Prepared for Herkimer County, New York

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Herkimer County Multi-Jurisdictional Hazard Mitigation Plan

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HERKIMER COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN

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EXECUTIVE SUMMARY

Disasters can happen anytime, anywhere, and any place. They can cause loss of life; damage buildings and infrastructure; and have devastating economic, social, and environmental consequences. Nationwide, taxpayers pay billions of dollars annually to help communities, organizations, businesses, and individuals recover from disasters. These monies only partially reflect the true cost of such events because costs incurred by insurance companies and private entities are not reimbursed by tax dollars and, as such, are not included in the overall total. Many natural disasters are predictable, and much of the damage and costs caused by these events can be reduced or even eliminated.

> ***Mitigation is the thread that permeates national preparedness.***
>
> - *National Mitigation Framework*, U.S. Department of Homeland Security, July 2013

The National Mitigation Framework (NMF) discusses seven core capabilities related to threats and hazards that entities involved in mitigation must address:

- Risk and Disaster Resilience Assessment
- Planning
- Community Resilience
- Public Information and Warning
- Long-term Vulnerability Reduction
- Operational Coordination

The *Herkimer County Multi-Jurisdictional Hazard Mitigation Plan* (Herkimer HMP) brings these elements together as a community through the planning process and related activities and tasks to reduce risks from hazards in the County and all its municipalities.

The hazard mitigation planning process benefits Herkimer County and its communities in several ways:

- The hazard identification and risk assessment process establishes the foundation for all hazards and all phases of disaster and emergency management programs: preparedness, prevention/protection, response, recovery, and mitigation.
- The inclusive planning process builds partnerships by involving agencies, organizations, citizens, and businesses.
- The process increases education and awareness of threats and hazards, as well as their impacts, consequences, and risks.
- The plan communicates needs and priorities to State and Federal officials, and positions the adopting jurisdictions to receive potential financial and technical assistance.

- The plan provides for the most efficient and effective use of resources to address risk reduction.
- The process provides opportunities to align hazard risk reduction with other community objectives.

Effective mitigation begins with identifying the threats and hazards a community faces and determining the associated vulnerabilities and consequences. Sound assessment requires risk information based on credible science, technology, and intelligence validated by experience. No single threat or hazard exists in isolation. As an example, a hurricane can lead to flooding, dam failures, and hazardous materials spills.

Understanding risks makes it possible to develop strategies and plans to manage them. Managing risks from threats and hazards requires decision making to accept, avoid, reduce, or transfer risk. Avoiding and reducing risks also reduces long-term vulnerability and builds individual and community resilience.[1]

This plan is driven by risk, rather than the occurrence of incidents. By fostering comprehensive risk considerations, this plan encourages behaviors and activities that will reduce the future exposure and vulnerability of the people and communities of Herkimer County.

Successful mitigation leads to a more resilient community in the face of future disasters. Resilient communities proactively protect themselves against hazards, build self-sufficiency, and become more sustainable. Resilience…involves technical, organizational, social, and economic dimensions. It is fostered not only by government, but also by individual, organization, and business actions.[1]

Record of Changes

The 2017 Herkimer HMP Hazard Mitigation Working Group (HMWG) will secure ongoing plan feedback from jurisdictional representatives, partner agencies, stakeholders, and the public. The County Hazard Mitigation Coordinator, who is the Herkimer County Director of Emergency Management, will record input in **Table ES-1** (shown on the following page) throughout the current five-year planning cycle. The Director will also identify sections of the plan to which the input applies. The process of maintaining and updating the plan is fully outlined in **Section 5, Plan Maintenance.**

[1] *National Response Framework*, U.S. Department of Homeland Security, July 2013, p. i.

Table ES-1: Record of Changes

Date	Source	Comments	Sections
Example:			
9/30/2017	John Q. Public, Resident Town of Mohawk	Several communities located on the Mohawk River and area creeks have formed neighborhood-based groups to provide input on floodplain management issues. Mr. Public provided the names of groups and contact information so HMWP can invite them to planning meetings and secure their input in the 2022 HMP update.	Section 1: Planning Process Jurisdiction Annexes for communities where groups have formed

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SECTION 1: INTRODUCTION

DMA 2000 Requirements: There are no specific DMA 2000 requirements for the plan introduction and primary jurisdiction's profile. The information presented in this section provides an overview of the Planning Area and establishes context for the sections and information that follow in the plan.

1.1. Purpose

The *2017 Herkimer County Multi-Jurisdictional Hazard Mitigation Plan* (Herkimer HMP) was developed as a new plan for the Planning Area of Herkimer County, New York, and its 30 municipalities. Although the County and its local jurisdictions have a history of significant efforts in hazard mitigation planning and related activities, previous efforts did not result in the creation of a FEMA-approved plan.

The purpose of this plan is to guide hazard mitigation activities to protect the county's residents, property, and economy from the effects of future hazard events. This plan demonstrates the community's commitment to reducing hazard risk and is a tool to help decision-makers direct mitigation activities and resources.

The plan allows Herkimer County and participating jurisdictions to access mitigation resources that are only available to communities with an approved plan. The plan is an eligibility requirement for certain FEMA Hazard Mitigation Assistance programs. These include the Hazard Mitigation Grant Program (HMGP), Pre-Disaster Mitigation (PDM) Program, and Flood Mitigation Assistance (FMA) Program. Having the Herkimer HMP may help communities earn credits for the Community Rating System (CRS). CRS is a voluntary program of the National Flood Insurance Program (NFIP) that offers lower flood insurance premiums in return for a community's higher standard of floodplain management.

1.2. Background and Scope

The hazard mitigation planning process includes several steps: identifying hazards; assessing hazard impacts; establishing mitigation goals; and developing and ranking mitigation strategies. The process produces a comprehensive strategy to reduce or eliminate disaster-related damage, loss of life, and affects to the environment and the economy. In August 2016, Herkimer County and its municipalities, in collaboration with the New York State Division of Homeland Security and Emergency Services (NYS DHSES), re-launched a planning effort to develop the Herkimer HMP.

The Herkimer HMP covers all communities within Herkimer County, henceforth known as the "Planning Area." For this plan, Herkimer County and each municipality is considered a "local jurisdiction," for a total of 31 jurisdictions in the Planning Area. While ongoing effort was made to enlist the participation of all jurisdictions, eleven communities with limited staff and resources were unable to participate during the allowable timeframe. The following 20 jurisdictions participated at different stages of the planning process.

Jurisdictions denoted with an asterisk (*) are "adopting jurisdictions"[1] seeking approval of the plan:

- Herkimer County*
- Dolgeville (Village)*
- Fairfield (Town)*
- Frankfort (Town)*
- Frankfort (Village)*
- German Flatts (Town)*
- Herkimer (Town)*
- Herkimer (Village)*
- Ilion (Village)*
- Litchfield (Town)
- Little Falls (City)*
- Little Falls (Town)*
- Manheim (Town)*
- Mohawk (Village)*
- Norway (Town)
- Ohio (Town)
- Russia (Town)
- Salisbury (Town)
- Webb (Town)
- Winfield (Town)

This plan meets the requirements of the Disaster Mitigation Act of 2000 (Public Law 106-390) and the implementing regulations set forth within 44 CFR §201.6 (hereafter collectively referred to as DMA 2000). While the act emphasized the need for mitigation plans and more coordinated mitigation planning and implementation, the regulations set standards that Local Hazard Mitigation Plans (LHMPs) must meet for local jurisdictions to be eligible for certain federal disaster assistance and hazard mitigation funding under the Robert T. Stafford Disaster Relief and Emergency Act (Public Law 93-288). The Herkimer County planning effort also meets the *Hazard Mitigation Planning Standards* (updated 2017) established by NYS DHSES. These regulations impose additional requirements for any hazard mitigation plan developed with funds administered by NYS DHSES.

1.3. Plan Organization

The Herkimer HMP is organized as outlined below to align with DMA 2000 planning requirements and the FEMA Plan Review Tool:

- Base Plan
  - Section 1: Introduction and County Profile
  - Section 2: Planning Process
  - Section 3: Hazard Identification and Risk Assessment
  - Section 4: Mitigation Strategy
  - Section 5: Plan Maintenance
  - Section 6: Plan Adoption
- Jurisdiction Annexes
  - Annexes 1 – 31 (individual annexes for all jurisdictions in the Planning Area)

[1] Section 2.3, Base Plan provides the definitions of "participating" and "adopting" jurisdictions.

Base Plan

The six sections of the Base Plan contain documentation that meets DMA 2000 requirements. Some sections include appendices that provide supporting data, background information, or references.

Jurisdictional Annexes

A separate annex containing community-specific information was developed for each participating jurisdiction. Annexes contain a detailed assessment of the jurisdiction's unique risks, vulnerabilities, and mitigation strategy to reduce loss. Each annex can be maintained by the jurisdiction as a stand-alone component of the Herkimer HMP and includes the following information, if available:

- Community profile summarizing governing structure, geography and climate, history, economy, and population
- Hazard information about location, extent (magnitude and severity), previous occurrences, probability of future occurrence, impacts and consequences, and risk assessment
- Hazard map(s) scaled to the jurisdiction
- Vulnerable populations, and number and value of buildings, critical facilities, and other community assets located in special hazard areas
- Capability Assessment
- Mitigation Actions and Action Plan for Implementation
- Plan Maintenance
- Plan Adoption

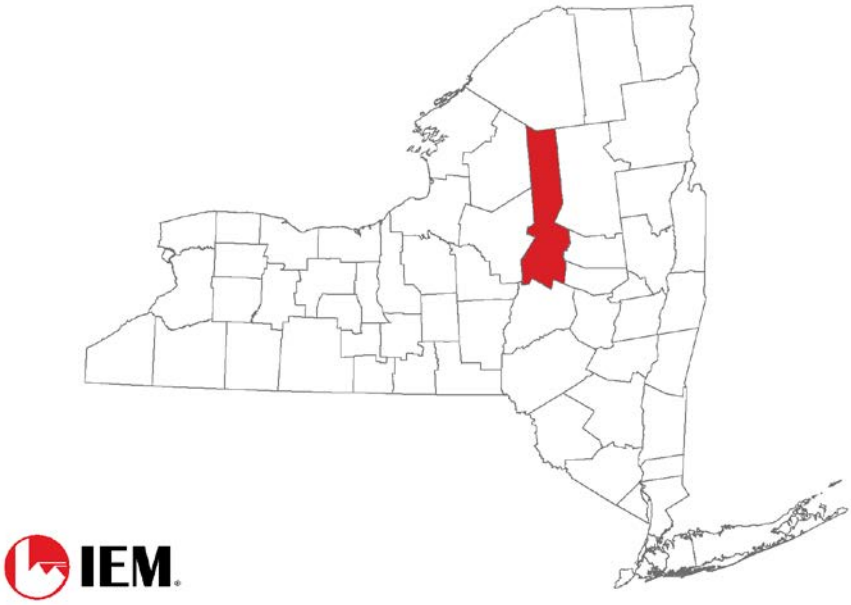
Jurisdiction-specific data for all jurisdictions was "rolled-up" into comprehensive summaries in each section of the Base Plan. Differences between jurisdictions are discussed when the risk or need of a specific community differs from the countywide assessment.

1.4. Herkimer County Profile

This section provides a countywide profile. Each municipal annex contains jurisdiction-specific information in a similar format.

Herkimer County is in central New York State, northwest of Albany and east of Syracuse (see **Figure 1-1**). The northern part of the county is in Adirondack Park, which is sparsely populated and largely under the jurisdiction of the Adirondack Park Agency (APA). Large segments are forested and crossed by creeks and streams that flow toward the Mohawk River Valley and into the Mohawk River, which flows across the southern portion of the county. Areas bordering or located near the Mohawk River and its tributaries are the most densely populated. **Figure 1-1** , **Table 1-a**, and **Table 1-b** provide geographic, historical, demographic, economic, and other details about Herkimer County and its municipalities.

Figure 1-1: Location of Herkimer County within the State of New York



***Source**: ESRI*

Herkimer County comprises 30 incorporated municipalities, each with a local governing body. These include one city, 19 towns, and 10 villages:

Table 1-a: Municipalities in Herkimer County

City
- Little Falls

Towns
- Columbia
- Danube
- Fairfield
- Frankfort
- German Flatts
- Herkimer
- Litchfield
- Little Falls
- Manheim
- Newport
- Norway
- Ohio
- Russia
- Salisbury
- Schuyler
- Stark
- Warren
- Webb
- Winfield

Villages
- Cold Brook
- Dolgeville
- Frankfort
- Herkimer
- Ilion
- Middleville
- Mohawk
- Newport
- Poland
- West Winfield

Table 1-b: Herkimer County Facts

Herkimer County Facts	
County Seat	Village of Herkimer
Population	64,519 (2010 U.S. Census)
Population Density	45.7 per square mile
Unemployment Rate	5.2% (September 2015)
Land Area	1,458 square miles
Inland Water	46 square miles
Municipalities	30

Herkimer County Facts	
▪ **Number of Cities**	1
▪ **Number of Towns**	19
▪ **Number of Villages**	10
County-maintained Local Roads	578.31 miles
Number of Hospitals	1
Number of Colleges and Universities	2
Highest Elevation	2,704 feet (*unnamed peak in West Canada Creek State Wilderness Area)*
Watersheds	5
Largest Land Owner/Manager	Adirondack Park Agency *(approximately 60% of county land area is within the Park)*
Largest City	Town of German Flatts
Largest Lake	Stillwater Reservoir
Largest Waterway	Mohawk River/Erie Canal

History

The land area that is now Herkimer County was part of the original Albany County when counties were first established in New York State in 1683. The counties were reorganized between 1766 and 1791 during subsequent geographical realignment. Herkimer County, the longest in the state, assumed its present form in 1817.

"Flood Debris – Manning, Herkimer County, March 2, 1910 Flood"
(Source: Postcard being sold on EBay 10/31/16)

Early in its history, the natural environment supported the county's population growth and economy. Forests in the northern region provided wood products and recreational opportunities in the Adirondack Mountains, while the southern creeks and river valleys sustained industry and agriculture, especially dairying. The Mohawk River and Erie Canal offered efficient transportation routes for passengers and trade. These, combined with a growing railroad network, created recreational opportunities and later contributed to the tourism economy. This trend was supported by the creation of Adirondack Park in 1892.

"Frankfort Fire, Feb. 14, 1912"
(Source: Postcard being sold on EBay 10/31/16)

The Erie Canal, proposed in 1808 and completed in 1825, contributed to the development of communities in the Mohawk Valley and provided the means to transport goods from the east coast to inland markets

via Lake Erie and other inland waterways. Industries, such as Remington Arms, the oldest industry in Herkimer County, continue to play a major economic role and provide many jobs. Local firms have for 200 years produced rifles, typewriters, farm equipment, furniture, textiles, shoes, data records, bicycles, nutcrackers, paper, and dairying equipment. The growing economy drew immigrants from throughout Europe to work in industry and agriculture, thereby building a diverse local culture.[2]

The natural hazards affecting Herkimer County are well documented. Newcomers to the region settled along the waterways crisscrossing the land. As a consequence, the county and its municipalities have been repeated affected by flooding that caused loss of life and property damage. Previous occurrences of flooding and other natural disasters are documented in **Section 3: Hazard Identification and Risk Assessment** and the **Jurisdictional Annexes.**

Geography and Climate

The land in Herkimer County generally slopes from north to south. The highest point (2,704 feet) is atop an unnamed peak in the West Canada Creek State Wilderness Area. The lowest elevation (303 feet) is near the Mohawk River. The average elevation is 1,480 feet.

The topography of the Planning Area causes slight variations in the general climate conditions from the northern region to the southern region. The average range of temperatures, precipitation, snowfall, and windspeed are described in the following tables.

Average Temperatures in the Planning Area	
Minimum	1°F to 11°F (Feb. – March)
Maximum	75°F to 83°F (July – Aug.)

Average Precipitation in the Planning Area	
Minimum	2.5 inches (Feb.)
Maximum	4.5 inches (Sept.)

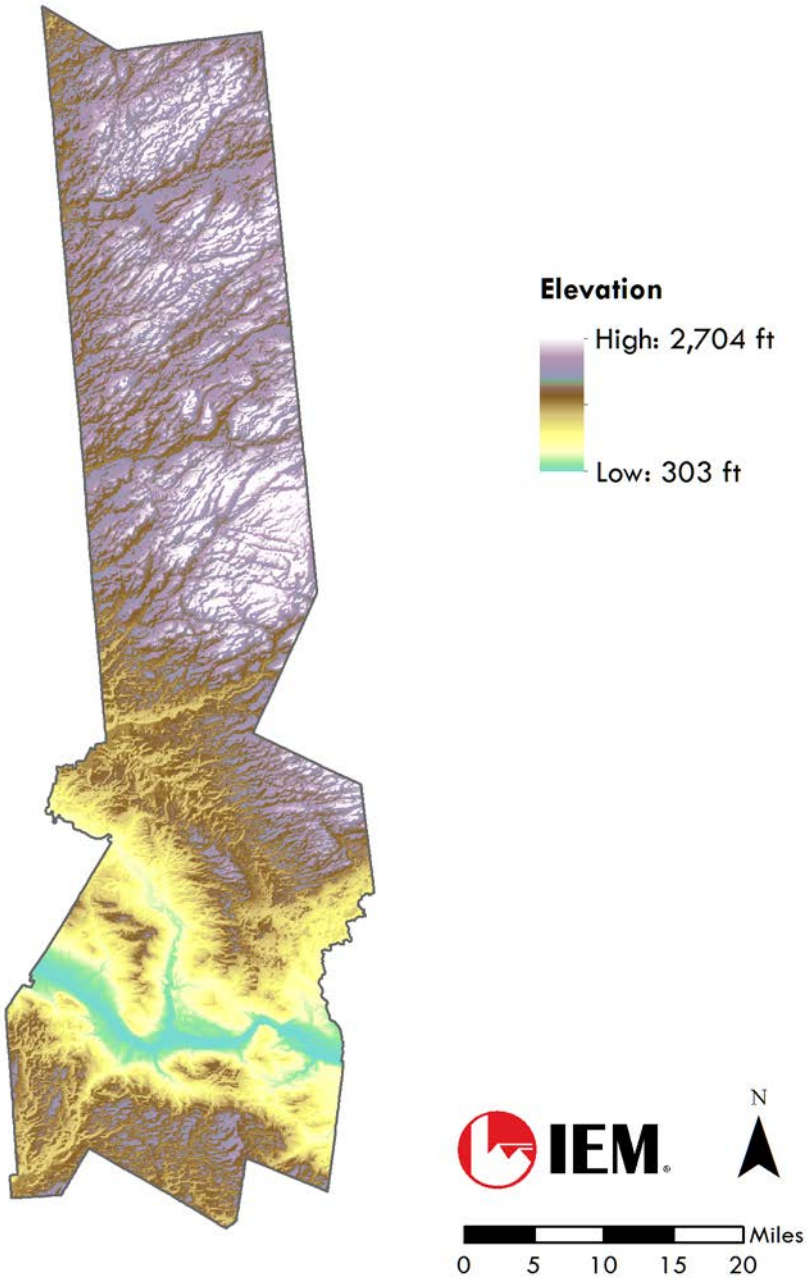
Average Snowfall in the Planning Area	
Dec.-Jan. (peak)	24 inches

Average Windspeed in the Planning Area	
Minimum	7.5 mph (Aug.)
Maximum	10.8 mph (March)

The three maps that follow provide a visual overview of the county's elevation **(Figure 1-2)**, land cover **(Figure 1-3)**, and major waterways **(Figure 1-4)**.

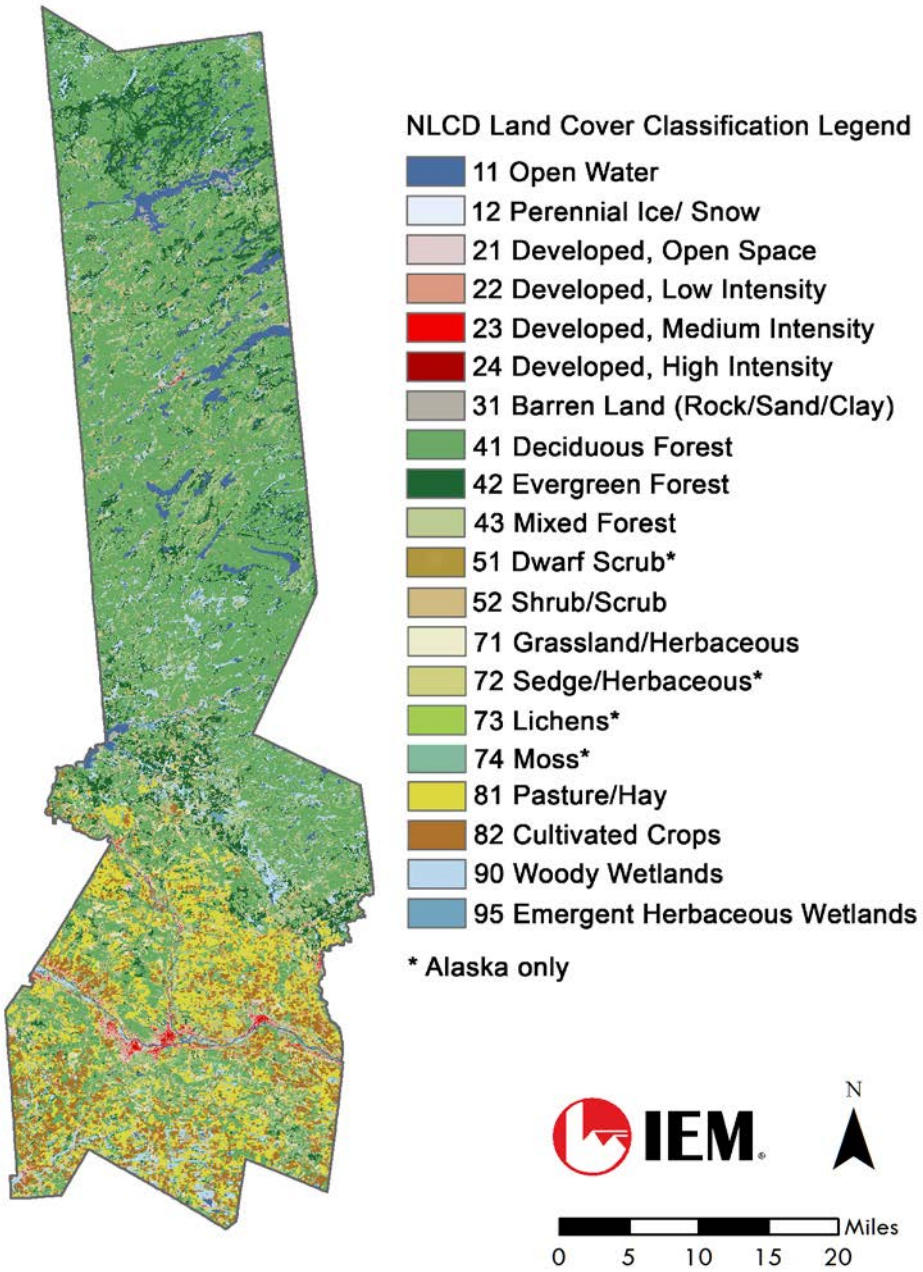
[2] Source: Herkimer County Historical Society

Figure 1-2: Elevation Map of Herkimer County



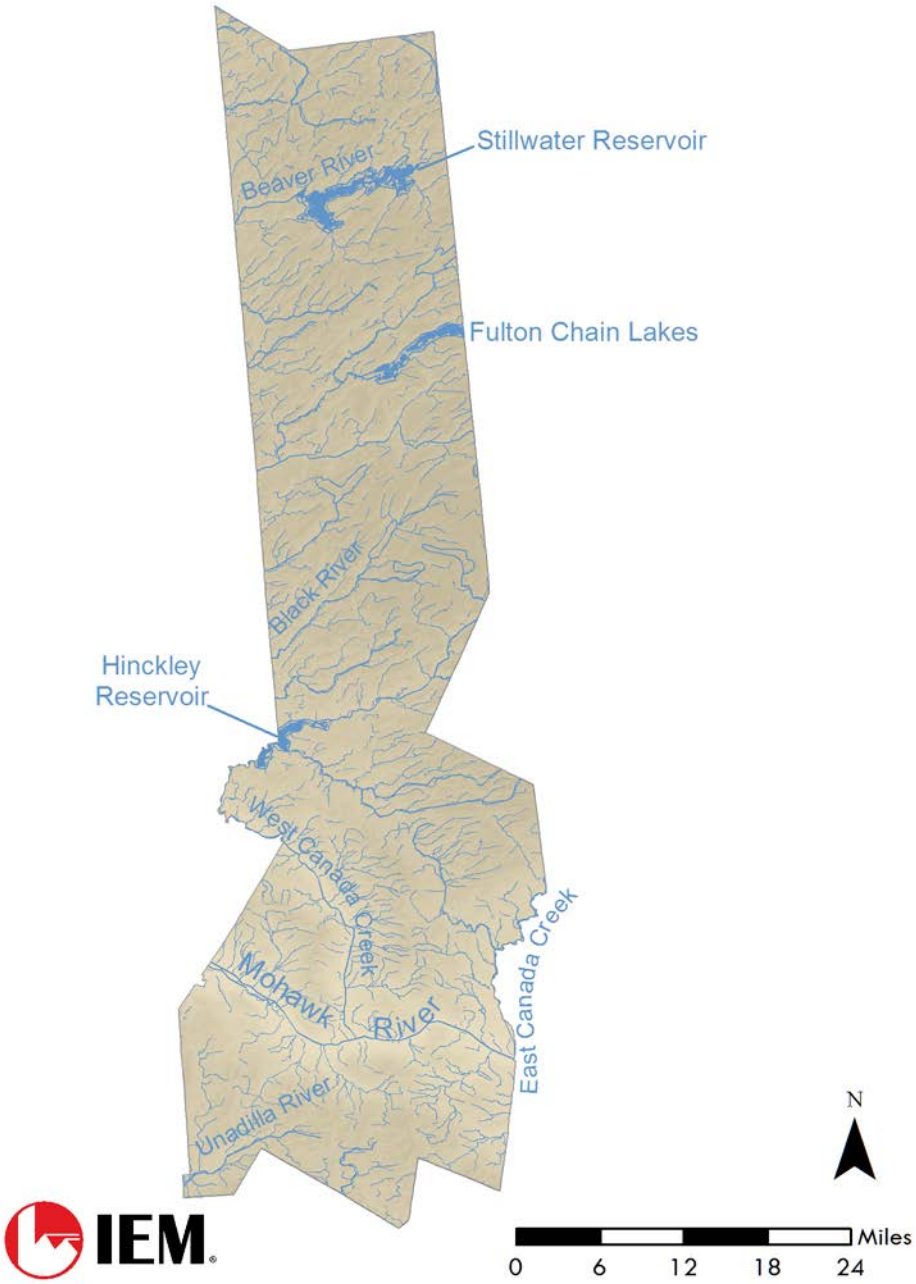
***Source**: U.S. Geological Survey*

Figure 1-3: Land Cover of Herkimer County



***Source**: National Land Cover Database*

Figure 1-4: Major Waterways in Herkimer County



***Source**: New York State GIS Clearinghouse*

Transportation

Herkimer County is mainly accessible by road, including the New York State Thruway (Interstate 90), which generally parallels the Mohawk River in the southern portion of the county. State roads (5, 5S, 8, 28, 29, 51, 167, 168, 169, 170, 171) connect communities within the county and adjacent jurisdictions. The Herkimer County Highway System consists of 578.31 miles of roads and 66 bridges (three co-owned with Fulton and Oneida Counties). The 2014 operations budget for maintenance of county roads and bridges exceeded $3.7 million.[3] *(Note: State owned/maintained roads are not included in this figure.)*

The Erie Canal is a cornerstone of the local transportation network. Managed by the New York State Canal Corporation,[4] this navigable waterway carries recreational and commercial traffic and connects Lake Erie at the western terminus to the Hudson River, the eastern terminus of the canal. It is 524 miles long and incudes 36 locks, two of which are in Herkimer County. Rail lines run east to west and carry freight and passengers across the southern portion of the county. Data summarizing the annual number of passengers and freight tonnage that passes through the county is not readily available, but the Association of American Railroads estimated that in 2010 freight carload tons originating in New York totaled about 7.5 million tons. Carloads transport chemicals, waste, scrap, nonmetallic minerals, food, coal, and other products. Twenty-two million tons of freight terminated in New York.

In addition to routine passenger and freight rail services, the Remson–Lake Placid Travel Corridor, traversing the Town of Webb, is a dormant railroad right-of-way owned by the State of New York. This line is currently not in use but conceptual plans have examined the feasibility of re-instituting limited service in combination with a trail system.

Erie Canal, Ilion, NY [5]

Economy, Tourism and Tax Base

Herkimer County's natural environment provides a base for year-round and seasonal attractions such as golf, hiking, boating, fishing, hunting, biking, camping, skiing, snowboarding, snowmobiling, and others. The Erie Canal, which joins the Mohawk River for much of its course through Herkimer County, serves as a transportation corridor for commercial boats and is widely used for cruises and water sports.

Business, Industry and Government

Munitions company Remington Arms, founded in 1816 in the village of Ilion, is one of the largest businesses in Herkimer County. Major industries are listed in **Table 1-c**.

[3] "Annual Report 2015", Herkimer County Department of Highways
[4] The New York Canal Corporation was absorbed by the New York Power Authority in early 2017.
[5] Photo: "Erie Canal, Ilion, N.Y." (202,666 -- Valentine & Sons' Publishing Co., New York) -- Postcard; postmarked Sep. 3, 1908.; available at: http://www.eriecanal.org/eastcentral-1.html#Mohawk

Table 1-c: Summary of Values of Economic Sectors in Herkimer County (2010 Census)

Business/Industry	Number of Firms	Employment	Total Payroll
All Business/Industry	**1,274**	**16,276**	**$516,321,600**
TOTAL PRIVATE:	**1,157**	**11,917**	**$361,563,994**
Natural Resources, Mining & Construction	161	656	$29,071,908
Manufacturing	56	2,446	$104,052,468
Trade, Transportation & Utilities	271	2,918	$88,452,089
Information	21	126	$5,544,197
Financial Activities	83	396	$13,111,076
Professional & Business Services	119	610	$21,243,350
Private Educational & Health Services	132	2,383	$63,433,660
Leisure & Hospitality	186	1,832	26,144,984
Other Services	125	548	$10,433,963
Unclassified	21	5	$76,229
TOTAL GOVERNMENT	**117**	**4,359**	**$154,757,606**
Federal	20	106	$5,196,739
State	7	197	$12,416,070
Local (includes Public Schools)	90	4,056	$137,144,797

***Source**: NYS Department of Labor, Research and Statistics Division, 2011*

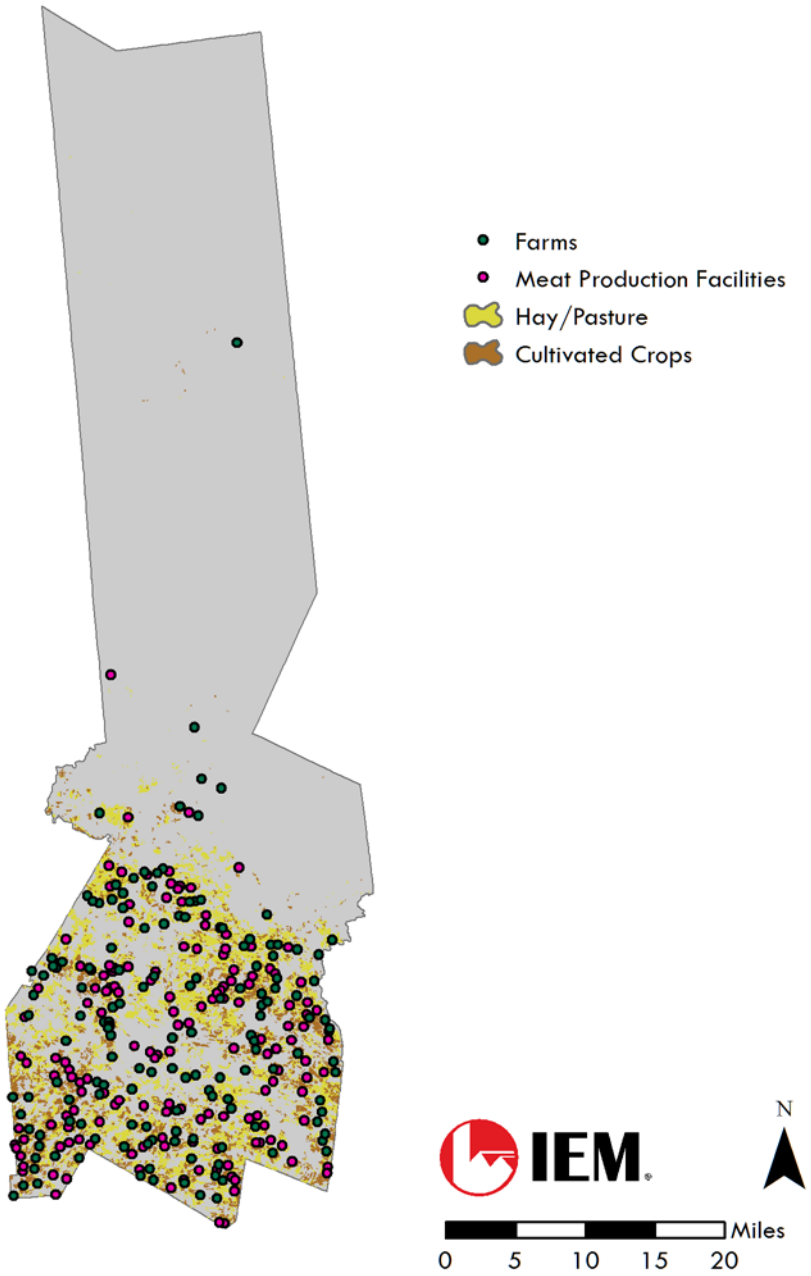
There are 1,247 firms in Herkimer County, including private sector and government employers **(Table 1-c).** They employ 16,276 people and manage a payroll of $516,321,600. Government agencies (federal, state, and local) provide the largest payroll ($154,757,606) and the largest number of jobs (4,056). The Trade, Transportation & Utilities sector includes the largest number of firms (271).

Agriculture

Farming is an important segment of economy, culture, and way of life. According to New York State Agricultural Statistics (based on the 2010 U.S. Census), there were 675 farms and 136,600 farmed acres, accounting for 14% of the total land area in the county. The dominant agricultural activity is dairy farming. Agricultural lands are primarily located in the southern Herkimer County. Approximately 41% of the total acreage of lands south of the Adirondack Park is farmland (see **Figure 1-5**).[6]

[6] NYS Agricultural Statistics, 2010.

Figure 1-5: Agricultural Uses in Herkimer County, by Type



***Source**: National Land Cover Database; HSIP*

Table 1-d depicts the change in number and size of farms between 2000 and 2010.

Table 1-d: Comparison of Number of Farms and Acreage in Farming, Herkimer County, 2000 – 2010

	2000	2010
Number of Farms	710	675
Total Farmland Acreage	154,200 acres	136,600 acres
Average Farm Size	217 acres	243 acres

Source: 2000 and 2010 NYS Agricultural Statistics

In 2007, milk and other dairy products generated the top sales by commodity group for county agriculture, totaling over $47.5 million.[7] In recent years, the depressed economy and higher cost for producing milk and other dairy products has caused a steep decline in revenues. The vulnerability of each economic sector depends on the type of hazard, location, extent, severity, and duration. Typical economic vulnerabilities include property loss, business loss (direct and indirect) and loss of employees.

Education

Approximately 89% of county residents age 25 of older graduated from high school or have some college education; 22.4% have a bachelor's degree or higher.[8] Public and private schools provide education from pre-school through high school, but the local college is a regional attraction. Herkimer County Community College (HCCC) provides a substantial educational opportunity and an economic boost to the county. HCCC, unique among community colleges, offers on-campus housing and is one of the largest residential community colleges in the country. The student population includes residents from 30 states and 20 countries. The local economic impact of the college and its programs is estimated at more than $75 million annually.[9]

Government Structure

Counties are the primary government administrative division of New York. While originally created as subdivisions of the state meant to carry out state functions, counties are now considered municipal corporations with the power and fiscal capacity to provide an array of local government services. These include law enforcement and public safety, social and health services, and education. Herkimer County is one of 62 counties in New York State and one of 19 operating under a county charter that affords greater home rule powers. The Village of Herkimer is the county seat.

Additional information about Herkimer County and the services it provides is described in **Annex 1**.

[7] 2007 Census of Agriculture County Profile
[8] *Ibid*.
[9] American Community Survey, 2015, U.S. Census

Municipal Units of Government

All land within Herkimer County is incorporated as a city, town, or village. **Table 1-e** defines each of these entities.

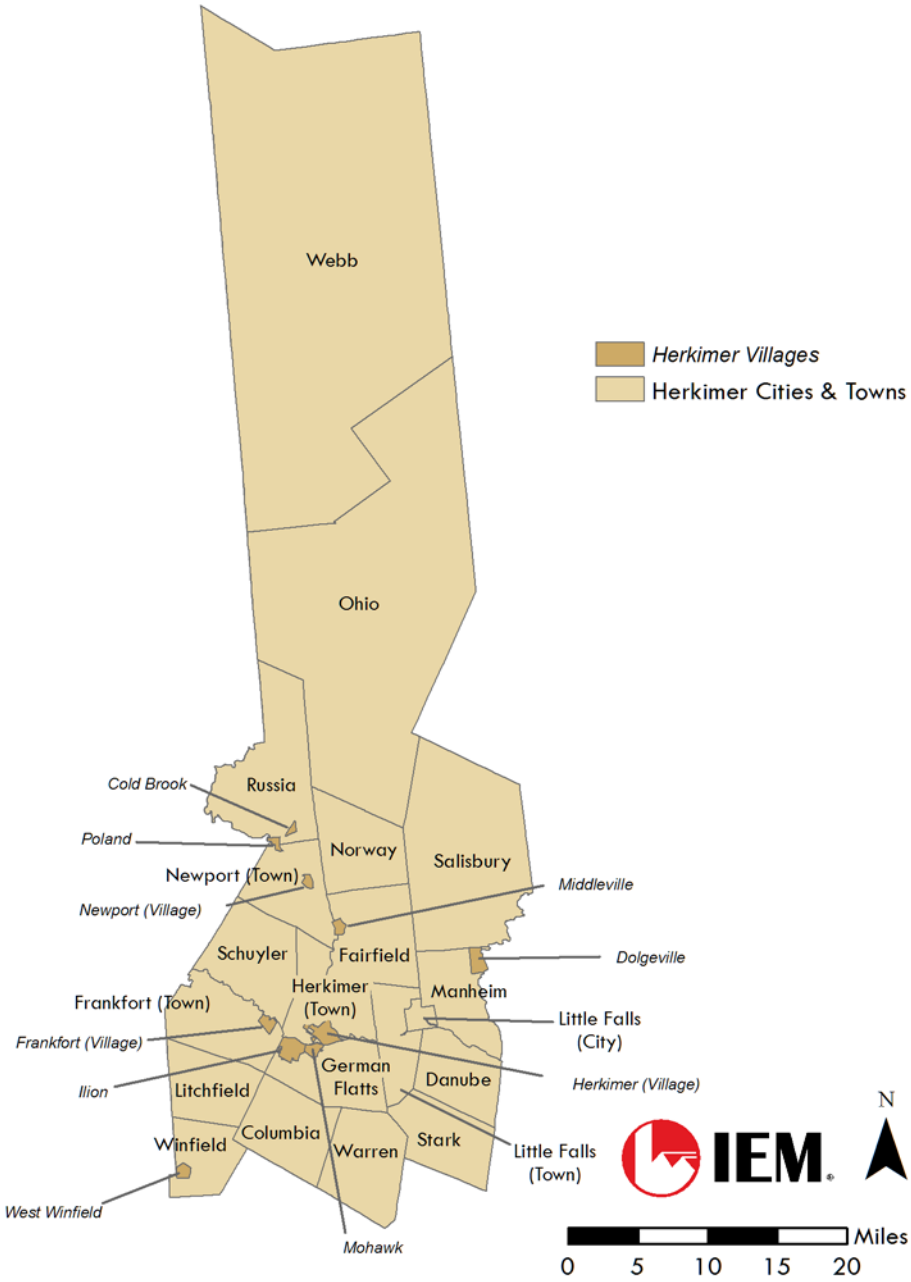
Table 1-e: Municipal Units of Government in New York State

Unit of Government	Definition
City	▪ A highly autonomous incorporated area contained within one county and providing most services to its residents. ▪ Has the highest degree of home rule and taxing jurisdiction over residents. ▪ Differs from a village in that cities are organized and governed according to their charters, while most villages are subject to a uniform statewide Village Law. ▪ A City is neither part of nor subordinate to a town. ▪ Some cities are surrounded by a town, typically of the same name. ▪ There is no minimum population or land area requirement to become a city.
Town	▪ A municipal corporation that is the major division of each county (excluding the five counties that comprise New York City), similar to townships in other states. ▪ Governed by a Town Board comprised of one elected supervisor and a specified number of elected council persons, ranging in number from two to six. The Town Board serves as the legislative branch. ▪ Provides or arranges for the primary functions of local government, which vary widely. ▪ May vary in size and population, and contain one or more villages, and several hamlets and communities.
Village	▪ An incorporated area with clearly defined legal boundaries, and less autonomy than a City. ▪ Part of a Town (or Towns), with residents who pay taxes to and receive services from the Town, as well as from the Village. ▪ Some Villages provide their own police and other municipal services. ▪ Services not provided by the Village are provided by the Town or Towns containing the Village. ▪ The legislature of a Village is the Board of Trustees, composed of a mayor and (usually) four trustees. ▪ Most Villages are subject to a uniform statewide Village law. ▪ Must have at least 500 inhabitants and not be part of an existing City or Village to incorporate. ▪ Can be no more than five square miles in area unless its boundaries are coterminous with a school, fire, improvement, or another district or the entire town.

***Source**: Local Government Handbook*, New York Department of State, 2009

While all land within county borders is incorporated as a city, town, or village, Herkimer County was considered a jurisdiction during the mitigation planning process.

Figure 1-6: Herkimer County and its Municipalities (City, Towns, and Villages)



***Source**: New York State GIS Clearinghouse*

Population/Demographics

Table 1-f provides a summary of the population, number of households, per capita income and median age for each jurisdiction in the Planning Area.

Table 1-f: Herkimer County Demographics, by Jurisdiction

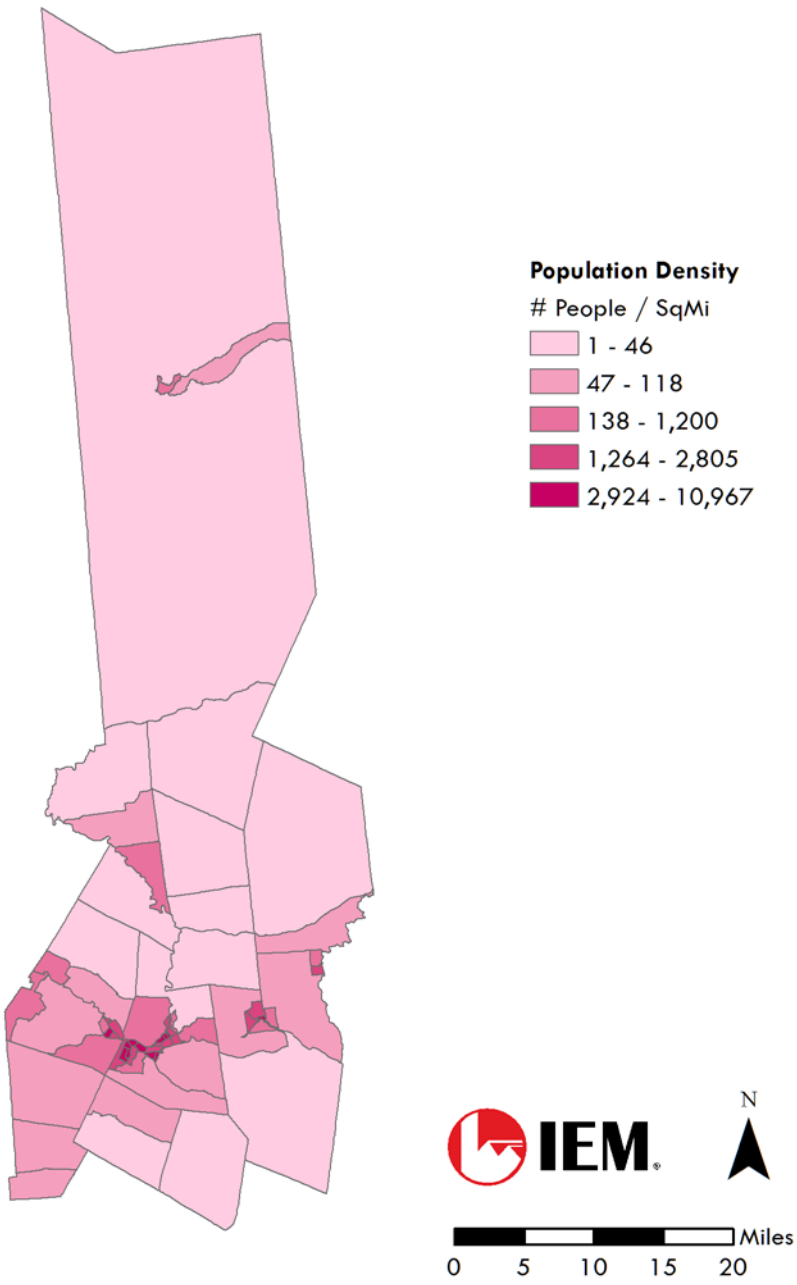
CITY/VILLAGE/ TOWN	POPULATION (2010 Census)	POPULATION (2015 Estimated)	HOUSEHOLDS	PER CAPITA INCOME	MEDIAN AGE
Herkimer County	64,519	63,100	26,324	$23,123	42.1
Cold Brook (Village)	329	322	151	$19,281	40.6
Columbia (Town)	1,580	1,557	678	$23,235	43.7
Danube (Town)	1,039	1,025	461	$18,178	38.5
Dolgeville (Village)	2,206	2,005	982	$21,035	40.6
Fairfield (Town)	1,627	1,573	695	$27,241	43.8
Frankfort (Town)	7,636	7,470	3,288	$23,891	42.4
Frankfort (Village)	2,598	2,507	1,097	$19,633	36.6
German Flatts (Town)	13,258	12,844	5,869	$21,966	38.6
Herkimer (Town)	10,175	9,901	4,572	$20,738	42.1
Herkimer (Village)	7,743	7,519	3,551	$18,385	40.3
Ilion (Village)	8,053	7,926	3,563	$21,819	38.1
Litchfield (Town)	1,513	1,499	758	$31,546	42.0
Little Falls (City)	4,946	4,787	2,808	$23,712	44.7
Little Falls (Town)	1,587	1,538	700	$26,130	44.3
Manheim (Town)	3,334	3,246	1,546	$21,135	41.3
Middleville (Village)	512	501	239	$23,316	44.9
Mohawk (Village)	2,731	2,628	1,244	$18,396	37.4
Newport (Town)	2,302	2,279	973	$23,872	40.6
Newport (Village)	640	620	256	$22,390	41.3
Norway (Town)	762	776	383	$23,071	46.5
Ohio (Town)	1,002	1,003	982	$23,071	46.5
Poland (Village)	508	500	190	$27,805	38.0
Russia (Town)	2,587	2,555	1,422	$22,737	42.1
Salisbury (Town)	1,958	1,923	930	$19,066	40.3
Schuyler (Town)	3,420	3,413	1,469	$22,801	45.5
Stark (Town)	757	741	352	$22,873	43.1
Warren (Town)	1,143	1,129	551	$19,250	40.5
Webb (Town)	1,807	1,815	845	$30,235	51.8
West Winfield (Village)	826	882	391	$23,926	40.4
Winfield (Town)	2,086	2,100	822	$25,702	44.9

***Source**: U.S. Census 2010*

According to 2015 estimates, the total population in Herkimer County has declined by slightly more than two percent since the 2010 census.

Figure 1-7 illustrates the population density of the Planning Area. The most densely populated areas are generally located on and around the county's waterways.

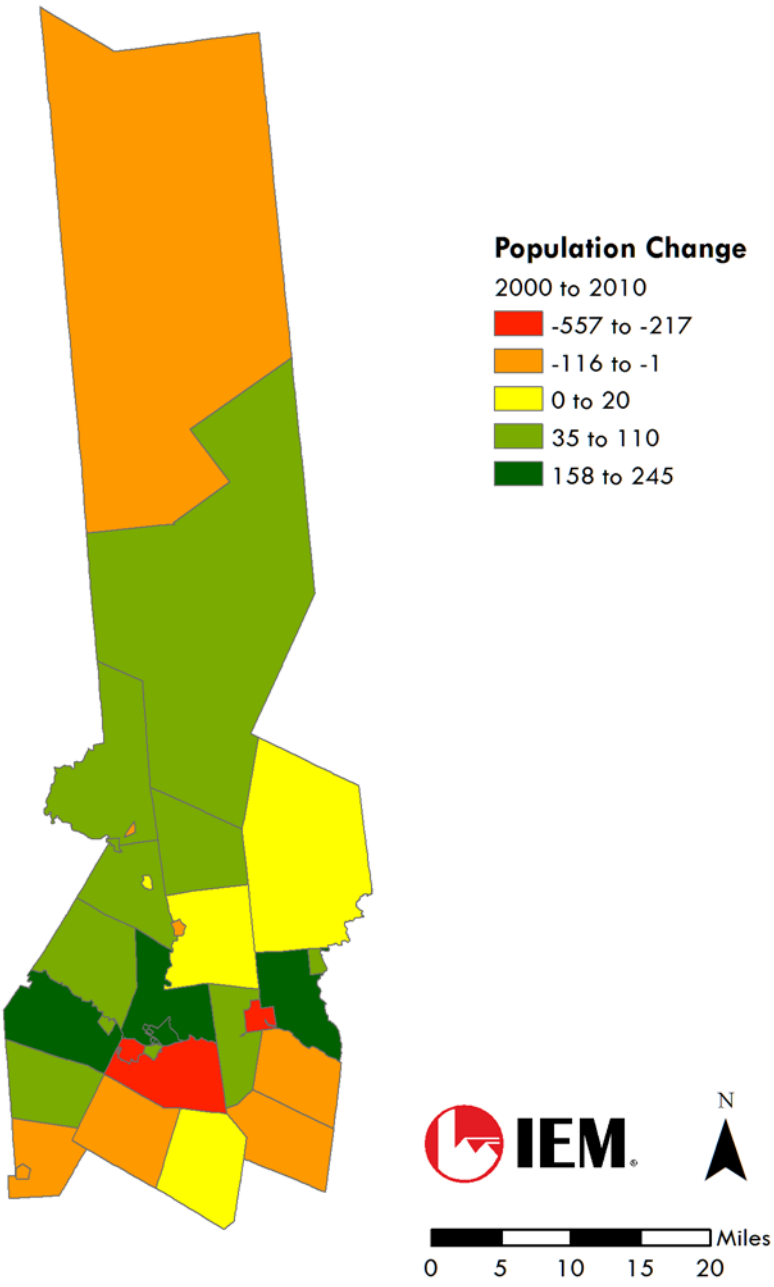
Figure 1-7: Population Density in Herkimer County



***Source**: U.S. Census 2010*

Figure 1-8 depicts the change in number of residents by jurisdiction between 2000 and 2010. The greatest decreases in population during this period were in the City of Little Falls, the Town of German Flatts and the Village of Ilion. The largest increases during the same period were seen in the Town of Frankfort, Town of Herkimer, Village of Herkimer and the Town of Manheim.

Figure 1-8: Population Change in Herkimer County, by Jurisdiction (2000-2010)

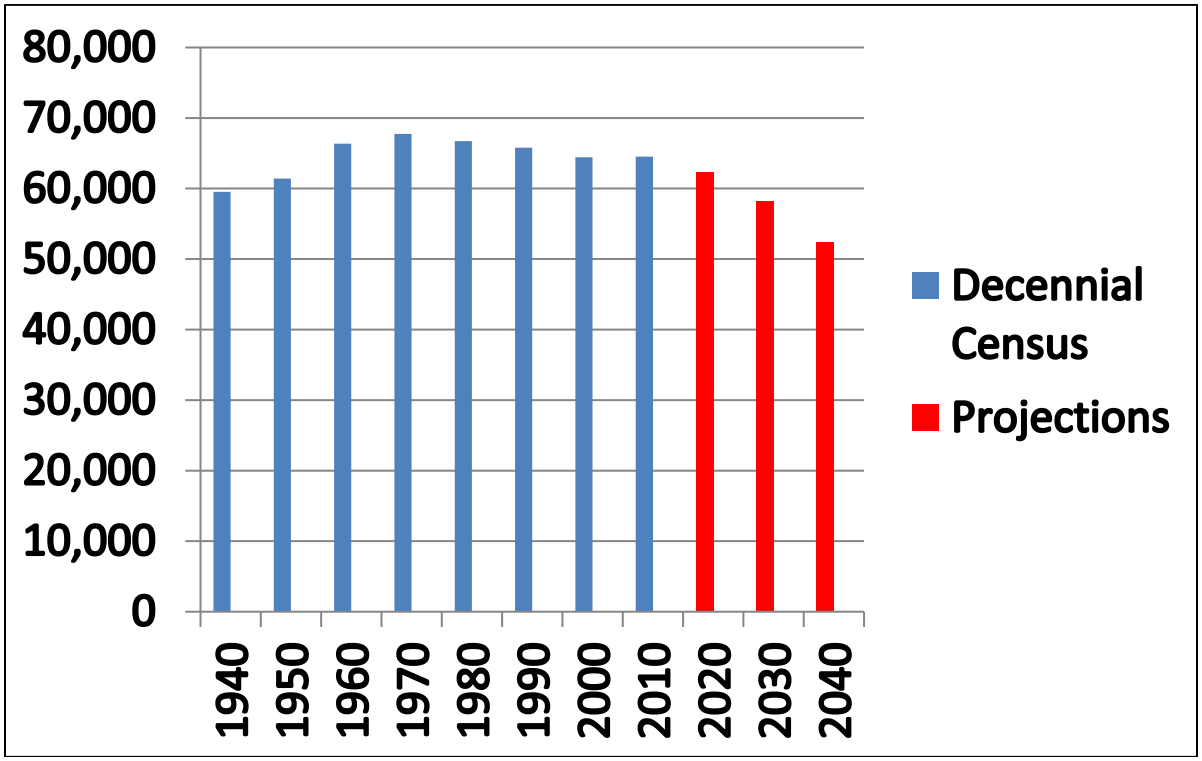


***Source**: U.S. Census, 2000 - 2010*

Population Trends and Future Population Growth

As seen in **Figure 1-9,** the long-term county population trend showed a slight overall increase between 1940 and 2010. While some municipal populations increased between 2000 and 2010, population projections depicted here indicate a gradual decline in total county population to just over 52,000 by 2040. This represents a 19% decline from the 2010 census.

Figure 1-9: Herkimer County Population Trends and Projections (1940 – 2040)



***Source**: 1940-2010 Decennial Census and projections by Cornell Program on Applied Demographics (2013)*

While the overall population trend indicates a projected decrease of the county's total population by 2040, the age demographic is projected to shift significantly in the next 30 years. The median age, which dropped slightly between 1950 and 1970, has since been climbing, rising from 31.1 years in 1970 to 42.1 years in 2010.[10] In general, the county's older population groups have increased at a faster pace than younger age groups. **Table 1-g** shows projections for ages 60 and over for the years 2010 to 2040, by age group. The number of adults over the age of 60 is expected to increase by 34.5% during this period.

[10] U.S. Census Bureau, 1970 – 2010 Censuses

Table 1-g: Demographic Projections for the Herkimer County Elderly Population, 2010-2040

	2010	2015	2020	2025	2030	2035	2040
Ages 60 & Over	14,333	15,844	17,596	29,338	19,643	19,553	19,272
Ages 65 & Older	10,289	11,458	12,933	14,543	15,941	16,155	15,807
Ages 75 & Older	4,867	4,830	5,289	6,224	7,253	8,277	9,026
Ages 85 & Older	1,588	1,603	1,529	1,547	1,738	2,130	2,459
Ages 60-74	9,466	11,014	12,307	13,004	12,390	11,276	10,246
Ages 75-84	3,279	3,227	3,760	4,677	5,515	6,147	6,567

***Source**: New York State Office for the Aged, County Data Book 2011*

The shift in the elderly population, considered especially vulnerable to hazards and their impacts, may increase the need for services and assistance before, during, and after a disaster.

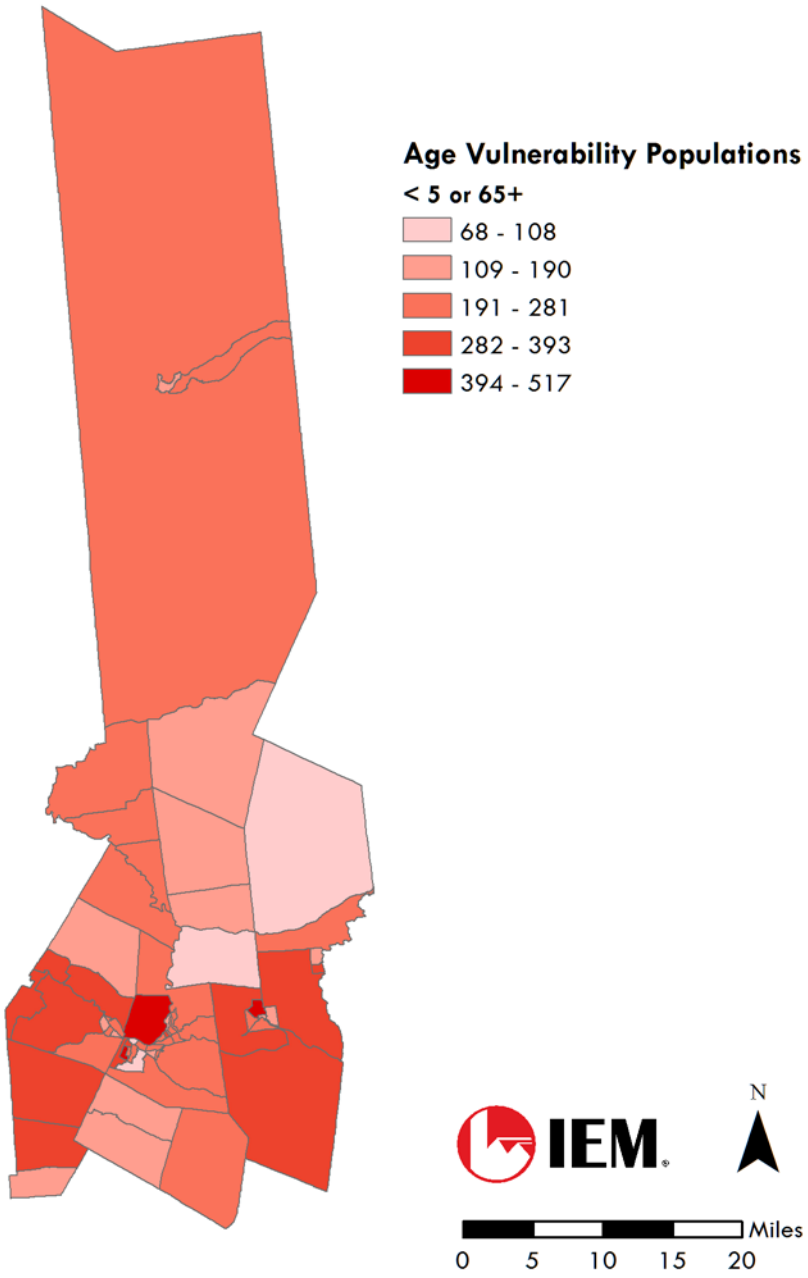
An additional consideration for future population growth is the number of county residents residing inside Adirondack Park within the geographic boundaries of Herkimer County. The 2010 Census reported the county "in-park" population as approximately 3,651. There was a very slight increase (0.5%) in population growth within the Park boundaries in Herkimer County between 2000 and 2010. This includes a decline of 5.5% in the Town of Webb and an increase of 8.7% in the Town of Ohio.

Special Populations at Risk

Certain population groups are generally more susceptible to the impacts of disasters. People with disabilities or medical conditions, who are normally stable day-to-day, may become susceptible to changes in accommodations, temperature, diet, and stress level. Children under the age of 5 and adults age 65 and over may require additional assistance during a hazard event and during the recovery from the event. This would be especially true if the event has widespread impacts to community systems and services, such as housing, electricity, water, medical care, and transportation**. Figure 1-10** shows the demographic represented by these two age groups. The highest numbers of vulnerable residents are in the City of Little Falls and the Town of Herkimer. While the population of children under the age of five has decreased more than 42% since 1950, the population of adults age 65 and older has increased nearly 60%.

Jurisdictional Annexes provide additional details about population trends.

Figure 1-10: Vulnerable Populations by Age (<5 and 65+), by Jurisdiction



***Source**: U.S. Census, American Community Survey 2014*

Natural Environment

The environment and natural resources of the Planning Area are a primary benefit for the county's residents and visitors. Assets include threatened and endangered species, forests, waterways, wetlands, and other environmentally sensitive areas.

Erie Canal

The Erie Canalway National Heritage Corridor is made up of geology, soils, and landforms shaped by construction of the canals almost 200 years ago. The segment of the canal that traverses the Planning Area includes approximately 40 percent of New York State's freshwater resources and drains nearly half of the state's total area.[11] Vegetation within the corridor includes hardwood forests, wetlands, bogs, agricultural fields, and orchards. The plentiful waters support habitats for fish, waterfowl, and forest animals, including many threatened and endangered species.

The canal's original construction necessitated the loss of forest acreage to create the canal and its towpath, but it also allowed the growth of farming, industry, and cities that further altered the land. The canal channel has changed over the years, allowing some segments to revert to their natural state.

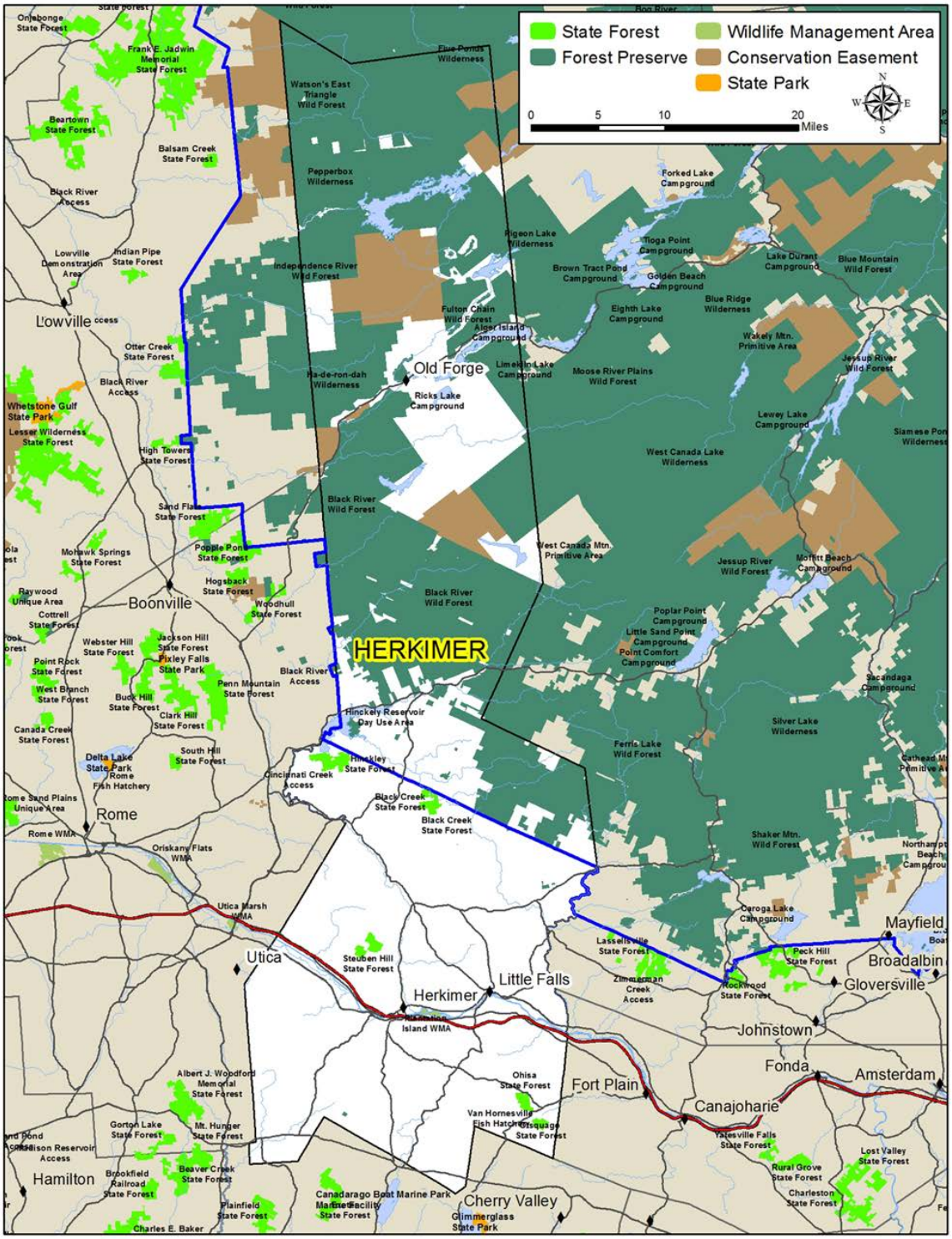
Natural geological features were incorporated into the canal route, including "potholes" found on Moss Island in Little Falls, near Lock E17. Potholes were formed by rock layers eroded by floodwater released by melting snow or ice, including glacial ice, which scoured one hole measuring 20 feet wide and 8 feet deep.

Adirondack Park

The Adirondack Park State Land is a unique natural resource, established in 1892 to encompass both private lands and the Forest Preserve created by an act of the Legislature in 1885. State lands are further protected by the *Adirondack Park State Land Master Plan*, February 2014, which prescribes low-impact uses within the park lands. Most Park land located within Herkimer County is forested. **Figure 1-11** displays the state lands within Herkimer County that are protected state forest, forest preserve, wildlife management areas, and conservation easements.

[11] http://www.eriecanalway.org

Figure 1-11: Forested Land Map, Adirondack State Lands in Herkimer County

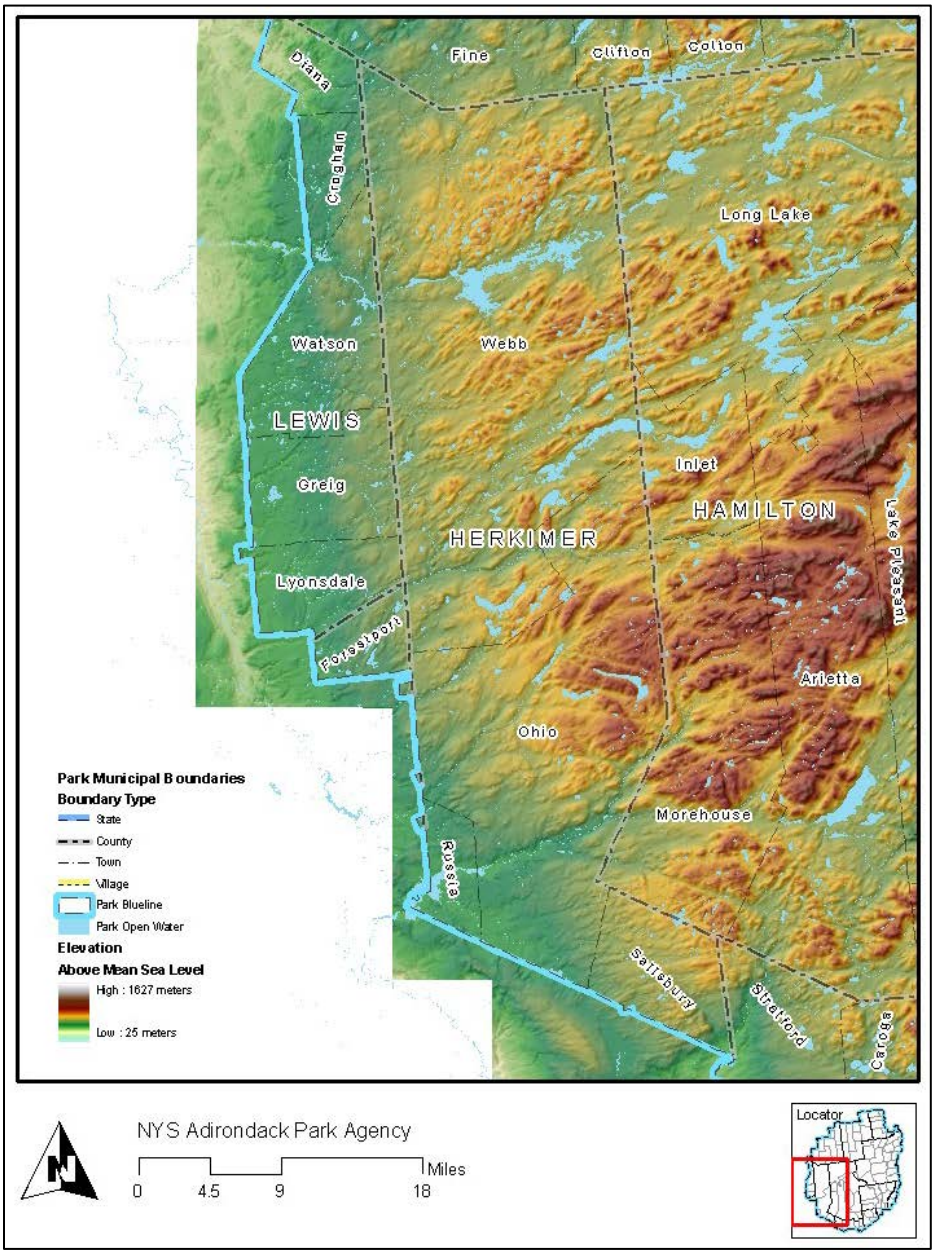


***Source**: New York State Department of Environmental Conservation*
http://www.dec.ny.gov/outdoor/56067.html

The Adirondack Park Agency (APA) controls state lands in this region. The two largest land

use categories among park acreage are designated as wild forest (37.14%) and wilderness (24.12%).[12] Another 19.03% is allocated for resource management use. Land elevations within park boundaries vary considerably, ranging from 82 feet to 5,338 feet. Approximately 5.7% of the county population lives in the Park.

Figure 1-12: Adirondack Park Land Elevation within Herkimer County



***Source**: http://apa.ny.gov/gis/images/county/HerkimerElevation.jpg*

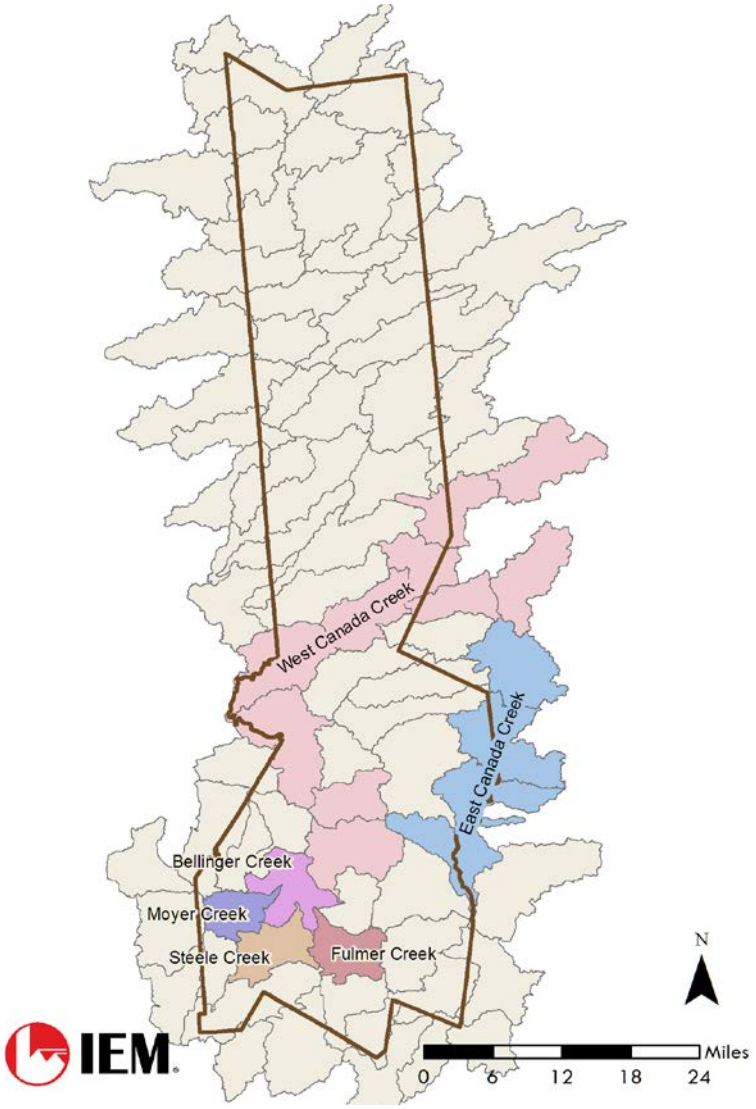
[12] 2009 APA Geographic Information System, average statistics http://apa.ny.gov/gis/CountyStatResults.cfm?countySelect=HERKIMER&coSubmit=Go

The existence of natural resources is factored into the benefit/cost analysis of future projects. Such resources may be used to leverage funding for mitigation projects with the dual objective of promoting mitigation goals while supporting sensitive natural resources. For instance, protecting wetland areas also protects sensitive habitats and reduces the force and storage of floodwaters.

Special Features and Considerations

Herkimer County's unique topography and location greatly enhance its ecological character. Between the Mohawk River Valley at the south end and the Adirondack Mountains to the north lies a diverse mixture of geography, geology, and biology. The terrain ranges from wetlands and rolling hills to steep mountains. In general, water drains from the northern areas into numerous watersheds moving south into the Mohawk River. Waterways south of the river generally drain northwards into the river.

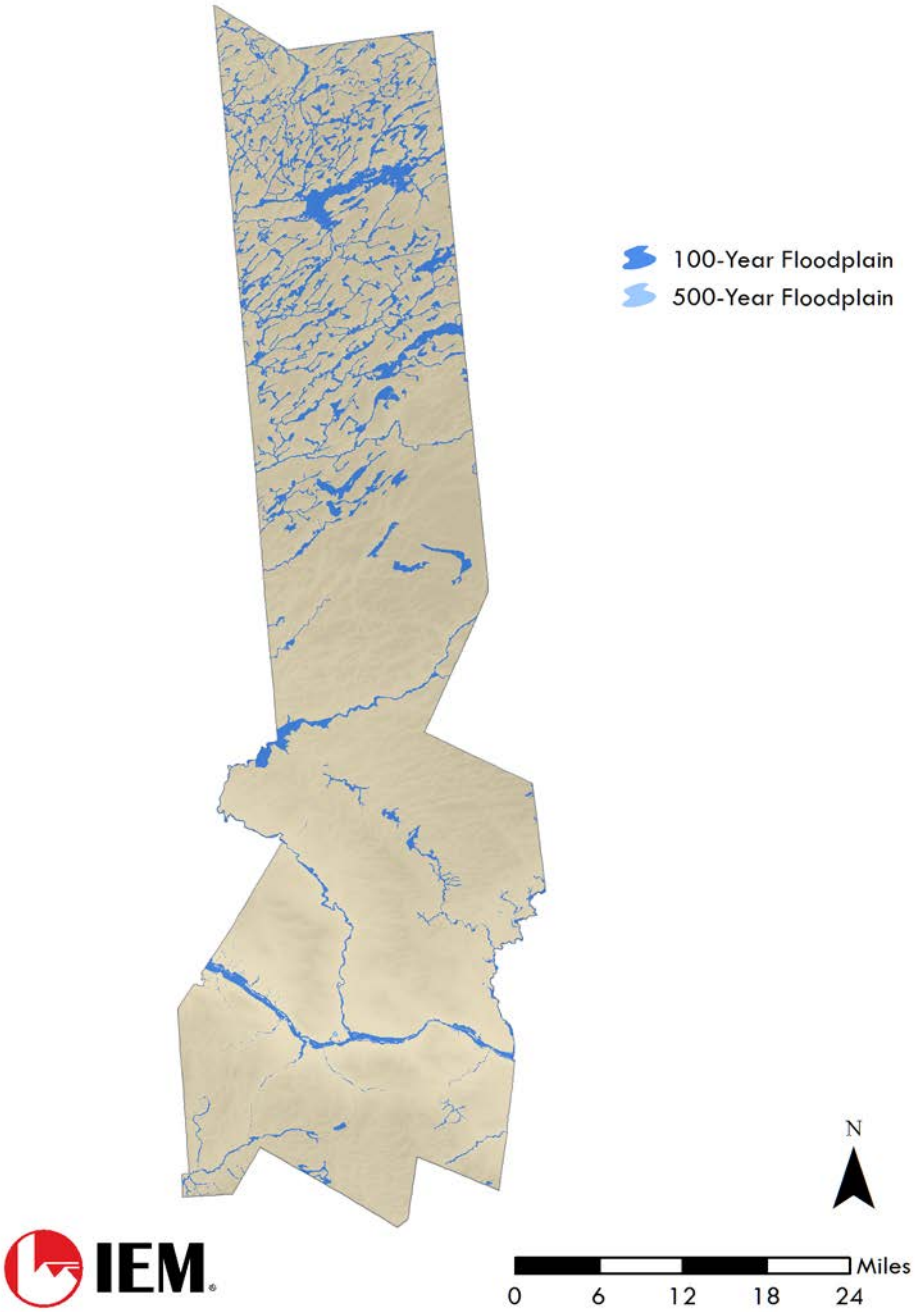
Figure 1-13: Major Drainage Basins in Herkimer County



***Source**: Herkimer-Oneida Counties Comprehensive Planning Program (HOCCPP)*

Floodplains and areas of riparian habitat along the rivers and streams in the county provide locations for groundwater recharge and stormwater management. Detailed maps of floodplains within specific municipalities can be found in the Jurisdiction Annexes.

Figure 1-14: Floodplains in Herkimer County



***Source**: FEMA*

Cultural and Historical Assets

Cultural assets are associated with the beliefs, customs, arts, etc., of a society, group, place, or time. Historical assets include structures, properties, collections, and artifacts recognized for their historical significance and may or may not be listed on state and/or federal registers as "historic sites". Herkimer County includes a large stock of historically significant homes, public buildings, and landmarks. Information was collected from the following sources to inventory these resources:

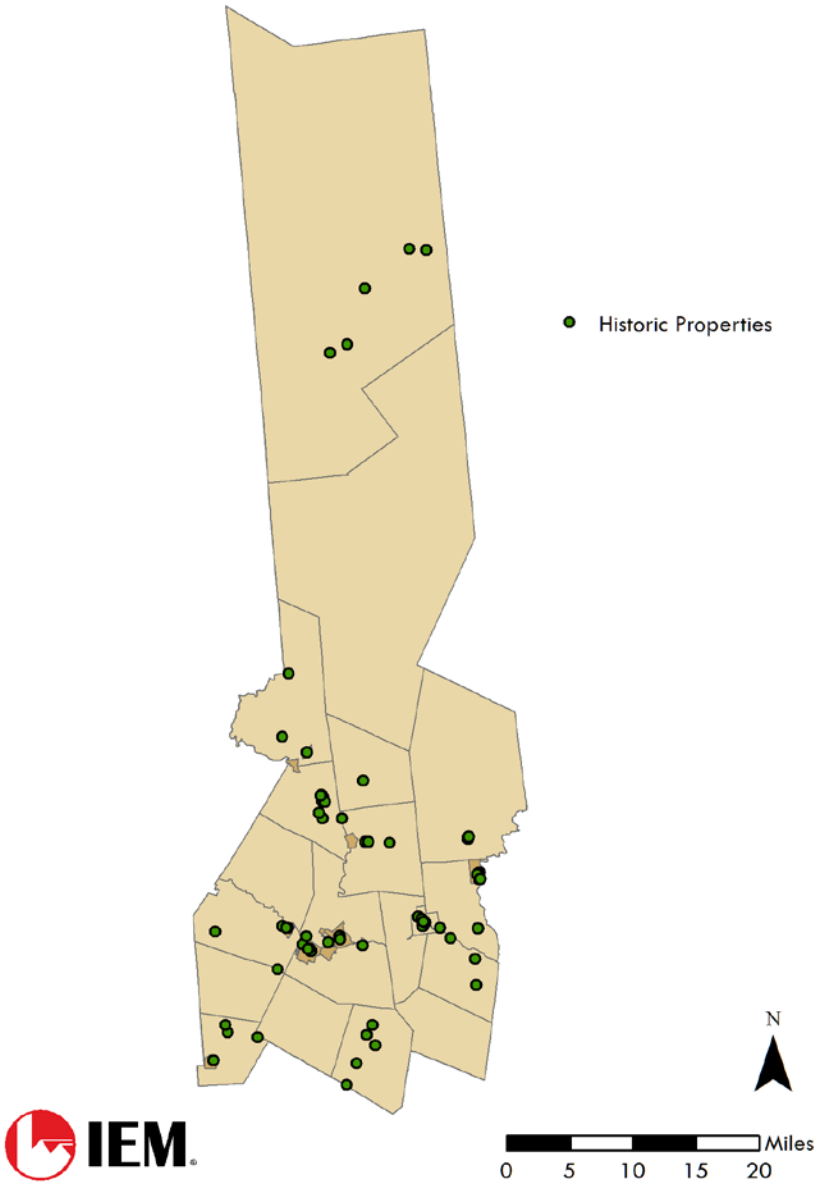
- **The New York State and National Registers of Historic Places**: The official list of buildings, structures, districts, objects and sites significant in the history, architecture, archaeology, engineering, and culture of New York and the nation
- **The New York State Historic Preservation Office, Cultural Resource Information System (CRIS)**: Online lists of the State's historic and cultural resource databases

Data collected shows that there are 66 structures and/or sites Herkimer County listed in the CRIS database, 45 of which are listed on the National Register of Historic Places. **Appendix 1** provides a countywide inventory of historic structures**.** Jurisdictional Annexes include information about jurisdiction-specific community assets.

Table 1-h: Number of National Register Historic Sites in Herkimer County, by Jurisdiction

Jurisdiction	Number of Resources/Sites
Cold Brook (Village)	1
Danube (Town)	4
Dolgeville (Village)	5
Fairfield (Town)	6
Frankfort (Village)	1
German Flatts (Town)	1
Herkimer (Village)	5
Herkimer (Town)	1
Ilion (Village)	4
Little Falls (City)	2
Manheim (Town)	1
Newport (Village)	4
Norway (Town)	1
Russia (Town)	1
Salisbury (Town)	3
Warren (Town)	3
Webb (Town)	2
TOTAL	**45**

Figure 1-15: Historic Properties in Herkimer County



***Source**: National Register of Historic Places*

The National Environmental Policy Act (NEPA) states that any property over 50 years of age is considered a historic resource and is potentially eligible for listing in the National Register. Should a property be altered, or if it has been altered as the result of a major federal action, the property must undergo an environmental review under the guidelines set forth by Section 14.09 of the New York State Historic Preservation Act and NEPA. If a project is in or near a New York State Parkland, additional environmental review under the New York Environmental Conservation Law, Article 8, is required. Structural mitigation projects are considered alterations under this regulation.

Future Growth and Development Trends

Many communities along the Mohawk River and its tributaries are built-out, meaning no significant land parcels are available for development. These jurisdictions typically authorize fewer than five new building permits a year, primarily for "infill building," new construction on individual parcels within already developed areas. This trend is not expected to change. Much of the Planning Area's northern region is controlled by the State Land Master Plan in the Adirondack Park, which rigidly controls development that could impact the Park's sensitive environmental land and recreational uses.

Current county and municipal land use and zoning policies and practices do not suggest a high potential for residential development in the future. Since 1970, the total number of housing units increased by 27% from 24,464 to 33,381. This is consistent with the slow increase in countywide population. The population is expected to enter a period of decline from 2010 to 2040, thereby reducing housing demand and development pressures. Planned industrial development is possible on open lands adjacent to several Mohawk Valley communities:[13]

- Frankfort 5S North Business Park
  - 36 acres within the Village of Frankfort, adjacent to NYS Route 5S
- Frankfort 5S South Business Park
  - 200 acres in the Town of Frankfort; designated "Build Now-NY Shovel Ready" site; water and sewer infrastructure complete.
- Manheim Business Park
  - 30-acre site outside the Village of Dolgeville. Owned by the Herkimer County Industrial Development Agency
- Schuyler Business Park
  - 99 acres in the Town of Schuyler located on Route 5; designated "Build Now-NY Shovel Ready" site; water, electric, gas, and fiber-optic availability.
- West Frankfort Industrial Park
  - Town of Frankfort acreage; water, sewer, natural gas, and electric service complete.

Several communities are also participating in, or are applying to participate in, the Brownfield Opportunity Areas Program. The Town and Village of Frankfort received "pre-nomination study" funding in 2011 for to redevelop a 470-acre property that includes several brownfield and vacant sites located near Main Street and the Mohawk River. In November 2016, the Herkimer County Industrial Development Agency announced its application for funding to evaluate several brownfield sites in the villages of Herkimer and Ilion.

Future growth and development will be monitored and evaluated in the next planning cycle to consider whether the there is a change in level of hazard-related risk. Monitoring will also enable the communities to identify development-related mitigation opportunities.

[13] Herkimer County Industrial Development Agency website, 7/6/16. Available at http://www.herkimercountyida.org/business-parks/

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SECTION 2: PLANNING PROCESS

Requirements:

- **§201.6(c) (2) (1)** – [The] plan documents the planning process, including how it was prepared and who was involved in the process for each jurisdiction.
- **§201.6(b)(2) -** [The] plan documents an opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, agencies that have the authority to regulate development as well as other interests to be involved in the planning process.
- **§201.6(b) (1) –** [The] plan documents how the public was involved in the planning process during the drafting stage.
- **§201.6(b) (3) –** [The] plan describes the review and incorporation of existing plans, studies, reports, and technical information. [*Also addressed in Section 4.4: Mitigation Strategy.]*

2.1. Background

The *Herkimer County Multi-Jurisdictional Hazard Mitigation Plan* (Herkimer HMP) is a new plan, although hazard mitigation planning is not new to Herkimer County and its jurisdictions. Two previous planning initiatives were conducted, the first between 2008 and 2010, and again between 2014 and 2015 (hereafter referred to as the 2010 HMP Draft and the 2015 HMP Draft, respectively). Requirements for local hazard mitigation planning as defined in the Disaster Mitigation Act of 2000 provided the framework for both planning efforts. Significant progress was made in identifying and profiling hazards, conducting capabilities assessments, inventorying community assets, quantifying risk, and defining a comprehensive mitigation strategy, but neither effort resulted in an approved plan.

In Spring 2016, four municipalities within the County were awarded funding by the Federal Emergency Management Agency's (FEMA) Hazard Mitigation Grant Program (HMGP) to acquire and demolish flood prone properties. FEMA granted the County and its municipalities an extraordinary circumstance exception to the local mitigation planning requirement, allowing twelve months to complete and adopt a FEMA approved mitigation plan. The current planning process was initiated with the County in July 2016. Led by the New York State Division of Homeland Security and Emergency Services (NYS DHSES), with funding awarded through the HMGP, contractors Adjusters International and IEM, Inc. were tasked with facilitating the planning process and developing the plan in cooperation with the County and its 30 local jurisdictions.

A review of the previous planning efforts revealed success in several areas:

- Developing a mitigation planning organization with broad representation from multiple jurisdictions, local officials, key stakeholders, regional and state agencies, civic groups, non-governmental agencies, the private sector, and the public.
- Gathering and analyzing hazard data to determine the hazards of greatest concern.
- Assembling a comprehensive list of proposed mitigation actions.

Elements of previous planning efforts were incorporated into the current planning process including previously identified hazards of highest concern and mitigation actions. Actions identified in the 2015 HMP Draft were reviewed to see which had been completed, were no longer feasible, or remain priorities for inclusion in the 2017 Herkimer HMP. Each section of this plan describes how earlier efforts were incorporated into the current planning process. The latest planning process was built on teamwork to ensure jurisdiction-wide involvement in developing all components of the plan. Representatives from jurisdictions and partner agencies collected gathered data and critical information that was later analyzed and validated by the entire planning team. This allowed the group to identify the greatest opportunities to minimize losses by addressing the most frequent hazards; building support and "ownership" of the strategy and its identified activities; and developing a strategy that promotes long-term risk reduction.

2.2. Planning Process

The Herkimer HMP planning process followed the framework described in the *Local Hazard Mitigation Planning Handbook* (FEMA, March 2013). **Table 2-a** illustrates the planning areas, steps, tasks, and outcomes.

Table 2-a: Herkimer County Multi-Jurisdictional Hazard Mitigation Planning Process

PROCESS AND ORGANIZATION	**1. Determine Planning Area and Resources**	
	• Multi-jurisdictional Plan • Lead Contact for Planning Process	Document Planning Process: Meetings, Minutes, Sign-in Sheets
	2. Planning Team	
	• Identify Planning Team Members o Multi-jurisdictional • Engage Local Leadership • Promote Participation and Buy-in • Initial Steps for Planning Team	Document Planning Process: Planning Team Roles, Engagement, and Input
	3. Outreach Strategy	
	• Strategy Framework • Developing Strategy • Continuing Public Outreach over Time	Document Planning Process: Stakeholder and Public Involvement

ANALYSIS AND DECISION MAKING	**4. Review Community Capabilities**	
	• Capability Assessment • Types of Capabilities • NFIP	Document: Community Capabilities
	5. Conduct Risk Assessment	
	• Define Risk Assessment • Conduct Risk Assessment • Document Risk Assessment	Document: Hazards and Risk Assessment
	6. Develop Mitigation Strategy	
	• Identify Goals and Objectives • Identify/Update Actions • Develop Action Plan for Implementation • Update Mitigation Strategy • Communicate Mitigation Action Plan	Document: Update and Development Process for Mitigation Strategy, Goals, Objectives, and Actions, including Alternatives
	7. Keep Plan Current (Maintenance)	
	• Plan Maintenance Procedures • Continue Public Involvement	Document: Plan Maintenance Procedures and Schedule
	8. Review and Adopt the Plan	
	• Local Plan Review • State and EMA Plan Review • Local Adoption of the Plan • Additional Considerations • Celebrate Success	Document: Adoption Process - Jurisdiction, Date, and Method of Adoption (e.g., minutes, signed resolutions)
RESOURCES	**9. Create Safe and Resilient Community**	
	• Challenges to Achieving Mitigation Goals • Recommendations for Success • Funding and Assistance	Appendix to LHMP

2.3. Planning Organization

Hazard mitigation planning organizations were created for the two previous planning initiatives, both with broad stakeholder representation. The "All-Hazards Mitigation Planning Team" served as the oversight body for the 2010 HMP Draft process. The Comprehensive Emergency Planning Committee (CEPC), which serves as the County's Local Emergency Planning Committee (LEPC), served as the planning team for the 2015 HMP Draft initiative. At the beginning of the current planning process, the CEPC decided to establish the Hazard Mitigation Working Group (HMWG) as a sub-committee to allow members to focus specifically on developing the mitigation plan. Twelve county officials and representatives of government agencies and non-profit organizations who participated in one or both previous planning groups also served as members of the HMWG. These members leveraged past efforts by ensuring that information previously included in the

plan would be verified and included in the current plan as appropriate. **Appendix 2** illustrates the level of participation by individuals, jurisdictions, departments, agencies, and organizations.

Planning team members include representation from local officials, county departments and agencies (e.g., education, emergency management, fire/emergency medical services, law enforcement, public health, public works/engineering, transportation, social services, code enforcement, floodplain administrators); regional, state and federal agencies (e.g., emergency management, comprehensive planning, infrastructure, transportation, soil and water conservation, economic development); and non-profit/non-governmental organizations (e.g., disaster response, community-based special interest, services to special populations). Representatives from two adjacent counties attended the kick-off meeting. Additional key stakeholder agencies and organizations were invited to participate. Among the items included in **Appendix 2** are meeting invitations, participant lists, and meeting minutes.

An organizational modification for the current process allowed each municipality to select their level of participation as either an *adopting jurisdiction* or a *participating jurisdiction*. Adopting jurisdictions made a commitment to be involved in all activities of the Working Group, including identifying a point of contact, soliciting input from municipal planning committees or planning partners, attending meetings, submitting requested information, providing input and adopting the plan at the appropriate time. Participating jurisdictions agreed to a level of participation during most of the planning process but did not include a commitment to adopt the plan. Jurisdictions chose this category because they lacked the staff time or resources to fully participate given other imminent priorities. All planning activities completed by a jurisdiction are documented in the jurisdiction annexes. The record of participation by jurisdictions and the activities each completed during the current planning process is described in **Table 2-b**.

The HMWG was made up of representatives from jurisdiction and key stakeholder agencies at the local, regional, state, and federal levels. The detailed record of jurisdiction and stakeholder HMWG participation in the planning process is presented in **Appendix 2**, and summarized in below in **Table 2-c**.

Table 2-b: Record of Participation – Herkimer County Jurisdictions

Adopting (A) or Participating (P) Jurisdiction	Jurisdiction	Invited to Kick-Off Meeting (7/30/16)	Attended Kick-Off Meeting (8/10/16)	Participation Form Returned	Invited to Capabilities Assessment Workshop (8/31/16)	Attended Capabilities Assessment Workshop (9/21/16)	Submitted Capabilities Assessment	Submitted NFIP Form	Invited to HIRA Workshop (10/3/16)	Attended HIRA Workshop (10/19/16)	Submitted HIRA Worksheets	Participated in Hazard Survey (Residents or Stakeholders)	Invited to Mitigation Strategy 1 Workshop (11/4/16)	Attended Mitigation Strategy 1 Workshop (11/16/16)	Submitted Mitigation Strategy Worksheets	Invited to Mitigation Strategy 2 Workshop (11/28/16)	Attended Mitigation Strategy 2 Workshop	Invited to Plan Review Meeting (2/8/17)	Attended Plan Review Meeting (2/8/17)	Posted/Disseminated Draft Plan - Public Review	Draft Review - Provided Comments	Adopted Plan
	Cold Brook Village of	x			x				x				x									
	Columbia, Town of	x			x				x				x									
	Danube, Town of	x			x				x				x									
A	Dolgeville, Village of	x			x		x	x	x		x	x	x		x	x	x	x	x			
	Fairfield, Town of	x		x	x	x	x	x	x				x					x				
A	Frankfort, Town of	x		x	x		x	x	x		x		x	x		x	x	x				
A	Frankfort, Village of	x		x	x		x	x	x		x		x	x	x	x		x				
A	German Flatts, Town of	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x			x
A	Herkimer County	x	x	x	x	x	x		x	x	x	x	x	x	x	x	x	x	x			
A	Herkimer, Town of	x	x		x		x	x	x	x	x		x	x	x	x	x	x	x			x
A	Herkimer, Village of	x	x		x		x	x	x		x		x	x	x	x		x	x			x
A	Ilion, Village of	x	x	x	x	x	x	x	x			x	x	x	x	x		x	x			x
P	Litchfield, Town of	x			x				x	x			x	x		x		x				
A	Little Falls, City of	x	x	x	x		x	x	x	x		x	x	x	x	x	x	x	x			
A	Little Falls, Town of	x	x	x	x		x	x	x	x		x	x	x	x	x	x	x	x			
A	Manheim, Town of	x	x		x		x	x	x				x	x		x		x				
	Middleville, Village of	x			x				x				x									
A	Mohawk, Village of	x	x	x	x		x	x	x		x		x	x	x	x	x	x	x			x
	Newport, Town of	x	x		x				x				x	x		x		x				
	Newport, Village of	x			x				x				x			x		x				
P	Norway, Town of	x	x		x				x				x	x		x		x				
P	Ohio, Town of	x			x				x				x	x		x		x				
	Poland, Village of	x			x				x				x			x						
P	Russia, Town of	x			x				x				x	x		x		x				
P	Salisbury, Town of	x			x				x				x	x		x		x				
	Schuyler, Town of	x			x				x				x									
	Stark, Town of	x			x				x				x									
	Warren, Town of	x			x				x				x									
P	Webb, Town of	x	x		x				x				x	x		x		x				
	West Winfield, Village of	x			x				x				x			x		x				
P	Winfield, Town of	x			x				x				x	x		x		x				
	HOCCPP -Designee for German Flatts, Ilion, & Mohawk	x	x	x	x	x			x	x		x	x	x	x	x	x	x	x			
	Participating Jurisdictions		**12**	**10**		**5**	**13**	**12**		**7**	**8**			**20**	**11**		**9**		**10**			

Table 2-c: Summary of HMWG Participation, by Agency/Organization

Agency/Organization Name	Agency/Organization Type	Number of Participants
American Red Cross, Mohawk Valley Chapter	Non-Governmental Organization - Disaster Preparedness and Response	2
ARC-Herkimer	County Social Service Agency	1
Community Flood Action Group	Local Hazard Advocacy Group	2
Village of Dolgeville	Municipality	1
FEMA, Region 2	Federal Government	1
Town of Fairfield	Municipality	1
Town of Frankfort	Municipality	2
Village of Frankfort	Municipality	2
Town of German Flatts	Municipality	1
Town of Herkimer	Municipality	2
Village of Herkimer	Municipality	6
Herkimer County Community College	Education	2
Herkimer County Emergency Services	County Government - Public Safety	2
Herkimer County Government	County Government - Administration	1
Herkimer County Highway Department	County Government - Transportation	1
Herkimer County Office on Aging	County Government - Social Services	1
Herkimer County Legislature	County Government - Elected Official	1
Herkimer County Public Health	County Government - Public Health	2
Herkimer County Sheriff's Office	County Government - Public Safety	2
Herkimer County Soil & Water Conservation	County Government - Environment	1
Herkimer - Oneida Comprehensive Community Planning Program	Regional Planning Agency	1
Village of Ilion	Municipality	4
Lewis County Emergency Management	County Government - Neighboring Jurisdiction	1
Town of Litchfield	Municipality	2
City of Little Falls	Municipality	2
Town of Little Falls	Municipality	1
Town of Manheim	Municipality	2
Village of Mohawk	Municipality	2
Town of Newport	Municipality	1
Town of Norway	Municipality	1
New York State Dept. of Transportation	State Government - Transportation	3
New York State Div. of Homeland Security and Emergency Services	State Government - Public Safety	3
New York State Police	State Government - Law Enforcement	1
Town of Ohio	Municipality	1
Oneida-Herkimer Solid Waste Authority	Regional Agency - Environment	1
Town of Russia	Municipality	1
Town of Salisbury	Municipality	1
Town of Webb	Municipality	2
Village of West Winfield	Municipality	1
Town of Winfield	Municipality	1

2.4. Planning Committee Roles and Responsibilities

At the outset, the HMWG defined planning committee roles and responsibilities. Roles were described as:

- Participating Jurisdiction
- Adopting Jurisdiction
- Subject Matter Stakeholder

Table 2-d: Roles and Responsibilities of HMWG Members

PARTICIPATING JURISDICTION REPRESENTATIVE(S):
Role: Represent your jurisdiction as the Point of Contact and working member of the Mitigation Working Group; coordinate all aspects of the planning process within your jurisdiction.
Responsibilities: • Participate in developing the Work Program and Schedule with the Mitigation Working Group. • Assist in organizing and attending scheduled meetings of the Mitigation Working Group. • Assist the Mitigation Working Group with developing and conducting an outreach strategy to involve other Working Group members, stakeholders, and the public, as appropriate to represent your jurisdiction. • Identify community resources available to support the planning effort, including technical expertise, in-kind services, and project development and implementation • Coordinate your jurisdiction's Mitigation Planning Committee (JPC). • Provide jurisdiction-specific data and feedback to develop the risk assessment and mitigation strategy, including a specific mitigation action plan for your jurisdiction. • Submit the draft plan to your jurisdiction for review. • Work with the Mitigation Working Group to incorporate your jurisdiction's comments into the draft plan.

ADOPTING JURISDICTION REPRESENTATIVE(S):
Role: Represent your jurisdiction as the Point of Contact and working member of the Mitigation Working Group; coordinate all aspects of the planning process ***and plan adoption*** within your jurisdiction.
Responsibilities: • Carry out all responsibilities described ABOVE. • Ensure that all data, information, and input requested of your jurisdiction is provided at the appropriate time. • **Submit the draft plan to your respective governing body for consideration and adoption.** • **After adoption, coordinate plan maintenance activities with other Herkimer County Jurisdictions to monitor, evaluate, and work toward plan implementation.**

SUBJECT MATTER STAKEHOLDER(S):
Role: Represent your agency, department, discipline, or organization as the Point of Contact and stakeholder representative to the Mitigation Working Group.
• Participate in Mitigation Working Group meetings through attendance and assistance. in identifying, locating, collecting, compiling and/or analyzing relevant information and data. • Participate with the Mitigation Working Group in developing the risk assessment and mitigation strategy. • Coordinate review of the plan and feedback from the entity you are representing • Identify potential resources from your agency, department, discipline, or organization that could support the mitigation strategy, including specific mitigation actions and potential funding sources.

2.5. Planning Committee Meetings

The HMWG held regularly scheduled meetings during the planning process, meeting six times over a period of 12 months.

Table 2-e: HMWG Meeting Schedule, Purpose and Outcomes

Event	Purpose & Outcomes	Date and Location
Planning Meeting 1	Kick-Off Meeting and Confirmation of CEPC as Hazard Mitigation Planning Committee	August 10, 2016 Herkimer County Community College, Herkimer, NY (36 participants)
Planning Meeting 2	Capabilities Assessment	September 21, 2016 Herkimer County Emergency Services, Herkimer, NY (17 participants)
Planning Meeting 3	Hazard Identification and Risk Assessment Workshop & Introduction to the Mitigation Strategy	October 19, 2016 Herkimer County Emergency Services, Herkimer, NY (11 Participants)
Planning Meeting 4	Mitigation Strategy Workshop 1 (two sessions)	November 16, 2016 Herkimer County Emergency Services, Herkimer, NY (33 participants)
Planning Meeting 5	Mitigation Strategy Workshop 2 (two sessions)	December 7, 2016 Herkimer County Emergency Services, Herkimer, NY (19 participants)
Planning Meeting 6	Plan Review – Initial Draft	February 8, 2017 Herkimer County Emergency Services, Herkimer, NY (17 participants)

The meeting PowerPoint presentations provided a step-by-step approach to accomplishing the day's planning objective. Activities that supported each step of the process were introduced at each meeting and provided direction about how each jurisdiction should follow up after the meeting. Documentation of the HMWG meetings, including agendas, minutes, handouts, and presentations, are provided in **Appendix 2**.

2.6. Planning Process Milestones

Each step in the planning process stemmed from the presentation and discussion that took place at HMWG meetings. This validated the fact that the mitigation actions and implementation priorities proposed by participants were of critical importance.

Planning milestones measured the successful outcome of each step in the process (see **Table 2-f**).

Table 2-f: Milestones in the Planning Process

Event/Product	Milestone	Completed by
HMWG Meetings (General)	• Developed local hazard mitigation planning network • Built components of the Herkimer HMP • Provided frequent opportunities for input and technical assistance	Ongoing
Capabilities Assessment	• Analyzed planning and regulatory, administrative and technical, education and outreach, smart growth and funding, and NFIP capabilities of each jurisdiction	10/19/16
Hazards Profiles and Risk Assessment	• Description of methodology: scope, steps, data sources, and validation • Identified comprehensive list of hazards to be addressed in the plan • Qualitative and quantitative examination of the vulnerability of critical community facilities, systems and neighborhoods to the impacts of future disasters (e.g., maps, GIS modeling, vulnerabilities)	12/31/16
Public Outreach and Education	• Developed a hazard survey for residents and technical stakeholders	11/1/16
Mitigation Strategy & Implementation Plan	• Created goals and objectives and developed the Mitigation Strategy	12/15/16
Plan Maintenance Procedures and Schedule	• Tools to measure progress in next planning cycle: ▪ Monitoring ▪ Evaluation ▪ Updating	12/31/2016 *(to be implemented throughout the next planning cycle)*
Public Input	• 30-day comment period for review and input of Draft Plan	8/15-9/15/17
Plan Approval	• Plan reviewed by NYS DHSES; FEMA Approvable Pending Adoption ("APA")	4/21/17
Plan Adoption	• Plan adopted by first five jurisdictions	9/01/17

A key tool was used to assist jurisdictions and HMWG members to identify and collect data and other information required for the planning process. The *Herkimer HMP Local Hazard Mitigation Data Collection Guide,* included in **Appendix 2,** served as a workbook to provide an orientation to the hazard mitigation planning process. It presented all worksheets and related instructions that were used in the process of data collection and analysis. Using the

worksheets promoted timely and consistent data reporting and participation, and provided detailed information specific to each jurisdiction. Topics covered in the Guide include:

- Terminology
- Herkimer HMP Planning Process
- Participation Roles and Responsibilities
- Data Collection Worksheets
  - Capability Assessment and NFIP Survey Form
  - Historic Hazard Events
  - Hazard Impacts and Consequences
  - Hazard Analysis and Overall Risk Score
  - Vulnerability Assessment
  - Mitigation Strategy – Goals and Objectives
  - Mitigation Strategy – Actions
  - Mitigation Strategy – Ranking System for Prioritizing Actions
  - Action Plan for Implementation
  - Plan Maintenance Process and Schedule

2.7. Public Involvement

The contractor and HMWG developed an Outreach Strategy to foster public involvement. It identified three tiers of participation for HMWG members, stakeholders, and the public and outlined the methods and schedule for involvement of each tier. The Outreach Strategy and associated materials are provided in **Appendix 2.**

Table 2-g: Public Outreach Methods

Method and Schedule	Outcome
Information/Media Release	Given to HMWG for posting on websites
Mitigation Education Publication	FEMA Hazard Mitigation Assistance Brochure—distributed to HMWG members for distribution within their jurisdictions—September 21, 2016
Hazard Survey	Provided to HMWG members for dissemination in jurisdictions; 25 completed surveys were received in October 2016, and are summarized in **Appendix 2.**
Public Announcement – Draft Plan Review and Comment Period - Open	Media Release - Draft Plan Opening of Review and Comment Period – August 15, 2017
Public Announcement – Draft Plan Review and Comment Period - Closed	Media Release - Draft Plan End of Review and Comment Period – September 16, 2017
Public Announcement – FEMA approval pending adoption	Media Release – Final Plan Announcement
Public Announcement – Adoption by Jurisdiction(s)	Media Release – Plan adoption by Jurisdiction(s) (Coverage began 4/24/2017)

Adopting jurisdictions have committed to providing ongoing opportunities for public outreach, education and input through the plan maintenance process and schedule, defined in **Section 5, Base Plan.**

2.8. Other Community Planning Efforts and Hazard Mitigation

Concurrent with the Herkimer HMP planning process, four jurisdictions were participating in federally-funded hazard mitigation projects consisting of buy-out projects to address repetitive flood losses. Most of the projects were identified through separate planning processes conducted previously through other state agency initiatives. Every effort was made to include relevant information from these planning activities and projects to leverage as many resources as possible to address high-risk hazards and their impacts. As the Herkimer HMP planning process moves forward in the next cycle, intentional efforts will be made to integrate all relevant planning efforts into a unified process.

2.9. Review and Incorporation of Existing Policies, Plans, Studies, and Reports

Appendix 2 includes a list of existing policies, plans, studies, and reports reviewed during the planning process. The references below were the most heavily consulted and their use is described more thoroughly in **Appendix 2**.

- *2014 New York State Hazard Mitigation Plan*
- *Herkimer County All-Hazard Mitigation Plan*, FINAL DRAFT, August 2015 [not adopted]
- *Herkimer County Comprehensive Emergency Management Plan,* April 2015
- *Emergency Transportation Infrastructure Recovery Basin Assessment and Flood Hazard Mitigation Alternatives – Bellinger Brook at the Village of Herkimer,* April 2014
- *Emergency Transportation Infrastructure Recovery Basin Assessment and Flood Hazard Mitigation Alternatives – East Canada Creek,* April 2015
- *Fulmer Creek Multi-Community Flood Hazard Mitigation Plan; Emergency Transportation Infrastructure Recovery Basin Assessment and Flood Hazard Mitigation Alternatives,* Plan – May 2004, Assessment – April 2014
- *Finger Lakes – Lake Ontario Watershed Protection Alliance (FLLOWPA), Herkimer County Water Quality Coordinating Committee (WQCC),* Plan – May 2004, Assessment – April 2014
- *Finger Lakes – Lake Ontario Watershed Protection Alliance (FLLOWPA), Herkimer County Water Quality Coordinating Committee (WQCC)*, Ongoing
- *Mohawk River Basin Floodplain Assessment, Floodplain Coordination and Outreach– Final Report, (Ecology and Environment, Inc.),* 10/17/2017
- *Greater Catskills Flood Remediation Program,* April 2008, Updated 3/15/2010
- *Mohawk Valley Regional Sustainability Plan*, 2011-2012, Adopted 2013
- *Mohawk River Basin Program and Action Agenda, 2012-2016 ("Mighty Waters" Working Group)*, 2012
- *Moyer Creek Multi-Community Flood Hazard Mitigation Plan; Emergency Transportation Infrastructure Recovery Basin & Assessment and Flood Hazard Mitigation Alternatives,* Plan – May 2004, Assessment – April 2014
- *Emergency Transportation Infrastructure Recovery Basin Assessment and Flood Hazard Mitigation Alternatives – Maltanner Creek*, April 2014
- NY Rising Community Reconstruction Program – NY Rising Countywide Resiliency Plan - Herkimer County, 7/31/2014
- *Steele Creek Multi-Community Flood Hazard Mitigation Plan; Emergency Transportation Infrastructure Recovery Basin Assessment and Flood Hazard Mitigation Alternatives* – Plan – May 2004, Assessment – April 2014
- *Emergency Transportation Infrastructure Recovery Basin Assessment and Flood Hazard Mitigation Alternatives – West Canada Creek,* Plan – May 2004, Assessment – April 2014

- **Climate Change Websites:**
  https://www.nyclimatescience.org/
  http://www.dec.ny.gov/energy/76910.html
  http://www.dec.ny.gov/energy/96511.html
  https://www.nyserda.ny.gov/climaid
  http://nysrise.org/news/
  http://toolkit.climate.gov/

SECTION 3.0: HAZARD IDENTIFICATION AND RISK ASSESSMENT

Requirements:

- **§201.6(c)(2)(i) –**
  - [The] plan includes a description of the type, location, and extent of all natural hazards that can affect each jurisdiction(s)
  - [The] plan includes information on previous occurrences of hazard events and on the probability of future hazard events for each jurisdiction
- **§201.6(c)(2)(ii) –**
  - [The] plan includes a description of each identified hazard's impact on the community as well as an overall summary of the community's vulnerability for each jurisdiction
  - [The] plan addresses NFIP insured structures within the jurisdictions that have been repetitively damaged by floods

The four-step approach to addressing Herkimer County hazards and vulnerabilities used by the Hazard Mitigation Working Group (HMWG) is described in the Federal Emergency Management Agency (FEMA) publication Local Mitigation Planning Handbook, March 2013. The steps are as follows:

1. Describe Hazards
2. Identify Community Assets
3. Analyze Risk
4. Estimate Losses

The process includes Herkimer County and its incorporated jurisdictions. Because this is a multi-jurisdictional plan, the HMWG evaluated how hazards and risks affect the overall Planning Area and how they vary between jurisdictions. These differences are noted here and discussed more fully in the Jurisdiction Annexes. If the annex includes no additional data, it can be assumed that the hazard, risk, and potential vulnerability of affected jurisdictions are like those of the Planning Area.

Risk assessment data is incorporated here as follows:

- **Section 3.0: Hazard and Risk Overview and Methodology**
  - **3.0.1 Hazard Identification and Risk Analysis**: Identifies and profiles the natural and man-made hazards that threaten the Planning Area.
  - **3.0.2 Vulnerability Assessment**: Reviews the population, built environment, natural environment, and economy of the Planning Area and the potential impacts of each hazard on future growth, development, and climate change.
  - **Sections 3.1 to 3.11: Hazard Sub-sections** address hazards, risks, and vulnerability for the highest hazards of concern. Jurisdiction-specific hazard profiles and risk

assessments are provided in the Jurisdiction Annexes. Hazard sub-sections address the following:

- 3.1 Avalanche
- 3.2 Drought
- 3.3 Earthquake
- 3.4 Extreme Heat
- 3.5 Flood
- 3.6 Landslide
- 3.7 Severe Weather
- 3.8 Soil Hazards
- 3.9 Wildfire
- 3.10 Epidemic
- 3.11 Transportation Accidents

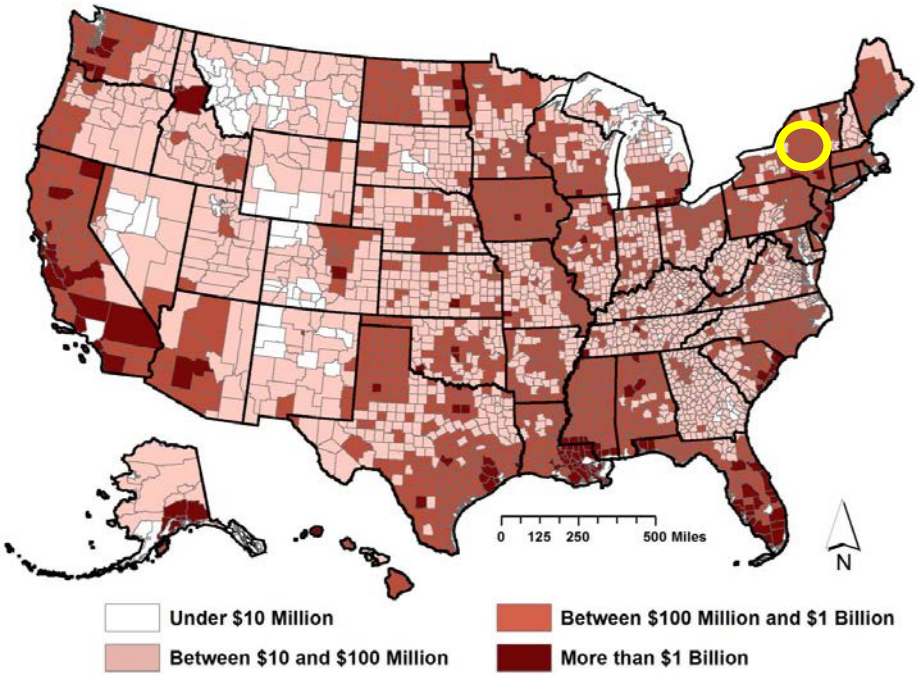
3.0.1. Hazard Identification

Overview and Methodology

The Herkimer County HMWG conducted a study to determine the hazards that threaten the Planning Area. The *Herkimer HMP Local Hazard Mitigation Data Collection Guide* (described in **Section 2, Planning Process** and included as **Appendix 2-C**) was used by jurisdictions and the HMWG to identify and collect relevant information. Herkimer County has experienced, and will continue to experience, impacts from multiple hazard types. The comprehensive mitigation strategy is predicated on accurate identification of hazard types, characteristics, levels of risk, and community vulnerability.

Figure 3.0-1 illustrates total losses from natural hazards for all jurisdictions in the United States between 1960 and 2014. The state of New York ranked fourth in the nation in the number of Presidential Disaster Declarations received (93). Herkimer County was included in declarations that totaled between $100 million and $1 billion during this period. (*Herkimer County lies roughly within the yellow circle.)*

Figure 3.0-1: Total U.S. Losses from Natural Hazards, 1960 - 2014



***Source**: "U.S. Hazard Losses, 1960 – 2014", Hazards and Vulnerability Research Institute, University of South Carolina*

Current FEMA Local Hazard Mitigation Plan (LHMP) criteria require that the plan ***must*** address only natural hazards. LHMPs ***may*** include other hazards, but these will not be considered during the FEMA plan review.[1] HMWG considered all natural, technological, and human-caused hazards while developing the Herkimer HMP.

Table 3.0-a: Hazard Category Definitions

Natural Hazard[2]	Source of harm or difficulty created by or resulting from acts of nature, including meteorological, environmental, or geological events. Human and animal disease outbreaks are considered natural hazards.[3]
Technological Hazard	Incidents originating from technological or industrial conditions that cause loss of life, injury, illness, property damage, loss of services, and economic and social disruption, such as a hazardous material spill or transportation accident
Human-Caused Hazard or Threat	Intentional actions of an adversary, such as a threatened or actual chemical or biological attack or cyber event

[1] FEMA, Local Mitigation Plan Review Guide (LMP Guide), October 1, 2011, p. 19
[2] LMP Guide, p. 19
[3] FEMA, *Threat and Hazard Identification and Risk Assessment Guide*, Second Edition, August 2013, p. 5

The HMWG reviewed existing data resources and input gathered during planning meetings. These included, but were not limited to: the *2014 New York State Hazard Mitigation Plan* (NYSHMP) and the *2015 DRAFT Herkimer County Hazard Mitigation Plan* (2015 HMP Draft). The group focused on criteria such as event frequency; level and types of damage; fatalities; injuries; and property, economic, and environmental damage. **Table 3.0-b** describes each natural hazard initially considered. The FEMA Local Mitigation Handbook was used to review many of the listed hazards.

Table 3.0-b: Hazards Initially Considered as Applicable to Herkimer County

Hazard	How Identified	Why Identified
Avalanche	• 2014 NYSHMP - Avalanche Section • New York State Department of Environmental Conservation (NYSDEC), Division of Forest Protection • U.S. Forest Service, National Avalanche Center	• Previous occurrences in NYS • Loss of life from previous occurrences • Damage to property/ infrastructure • Potential for avalanches in protected forests
Drought	• 2014 NYSHMP -– Drought Section • National Climatic Data Center (NCDC) – now the National Center for Environmental Information (NCEI) • U.S. Drought Monitor • NYSDEC • US Department of Agriculture (USDA)	• Previous occurrences • Importance of large water users and agriculture to the County's economy • USDA disaster declarations and state declared disasters and emergencies
Earthquake	• 2014 NYSHMP • 2015 DRAFT Herkimer County HMP • National Earthquake Hazards Reduction Program (NEHRP) • New York State Geological Survey (NYSGS) • U.S. Geological Survey (USGS) - Earthquakes	• History of previous occurrences impacting the region contiguous to the Planning Area • Potential for significant earthquake losses
Extreme Temperatures	• 2014 NYSHMP – Extreme Temperatures Section • 2015 DRAFT Herkimer County HMP • NCDC • National Severe Storms Laboratory • National Weather Service (NWS), National Oceanic and Atmospheric Administration (NOAA) • Storm Prediction Center, NOAA	• Previous occurrences • Health and safety issues • Climate change indicators • Impact to critical energy infrastructure

Hazard	How Identified	Why Identified
Flood	• 2014 NYSHMP – Flood Section • 2015 DRAFT Herkimer County HMP • FEMA, National Flood Insurance Program – Floodplain Management • NCDC • NYS DEC - Land Use • New York State Department of Transportation (NYS DOT) – Flood Histories • Herkimer County Watershed Assessments • USGS	• History of riverine flooding • Losses from previous floods • History of ice jams and flash floods • Ongoing, persistent closed basin flooding in local creeks and rivers • Herkimer County Dams, including high hazard dams • Presidential flood disaster declarations
Hail	• 2014 NYSHMP – Hailstorm Section • NCDC • National Severe Storms Laboratory • Storm Prediction Center, NOAA , 2015 Summary	• History of previous occurrences • Health and safety issues • Potential for significant damage to property
High Wind Events	• 2014 NYSHMP - High Winds Section • Storm Prediction Center, NOAA NWS, NOAA	• State history of tornadoes, tropical cyclones, downbursts, and strong winds • Presidential Disaster declarations for severe storms
Hurricane	• 2014 NYSHMP – Hurricane Section • National Hurricane Center, NOAA • FEMA Disaster Declarations	• Previous occurrences • Loss of life data • Storm-related property, infrastructure, and economic losses
Land Subsidence/ Expansive Soils	• 2014 NYSHMP – Land Subsidence and Expansive Soil • FEMA – Geologic Hazards • New York State Geological Survey	• History of previous occurrences • Potential for property damage
Landslides	• 2014 NYSHMP – Land Subsidence and Expansive Soil • FEMA – Geologic Hazards • New York State Geological Survey	• History of previous localized occurrences • Potential for property damage
Severe Winter Storms	• 2014 NYSHMP – Severe Winter Storms Section • 2015 DRAFT Herkimer County HMP • NWS, NOAA – Storm Events Database	• History of previous localized occurrences • Potential for loss of life • Significant impacts to critical infrastructure
Wildfire	• 2014 NYSHMP – Wildfire Section • 2015 DRAFT Herkimer County HMP • U.S. Forest Service – Fire Management	• History of previous localized occurrences • Potential for loss of life • Potential for environmental impacts

Coastal erosion, sea level rise, storm surge, and tsunami were considered in the 2014 NYSHMP but deemed irrelevant for the present study because Herkimer is not a coastal county. The 2014

NYS HMP also profiled climate change, now addressed within each hazard vulnerability assessment.

Having screened the initial list of hazards, the group reviewed the hazard profiles included in the April 2015 *Herkimer County Comprehensive Emergency Management Plan* (CEMP). The CEMP ranked twelve hazards as being of high, moderately high, or moderately low concern. These same hazards were used in the 2015 HMP Draft hazard profile and vulnerability assessment, along with addition of epidemic.

Table 3.0-c: Hazards Addressed in the April 2015 Herkimer County CEMP and the 2015 DRAFT Herkimer County Hazard Mitigation Plan

Hazard	*Rating*
Flood	323
Severe Storm	281
Ice Storm	253
Ice Jam	232
Winter Storm (Severe)	229
Wildfire	207
Landslide	202
Tornado	201
Epidemic	190
Earthquake	186
Extreme Temperatures	180
Drought	172

The ranking values shown in **Table 3.0-c** are categorized as:

- 321 to 400: High Hazard
- 241 to 320: Moderately High Hazard
- 161 to 240: Moderately Low Hazard
- 44 to 160: Low Hazard

The CEMP hazards were combined with FEMA's list of natural hazards.

Table 3.0-d: Hazards Considered for the 2014 Herkimer County HMP (with Comparison of 2014 NYS HMP and 2015 DRAFT Herkimer County HMP Hazard Lists)

HAZARD (2014 NYSHMP)	Hazard (2015 HMP Draft)	*Table Legend*
Avalanche	[Not addressed]	***Colors Signify Hazard Rank:*** • ***Red – High*** • ***Orange – Medium high*** • ***Yellow - Medium*** **** Numbers Signify HAZNY Score[4]***
Dam Failure	***Dam Failure - Appendix***	
Drought	**Drought (172) ***	
Earthquake	**Earthquake (186)**	
Erosion	[Not addressed]	
Expansive Soils	[Not addressed]	
Extreme Cold	**Winter Storm (229)**	
Extreme Heat	**Extreme Temps (180)**	
Flood*	**Flood (323)**	
Hail	**Severe Storm (281)**	
High Wind	**Severe Storm (281)**	
Hurricane	**Severe Storm (281)**	
Landslide	**Landslide (202)**	
Lightning	**Severe Storm (281)**	
Sea Level Rise	[Not addressed]	
Severe Winter Weather	**Winter Storm (229) & Severe Storm (281)**	
Storm Surge	[Not addressed]	
Subsidence	[Not addressed]	
Tornado	**Tornado (201)**	
Tsunami	[Not addressed]	
Wildfire	**Wildfire (207)**	
[Not addressed]	**Epidemic (190)**	
[Included in Severe Winter Weather]	****Ice Storm (253)**	
[Included in Flood]	***Ice Jam (232)**	

Additional data was collected from jurisdictions, geographic information systems (GIS) datasets, plans and studies, and other official and/or scientific sources. Jurisdictions distributed a hazard survey to residents and stakeholders to secure their input. Survey results, shown in **Appendix 2-D,** validated the hazards of concern and caused the HMWG to add Transportation Accidents as a technological hazard. Each jurisdiction then selected its hazards of concern, as shown in **Table 3.0-e**.

[4] *HIRA-NY* is a hazard ranking system used by New York State and its counties that provides a method for analyzing and ranking hazards for preparedness, and response, and recovery operations.

Table 3.0-e: Hazards Considered by Each Jurisdiction [5]

JURISDICTION	Avalanche	Drought	Earthquake	Extreme Heat	Flood: Dam/Levee Failure	Flood: Ice Jam	Flood: High Groundwater & Local Drainage	Flood: Riverine & Flash Flood	Landslide	Severe Weather: Hail	Severe Weather: High Wind	Severe Weather: Lightning	Severe Weather: Thunderstorm/Rainfall	Severe Weather: Winter Weather	Soil Hazard: Erosion	Soil Hazard: Expansive Soils	Soil Hazard: Subsidence	Wildfire	Epidemic	Transportation Accident
Herkimer County					x	x	x	x			x	x	x	x					x	x
Cold Brook (Village)																				
Columbia (Town)																				
Danube (Town)																				
Dolgeville (Village)					x	x	x	x			x	x	x	x	x					x
Fairfield (Town)		x	x	x		x	x	x		x	x	x	x	x	x			x	x	x
Frankfort (Town)				x		x		x			x	x		x	x					x
Frankfort (Village)				x		x		x			x	x		x	x					
German Flatts (Town)		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Herkimer (Town)		x	x	x	x	x	x	x		x	x	x	x	x	x				x	x
Herkimer (Village)		x	x	x	x	x	x	x		x	x	x	x	x	x				x	x
Ilion (Village)					x	x	x	x	x	x	x	x	x	x	x				x	x
Litchfield (Town)																				
Little Falls (City)		x	x	x	x	x	x	x			x		x	x	x				x	x
Little Falls (Town)		x	x	x	x	x	x	x			x		x	x	x				x	x
Manheim (Town)		x	x	x	x		x	x	x		x			x						
Middleville (Village)																				
Mohawk (Village)		x	x	x	x	x	x	x		x	x	x	x	x						
Newport (Town)																				
Newport (Village)																				
Ohio (Town)																				
Poland (Town)																				
Russia (Town)																				
Salisbury (Town)																				
Schuyler (Town)																				
Stark (Town)																				
Warren (Town)																				
Webb (Town)																				
West Winfield (Village)																				
Winfield (Town)																				

[5] Rows highlighted in gray indicate jurisdictions that did not submit hazard worksheets in this planning cycle.

Hazards Selected for Profiling and Risk Analysis

The HMWG reviewed jurisdictional input and determined that the following **20 hazards** warranted further research and investigation.

- Avalanche
- Drought
- Earthquake
- Extreme Heat
- Flood: Dam/Levee Failure
- Flood: Ice Jam & Debris Flow
- Flood: High Groundwater & Local Drainage
- Flood: Riverine & Flash Flood
- Landslide
- Severe Weather: Hail
- Severe Weather: High Wind (Straight Line, Tropical Cyclone, Tornado)
- Severe Weather: Lightning
- Severe Weather: Thunderstorm/Heavy Rainfall
- Severe Weather: Winter Weather (Snow, Ice, Extreme Cold)
- Soil Hazards: Erosion
- Soil Hazards: Expansive Soils
- Soil Hazards: Subsidence
- Wildfire
- Epidemic (natural and human-caused)
- Transportation Accidents (technological)

Hazard Profiles

Each hazard sub-section covers the following elements.

Location

The entire Planning Area is susceptible to hazards such as drought, earthquake, severe weather, and epidemic. Other hazards are limited in location of impact, discussed further in specific hazard sections. Hazards specific to one jurisdiction are discussed in its annex.

Extent

Extent is described in several ways depending on the hazard:

- The value on an established scientific scale or measurement system (e.g., Modified Mercalli Intensity Scale for earthquakes, Enhanced Fujita Scale for tornadoes).
- Other measures of magnitude, such as water depth or wind speed.
- The speed of onset.
- Event duration. For most hazards, the longer the duration, the greater the extent.
- Additional narrative or graphics illustrating the characteristics of the hazard.

Previous Occurrences

Challenges arise in documenting previous occurrences because of differences in how hazards are defined, how incidents are reported, and the use of algorithms. The Storm Events Database of the National Center for Environmental Information (NCEI, formerly known as the National Climatic Data Center, or NCDC) was the primary data source used to document previous occurrences and calculate future probability. Other information was taken from the Spatial Hazard Events and Losses Database (SHELDUS).

Since 1974, Herkimer County and its municipalities have been included in 14 federal disaster declarations for the following hazards:

- ***Flood*** – 5 declarations
- ***Severe Storm(s)*** – 7 declarations
- ***Fire*** – 1 declaration
- ***Hurricane*** – 1 declaration

In some cases, Herkimer County was indirectly impacted by an event that did not occur within its borders.

Table 3-f: Herkimer County Federal Disaster Declarations, 1974 – 2016*

DR	Date	IH	IA	PA	HM	Type	Incident Title
447	7/23/1974	Yes	No	No	Yes	Flood	SEVERE STORMS & FLOODING
515	7/21/1976	Yes	No	No	Yes	Flood	SEVERE STORMS & FLOODING
1095	1/24/1996	Yes	Yes	No	Yes	Flood	SEVERE STORMS AND FLOODING
1244	9/11/1998	Yes	No	No	Yes	Severe Storm(s)	NY - SEVERE WX, SEPT 7, 1998
1335	7/21/2000	Yes	Yes	No	No	Severe Storm(s)	SEVERE STORMS AND FLOODING
1391	9/11/2001	Yes	Yes	No	Yes	Fire	FIRES AND EXPLOSIONS
1534	8/3/2004	Yes	Yes	No	No	Severe Storm(s)	SEVERE STORMS AND FLOODING
1650	7/1/2006	No	No	No	No	Severe Storm(s)	SEVERE STORMS AND FLOODING
1670	12/12/2006	Yes	Yes	No	No	Severe Storm(s)	SEVERE STORMS AND FLOODING
1993	6/10/2011	Yes	Yes	No	No	Flood	SEVERE STORMS, FLOODING, TORNADOES, AND STRAIGHT-LINE WINDS
4020	8/31/2011	No	Yes	No	No	Hurricane	HURRICANE IRENE
4031	9/13/2011	No	Yes	No	No	Severe Storm(s)	REMNANTS OF TROPICAL STORM LEE
4129	7/12/2013	Yes	Yes	No	No	Flood	SEVERE STORMS AND FLOODING
4180	7/8/2014	Yes	Yes	No	No	Severe Storm(s)	SEVERE STORMS AND FLOODING

***Source**: FEMA*

*Table Abbreviations represent FEMA disaster assistance programs:

- DR – Disaster Recovery
- IH – Individuals & Households
- IA – Individual Assistance
- PA – Public Assistance
- HM – Hazard Mitigation

Probability of Future Occurrences

Probability of future hazard occurrence was determined using the best available data. Limitations are explained where insufficient data did not facilitate easy calculation. The estimate of probability contributed to the overall risk score.

Impacts and Consequences

Hazard impacts and consequences are discussed in quantitative and qualitative terms. Jurisdictions used a worksheet to evaluate the effects of each hazard. These are included in hazard profiles. The following were considered in assessing impacts and consequences.

Population at Risk

The Herkimer County population of 64,519 residents (2010 Census) is potentially at risk for all hazards. Jurisdictional population estimates and demographic distributions are included **Section 1, Introduction, Table 1-f.**

Built Environment, Natural Environment, and Economy

Detailed description of the risk and vulnerability of the each of these sectors to each hazard is included in sub-sections.

Impact and consequence characteristics considered by each jurisdiction included:

- Mass casualty potential
- Transportation infrastructure damage
- Impact on emergency response operations
- Damage to homes and businesses
- Health and medical system impacts
- Water system damage or failure
- Utility system damage or failure
- Environmental damage or long-term impact
- Agricultural losses (crops)
- Agricultural losses (animals)
- Economic impact (direct or indirect)
- Civil unrest
- Commodity shortage
- Impact to the public's confidence in governance
- Impacts to cultural or historical assets
- Impacts to municipal buildings/parks

3.0.2. Risk Analysis Summary

Jurisdictions conducted quantitative risk analyses based on the factors described above. A ranking system guided the scoring process (see **Worksheet #5, Data Collection Guide, Appendix 2-b, HMWG Meeting Documentation**). Elements were scored based on information from the 2015 HMP Draft, the 2014 NYS HMP, and current information. The sum of scores for each criterion yielded an overall risk score, which ranked the hazards in order of importance as high, medium, or low, thus identifying the hazards of highest concern. Only these received a full hazard profile and vulnerability assessment. Low-ranked hazards may be revisited during future planning cycles.

Table 3.0-g summarizes the results of the risk analysis based on input from jurisdictions and the HMWG. Jurisdictional rankings were averaged to obtain summary scores. More information about risk and loss estimates for the jurisdictions are available in the Jurisdiction Annexes.

Table 3.0-g: Average of Jurisdictions' Overall Risk Scores for All Hazards

Hazard	Overall Risk Score*
Avalanche	4 - Low
Drought	5.8 - Low
Earthquake	6.6 - Low
Epidemic	6.8 - Low
Extreme Heat	7.7 - Low
Flood: Dam/Levee Failure	7.8 - Low
Flood: Ice Jam	9.9 – Medium
Flood: High Groundwater and Local Drainage	9.8 – Medium
Flood: Riverine & Flash Floods	11.9 – Medium/High
Landslide	5.4 - Low
Severe Weather: Hail	5.8 - Low
Severe Weather: High Wind	10.6 – Medium
Severe Weather: Lightning	9.1 – Medium/Low
Severe Weather: Thunderstorm/Heavy Rain	11.8 – Medium
Severe Weather: Winter Weather	12.1 – Medium/High
Soil Hazards: Erosion	6.4 - Low
Soil Hazards: Expansive Soils	4.0 - Low
Soil Hazards: Subsidence	4.2 - Low
Transportation Accidents	10.9 - Medium
Wildfire	4.8 - Low

*The Overall Risk Score is the sum of the scores selected for Location, Probability of Future Occurrences, Magnitude/Severity, and Significance by each jurisdiction, and then averaged for a countywide score.

Hazard Risk Summary

The risk summary provides a snapshot of the hazard profile and assigns a level of significance or risk priority to each hazard. Hazards of **medium** or **high** significance required further evaluation to determine potential exposure or loss. Hazards that occur infrequently or have little or no impact on the Planning Area were determined to be of **low** significance and not considered to be priority hazards.

Table 3.0-h lists the hazards of highest concern, those requiring a vulnerability assessment. The overall risk scores also identified transportation accident as a medium-risk hazard. However, HMWG agreed that the regulations, plans, capabilities, and resources provided through the state's emergency planning and response system address this concern. Existing resources lower the risk of transportation accidents, so the hazard was re-classified as **low-risk**. There are also no current cost-effective mitigation measures or actions available to reduce the risk and vulnerability.

Table 3.0-h: Hazards of Highest Concern/Assessed for Vulnerability

Hazard	Risk Ranking
Flood: Ice Jam	Medium/High
Flood: High Groundwater and Local Drainage	Medium
Flood: Riverine & Flash Flood	Medium/High
Severe Weather: High Wind	Medium
Severe Weather: Thunderstorm/Heavy Rainfall	Medium
Severe Weather: Winter Weather	Medium/High

Hazards that ranked as **low** in the Overall Risk Score were eliminated from further consideration based on the justifications provided in **Table 3.0-i.**

Table 3.0-i: Justification for Hazards Excluded or Minimally Addressed in the Herkimer County HMP

Hazard	Why Hazard was not Assessed for Vulnerability	Final Disposition in Plan
Avalanche	• No previous hazard event recorded in the Planning Area • Low potential for impact and/or consequences • Low significance to the Planning Area	Profiled; vulnerability assessment not justified in this planning cycle
Drought	• Infrequent event • Low significance to the Planning Area	Profiled; vulnerability assessment not justified in this planning cycle
Earthquake	• Infrequent event • Low potential for impact and/or consequences • Low significance to the Planning Area	Profiled; minimal vulnerability assessment conducted as baseline for future planning within **Section 3.3, Earthquake**
Epidemic	• The local Department of Public Health and its stakeholders conduct planning and risk assessment • Preventive focus reduces risk and vulnerability	Profiled; vulnerability assessment not justified in this planning cycle
Extreme Heat	• Low significance to the Planning Area • Preparedness focus reduces risk and vulnerability	Profiled; vulnerability assessment not justified in this planning cycle

Hazard	Why Hazard was not Assessed for Vulnerability	Final Disposition in Plan
Flood: Dam & Levee Failure	• 2014 NYSHMP • 2015 DRAFT Herkimer HMP • High-hazard dams identified within the Planning Area • Potential for impact to life/safety and property • Dam safety program and plans address preparedness, mitigation, and public warning	Profiled: vulnerability assessment not justified in this planning cycle
Flood: Ice Jam	• 2014 NYSHMP • 2015 DRAFT Herkimer HMP • Previous occurrences document damage • Significant impacts to local communities	Profiled: vulnerability assessment included within **Section 3.5, Flood**
Flood: High Groundwater & Local Drainage Systems	• 2014 NYSHMP • 2015 DRAFT Herkimer HMP • Previous occurrences document damages • Significant impacts to local communities	Profiled: vulnerability assessment included within **Section 3.5, Flood**
Flood: Riverine & Flash Flood	• 2014 NYSHMP • 2015 DRAFT Herkimer HMP • Previous occurrences document damage • Significant impacts to local communities	Profiled: vulnerability assessment included within **Section 3.5, Flood**
Landslide	• Ranked as high hazard for the Town of German Flatts • Low potential for widespread impact and/or consequences • Low significance to the overall Planning Area	Profiled; vulnerability assessment for entire Planning Area not justified in this cycle. **Annex 9** explains finding by German Flatts of landslide as a high-risk hazard.
Severe Weather: Hail, Lightning	• Risk reduction focuses on individual and family preparedness and shelter-in-place • Potential mitigation actions unlikely to be cost-effective	Profiled; vulnerability assessment not justified in this planning cycle.
Severe Weather: High Wind, Thunderstorm & Heavy Rainfall, Winter Weather	• Previous occurrences document fatalities, injuries, and damages • Frequent events • Frequent widespread impact	Profiled; vulnerability assessment included within **Section 3.7, Severe Weather.**
Soil Hazards: Erosion	• Limited occurrences within the Planning Area, typically related to streambank failure due to flood • Low potential for widespread impact and/or consequences to the Planning Area	Profiled; vulnerability assessment included within the characteristics for flood, **Section 3.5, Flood**

Hazard	Why Hazard was not Assessed for Vulnerability	Final Disposition in Plan
Soil Hazards: Expansive Soils	• No previous hazard event recorded in the Planning Area • Potential mitigation actions unlikely to be cost-effective	Profiled; vulnerability assessment not justified in this planning cycle
Soil Hazards: Subsidence	• No previous hazard event recorded in the Planning Area • Limited potential for impact and/or consequences • Low significance to the Planning Area	Profiled; vulnerability assessment not justified in this planning cycle.
Wildfire	• Limited previous impacts and/or consequences to the Planning Area • Existing programs to mitigate the hazard • Focus on preparedness and response lessens risk and vulnerability	Profiled; vulnerability assessment not justified in this planning cycle

Section 2, Base Plan includes reviews previous mitigation planning efforts and new methodologies used to develop the current risk assessment**.**

3.0.3. Vulnerability Assessment Summary

Each jurisdiction identified its at-risk population and community assets, including: exposed population, existing structures, the natural environment, and potential direct and indirect economic losses. Where data was not available, jurisdictions estimated the percent of population at-risk building exposure, described community assets, and conducted a qualitative risk analysis.

Vulnerability Assessment Methodology

The Base Plan focuses countywide vulnerability. Jurisdictional data was integrated into this section, with differences in risk between communities noted.

The following data sources are among those used in the vulnerability assessment:

- Jurisdiction-specific GIS data (e.g., hazards, base layers, property assessor's data).
- Statewide GIS datasets, where available, compiled by the New York State Division of Homeland Security and Emergency Services GIS Office.
- FEMA's HAZUS-MH GIS-based inventory data.
- Federal-level Homeland Security Infrastructure Protection (HSIP) data.
- Written descriptions of inventory and risks provided by participating jurisdictions.
- Existing plans and studies.
- Personal interviews with planning team members, staff from the County and Regional Planning Offices, and participating jurisdictions.

Potential Exposure of Community Assets

This section describes population-based at-risk assets; the value of at-risk property; a critical facilities inventory; an inventory of cultural, historical, and natural resources; future population and development trends; and the projected impacts of climate change.

Vulnerability of the Population

Table 3.0-j provides the total population for each jurisdiction in the Planning Area (i.e., total number at risk). Hazard sub-sections provide additional information.

Table 3.0-j: Total Population at Risk, by Jurisdiction

CITY/VILLAGE/ TOWN	POPULATION (2010 Census)	POPULATION (2015 Estimated)
Herkimer County (all municipalities)	64,519	63,100
Village of Cold Brook	329	322
Town of Columbia	1,580	1,557
Town of Danube	1,039	1,025
Village of Dolgeville	2,206	2,005
Town of Fairfield	1,627	1,573
Town of Frankfort	7,636	7,470
Village of Frankfort	2,598	2,507
Town of German Flatts	13,258	12,844
Town of Herkimer	10,175	9,901
Village of Herkimer	7,743	7,519
Village of Ilion	8,053	7,926
Town of Litchfield	1,513	1,499
City of Little Falls	4,946	4,787
Town of Little Falls	1,587	1,538
Town of Manheim	3,334	3,246
Village of Middleville	512	501
Village of Mohawk	2,731	2,628
Town of Newport	2,302	2,279
Village of Newport	640	620
Town of Norway	762	776
Town of Ohio	1,002	1,003
Village of Poland	508	500
Town of Russia	2,587	2,555
Town of Salisbury	1,958	1,923
Town of Schuyler	3,420	3,413
Town of Stark	757	741
Town of Warren	1,143	1,129
Village of West Winfield	826	1,815
Town of Winfield	2,086	882

Vulnerability of the Built Environment

Calculation of the exposed built environment included quantitative and qualitative analysis, including statistical data and anecdotal information about previous occurrences and impacts.

Total Building/Land Values at Risk

Herkimer County has 24,408 property parcels with a total value of $4,861,736,553. **Table 3.0-k** shows the 2016 parcel values, provided by Herkimer County Property Tax Service, including a breakdown of residential and commercial parcels and values by jurisdiction.

Table 3.0-k: Total Property Parcels and Values at Risk, by Jurisdiction[6]

Jurisdiction	Total Residential Parcels	Total Value - Residential	Total Commercial Parcels	Total Value - Commercial	Total Parcels	Total Value - All Parcels
Cold Brook (Village)	110	$8,356,800	0	$0	157	$9,201,070
Columbia (Town)	561	$54,673,000	8	$840,000	1,069	$77,905,167
Danube (Town)	355	$33,850,843	5	$765,060	755	$71,138,434
Dolgeville (Village)	680	$36,245,899	74	$5,523,593	1,011	$56,615,846
Fairfield (Town)	427	$47,903,640	5	$802,500	854	$75,097,890
Frankfort (Town)	1,708	$224,833,494	73	$16,092,462	2,807	$316,460,253
Frankfort (Village)	787	$64,159,194	94	$11,159,301	1,102	$96,411,513
German Flatts (Town)	843	$78,079,420	29	$4,861,105	1,428	$98,066,984
Herkimer (Town)	948	$94,233,841	44	$18,814,149	1,553	$156,447,238
Herkimer (Village)	1,963	$134,971,206	294	$112,493,669	2,752	$409,089,217
Ilion (Village)	2,450	$165,276,516	173	$36,171,438	3,052	$294,749,252
Litchfield (Town)	540	$58,387,151	6	$589,111	983	$84,884,953
Little Falls (City)	1,565	$93,355,440	156	$26,321,945	2,257	$175,313,555
Little Falls (Town)	554	$55,295,235	25	$3,591,622	1,025	$86,026,561
Manheim (Town)	464	$39,934,307	20	$3,270,588	842	$83,890,351
Middleville (Village)	192	$15,828,097	15	$1,941,425	275	$20,806,077
Mohawk (Village)	827	$57,366,288	97	$11,447,272	1,093	$91,505,994
Newport (Town)	485	$58,587,726	8	$918,302	885	$93,808,104
Newport (Village	203	$17,668,610	28	$4,644,528	301	$29,458,799
Norway (Town)	324	$30,325,662	5	$673,109	686	$44,760,538
Ohio (Town	930	$71,250,347	5	$515,010	2,237	$187,858,076
Poland (Town)	153	$15,513,426	19	$2,725,554	229	$32,130,011
Russia (Town	995	$109,074,500	4	$1,213,300	1,800	$160,285,766
Salisbury (Town)	930	$80,188,500	13	$1,731,700	1,819	$129,165,800
Schuyler (Town)	878	$98,993,000	52	$31,797,016	1,561	$251,469,289
Stark (Town)	265	$26,846,537	7	$1,009,797	682	$51,952,365
Warren (Town)	374	$42,655,370	16	$1,898,614	867	$73,593,701
Webb (Town)	3,254	$1,054,441,255	174	$73,740,740	6,027	$1,480,593,861
West Winfield (Village)	270	$23,553,111	32	$4,687,889	405	$37,371,889
Winfield (Town)	373	$38,622,889	13	$2,675,333	693	$85,679,000
TOTAL – ALL COUNTY	**24,408**	**$2,930,471,306**	**1,494**	**$382,916,131**	**41,207**	**$4,861,736,553**

A housing analysis showed more than 41% (13,717) of housing units were constructed during or before 1939, prior to the adoption of current building codes.[7] These structures may be more susceptible to extreme weather forces, including hail and high wind. Jurisdictional Annexes include exposure and loss data about the built environment.

[6] Although this table separates only residential and commercial property data from the totals, the total property parcels and values represent the sum of all types of parcels.
[7] 2007-2011 American Community Survey and the Herkimer County Profile, 2013, Cornell Program on Applied Demographics, Cornell University Cooperative Extension.

Vulnerability of Critical Facilities and Community Assets

A critical facility or community asset is defined during this planning process as a facility, structure or asset that, if damaged, would devastate disaster response and/or recovery. A critical facility is classified as: (1) Essential Facilities; (2) High Potential Loss Facilities, including At-Risk Population Facilities; and (3) Transportation and Lifeline Facilities.

Table 3.0-l: Critical Facility Categories and Types

Essential Facilities	High Potential Loss Sites	Transportation and Lifeline
Hospitals and other medical facilities	Power plants	Highways, bridges, and tunnels
Police stations	Dams/levees	Railroads and facilities
Fire stations	Military installations	Bus facilities
Emergency Operations Centers	Hazardous material sites	Airports
	Schools	Water treatment facilities
	Day care centers	Natural gas facilities and pipelines
	Nursing homes	Oil facilities and pipelines
	Main government buildings	

Table 3.0-m lists types and numbers of assets vulnerable to hazards. Hazard sub-sections and Jurisdiction Annexes provide a more detailed list and description of at-risk assets.

Table 3.0-m: Critical Facilities Summary Table, all Jurisdictions

Category	Type	Count
Essential Facilities	County Government administration	**1**
	Hospitals & other medical facilities	**1**
	Emergency Medical Services	**21**
	Police and fire stations	**30**
	Emergency Operations Centers	**1**
High Potential Loss Facilities	Power plants/Electric Sub-stations	**22**
	Dams/levees	**115**
	Military installations	**0**
	Hazardous material sites (material stored or in use)	**33**
	Schools (Public /Private)	**27/1**
	Colleges/Universities	**2**
	Day care centers	**23**
	Nursing homes	**8**
	Main government buildings	**30**
	Churches/Places of Worship	**10**
Transportation and Lifeline Facilities	Highways, bridges, and tunnels	**25781 bridges**
	Railroads and facilities	**2**
	Bus facilities	**1**
	Commercial/Private Airports	**8**
	Water treatment facilities	**105**
	Wastewater facilities	**12**
	Natural gas facilities & pipelines	**5**
	Oil facilities and pipelines	**5**
	Communication towers	**25**
TOTAL		**26,277**

A list of critical facilities in the Planning Area can be found in **Appendix 3, Hazard and Risk Documentation.** Jurisdiction Annexes include a list of critical facilities each community.

Vulnerability of the Natural Environment

Each hazard has a unique effect on the natural environment.

Vulnerability of Cultural, Historical, and Natural Resources

Natural, historical, and cultural assets are irreplaceable and support the broader economy. Hazard sections describe potential impacts when resources are in hazard zones.

Vulnerability of the Economy

The economy sustains direct and indirect impacts.

Future Population Growth and Development Trends

The discussion of population growth and development is covered in the profiles and more fully in **Section 1, Introduction**.

Impacts of Climate Change

New York State has researched the potential impacts of climate change. Its science-based studies and reports detail the potential impacts of climate change to various community sectors. The State has also developed programs on climate change adaptation and strategies and discussed how these can be included into local mitigation plans. The following table explains some of the potential implications and impacts of changing weather patterns.

Table 3.0-n: Weather-related Potential Impacts and Consequences of Climate Change

Hazard	Consequences
Extreme Weather	• Increases/decreases in severity result in more severe or long-term secondary impacts (e.g., higher energy demand). • Higher temperatures and more extreme precipitation will stress the agricultural industry and ecosystems.
Drought	• Rising summer temperatures, with little change in the amount of summer rainfall, may increase the frequency of short-term droughts (1 to 3 months), which may occur annually. • Impacts to water management and hydrology. • Commodity shortages.
Heavy Precipitation Events	• Increased frequency and severity of damaging rainstorms. • Stressed agriculture and ecosystems.

Hazard	Consequences
Extreme Temperatures	• More days with temperatures above 90°F. These will stress all residents, but more so the frail and disadvantaged. • Longer growing season. • Higher temperatures will stress the agricultural industry and ecosystems. • Impacts to environmental, social, and economic systems.
Winter Weather	• Shorter snow seasons and earlier spring snow melts. Projections include loss of snow-cover days by one-fourth to one-half per year. • Projected increase of 20-30% in winter precipitation.[8] • Reduction in tourism economy from winter recreation.

A list of climate research studies and plans is provided in **Section 2.9, Review and Integration of Existing Policies, Plans, Studies and Reports**, and **Appendix 2-E, References to Existing Policies, Plans, Studies and Reports.**

Factors to Consider in the Next Planning Cycle

Hazard discussions mention factors that may increase or reduce future risk. Such elements should be considered in the next planning cycle and be reviewed as the HMWG monitors, evaluates, and updates the plan.

[8] "Confronting Climate Change" (p. 62), referenced in 2014 NYS HMP, p. 3.4-8

SECTION 3.1: AVALANCHE

3.1.1: HAZARD PROFILE

The few past occurrence of avalanches in New York happened in remote locations at high elevations in northeastern Adirondack Park. Such events are typically rare and localized. There is no record showing that an avalanche has impacted the population, built environment, natural environment, or economy of Herkimer County and its municipalities. Avalanche is omitted as a hazard of consideration in the 2015 HMP DRAFT but profiled here to establish a baseline and determine overall risk for the current planning cycle.[1]

Hazard/Problem Description

Avalanches (also called "snowslides") are defined as a natural hazard because they occur when gravity pulls a mass of snow down a mountainside. Information from the New York State Department of Environmental Conservation avalanche website indicates that four conditions must be present for an avalanche to occur: steep slope, snow cover, a weak layer in the snow cover, and a trigger event.[2]

Type

An avalanche occurs when the stress from gravity pulling snow downhill exceeds the strength of snow cover to hold the snow in place. Historically, they have begun on 30- to 45-degree slopes, although 98% of recent documented events occurred on slopes of 25-50 degrees.[3] Although avalanches occur most frequently on slopes above the timberline and facing away from prevailing winds, they can occur below the timberline on small slopes, such as road cuts and openings in the trees. Dense timber can anchor the snow to steep slopes and prevent avalanches from starting; however, once an avalanche is released it can travel through a moderately dense forest.

Location

Historical data indicates that past avalanches in New York's Adirondack Mountains occurred in Essex County, northeast of the Planning Area. Areas of Herkimer County within Adirondack Park are in the "foothills" of the mountain range but lack the higher elevations of Essex County. The image to the right illustrates potential avalanche areas in the Adirondack Mountains.

[1] The hazard and risk assessment conducted as part of the County's general emergency planning using the HAZNY software is described in Section 3.0, Base Plan.
[2] New York State Department of Environmental Conservation. Available at: http://www.dec.ny.gov/public/950.html
[3] Ibid.

Extent

Given the characteristics of avalanche, there is a low potential for the hazard to occur in the Planning Area, where the topography and land cover are not conducive to a large-scale event. There is also a low potential for small-scale snowslides that occur in road cuts and small openings on forested slopes.

Previous Occurrences

National Climatic Data Center (NCDC) historical statistics record one avalanche between 1996 and 2013. This event occurred on February 19, 2000, in Essex County.[4] Historical and anecdotal records[5] suggest other, unconfirmed avalanches affected New York,[6] but none of the confirmed or unconfirmed events occurred in Herkimer County. There have been no Presidential Disaster Declarations for avalanche in New York State.

Probability of Future Events

There is a low potential for an avalanche occurrence in the higher elevations of northern Herkimer County, and the absence of historical activity means there is no data to establish a statistical period of return. Qualitative analysis suggests a low future probability based on the lack of previous events. Topography and other conditions are also not conducive to avalanche.

> *Most avalanches occur in the backcountry, outside of developed ski areas.*
> *(NYS DEC Avalanche website)*

Impacts and Consequences

One avalanche incident in the state claimed one life, but the incident occurred Essex County. No major impacts to the **built environment, natural environment,** or **economy** were recorded during previous occurrences. Northern Herkimer County municipalities are sparsely populated. There is no indication that such an event would impact the County's economy either directly or indirectly. Should an event occur, its primary impact would be on resident safety and health, and structural damage to buildings and infrastructure networks—water, power and communication lines, and transportation routes. Loss of vegetative cover would be a secondary impact.

Each jurisdiction in the Planning Area conducted an analysis of risks and consequences for avalanche. Analytical data is summarized in **Table 3.1-a.**

[4] NCDC data as reported in the NYS HMP, Section 3.3, p. 3.3-2
[5] NYS HMP, Section 3.3 – Avalanche. Attributed to National Climatic Data Center, NOAA; and "A Short History of Adirondack Avalanches", Phil Brown, The Adirondack Almanac, February 1, 2010.
[6] NYS HMP, pp. 3.3-2 to 3.3-3

Table 3.1-a: Summary of Analysis of Avalanche Impacts and Consequences, by Jurisdiction

Summary of Avalanche Impacts and Consequences, by Jurisdiction	Level of Concern/Ranking[7]	Mass Casualty Potential	Transportation Infrastructure Damaged	Impact on Emergency Response Operations	Communication Failure	Damage to Homes and Businesses	Health and Medical System Impacts	Water System Damage or Failure	Utility System Damage or Failure	Sewer System Damage or Failure	Environmental Damage or Long Term Impact	Agricultural Losses - Crops	Agricultural Losses - Animals	Economic Impact - Direct or Indirect	Civil Unrest	Commodity Shortage	Impact to Public Confidence in Governance	Impacts to Cultural or Social Assets	Impact to Municipal Buildings/Parks
Herkimer County	-	-	x	x	-	-	-	-	-	-	x	-	-	-	-	-	-	-	-
Village of Dolgeville	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Town of Fairfield	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Town of Frankfort	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Village of Frankfort	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Town of German Flatts	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Town of Herkimer	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Village of Herkimer	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Village of Ilion	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
City of Little Falls	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Town of Little Falls	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Town of Manheim	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Village of Mohawk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

3.1.2: Risk Analysis

Each jurisdiction studied avalanche risk based on location, probability of future occurrences, magnitude/severity, and significance to determine an Overall Risk Score. **Table 3.1-b** summarizes jurisdictional scoring. The methodology for ranking risk elements and determining the Overall Risk Score is described in **Section 3.0, Base Plan**.

Table 3.1-b: Summary of Overall Risk Scores for Avalanche, by Jurisdiction

Jurisdiction	Location	Probability of Future Occurrences	Magnitude/ Severity	Significance	Overall Risk Score[8]
Herkimer County	1	1	1	1	4
Village of Dolgeville	1	1	1	1	4
Town of Fairfield	1	1	1	1	4
Town of Frankfort	1	1	1	1	4
Village of Frankfort	1	1	1	1	4

[7] This category was considered only by the Town of German Flatts.
[8] The scoring methodology is described in Section 3.0 of the Base Plan.

Jurisdiction	Location	Probability of Future Occurrences	Magnitude/ Severity	Significance	Overall Risk Score[8]
Town of German Flatts	1	1	1	1	4
Town of Herkimer	1	1	1	1	4
Village of Herkimer	1	1	1	1	4
Village of Ilion	1	1	1	1	4
City of Little Falls	1	1	1	1	4
Town of Little Falls	1	1	1	1	4
Town of Manheim	1	1	1	1	4
Village of Mohawk	1	1	1	1	4
AVERAGE SCORE					**4.0 = Low**

Risk Summary: AVALANCHE

Location – Limited **Probability of Future Occurrence** – Low **Magnitude/Severity** – Low **Significance** - Low **Overall Risk Score** – Low	The compilation of jurisdiction risk scores, along with consideration of the hazard profile and potential impacts and consequences, indicates that avalanche is a **low-risk** hazard.
AVALANCHE Hazard Priority – Low	

3.1.3: Vulnerability Assessment

The HMWG determined that avalanche is a **low-risk** hazard based on jurisdictional feedback and a lack of documented occurrences. Further vulnerability assessment of the hazard is not justified, and no action is necessary in this planning cycle to mitigate the hazard.

Future Population and Development Trends

It is unlikely that future growth in either population or development will affect the risk and vulnerability of avalanche in the Planning Area. The highest elevations are within Adirondack Park and included in the State Land Master Plan restricting development in the natural environment, limiting potential increased population in areas where an avalanche might occur.

Factors for Consideration in the Next Planning Cycle

Future monitoring, evaluation, and updating of this plan should consider the following factors, along with information from NYS HMP updates:

- Have avalanche events occurred since adoption of this plan?
- Has new scientific research or methodology changed the ability to predict avalanche events or assess risk and vulnerability?
- Has there been significant change in the population, built environment, natural environment, or economy that could affect the risk or vulnerability to avalanche?
- Is there new evidence about the impacts of climate change that could affect the level of risk or vulnerability to avalanche?

SECTION 3.2: DROUGHT

3.2.1: Hazard Profile

Most of Upstate New York typically receives amounts of rainfall sufficient to maintain a natural environment that includes plentiful forested and agricultural lands such as those found in the Planning Area However, the potential for drought exists statewide.

More frequently occurring natural hazards, such as floods, thunderstorms, and winter storms overshadow instances of drought in Herkimer County. Drought is profiled to determine the overall risk to the Planning Area based on historical occurrences and potential impacts to the natural environment and economy.

Hazard/Problem Description

Drought is defined as a normal, recurrent, and permanent feature of climate, originating from a deficiency of precipitation over an extended period. The most visible impact is water shortage. Drought periods of dryness are prolonged and severe enough to reduce soil moisture. Water and snow levels fall below the minimum necessary for sustaining plant, animal, and economic systems. The average annual statewide precipitation in the State of New York is 28 to 60 inches per year. Average annual rainfall in Herkimer County ranges from 43 inches to 57 inches.[1]

Other climatic factors such as elevated temperatures, strong winds, and low relative humidity are often associated with drought and can affect its severity. Drought may also precipitate or exacerbate secondary hazards such as wildfires. Plentiful vegetative fuel and low water supply challenge control of a wildfire in progress.

Type

The 2014 NYS HMP characterizes drought as "an insidious hazard of nature"[2] because it occurs over an extended period and may have a widespread impact on the environment and the economy. There is generally no loss of life or damage to the built environment. It may impact the water supply, including potable (drinking) water, thereby affecting public health.

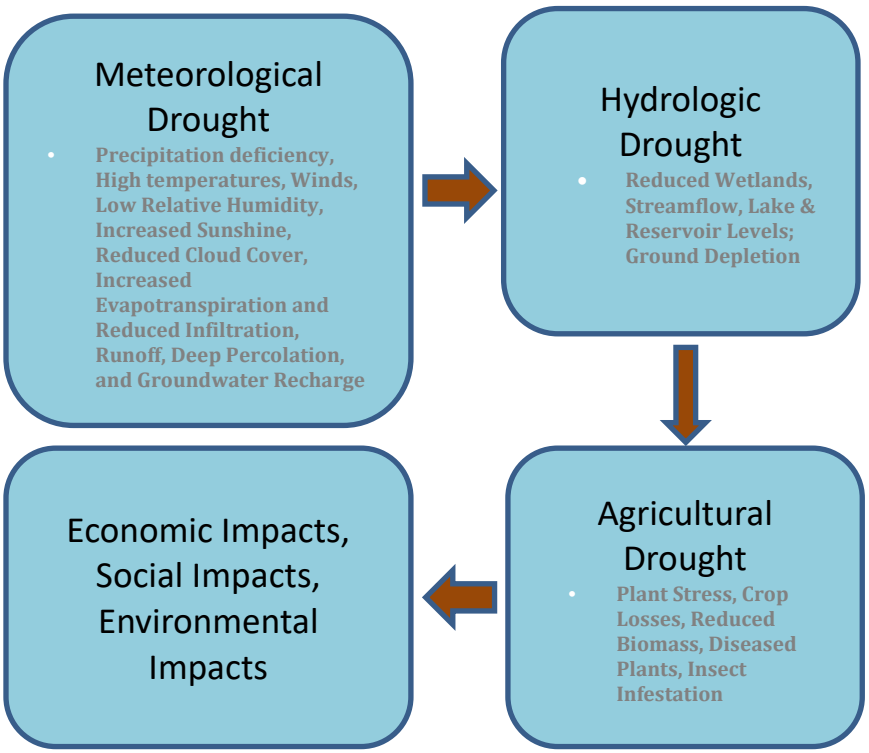
Drought has also been known to affect the environment and social and economic conditions. The National Weather Service, Climate Prediction Center defines four types of drought: meteorological/climatological, hydrological, agricultural, and socioeconomic. **Figure 3.2-1** illustrates the interrelationship between the four types of drought.

[1] USDA/NRCS Data, 2006; referenced in the "Flood Insurance Study, Herkimer County, New York, (Preliminary)"; 9/30/11.
[2] National Drought Mitigation Center (NDMC). http://drought.unl.edu/DroughtBasics/WhatisDrought.aspx; as referenced in the 2014 NYS HMP, Section 3.6, p. 3.6-1 (footnote 1)

Location

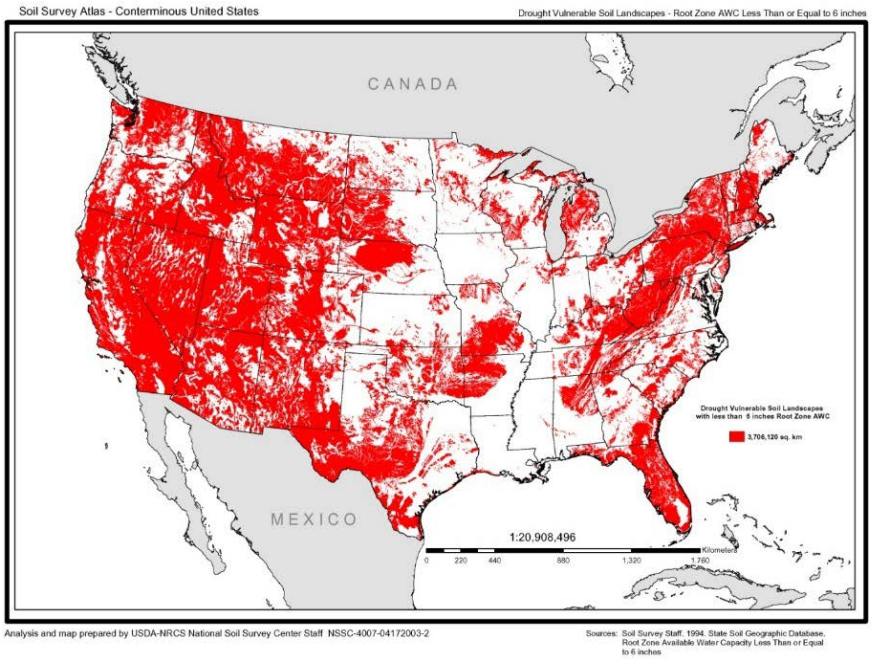
The entire planning area is susceptible to drought. The hazard impacts primarily the agricultural economy of southern Herkimer County. **Figure 3.2-2** maps drought-vulnerable soil landscapes of the United States. Areas highlighted in red are dominated by soils with less than six inches of available water in the root zone, which contributes to drought conditions. The map shows that both the state and the Planning Area have a foundation of drought-vulnerable soil.

Figure 3.2-1: Relationships Among Drought Types



***Source**: 2014 NYS HMP, Section 3.2, p. 3.2-3*

Figure 3.2-2: Drought Vulnerable Soils in the United States



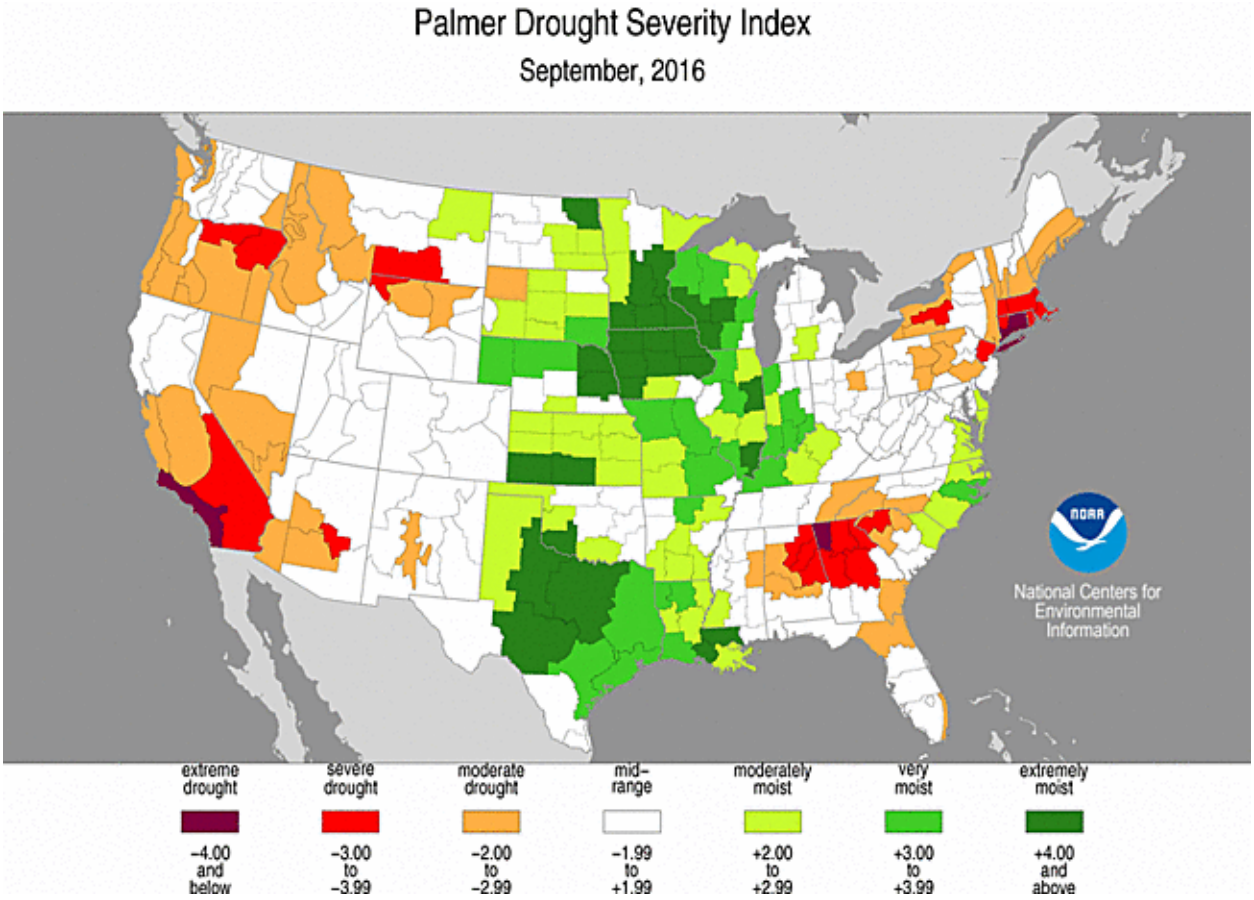
***Source**: U.S. Department of Agriculture/Natural Resources Conservation Service Soil Survey Center*

Extent

Drought is a rare occurrence in the Planning Area, although the past occurrences suggest a probability reoccurrence.

Several agencies and tools monitor the potential for and status of drought. The Palmer Drought Severity Index is the most widely used nationally. The Index is calculated from precipitation and temperature measurements at weather stations. An index value of zero represents the average moisture conditions observed between 1931 and 1990 at a given location. A positive value means conditions are wetter than average, and a negative value means conditions are drier than average. **Figure 3.2-3** shows the index for the month of September 2016. This map indicates that Herkimer County was in the mid-range, or "normal," drought phase during that month.

Figure 3.2-3: Palmer Drought Severity Index for Herkimer County, September 2016



***Source**: NCDC. Available at:* https://www.ncdc.noaa.gov/temp-and-precip/drought/historical-palmers/

The U.S. Drought Monitor map monitors regional drought by looking at the current level of short- (six months or less) and long-term (greater than six months) drought. **Figure 3.2-4** depicts the drought situation as of November 22, 2016. This figure shows that by the end of the two-month period between September (shown above in **Figure 3.2-3**) and November 2016, Herkimer County was an abnormally dry region, just above the level of moderate drought.

Figure 3.2-4: U.S. Drought Monitor, November 22, 2016 (Severity Categories Below)

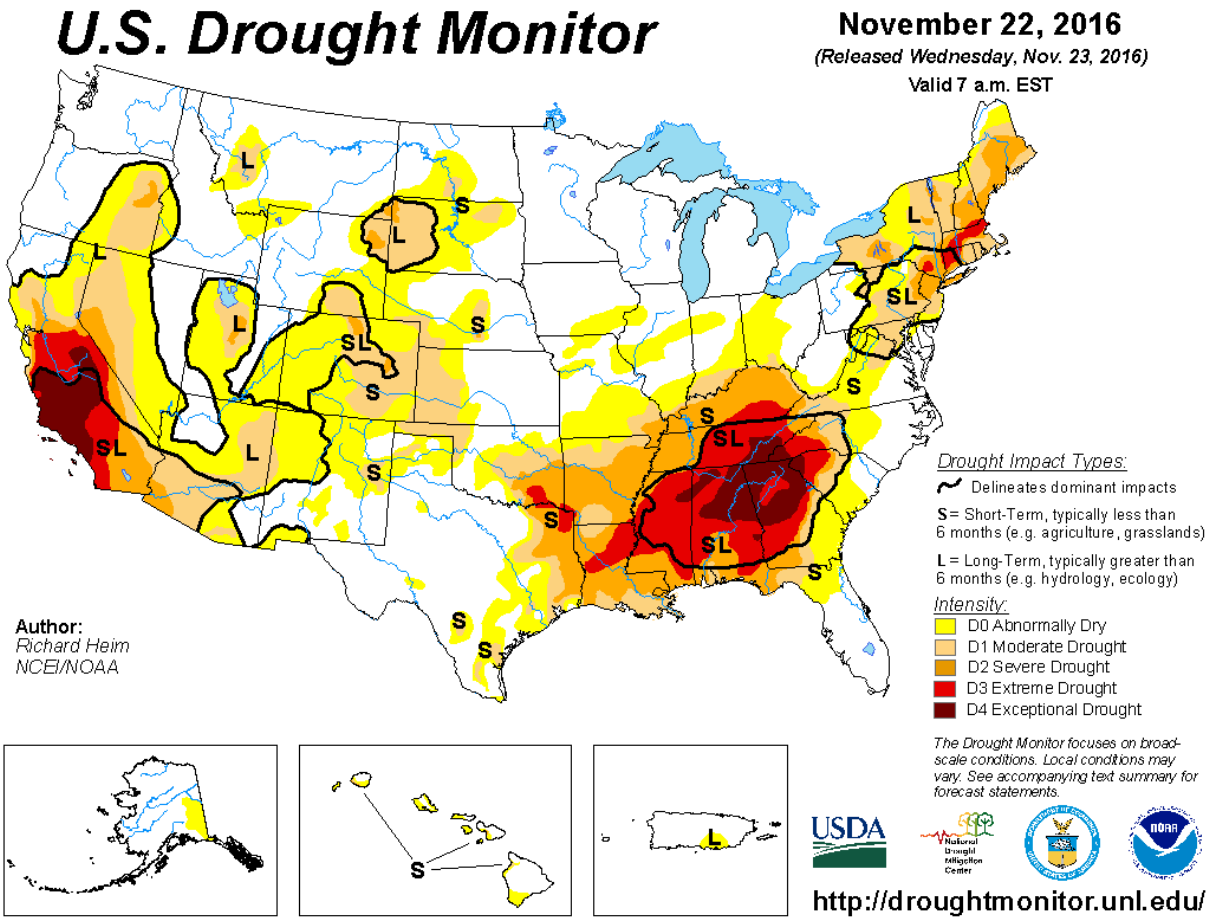


Table 3.2-a: Categories of Drought Severity, U.S. Drought Monitor

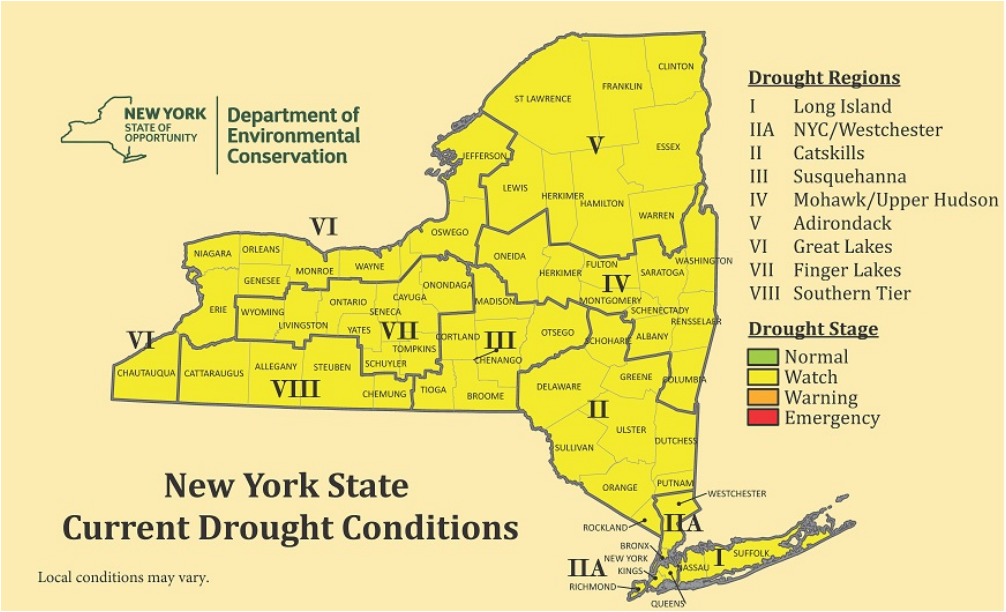
Category	Description	Possible Impacts
D0	**Abnormally dry**	Going into drought: short-term dryness slowing planting or growth of crops or pastures. Coming out of drought: some lingering water deficits; pastures or crops not fully recovered.
D1	**Moderate drought**	Some damage to crops or pastures; streams, reservoirs, or wells low; some water shortages developing or imminent; voluntary water use restrictions requested.
D2	**Severe drought**	Crop or pasture losses likely; water shortages common; water restrictions imposed.
D3	**Extreme drought**	Major crop/pasture losses; widespread water shortages or restrictions.
D4	**Exceptional Drought**	Exceptional and widespread crop/pasture losses; shortages of water in reservoirs, streams, and wells, creating water emergencies.

Source: http://droughtmonitor.unl.edu/

Figure 3.2-5 shows a monitoring tool maintained by the New York Department of Environmental Conservation. This map shows that Herkimer County was in a "watch" status for drought on January 3, 2017. A review of this and the previous two figures shows

a span of time within which the county's drought conditions gradually progressed from "normal" to a "watch" status.

Figure 3.2-5: New York State Current Drought Conditions, January 3, 2017



***Source**: NYS DEC, January 3, 2017-* http://www.dec.ny.gov/lands/5014.html#Current

The extent of drought specific to Herkimer County is described in **Table 3.2-b** below.

Table 3.2-b: Table 3.2-b: Drought Extent in Herkimer County

Extent of Drought in Herkimer County, NY	
Longest Drought on Record	July 1998 – August 1999
Speed of Onset	Warning period: Weeks to months
Duration	Weeks to months; in extreme conditions, years

Previous Occurrences

The 2014 *New York State Hazard Mitigation Plan*, January 2014, identifies three drought events in Herkimer County between 1960 and 2012[3], which was confirmed by additional research conducted during this planning process for the period 1950–2016. **Table 3.2-c** describes the events and their general impacts, but is not specific to the Planning Area. No additional statistical or historical information about previous occurrences was reported by municipalities.

The 2014 NYS HMP documents property damages from drought totaling $38,406 and crop damage of $2,069,243. No fatalities or injuries were recorded during the events described

[3] 2014 NYSHMP, p. 3.7-13

in **Table 3.2-c**. No communities in the Planning Area have been included in previous federal disaster declarations for drought.

Table 3.2-c: Previous Drought Events in Herkimer County, 1950 -2016

Date	Location	Related Information
4/1/1999	**Herkimer County – Northern and Southern Zones**	April 1999 was officially the driest April of the 20th Century. Only 0.60 inches of rain were recorded at the Albany International Airport and less at the National Weather Service (NWS) office on the State University of New York, Albany (SUNY) Campus. The combination of low rainfall and frequent gusty winds caused very dry underbrush, which led to numerous brush fires during the month. ***[No impacts specific to drought or brush fires are recorded for Herkimer County.]***
8/1/1999	**Herkimer County – Northern and Southern Zones**	August was the peak of a 14-month-long drought across Eastern New York that began in July of 1998. Regional rainfall and snow melt reached about 80 percent of that normally seen. Between July 1998 and August 1999, 35.41 inches of water equivalent was recorded, compared to the 30-year normal of 42.84 inches. Drought warnings were issued across the region and an agricultural disaster was declared. The Mohawk Valley experienced record low levels and many wells went dry. Most communities implemented voluntary or mandatory water restrictions.
9/13/2007 – 10/21/2007	**Herkimer County – Northern Zone**	Severe drought conditions developed over a 6-week period across Northern Herkimer and Hamilton Counties. Some portions of the Adirondack region accrued 90-day rainfall deficits of 8 to 12 inches below normal, resulting in severe drought levels on the Palmer Drought Severity Index. Streamflow levels dropped into the lowest 10% of recorded flows. Shallow wells and farm ponds reportedly ran dry in northern portions of Herkimer County, and reservoir levels became low enough to stop recreational activities and some hydropower generation. Conditions improved following significant rainfall on 10/23/2007 – 10/24/2007.

Source*: Storm Events Database, NCDC. Available at:* https://www.ncdc.noaa.gov/stormevents/choosedates.jsp?statefips=36%2CNEW+YORK

Probability of Future Events

The occasional drought that disrupts the mostly moist climate in the state has an overall annual future probability of three percent, based on the years 1960–2012.[4] *(This figure remains accurate for this planning period as no droughts were recorded within the additional periods of research, 1950–1960 and 2012–2016.)*

Impacts and Consequences

No major impacts to the people or built environment have been recorded from previous occurrences. There is potential for impacts to public health, and the natural environment has been affected during previous events. An event would also affect the Planning Area economy as described below.

[4] 2014 NYS HMP, p. 3.6-20

Potential Primary Impacts

- Health of residents
- Damage to critical lifelines such as water supply, power generation, and food supply

Potential Secondary impacts

- Power Failure
- Water shortage
- Food shortage
- Wildfires
- Economic loss

Population

There exists the potential for impact to the health of the public, particularly special populations. Children, the elderly, the disabled, and those who are economically disadvantaged typically require special assistance during all severe weather events. They need preparedness and response assistance to establish alternate warning methods, and could be at risk if there is a diminished supply of water or power. In such conditions, frail persons who generally remain stable day-to-day may become unstable during a disaster, requiring medical monitoring and access to immediate assistance or treatment.

Built Environment

Impacts and consequences to the built environment from drought are limited to potential disruption of critical service and supply systems, such as water, sewer, electric power, and communications. Loss of water may lead to the loss of power if the water level falls below that required to support hydroelectric generating systems. No structural impacts from drought are anticipated.

Natural Environment

The most significant impacts to the natural environment are crop failure and dried wells. Lakes, reservoirs, streams, creeks, and rivers may also see lower water levels.

Economy

Drought causes secondary direct and indirect economic losses. These would be felt by the agricultural community, water providers, and water users. Tourism would be scaled back because low water levels would limit recreational activities. Residential economic losses include:

Direct Impacts

- Crop loss
- Increased food prices
- Increased costs for utilities (water, power)

Indirect Impacts

- Loss of wages due to farms and agriculture-related businesses being temporarily or permanently closed
- Loss of customers due to business closures

3.2.2: Risk Assessment

Each jurisdiction in the Planning Area conducted analyzed the potential impacts and consequences for drought. This analytical compilation is described in **Table 3.2-d**.

Table 3.2-d: Summary of Drought Impacts and Consequences, by Jurisdiction

Summary of Drought Impacts and Consequences, by Jurisdiction	Level of Concern/Ranking	Mass Casualty Potential	Transportation Infrastructure Damaged	Impact on Emergency Response Operations	Communication Failure	Damage to Homes and Businesses	Health and Medical System Impacts	Water System Damage or Failure	Utility System Damage or Failure	Sewer System Damage or Failure	Environmental Damage or Long Term Impact	Agricultural Losses - Crops	Agricultural Losses - Animals	Economic Impact - Direct or Indirect	Civil Unrest	Commodity Shortage	Impact to Public Confidence in Governance	Impacts to Cultural or Social Assets	Impact to Municipal Buildings/Parks
Herkimer County	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Village of Dolgeville	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Town of Fairfield								X			X	X		X		x			
Town of Frankfort	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Village of Fairfield	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Village of Frankfort	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Town of German Flatts*	M	L	L	M	L	L	M	H	L	M	H	H	H	M	L	M	L	L	L
Town of Herkimer	-	-	-	-	-	-	-	x	-	-	x	x	x	x	-	-	-	-	-
Village of Herkimer	-	-	-	-	-	-	-	x	-	-	x	x	x	x	-	-	-	-	-
Village of Ilion	-	-	-	-	-	-	-	x	-	-	x	-	-	-	-	-	-	-	-
City of Little Falls	-	-	-	x	-	-	-	x	-	-	x	-	-	x	-	-	x	-	-
Town of Little Falls	-	-	-	x	-	-	-	x	-	-	x	-	-	x	-	-	x	-	-
Town of Manheim	-	-	-	-	-	-	-	-	-	-	-	x	x	-	-	x	-	-	-
Village of Mohawk	-	-	-	-	-	-	-	x	-	-	x	-	-	-	-	-	-	-	-

**Town of German Flatts used a low (score 3), medium (2), and high (1) ranking system, but added a category called "Level of concern/Ranking."*

3.2.2: Risk Analysis

Each jurisdiction in the Planning Area conducted a drought risk analysis to consider location, probability of future occurrences, magnitude/severity, and significance. An Overall Risk Score for drought was determined by each jurisdiction.

Table 3.2-e: Summary of Overall Risk Scores for Drought, by Jurisdiction

Jurisdiction	Location	Probability of Future Occurrences	Magnitude/ Severity	Significance	Overall Risk Score[5]
Herkimer County	2	2	2	3	9
Village of Dolgeville	2	2	1	1	6
Town of Fairfield	1	1	1	1	4
Town of Frankfort	1	1	1	1	4
Village of Frankfort	1	1	1	1	4
Town of German Flatts	2	2	2	2	8
Town of Herkimer	3	2	2	3	10
Village of Herkimer	3	2	2	1	9
Village of Ilion	1	1	1	1	4
City of Little Falls	1	1	1	1	4
Town of Little Falls	1	1	1	1	4
Town of Manheim	2	1	1	1	5
Village of Mohawk	2	1	1	1	5
AVERAGE SCORE					**5.8 - Low**

Additional details related to this summary are provided in the Jurisdictional Annexes.

Risk Summary: DROUGHT

Location – Widespread **Probability of Future Occurrence** – Low **Magnitude/Severity** – Low **Significance –** Low **Overall Risk Score** – Low	The compilation of jurisdiction risk scores, along with consideration of the hazard profile and potential impacts and consequences, indicates that drought is a **low-risk** hazard.
DROUGHT Hazard Priority – Low	

3.2.3: VULNERABILITY ASSESSMENT

The HMWG determined that there is a potential for drought to occur in Herkimer County, but its sporadic occurrence does not justify a conducting a vulnerability assessment. Based on this determination, no actions are needed in this planning cycle to address mitigation of this hazard.

[5] The scoring methodology is described in Section 3.0, Base Plan.

Future Development and Population Trends

Generally, municipal land use and zoning policies and programs do impact drought. Despite the overall trend in declining populations in most municipalities, future growth in housing may result in a higher at-risk population vulnerable to future drought conditions. Drought conditions could be mitigated by incorporating cost-effective water containment systems and back-up water and power generation systems into land development and emergency planning criteria. The population and development trend will be evaluated in the next planning cycle to determine whether there is any change in vulnerability to drought.

Impacts of Climate Change[6]

Our understanding of the impacts of climate change to all weather types is still incomplete, but a look at trend data can provide insight into rainfall patterns to date. Average annual precipitation in the Northeast has increased 10% since 1895, with precipitation from extremely heavy storms increasing 70% since 1958. Scientific data suggests that annual precipitation levels and the frequency of heavy downpours are likely to further increase.

Factors for Consideration in the Next Planning Cycle

Future monitoring and evaluation of this plan should consider the following factors, as well as other information from NYS HMP updates:

- Have droughts occurred since the adoption of this plan?
- Has new scientific study, research, or practice changed the methods of predicting drought or assessing risk and vulnerability?
- Are there new land development policies, plans or practices, or emergency plans that address or impact drought?
- Is there new climate change information or data that could affect the risk or vulnerability to drought or provide opportunities for adaptation?

[6] Information in this subsection was obtained from "What Climate Change Means for New York", EPA 430-F-16-034. U.S. Environmental Protection Agency, August 2016

SECTION 3.3: EARTHQUAKE

3.3.1: Hazard Profile

While an earthquake in New York State has the potential to occur, scientific and historical data indicate that Herkimer County's vulnerability to this hazard is lower than that of the rest of northern New York.

Earthquake is profiled below to determine the overall risk to the jurisdictions within the Planning Area. The assessment considered factors such as impacts to the population, the built environment, the natural environment, and the economy; should it occur, this hazard would greatly impact the community. County vulnerability data was included in the *2014 New York State Hazard Mitigation Plan* (NYS HMP), January 2014. A current baseline vulnerability assessment is included in **Section 3.3.3**.

Hazard/Problem Description

Earthquakes are defined as natural hazards but they are unaffected by weather or climate. An earthquake is characterized by sometimes violent shaking of the ground caused by movement of the Earth's tectonic plates, where two plates come together along fault lines. An earthquake may strike suddenly and violently, occurring at any time of the day or night, at any time of year. While FEMA and scientific organizations have extensively studied earthquakes and how to predict them, no reliable predictive methods exist. A small earthquake might crack windows and shake objects off shelves, but larger events may cause death and massive destruction. They often devastate an affected community and debilitate the economy.

Type

An earthquake is measured in magnitude and intensity. The Richter magnitude scale (known as the "Richter Scale") is used by the United States Geological Survey (USGS) to estimate ***magnitudes*** for all large earthquakes, and is expressed in whole numbers and decimals. The Modified Mercalli Scale (MMS) measures ***intensity,*** or earthquake severity. It is the expression of the amount of shaking at a given location on the ground surface, and MMS classifies earthquakes by their effects.[1] Roman numerals are assigned to categories corresponding to effects observed during and after the event. The scale captures intensity (ranging from imperceptible shaking to wholesale destruction) at a specific location, such as at the epicenter or over a specific area. The strength of the earthquake is reduced as the distance from the epicenter increases. **Table 3.3-a** shows a comparison of the MMS and Richter Scale.

[1] https://earthquake.usgs.gov/learn/topics/mercalli.php

Table 3.3-a: The Modified Mercalli Scale (Intensity) versus the Richter Scale (Magnitude)

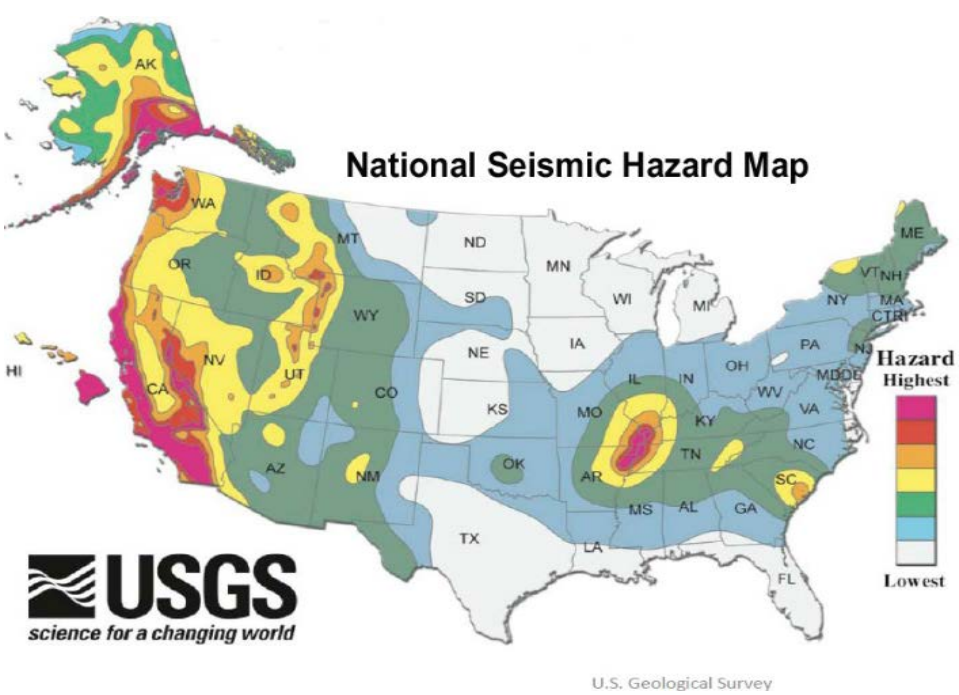
Category	Effects	Richter Scale
I. Instrumental	Not felt	1-2
II. Just perceptible	Felt by only a few people, especially on upper floors of tall buildings	3
III. Slight	Felt by people lying down, seated on a hard surface, or in the upper stories of tall buildings	3.5
IV. Perceptible	Felt indoors by many, by few outside; dishes and windows rattle	4
V. Rather strong	Generally felt by everyone; sleeping people may be awakened	4.5
VI. Strong	Trees sway, chandeliers swing, bells ring, some damage from falling objects	5
VII. Very strong	General alarm; walls and plaster crack	5.5
VIII. Destructive	Felt in moving vehicles; chimneys collapse; poorly constructed buildings seriously damaged	6
IX. Ruinous	Some houses collapse; pipes break	6.5
X. Disastrous	Obvious ground cracks; railroad tracks bent; some landslides on steep hillsides	7
XI. Very disastrous	Few buildings survive; bridges damaged or destroyed; all services interrupted (electrical, water, sewage, railroad); severe landslides	7.5
XII. Catastrophic	Total destruction; objects thrown into the air; river courses and topography altered	8

Source: http://earthquake.usgs.gov/learn/topics/mag_vs_int.php

Location

An Earthquake may occur along any of the state's several fault lines. The Ramapo Fault zone (a system of faults), the most predominant, spans southern New York and parts of Pennsylvania and New Jersey. The Western Quebec Seismic Zone produces periodic earthquakes, most which are less than 4.0 on the Richter Scale, that are felt in New York.

Figure 3.3-1: National Seismic Hazard Map



Source: *USGS, September 2016*

The USGS National Seismic Hazard Map on the previous page **(Figure 3.3-1)** indicates that Herkimer County and its municipalities are minimally susceptible to earthquakes. The risk in northern Herkimer County is only slightly higher. USGS regularly updates its maps to help government officials assess current potential vulnerability. The insurance industry also relies on these updates to evaluate exposure and risk, which helps establish earthquake insurance premiums.

Extent

Earthquakes are rare, but their potential for occurrence is greater than zero. The extent of an earthquake with the potential to affect the Planning Area is shown in **Table 3.3-b.**

Table 3.3-b: Earthquake Extent in Herkimer County

Extent of Earthquake in Herkimer County, NY	
Highest Earthquake Value Recorded in New York State	Richter Scale – 5.8 magnitude (8/23/2011, due to distance from epicenter, higher impact not felt in Herkimer County)
Speed of Onset	Without Warning
Duration	Primary shock - 10-30 seconds Aftershocks – intermittent for weeks or months

Vulnerability increased with the presence of softer soils, which can become fluid in character during ground movement. The term "liquefaction" is commonly used to describe how saturated soils react to an earthquake. The National Earthquake Hazard Reduction Program (NEHRP) categorizes New York soil into five classes, labeled A to E. Class A soils tend to reduce ground motion, while Class E soil is likely to amplify and magnify seismic waves.[2]

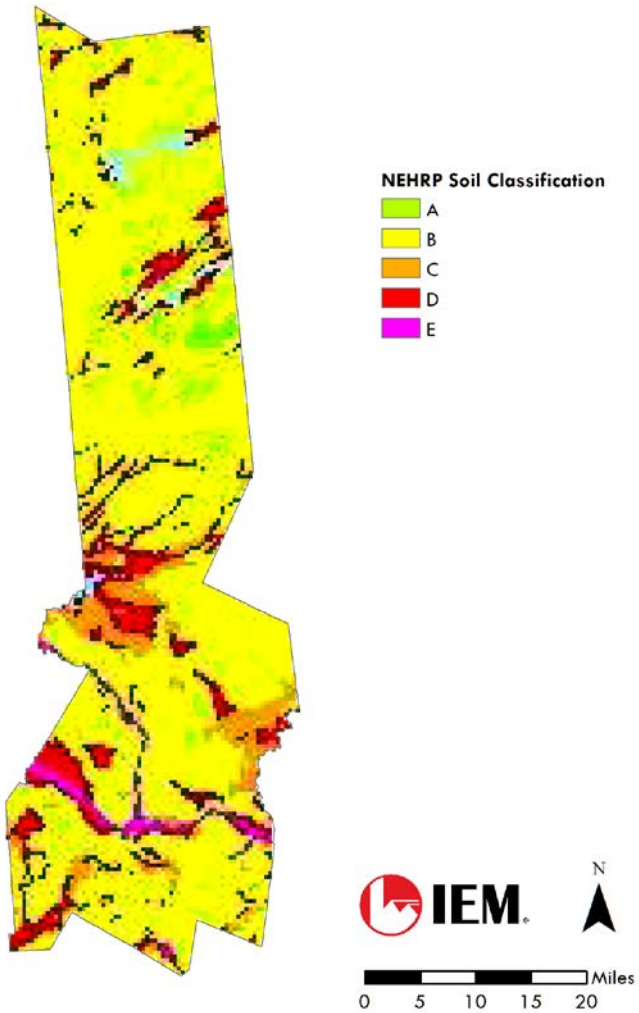
Table 3.3-c: NEHRP Soil Classes

Soil Classification	Soil Types
A	Very hard rock (e.g., granite, gneisses; and most of the Adirondack Mountains)
B	Rock (sedimentary) or firm ground
C	Stiff Clay
D	Soft to medium clays or sands
E	Soft soil (including fill, loose sand, waterfront, lake bed clays)

Herkimer County soils are primarily Class B and Class D types. The soil classification map on the next page (**Figure 3.3-2**) shows where soils in classes A through E may be found.

[2] 2015 NYS HMP, p. 3.7-8 and 9

Figure 3.3-2: NEHRP Soil Classification Map, Herkimer County



***Source**: NYS Geological Survey, as depicted in the 2014 NYS HMP. Based on correlations of surficial geologic materials to NEHRP soil class and generalized depth to bedrock conditions. Note: Actual site specific conditions may vary.*

Previous Occurrences

The largest New York earthquake on record occurred in 1944. It registered 5.8 on the Richter scale, and the epicenter was in the town of Massena (St. Lawrence County), north of Herkimer County. The 2014 NYS HMP identifies one previous earthquake occurrence in Herkimer County,[3] but none of the seven occurrences mentioned affected the Planning Area. **Table 3.3-d** summarizes information gathered from various data sources and municipalities. Following the table is a map (**Figure 3.3-3**) showing the location of previous occurrences statewide.

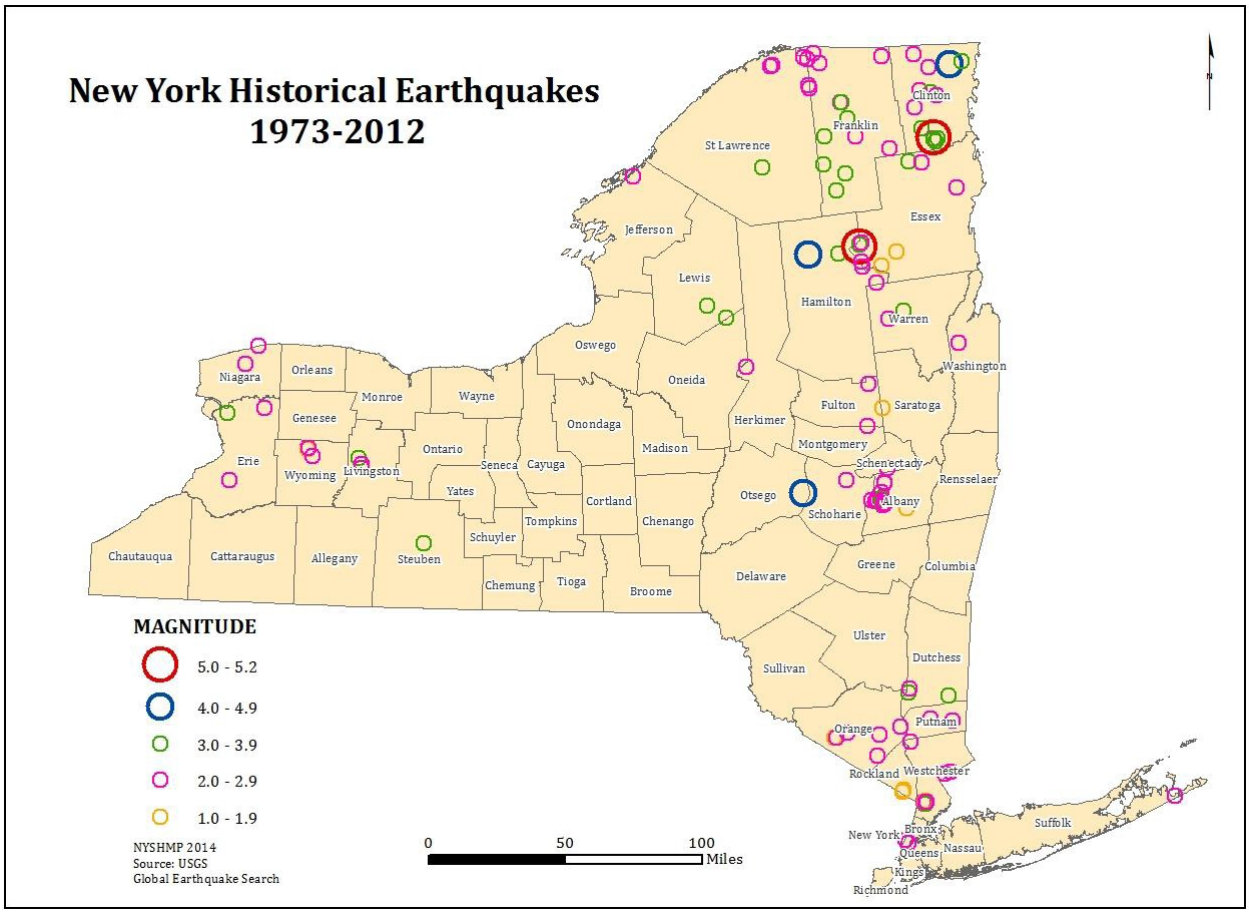
[3] 2014 NYSHMP, p. 3.7-13

Table 3.3-d: Earthquake History of Herkimer County (1840 – 2016)

Date/Disaster Declaration	Location	Extent	Description/Reported Damage
January 16, 1840	Herkimer	3.7	No reference and/or no damage reported.
January 19, 1982	[Unknown]	4.7	The epicenter was 173.9 miles from Herkimer County.
October 7, 1983	Adirondacks	5.3 Moderate, Intensity: VI-VII	The epicenter was 20 km east of Blue Mountain Lake, or 71.9 miles from Herkimer, NY. The initial shock and tremors were felt in Herkimer County. Damages included a rotated, cracked chimneys and walls, and broken windows. No record of injury or damage in Herkimer County.
June 17, 1991	Richmondville	4.0 Light, Intensity: IV-V	The epicenter was 31.7 miles from Herkimer. No record of injury or damage in the county.
April 20, 2000	Adirondacks	4.0 (8:46 a.m.) 5.2 (10:50 a.m.)	Two earthquakes were recorded on the same day. The epicenter of the first was registered at 73.7 miles from Herkimer County, the second quake in the Town of Newcomb in Essex County, 119.4 miles from Herkimer. The event was felt in 12 states and Canada. No injuries or major damage were reported.
April 20, 2002 FEMA DR 1415	"North County" Earthquake	5.1	The largest earthquake since 1983 to affect northeastern New York, with some affects in Herkimer County. The President authorized a FEMA declaration, with total eligible damages of $2+ million counted in Washington, Warren, Hamilton, Franklin, Essex, and Clinton counties. No record of injury or damage in Herkimer County.
August 23, 2011	Mineral, Virginia	5.8	The strongest earthquake since the 1944 earthquake in Massena, NY. Impacted several states and caused precautionary evacuations at New York City airports. There were no documented injuries but minor property damage was reported, including partial chimney collapses. No record of injury or damage in Herkimer County.

***Sources**: New York State Hazard Mitigation Plan, 2014 (additional statistics extracted from the NYS Statistical Yearbook 2006); Herkimer County All-Hazards Mitigation Plan, (2014 DRAFT);* http://www.city-data.com/city/Herkimer-New-York.html#ixzz4QTfyHyrU

Figure 3.3-3: Previous Earthquake Occurrences, New York (1973-2012)



***Source**: USGS Global Earthquake Search, as depicted in the 2014 NYS HMP*

New York State's only Presidential Disaster Declaration for earthquake, in 1954, covered six counties, including Hamilton County, which lies on Herkimer County's eastern border.[4]

Probability of Future Events

Historical earthquake activity in the Herkimer area is near the New York state average, which is 88% less than the overall U.S. average.[5] Although there is a 100% chance at any given moment that an earthquake can occur, using historical information to predict future occurrences, New York State can expect damaging earthquake events on average only once every 22 years.[6] The 2014 NYS HMP summarizes the potential for future earthquakes as relatively low, based on frequency alone. However, the state is considered vulnerable because large events have previously occurred. Communities with high population density and many older, deteriorating buildings are especially at risk.

[4] Source: 2014 NYS HMP, FEMA: DR:1415, 5/16/2002p. 3.7-16
[5] Source: http://www.city-data.com/city/Herkimer-New-York.html
[6] 2014 NYSHMP, p. 3.7-18

Impacts and Consequences

No major impacts to the people, built environment, natural environment, or economy have been recorded from previous occurrences; however, earthquake risk is primarily based on population and the built environment. There is some potential for impacts to the natural environment and the Planning Area's economy through direct and indirect consequences described in the primary and secondary impact descriptions below.

Potential Primary Impacts

- Life, safety, and health of residents.
- Structural damage to buildings and infrastructure networks: Water, power, communication, and transportation lines.
- Other damage: May include surface rupture, fissuring, settlement, and permanent horizontal and vertical shifting of the ground.

Potential Secondary Impacts

- Landslide
- Seiche
- Liquefaction
- Fires
- Dam/Levee failure
- Economic loss

Population

More heavily populated areas in high seismic hazard zones are the most vulnerable, while uninhabited areas are less vulnerable. The northern region of Herkimer County and the municipalities in that region are sparsely populated and are less vulnerable to impacts from earthquake.

Built Environment

Older, multi-story buildings in poor repair are the most vulnerable to the effects of earthquake. Ground movement can result in buildings shifting on their foundations; structural damage; exterior siding failure (materials such as brick may crack and fall); breaking windows; and roof collapses. **Figure 3.3-4** illustrates the potential effects of earthquake on a masonry building.

Natural Environment

Although movement of the earth during an earthquake can produce significant impacts to the natural environment, including landslide and liquefaction, there is no historical report of impacts of this kind in the Planning Area.

Economy

Economic losses from earthquake could result from both direct and indirect impacts to homes, infrastructure, businesses, and industries.

Figure 3.3-4: Structural Damage to a Masonry Building, 1994 Northridge, California Earthquake

***Source**: "Preventing Earthquake Disasters: The Grand Challenge in Earthquake Engineering: A Research Agenda for the Network for Earthquake Engineering Simulation, 2004, The National Academies Press*

Direct Economic Impacts

- Cost of repairs or replacement for damaged homes, infrastructure, and local businesses
- Increased costs for supplies or materials

Indirect Economic Impacts

- Loss of wages due to businesses being temporarily or permanently closed
- Loss of customers due to business closures

3.3.2: Risk Analysis

Each jurisdiction in the Planning Area conducted an earthquake risk analysis to consider location, probability of future occurrences, magnitude/severity, and significance, from which a county overall risk score was derived. A summary of municipal analyses of potential risks and consequences for earthquake is shown in **Table 3.3-e.**

Table 3.3-e: Summary of Earthquake Impacts and Consequences, by Jurisdiction

Summary of Earthquake Impacts and Consequences, by Jurisdiction	Level of Concern/Ranking	Mass Casualty Potential	Transportation Infrastructure Damaged	Impact on Emergency Response Operations	Communication Failure	Damage to Homes and Businesses	Health and Medical System Impacts	Water System Damage or Failure	Utility System Damage or Failure	Sewer System Damage or Failure	Environmental Damage or Long Term Impact	Agricultural Losses - Crops	Agricultural Losses - Animals	Economic Impact - Direct or Indirect	Civil Unrest	Commodity Shortage	Impact to Public Confidence in Governance	Impacts to Cultural or Social Assets	Impact to Municipal Buildings/Parks
Herkimer County	-	-	x	-	x	-	-	x	-	-	-	-	-	-	x	-	x	x	-
Village of Dolgeville	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Town of Fairfield	-	-	-	-	-	-	-	X	X	-	-	-	-	-	-	-	-	-	-
Town of Frankfort	-	-	-	-	-	-	-	x	x	-	-	-	-	-	-	-	-	-	-
Village of Frankfort	-	-	-	-	-	-	-	x	x	-	-	-	-	-	-	-	-	-	-
Town of German Flatts*	L	L	M	L	M	L	L	M	L	L	L	L	L	L	M	L	M	M	L
Town of Herkimer	-	-	x	-	-	-	-	x	x	x	-	-	-	-	-	-	-	-	-
Village of Herkimer	-	-	x	-	-	-	-	x	x	x	-	-	-	-	-	-	-	-	-
Village of Ilion	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
City of Little Falls	-	x	x	x	x	x	x	x	x	x	x	-	-	x	x	x	x	x	-
Town of Little Falls	-	x	x	x	x	x	x	x	x	x	x	-	-	x	x	x	x	x	-
Town of Manheim	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Village of Mohawk	-	-	-	-	-	-	-	x	x	x	-	-	-	-	-	-	-	-	-

**Town of German Flatts used a low (score 3), medium (2), and high (1) ranking system, and added "Level of Concern/Ranking"*

Jurisdictional annexes include information earthquake impact on each community.

Table 3-f: Summary of Overall Risk Scores for Earthquake, by Jurisdiction

Jurisdiction	Location	Probability of Future Occurrences	Magnitude/ Severity	Significance	Overall Risk Score[7]
Herkimer County	1	1	1	1	4
Village of Dolgeville	1	1	1	1	4
Town of Fairfield	3	1	1	1	6
Town of Frankfort	1	1	1	1	4
Village of Frankfort	1	1	1	1	4
Town of German Flatts	4	2	1	2	9
Town of Herkimer	3	1	2	2	8
Village of Herkimer	3	1	2	2	8
Village of Ilion	1	2	1	2	6
City of Little Falls	4	2	3	3	12
Town of Little Falls	4	2	3	3	12
Town of Manheim	2	1	1	1	5
Village of Mohawk	1	1	1	1	4
AVERAGE SCORE					**6.6 = Low**

[7] The scoring methodology is described in **Section 3.0, Base Plan**

Risk Summary – EARTHQUAKE

Location – Widespread **Probability of Future Occurrence** – Low **Magnitude/Severity** – Low **Significance** - Low **Overall Risk Score** – Low	The compilation of jurisdiction risk scores, along with consideration of the hazard profile and potential impacts and consequences, indicates that earthquake is a **low-risk** hazard.
EARTHQUAKE Hazard Priority – Low	

3.3.3: Vulnerability Assessment

A baseline vulnerability assessment to quantify potential earthquake loss was conducted because there have been occurrences elsewhere in the state. Given the hazard's low overall risk score, the HMWG determined that no mitigation actions are currently required.

Methodology

The 2014 NYS HMP conducted a vulnerability analysis of a potential earthquake using HAZUS-MH. Analysis for the state's plan provided a method to quantify and compare the relative earthquake risk of all New York counties through an annualized loss estimation methodology. The State reviewed estimated losses associated with ground shaking for eight return periods using USGS seismic probabilistic curves: 100; 250; 500; 750; 1,000; 1,500; 2,000; and 2,500-year ranges. The aggregation of these losses and exceedance probabilities were annualized to estimate the annual cost of earthquake losses.

Population Vulnerability

Earthquake vulnerability is primarily based on population and the built environment. The extent of impact to the population can be classified within the seismic zones, as described in the 2014 NYS HMP.[8]

Table 3.3-g: Population at Risk in Earthquake Seismic Zones, Herkimer County

Spectral Acceleration (%gravity)	8-16	16-20	20-24	24-28	28-32	32-36	36-40	40-60
Population at Risk	673	59,528	2,538	1,515	265	0	0	0

At-risk populations typically require special assistance for preparedness and response measures. These include alternative warning methods, evacuation and sheltering, and daily living needs. Individuals with medical conditions that are stable day-to-day may become unstable during a disaster, requiring monitoring and access to immediate medical assistance or treatment. In future in planning cycles, the HMWG should consider actions that may be needed to protect vulnerable populations.

[8] 2014 NYSHMP, Table 3.7g. Data is identified by HAZUS-MH analysis of spectral acceleration (%g)

Built Environment Vulnerability

Many factors affect the survivability of structures and systems from earthquake-caused ground motions: proximity to the fault; direction of rupture, epicenter location, and depth; magnitude; geologic and soil conditions; construction type and quality; and building configurations and height. There are similar concerns about utility, transportation, and communications systems.

The HMWG analyzed property values for potential loss based on the number of structures at risk (described in **Table 3.3-h**).[9] **Table 3.3-i** shows the value of at-risk structures from a 2,500-year earthquake scenario. Estimated losses would vary depending on event location and magnitude.

Table 3.3-h: HAZUS-MH Earthquake Loss Estimation, Herkimer County (x $1,000)

Structural Damage	N0n-Structural Damage	Contents Damage	Inventory Loss	Relocation Loss	Capital Related Loss	Wage Loss	Rental Income Loss	Total Loss
$29	$85	$27	$1	$22	$9	$12	$11	$196

Table 3.3-i: Building Inventory Value, Herkimer County (millions of dollars)

Residential	Non-Residential	Total
$3,411	$1,085	$4,496

Critical Infrastructure Vulnerability

The New York State Department of Transportation maintains inventories of county/municipal- and state-managed roads and bridges. Herkimer County manages 578.31 miles of roads and 66 bridges (five co-owned with Fulton and Oneida Counties). Critical infrastructure (roads and bridges) and electric, water, and gas lines are at risk to damage from a significant earthquake. An event could disrupt communications and transportation, leading to delays in emergency response. The Herkimer County Highway Department and the County work on a rotating schedule to replace older bridges in poor condition.

Cultural and Historical Resources Vulnerability

Historic and cultural assets are susceptible to earthquake damage because they were built before the today's building codes and development regulations were instituted. Only in the mid-20th century did builders begin considering risk from natural hazards or build using rigid construction standards. In high-risk communities, mitigation building practices may include reinforced foundations and structural components, impact-resistant windows, or the practice of securing interior objects.[10]

[9] 2014 NYS HMP, HAZUS-MH Loss Estimation, Table 3.7i, p. 3,7-24

[10] http://www.conservationtech.com/FEMA-WEB/FEMA-subweb-EQ/02-02-EARTHQUAKE/1-BUILDINGS/E~-Mitigation-Measures.htm

Economic Vulnerability

Direct economic losses described in **Table 3.3-j** are based on data from the 2014 NYS HMP.

Table 3.3-j: Direct Economic Building Losses for 100-Year Earthquake Event, Herkimer County (X $1,000)

Structural Damage	N0n-Structural	Contents Damage	Inventory Loss	Relocation Loss	Capital Related Loss	Wage Loss	Rental Income Loss	Total Loss
$36	$85	$6	0	$24	$7	$9	$10	$156

Future Population and Development Trends

Planning Area population trends show a slight decline over the past 40 years. This is not expected to change within the next few years. Changes in economic development and land use could impact population growth or decline and will be monitored and evaluated in the next planning cycle. Specific population trends within municipalities are described in the Jurisdiction Annexes.

Current county and municipal land use and zoning policies and programs do not indicate a high potential for large-scale development in the future. Small-scale development can be managed within the planning and regulatory capabilities of each local jurisdiction, without impacting identified hazard areas. The low probability of an earthquake event, combined with current higher building standards, lessens Herkimer County's vulnerability to earthquake.

Impacts of Climate Change

Earthquake is a geological phenomenon. As such, climate change and related environmental variables—such as temperature, precipitation, water quantity/quality, storm frequency, and intensity—are not likely to affect earthquake risk and vulnerability.

Factors for Consideration in the Next Planning Cycle

Future monitoring and evaluation of this plan should consider the following factors, as well as other information from NYS HMP updates:

- Have earthquakes occurred since the adoption of this plan?
- Have new scientific studies, research, or practices changed the methods of predicting earthquakes or assessing risk and vulnerability?
- Are there new building or land development policies, plans, or practices that address earthquakes?
- Has there been significant change in the population, built environment, natural environment, or economy that could affect the risk or vulnerability to earthquakes?

SECTION 3.4: EXTREME HEAT

NOTE: In the previous hazard and risk planning efforts for the *2015 HMP DRAFT*, **Extreme Heat** was considered jointly with **Extreme Cold** in the hazard category "**Extreme Temperatures**". The HMWG chose to consider **Extreme Heat** as a separate category in this planning process, and combine **Extreme Cold** with **Severe Weather: Winter Weather (Section 3.7.5)**.

3.4.1: Hazard Profile

Heat is one of the leading weather-related killers in the United States, despite the ability to prevent or reduce the risk of heat exhaustion and heat stroke through outreach and intervention.[1] Other natural hazard events such as floods and severe winter weather occur more frequently in Herkimer County and New York, overshadowing concern about extreme heat in hazard mitigation planning. Extreme heat must be considered, however, because its effects may be devastating to the population, built environment, natural environment, and the economy. Because this is a high-impact hazard and there have been previous occurrences in the Planning Area, extreme heat is profiled to determine the overall risk to jurisdictions. This section emphasizes the preparedness role of public education and early warning in reducing the threat to humans.

Hazard/Problem Description

Exposure to extreme heat is a public health problem because it may result in heat-related illnesses and death. In 2015, 45 people nationwide died as a result of extreme heat. This figure is twice that of 2014 but well below the 10-year average of 113 heat related fatalities.[2] Exposure to extreme heat also may exacerbate pre-existing medical conditions, especially those that affect the body's heat regulatory system.

Type

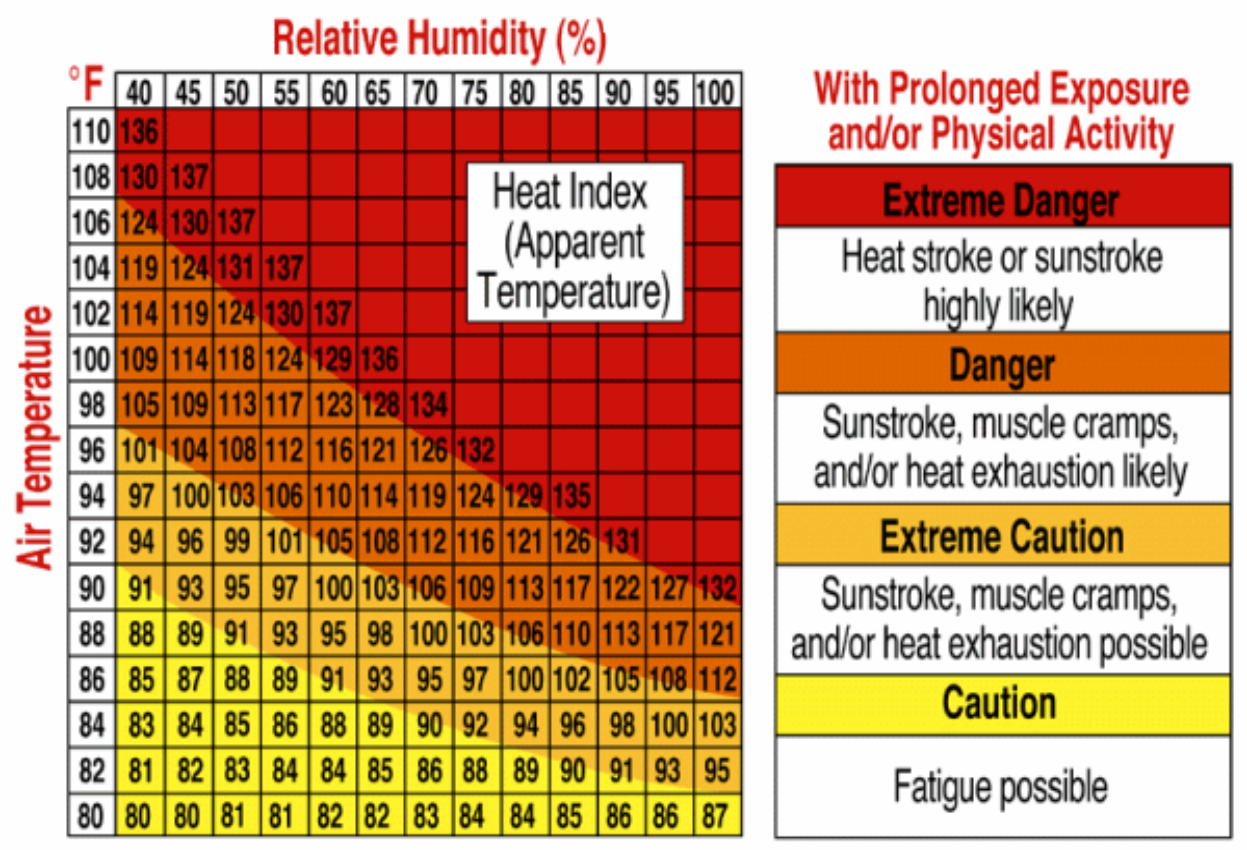
Extreme heat is defined as temperatures that hover 10°F or more above the average regional highs and last for several weeks. A heat wave is the term given to conditions in which there is a prolonged period of excessively hot (and sometimes humid) weather compared to normal climate patterns.

Extreme heat usually stems from the existence of a high-pressure system that stalls off the Atlantic Coast. The system combines with airflow from the southwest or south. This pattern of circulation brings warm and often humid weather in the summer and milder temperatures in the fall, winter, and spring.

The relationship between heat and humidity is best explained through the Heat Index Chart, shown here in **Figure 3.4-1**, developed by the National Weather Service (NWS) to show how the combined threat of heat and humidity impact people.

[1] EPA's *Excessive Heat Events Guidebook* at: www.epa.gov/heatisland/about/pdf/EHEguide_final.pdf).
[2] www.nws.noaa.gov/os/hazstats/heat15.pdf

Figure 3.4-1: Heat Index and Relative Humidity, Effects on People



°F	40	45	50	55	60	65	70	75	80	85	90	95	100
110	136												
108	130	137											
106	124	130	137										
104	119	124	131	137									
102	114	119	124	130	137								
100	109	114	118	124	129	136							
98	105	109	113	117	123	128	134						
96	101	104	108	112	116	121	126	132					
94	97	100	103	106	110	114	119	124	129	135			
92	94	96	99	101	105	108	112	116	121	126	131		
90	91	93	95	97	100	103	106	109	113	117	122	127	132
88	88	89	91	93	95	98	100	103	106	110	113	117	121
86	85	87	88	89	91	93	95	97	100	102	105	108	112
84	83	84	85	86	88	89	90	92	94	96	98	100	103
82	81	82	83	84	84	85	86	88	89	90	91	93	95
80	80	80	81	81	82	82	83	84	84	85	86	86	87

***Source**: National Weather Service, NOAA*

Location

The whole Planning Area is susceptible to the effects of extreme heat. Temperatures at the higher elevations of northern Herkimer County run cooler than those at lower elevations.

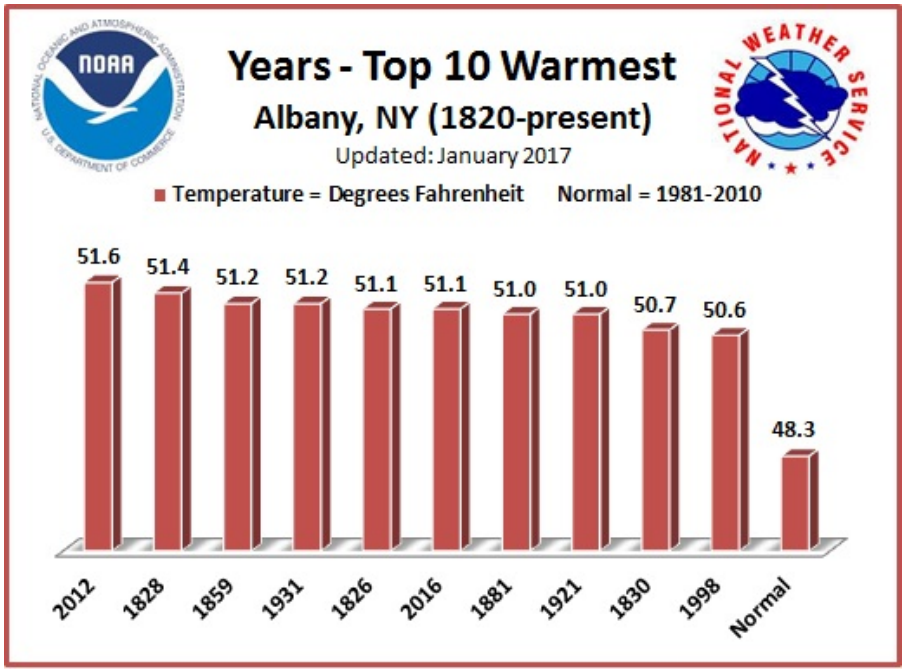
Extent

The average maximum temperature in Herkimer County ranges from 75° to 83°F.[3] Historical data shows that the top ten years with the highest number of 90°+ days on record occurred sporadically between 1874 and the present day. The mean number of days per year with temperatures above 90° is 10. Between 2006 and 2016, the number of days with temperatures over 90° ranged from four days (2009) to fifteen days (2013 and 2016).[4]

[3] USDA/NRCS Data, 2006; referenced in the "Flood Insurance Study, Herkimer County, New York, (Preliminary)"; 9/30/11

[4] http://www.weather.gov/media/aly/Climate/90DegreeDays.pdf

Figure 3.4-2: Top 10 Warmest Years, National Weather Service Office, Albany, NY (1820 – January 2016)



***Source**: NWS, http://www.weather.gov/images/aly/Climate/Years_Warmest.JPG*

Previous Occurrences

Based on NCDC records summarized in the 2014 NYS HMP,[5] the Planning Area experienced 15 extreme heat events between 1960 and 2012. Data covering the period 2013 through August 2016 shows no recorded extreme heat incidents. A SHELDUS search revealed that a heat event affected Herkimer County between 2010 and 2012 and resulted in one injury, $2,890 in property damage, and no crop damage.

Further research of the NCDC Storm Events Database during this planning cycle revealed two "excessive heat" events[6] recorded for Herkimer County between 1950 and November 2016[7]; however, there is no record of fatalities, injuries, property damage, or crop damage resulting from either event. They occurred in the "Northern Herkimer (zone)" and the "Southern Herkimer (zone)" on March 8, 2000. No additional information about extreme heat events was reported by jurisdictions in the Planning Area.

Research conducted during this planning cycle shows that previous occurrences were limited to one day of extreme heat. There have been no Presidential Disaster Declarations in New York for extreme heat.

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[5] Documented in the 2014 NYS HMP, as determined through SHELDUS analysis, pp. 3.8-11

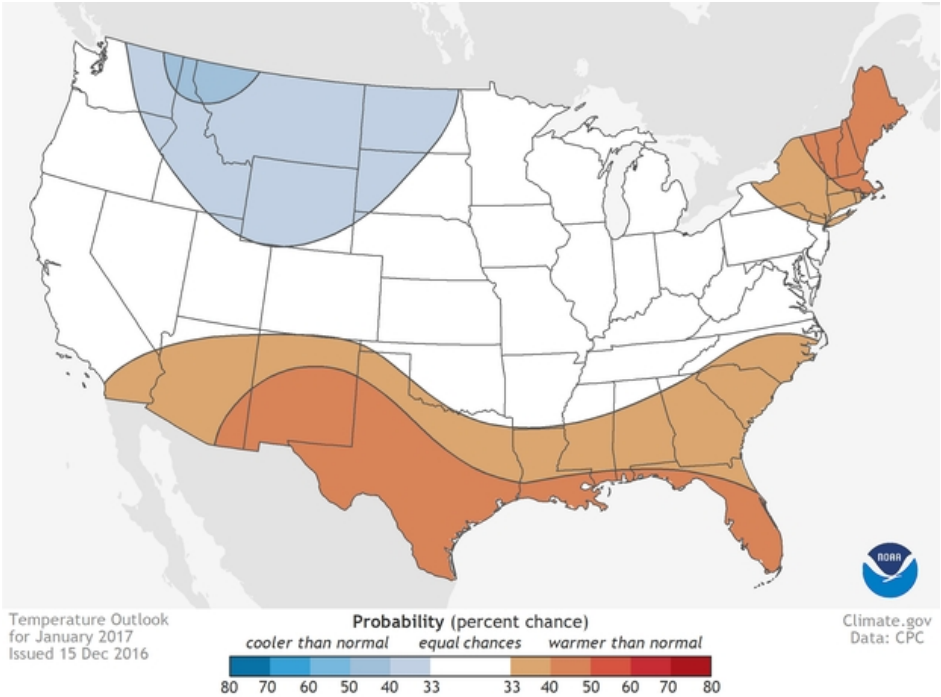
[6] The Storm Database, NCDC, documents National Weather Service data that, for Herkimer County, is frequently split into two zones – "Northern Herkimer" and "Southern Herkimer". Because the Planning Area is split into two zones, a single weather or hazard occurrence that impacts both areas may be reported as two "events".

[7] https://www.ncdc.noaa.gov/stormevents/

Probability of Future Events

The statewide average probability for an extreme heat event is 6%. Future probability for Herkimer County is 0%, a figure based on the low number of previous events.[8] Various predictive tools are available to anticipate periods of extreme heat. The map displayed in **Figure 3.4-3** is one such tool. It is used to convey the probability of temperature extremes (in percent chance) during a specific period.

Figure 3.4-3: Temperature Probability Outlook for January 2017 (Percent Chance)



***Source**: NOAA, Climate.gov, Issued 15 December 2016*

Impacts and Consequences

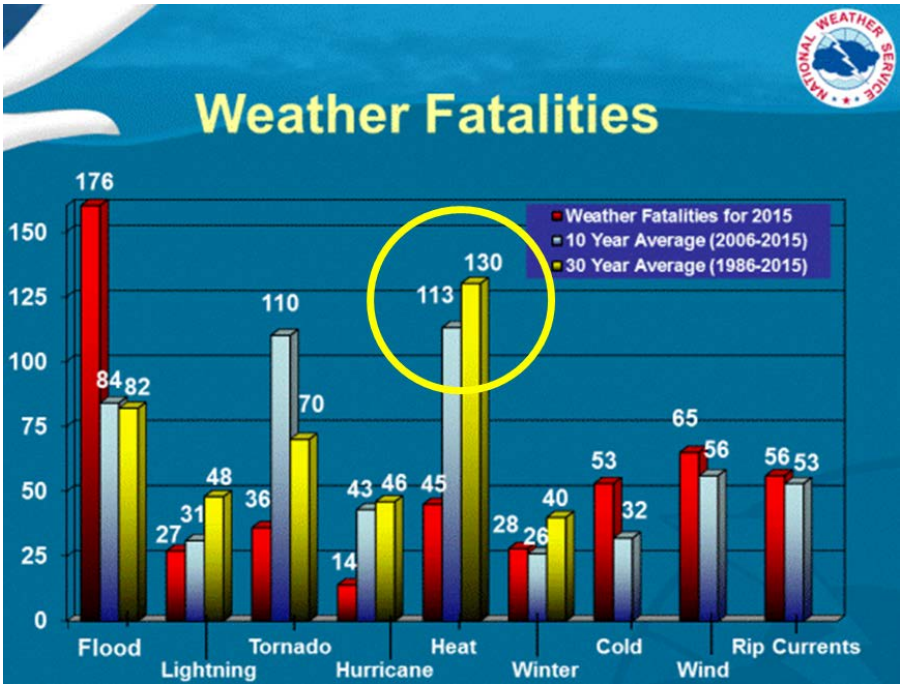
Atmospheric variables can affect the impacts of extreme heat. Humid conditions add to human discomfort and can increase the adverse effects of prolonged exposure. Extended periods of hot weather in combination with lack of rainfall and dry conditions may lead to drought, impacting to crops and livestock, and indirectly, the economy.

Population

Extreme heat may cause serious injury or death, though in small numbers. The greatest human concern is for vulnerable populations, including children and the elderly. Despite the many warnings issued about hot-weather preparedness, extreme heat is a predominant cause of weather-related fatalities. **Figure 3.4-4** illustrates the relationship between fatalities from extreme heat and other weather types for the year 2015.

[8] 2014 NYS HMP, p. 3.8-26

Figure 3.4-4: Heat-Related Fatalities for 2015



***Source**: NWS, http://www.nws.noaa.gov/om/hazstats.shtml*

Statistics for the same year (2015) illustrate that certain vulnerable populations are at increased risk of heat-related morbidity and mortality.[9] **Table 3.4-a** shows that males have a higher rate of heat-related fatality, consistent with the fact that typically more men have jobs that require outside work in extreme conditions.

Table 3.4-a: Heat-Related Fatalities, by Age and Gender, for 2015

Age Group	Female	Male	Total	Percent
0 to 9	1	4	5	**11.11%**
10 to 19	0	1	1	**2.22%**
20 to 29	0	2	2	**4.44%**
30 to 39	0	1	1	**2.22%**
40 to 49	0	3	3	**6.67%**
50 to 59	2	4	6	**13.33%**
60 to 69	3	8	11	**24.44%**
70 to 79	3	5	8	**17.78%**
80 to 89	4	4	8	**17.78%**
90+	0	0	0	**0.00%**
Unknown	0	0	0	**0.00%**
Total	**13 (28.89%)**	**23 (71.11%)**	**45**	**100.00%**

***Source**: NWS, http://www.nws.noaa.gov/os/hazstats/heat15.pdf*

[9] "Deaths Attributed to Heat, Cold, and Other Weather Events in the United States, 2006-2010", July 30, 2014; National Health Statistics Reports, Centers for Disease Control and Prevention; http://www.cdc.gov/nchs/data/nhsr/nhsr076.pdf

The Herkimer County Department of Health maintains a "Public Health Emergency Preparedness and Response Plan" (PHEPR) as part of the County's Comprehensive Emergency Management Plan.[10] The PHEPR identifies the risk of extreme weather and includes plans to assist those with special medical needs. As an example, the plan provides for the opening of cooling sites to shelter those who lack access to air conditioning. The following demographic groups are more susceptible to the effects of extreme heat:

- Older adults (age 65 and older)
- Young children (0-4 years)
- Women who are pregnant
- Persons with medical conditions (e.g., heart disease, diabetes, high blood pressure, insulin-dependent, dialysis)
- Persons with mental illness/disabilities or cognitive disorders
- Persons who use medical equipment (e.g., ventilators, oxygen, G-tubes)
- Individuals with drug or alcohol dependencies
- Persons with mobility devices (e.g., wheelchairs, walkers, canes)
- Persons who are non-ambulatory
- Persons who are socially isolated
- Persons who do not speak English with minimal access to information
- Economically disadvantaged, especially in urban areas

Heat Safety

The best approach to mitigating the effects of extreme heat on humans is aggressive preparedness education and providing timely warnings (see **Figure 3.4-5**).

Figure 3.4-5: National Weather Service: Warning Signs and Symptoms of Heat Illness

[10] Herkimer County Comprehensive Emergency Management Plan, updated April 2015, Appendix 11: Public Health Emergency Preparedness and Response Plan, p. 352 and 354. Additional reference for preparedness information: http://www.health.ny.gov/publications/1243/

The National Weather Service (NWS) issues initiate alerts (advisories or warnings) when the Heat Index is expected to affect public safety (see **Table 3.4-b**). The expected heat severity determines whether an advisory or warning is issued. A guideline for the issuance of excessive heat alerts is when the maximum daytime high is expected to equal or exceed 105°F, and a nighttime minimum high of 80°F or above is expected for two or more consecutive days. The NWS office in Albany issues heat-related advisories as conditions warrant.

Table 3.4-b: NWS Heat Watch and Warning Products

Advisory, Watch or Warning	Conditions
Excessive Heat Outlook	The potential exists for an excessive heat event in the next 3-7 days. • Provides information to the Heat Index United States forecast map for those who need lead time to prepare for the event: public utilities, emergency management, and public health officials.
Excessive Heat Watch - Be Prepared!	Conditions are favorable for a heat event in the next 24 to 72 hours. • Issued when the risk of a heat wave has increased but its occurrence and timing is still uncertain.
Heat Advisory – Take Action!	Issued within 12 hours of the onset of dangerous heat conditions. • When the maximum heat temperature is expected to be 100° or higher for at least two days and nighttime air temperatures will not drop below 75°. • Criteria vary across the country, especially in areas not used to dangerous heat conditions. • Take precautions to avoid heat illness. • Not taking precautions could lead to serious illness or death.
Excessive Heat Warning – Take Action!	Issued within 12 hours of the onset of extremely dangerous heat conditions. • When the maximum heat index temperature is expected to be 105° or higher for at least two days and nighttime air temperatures will not drop below 75°. • Criteria vary across the county, especially in areas not used to dangerous heat conditions. • Take immediate precautions to avoid heat illness. • Not taking precautions could lead to serious illness or death.

***Source**: National Weather Service Forecast Office;* http://www.nws.noaa.gov/om/heat/ww.shtml

Built Environment

Extreme heat has very little impact on individual homes and businesses. Overall, however, the increased use of air conditioning in homes and work places during heat events may result in significant energy demand that leads to utility "brownouts" and "blackouts."

- ***Brownouts*** are an intentional or unintentional drop in voltage in an electrical power supply system or grid. Intentional brownouts are used by power companies in an emergency for load reduction to prevent a total power outage. They may last for minutes or hours. Electrical equipment responds differently to brownouts. Some devices will be severely affected, while others may not be affected at all.

- ***Blackouts*** are short- or long-term losses of electrical power to an area. They can occur for many reasons, but a system overload, such as one occurring during an extreme heat event, may lead to a blackout.

Based on the analysis of the effects of extreme heat to the built environment, including cultural and historic resources, potential risk is limited to temporary loss of power. Critical assets such as roads and water distribution systems may experience minimal disruption as an indirect consequence of extreme heat.

Heat Islands

A primary concern of extreme heat events is the increased demand for air conditioning within homes and businesses. Heat islands are zones of relative warmth created by urban air and surface temperatures that are higher than those of nearby rural areas. Air temperatures in a large city can be 2 to 22°F higher than its rural surroundings. **Figure 3.4-6** (next page) describes "heat islands," their effects on humans, and mitigation measures.

Economy

Extreme heat affects the economy through increased food prices. The hazard may result in increased costs for healthcare and road maintenance and repair. Extreme heat can cause short- or long-term impacts to agriculture and the food supply system by affecting the water supply. This, in turn, reduces crop production and increases livestock mortality.

Primary Economic Impacts:
- Illness and loss of life
- Loss of Crops and Livestock
- Power Failure

Secondary Economic impacts:
- Drought
- Water Shortage
- Food Supply
- Wildfire
- Transportation Hazards (thermal expansion of concrete and steel leads to buckling of roads and rails)
- Economy

Cultural and Historical Resources

There is no potential direct impact to cultural or historical resources from extreme heat other than potential temporary disruption of power. In an extended period of extreme heat, there could be an indirect economic impact from loss of revenue if the resource is tourism-dependent. Each jurisdiction in the Planning Area conducted an analysis of potential impacts and consequences for the hazard.

Figure 3.4-6: Heat Islands

WHAT IS A "HEAT ISLAND"?

Heat islands[11] are zones of relative warmth created by urban air and surface temperatures that are higher than those of nearby rural areas. Air temperatures in a large city may be 2 to 22°F higher than its rural surroundings and contribute to an increased demand for air conditioning within homes and businesses.

In general, people living in and around cities experience summertime temperatures that are higher than those in surrounding natural areas. Urban "heat islands" increase energy demand, raise air pollution levels, and cause heat-related illness and death.

Heat Islands affect people in the following ways:

- Health: Breathing problems, heat cramps, and heat stroke.
- Air Quality: Increased use of air conditioning raises utility bills and increases power plant emissions of carbon pollution that contribute to the effects of climate change. Higher temperatures accelerate the chemical reaction that produces ground-level ozone, or smog.
- Water Quality: Hot pavements heat stormwater runoff, which can hurt aquatic life in local waterways.
- Energy Use: Heat islands are responsible for 5-10% of summertime electricity demand, leading to higher electric bills, pressure on the electric grid, and brownouts and blackouts.

The following changes in urban areas can lead to higher urban temperatures:

- Removing trees and vegetation eliminates the natural cooling effects of shade and evaporation of water from soil and leaves.
- Pavement, rooftops, and other non-reflective surfaces absorb heat during the day and release it at night, inflating overnight temperatures.
- Tall buildings and narrow streets reduce wind flow and hot air that is trapped between them.
- Waste heat from vehicles, factories, and air conditioners add warmth to the air, further increasing the heat island effect.

How can communities cool down?

- Installing reflective cool roofs.
- Planting trees and vegetation, including "green" roofs.
- Using cool paving materials for roads, sidewalks, and parking lots.

Natural Environment

Extended periods of extreme heat may have devastating effects on the natural environment. This includes the water supply, affecting the availability of drinking water, as well as water navigation and recreation. Crop failure may result from lack of water for irrigation. When accompanied by drought, periods of extreme heat increase the risk of wildfires.

[11] U.S. Environmental Protection Agency, https://www.epa.gov/sites/production/files/2016-09/documents/heat_island_4-page_brochure_508_120413.pdf

Table 3.4-c: Summary of Analysis of Extreme Heat Impacts and Consequences, by Jurisdiction*

Summary of Extreme Heat Impacts and Consequences, by Jurisdiction	Level of Concern/Ranking	Mass Casualty Potential	Transportation Infrastructure Damaged	Impact on Emergency Response Operations	Communication Failure	Damage to Homes and Businesses	Health and Medical System Impacts	Water System Damage or Failure	Utility System Damage or Failure	Sewer System Damage or Failure	Environmental Damage or Long Term Impact	Agricultural Losses - Crops	Agricultural Losses - Animals	Economic Impact - Direct or Indirect	Civil Unrest	Commodity Shortage	Impact to Public Confidence in Governance	Impacts to Cultural or Social Assets	Impact to Municipal Buildings/Parks
Herkimer County	-	-	x	x	x	-	x	x	x	-	-	x	x	x	-	x	-	-	-
Village of Dolgeville	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Town of Frankfort	-	-	-	-	-	-	x	-	-	-	-	-	-	-	-	-	-	-	-
Village of Frankfort	-	-	-	-	-	-	x	-	-	-	-	-	-	-	-	-	-	-	-
Town of German Flatts*	L	L	M	L	M	L	L	M	L	L	L	L	L	L	M	L	M	M	L
Town of Herkimer	-	-	-	-	-	-	-	-	-	-	-	x	x	x	-	-	-	-	-
Village of Herkimer	-	-	-	-	-	-	x	-	-	-	-	-	-	-	-	-	-	-	-
Village of Ilion	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
City of Little Falls	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Town of Little Falls	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Town of Manheim	-	-	-	-	-	-	-	-	-	-	-	X	x	-	-	-	x	-	-
Village of Mohawk	-	-	-	x	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

**Town of German Flatts used a low (score 3), medium (2), and high (1) ranking system, and added "Level of Concern/Ranking". Impacts and consequences of extreme heat are also provided in the Jurisdiction Annexes.*

3.4.2: Risk Analysis

Each jurisdiction in the Planning Area conducted an extreme heat risk analysis to consider location, probability of future occurrences, magnitude/severity, and significance. An Overall Risk Score for extreme heat was determined by each jurisdiction. **Table 3.4-d** summarizes the jurisdictions' scores.

Table 3.4-d: Table 3.4e: Summary of Overall Risk Scores for Extreme Heat, by Jurisdiction

Jurisdiction	Location	Probability of Future Occurrences	Magnitude/ Severity	Significance	Overall Risk Score[12]
Herkimer County	3	3	1	2	9
Village of Dolgeville	1	2	1	1	5
Town of Frankfort	3	1	1	1	6
Village of Frankfort	3	1	1	1	6
Town of German Flatts	4	2	2	2	10

[12] The scoring methodology is described in Section 3.0 of the Base Plan

Jurisdiction	Location	Probability of Future Occurrences	Magnitude/ Severity	Significance	Overall Risk Score[12]
Town of Herkimer	3	2	2	2	9
Village of Herkimer	3	2	1	1	7
Village of Ilion	1	1	1	1	4
City of Little Falls	4	3	1	2	10
Town of Little Falls	4	3	1	2	10
Town of Manheim	4	3	1	2	10
Village of Mohawk	3	1	1	1	6
AVERAGE SCORE					**7.7 = Low**

Risk Summary – EXTREME HEAT

Location – Widespread **Probability of Future Occurrence** – Low **Magnitude/Severity** – Low **Significance** – Low **Overall Risk Score** – Low	The compilation of jurisdiction risk scores, along with consideration of the hazard profile and potential impacts and consequences, indicates that extreme heat is a **low-risk** hazard.
EXTREME HEAT Hazard Priority – Low	

3.4.3: Vulnerability Assessment

The HMWG determined that, while there is a potential for extreme heat to occur in Herkimer County, it is a sporadic occurrence and a vulnerability assessment is not justified. Based on this determination, no actions are needed in this planning cycle to address mitigation of this hazard. Although a vulnerability assessment was not conducted for extreme heat, the following information is provided as guidance for consideration in future planning cycles.

Future Development Population Growth

Municipal land use and zoning policies and programs cannot directly affect extreme heat. Despite the overall trend in declining populations in most municipalities, future housing growth could result in a higher at-risk population vulnerable to extreme temperatures in the future. Population and development trends will be evaluated in the next planning cycle to determine whether there is any change in vulnerability to extreme temperature.

Impacts of Climate Change

Globally, unusually hot summer temperatures have become more frequent in recent years.[13] Extreme heat events such as heat waves are expected to become longer, more frequent, and more intense. If temperatures continue to rise due to climate change, urban areas are especially more likely to experience intense heat waves. This would result in more heat-related deaths and illness.[14] For the elderly and other vulnerable populations,

[13] Hansen, J., M. Sato, and R. Ruedy. 2012. Perception of climate change. P. Natl. Acad. Sci. USA. Published online: August 6, 2012.
[14] IPCC (Intergovernmental Panel on Climate Change). 2014. Climate change 2014: Impacts, adaptation, and vulnerability. Working Group II contribution to the IPCC Fifth Assessment Report. Cambridge, United Kingdom: Cambridge University Press. www.ipcc.ch/report/ar5/wg2.

the risk of heat-related death may be even higher when combined with certain diseases and conditions such as cardiovascular and respiratory illnesses. Young children and the economically disadvantaged are also especially vulnerable when exposed to excessive heat.

Factors for Consideration in the Next Planning Cycle

Future monitoring, evaluation, and updating of this plan should consider the following factors, as well as other information from NYS HMP updates:

- Have extreme heat events occurred since adoption of this plan?
- Have new scientific studies, research, or practices changed the methods of predicting extreme heat events or assessing risk and vulnerability?
- Are there increased or newly identified at-risk populations?
- Has there been a significant change in the population, built environment, natural environment, or economy that could affect risk or vulnerability to extreme heat?
- Is there new evidence related to the impacts of climate change that could affect the level of risk or vulnerability to extreme heat?

SECTION 3.5: FLOOD

3.5.1: Hazard Profile

Flood is the most destructive natural hazard in the country based on impact and cost. From 2006 to 2015, flood insurance claims averaged $1.9 billion per year.[1] United States weather fatality statistics for the year 2015 show that flood caused more deaths than other weather-related hazards. It ranked third in total deaths, behind heat and tornado, when calculating 10- and 30-year averages.

Flooding can occur under weather and climatic conditions such as thunderstorms with heavy rainfall, fast-melting snow, or ice jams, or following the failure of water control structures or systems (e.g., dams, levees). Nationally, the most common cause of flooding is heavy rainfall or snow melt that accumulates faster than it can be absorbed by soil or carried away by rivers.

Herkimer County's topographic, climatological, and meteorological features create an environment conducive to year-round flooding. Warm weather flooding is caused by severe thunderstorms bringing heavy rainfall that leads to flash floods and riverine or overbank flooding. In cold weather, ice jams and fast-melting snow overwhelm waterways. Bank erosion and sediment deposits exacerbate flooding by blocking and re-directing the natural flow of waterways. Inland Herkimer County is not affected by storm surge from hurricanes or tropical storms, but severe storms associated with these systems result in flooding elsewhere in the state.

Hazard/Problem Description

The Planning Area has experienced many flood events. Historical data, federal disaster declarations, and an analysis of impacts and consequences reveal that flooding is the costliest, and one of the most frequently occurring, natural hazards.[2] Northern Herkimer County is located at higher elevations within Adirondack Park. The topography of the southern region slopes north toward the Mohawk River. Drainage basins from higher elevations merge into lakes, streams, brooks, and creeks that drain into the river.

The community is at risk, in part, from the way the built environment was developed. Communities that are now built to capacity were founded near waterways for access to transportation and a water supply. Historic poorly designed and constructed development, combined with today's climate change phenomenon, increases flood risk. The region has conducted numerous studies to document flood problems. This plan integrates previously identified data. Summaries of previous studies, plans, and reports are presented in **Section 2.9, Base Plan**.

[1] FEMA, www.floodsmart.gov, the National Flood Insurance Program.
[2] FEMA, Federal Disaster Declarations, total costs.

New York Rising Community Reconstruction Program (NYRCRP)

The *New York Rising Community Reconstruction Program* (NYRCRP) was among the most comprehensive flood planning efforts to date. A Herkimer County group with broad representation from key stakeholders developed a county-specific plan. These efforts are documented in the *NY Rising Countywide Resiliency Plan, Herkimer County* (NY Rising-Herkimer), July 31, 2014. The plan provided rebuilding and resiliency guidance to communities affected by Hurricane Irene, Tropical Storm Lee, Superstorm Sandy, and the severe summer storms of 2013.[3]

The *NY Rising-Herkimer* process enlisted federal, state, and local agencies for "technical expertise needed to develop reconstruction strategies to build more resilient communities."[4] The plan describes flood-related issues and long-term needs and suggests that the community implement actions like those described below.[5]

- Provide a more natural floodplain for the county's streams and creeks.
- Stabilize streambanks and repair erosion.
- Provide regular sediment and debris removal in high-risk streams.
- Strengthen land use regulations for floodplain development.
- Strengthen communication systems used before, during, and after disasters.
- Improve information sharing among local, state, and federal agencies.
- Provide safer and more resilient housing options for those living in the floodplain.
- Increase public education to current and future homeowners on the risks of living in a floodplain.
- Improve evacuation preparedness and procedures.
- Use innovative technology to strengthen the resiliency of key assets.
- Create redundancy in the electrical power supply.
- Manage storm water and waterway capacity.
- Upgrade aging infrastructure.

Up to $3 million was initially allocated through the NYRCRP for recovery and resiliency projects identified in the *NY Rising - Herkimer* plan.[6] Additional projects are being funded by the Dormitory Authority of the State of New York (DASNY), which is among the nation's largest issuers of low-cost, tax-exempt bonds and one of country's biggest public builders.

[3] *NY Rising Countywide Resiliency Plan, Herkimer County*, July 31, 2014.; p. ii
[4] *Ibid*; p. iii
[5] *Ibid*; p. ES-2
[6] NY Rising – Herkimer, p. ES-3

Types of Flooding

Dam and Levee Failure

Dams and levees are manmade structures used for flood protection, power generation, agriculture, water supply, and recreation. When built for flood protection, they are engineered to withstand a flood with a computed risk level. If prolonged periods of rainfall occur that exceed design requirements, water may overtop the structure and cause failure. Overtopping is the primary cause of earthen dam/levee failure in the United States. Dam failures also result from one or a combination of the following:

- Earthquake
- Inadequate spillway capacity
- Internal erosion from embankment or foundation leakage, or piping or rodent activity
- Improper design or maintenance
- Negligent operation
- Failure of upstream dams/levees on the same waterway

Dam failure results in an uncontrolled release of impounded water that causes downstream flooding. Different types of dams/levees fail for different reasons, as shown in **Table 3.5-a**.

Table 3.5-a: Dams/Levee Structure Types

Type of Structure	Failure Characteristics
Concrete Arch or Hydraulic Fill	May fail almost instantaneously: the flood wave builds to peak rapidly then gradually declines.
Earth and Rock Fill	Fails gradually due to erosion of a breach.
Concrete Gravity	Fails instantaneously or gradually with a corresponding building and decline of the flood wave.

With proper maintenance, structures can safely control the release of water during flood events. However, many dams are more than 50 years old and require maintenance. Dams are also now subject to stricter criteria because there is more downstream development, and experts know more about how to predict flooding, earthquakes, and dam failures.[7]

Dam storage capacity ranges from a few thousand acre feet to millions of acre feet. The largest Herkimer County reservoirs are Stillwater Reservoir and Hinckley Reservoir. Stillwater has a surface area of 6,700 acres and 4,926 cubic feet of water at capacity. Stillwater was created by damming the Beaver River. Hinckley, a combination earthen and concrete masonry structure, was constructed in 1915 from a West Canada Creek dam for

[7] NYS HMP, p. 3.9-7

supplying water to a canal. Today it is used for hydropower generation, water supply, flood control, and recreation. Its surface area is 4.46 square miles and it has a water capacity of 25.8 billion gallons. The dam supplies water to 130,000 people in the region. There is no record of dam failure.

The New York State Department of Environmental Conservation (NYS DEC) Bureau of Flood Protection and Dam Safety assigns dam hazard classifications based on the potential impacts of failure. The hazard class indicates the estimated consequences of failure, not the condition of the dam.[8] DEC may reclassify a dam to reflect changing conditions or changes in the Department's understanding of the impact of failure.

Dams must be constructed, operated, and maintained knowing that failure of even a small dam may endanger downstream life, property, and the environment. Classification levels build on each other, with higher levels adding to the consequences of previous levels. Downstream hazard classifications are defined in 6 NYCRR Subpart 673.5(b).

Table3. 5-b: Downstream Dam Classifications[9]

Dam Classification	Description
Class A – Low Hazard	*Failure is unlikely to result in damage to more than isolated or unoccupied buildings, undeveloped lands, or minor roads, such as town or county roads; is unlikely to result in the interruption of 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 B – Significant/intermediate Hazard	*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 TV 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 C – High Hazard	*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; loss of human life or widespread substantial economic loss is likely.*
Class D – Non-hazard	*A dam that has been breached or removed, has failed or otherwise no longer materially impounds waters; or a dam that was planned but never constructed. Class "D" dams are defunct dams posing negligible or no hazard. The department may retain pertinent records regarding such dams.*

[8] "DOW TOGS 3.1.5 – GUIDANCE FOR DAM HAZARD CLASSIFICATION", Undated; New York Department of Environmental Conservation, Division of Water Program Policy. http://www.dec.ny.gov/docs/water_pdf/togs315.pdf

[9] *Ibid*, p. 4-5

New York's dam safety program comprises the following state and federal government authorities regulating safety:[10]

- NYS DEC
  - Environmental Conservation Law (ECL) Article 15, Part 673
- Federal Energy Regulatory Commission (FERC)
  - 18 CFR 12.22-24
- U.S. Army Corps of Engineers (USACE)
  - EP 1110-2-13, Dam Safety Preparedness

A dam safety Emergency Action Plan (EAP) is required for structures identified as Class B (significant/intermediate) or Class C (high hazard). EAPs are not a local jurisdiction's response or flood plan, but a site-specific document that includes scenario-based procedures to prevent or mitigate failure. USACE is required to submit an EAP for dams it owns, operates, and maintains. EAPs for hydroelectric dams fall under the FERC. NYS DEC regulates dam safety and EAPs for all dams in New York State.

When a dam or levee fails, it is incumbent upon local government to protect the life, safety, and property of citizens in harm's way. All jurisdictions within the dam inundation area identified in the EAP should receive a copy of the plan. More information about the state's Dam Safety Program, EAPs, and structural flood control projects is available in the 2014 NYSHMP, Section 3.9. Additional information on the State's Dam Safety Program is available online at: http://www.dec.ny.gov/lands/4991.html

Herkimer Levee System

The earthen Herkimer Levee was completed by USACE in 1964 to protect against flooding from the Mohawk River, West Canada Creek, and Bellinger Brook. The system is approximately 21,700 feet in length and includes 16,700 feet of levee embankment from Route 5 on its western end to the railroad on its east end; 1,800 feet along the east bank of Bellinger Brook north of Route 5; and 3,200 feet along the west bank of West Canada Creek north of the railroad. The levee system is sponsored by the State of New York and is represented by NYS DEC and the Village of Herkimer, which operates and maintains the flood risk management project. Levee failure would affect the Village and Town of Herkimer. FEMA released a Risk MAP study titled *The Levee Analysis and Mapping Plan (LAMP), Herkimer Levee, DRAFT,* in December 2016, and a follow-up report in March 2017, discussing how best to map flood hazards landward of the levee system.

The updated study is required because the levee system was completed prior to 1985, when FEMA released the Town and Village Flood Insurance Rate Maps (FIRMs) and Flood Insurance Study (FIS). These documents inform the community of which areas are in a flood zone, and to what degree all community neighborhoods are at risk from flood. The levee system is not considered by FEMA to be an "accredited," or effective, levee system.

[10] 2014 NYSHMP, p. 3.9-7

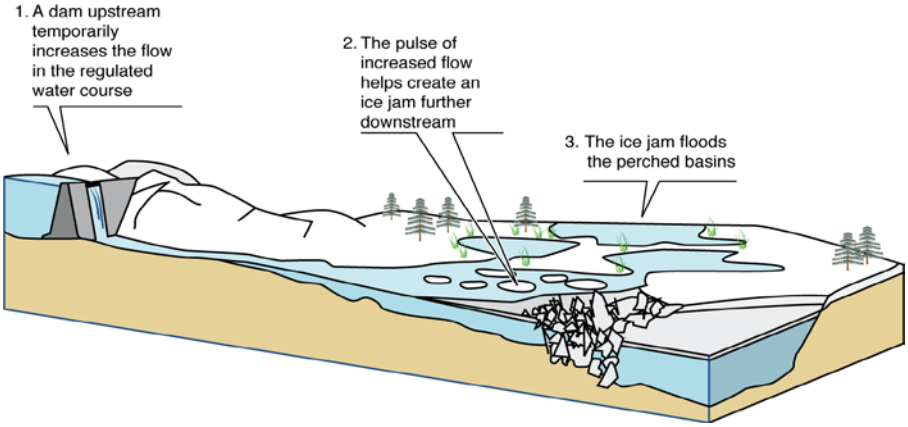
The goal of the LAMP is to complete a system analysis that meets the National Flood Insurance Program (NFIP) requirements of 44 CFR §65.10 and becomes "accredited." The study revisits previous risk assessments that did not meet requirements and analyzed and mapped the levee as if it provided no protection during a 100-year flood (one having a 1% annual chance of flood). This is called the "without levee" approach. New modeling techniques will refine the level hazard reduction that current non-accredited levee systems provide.

Ice Jam

An ice jam is an accumulation of ice or "frazil," soft ice crystals in water that is too turbulent to freeze solid. This forms where the slope of a river changes from steep to mild, or where moving ice meets intact ice cover. Ice jams may lead to localized and regional flooding behind the blockage. Sudden ice jam failure releases large quantities of water and ice that damage nearby structures, croplands, and wildlife habitat.

Long cold spells cause rivers and lakes to freeze. A rise in the water level or a thaw breaks the ice into large chunks that become jammed at man-made and natural obstructions. Ice jam formation depends on weather and physical conditions in river channels.

Figure 3.5-1: Dynamics of Ice Jam Flooding



***Source**: www.researchgate.net*

A late winter ice jam is created when air temperatures rise above the freezing point and causes river ice to melt from action of turbulent water on the undersurface of a river or lake. Ice cover not subjected to a sudden increased flow may melt in place with little jamming or significant rise in water level. Additional rain and spring snowmelt runoff contribute to ice jam flooding. The increased flow raises the water level and breaks ice loose from the banks. Given the large quantities of ice present, spring breakup jams are more destructive than those created when water freezes in a narrow stretch of a river. In a repeated process, ice jams break up, move downstream, and reform.

Ice Jam on the Mohawk River, 2007
Photo Credit: Union College

Debris Flow

Debris flow is not a specific type of flood but a geological phenomenon that impacts flooding. During heavy rainfall, a mass of soil and fragmented rock flows down a steep slope and is funneled into stream channels. If combined with other objects, such as vegetative debris in its path, the resulting muddy and debris-laden stream deposit exacerbates flood levels and damage. Flows also result from moving natural detritus, such as decayed trees, broken tree limbs, logs, and abandoned beaver dams.

Riverine or Flash Flood

Riverine flooding occurs when heavy rainfall causes high water levels in rivers or creeks to overtop the bank onto normally dry land. Event impacts create human hardship and economic loss. A flash flood is a rapid inundation of low-lying areas caused by heavy rain associated with severe thunderstorms, tropical systems, or melting water from ice or snow. Flash flooding also occurs far away from water bodies when a large volume of water cannot be absorbed by the soil or storm water systems and travels overland unimpeded.

Flash floods also occur relatively frequently and not always within a floodplain. Floodplains located along the shores of county lakes, streams, creeks, and rivers are prone to frequent floods and/or inundation from heavy precipitation and run-off. When severe thunderstorms associated with hurricanes or tropical storms occur, they often result in floods.

Alluvial fan flood is not addressed in the NYS HMP because there are no documented incidents of this hazard in the state. On the other hand, "bank-full" channel conditions in places like Fulmer Creek cultivate sediment deposits that build alluvial fan-type floodplains.

The natural processes of stream erosion and sediment deposition cause flooding where stream or river slopes quickly change from a high to low grade, allowing sediment to build up in the channel. This occurs in the Village of Mohawk, where commercial and residential development sits 20 feet from the edge of Fulmer Creek. This situation is discussed in the report titled *Water Basin Assessment and Flood Hazard Mitigation Alternatives, Fulmer Creek, Herkimer County, New York*, Milone & MacBroom, April 2014. Page one reads, "A number of steep slopes and high banks along the watercourse are prone to sliding, slumping and failure, and contribute a substantial sediment load to the creek. As the sediment is transported and deposits downstream, it restricts channel and bridge capacity." Sediment build-up also contributes to flooding in confined areas near culverts or bridges. Routine stream maintenance and careful environmental permitting help alleviate such flooding.

Mohawk River Flooding[11]

The extent and impact of the types of flooding in the Planning Area are better understood through a reading of the multi-channel risk reduction studies and plans previously

[11] Mohawk River Basin Program, Action Agenda, 2012-2016, New York Department of Environmental Conservation

developed. The Mohawk River is included among the water bodies studied. The information below from a plan documenting river concerns describes the problem and suggests risk-reduction measures.

Mohawk River Basin Program Action Agenda, 2012-2016

New York State Department of Environmental Conservation

Background

The "Mighty Waters" Working Group was established by New York Governor Andrew Cuomo in June 2012. The group was formed to support the Regional Economic Development Councils and integrate the sometimes-conflicting interests of economic development, community revitalization, environmental conservation, and flood hazard risk reduction. **GOAL 3** defines the challenges and identifies multi-year targets to address flood hazard risk reduction. The following summaries highlight some of the findings.

Challenges

- Repetitive flood events are physically and financially devastating to flood-prone communities.
- Historical development of communities along the rivers does not easily accommodate relocation of structures without technical and financial challenges.
- Multiple types of flooding can exacerbate the creation, movement, and deposition of debris, which then impacts water flow and causes flooding in areas of floodplain constriction.
- Changes in landscape and human development have contributed to the flooding impacts.
- Strategies to reduce flood risk should reduce the consequences of flood events on human populations and communities, as well as on critical infrastructure and cultural assets.

2016 Targets:

- Public Education and Awareness: The community needs a better understanding of the causes of flooding; factors that contribute to flooding; and the potential impacts of climate change.
- Floodplain Mapping: Work with FEMA and State and local agencies to complete the Light Detection and Ranging (LiDAR) digital topographic layers initiated through FEMA's RiskMap Program, a process that has been underway since 2011.
- Flood Inundation Maps and Tools: Develop flood inundation maps and forecast tools using LIDAR, real-time stream gauge reporting, and National Weather Service flood forecasts.
- Flood Hazard Restudies: Continue to work with FEMA to perform restudies of the most outdated or flood-prone segments of the Mohawk and its tributaries *[Note: Several these restudies were completed in 2014 after the June 2013 severe flood event.]*
- Climate Change and Flood Hazard Risk Reduction of Key "At Risk" Community Assets: Conduct public education and outreach activities to foster better understanding of the potential impacts of climate change on the region, and to encourage development of local climate adaptation strategies that emphasize natural protective features.
- Sedimentation and Flooding: Evaluate the connection between sediment/gravel build-up to flooding, and how this build-up increases scouring, erosion, and sediment loading in the basin.

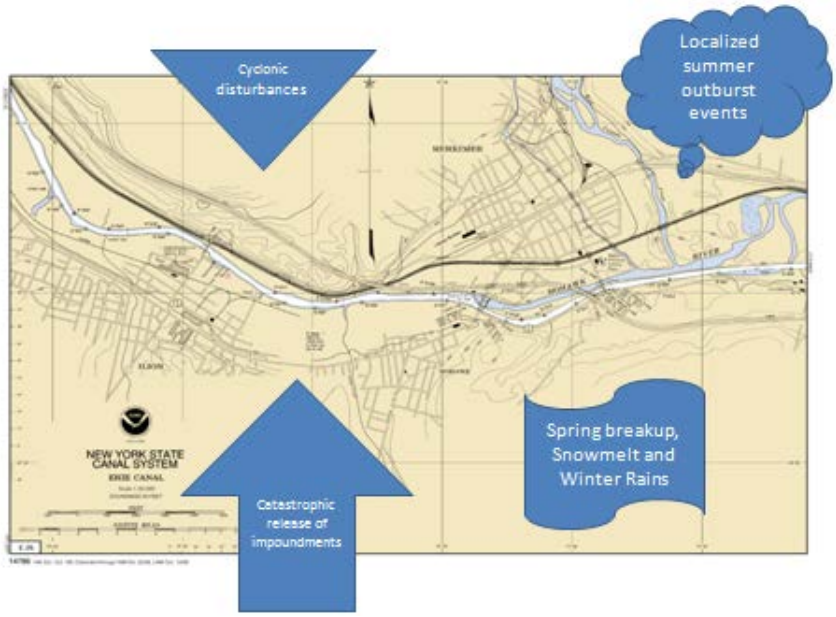
Impacts of Climate Change

The potential impacts of climate change are described in the Action Agenda:

- Spring Breakup, Snowmelt, and Winter Rains
  - Warmer spring temperatures that lead to earlier and more rapid snow melt; more late-winter precipitation likely to fall as rain, rather than snow.
- Cyclonic Disturbances
  - Increasing frequency of severe cyclonic events, allowing more northward tracking of hurricanes.
- Localized Summer Outburst Events
  - Increasing potential for formation of conditions conducive to summer outbursts and flash flooding.

Figure 3.5-2 provides a visual overview of the types of flooding that impact the communities near the Mohawk River and its tributaries.

Figure 3.5-2: Primary Types of Flooding Impacting the Mohawk River Watershed

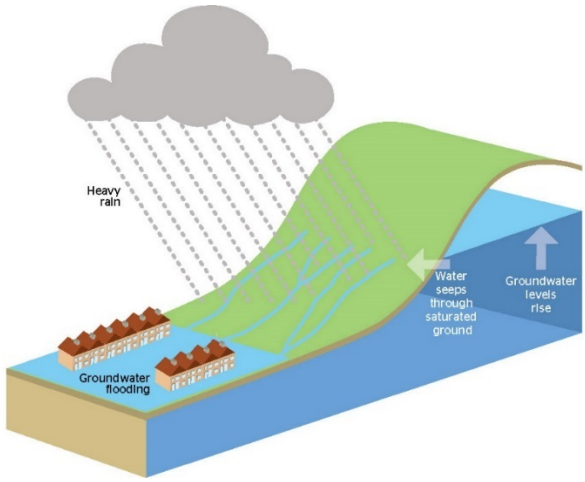


Source: *http://www.canals.ny.gov*

High Groundwater/Overbank Flooding

High groundwater flooding occurs when heavy precipitation causes the water table to rise.[12] As rainwater from high ground accumulates in low-lying areas, the water table rises to the surface, causing the ground to be completely saturated (see **Figure 3.5-3**). High groundwater flooding is not common in the Planning Area.

Figure 3.5-3: High Groundwater Cycle



Source: *http://radleygeography.blogspot.com/*

[12] Water table: the level below which the ground is saturated with water.

Local Drainage

Local (urban) drainage systems collect groundwater from heavy rainfall in developed areas. Water that does not evaporate or become absorbed by the ground is carried by conduits to waterways such as creeks, rivers, or the ocean. These systems have two purposes: 1) to control storm water runoff during periods of heavy rainfall; and 2) to minimize disruption of activity from more frequently occurring, less significant storms. Flooding occurs when runoff exceeds system capacity, or because systems are blocked from lack of maintenance. Flooding that results from poorly-designed or blocked drainage systems is categorized as flash flooding. About 20 to 25% of flood-related economic losses occur in areas not designated as being in a "floodplain" because of ineffective local drainage.[13]

Location

Each municipality is susceptible to flooding of one type or another. Developed areas near waterways are prone to riverine and flash floods from seasonal storms, and to flooding from fast-melting snow or ice jams. Heavy rainfall from seasonal storms impacts areas away from waterways stemming from issues related to high groundwater or local drainage.

Dam/Levee Locations

The Herkimer Levee System affects the Village of Herkimer and the Town of Herkimer. The New York State Inventory of Dams lists 104 dams in Herkimer County.[14] Seven of these are Class C (High Hazard) dams (see **Table 3.5-c**). Three of these are on Beaver Brook, two on Steele Creek, and one each on the Mohawk River and West Canada Creek. The Herkimer County Dam Inventory (**Appendix 3**) lists 68 dams as Class A, 13 as Class B, and 16 as Class D. The inventory notes that 20 dams require EAPs but only 17 plans are on file with DEC.

Table 3.5-c: Class C - High Hazard Dam Locations, by Basin

Dam Name	Basin	River/Stream	Nearest City	EAP on File
Moshier Dam	Black River	Beaver River	Moshier Falls	Yes
Stillwater Reservoir Dam	Black River	Beaver River	Moshier Falls	Yes
Beaver Brook Site #1 Dam	Mohawk	Beaver River	Dolgeville	Yes
Hinckley Dam	Mohawk	West Canada Creek	Hinckley	Yes
Ilion Reservoir #3 Dam	Mohawk	Mohawk River Tributary	Ilion	Yes
Ilion Reservoir #2 Dam	Mohawk	Steele Creek	Ilion	Yes
Ilion Reservoir #1 Dam	Mohawk	Steele Creek Tributary	Ilion	Yes

***Source**: NYS DEC Dam Inventory, January 2017*

The Hinckley Dam, located in the Town of Russia, could impact the Towns of Fairfield, Herkimer, Newport, and Russia. The dam on East Canada Creek in the Village of Dolgeville could impact that village and the Town of Manheim.

[13] Wright, James M., P.E., *Floodplain Management, Principles and Current Practices*, FEMA, 2007; p. 2-12
[14] The New York State Inventory of Dams is maintained by NYS DEC.

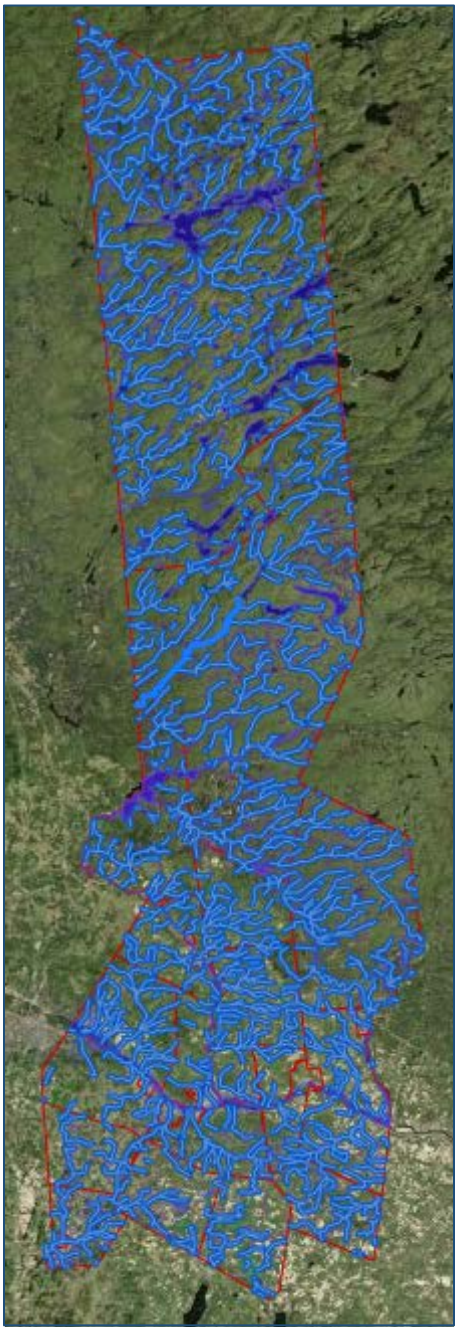
Figure 3.5-4: Locations of All Dams in Herkimer County (Includes one dam on the Montgomery County border)

***Source**: NYS DEC Inventory of Dams*

Riverine, Flash Flood, and Ice Jam

Countywide riverine and flash flooding is main source of flood damage. **Figure 3.5-5** illustrates the widespread network of FEMA-designated floodplains and waterways in the Planning Area. The waterways are overlaid on the jurisdictional boundaries (in red). Detailed maps of jurisdiction floodplains are provided in the Jurisdiction Annexes.

Figure 3.5-5: FEMA Floodplains and Lakes in Herkimer County



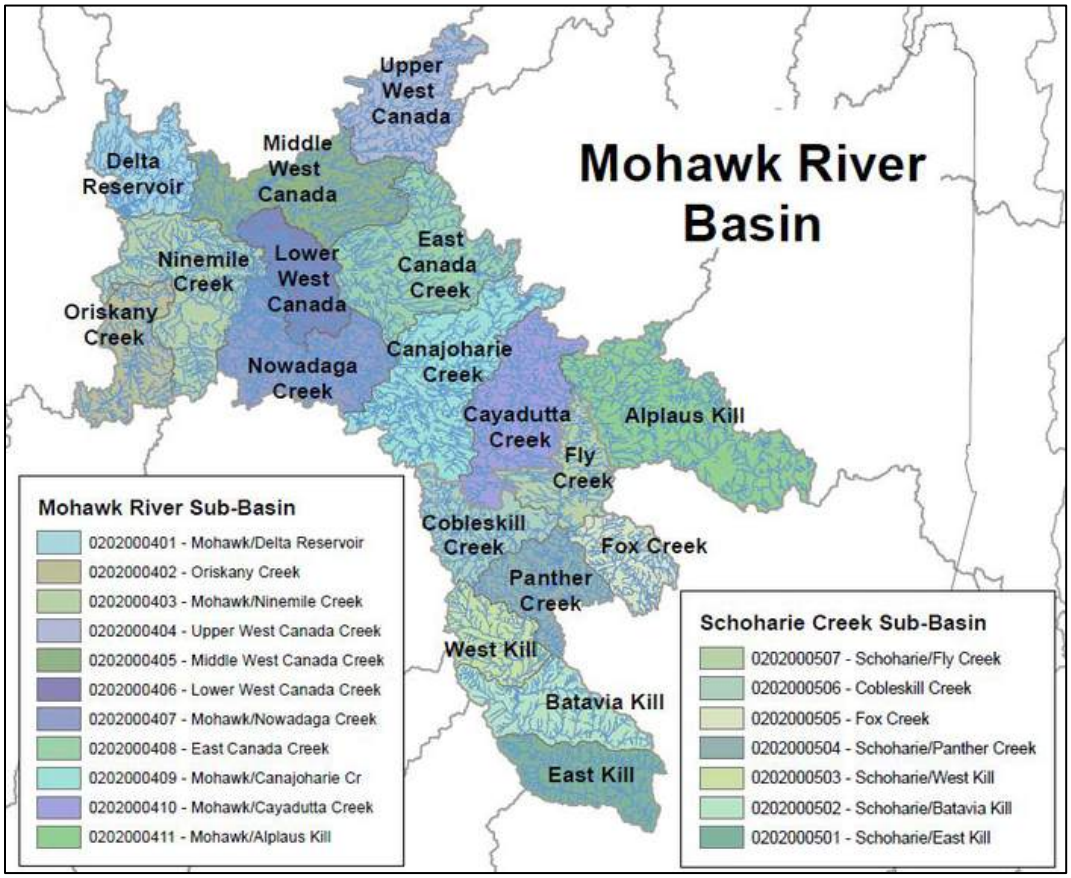
***Source**:* http://sdg.giscloud.com/map/225030/herkimer

Ice jam flooding causes riverine flood events on Bellinger Brook; East Canada, Fulmer, Moyer, Steele, and West Canada Creeks; and the Mohawk River. Ice jam and/or riverine flooding affect most municipalities.

The Mohawk River Basin and its sub-basins are susceptible to repetitive flooding from riverine/flash floods, severe storm system overload, snowmelt and ice jams, and cyclonic

disturbances. Drainage from sub-basins contributes to the overall volume of water in the river.

Figure 3.5-6: Mohawk River Basin and Sub-basins



***Source**: New York Department of Environmental Conservation*

Previous flood studies and plans describe issues specific to creek and river locations where the highest level of riverine and ice jam flooding occur. These locations include the following:

- ***Bellinger Brook*** – Bridges in the Village of Herkimer are not large enough to span bank-full flows. Bridges and neighborhoods near Church Street, West German Street, and Maple Grove Avenue are at risk of flooding from heavy rainfall, ice jams, and storms not severe enough to receive a Presidential disaster declaration (July 2013).[15] Three site-specific high risk areas were identified in the *Basin Assessment, and Flood Hazard Mitigation Alternatives, Bellinger Brook at the Village of Herkimer*, (April 2014*), Emergency Transportation Infrastructure Recovery*.
- ***East Canada Creek*** – The creek often overtops its banks, flooding residential, commercial, and industrial areas in the Village of Dolgeville. The Route 29 bridge is

[15] *Water Basin Assessment and Flood Hazard Mitigation Alternatives, Bellinger Brook at the Village of Herkimer, Herkimer, NY,* Emergency Transportation Infrastructure Recovery, April 2014

susceptible to flooding because of ice jam formation.[16] Three high-risk sites for mitigation actions include the bridges, the hydroelectric dam, and areas of sediment deposition along Saltsman Road.

- ***Mohawk River*** – Constrictions in the natural channel and water control devices, such as dams and locks, create an impediment to the natural flow of water and accumulation points for ice and debris. The *Mohawk River Basin Floodplain Assessment* (10/17/12) estimated the extent of potential damage to at-risk structures in future flood scenarios, and included maps with identified critical facilities overlaid on the river's floodplains. The *Mohawk River Action Agenda, 2012-2016*, includes two key deliverables: goals for flood hazard risk reduction, and linkages between climate change and preparedness efforts required to protect cultural, recreational, economic, and environmental assets.
- ***Moyer Creek*** – Water flowing from the steep upper reaches of the Frankfort Gorge transports sediment to lower gradient reaches in the Village of Frankfort. Here they are deposited in the channel, restricting flow capacity and blocking stream crossings. Sediment transport and stream hydraulics are compounded by the proximity of commercial and residential development in the floodplain, where structures sit within 20 feet of the creek. Some of the worst flooding occurs near Main Street Bridge, which is constricted, and is exacerbated by ice accumulations in winter. The *Basin Assessment and Flood Hazard Mitigation Alternatives, Moyer Creek (*April 2014), Emergency Transportation Infrastructure Recovery study identified three site-specific high risk concerns: road crossings in Frankfort Gorge; high bank failure and levees; and Main Street Bridge, nearby canal walls, and a dam.

Moyer Creek

Source*: Milone & MacBroom, Inc.*

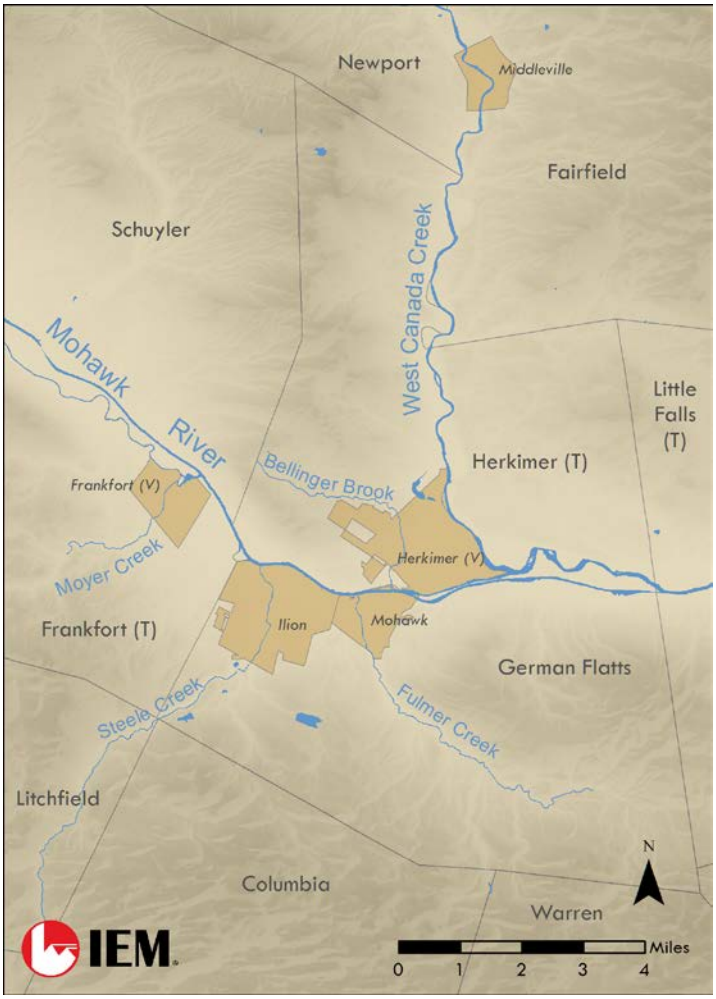
- ***Steele Creek*** – Steele Creek generates stream power in some of its reaches during high flow events. Bridges and sections of channel along the watercourse are not large enough to convey flows during storm events because flow is hindered by sediment deposits and development. An area of commercial and residential development in the Village of Ilion occurs in the floodplain and less than 20 feet from the creek. The *Basin Assessment and Flood Hazard Mitigation Alternatives, Steele Creek* (April 2014), Emergency Transportation Infrastructure Recovery study identified three high-risk sites: the Spinnerville Gulf Confluence; the Falls; and Otsego, First, Second, Third, and West Main Streets.[17]
- ***West Canada Creek*** – Officials and residents report that flood-related damage in the

[16] *Water Basin Assessment and Flood Hazard Mitigation Alternatives, East Canada Creek, Herkimer County, NY,* Emergency Transportation Infrastructure Recovery, April 2014,

[17] *Water Basin Assessment and Flood Hazard Mitigation Alternatives, Steele Creek,* Emergency Transportation Infrastructure Recovery, April 2014

Village of Middleville affected homes on Fishing Rock Road and Kanata Street. The fire station has been inundated by waters from the creek and from Maltanner Brook. The Village of Herkimer Route 5 bridge is susceptible to ice jam flooding. The *Basin Assessment and Flood Hazard Mitigation Alternatives, West Canada Creek* (April 2014) study identified high-risk sites affected by sedimentation, bank failure, and erosion.

Figure 3.5-7: Waterways in Herkimer County, Detail of Southern County Region



***Source**: New York State GIS Clearinghouse*

Basin assessments for East Canada, Fulmer, Moyer, Steele, and West Canada Creeks describe affected locations in neighboring jurisdictions. The assessments are discussed in **Section 2.9, Base Plan**, and **Appendix 2-D**: **References, Plans, and Studies**.

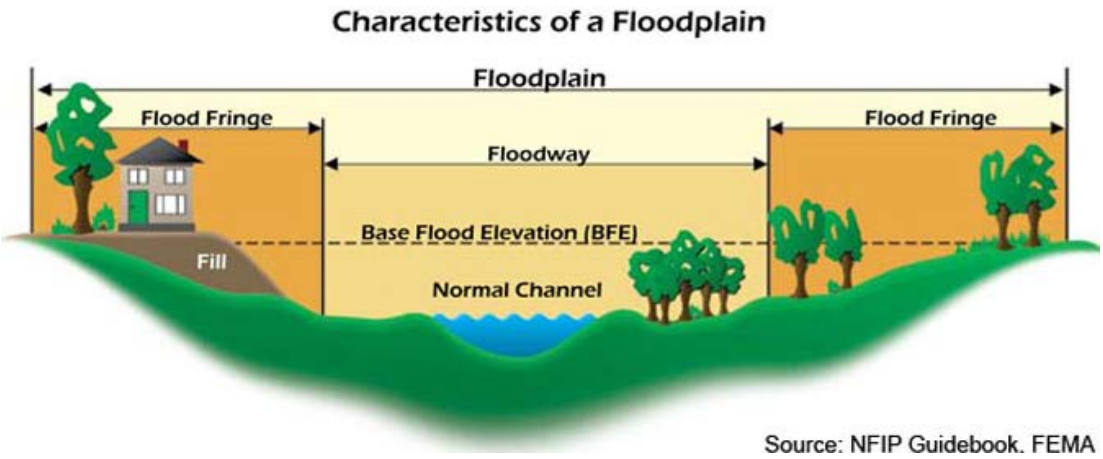
The following Herkimer County communities are susceptible to repetitive flooding: the City of Little Falls; the Towns of Columbia, Fairfield, Frankfort, German Flatts, Herkimer, Little Falls, Manheim, Newport, Russia, Salisbury, Schuyler, Stark, and Webb; and the Villages of Dolgeville, Frankfort, Herkimer, Ilion, Middleville, and Mohawk. Community-specific risks and concerns are addressed in the jurisdiction annexes.

Floodplains (Special Flood Hazard Areas, SFHAs)

A floodplain is flat land adjacent to a river, creek, or stream that is subject to periodic inundation. The floodplain describes the area inundated by the "100-year" flood, or a flood that has a 1% chance in any given year of being equaled or exceeded. A floodplain is designated when floodwater exceeds the capacity of the main channel, or water escapes the channel through bank erosion. During inundation, silt is deposited by retreating floodwater and, trapped by vegetation, builds the floodplain. Buildup is greatest near the stream, forming natural levees in areas of stable banks. Floodplain deposits, which are coarsest near the stream, may show vertical size-graded stratification (sorting). The floodplain is an integral part of a stream system and is affected by adjustments the system makes to its sediment load and variable flow. The stream system is a network that collects fresh water from the land and carries it to the ocean. As such, floodplain deposits and floodplain development affect a larger natural structure than might first be appreciated.

Floodplains serve multiple functions. They moderate flooding, maintain water quality, recharge groundwater, reduce erosion, redistribute sand and sediment, and support fish and wildlife habitat.

Figure 3.5-8: Characteristics of a Floodplain



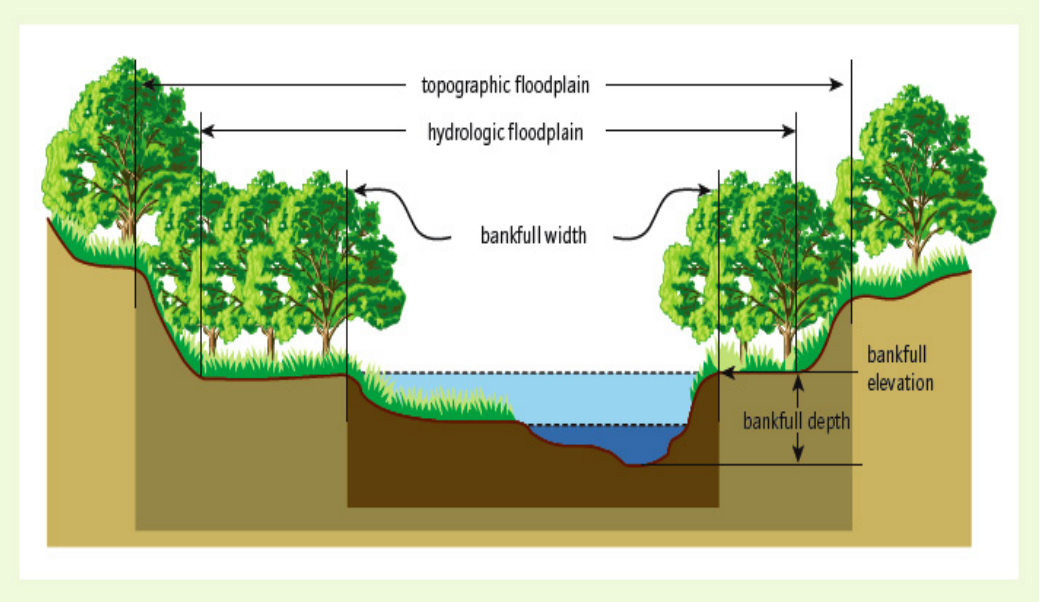
Areas subject to flooding include the following:

- Locations that experience greater than the 1% annual chance flood, often referred to as the 100-year flood.
- Those subject to less extensive, more frequent, or repetitive flooding.
- Sites that experience shallow flooding, storm water flooding, or drainage problems that do not meet the National Flood Insurance Program (NFIP) mapping criteria. Twenty percent of flood insurance claims are from properties in these areas.
- Places affected by flood-related hazards such as coastal and riverine erosion.
- Locations that will flood in the future because of sea level rise and upstream

watershed development.[18]

Figure 3.5-9 depicts how the hydrologic floodplain is defined by bank-full elevation. The topographic floodplain includes the hydrologic floodplain and higher floodplains up to a defined elevation that corresponds to potential flood frequency.

Figure 3.5-9: Topographic and Hydrologic Features of a Floodplain



***Source**: U.S. EPA, https://cfpub.epa.gov/watertrain/moduleFrame.cfm?parent_object_id=637*

Extent

The strength or magnitude of a flood varies based meteorological, environmental, and geological factors, including latitude, altitude, topography, and atmospheric conditions. Flood is also affected by seasonal variation, storm characteristics, warning time, speed of onset, and duration. Most floods are preceded by a warning period that allows emergency managers to communicate the need to prepare for the event. A flood may last from minutes to days.

The September 2011 FEMA Flood Insurance Study (FIS) shows that the region is prone to intense cloudburst rainfall. Floods result from storms covering both large and small areas with intense rainfall. Riverine floods generally occur from May through August. The upland areas are characterized by dissected topographic relief with steep stream slopes. Flood-prone communities in the Planning Area experience floods characterized by rapid water rise, high maximum discharge, short duration, and low volume of total runoff. **Table 3.5-d** discusses the extent of various flood types.

[18] "No Adverse Impact How-To Guide for Mitigation", American Society of Floodplain Managers, July 2013, Update 2016.

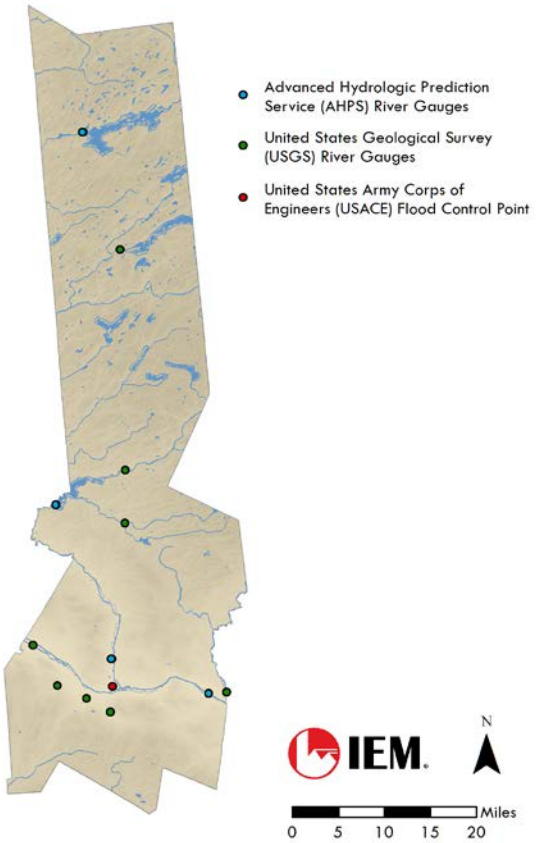
Table 3.5-d: Flood Extents by Flood Type

Extent of Flood (General) in Herkimer County, NY	
Potential Impact	Throughout a large region
Cascade Effects	Highly likely
Frequency	Regular event
Onset	Warning time from minutes to hours
Duration	Minutes to hours; 2 to 3 days in extreme events
Recovery Time	More than two weeks
Impact	• Potential for serious injury or death, not in large numbers • Severe damage to private property, public facilities, and critical infrastructure
Extent of Dam/Levee Failure Flood in Herkimer County, NY	
Potential Impact	Multiple locations (identified in **Figure 3.5-4**)
Cascade Effects	Highly likely – structural collapse, utility failure, water supply contamination
Frequency	Rare event
Onset	No warning to warning time of minutes
Duration	1 day
Recovery Time	More than two weeks
Impact	• Potential for serious injury or death in large numbers • Severe damage to private property and public facilities
Extent of Ice Jam Flood in Herkimer County, NY	
Potential Impact	Multiple locations
Cascade Effects	Highly likely – structural collapse, utility failure, water supply contamination
Frequency	Occasional event
Onset	No warning to warning time of minutes
Duration	1 day
Recovery Time	More than two weeks
Impact	• Potential for serious injury or death, not in large numbers • Severe damage to private property and public facilities
Extent of High Groundwater/Local Drainage Flood in Herkimer County, NY	
Potential Impact	Multiple Locations
Cascade Effects	Highly likely – flood, utility failure, water supply contamination
Frequency	Occasional Event
Onset	No warning to warning time of minutes
Duration	1 day
Recovery Time	More than two weeks
Impact	• Potential for serious injury or death, not in large numbers • Severe damage to private property and public facilities
Extent of Riverine & Flash Flood in Herkimer County, NY	
Potential Impact	Multiple Locations
Cascade Effects	Highly likely – flood, structural damage and collapse, road and bridge damage, utility failure, water supply contamination
Frequency	Frequent Event
Onset	Limited warning to warning time of minutes
Duration	1 day
Recovery Time	More than two weeks
Impact	• Potential for serious injury or death, not in large numbers • Severe damage to private property and public facilities

Warnings issued through official sources, such as the National Weather Service (NWS) and the Storm Prediction Center, provide the most reliable and timely preparedness information, but the exact flood location and depth depends on the amount, duration, and location of rainfall. Many floods, especially flash floods, occur outside of FEMA-designated flood zones.

The region is subject thunderstorms with heavy precipitation from May through July, during the spring and early summer. Severe winter storms associated with cold-weather months affect the area between October and May. Ice jam flood occurs between December and April. Local officials use several tools to predict flood conditions and develop timely warnings. One such tool is a series of stream gauges on county creeks and rivers. Monitored by the Advanced Hydrological Prediction Center, the USGS, the U.S. Army Corps of Engineers, and the NWS, the region's 13 gauges track the rise and fall of water level and, if necessary, estimate the time required to evacuate.

Figure 3.5-10: Stream Gauge Locations on Herkimer County Waterways



***Source**: NYS DHSES*

Previous Occurrences

The National Oceanic and Atmospheric Administration's (NOAA) National Climatic Data Center's (NCDC) Storm Events Database documented **79 flood events** occurring locally

between 1996 and 2016.[19] Between 2013 and August 2016, there were 10 floods, all reported as "flash floods." The number and types of events are described in **Table 3.5-e**.

Table 3.5-e: Types and Causes of Flash Flood and Flood Events in Herkimer County, 1996 – 2016

Flood Type	Cause	Number of Events	Property Damage
Flash Flood	[Not Available]	26	$1,996,000
	Heavy Rain	20	$582,000
	Heavy Rain/Snow Melt	1	[Not Available]
	Heavy Rain/Tropical System	1	[Not Available]
ALL FLASH FLOODS		**48**	**$2,578,000**
Flood	[Not Available]	22	$4,165,100
	Heavy Rain	5	$50,000
	Heavy Rain/Snow Melt	3	[Not Available]
	Ice Jam	1	[Not Available]
ALL FLOODS		**31**	**$4,125,100**
TOTAL FLASH FLOODS AND FLOODS		**79**	**$6,793,100**

One flood-related fatality and 12 injuries were reported from events occurring before 1996,[20] but no fatalities or injuries were recorded for the events summarized above. There was one instance of crop damage pre-1996 but none thereafter. Eleven flood events warranted Federal Disaster Declarations. These are described in **Table 3.5-f.**

Table 3.5-f: Major Flood Disaster Declarations in Herkimer County (1954 – 2016)

Disaster Number	Type/Location Individual Assistance (IA) Public Assistance (PA)	Declaration Date	Damage Amount
DR-4129	***Severe Storms and Flooding (16 counties)*** Herkimer - PA	07/12/2013	FEMA Obligated Dollars as of January 2017" PA-$56.5 million
DR-4031	***Remnants of Tropical Storm Lee (13 counties)*** Herkimer – IA	10/30/2012	FEMA Obligated Dollars as of 2014 NYSHMP update: IA - $999 million PA $1.26 billion
DR-4020	***Hurricane Irene (28 counties)*** Herkimer – IA and PA	08/31/2011	FEMA Obligated Dollars as of 2014 NYSHMP update: IA - $103 million PA - $362.5 million

[19] The NCDC Storm Events Database does not list flood events prior to 1996. The database also identifies events as occurring in Southern Herkimer and Northern Herkimer. When events in both regions are reported for the same date, they included here as one countywide event.
[20] 2014 NYS HMP, P. 3.9-32.

Disaster Number	Type/Location Individual Assistance (IA) Public Assistance (PA)	Declaration Date	Damage Amount
DR-1993	***Severe Storms, Flooding, Tornadoes, and Straight-line Winds (23 counties)*** Herkimer – PA	06/10/2011	FEMA Obligated Dollars as of 2014 NYSHMP update: PA - $25.9 million
DR-1670	***Severe Storms & Flooding (9 counties)*** Herkimer – PA	12/12/2006	FEMA Obligated Dollars as of 2014 NYSHMP update: IA $3 million PA - $30 million
DR-1650	***Severe Storms & Flooding (12 counties)*** Herkimer – IA	07/01/2006	Damages: $246.3 million FEMA Obligated Dollars as of 2014 NYSHMP update: IA - $31.5 million PA - $211.1 million
DR-1534	***Severe Storms & Flooding 14 counties)*** Herkimer – PA	08/03/2004	FEMA Obligated Dollars as of 2014 NYSHMP update: PA – 18.7 million
DR-1335	***Severe Storms (28 counties)*** Herkimer – PA	07/21/2000	Total Eligible Damages: $34.6 million FEMA Obligated Dollars as of 2014 NYSHMP update: PA - $31 million
DR-1095	***Severe Storm & Flooding (41 counties)*** Herkimer - PA	01/24/1996	Road closures, property damages, closed businesses and ten (10) deaths. Total Eligible Damages: $160 million. NWS – NY Total Flood Damages for 1996 in 2013 Dollars: $220 million
DR-515	***Severe Storms & Flooding (7 counties)*** Herkimer - IA	07/21/1976	NWS – NY Total Flood Damages for 1976 & 1977 in 2013 Dollars: 1976 - $38 million 1977 - $10.6 million
DR-447	***Severe Storms & Flooding***	07/23/1974	Damage information unavailable

Other flood loss reports include the following:

- Flood of July 2006: Most severe/extensive flooding in over 100 years with an estimated $20 million in damages in Herkimer County.
- NCDC documented flood costs for **116 events** (March 1993 – April 2007) totaling $16.47 million.
- Between July 2007 and January 2014, the county experienced three floods, all of which met the threshold for the community to receive FEMA Public Assistance.
- Spring Flood, 2010: A historic building in the Town of Middleville housing village government offices, the post office, and the library sustained structural damage. Offices were temporarily relocated. Two families were displaced when their homes were damaged. NCDC noted that the culvert system is prone to blockage, which contributes to repetitive flooding.

- June–July 2013: The NWS Advanced Hydrologic Prediction Service reported that the Planning Area received between 10 and 15 inches of rainfall in the month of June and an additional 5 to 8 inches in July 2013. Much of this rainfall fell during events that dropped between 3.5 and 4.5 inches of rain between June 11 and 14; 5.5 to 8.5 inches between June 24 and 28; and 1.5 to 2.0 inches on July 2. In between these severe events were smaller showers that dropped trace amounts of precipitation, preventing soils from drying out between the larger rain events. These conditions led to numerous riverine and flash floods in communities near the Mohawk River and its tributaries. Ground already saturated by several weeks of wet weather contributed to flash flooding in multiple jurisdictions, leading to road washouts, road closures, and swift water rescues to evacuate residents. The Mohawk River crested above flood stage on June 28, 2013, causing the closure of the New York State Thruway between the Little Falls and Canajoharie exits. One fatality was reported.
- March 2014: Rainfall and melting snow led to a minor mud and debris slide 3 miles south of Ilion in German Flatts on Sunday, March 30, 2014. The mudslide caused a portion of State Route 51 to be closed between Spinnerville Gulf Road and Cedarville Road for two days while debris was cleared from the roadway.

Herkimer County has experienced numerous events that did not reach the threshold for a federal disaster declaration, but were significant at the local level. Most of these were caused by severe storms. Additional research and data on past flood events in Herkimer County between the years 1896 and 2014, included in the 2015 HMP DRAFT, is documented in **Appendix 3**.

Communities have conducted substantial research on flood impact based on flood occurrences studied. Engineering studies, watershed/basin assessments, and flood hazard mitigation plans were developed with input from local government, regional planning agencies, state and federal agencies, community-based organizations, and interested citizens. Although the flood hazard mitigation plans were completed in 2004, more recent basin assessments were conducted following the July 2013 floods to provide updated data, mitigation recommendations, and cost estimates for alternative actions. A list of the relevant flood studies and plans is shown in **Table 3.5-g.** A summary of these documents is included as **Appendix 2-D**. An explanation of how the information was incorporated in this plan is provided in **Section 2.9, Base Plan.**

Table 3.5-g: Flood Programs, Plans, Studies and Reports for Herkimer County

Program, Plan, Study or Report	Funding Source/Sponsor	Date(s)
Basin Assessment and Flood Hazard Mitigation Alternatives – **Bellinger Brook** at the Village of Herkimer, Emergency Transportation Infrastructure Recovery	NYSDOT & NYSDEC	April 2014
Basin Assessment and Flood Hazard Mitigation Alternatives – **East Canada Creek,** Emergency Transportation Infrastructure Recovery	NYSDOT & NYSDEC	April 2014
Fulmer Creek Multi-Community Flood Hazard Mitigation Plan	Herkimer-Oneida Counties Comprehensive Planning Program;	May 2004

Program, Plan, Study or Report	Funding Source/Sponsor	Date(s)
Basin Assessment and Flood Hazard Mitigation Alternatives – **Fulmer Creek,** Emergency Transportation Infrastructure Recovery	NYSDOT, NYSDEC	April 2014
Finger Lakes – Lake Ontario Watershed Protection Alliance (FLLOWPA), Herkimer County Water Quality Coordinating Committee (WQCC)*	NYS Environmental Protection Fund; Water Resources Board http://www.fllowpa.org/county.html#Herkimer	Ongoing
Floodplain Coordination and Outreach (Ecology and Environment, Inc.)	DHS-FEMA Competitive Grant, NYS Office of General Services	10/17/12
Greater Catskills Flood Remediation Program	NYS Housing Trust Fund Corporation/NYS Homes and Community Renewal	Greater Catskills Flood Remediation Program
Mohawk Valley Regional Sustainability Plan	Cleaner, Greener Communities (NYSERDA)	2011-2012 (Adopted 2013)
Mohawk River Basin Program and Action Agenda, 2012-2016 ("Mighty Waters" Working Group)	NYSDEC, NYSDOS	2012
Moyer Creek Multi-Community Flood Hazard Mitigation Plan	Herkimer-Oneida Counties Comprehensive Planning Program;	June 2004
Basin Assessment and Flood Hazard Mitigation Alternatives – **Moyer Creek,** Emergency Transportation Infrastructure Recovery	NYSDOT, NYSDEC	April 2014
Basin Assessment and Flood Hazard Mitigation Alternatives – **Maltanner Creek,** Emergency Transportation Infrastructure Recovery	NYSDOT, NYSDEC	April 2014
NY Rising Community Reconstruction Program – NY Rising Countywide Resiliency Plan - Herkimer County	New York State (NYSDEC, NYSDOS)	July 31, 2014
Steele Creek Multi-Community Flood Hazard Mitigation Plan	Herkimer-Oneida Counties Comprehensive Planning Program	October 2004
Basin Assessment and Flood Hazard Mitigation Alternatives – **Steele Creek,** Emergency Transportation Infrastructure Recovery	NYSDOT, NYSDEC	April 2014
Basin Assessment and Flood Hazard Mitigation Alternatives – **West Canada Creek,** Emergency Transportation Infrastructure Recovery	NYSDOT, NYSDEC	April 2014
Erie Canal National Heritage Corridor Preservation and Management Plan	New York State Canal Corporation	N/A
Local Waterfront Revitalization Program - *Member:* ***City of Little Falls***	NYS DEC, NYS DOS	
U.S. Army Corps of Engineers Reconnaissance Study of the **Mohawk River**	USACE	2008 (feasibility)

The New York Rising Community Reconstruction Program, and related *Countywide Resiliency Plan for Herkimer County*, released in July 2014, were important planning milestones. The plan was developed by a multi-jurisdictional, multi-discipline committee that identified critical community assets and assessed risk exposure. The planning committee defined resiliency needs and opportunities, developed reconstruction and resiliency strategies, and identified projects and implementation actions to help achieve those strategies. Projects were categorized as advancing either recovery or resiliency goals.

Many of the projects identified in this plan have been funded or are scheduled for funding through the DASNY process. The status of each project is included in **Appendix 4-C.**

Probability of Future Events

Herkimer County jurisdictions know that flood events will occur in the future. Past severe weather events and current climate trends indicate the potential for more frequent events, possibly impacting areas that have not previously experienced the hazard. The future probability of flood in Herkimer County was calculated by dividing the number of occurrences (79) by the number of years of record (20), resulting in a recurrence interval. Herkimer County's future probability of recurrence for flood expressed is 395%, or **high**.

Dam/levee failure is an exception to this probability because there have been no such previous events in Herkimer County, and there is low likelihood of future occurrences. Based on HMWG input, there is a **low** probability of future events for dam/levee failure.

Severe convective storm activity is increasing and is likely tied to a multi-decadal climate pattern shift. Other climate patterns such as La Nina and El Nino also affect the frequency and severity of severe storms which can cause multiple types of floods. In addition, the trend toward earlier warm weather in the spring could bring more precipitation as rainfall rather than snow.

Impacts and Consequences

Floods have the potential to impact the population, built environment (including critical infrastructure), natural environment, and economy.

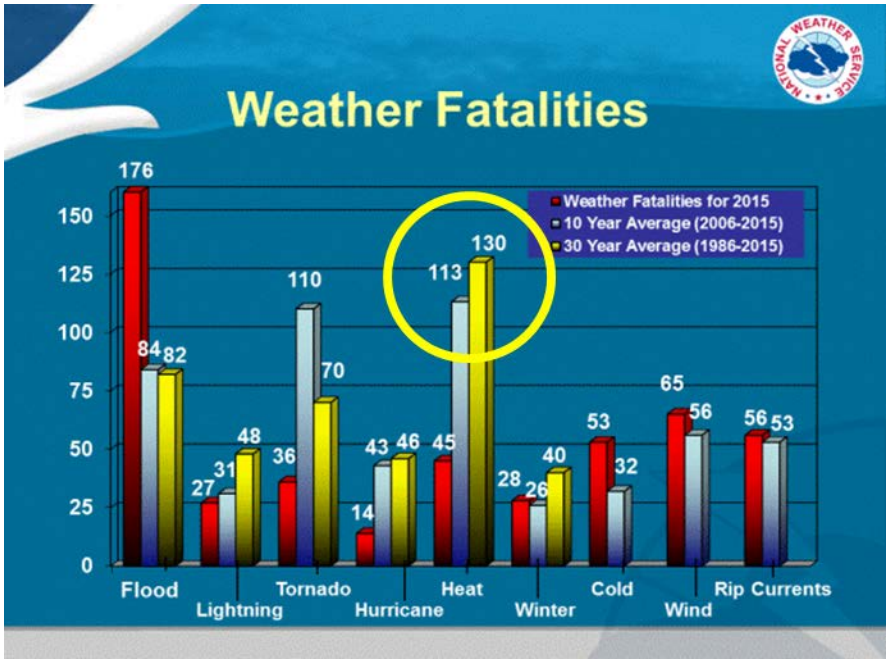
Population

The level of impact depends on the event type and cause. Water released by a failed dam or levee generates tremendous energy and may cause a flood that is catastrophic to life and property. A dam failure or other event of such magnitude would challenge local response capabilities and require life-saving evacuation. The potential for personal harm depends on the type of flood, warning time, and resources available to notify and evacuate the public. Major loss of life could result from a catastrophic event.

Figure 3.5-11 depicts the total number of weather-related fatalities in the U.S. for the year 2015. Floods claimed 176 lives in the United States, the highest of any weather-related disaster. The 2015 fatality rate for floods was up dramatically from 38 in 2014, and well above the 10-year average of 82 deaths. Of the 176 deaths, 112 (64%), occurred when the victim was in a vehicle, such as when trying to cross a flooded road. Flash floods caused 129 deaths, river floods 45. Flood deaths were heaviest in the 50-59 age range, with 29 victims (16%), followed by 27 deaths in the 30-39 age range (15%), and 24 deaths in the 40-49 are range (14%). Males accounted for 114 deaths (65%) and females, 60 (34%).[21]

[21] Source: www.floodsmart.gov

Figure 3.5-11: Weather-Related Fatalities for 2015



***Source**: NWS, http://www.nws.noaa.gov/om/hazstats.shtml*

Walking through flood water can be extremely dangerous. As little as six inches of flowing water creates a current strong enough knock down a person and move large objects. Driving a car through moving water is equally dangerous. A vehicle will float in less than two feet of water and may be swept downstream into deeper waters. During a flood, people are at risk from heart attack from stress, or electrocution from shorts in electrical equipment.

Life safety concerns aside, specific health hazards are common to flood events:

- Contaminated floodwater from dirt, oil, human and animal waste, farm and industrial chemicals.
- Infiltration of sanitary sewer lines into saturated ground (i.e., sewer back-up into low-lying homes, exposed raw sewage).
- Standing water is a breeding ground for mosquitoes, mold and mildew.
- Contaminated drinking water systems.
- Contaminated heating ducts in forced air systems.
- Long-term psychological impact (e.g., impacts of events, fear of repetitive event, economic pressure).

Previous flood events have documented 1 fatality and 12 injuries in Herkimer County.[22]

[22] NYS HMP, 2014, p. 3.9-33

Built Environment

Flood risk is unique to each structure and depends on factors such as property elevation relative to predicted flood levels; building construction style; and flood risk zone. Ground saturation may result in structural instability, damage, or collapse. Objects can be buried or destroyed during sediment deposition, and floodwaters break utility lines and interrupt services. Standing water damages crops, roads, foundations, and electrical circuits.

FEMA flood hazard maps show anticipated flood levels and risk zones based on historical climate data and the best available science. Of great concern is the risk of critical infrastructure, such as roads, bridges, electric and gas networks, water supply systems, and health and medical facilities, and other support systems. Critical infrastructure and assets were identified by previous plans and studies and during this planning process. One such study, the *Mohawk River Floodplain Assessment* (Milone & MacBroom, Inc., April 2014) identified a total of 115 critical facilities as being at risk because they are in, or close to, a flood zone. The list includes all categories of critical infrastructure, including 25 structures considered to be at risk for inundation by a 10- or 50-year flood.

Analysis of Herkimer County parcel data indicates that there are 8,920 parcels in the 100- and 500-year flood zones. These figures show that 17.3% of all county parcels are in the 100-year flood zone, and 4.3% are in the 500-year flood zone. Jurisdiction Annexes provide additional detail about at-risk structures.

Cultural and Historical Structures

Given historical development along the county's navigable waterways, cultural and historical structures are frequently located in flood-prone areas. A study of historic properties near floodplains demonstrates that eight historically-designated properties are in either the 100- or the 500-year floodplain.

Natural Environment

Areas of the natural environment adjacent to waterways are at various levels of risk. Specific flood types and their potential impacts to the natural environment are described in **Table 3.5-h**.

Table 3.5-h: Flood Types and Levels of Environmental Risk

Flood Type	Environmental Risk
Dam/Levee Failure	• Minimal – Erosion/streambank failure, loss of vegetative cover, loss of top soil
Ice Jam & Debris Flood	• Moderate – Loss of vegetative cover, debris accumulation
High Groundwater & Local Drainage	• Minimal – Temporary inundation of localized areas
Riverine & Flash Flood	• Moderate – Erosion/streambank failure, sediment deposition, debris accumulation

Economy

Flood-related economic losses include displacement of residents and damage to infrastructure, businesses, and industries. The HMWG and local jurisdiction planning groups identified the following primary and secondary impacts of flooding:

- Potential Primary Impacts:
  - Loss of life and injury
  - Structural collapse or damage to the exterior and interior of buildings
  - Disruption of utility services, including water, sewer, electricity, and gas
  - Disruption of communications networks and facilities
  - Displacement from residences or businesses
  - Loss of agricultural crops and livestock
- Potential Secondary Impacts:
  - Proliferation of disease vectors
  - Stress on the resources of emergency response and healthcare organizations and personnel
  - Food and fuel shortages
  - Water supply contamination
  - Erosion/streambank failure
  - Loss of economic productivity
  - Displacement of persons from homes and places of employment
  - Loss of business income and employee wages

Table 3.5-i illustrates the range of impacts and consequences associated with flood. The table displays the summary of jurisdictional evaluations. Jurisdiction-specific evaluations are presented in the Jurisdiction Annexes.

Table 3.5-i: Flood Impacts and Consequences, by Jurisdiction

Summary of Flood Impacts and Consequences, by Jurisdiction	Level of Concern/Ranking[23]	Mass Casualty Potential	Transportation Infrastructure Damaged	Impact on Emergency Response Operations	Communication Failure	Damage to Homes and Businesses	Health and Medical System Impacts	Water System Damage or Failure	Utility System Damage or Failure	Sewer System Damage or Failure	Environmental Damage or Long Term Impact	Agricultural Losses - Crops	Agricultural Losses - Animals	Economic Impact - Direct or Indirect	Civil Unrest	Commodity Shortage	Impact to Public Confidence in Governance	Impacts to Cultural or Social Assets	Impact to Municipal Buildings/Parks
Herkimer County	-	-	x	x	x	x	-	x	x	x	x	x	x	x	-	-	x	x	-
Village of Dolgeville	-	-	x	x	-	x	-	x	x	x	x	-	-	x	-	-	-	-	-
Town of Fairfield			x	x	x	x	x	x	x	x	x	x		x			x	x	
Town of Frankfort	-	-	x	x	x	x	x	x	x	x	x	x	-	x	-	-	x	x	x
Village of Frankfort	-	-	x	x	-	x	-	-	-	-	x	-	-	x	-	-	-	-	-
Town of German Flatts*	H	H	H	H	M	H	H	H	H	H	M	M	M	M	L	H	M	H	M
Town of Herkimer	-	-	x	-	-	x	x	x	x	x	x	x	x	x	-	-	-	-	-
Village of Herkimer	-	-	x	x	-	x	-	x	x	x	x	-	-	x	-	-	-	x	-
Village of Ilion	-	x	x	x	-	x	x	x	x	x	x	-	-	x	-	x	-	x	-
City of Little Falls	-	-	x	x	x	x	x	x	x	x	x	-	-	x	-	-	x	x	-
Town of Little Falls	-	-	x	x	x	x	x	x	x	x	x	-	-	x	-	-	x	x	-
Town of Manheim	-	x	x	x	x	x	-	-	x	-	x	x	x	x	-	-	x	-	-
Village of Mohawk	-	x	x	x	x	x	x	x	x	x	x	x	x	x	-	-	x	-	-

**The Town of German Flatts modified the table to use a ranking system that also includes the "Level of Concern", and ranked impacts and consequences by low, medium and high with numerical scores.*

In summary, flood impacts may include injury or death, though not in large numbers. Of greater concern are losses to the built environment (public facilities, critical infrastructure, private property), natural environment (contamination of the water supply), and economy (secondary business and agricultural losses).

3.5.2: Risk Analysis

Each jurisdiction in the Planning Area conducted a flood risk analysis to consider location, probability of future occurrences, magnitude/severity, and significance. The process yielded an Overall Risk Score for flood based on scores determined by each jurisdiction.

[23] This category was considered only by the Town of German Flatts.

Table 3.5-j: Summary of Overall Risk Scores for Flood, by Jurisdiction

Jurisdiction	Location	Probability of Future Occurrences	Magnitude/ Severity	Significance	Overall Risk Score[24]
Herkimer County					
Dam/Levee Failure	3	1	4	4	12
Ice Jam	3	3	2	3	11
High Groundwater/Local Drainage	2	3	2	3	10
Riverine & Flash Flood	4	4	4	4	16
Village of Dolgeville					
Dam/Levee Failure	3	2	1	1	7
Ice Jam	4	4	2	3	13
High Groundwater/Local Drainage	3	3	2	3	11
Riverine & Flash Floods	3	4	2	3	12
Town of Fairfield					
Dam/Levee Failure	2	1	1	1	5
Ice Jam	2	2	2	2	8
High Groundwater/Local Drainage	2	4	2	2	10
Riverine & Flash Flood	2	3	3	3	11
Town of Frankfort					
Dam/Levee Failure	2	1	2	2	7
Ice Jam	3	2	4	3	12
High Groundwater/Local Drainage	2	3	3	3	11
Riverine & Flash Flood	2	4	4	3	13
Village of Frankfort					
Dam/Levee Failure	2	1	2	2	7
Ice Jam	3	2	4	3	12
High Groundwater/Local Drainage	2	3	3	3	11
Riverine & Flash Flood	2	4	4	3	13
Town of German Flatts					
Dam/Levee Failure	1	1	1	1	4
Ice Jam	3	4	3	4	14
High Groundwater/Local Drainage	4	4	2	3	13
Riverine & Flash Flood	3	4	4	4	15
Town of Herkimer					
Dam/Levee Failure	4	1	4	4	13
Ice Jam	2	2	4	3	11
High Groundwater/Local Drainage	2	2	1	1	6
Riverine & Flash Flood	2	4	4	3	13
Village of Herkimer					
Dam/Levee Failure	4	1	4	4	13
Ice Jam	2	2	4	3	11
High Groundwater/Local Drainage	2	2	1	1	6
Riverine & Flash Flood	2	4	4	3	13
Village of Ilion					
Dam/Levee Failure	3	1	4	4	12
Ice Jam	3	4	2	4	13
High Groundwater/Local Drainage	3	4	2	4	13

[24] The scoring methodology is described in Section 3.0 of the Base Plan

Jurisdiction	Location	Probability of Future Occurrences	Magnitude/ Severity	Significance	Overall Risk Score[24]
Riverine & Flash Flood	3	4	2	4	13
City of Little Falls					
Dam/Levee Failure	2	1	1	2	6
Ice Jam	1	1	1	1	4
High Groundwater/Local Drainage	3	3	3	3	12
Riverine & Flash Flood	2	2	2	2	8
Town of Little Falls					
Dam/Levee Failure	2	1	1	2	6
Ice Jam	1	1	1	1	4
High Groundwater/Local Drainage	3	3	3	3	12
Riverine & Flash Flood	2	2	2	2	8
Town of Manheim					
Dam/Levee Failure	2	1	1	1	5
Ice Jam	3	2	1	2	8
High Groundwater/Local Drainage	1	1	1	1	4
Riverine & Flash Flood	3	3	2	3	11
Village of Mohawk					
Dam/Levee Failure	1	1	1	1	4
Ice Jam	2	2	2	2	8
High Groundwater/Local Drainage	2	2	2	2	8
Riverine & Flash Flood	2	2	2	2	8
AVERAGE SCORES					
Dam/Levee Failure					**7.8h = Low**
Ice Jam					**9.9 = Medium**
High Groundwater/Local Drainage					**9.77 = Medium**
Riverine & Flash Flood					**11.9 = Medium**
AVERAGE OVERALL FLOOD RISK					**9.8 - Medium**

Risk Summary – FLOOD (all types)

Location – Significant **Probability of Future Occurrence** – Medium **Magnitude/Severity** – Moderate **Significance** – Medium/High **Overall Risk Score** – Medium	The compilation of jurisdiction risk scores, along with consideration of the hazard profile and potential impacts and consequences, indicates that flood is a **medium-risk** hazard for all jurisdictions within the Planning Area, and a vulnerability assessment is appropriate to identify the level of exposure to the jurisdictions within the Planning Area.
FLOOD Hazard Priority – Medium	

3.5.3: Vulnerability Assessment

Methodology

This section quantifies the vulnerability of the Planning Area to floods. There are approximately 83,790 acres of surface water and floodplain in Herkimer County, identified

on the FEMA Flood maps.[25] GIS was used to determine the possible impacts of flooding within the municipalities and how the risk varies across the Planning Area by jurisdiction. The methodology determined improved parcel counts and values at risk to the 100-year and 500-year annual chance flood events, and produced loss estimates. The methodology should be considered "reasonable"; however, uncertainties are inherent in loss estimation methodology, and losses vary depending on event magnitude.

FEMA FIRMs apply to flooding from bodies of water and flooding associated with low-lying areas. Additional information about vulnerabilities to dam or levee failure are defined in EAPs on file with relevant jurisdictions. These were not available for review during this planning process.

Dam/Levee Failure

Vulnerability to dam or levee failure depends on the specific dam or jurisdiction in question. Small dams in the county would cause only localized damage in rural areas. Because dam classification is linked to potential consequences, failure of a high-risk dam would impact any jurisdiction in its path. A catastrophic dam failure would challenge local response capabilities and require timely evacuations to save lives. An event may cause loss of life; destroy roads, bridges, and homes; affect water quality; and cause health concerns. The consequences of high-risk dam failure are included in the structure's EAPs, which is kept on file in affected jurisdictions.

The methodology for determining vulnerability to other types of flood is described below:

- Flooding resulting from high groundwater and drainage systems is only indirectly related to the existence of flood zones. As such, this type of flood is considered in combination with determining vulnerability from riverine and flash floods.
- Flooding resulting from ice jams is related to identified flood zones, so vulnerability to this type of flood is considered in combination with riverine and flash floods.

Vulnerable Population

Table 3.5-k, **Table 3.5-l**, and **Table 3.5-m** present flood analysis results for jurisdictions in the Planning Area. Although Herkimer County itself does not include unincorporated land identified as floodplains, the data for all municipalities totaled to generate countywide totals. The tables show the exposed population for flood and the number of structures/ facilities and total exposure for three property types: residential, commercial, and critical facilities.

[25] Source: Base GIS review of FEMA BFE data.

Table 3.5-k: Population Residing in 100-Year Floodplain, by Jurisdiction

Jurisdiction	Total Population	Total Residential Parcels: 100- & 500-Year Flood Zones	Population within 100-Year Flood Zones
Herkimer County	64,519	8,771	7,321
Village of Cold Brook	329	60	107
Town of Columbia	1,580	101	97
Town of Danube	1,039	87	506
Village of Dolgeville	2,206	343	24
Town of Fairfield	1,627	32	298
Town of Frankfort	7,636	340	165
Village of Frankfort	2,598	254	314
Town of German Flatts	13,258	277	95
Town of Herkimer	10,175	114	67
Village of Herkimer	7,743	578	2,160
Village of Ilion	8,053	1,407	148
Town of Litchfield	1,513	95	32
City of Little Falls	4,946	153	-
Town of Little Falls	1,587	21	575
Town of Manheim	3,334	231	64
Village of Middleville	512	51	182
Village of Mohawk	2,731	189	182
Town of Newport	2,302	117	98
Village of Newport	640	62	9
Town of Norway	762	20	208
Town of Ohio	1,002	422	23
Village of Poland	508	18	169
Town of Russia	2,587	155	282
Town of Salisbury	1,958	305	230
Town of Schuyler	3,420	192	171
Town of Warren	757	0	-
Town of Webb	1,807	2,983	907
Village of West Winfield	826	47	64
Town of Winfield	2,086	117	145

Vulnerable Built Environment

Analysis of Herkimer County parcel data shows there are 4,891 parcels in the 100- and 500-year flood zones. This includes 15.6% and 4.5%, respectively, of all parcels. An estimate of persons living in FEMA flood zones generated from 2010 U.S. Census figures for the countywide number of persons per household (2.4), multiplied by the number of

parcels in flood zones. This calculation suggests that a total of 11,738 people live in flood zones.

Additional details about the at-risk population are in the Jurisdiction Annexes.

Table 3.5-l: Summary of Potential Flood-Related Exposure/Loss to 1% Annual Chance Flood Zone by Property Type, by Jurisdiction[26]

Jurisdiction	Residential		Commercial		Critical Facilities	
	Number of Residential Parcels	Potential Exposure/Loss for Residential Buildings	Number of Commercial Buildings	Potential Exposure/Loss for Commercial Buildings	Potential Exposure for Critical Facilities	Annualized Flood Losses (Estimated)
Herkimer County	3,800	$974,790,320	254	$90,788,727	[Unavailable]	$8,691.696
Village of Dolgeville	156	$7,634,074	28	$1,921,319	[Unavailable]	$64,559
Town of Frankfort	101	$13,596,951	9	$2,959,720	[Unavailable]	$149,027
Village of Frankfort	50	$3,663,357	14	$2,987,063	[Unavailable]	$63,990
Town of German Flatts	107	$8,715,864	8	$1,490,988	[Unavailable]	$87,173
Town of Herkimer	37	$3,364,787	5	$11,156,702	[Unavailable]	$146,530
Village of Herkimer	17	$1,376,064	6	$3,537,766	[Unavailable]	$245,529
Village of Ilion	657	$40,231,716	85	$19,408,086	[Unavailable]	$1,247,614
City of Little Falls	10	$593,300	10	$3,021,400	[Unavailable]	$269,967
Town of Little Falls	0	$0	0	$0	[Unavailable]	$12,989
Town of Manheim	80	$4,840,553	0	$0	[Unavailable]	$125,701
Village of Mohawk	55	$4,069,689	5	$815,556	[Unavailable]	$52,078

This analysis shows that the Village of Ilion includes the highest residential and commercial property exposure in the 1% annual chance flood zone, and also the highest estimated annualized flood loss. The Town of Frankfort has the second highest exposure of residential property in the 1% annual chance flood zone, and the Town of Herkimer has the second highest exposure of commercial property.

Table 3.5-m: Summary of Potential Flood-Related Exposure/Loss to 0.2% Annual Chance Flood Zone by Property Type, by Jurisdiction

Jurisdiction	Residential		Commercial	
	Number of Residential Parcels	Potential Exposure/Loss for Residential Buildings	Number of Commercial Parcels	Potential Exposure/Loss for Commercial Buildings
Herkimer County	1,091	$75,377,100	169	$53,198,977
Village of Dolgeville	49	$2,568,619	12	$777,146
Town of Frankfort	29	$3,466,378	5	$2,013,986
Village of Frankfort	82	$5,540,979	27	$3,738,112
Town of German Flatts	50	$4,645,741	5	$1,162,840
Town of Herkimer	0	$0	2	$346,277
Village of Herkimer	430	$30,418,985	31	$24,178,191
Village of Ilion	330	$20,578,728	54	$15,159,414

[26] Jurisdictional data for Tables 3.5-k and 3.5-l is provided only for participating and adopting jurisdictions. County totals include all 30 municipalities.

Jurisdiction	*Residential*		*Commercial*	
	Number of Residential Parcels	Potential Exposure/Loss for Residential Buildings	Number of Commercial Parcels	Potential Exposure/Loss for Commercial Buildings
City of Little Falls	10	$526,550	11	$3,050,400
Town of Little Falls	1	$113,514	0	$0
Town of Manheim	65	$3,904,965	1	$419,118
Village of Mohawk	36	$2,538,353	20	$1,808,395

Table 3.5-m (above) shows that the Village of Herkimer and the Village of Ilion have the largest number of residential parcels in the 500-year flood zone, and the highest total residential property value in the 0.2% annual chance flood zone. The Village of Herkimer has the highest total commercial value in the 0.2% annual chance flood zone, but the Village of Ilion includes the most commercial buildings at this risk level.

Critical Facilities at Risk

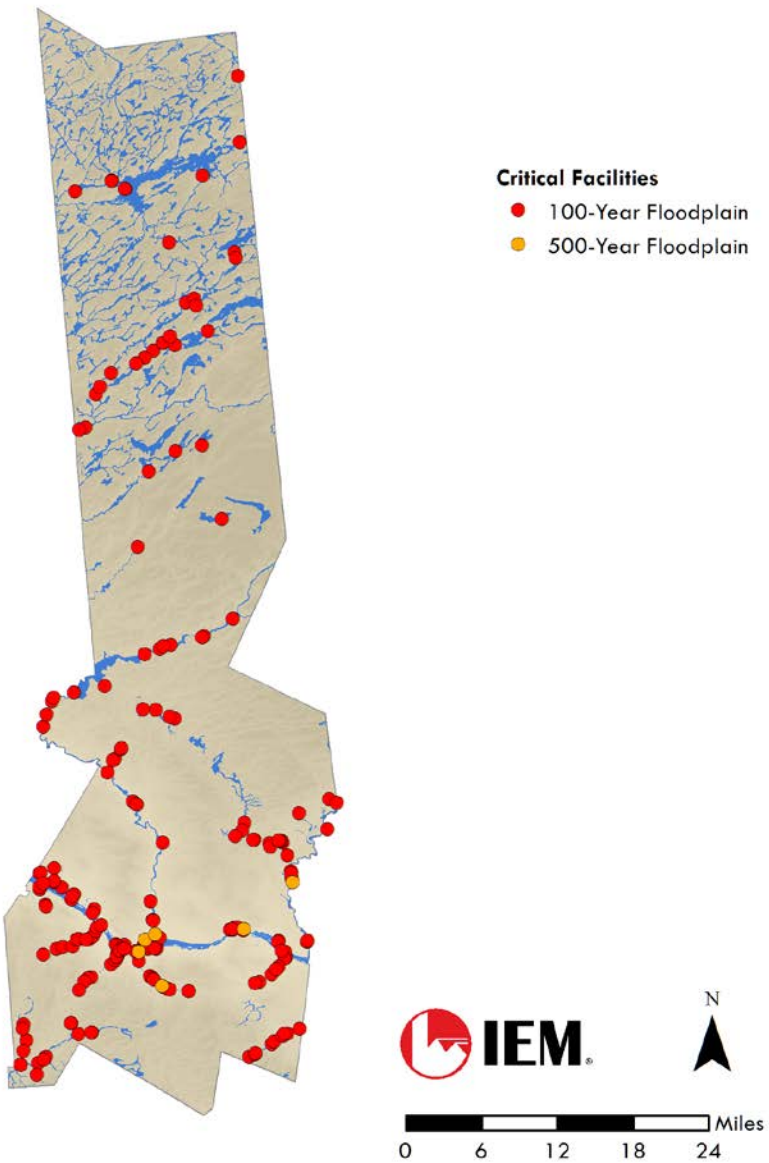
There are 206 critical facilities located in the 1% annual chance and 6 facilities in the 0.2% annual chance flood zones. Because many are privately owned, the value of some was unavailable during this planning cycle. Specifics about jurisdictions' at-risk critical facilities, including dollar value (if available), are described in the Jurisdiction Annexes.

Table 3.5-n: Critical Facilities Exposure to FEMA Floodplains, by Jurisdiction

Jurisdiction	Total Facilities	In 100-year Floodplain	In 500-year Floodplain
Cold Brook, Village of	3	3	
Columbia, Town of	14	3	
Danube, Town of	30	9	
Dolgeville, Village of	15	3	1
Fairfield, Town of	11		
Frankfort, Town of	52	16	
Frankfort, Village of	14	2	
German Flatts, Town of	33	12	1
Herkimer, Town of	28	5	
Herkimer, Village of	42	5	2
Ilion, Village of	28	17	
Litchfield, Town of	23	8	
Little Falls, City of	30	6	1
Little Falls, Town of	14		
Manheim, Town of	25	5	
Middleville, Village of	6	1	
Mohawk, Village of	19	4	1
Newport, Town of	13		
Newport, Village of	8	3	
Norway, Town of	11		
Ohio, Town of	38	14	
Poland, Village of	10	1	
Russia, Town of	32	7	

Jurisdiction	Total Facilities	In 100-year Floodplain	In 500-year Floodplain
Salisbury, Town of	51	19	
Schuyler, Town of	46	14	
Stark, Town of	20	9	
Warren, Town of	13		
Webb, Town of	61	30	
West Winfield, Village of	11	2	
Winfield, Town of	17	8	
Total – Herkimer County	**718**	**206**	**6**

Figure 3.5-12: Critical Facilities in FEMA Flood Zones



***Source**: HSIP, Cameron Engineering, NYS DEC; FEMA*

Annualized Flood Losses

Estimating annualized flood losses helps municipalities determine their level of vulnerability. Annual losses were derived by taking the total economic losses attributed to flood divided by the number of years of record to obtain estimated losses per year.

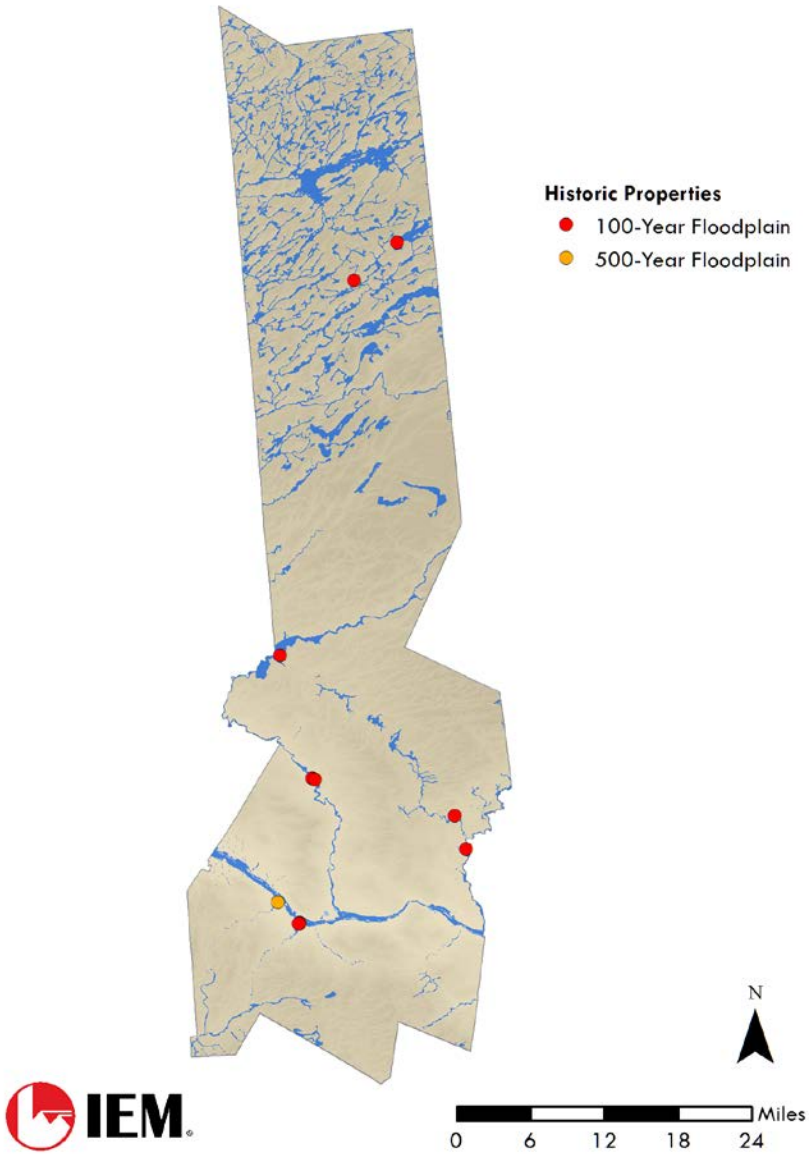
Table 3.5-o: Annualized Flood Losses, by Jurisdiction (Estimated)

Jurisdiction	Annualized Flood Loss (estimated)
Cold Brook, Village of	$26,761
Columbia, Town of	$53,382
Danube, Town of	$64,559
Dolgeville, Village of	$176,542
Fairfield, Town of	$17,610
Frankfort, Town of	$149,027
Frankfort, Village of	$63,990
German Flatts, Town of	$87,173
Herkimer, Town of	$146,530
Herkimer, Village of	$245,529
Ilion, Village of	$1,247,614
Litchfield, Town of	$80,517
Little Falls, City of	$269,967
Little Falls, Town of	$12,989
Manheim, Town of	$125,701
Middleville, Village of	$34,753
Mohawk, Village of	$52,078
Newport, Town of	$186,726
Newport, Village of	$51,172
Norway, Town of	$3,955
Ohio, Town of	$168,448
Poland, Village of	$28,303
Russia, Town of	$341,443
Salisbury, Town of	$117,801
Schuyler, Town of	$170, 616
Stark, Town of	$126,750
Warren, Town of	-
Webb, Town of	$4,263,419
West Winfield, Village of	$36,613
Winfield, Town of	$341,707
TOTAL – HERKIMER COUNTY	**$8,691,696**

Cultural, Historical and Natural Resources at Risk

Herkimer County and its 30 municipalities include many previously described cultural, historical, and natural resources. Data limitations affected the ability to conduct a full risk analysis, but FEMA FIRM datasets were overlaid on a historical resource map to show the number and locations of at-risk historically-significant structures. The map shows seven sites in the 100-year flood zone and one in the 500-year flood zone. The detailed list of historic properties is included in **Appendix 1.**

Figure 3.5-13: Location of Historic Properties within the 100- and 500-Year Floodplain



***Source**: New York State Cultural Resource Inventory System; FEMA*

3.5.4: National Flood Insurance Program Coverage, Claims, and Repetitive Losses

Twenty-nine of the 30 municipalities in Herkimer County participate in the National Flood Insurance Program (NFIP).[27] The Herkimer County administrative jurisdiction does not participate because all land area in the county is incorporated in a municipality. NFIP participation requires that communities adopt and enforce a floodplain management ordinance for areas identified as being in a Special Flood Hazard Area (flood zone). This

[27] The Town of Warren does not include identified flood zones.

means that communities must enforce state and local regulations intended to prevent unsafe development in the floodplain, thereby reducing future flood damage. Property owners in communities that uphold such standards are eligible to purchase flood insurance as a financial protection against flood loss. In some ways, flood is the most predictable and manageable hazard because for each location there is an anticipated annual probability of occurrence, as well as information about the estimated event magnitude, depth, and water velocity. Areas of occurrence are generally well mapped.

Regulated floodplains are illustrated on inundation maps called Flood Insurance Rate Maps (FIRMs) or Digital FIRMs (DFIRMs). The FIRM/DFIRM is the official map of a community on which FEMA has delineated special flood hazard areas and risk (insurance) premium zones for the community. FIRMs/DFIRMs are used for the following purposes:

- Private citizens and insurance agents use the maps to determine whether specific properties are in flood hazard areas.
- Community officials use the maps to administer floodplain management regulations and mitigate flood damage.
- Lending institutions and federal agencies use the maps to identify properties and buildings near mapped flood hazards, and to determine whether flood insurance is required when making loans or providing grants for the post-disaster purchase or construction of a building.

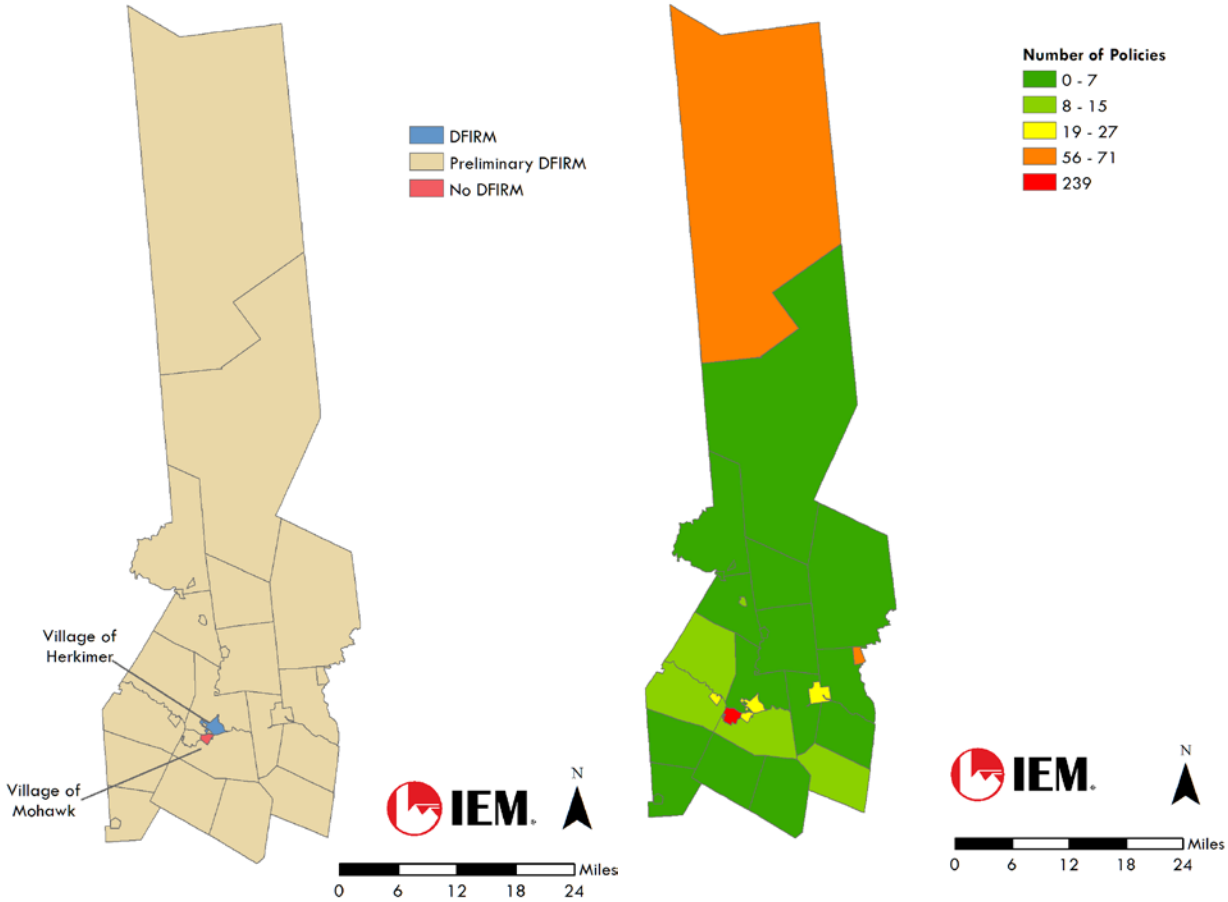
The 100-year flood, which is the minimum standard used by most federal and state agencies, is used by the NFIP as the standard for floodplain management and to determine whether a property owner must purchase flood insurance.

FIRMs for the municipalities in Herkimer County are currently being updated as part of FEMA's map modernization project. At the time this HMP was published, the updated maps were still in the "preliminary" stage of development.

Figure 3.5-14 illustrates that the Village of Herkimer is the only jurisdiction within Herkimer County with an adopted DFIRM. The Village of Mohawk does not yet have a DFIRM, and all other jurisdictions in the Planning Area have preliminary DFIRMs.

Figure 3.5-14: Status of Digital Flood Insurance Rate Maps (DFIRMs) for Herkimer County Jurisdictions, as of January 2017

Figure 3.5-15: Number of NFIP Policies in Herkimer County, by Jurisdiction



***Source**: NFIP, FEMA (January 2017)*

Figure 3.5-15 (above) shows the number of NFIP policies per municipality in the Planning Area. The most policies (239) are held in the Village of Ilion, while the Town of Webb and Village of Dolgeville hold the fewest at 71 and 56, respectively. A total of 576 NFIP policies with coverage of $78,777,900 are written on Herkimer County properties. There have been 387 claims for flood-damaged properties since 1978. The NFIP Summary in **Appendix 3** shows data for each participating jurisdiction: the number of policies, dollar amount of coverage, and number and dollar value of claims for each jurisdiction. This information is also provided in the Jurisdiction Annexes.

Figure 3.5-16: Total NFIP Premiums (Dollars), by Jurisdiction

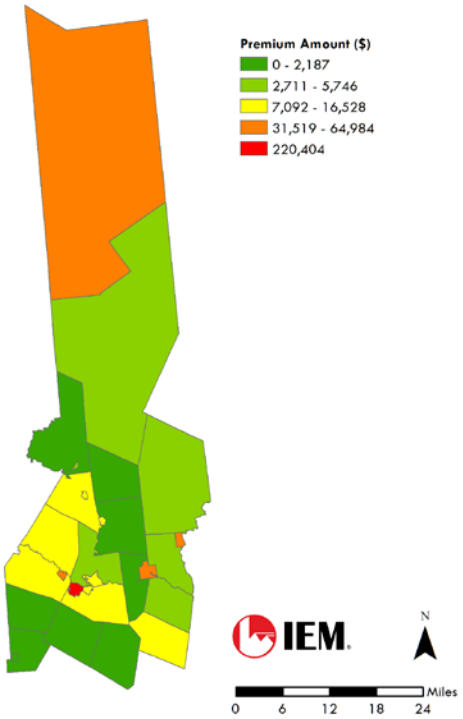


Figure 3.5-17: Total NFIP Repetitive Loss Properties

Source: NFIP, FEMA (January 2017)

Repetitive Loss Properties

A Repetitive Loss Property (RLP) is an insured building for which two or more claims of more than $1,000 were paid by NFIP within a rolling ten-year period since 1978. An RLP need not be currently insured by NFIP. "RLPs are the largest draw on the National Flood Insurance Fund, costing the NFIP more than $12.5 billion since 1978 - equivalent to roughly half of the program's $23 billion debt."[28] Federal Hazard Mitigation Assistance (HMA) funding is available to mitigate RLPs. This represents a cost-effective way to reduce future flood losses and claims.

Figure 3.5-17 (above) shows the location of the 96 RLPs by jurisdiction in the Planning Area. More than half (52) are in the Village of Ilion. The Village of Mohawk is far behind with 13 properties, the second highest number. Both jurisdictions participate in repetitive loss mitigation projects. Full repetitive loss data is included in **Appendix 3.**

Community Rating System

The Community Rating System (CRS) is a voluntary NFIP initiative to encourage floodplain management activities that exceed minimum standards. Policyholders may see flood

[28] Source: Rawle King, National Flood Insurance Program Background, Challenges, and Financial Status, Congressional Research Service (June 12, 2012), http://www.washingtonpost.com/wp-srv/business/documents/health-science-NFIP-123110.pdf

insurance premium rates reduced by up to 45% depending on the community's level of participation. CRS activities enhance public safety, reduce damage to property and public infrastructure, minimize economic losses, and protect the environment. Efforts may qualify projects for other Federal assistance programs. The Village of Ilion is a CRS participant.

Additional Considerations for Flood Risk and Vulnerability

- Special Populations – Communities must consider how to evacuate and shelter special populations while complying with the Americans with Disabilities Act. A large Village of Ilion nursing program with two high-rise buildings housing the disabled and the elderly sits in the flood zone. The community also includes several ARC/DDSO facilities housing disabled persons. The Village of Frankfort includes a multi-story senior living facility in the 100-year flood zone. If future mitigation efforts to address these facilities are technically infeasible or not cost-effective, occupants will require evacuation and potential sheltering in a flood event. Plans for evacuation and sheltering must also include accommodations for pets. Individuals and families in harm's way have repeatedly stayed behind to face danger when there was no shelter to accommodate their pets.
- State and federal mitigation programs give funding priority and resources to reinforcing critical facilities and infrastructure in FEMA flood zones. NY State guidelines require that mitigation of such structures protect the asset in event of a 500-year flood event or worst-case scenario.
- State standards also require that mitigation plans identify potential sites for the temporary housing units for residents displaced by disaster; sites within each jurisdiction (or nearby) suitable for relocating houses out of the floodplain; and locations on which to build new houses once properties in the floodplain are razed.

Conditions Affecting Vulnerability

Changes in Flood Risk over Time

Many FIRMs depicting local flood zones are more than 25 years old. Since their creation, changes in development, advances in climate change forecasting, and new technology have lessened the usefulness of current maps. Adoption of the preliminary Herkimer County DFIRMs currently in production will help communities update their floodplain management policies and programs. NYS DEC explains the usefulness of working with the latest information.

> *Risk changes over time as conditions in the community change. Physical changes can affect how much water reaches flooding sources, how far the water spreads when floods occur, or the way buildings and infrastructure are exposed to a flooding source. Much of the risk analysis depends on historical data and on the potential severity of flooding over time. As newer data is collected (particularly when severe, rare events occur), the expected chance or severity of flooding derived by analyzing this data may change. The scientific methods and technology used to analyze and map flood risk also continue to improve and may affect predicted flood hazard levels and floodplain boundaries. (**Source**: NFIP: Frequently Asked Questions)*

Future Population Growth and Development Trends

New development changes risk when it alters the land's capacity to handle flood conditions. Development creates risk in locations that have not previously experienced flooding by altering natural drainage paths, and by the very fact there are new structures and persons in harm's way. Construction of buildings, parking lots, and roads encroach on land available to absorb excess precipitation. This leaves an area more susceptible to flash flood during a heavy rain or another flood event.

No large-scale residential development is planned for Herkimer County. Should this change, future development projects create the opportunity to include mitigation-based design and construction best practices. One example includes upgrading the capacity of culverts to accommodate projected increase in precipitation resulting from climate change.

Flooding from dam/levee failure is likely to exceed the floodplain areas regulated through local floodplain ordinances. Jurisdictions should consider the dam failure hazard when permitting development downstream of such structures. Low-hazard dams become high-hazard dams when people and structures are in harm's way. This type of flood is mitigated by regular dam monitoring; exercising and updating EAPs; and rapid response to problems detected at or near dam sites.

Future development risk is addressed by regulatory and land use measures, such as floodplain ordinances and building codes. Mitigation best practices balance the interests of community growth with safety of persons and structures. The State of New York is a resource for programs, planning tools, and guidance on "green" development and resiliency. The Association of State Floodplain Managers (ASFM) program called No Adverse Impact offers similar guidance for preserving the natural floodplain function while protecting humans from adverse development.

Floodplain Management

Jurisdictions within the Planning Area abide by applicable federal, state, and local regulations that control development or redevelopment in designated flood zones.

- 6 NYCRR Part 502 and the New York State Residential Building Code: When a New York State entity funds a project, proposed reconstruction and repair of substantially damaged structures in the floodplain must adhere to the most recent elevation requirements outlined in state policies and regulations.
- Communities participating in NFIP must develop a local ordinance that addresses development in a flood zones. Where no Base Flood Elevation (BFE) exists, the lowest floor must be at least three feet above the highest adjacent grade.
- Executive Order 11988 & 24 CFR Part 55 describes the eight-step decision-making process for federally-funded projects in a floodplain. Federal agencies and state agencies implementing Federal programs must avoid actions in, or adversely affecting, floodplains unless no practicable alternative exists. The entity is required to evaluate actions and demonstrate that the project reduces or eliminates adverse impacts by including a Floodplain Management Plan.
- The risk of storm water or localized flooding to future development is minimized by

keeping accurate records of localized storm activity and affected areas; eliminating the cause of storm water pooling; and choosing not to develop in areas subject to flooding.

Integration with Other Planning Efforts

Integrating data from previous plans during the current planning process paved the way for incorporating resiliency measures into future planning efforts. It was mentioned that projects identified and funded through New York Rising initiatives were reviewed and cited in this document. Concurrency between the Herkimer County HMP and other plans during plan maintenance will ensure that projects include efforts to minimize risk.

Impacts of Climate Change

Climate change affects flooding more than other hazards because the frequency of extreme precipitation events in the Northeast has increased in recent years. Severe storms projected in the 1950s to occur only once in 100 years are now are expected to occur once every 60 years.[29] Other climate change influences include the following:[30]

- Spring breakup, snowmelt and winter rains
  - Warmer spring temperatures that lead to earlier and more rapid snow melt; more late-winter precipitation likely to fall as rain, rather than as snow
- Cyclonic disturbances
  - Increasing frequency of severe cyclonic events, which may permit more northward tracking of hurricanes
- Localized summer outburst events
  - Increase formation of conditions conducive to summer outbursts and flash flooding

Factors for Consideration in the Next Planning Cycle

Future monitoring and evaluation of this plan should consider the following factors in relation to flood, as well as other information from NYS HMP updates:

- Have floods occurred since adoption of this plan? Where did the flood occur? What type of flood and what were its impacts?
- Have new scientific studies, research, or practices changed the methods of predicting floods or assessing risk and vulnerability?
- Are there new building or land development policies, plans, or practices that address or impact flood?
- Has there been significant change in the population, built environment, natural environment, or economy that could affect the risk or vulnerability to flood?

[29] DeGaetano, A. T., 2009: Time-dependent changes in Extreme Precipitation return-period amounts in the continental United States. Journal of Applied Meteorology and Climatology, 48, 2086-2099, doi:10.1175/2009jamc2179.1. [Available online at http://journals. ametsoc.org/doi/pdf/10.1175/2009JAMC2179.1]

[30] *Mohawk River Basin Program Action Agenda, 2012-2016*, NYS DEC, pp. 17-18

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SECTION 3.6: LANDSLIDE

3.6.1: Hazard Profile

The potential for landslides exists statewide, though scientific and historical data show Herkimer County to be an area of low susceptibility. Historical data and anecdotal information reveal that the few occurring landslides took place in remote locations at high elevations in northern Adirondack Park. Landslides were included as a hazard of consideration in the 2015 HMP DRAFT.[1] That planning team noted areas in the county experiencing landslide damage that resulted in road closures. For these reasons, landslide is profiled to determine overall risk for this planning cycle.

Hazard/Problem Description

United States Geological Survey (USGS) data indicates that landslides nationwide kill between 25 and 50 people annually. They cause more than $1 billion in damage, making them one of the costlier natural hazards.[2] The term landslide refers to a variety of conditions that result in the perceptible downward and outward movement of soil, rock, and vegetation under gravitational influence. Landslides may be triggered by natural- and human-induced changes in the environment that result in slope instability.

The edge of a landslide in Keene Valley, New York is shown in this May 17, 2011, REUTERS/Andrew Kozlowski/Handout

Type

Landslides are referred to by terms such as block slide, creep, debris landslide, debris flow, earth flow, rock fall, rock topple, rotational slump, and transitional slide. These are defined in Table 3.6-a.

Table 3.6-a: Landslide Terms and Definitions[3]

Term	Definition
Block Slide	A block of rock slides along a slip plane as a unit down a slope.
Creep	Slow moving landslide often only noticed through crooked trees and disturbed structures.
Debris Landslide	Predominately gravel, cobble, boulder sediments and trees that move quickly down slope.
Debris Flow	Coarse sediments flow downhill and spread out over relatively flat areas.
Earth Flow	Fine grained sediment flows downhill, typically forming a fan structure.

[1] The hazard and risk assessment conducted as part of the County's general emergency planning using the HAZNY software is described in detail in Section 3.0 of the Base Plan.
[2] http://www.reuters.com/article/us-landslide-newyork-idUSTRE7605F320110701
[3] 2014 NYS HMP; Section 3.14, p. 3.14-1

Term	Definition
Rock Fall	Blocks of rock fall away from a bedrock unit *without* a rotational component.
Rock Topple	Blocks of rock fall away from a bedrock unit *with* a rotational component.
Rotational Slump	Blocks of fine grained sediment rotate and move down slope.
Transitional Slide	Sediment moves along a flat surface without a rotational component.

Location

USGS and the New York State Geological Survey (NYSGS) report that 80% of the state has a low susceptibility to landslides.[4] Events are typically confined to steep slopes along major rivers and stream valleys with soil composed of glacial lake clay, such as that found in the Mohawk River Valley. Landslides may also occur on steep banks at higher elevations.

Extent

Several natural variables contribute to the extent of landslide activity: soil properties, topographic position and slope, and historical incidence. Slopes of 10 degrees or higher and those greater than 40 feet are generally more susceptible.[5] Most of the soil in the Planning Area consists of dense glacial till that resists landslides. Glacial lake clay soils have a higher risk for landslide occurrence, especially on steeper slopes.

Previous Occurrences

Three landslide events have occurred in Herkimer County since 1950. The National Climatic Data Center (NCDC) Storm Events Database records one landslide event, a "debris flow," on March 30, 2014, in the Cedarville area of the Town of Winfield.[6] Rainfall and melting snow caused a minor mud and debris slide three miles south of the Village of Ilion in the Town of German Flatts. The event caused part of State Route 51 to be closed for two days while debris was cleared from the roadway.

The 2014 DRAFT Herkimer HMP documents several additional landslide events:[7]

- April 13, 1994: An 80-foot mudslide caused by heavy rain falling on saturated ground uprooted 30 trees and several utility poles, leaving people without power. It covered a section of Mucky Run Road, 1.5 miles south of Route 5S, and caused $50,000 in damage.
- April 9, 2001: Excessive rains and rapid snowmelt caused a mudslide in the Town of Mohawk, which covered portions of Route 334, blocking traffic and causing $100,000 in damage.
- November 2006: Two landslides took place within a 10-day span. The first occurred on November 7, destroying a house on Route 5. On November 17, a second occurred

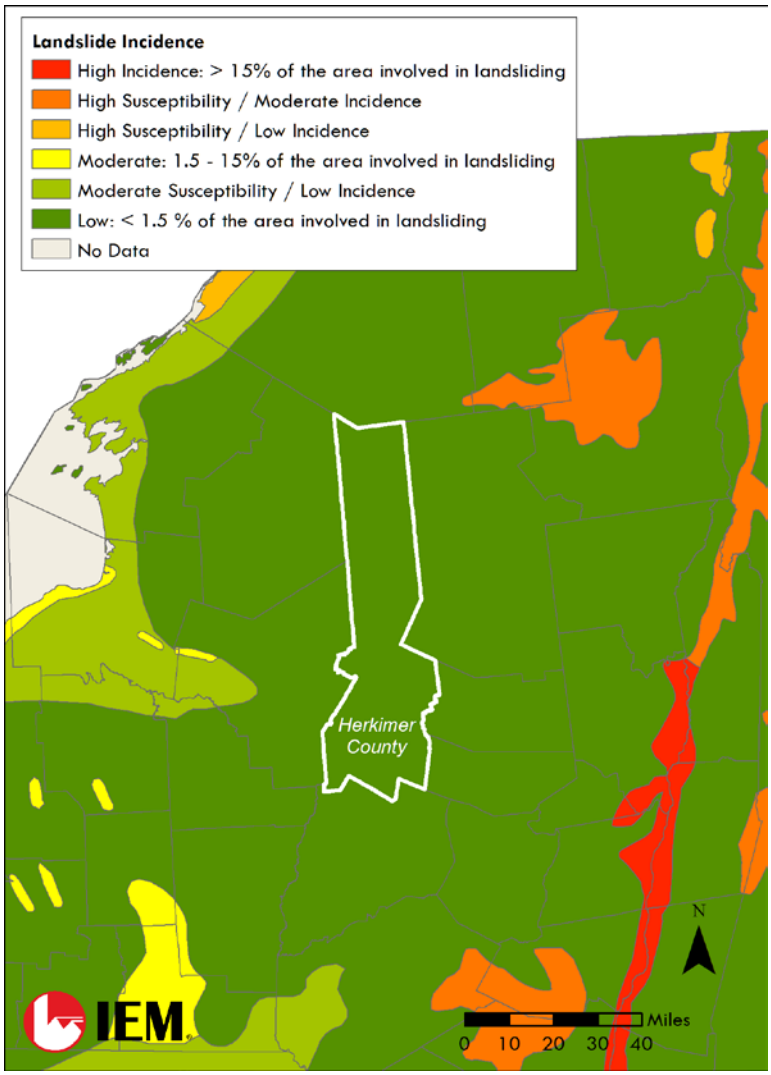
[4] 2014 NYS HMP, Section 3.14, p. 3.14-2
[5] 2014 NYS HMP, Section 3.14, p. 3.14-7
[6] NCDC data as reported in the NYS HMP, Section 3.3, p. 3.3-2
[7] The source for this information was not provided in the 2015 HMP DRAFT.

when a 75-foot highway bank opposite West Canada Creek slid across the highway. It destroyed five telephone poles, bent the guardrail, and closed Route 28.

The 2014 NYS HMP documents two landslide events in Herkimer County between 1960 and 2012 that generated property damage of $105,000.[8] There have been no additional reports of landslides in Herkimer County and no federal disaster declarations for the hazard.

Figure 3.6-1 illustrates the incidence and susceptibility of landslide in Herkimer and nearby counties. The map shows that Herkimer County has a low incidence and susceptibility.

Figure 3.6-1: Landslide Incidence and Susceptibility in Herkimer County



***Source**: HSIP*

[8] 2014 NYS HMP, Section 3.14, p. 3.14-8. *Statistical analysis in the NYS HMP was based on the SHELDUS database, which covered a different span of time than NCDC data.*

Probability of Future Events

Using qualitative analysis, landslide probability is established by dividing the number of past events (3) by the number of years of record (66). This calculation indicates that the future probability for landslides in Herkimer County is 4.5%, a **low** probability.

Impacts and Consequences

The primary landslide concern is damage to structures and infrastructure: roads, bridges, and utility and communication lines. The 2014 NYS HMP included a HAZUS analysis of landslide vulnerability for all counties in the state. Based on this assessment, Herkimer County was rated as a "2," which indicated a landslide susceptibility of .15-.50, and placed Herkimer County at low risk for landslide.[9] Unfortunately, it was ranked third of 62 counties as having had the "highest property damage" from landslides.

Population at Risk

There have been no landslide-related fatalities or injuries in Herkimer County. The 2014 NYS HMP landslide vulnerability assessment (based on USGS data) numbered the at-risk population at 64,519, which is 100% of the population.[10]

Built Environment

The 2014 NYS HMP describes property damage of $105,000 from two landslides. The plan also incorporates data from a "Landslide Impact Analysis" that ranks threatened jurisdictions and lists the number of vulnerable structures. The analysis resulted in a Herkimer County Rating Score of 2 (low) and indicated that 22,298 structures are at risk to landslide.[11] The 2014 Herkimer County Plan [not adopted] also mentioned the probability as "moderately low" hazard based on the New York HAZNY ranking system and state landslide susceptibility map.

Critical infrastructure such as roads, bridges, and utility and communication lines are at risk to landslides. Past landslides near Herkimer County roads caused temporary road closure and damage to telephone poles, guard rails, and one house.[12] Only one or two parcels of private property have been affected by the hazard.

Natural Environment

Landslides threaten the natural environment because they change the landscape and cause the loss of environmentally sensitive areas; however, these threats are limited in scale.

Economy

Impacts to the economy of Herkimer County from landslide would be secondary, resulting from indirect loss of revenues for businesses, or costs to uninsured property owners. No long-term impacts to the economy are anticipated.

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[9] 2014 NYS HMP, Section 3.14, pp. 3.14-3 to 3.14-18.
[10] 2014 NYS HMP, Section 3.14, Table 3.14a, p 3.14-3.
[11] 2014 NYS HMP, Section 3.14, Table 3.14d, p. 3.14-16
[12] 2015 HMP DRAFT, p. 106

Impacts Summary

The following primary and secondary impacts are listed here for future review in the event that risk level increases.

- Potential Primary Impacts
  - Life, safety, and health of residents
  - Structural damage to buildings and infrastructure networks (water, power, and communication lines) and transportation routes.
  - Temporary road closures
- Potential Secondary Impacts
  - Loss of vegetative cover

Jurisdictions analyzed landslide risks and consequences. Their analyses are shown in **Table 3.6-b.** Details about impacts and consequences are also provided in the Jurisdiction Annexes.

Table 3.6-b: Summary of Analysis of Landslide Impacts and Consequences, by Jurisdiction

Summary of Landslide Impacts and Consequences, by Jurisdiction	Level of Concern/Ranking[13]	Mass Casualty Potential	Transportation Infrastructure Damaged	Impact on Emergency Response Operations	Communication Failure	Damage to Homes and Businesses	Health and Medical System Impacts	Water System Damage or Failure	Utility System Damage or Failure	Sewer System Damage or Failure	Environmental Damage or Long Term Impact	Agricultural Losses - Crops	Agricultural Losses - Animals	Economic Impact - Direct or Indirect	Civil Unrest	Commodity Shortage	Impact to Public Confidence in Governance	Impacts to Cultural or Social Assets	Impact to Municipal Buildings/Parks
Herkimer County	-	-	x	-	x	-	-	-	x	-	-	-	-	-	-	-	-	-	-
Village of Dolgeville	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Town of Frankfort	-	-	x	x	-	-	-	-	-	-	x	-	-	-	-	-	-	-	-
Village of Frankfort	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Town of German Flatts*	H	H	H	H	L	H	L	L	M	L	H	L	L	M	L	L	L	L	L
Town of Herkimer	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Village of Herkimer	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Village of Ilion	-	-	x	x	x	-	-	-	-	-	-	-	-	-	-	-	-	-	-
City of Little Falls	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Town of Little Falls	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Town of Manheim	-	-	x	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Village of Mohawk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

**Town of German Flatts used a low (score 3), medium (2), and high (1) ranking system, and added "Level of Concern/Ranking"*

[13] This category was considered only by the Town of German Flatts.

3.6: Analysis of Risk

Planning Area jurisdictions conducted a landslide risk analysis that considered location, probability of future occurrences, magnitude/severity, and significance. An Overall Risk Score for landslide was determined from the compiled scores, shown in **Table 3.6-c**.

Table 3.6-c: Summary of Overall Risk Scores for Landslide, by Jurisdiction

Jurisdiction	Location	Probability of Future Occurrences	Magnitude/ Severity	Significance	Overall Risk Score[14]
Herkimer County	1	1	1	1	4
Village of Dolgeville	1	3	2	3	8
Town of Frankfort	2	2	1	1	6
Village of Frankfort	1	1	1	1	4
Town of German Flatts	2	4	3	3	13*
Town of Herkimer	2	2	1	1	6
Village of Herkimer	1	1	1	1	4
Village of Ilion	1	2	1	1	5
City of Little Falls	1	1	1	1	4
Town of Little Falls	1	1	1	1	4
Town of Manheim	1	1	1	1	4
Village of Mohawk	1	1	1	1	4
AVERAGE SCORE					**5.5 = Low**

****NOTE**: The Town of German Flatts found landslide to be a high hazard, but the description of events, impacts, and consequences indicates that the hazard results from road cuts, streambank slides, or bank failure due to flood. Consequently, the vulnerability identified by the Town associated with this hazard is considered a flood-related hazard and incorporated in **Section 3.5: Flood** in the Town Jurisdictional Annex.*

Risk Summary - LANDSLIDE

Location – Limited **Probability of Future Occurrence** – Low **Magnitude/Severity** – Low **Significance** – Low **Overall Risk Score** – Low	The compilation of jurisdiction risk scores, along with consideration of the hazard profile and potential impacts and consequences, indicates that landslide is a **low-risk** hazard for the Planning Area.
LANDSLIDE Hazard Priority – Low	

3.6.3: Vulnerability Assessment

Given the low number of previous occurrences and the average overall risk score, the HMWG determined that landslide is a **low-risk** hazard for the Planning Area. As such, a vulnerability assessment to quantify potential loss is not currently justified. Information about the high-risk hazard rating by the Town of German Flatts is presented in **Annex 9**.

Future Population and Development Trends

The Planning Area population declined slightly over the past 40 years, a trend that is not expected to change in the near-term. Changes in development and land use could affect

[14] The scoring methodology is described in Section 3.0 of the Base Plan.

growth or decline and will be monitored and evaluated in the next planning cycle. Municipal population trends are described in the jurisdiction annexes. Current land use and zoning policies and programs do not reflect high potential for large-scale future development. Small-scale development can be managed with current planning and regulatory capabilities.

Impacts of Climate Change

Because landslide is largely a geological phenomenon, climate change is not likely to impact community risk and vulnerability. Climate change variables include temperature, precipitation, water quantity/quality, and storm frequency and intensity. These factors do not affect landslide, but increased precipitation would. This factor will be evaluated during the next planning cycle.

Factors for Consideration in the Next Planning Cycle

Plan monitoring, evaluation, and updating will consider the following landslide factors and information from NYS HMP updates:

- Have landslide events occurred since adoption of this plan?
- Has new scientific research or methodology changed the ability to predict landslide events or assess risk and vulnerability?
- Has there been significant change in the population, built environment, natural environment, or economy that could affect the risk or vulnerability to landslide?
- Is there new evidence about climate change that affects the risk level or vulnerability?

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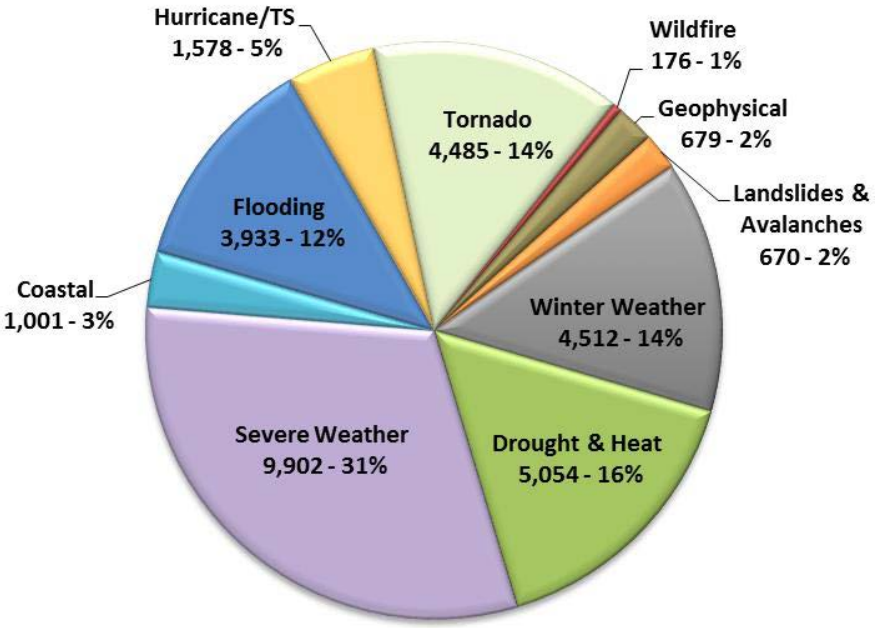
SECTION 3.7: SEVERE WEATHER

3.7.0 Hazard Profile

Severe Weather refers a meteorological event with the potential to cause damage, social disruption, or loss of life. Scope and extent vary by latitude, altitude, topography, and atmospheric conditions. Severe weather and its effects are responsible for nearly 31% of hazard fatalities in the United States.[1] The rate is higher when tornado, winter, flooding, drought, and extreme heat are also considered.

Figure 3.7.0-1: Natural Hazard-Related Fatalities in the U.S., 1960 - 2014



***Source**: Hazards & Vulnerability Institute, University of South Carolina*

Hazard/Problem Description

Severe winter weather brings with it an assortment of conditions, impacts, and consequences. These include heavy snow, ice, extreme cold, and winds strong enough to create a blizzard. Depending on the severity, frequency, and timing of the event, occurrences such as heavy rain and heavy snow may lead to flooding. Extended severe weather patterns also contribute to extreme heat, extreme cold, and drought.

Type

Because different types of severe weather often occur simultaneously and create similar impacts, these hazards are first collectively addressed, then profiled individually in the following subsections:

[1] "U.S. Hazard Losses, 1960-2014", Hazards & Vulnerability Research Institute; University of South Carolina.

- 3.7.1. Hail
- 3.7.2. High Wind (Straight Line, Tornado, Tropical Cyclone)
- 3.7.3. Lightning
- 3.7.4. Thunderstorm/Heavy Rain
- 3.7.5. Winter Weather (Snow, Ice, Extreme Cold)

Tropical Cyclone, including Hurricane, is included in the High Wind category. While a rare occurrence in Herkimer County, the high winds from hurricanes and tropical storms impact the Planning Area with significant straight line winds and tornadoes.

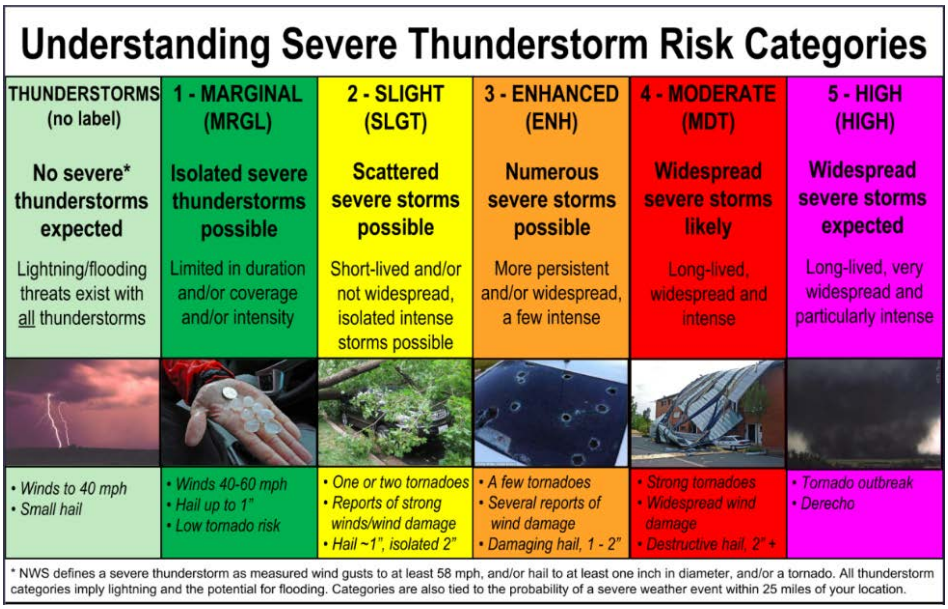
Location

All of Herkimer County may be impacted by severe weather. If the risk level for a specific jurisdiction differs from that of the overall Planning Area, this is explained in the jurisdiction annex.

Extent

Figure 3.7.0-2 shows severe thunderstorm risk categories and their magnitude. The National Weather Service (NWS) defines a severe thunderstorm as measured wind gusts of at least 58 miles per hour; hail of at least one inch in diameter; and/or a tornado. All categories suggest the possibility of lightning and the potential for flooding. They also include the probability of a severe weather event within 25 miles of a given location.

Figure 3.7.0-2: Severe Thunderstorm Risk Categories



***Source**: http://www.spc.noaa.gov/misc/about.html*

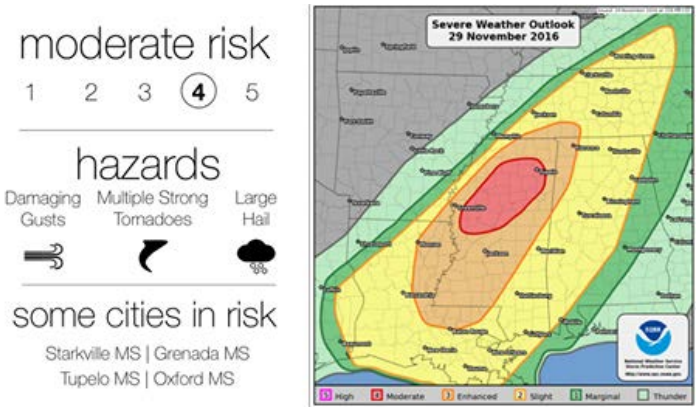
Historical data presented in **Table 3.7.0-a** shows the maximum extent of severe weather in the Planning Area**.**

Table 3.7.0-a: Severe Weather Extent in Herkimer County (1950 - 2016)

Extent of Severe Weather in Herkimer County, NY	
Largest Hailstone on Record	1.5 inches
Strongest Tornado Recorded	F1; EF1
Highest Wind Speed on Record	84 mph
Speed of Onset	Warning Time – Minutes to hours
Duration	Limited – Minutes to hours; multiple days in extreme events

Warnings issued through official sources, such as the NWS and the National Oceanic and Atmospheric Administration (NOAA) Storm Prediction Center, provide the most reliable and timely preparedness data. A prediction example is illustrated in **Figure 3.7.0-3**.

Figure 3.7.0-3: Sample Severe Weather Warning Product, NOAA



***Source**: Storm Prediction Center, NOAA. November 29, 2016*

The frequency of severe thunderstorms increases during the spring and early summer (from May through August) but they can occur at any time. March, April, and May are typically the months with the most severe thunderstorm events. Severe winter storms are associated with cold-weather months can occur as early as October and as late as May. Most of these events occur between December and March.

Previous Occurrences

The *2014 New York State Hazard Mitigation Plan* (NYS HMP), January 2014, documented that Herkimer County experienced 273 events categorized as "severe weather" between 1960 and 2012.[2] The data was taken from the National Oceanic and Atmospheric Administration (NOAA) National Center for Data Collection (NCDC) Storm Events Database[3] and describes

[2] 2014 NYS HMP statistical data was obtained from SHELDUS, a hazard database incorporating data from multiple sources from 1960 through 2012.
[3] In 2017, The National Center for Data Collection was renamed the National Center for Environmental Information. This Herkimer County HMP was largely complete by then so references to NCDC remain in the document.

858 severe weather events of all types that occurred in Herkimer County during this period. These events are summarized by type of storm in **Table 3.7.0-b**. The data includes fatalities, injuries, property damage, and crop damage.

Table 3.7.0-b: Total Number and Impacts of All Severe Weather Events in Herkimer County, by Category/Type, 1950 - 2016[4]

Severe Weather Category/Type	Total Number of Events	Total Fatalities	Total Injuries	Total Property Damage ($)	Total Crop Damage ($)
Cold/Wind Chill	43	0	0	0	0
Extreme Cold/Wind Chill	12	0	0	0	0
Hail	82	0	0	0	0
Heavy Rain	20	0	0	101,000	0
Heavy Snow	44	0	0	0	0
High Wind	51	0	0	313,000	0
Ice Storm	4	0	0	0	0
Lake-Effect Snow	35	0	0	0	0
Lightning	9	0	0	109,000	0
Strong Wind	16	0	0	57,000	0
Thunderstorm Wind	345	0	7	11,319,000	0
Tornado	7	1	5	3,027,000	0
Tropical Storm	2	0	0	0	0
Winter Storm	84	0	0	447,300	0
Winter Weather	104	0	0	35,000	0
TOTAL	**858**	**1**	**12**	**$15,408,300**	**0**

Seventy-one of these events occurred in the Planning Area within the past three years. **Table 3.7.0-c** describes all severe weather events recorded during this period in the Storm Events Database.

Table 3.7.0-c: NCDC Severe Weather Reports for Herkimer County, January 2013 – March 19, 2016

Date(s)	Hazard	Severity	Location
1/20/2013	High Wind/Strong Wind	50 knots	Southern Herkimer County
1/22-24/2013	Winter Weather (Extreme Cold)		Herkimer County
1/31/2013	High Wind/Strong Wind	50 knots	Southern Herkimer County
2/8/2013	Winter Weather (Storm)		Herkimer County
5/21/2013	Hail	.75 - 1.5 in.	Mohawk, East Herkimer, Goodell Corners, Fairfield, Dolgeville
5/21/2013	High Wind/Strong Wind	50 knots.	Frankfort Hill, Frankfort Center, East Schuyler, Dolgeville
5/29/2013	Flash Flood		Manheim Center, East Herkimer, Dolgeville
5/29/2013	High Wind/Strong Wind	50 knots.	Manheim Center, Dolgeville, Harbor, Frankfort, Ilion
6/1-2/2013	High Wind/Strong Wind	50 knots.	Old Forge, West Winfield
6/13/2013	Flash Flood		East Frankfort

[4] Storm Events Database, NCDC, as of March 1, 2017

Date(s)	Hazard	Severity	Location
6/23-24/2013	Flash Flood		Eatonville, Harbor, East Schuyler
6/24/2013	High Wind/Strong Wind	50 knots.	Ohio, West Winfield
6/28/2013	Flash Flood		East Frankfort, Ilion, East Herkimer, Eatonville, Indian Castle, Middleville, East Schuyler, Little Falls
6/30/2013	Hail	1.00 in.	Manheim Center
6/30/2013	High Wind/Strong Wind	50 - 60 knots.	Little Falls, Manheim Center
7/1/2013	Flash Flood		East Frankfort, Mohawk, Ilion, East Schuyler, Eatonville, Indian Castle, Middlefield, Little Falls
7/19/2013	Extreme Heat		Southern Herkimer County
7/19/2013	Flash Flood		Mohawk
7/19/2013	Hail	1.00 in.	East Frankfort
7/19/2013	High Wind/Strong Wind	50 knots.	Mohawk, Dolgeville, Russia, Norway, Middlefield
9/2/2013	High Wind/Strong Wind	50-61 knots.	Little Falls, Ingham Mills, Dolgeville
9/11/2013	High Wind/Strong Wind	50 knots.	Poland
11/1/2013	High Wind/Strong Wind	50 knots.	Herkimer County
12/10/2013	Winter Weather (Lake-effect		Northern Herkimer County
1/1/2014	Winter Weather (Heavy Snow)		Southern Herkimer County
1/2/2014	Winter Weather (Storm, Cold		Herkimer County
1/6-7/2014	Winter Weather (Snow, Cold)		Herkimer County
1/21/2014	Winter Weather (Extreme Cold)		Northern Herkimer County
1/26-29/2014	Winter Weather (Extreme Cold)		Herkimer County
2/5/2014	Winter Weather (Snow, Cold)		Herkimer County
2/13/2014	Winter Weather		Herkimer County
3/12/2014	Winter Weather (Heavy Snow)		Herkimer County
3/30/2014	Debris Flow		Cedarville
5/16/2014	Flash Flood		West Winfield
6/3/2014	Lightning	1k Prop Damage	Salisbury Center
6/13/2014	Flash Flood		East Frankfort, East Herkimer, Mohawk
6/17/2014	High Wind/Strong Wind	50-60 knots.	Old Forge, Beaver River, Eagle Bay, South Columbia, Poland, Middleville, Salisbury Center, Little Falls
7/2-3/2014	High Wind/Strong Wind	50-70 knots.	Poland, Newport, Columbia Center, West Winfield, East Winfield, Cedarville, South Columbia, Columbia Center, Jordanville, Ilion, Cullen, Norway, Newville
7/3/2014	Hail	1.00 in.	West Winfield
7/8/2014	High Wind/Strong Wind	50 knots.	Northwood, Woodin Corners, Wilmurt, Johnson Corners, Newport, Norway, Poland, Cold Brook, West Winfield, Cedarville, Dolgeville, Newville, Cullen
7/31/2014	Lightning	1k Prop Damage	Salisbury Center
11/18-20/2014	Winter Weather (Lake-effect		Northern Herkimer County
11/26/2014	Winter Weather (Storm)		Herkimer County
12/9/2014	Winter Weather		Herkimer County
1/1/2015	Winter Weather (Lake-effect		Northern Herkimer County
1/3/2015	Winter Weather		Southern Herkimer County
1/7/2015	Winter Weather (Extreme Cold)		Northern Herkimer County
1/9/2015	Winter Weather (Lake-effect		Northern Herkimer County
1/30/2015	Winter Weather (Extreme Cold)		Herkimer County
2/2/2015	Winter Weather (Heavy Snow)		Herkimer County
2/5/2015	Winter Weather (Extreme Cold)		Herkimer County
2/7/2015	Winter Weather		Herkimer County

Date(s)	Hazard	Severity	Location
2/13-15/2015	Winter Weather (Extreme Cold)		Herkimer County
2/19-23/15	Winter Weather (Extreme Cold)		Herkimer County
4/20/2015	High Wind/Strong Wind	39 knots/ 11k Prop Damage	Herkimer County
6/12/2015	High Wind/Strong Wind	50 knots.	West Winfield, East Frankfort
12/15/2015	High Wind/Strong Wind	39 knots. / 5k Prop. Damage	Southern Herkimer County
12/19/2015	Winter Weather (Lake-effect		Northern Herkimer County
12/28/2015	Winter Weather		Herkimer County
1/1/2016	High Wind/Strong Wind	43-52 knots.	Herkimer County
1/1/2016	Winter Weather (Lake-effect		Northern Herkimer County
1/27/2016	Winter Weather (Lake-effect		Northern Herkimer County
2/13/2016	Winter Weather (Extreme Cold)		Herkimer County
3/2/2016	High Wind/Strong Wind	43 knots/ 10K Prop Damage	Southern Herkimer County
3/18-19/2016	Winter Weather (Storm, Snow)		Herkimer County
6/20/2016	High Wind/Strong Wind	50 knots.	Eagle Bay, Johnson Corners, East Herkimer, Salisbury, Little Falls, Kelhi Corners
6/28/2016	Hail	1.00 in.	West Schuyler
6/28/2016	High Wind/Strong Wind	50 knots.	East Frankfort
7/1/2016	High Wind/Strong Wind	50 knots.	Minnehaha
7/15/2016	High Wind/Strong Wind	50 knots.	Eatonville, Mohawk
8/13/2016	High Wind/Strong Wind	50 knots.	Frankfort Center, Frankfort, Cedarlake, Middleville, Mohawk, Johnson Corners, Fairfield, Eatonville, Bull Hill, Fairfield, Columbia Center, South Columbia, Little Falls, Manheim Center, Salisbury Center, Ingham Mills, Eagle Bay, Warren

Eight of these events resulted in the federal disaster declarations shown in **Table 3.7.0-d.**

Table 3.7.0-d: Severe Weather Federal Disaster Declarations, Herkimer County (1974–2016)*

DR	Date	IH	IA	PA	HM	Type	Incident Title
1244	9/11/1998	Yes	No	No	Yes	Severe Storm(s)	NY – Severe WX, Sept. 7, 1998
1335	7/21/2000	Yes	Yes	No	No	Severe Storm(s)	Severe Storms and Flooding
1534	8/3/2004	Yes	Yes	No	No	Severe Storm(s)	Severe Storms and Flooding
1650	7/1/2006	No	No	No	No	Severe Storm(s)	Severe Storms and Flooding
1670	12/12/2006	Yes	Yes	No	No	Severe Storm(s)	Severe Storms and Flooding
4020	8/31/2011	No	Yes	No	No	Hurricane	Hurricane Irene
4031	9/13/2011	No	Yes	No	No	Severe Storm(s)	Remnants of Tropical Storm Lee
4180	7/8/2014	Yes	Yes	No	No	Severe Storm(s)	Severe Storms and Flooding

**Federal disaster recovery programs: IH=Individuals and Households; IA=Individual Assistance; PA=Public Assistance; HM=Hazard Mitigation*

It is important to note that different data sources capture different events during different time periods, and sometimes display dissimilar information about the same event.

Probability of Future Events

Herkimer County jurisdictions are confident that of all types of severe weather events will continue in the future. Historical data and climate trends indicate the potential for more

frequent severe weather events of longer duration. Severe convective storm activity has been on the rise and is likely tied to a climate pattern shifts (such as La Nina and El Nino), which affect the frequency and severity of storms. The future probability of severe weather in Herkimer County was calculated by dividing the number of occurrences (858) by the number of years of record (66). This formula indicates Herkimer County has a 1,300% probability of recurrence for all severe weather types. Probability for each type of severe weather is discussed in later sub-sections.

Impacts and Consequences

The characteristics of severe weather vary greatly and include hail, lightning, high winds, heavy rainfall, snow, ice, and extreme cold. The specific impacts and consequences related to each of these characteristics are summarized here and more fully in subsequent sub-sections. Severe weather causes fatalities, property damage, and damage to critical infrastructure. It may also impact the natural environment and agriculture, causing economic loss.

Population

Previous severe weather events resulted in fatalities and injuries. All 64,519 residents of the county are vulnerable to the effects of severe weather, especially those who work outdoors or do not heed weather-related watches, warnings, and alerts. Tornadoes and severe winter weather create conditions that are hazardous to life and safety.

Built Environment

Structural and property risk level depends on storm event characteristics. There is a high level of concern about risk to critical infrastructure such as roads, bridges, electric and gas networks, water supply systems, and health and medical facilities and their support networks.

Critical Infrastructure

Power failure is a frequent consequence of severe weather. Even short-term power failure may cause cascading effects: failure of traffic signals, water and sewer system failure, and loss of heat and air systems in individual structures. Loss of power, combined with extreme heat or cold, may cause communities to open emergency shelters. These would be used by the elderly, those with electricity-dependent medical equipment, children under five years of age, and homeless persons exposed to extreme temperature changes for extended periods.

Cultural and Historical Structures

Historical structures are susceptible to the effects of high wind, hail, lightning, and winter weather because they were built to lower construction standards. Lightning strikes often start fires in older wood buildings that were built without fire suppression systems. High wind may blow out windows or roof sections, thereby weakening the remaining structure.

The 2014 NYS HMP does not address all types of severe weather, but the Severe Winter Storm section documents that Herkimer County sustained more than $53.2 million in property damage from winter weather between 1960 and 2012.[5] Hazard sub-sections

[5] 2014 NYS HMP, p. 3.15-11

include additional details about impacts to the built environment.

Natural Environment

Specific weather types and their impacts to Herkimer County's natural environment are described in **Table 3.7.0-e.**

Table 3.7.0-e: Potential Environmental Impacts, by Severe Weather Type

Severe Weather Type	Environmental Impacts
Hail	• Damage to trees, loss of vegetation • Crop damage
High Wind/Tornado	• Damage to trees, loss of vegetation • Straight-line winds may exacerbate wildfire conditions • Build-up of vegetative debris
Lightning	• Damage to trees, loss of vegetation • May cause wildfires
Thunderstorm/Heavy Rain	• Damage to trees, loss of vegetation • Secondary potential for flood or landslides that damage ecosystems • Erosion
Winter Weather	• Damage to trees, loss of vegetation • Build-up of vegetative debris • Crop damage

The 2014 NYS HMP documents $1,059,923 in Herkimer County crop damage between 1960 and 2012 due to winter weather.

Economy

Economic losses resulting from severe weather are secondary effects related to the conditions of the event, resulting in both direct and indirect impacts to infrastructure, businesses, and industries.

- Direct Economic Impacts
  - Cost of repairs or replacement for damaged infrastructure, homes, and businesses
  - Loss of livestock or crops
- Indirect Economic Impacts
  - Loss of income due to business and agricultural disruption or failure
  - Loss of customers and wages due to business closures
  - Loss of suppliers or distributors
  - Disruption in transportation systems

Table 3.7.0-f summarizes jurisdictional evaluation of impacts and consequences, illustrating the range of effects associated with various types of severe weather. Jurisdiction-specific evaluations are presented in the jurisdiction annexes.

Table 3.7.0-f: Severe Weather Impacts and Consequences

Severe Weather Impacts and Consequences, Summary of Jurisdictional Assessments	Level of Concern/Ranking	Mass Casualty Potential	Transportation Infrastructure Damaged	Impact on Emergency Response Operations	Communication Failure	Damage to Homes and Businesses	Health and Medical System Impacts	Water System Damage or Failure	Utility System Damage or Failure	Sewer System Damage or Failure	Environmental Damage or Long Term Impact	Agricultural Losses - Crops	Agricultural Losses - Animals	Economic Impact - Direct or Indirect	Civil Unrest	Commodity Shortage	Impact to Public Confidence in Governance	Impacts to Cultural or Social Assets	Impact to Municipal Buildings/Parks
Herkimer County	-	-	x	x	x	x	-	x	x	x	x			x	-	-		x	-
Village of Dolgeville	-	-	x	x	-	x	-	x	x	-	x	-	-	-	-	-	-	-	-
Town of Fairfield	-	-	x	x	x	x	-	-	x	-	x	-	-	x	-	-	-	-	-
Town of Frankfort	-	-	x	x	x	x	-	x	x	x	x	-	-	x	-	-		x	-
Village of Frankfort	-	-	-	x	x	x	-	x	x	-	x	-	-	x	-	-	-	-	-
Town of German Flatts*	1	2	2	1	1	1	1	2	1	1	2	3	2	2	3	1	2	1	3
Town of Herkimer	-	-	x	x	-	x	x	x	x	-	x	x	x	x	-	-	-	-	-
Village of Herkimer	-	-	x	x	-	x	x	x	x	-	x	x	x	x	-	-	-	-	-
Village of Ilion	-	-	x	x	x	x	-	x	x	-	-	-	-	x	-	-	-	-	-
City of Little Falls	-	x	x	x	x	x	x	x	x	x	x	-	-	x	x	x	x	x	-
Town of Little Falls	-	x	x	x	x	x	x	x	x	x	x	-	-	x	x	x	x	x	-
Town of Manheim	-	x	x	x	x	x	-	-	x	-	x	x	x	x	-	-	x	-	-
Village of Mohawk	-	x	x	x	x	x	x	x	x	x	x	-	-	x	-	-	-	-	-

**Town of German Flatts used a low (score 3), medium (2), and high (1) ranking system, and added "Level of Concern/Ranking"*

Risk Analysis

Each type of severe weather was evaluated separately by jurisdictions to determine its Overall Risk Score. **Table 3.7.0-g** summarizes and averages the scores.

Table 3.7.0-g: Jurisdictional Summary of Overall Risk Scores for Severe Weather

Jurisdiction	Location	Probability of Future Occurrences	Magnitude/ Severity	Significance	Overall Risk Score[6]
Herkimer County					
Hail	1	4	1	2	8
High Wind	3	4	2	3	12
Lightning	2	4	1	2	9
Thunderstorm/Heavy Rainfall	3	4	2	3	12
Winter Weather	4	4	2	3	13
Village of Dolgeville					
Hail	1	1	1	1	4
High Wind	2	4	2	2	10

[6] The scoring methodology is described in Section 3.0 of the Base Plan

Jurisdiction	Location	Probability of Future Occurrences	Magnitude/ Severity	Significance	Overall Risk Score[6]
Lightning	2	4	2	2	10
Thunderstorm/Heavy Rainfall	3	4	2	2	11
Winter Weather	4	4	2	2	12
Town of Fairfield					
Hail	1	1	1	1	4
High Wind	3	3	2	2	10
Lightning	1	3	1	2	7
Thunderstorm/Heavy Rainfall	2	3	3	3	11
Winter Weather	3	3	2	3	11
Town of Frankfort					
Hail	1	1	1	1	4
High Wind	2	3	2	2	9
Lightning	1	3	1	1	6
Thunderstorm/Heavy Rainfall	3	3	2	3	11
Winter Weather	4	4	2	2	12
Village of Frankfort					
Hail	1	1	1	1	4
High Wind	2	3	2	2	9
Lightning	1	3	1	1	6
Thunderstorm/Heavy Rainfall	3	3	2	3	11
Winter Weather	4	4	2	2	12
Town of German Flatts					
Hail	4	4	2	3	13
High Wind	4	4	2	3	13
Lightning	4	4	2	3	13
Thunderstorm/Heavy Rainfall	4	4	2	3	13
Winter Weather	4	2	3	3	12
Town of Herkimer					
Hail	2	2	1	1	6
High Wind	2	3	2	2	9
Lightning	2	2	1	2	7
Thunderstorm/Heavy Rainfall	2	3	3	3	11
Winter Weather	3	3	3	3	12
Village of Herkimer					
Hail	2	2	1	1	6
High Wind	3	3	2	2	10
Lightning	2	2	1	1	6
Thunderstorm/Heavy Rainfall	2	3	3	3	11
Winter Weather	4	3	2	2	11
Village of Ilion					
Hail	4	4	2	3	13
High Wind	4	4	2	3	13
Lightning	4	4	2	4	14
Thunderstorm/Heavy Rainfall	4	4	2	4	14
Winter Weather	4	4	2	3	13
City of Little Falls					
Hail	1	1	1	1	4
High Wind	3	3	3	3	12
Lightning	2	3	3	3	11

Jurisdiction	Location	Probability of Future Occurrences	Magnitude/ Severity	Significance	Overall Risk Score[6]
Thunderstorm/Heavy Rainfall	4	4	3	4	15
Winter Weather	4	3	3	3	13
Town of Little Falls					
Hail	1	1	1	1	4
High Wind	3	3	3	3	12
Lightning	2	3	3	3	11
Thunderstorm/Heavy Rainfall	4	4	3	4	15
Winter Weather	4	3	3	3	13
Town of Manheim					
Hail	1	1	1	1	4
High Wind	2	4	2	2	10
Lightning	2	4	2	2	10
Thunderstorm/Heavy Rainfall	3	4	2	2	11
Winter Weather	4	4	2	2	12
Village of Mohawk					
Hail	1	1	1	1	4
High Wind	3	3	2	3	11
Lightning	1	2	1	1	5
Thunderstorm/Heavy Rainfall	2	3	2	2	9
Winter Weather	4	3	2	2	11
AVERAGE SCORES					
Hail					5.8=Low
High Wind					10.6=Medium
Lightning					9.1=Medium/Low
Thunderstorm/Heavy Rainfall					11.8=Medium
Winter Weather					12.1=Medium
AVERAGE OVERALL SEVERE WEATHER RISK					**9.6- Medium**

The decision about whether to further assess the hazard for vulnerability was made based upon the average of all Overall Risk Scores for each severe weather type. High wind, thunderstorm/heavy rainfall, and winter weather were determined to be medium-risk hazards and were considered in the vulnerability assessment.

Risk Summary – SEVERE WEATHER – ALL TYPES

Location – Widespread **Probability of Future Occurrence** – High **Magnitude/Severity** – Medium **Significance** – Medium **Overall Risk Score** – Medium	Jurisdiction risk scores, hazard profiles, and potential impacts and consequences indicate that severe weather is a **medium-risk** hazard.
SEVERE WEATHER – ALL TYPES – Hazard Priority – Medium	

Vulnerability Assessment

Historical data, severe weather impacts, and severe weather risk were used to create a *combined* vulnerability assessment for severe weather hazards ranked as high- and medium-risk: **high wind, thunderstorm/heavy rainfall,** and **winter weather**. Although the overall risk score for lightning resulted in a medium risk rank, the community is not vulnerable overall and there are few mitigation options. A vulnerability assessment was not conducted during hazard review, but the risk status will be reassessed in the next planning cycle.

Methodology and Findings

Vulnerability assessments are based on information from the NCDC Storm Events Database, which covers the period from January 1950 through November 2016. Impacts to Herkimer County from all types of severe weather included 15 fatalities, 105 injuries, and $15,408,300 in property/infrastructure damage. While NCDC reported no crop damage, the 2014 NYS HMP recorded more than $1 million in crop damage due to winter weather alone. Despite this data discrepancy, it is evident that the Planning Area experienced, and will continue to experience, severe weather impacts.

Vulnerable Population

The most reliable way to quantify vulnerable population is to determine the number of residents who are age 5 and under and those who are age 65 and over. This population is more likely to require medical care and/or social services during disasters. Using the county level figures from the 2010 Census, an estimated 22.4% of the population in Herkimer County can be described as "vulnerable." This percentage was used to calculate the vulnerable population in each jurisdiction based on the 2015 estimated population based on age alone. It does not include vulnerable populations such as the disabled or the homeless. The vulnerable population age demographic is illustrated in **Table 3.7.0-h.**

Table 3.7.0-h: Population at Risk (based on Demographic Groups) for All Severe Weather Events, by Jurisdiction

CITY/VILLAGE/ TOWN	POPULATION (2015 Estimated)	Vulnerable Population
Herkimer County	63,100	14,134
Village of Cold Brook	322	72
Town of Columbia	1,557	349
Town of Danube	1,025	230
Village of Dolgeville	2,005	449
Town of Fairfield	1,573	352
Town of Frankfort	7,470	1,673
Village of Frankfort	2,507	562
Town of German Flatts	12,844	2,877
Town of Herkimer	9,901	2,218
Village of Herkimer	7,519	1,684
Village of Ilion	7,926	1,775
Town of Litchfield	1,499	336
City of Little Falls	4,787	1,072
Town of Little Falls	1,538	345
Town of Manheim	3,246	727
Village of Middleville	501	112
Village of Mohawk	2,628	589
Town of Newport	2,279	510
Village of Newport	620	139
Town of Norway	776	174

CITY/VILLAGE/ TOWN	POPULATION (2015 Estimated)	Vulnerable Population
Town of Ohio	1,003	225
Village of Poland	500	112
Town of Russia	2,555	572
Town of Salisbury	1,923	431
Town of Schuyler	3,413	765
Town of Stark	741	166
Town of Warren	1,129	253
Town of Webb	1,815	407
Village of West Winfield	882	198
Town of Winfield	2,100	470

Vulnerable Built Environment

All structures are vulnerable to severe weather. **Table 3.7.0-i** shows a statistical "worst case scenario," providing the total numbers of parcels and potential exposure for all residential and commercial buildings (assuming every parcel includes one or more structures). Parcel-level detail identifying the type, age, and construction characteristics of structures is not currently available for detailed vulnerability analysis. Future data collection and analysis should consider these variables.

Table 3.7.0-i: Structures at Risk for All Severe Weather Events, by Jurisdiction

Jurisdiction	*Residential*		*Commercial*	
	Number of Residential Parcels	Potential Exposure/Loss for Residential Buildings	Number of Commercial Parcels	Potential Exposure/Loss for Commercial Buildings
Herkimer County	24,408	$2,930,471,306	1,494	$382,916,131
Village of Dolgeville	608	$36,245,899	74	$5,523,593
Town of Frankfort	1,708	$224,833,494	73	$16,092,462
Village of Frankfort	787	$64,159,194	94	$11,159,301
Town of German Flatts	843	$78,079,420	29	$4,861,105
Town of Herkimer	948	$94,233,841	44	$18,814,149
Village of Herkimer	1,963	$134,971,206	294	$112,493,669
Village of Ilion	2,450	$165,276,516	173	$36,171,438
City of Little Falls	1,565	$93,355,440	156	$26,321,945
Town of Little Falls	554	$55,295,235	25	$3,591,622
Town of Manheim	464	$29,934,307	20	$3,270,588
Village of Mohawk	827	$57,366,288	97	$11,447,272

Jurisdiction Annexes provide additional detail about the at-risk built environment, including critical infrastructure such as power, water and sewer systems, and transportation systems.

Vulnerable Natural Environment

Severe weather may damage vegetation and agriculture. This is further discussed in **Section 3.7.5, Base Plan**.

Vulnerable Economy

Annualized losses were calculated by taking the total economic losses from previous severe weather events divided by the number of years of record. The cost of thunderstorm/heavy rainfall events are reported under the category "Heavy Rain" in the NCDC Storm Events Database. This does not include costs from secondary impacts of heavy rain, including flood and flash flood (see **Section 3.5, Base Plan**). The average annual costs for winter weather were calculated using the total costs of the NCDC reporting categories for cold/wind chill, extreme cold/wind chill, heavy snow, ice storm, lake-effect snow, winter storm, and winter weather.

Table 3.7.0-j: Average Annual Losses for High Wind, Thunderstorm/Heavy Rainfall and Winter Weather for Herkimer County (1950-2016)

Severe Weather Type	Average Annual Loss (estimated)
High Wind	$274,921
Thunderstorm/Heavy Rainfall	$25,250
Winter Weather	$1,156,625

Conditions Affecting Vulnerability

Future Population Growth and Development Trends

All new growth and development would be affected by severe weather. The effects of weather conditions may be ameliorated through adherence to regulatory and land use measures such as floodplain ordinances and building codes.

The Building Code of New York State[7] (BCNYS) establishes design wind speeds statewide, starting with coastal communities exposed to wind speeds of 120 miles per hour. Herkimer County municipalities fall within the wind load of 90 miles per hour, which means that new structures must be built to withstand winds of this speed. New York State also designates "special wind regions" in which speed abnormalities are known to exist. The Planning Area is not in one of these regions.

New critical facilities such as communications towers should be built to withstand the max wind speed and extreme conditions created by heavy rain, thunderstorms, and winter weather. While the Planning Area has experienced severe weather damage, it is difficult to quantify future deaths, injuries, or property damage. Development should consider severe weather hazards during project planning, engineering, and architectural design, with a goal of lessening risk to people, property, the natural environment, and the economy.

In summary, population and development in Herkimer County are not expected to increase community vulnerability to severe weather hazards.

[7] 19 NYCRR 1220 - Residential Code of New York State (RCNYS), and 19 NYCRR 1221 - Building Code of New York State (BCNYS)

Impacts of Climate Change

Climate change is expected to worsen the effects of severe weather. These concerns are summarized in **Table 3.7.0-k.**

Table 3.7.0-k: Potential Impacts of Climate Change in Relation to Severe Weather[8]

Hazard	Potential Impacts
Extreme Weather	• Increases or decreases in severity may lead to other conditions associated with extreme weather and result in more severe or more long-term secondary impacts (e.g., changes in energy demand)
Drought	• Rising summer temperatures with little change in summer rainfall may increase the frequency of short-term (1 to 3 month) droughts, possibly as often as once a year • Impacts to water management and hydrology • Commodity shortages
Heavy Precipitation Events	• Increased heavy precipitation • Predicted increases in the frequency and severity of damaging rainstorms • Agriculture and ecosystems stressed by higher temperatures and more extreme precipitation
Extreme Temperatures	• More frequent days with temperatures above 90°F • Longer growing season • Impacts to environmental, social, and economic systems • Increasing vulnerability of residents, especially populations that are already most vulnerable and disadvantaged
Winter Weather	• Shorter snow seasons and earlier spring snowmelts (projections are for loss of snow-cover days by one-fourth to one-half per year) • Projected increase of 20-30% in winter precipitation

No large-scale development is planned in Herkimer County. Should it take place, new projects offer the opportunity to address conditions resulting from past severe weather hazards by incorporating mitigation design and construction measures.

[8] *http://www.ucsusa.org/sites/default/files/legacy/assets/documents/global_warming/pdf/confronting-climate-change-in-the-u-s-northeast.pdf*

Factors for Consideration in the Next Planning Cycle

Mitigation plan monitoring and evaluation will consider the following severe weather factors, as well as information from future NYS HMP updates:

- Have severe weather events occurred since adoption of this plan? Where did they occur? What type of severe weather and what were its impacts?
- Have new scientific studies, research, or practices changed the methods of predicting severe weather or assessing risk and vulnerability?
  - If risk or vulnerability to severe weather has increased, it is recommended that the HMWG utilize HAZUS-MH to more broadly analyze vulnerability to high wind.
- Are there new building or land development policies, plans, or practices that address or impact severe weather?
- Has there been significant change in the population, built environment, natural environment, or economy that could affect risk or vulnerability to severe weather?

3.7.1 Severe Weather Profile: Hail

This section profiles hail to determine the overall risk as described in **Section 3.7.0.2**.

Hazard/Problem Description

Hail is formed when water droplets freeze and thaw as they are pushed into the upper atmosphere by the internal forces of thunderstorms. Hailstones are usually less than two inches in diameter and can fall at speeds of 120 miles per hour (mph). Severe hailstorms are destructive, injuring people and damaging roofs, buildings, automobiles, vegetation, and crops. Hail has been associated with severe storms in Herkimer County.

Most hail is two inches or larger in diameter (slightly larger than golf ball size) and associated with supercell and non-supercell thunderstorms. Hail falls when the thunderstorm's updraft can no longer support the weight of the ice from which hail is formed. The stronger the updraft, the larger the hailstones grow. An aerial view of the hazard reveals that it falls in paths known as hail swaths ranging in size from a few acres to an area 10 miles wide and 100 miles long. Hail accumulates in deep piles and large drifts.

Location

All areas within Herkimer County's geographical boundaries are susceptible to hail.

Extent

The National Weather Service (NWS) classifies hail by its diameter and compares it to everyday objects (i.e., size of a golf ball, tennis ball) to explain scope and severity to non-scientific audiences.

Table 3.7.1-a: Hailstone Measurements

Average Diameter (inches)	Description
0.25	Pea
0.5	Marble/Mothball
0.75	Dime/Penny
0.875	Nickel
1.0	Quarter
1.5	Ping-pong ball
1.75	Golf-Ball
2.0	Hen Egg
2.5	Tennis Ball

Table 3.7.1-1: Comparison of Hailstones to Objects of Measurement

***Source**: USGS, September 2016*

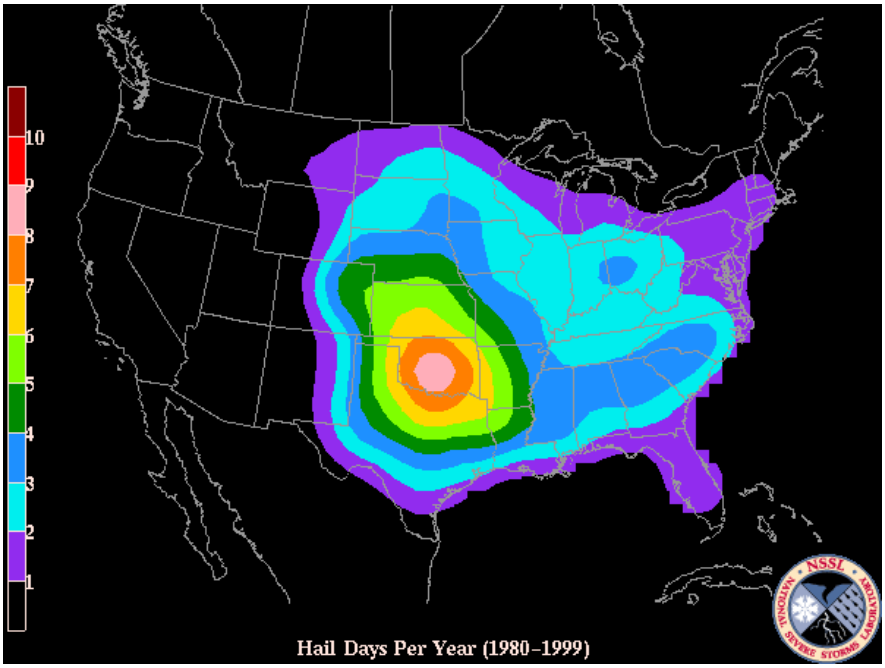
Table 3.7.1-b summarizes the extent of hail in the Planning Area based on historical data and accepted preparedness measures.

Table 3.7.1-b: Hail Extent in Herkimer County

Extent of Hail in Herkimer County, NY	
Largest Hailstone Recorded (1950 – 2016)	1.5 inches
Speed of Onset	Warning Time – Hours to minutes
Duration	Limited - Minutes

Figure 3.7.1-2 indicates that, based on the number of annual hail days, southern Herkimer County was more susceptible to hail than the northern region of the New York during the period 1980 to 1999.

Figure 3.7.1-2: Average Number of Hail Days per Year (1980 – 1999)

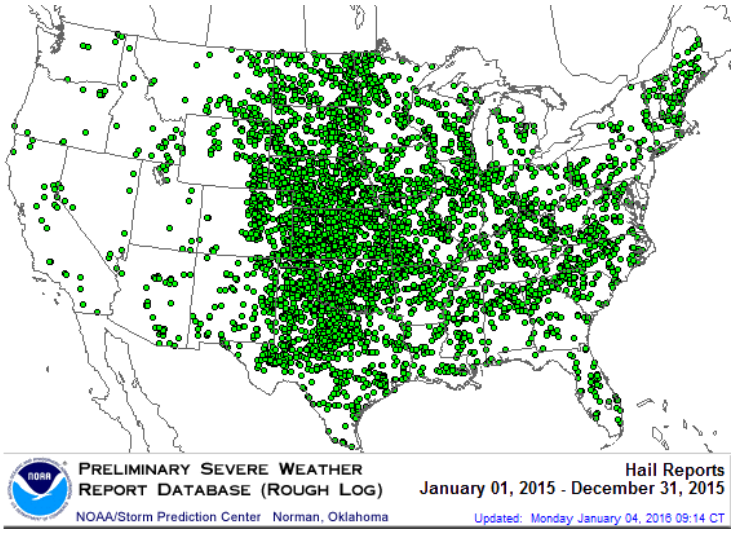


***Source**: National Severe Storms Laboratory - http://www.nssl.noaa.gov/projects/hazard/img/thai8099.gif*

Previous Occurrences

Table 3.7.0-b shows that there were 82 hail events documented between 1950 and November 2016. No fatalities, injuries, property damage, or crop damage was reported for these events. The 2015 Storm Prediction Center's Annual Severe Weather Report Summary (below) visually depicts the year's incidence. It shows that the state had a lower incidence of hail for that year when compared to other states and regions. No hail was reported in Herkimer County in 2015.

Figure 3.7.1-3: Map of Reported Severe Weather Events – Hail Reports, 2015

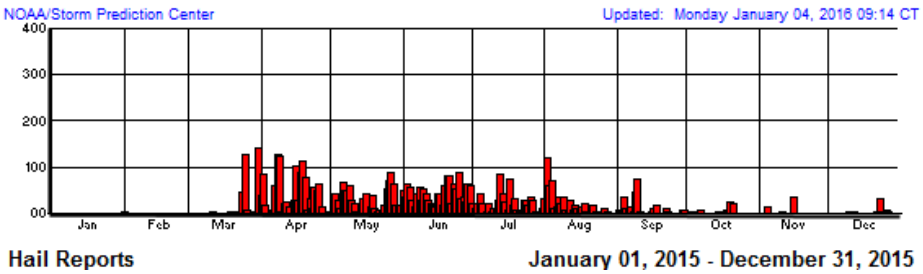


***Source**: National Severe Storm Laboratory, http://www.nssl.noaa.gov/research/hail/*

The largest hailstone to impact the Herkimer County Planning Area was 1.5 inches, the size of a ping-pong ball. The 2014 NYS HMP (based on SHELDUS) for the period of 1960 to 2012[9] shows hail-related property damage totaling $513,203 and crop damage of $55,474. The NCDC database does not mention hail-related fatalities, injuries, or damage of any kind between 1950 and 2016.

Hail activity is typically associated with strong thunderstorms, especially during the spring and early summer months. **Figure 3.7.1-4** identifies hail activity during 2015, which is typical of recent years.

Figure 3.7.1-4: Months of Most Frequent Hail Storm Activity, 2015



***Source**: NOAA, Storm Prediction Center*

Probability of Future Events

The recurrence interval of hailstorms was calculated by dividing the number of occurrences (82) by the number of years of record (66). Herkimer County's future probability of recurrence for hail is 80%.

Impacts and Consequences

While historical data indicates that there is a high probability of future occurrence, data also shows that hail causes few impacts and consequences to the population, property, the environment, and the economy.

- Potential Primary Impacts
  - Life, safety, and health of residents
  - Damage to automobiles and aircraft
  - Structural damage to buildings including skylights, metal roofs, and glass-roofed structures
  - Injuries to livestock
  - Crop damage
- Potential Secondary Impacts
  - Economic loss

[9] 2014 NYS HMP data analysis used SHELDUS, a database that differs slightly from the NCDC Storm Events Database.

Population

There is no record of fatality or injury from hailstorm in the Planning Area.

Built Environment

Hail damage is limited in severity and is likely to impact structures built with vulnerable materials such as metal roofs, glass windows, roofing, and vinyl. Historical data does not include reports of damage to buildings or critical infrastructure.

Cultural and Historical Structures

Older structures in a community are at higher risk to severe weather because they were built before modern building codes were implemented. They often suffer from deferred maintenance or are in hazard-prone areas. Owners of such property would be wise to use mitigation measures that provide emergency temporary protection and produce no permanent long-term impacts to such structures, and to upgrade mitigation efforts when structures undergo maintenance, rehabilitation, or adaptive re-use.

Natural Environment

Hail may damage vegetation and crops and hurt livestock. Fortunately, NCDC documents no such losses in the Planning Area for the period from 1950 through November 2016.

Risk Analysis: Hail

Each jurisdiction in the Planning Area conducted an analysis of potential risks and consequences for hail. Jurisdictional analyses are summarized in **Table 3.7.0-f**. Based on the average overall risk score (see **Table 3.7.0-g**), hail was determined to be a **low-risk** hazard. As such, a vulnerability assessment was not conducted during this planning cycle.

3.7.2 Severe Weather Profile: High Wind (Straight-line, Tornado, Tropical Cyclone)

This section profiles high wind hazards to determine the overall risk, as described in **Section 3.7.0.2**.

High winds are one of the most frequently reported and costliest severe weather hazards in Herkimer County. Straight-line winds are the most common high wind occurrence, but tornadoes and winds from tropical cyclones can also impact the Planning Area. New York is not generally considered to be a tornado-prone location. Conditions for supercells that spawn tornadoes require strong vertical wind shear, an atmospheric condition that occurs more frequently in the U.S. mid-section rather than the Northeast. Despite the generally-held belief that such events do not occur in New York, many tornadoes—some causing injuries, fatalities, and property damage—have been reported in the state since recordkeeping began in 1950.

Hazard/Problem Description

High winds, often accompanying severe thunderstorms, cause significant property and crop damage, threaten public safety, and have short-term economic impacts stemming from business closures and power loss. Herkimer County winds are typically straight-line winds or thunderstorm wind not associated with rotation (i.e., not tornadoes). Such winds can overturn mobile homes, tear roofing from structures, topple trees, snap power lines, shatter windows, and sandblast paint from cars. Associated hazards include utility outages, arcing power lines, debris blocking streets, structural fire, and wildfire. Widespread damage to homes may lead to the need for shelter and temporary housing for those impacted by the event.

Type

Seven types of high winds are defined in this section: tornado, straight line wind, downdraft, downburst, microburst, gust front, and derecho. Herkimer County has not experienced hurricane-force winds (sustained winds above 74 miles per hour) from a tropical cyclone, but wind gusts and tornadoes arising from these tropical systems have the potential to impact the Planning Area.

Table 3.7.2-a: High Wind Definitions[10]

Type of High Wind	Definition
Tornado	Local atmospheric storm, generally of short duration, formed by winds rotating at very high speeds, usually in a counterclockwise direction.
Straight-line Wind	Wind that comes out of a thunderstorm but is not associated with rotation like tornado winds.
Downdraft	Small-scale column of air that rapidly sinks toward the ground.
Downburst	Strong downdraft with horizontal dimensions larger than 2.5 miles, resulting in an outward burst or damaging winds on or near the ground.
Microburst	Small, short-lived, concentrated downburst that produces an outward burst of damaging winds at the surface.
Gust Front	A wind shift, temperature drop, and gusty winds out ahead of a thunderstorm. Sometimes the winds push up air above them, forming a shelf cloud or detached roll cloud.
Derecho	Widespread wind storm that is associated with a band of rapidly moving showers or thunderstorms, it consists of numerous microbursts, downbursts, and downburst clusters.

Location

All of Herkimer County is susceptible to high wind and its effects. Large-scale weather events that include high winds generally affect the entire county. Using wind data collected over 100 years, weather and emergency management groups divided the United States into four zones that reflect the number and strength of extreme winds. These wind zones are

[10] New York State Hazard Mitigation Plan, January 2014, p. 3.11-1

primarily used for establishing Design Wind Speeds for building codes. They also provide a visual guide for determining hazard preparedness measures, risk, and mitigation actions. The map used in **Figure 3.7.2-1** shows that most of Herkimer County (indicated by the **blue arrow**) is located within Zone II, an area with a top wind speed of 160 miles per hour (mph). Southern Herkimer County falls into Zone III, with a top wind speed of 200-mph. The map is from FEMA Publication #361, *Design and Construction Guidance for Community Shelters.* Estimates such as these are used by ASCE American Society of Civil Engineers), the International Code Council (building codes), and NFPA (National Fire Protection Association).

Figure 3.7.2-1 Wind Zones in the United States, with designation of Herkimer County

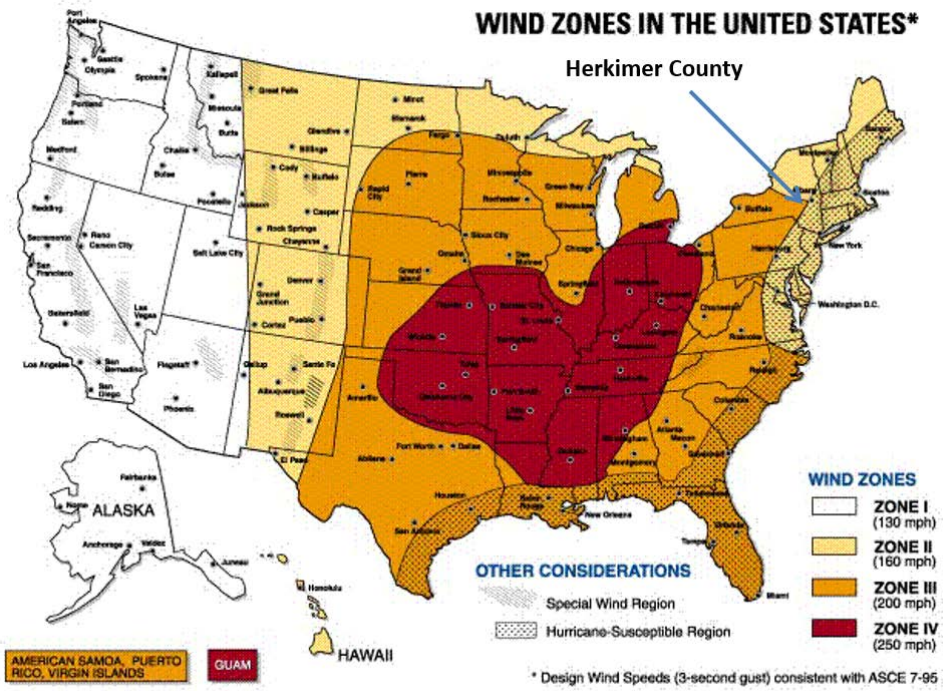


Figure I.2 Wind zones in the United States

***Source**: https://www.fema.gov/graphics/library/wmap.gif*

Extent

Straight-line Winds

Winds are often termed straight-line winds to differentiate the damage they cause from that of a tornado. Most winds that cause damage at the ground level result from outflow generated by thunderstorm downdraft. The intensity of straight-line winds may be as intense as that of a tornado. Damaging winds are classified as those exceeding 50-60 mph.

Thunderstorm wind damage is more common than tornado damage and accounts for half of all severe weather reports in the lower 48 states. Wind speeds reach up to 100 mph and may create a damage path extending for hundreds of miles.[11] Mobile home residents are

[11] National Severe Storm Laboratory

especially at risk for injury and death. Even anchored mobile homes can be seriously damaged when straight-line winds gust to over 80 miles per hour.

Figure 3.7.2-2: Mobile Home Overturned by High Winds

***Source**: http://www.nssl.noaa.gov/education/svrwx101/wind/*

Tornadoes

Tornadoes the world's most powerful storms. They are characterized by a funnel-shaped downward extension of a cumulonimbus cloud whirling at speeds of up to 300 miles per hour. They generally occur in the afternoon and evening, after the daily buildup of heat powers a violent "supercell" thunderstorm. A tornado can stay on the ground for an hour or longer and be a mile wide or larger. While rarely seen in the Planning Area, they have in recent years occurred more frequently in combination with several types of severe storms.

Practically speaking, it is nearly impossible to measure the actual wind speed inside a tornado because unprotected weather instruments would be destroyed. For this reason, the *Fujita Scale* was devised in 1971 as a system for estimating the intensity of tornadoes based on the type and severity of damage. The Fujita Scale used an "F" designator before the scale number and ranges from F0 to F5, with higher numbers indicating more severe storms. In recent years, increased knowledge of wind forces and their effects on buildings led scientists to determine that wind speeds on the original scale were too high for categories F3 and higher. The scale was revised in 2007 as the *Enhanced Fujita Tornado Intensity Scale.* This is the scale now used exclusively for determining tornado ratings by comparing wind speed and actual damage. The *Enhanced Fujita Scale* uses an "EF" designator before the scale number.

Figure 3.7.2-3 illustrates the relationship between *Enhanced Fujita* ratings, wind speed, and expected tornado damage.

Figure 3.7.2-3: Enhanced Fujita Scale Estimated Wind Speeds and Expected Damage

EF Rating	Wind Speeds	Expected Damage		
EF-0	65-85 mph	'Minor' damage: shingles blown off or parts of a roof peeled off, damage to gutters/siding, branches broken off trees, shallow rooted trees toppled.		
EF-1	86-110 mph	'Moderate' damage: more significant roof damage, windows broken, exterior doors damaged or lost, mobile homes overturned or badly damaged.		
EF-2	111-135 mph	'Considerable' damage: roofs torn off well constructed homes, homes shifted off their foundation, mobile homes completely destroyed, large trees snapped or uprooted, cars can be tossed.		
EF-3	136-165 mph	'Severe' damage: entire stories of well constructed homes destroyed, significant damage done to large buildings, homes with weak foundations can be blown away, trees begin to lose their bark.		
EF-4	166-200 mph	'Extreme' damage: Well constructed homes are leveled, cars are thrown significant distances, top story exterior walls of masonry buildings would likely collapse.		
EF-5	> 200 mph	'Massive/incredible' damage: Well constructed homes are swept away, steel-reinforced concrete structures are critically damaged, high-rise buildings sustain severe structural damage, trees are usually completely debarked, stripped of branches and snapped.		

Source: www.weather.gov

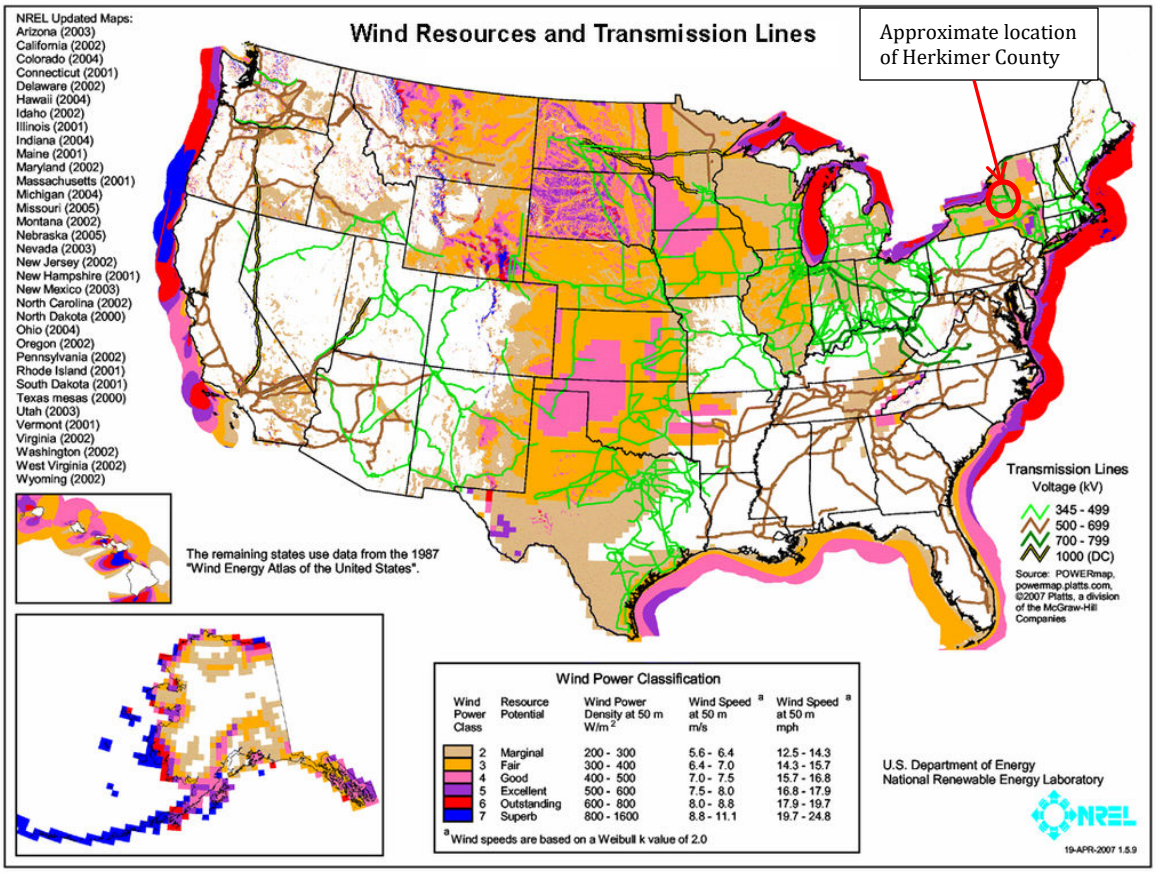
The extent of high wind and tornadoes impacting Herkimer County is shown in **Table 3.7.2-b**.

Table 3.7.2-b Tornado Extent in Herkimer County, 1950 - 2016

High Wind and Tornado Extent in Herkimer County, NY	
Highest Straight-Line Wind Speed Value Recorded	84 miles per hour
Highest Tornado Wind Speed Value Recorded	F1/EF1
Widest Tornado Path Recorded	250 yards
Longest Tornado on the Ground (Length/Duration)	2.88 miles
Speed of Onset	With Warning (6 -15 minutes)

The county has experienced loss of life, injuries, and property damage from tornadoes even though no tornado above the F1/EF-1 category has been recorded within the Planning Area. On the positive side, there is an energy benefit to being in a high wind region. Herkimer County is the site of three wind farms that built 37 wind turbines to generate power. **Figure 3.7.2-4** depicts the areas of wind resources and transmission lines in the United States, highlighting the location of Herkimer County.

Figure 3.7.2-4: Wind Resources Map, Illustrating Transmission Lines near Herkimer County



***Source**: National Renewable Energy Laboratory*

Despite the energy benefits from developing wind-driven power sources, their overall value is not firmly established when balanced against claims of health risk, noise pollution, and complaints that the turbines disrupt scenic views.

Previous Occurrences

All High Wind Events

Between 1960 and 2012, Herkimer County experienced 167 high wind events[12] leading to 3 fatalities, 13 injuries, and $13,740,682 in property damage. From 2013 to August 2016, 24 additional high wind events were reported.[13] No fatalities or injuries were reported from these events, although property damage exceeded $26,000.

Significant recent high wind events in Herkimer County include the following:

[12] 2014, NYSHMP, Table 3.11d, p. 3.11-11; data reported through SHELDUS for all wind events including tornadoes and hurricanes.
[13] Storm Events Database, NCDC, 2013 to August 2016.

- June 20, 2016: Severe weather produced winds of 58 miles per hour, impacting the Herkimer County communities of Schuyler and Little Falls. Damage included fallen trees and power lines and short-term power outages.
- March 2, 2016: Winds in excess of 50 miles per hour impacted the southern region of the county, causing approximately $11,000 in damage.
- July 2–3, 2014: A high wind event produced winds from 58 to 70 miles per hour, impacting multiple jurisdictions. No injuries or significant damage was reported.

Tornado Events

Herkimer County was struck by seven tornadoes between 1950 and 2016.[14] Two were categorized as F1 on the *Fujita Scale*[15] for damage. These incidents caused one fatality and five injuries. No additional statistical or historical information about previous occurrences of tornadoes was identified by individual municipalities.

Table 3.7.2-c: Tornado History of Herkimer County (1950 – 2016)

SPC#	Date	Time	Fujita/ *Enhanced Fujita Scale	Fatalities	Injuries	Width (yards)	Length (miles)	Damage ($)	Crop Loss
352	6/18/1970	15:00	F1	1	1	10	2.3	$50,000-500,000	-
730	7/11/1984	12:15	F0	0	0	100	15	$500-5000	-
371	5/17/1990	13:12	F0	0	1	13	0.5	$50,000-500,000	-
997	8/28/1990	18:20	F1	0	3	57	2	$500,000-$5 million	-
912	8/4/1992	11:05	F0	0	0	10	0.2	$5,000-50,000	-
822	6/28/2010	13:38	EF0*	0	0	50	0.97	-	-
268	4/28/2011	03:04	EF1*	0	0	250	2.88	-	-

Source: [1] *http://www.tornadohistoryproject.com/tornado/New-York/Herkimer/table*

Tornadoes affect the Planning Area primarily during the early spring and summer, when severe storms are more prevalent. The 2014 NYS HMP lists a June 10, 2011, Presidential Disaster Declaration for a tornado that touched down on April 28 of that year. The event NCDC data notes that:

- FEMA announced that federal disaster assistance had been made available to the state of New York to supplement state and local recovery efforts in the area struck by storms, flooding, tornadoes, and straight-line winds during the period of April 26 to May 8, 2011. Herkimer County was one of 23 counties included in the declaration.
- A National Weather Service survey team confirmed an EF1 with estimated maximum wind speed of 100 miles per hour tornado in Frankfort. Trees were snapped and uprooted. Structural damage to homes included torn roofs and siding. A garage was moved off its foundation and a house on Brockway Road sustained significant damage.

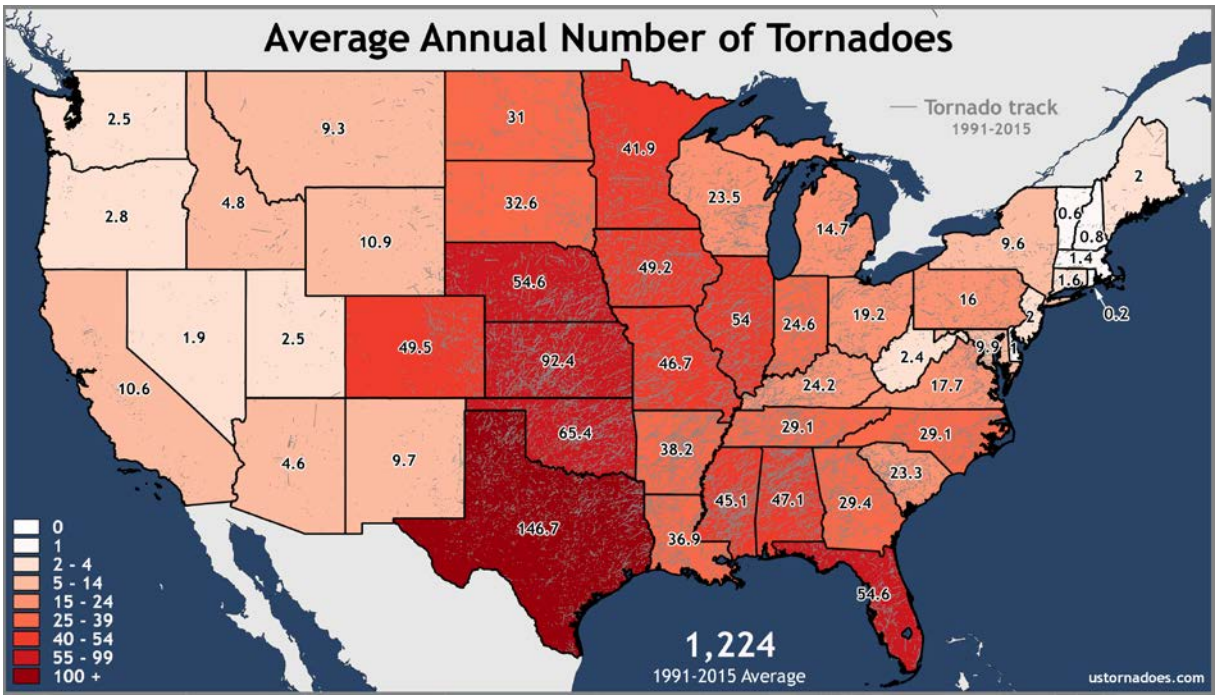
[14] Storm Events Database, NCDC, 1950 to November 2016.
[15] These events occurred prior to the development and use of the *Enhanced Fujita Scale*.

Probability of Future Events

The total recurrence interval of all high wind events in Herkimer County is calculated by dividing the number of occurrences (191) by the number of years of record (56), resulting in a future probability of recurrence of 341 percent. Historical tornado activity in the Herkimer area is slightly below the New York state average, which is 72 percent less than the overall U.S. average.[16] Using historical data to predict future occurrences, the recurrence interval[17] for tornado events in Herkimer County is 10 percent in a given year.

There are several ways to illustrate the probability of future tornado events. One used by the NOAA Storm Prediction Center (SPC) determines the average annual number of tornadoes based on analysis of previous tornado event frequency. **Figure 3.7.2-5** is an SPC illustration showing the average annual number of tornadoes by state. The data used to create this map also provided a month-by-month average. This averages determined that the month of July, with an average of 2.7 tornadic events, is the most tornado-prone month in New York.

Figure 3.7.2-5: Average Annual Number of Tornadoes, by State



Source: http://www.ustornadoes.com/2016/04/06/annual-and-monthly-tornado-averages-across-the-united-states/

While this methodology should not be used to calculate the probability for recurrence, it is helpful to have for emergency planning purposes so communities can implement preparedness and response measures.

[16] Source: http://www.city-data.com/city/Herkimer-New-York.html
[17] Recurrence intervals for tornadoes are calculated by dividing the number of events (7) by the number of years of record (66).

Impacts and Consequences

High wind affects the population and structures. It may cause environmental and property damage, especially to structures made of lighter materials (e.g., mobile homes). In extreme events with direct impacts, few structures can withstand tornadic winds. More heavily populated areas in the southern region of the county are the most vulnerable, while sparsely populated and uninhabited areas in the middle and northern regions at higher elevations are less vulnerable. Anticipated primary and secondary impacts are listed below.

Cultural and Historical Structures

Older community structures are at higher risk for impacts from all types of severe weather because they were built before strong building codes were implemented. Such buildings also suffer from deferred maintenance and from being in locations hazard-prone areas. Mitigation measures that provide emergency temporary protection and produce no permanent long-term impact to the historic or cultural significance should be considered when these types of structures undergo maintenance, rehabilitation, or adaptive re-use.

Potential Primary Impacts:

- Life, safety and health of residents
- Damage to vehicles and aircraft
- Structural damage to buildings and infrastructure networks such as water, power, and communication lines
- Potential for hazardous material release, if sites of such materials are breached
- Loss of livestock and crop damage

Potential Secondary Impacts (catastrophic events):

- Disruption of community services (e.g., health and medical, education, economic assistance programs, transportation)
- Economic loss (community and residents)
- Re-development opportunities

Population

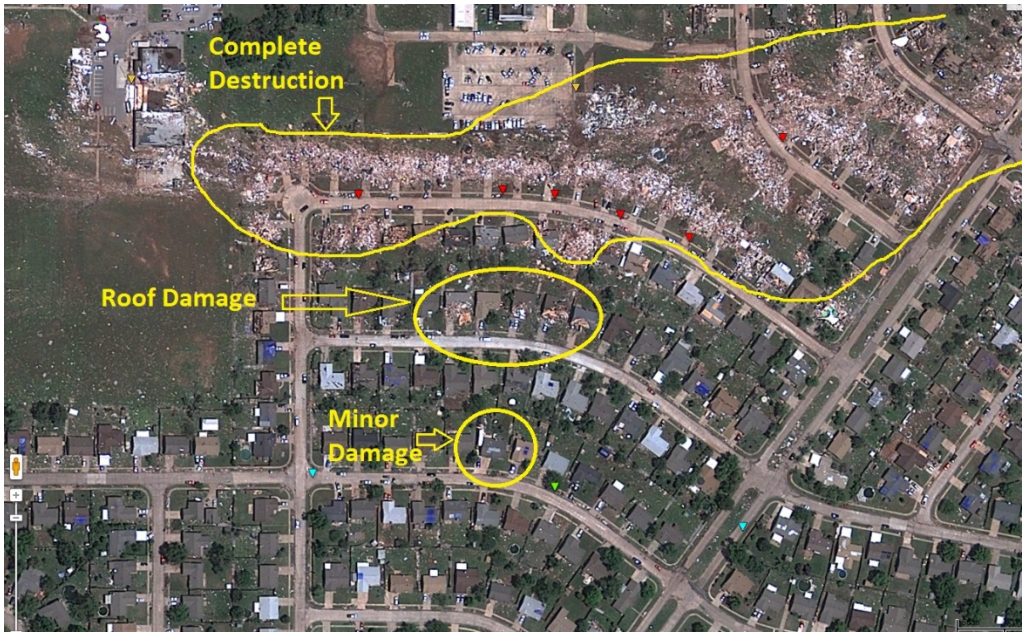
All residents of the Planning Area are at risk from tornado. Those who are caught outdoors unaware may sustain serious injury. Three Herkimer County residents died and thirteen were injured during wind events. One fatality and five injuries occurred during tornadoes. Given the county's history of fatalities and injuries from high wind events, appropriate wind mitigation should include public education about potential hazard impacts and preparedness.

Built Environment and Critical Infrastructure

Building codes do not typically include tornado wind-load designs, although part of a building could be hardened as a safe room capable of surviving an EF5 tornado. It is cost prohibitive to construct an entire home or businesses so the structure is impervious to tornado damage.

Figure 3.7.2-6 depicts damage patterns from an EF5 tornado that destroyed homes in a Moore, Oklahoma neighborhood in May 2013.

Figure 3.7.2-6: Tornado Damage Patterns



Source: http://wane.com/blog/2013/05/23/google-crisis-map-moore-tornado-damage/

This figure depicts varying levels of structural damage because of nature of the storm path and strength. Structures within the direct path sustained complete destruction, while those adjacent to the path sustained major to moderate damage. Other variables such as flying debris affect the degree of damage to structures farther from the main path. It is entirely possible, given the history of tornado damage, that one structure is destroyed and the structure next door is left untouched.

Critical facilities and infrastructure in all jurisdictions within the Planning Area are equally susceptible damage or destruction from high wind or tornado. Effective mitigation measures include moving overhead power and communication lines to an underground location.

Natural Environment

Impact to the natural environment typically includes downed trees. Large numbers of downed trees and utility lines contribute to loss of electrical power over an area much larger than the actual storm path. This creates an expanded demand for response and recovery resources. No major impacts to the natural environment or economy from past high wind events have been noted.

Economy

Economic losses from high wind events result from direct and indirect impacts to infrastructure, businesses, and industry. They can devastate a small community if there is a direct hit, but such events threaten the regional economy as severely as do hurricane or flood events.

- Direct Economic Impacts
  - Cost of repairs or replacement for damaged homes, businesses, and infrastructure
- Indirect Economic Impacts
  - Loss of wages due to businesses being temporarily or permanently closed
  - Loss of customers due to business closures
  - Increased costs for supplies or materials

Risk Analysis: High Wind

Each jurisdiction in the Planning Area conducted an analysis of potential high wind risks and consequences. Jurisdictional analyses are described in **Table 3.7.0-f**. Based on the average overall risk score (see **Table 3.7.0-g**), high wind was determined to be a **medium-risk** hazard. As such, a vulnerability assessment was conducted and is presented in the Severe Weather Vulnerability Assessment, **Section 3.7.0.3**

3.7.3 Severe Weather Profile: Lightning

This profile serves as a baseline to determine the overall risk from this hazard as described in **Section 3.7.0.2**.

Hazard Problem/Description

Lightning is defined as visible electrical discharge caused by thunderstorms. Cloud-to-ground lighting can directly or indirectly kill or injure. Property struck by lightning may be slightly damaged, explode, catch fire, or be destroyed.

Types

Intra-cloud lightning is the most common type of discharge, occurring between oppositely charged centers within the same cloud. From the outside of the cloud, this looks like diffuse, flickering brightening in the cloud. The flash may exit the boundary of the cloud, and a bright channel of light, like cloud-to-ground flash, can be visible for miles.

Although less common, *cloud-to-ground* lightning is the more dangerous and damaging type. Most charges originate near the lower-negative charge center of the cloud and deliver a negative charge to earth, but many flashes carry a positive charge to earth. Positive flashes commonly occur when a thunderstorm is dissipating. Positive charges are more common as a percentage of total ground strikes during the winter months.

Positive charge lightning is dangerous because it strikes outside of the rain core, either behind or ahead of a thunderstorm. It can strike as far as five or 10 miles from the storm in areas not considered to be a lightning threat. Positive lightning strikes are of longer

duration and more easily light fires. When positive lightning strikes, it carries a high peak electrical current, resulting in greater damage.

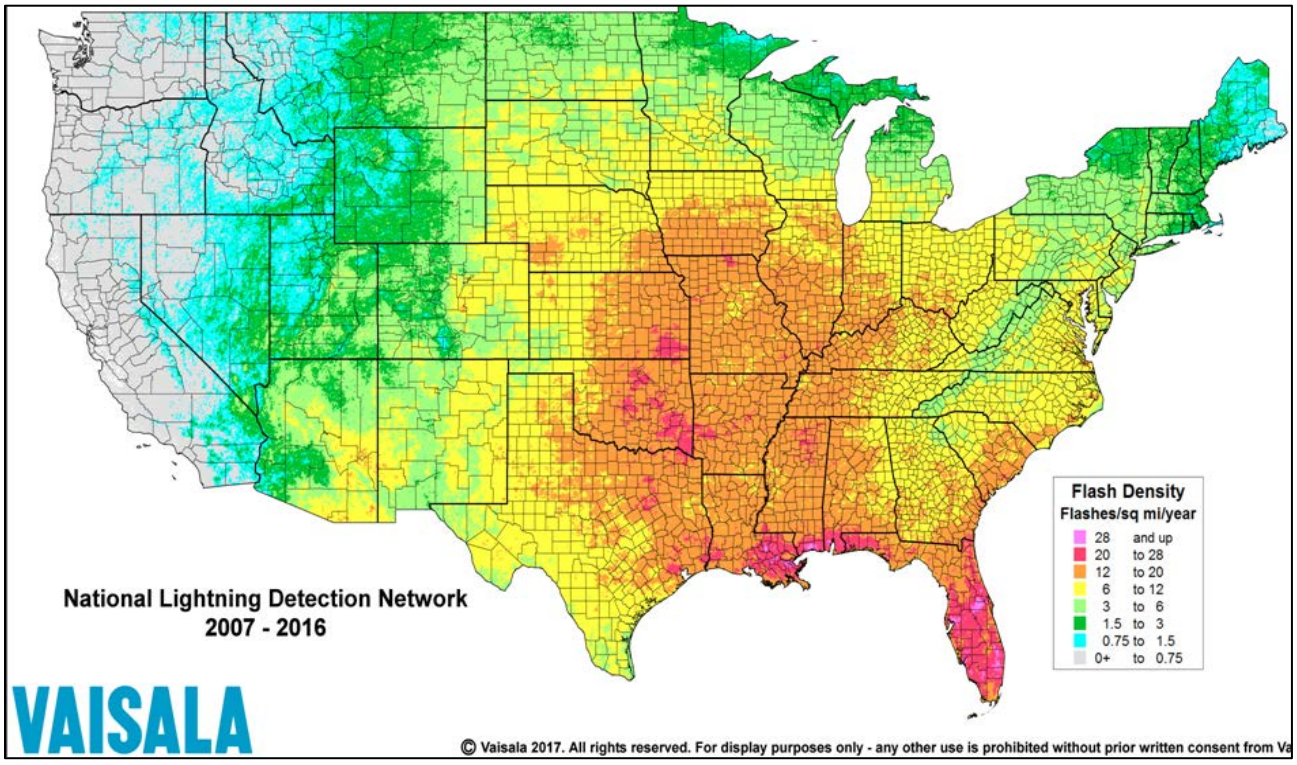
Location

All Herkimer County jurisdictions are susceptible to lightning strikes and their consequences. Because of its association with thunderstorms, lightning is more prevalent in areas that experience more thunderstorms.

Extent

Lightning is monitored nationwide through a network of lightning detection systems. These record an average of 25 million strikes of cloud-to-ground lightning every year. **Figure 3.7.3-1** documents that the average number of flashes per square mile per year for the southern region of the Planning Area is almost twice that of the northern region.

Figure 3.7.3-1: Lightning Flash Density Map (2007-2016)



***Source**: Vaisala's US National Lightning Detection Network, Available at: http://www.lightningsafety.noaa.gov/stats/NLDN%20CG%20Flashes,2007-2016,2-mi%20Grid.png*

Past Occurrences

The NCDC Storm Events Database recorded nine lightning events Herkimer County. These caused $109,000 in property damage.

Table 3.7.3-a: Significant Storm-Related Lightning Events with Associated Damage, Herkimer County, 1950 - 2016

Date	Property Damage
August 27, 1996	In the Village of Herkimer, a garage struck by lightning sustained moderate damage of $10,000.
July 15, 1997	Lightning ignited several fires in Town of Herkimer, resulting in $70,000 in damage.
June 10, 2008	Lightning caused a house fire near Dolgeville, causing damage totaling $20,000.

Probability of Future Events

Because lightning is associated with severe thunderstorms, the probability is combined with that of thunderstorms in **Section 3.7.4.1** and calculated as a 577 percent chance of occurrence.

Impacts and Consequences

Lightning causes fatalities, injuries, and damage property, and contributes to loss of crops and sensitive environmental areas. There is, however, a low potential for impact to the overall economy of the Planning Area from lightning events.

Population

Lightning kills an average of 49 people in the United States each year and injures hundreds more.[18] The primary method of reducing risk to the population is through preparedness efforts that include public education about the hazard and protective measures; monitoring weather conditions; and issuing early warnings.

Built Environment

Lightning property damage in the Planning Area has been limited in scope. Lighting associated with severe storms will continue to threaten structures and infrastructure. The best risk reduction practices include the use of fire alarms and suppression systems and promoting insurance for property owners. Lightning protection/discharge systems may be appropriate to include in critical infrastructure such as public buildings and communication towers.

Natural Environment

Lightning strikes are the primary non-human cause of wildfires. Herkimer County's vast forested lands create the potential for impacts to the natural environment from wildfire. Despite this threat, past events do not indicate that this has occurred because of the rapid response and coordinated efforts of experienced firefighting crews within Adirondack Park and in the county's fire districts.

Economy

The overall economy of the Planning Area is not at risk for widespread impacts from lightning.

[18] Lightning Safety", NOAA' Available at http://www.lightningsafety.noaa.gov/

Risk Analysis: Lightning

Each jurisdiction conducted an analysis of potential risks and consequences for lightning. The compilation of jurisdictional analyses is described in **Table 3.7.0-f**. Based on the average overall risk score (see **Table 3.7.0-g**), lightning was determined to be a **low-risk** hazard. Consequently, a vulnerability assessment was not justified in this planning cycle.

3.7.4 Severe Weather Profile: Thunderstorm/Heavy Rainfall

This section provides a profile of thunderstorms and heavy rainfall to determine the overall risk from this hazard, as described in **Section 3.7.0.2**.

Thunderstorms are frequently reported in Herkimer County. The current section addresses the general characteristics of thunderstorm, including heavy rainfall that does not result in flooding. Thunderstorm and heavy rainfall may also be accompanied by hail, lightning, and high wind. All categories of flooding are addressed in **Section 3.5**.

Hazard/Problem Description

Thunderstorms are characterized by heavy rain that may be accompanied by strong winds, lightning and hail. Approximately 10 percent of thunderstorms that occur each year in the United States are classified as severe. A thunderstorm is labeled severe when it includes one or more of the following phenomena: hail that is three-quarters of an inch or greater, winds greater than 50 knots (57.5 miles) per hour, or a tornado.

Type

Thunderstorms result from the rapid upward movement of warm, moist air. They occur inside these areas of moist air and at weather "fronts." As warm, moist air rises, it cools, condenses, and forms cumulonimbus clouds that climb to heights of greater than 35,000 feet. As the rising air reaches its dew point, water droplets and ice form and fall to the earth's surface, becoming larger by merging with other droplets. Falling droplets create a downdraft of air that spreads out at ground level and creates the strong winds associated with thunderstorms.

Ordinary Cells and Multi-Cell Clusters

Thunderstorms include ordinary cells and multi-cell clusters. Ordinary cells consist of a one-time updraft and one-time downdraft. They are short-lived and not severe. Thunderstorms more frequently form in clusters with numerous cells in various stages of development merging together. Each cell within a multi-cell cluster behaves as a single cell; as it matures, it is carried downstream by upper level winds to join with new cells forming upwind of the previous cell. The speed of movement for a cluster of thunderstorm cells makes a difference in the amount of rain received at a given location. "Training" is the term given to the process by which additional cells move over the path of the previous cell. Training thunderstorms produce tremendous rainfall over relatively small areas, frequently leading to flash flooding.

Squall Lines

The formation of thunderstorms in a line creates "squall lines" that may extend laterally for hundreds of miles and persist for hours, producing damaging winds and hail. Tornadoes sometimes occur on the leading edge of a squall lines, but these lines primarily produce straight-line wind.

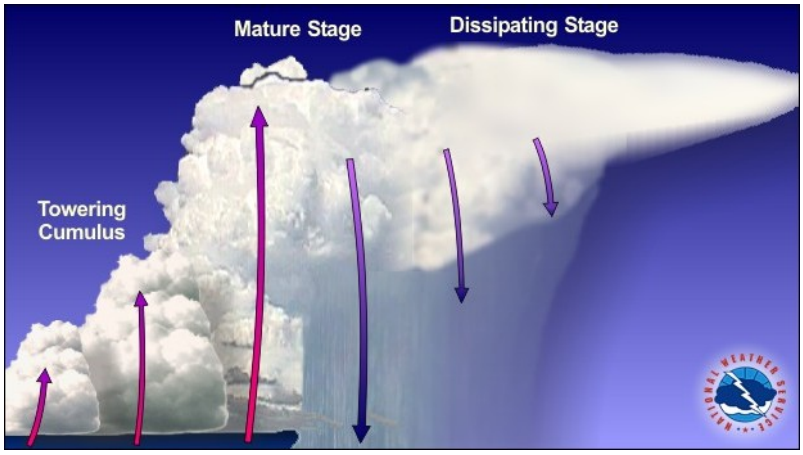
Derechos

Long-lived squall lines are called "derechos" (Spanish for 'straight'). They can travel for miles and produce widespread damage from wind and hail.

Supercell Thunderstorms

This type of single cell storm, lasting for hours, is responsible for most damaging tornadoes and for hailstones larger than golf ball in size. They are known to produce extreme winds and flash flooding.

Figure 3.7.4-1: Evolution of a Thunderstorm



***Source**: NOAA,* http://www.srh.noaa.gov/srh/jetstream/tstorms/tstrmtypes.html

Location

All of Herkimer County is susceptible to thunderstorms and heavy rainfall. Some events are localized, while multi-cell cluster thunderstorms affect a broad area.

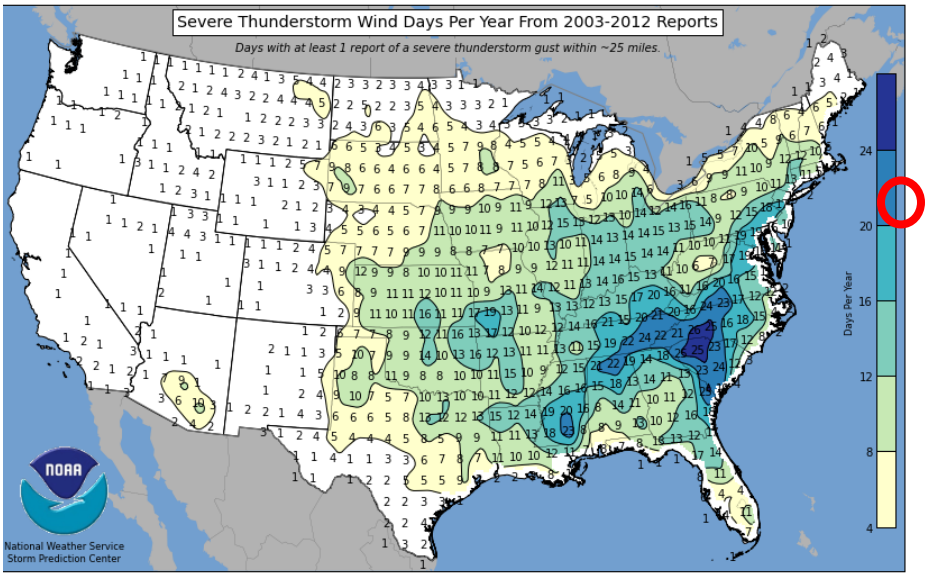
Extent

Thunderstorms include heavy rainfall and occasional, gusty winds, but often include hail and lightning. Damage from severe thunderstorm winds account for half of all severe storm reports in the lower 48 states and is more common than damage from tornadoes. Wind speeds may reach up to 100 mph and produce a damage path extending for hundreds of miles.[19] Heavy rainfall produced by thunderstorms may result in several types of flooding including riverine, flash floods, and local drainage floods. Flood types are discussed in **Section 3.5, Base Plan**.

[19] National Severe Storm Laboratory

Multiple tools are available to illustrate the extent of thunderstorm events. One such product used by the NOAA Storm Prediction Center (SPC) estimates the average annual number of severe thunderstorm wind days per year based on previous event frequency. **Figure 3.7.4-2** illustrates SPC data in its mapping format.

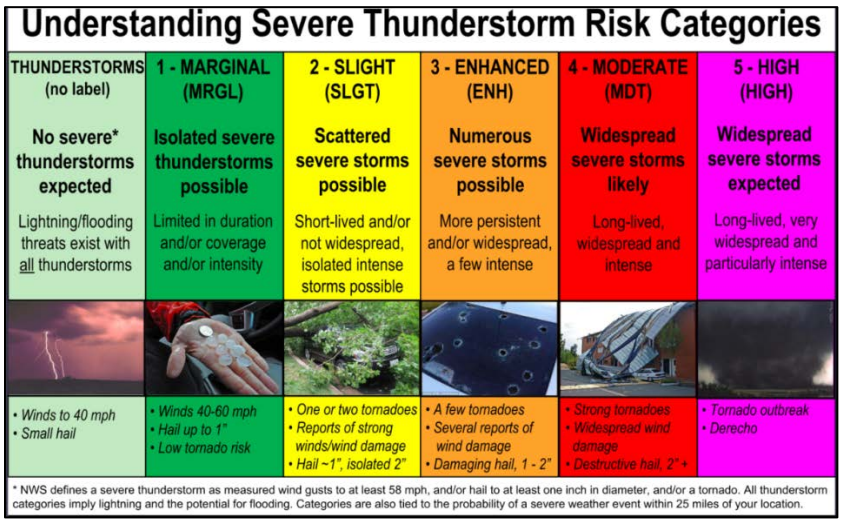
Figure 3.7.4-2: Severe Thunderstorm Wind Days per Year, 2003–2012



***Source**: National Weather Service Storm Prediction Center, NOAA*

Because thunderstorms create straight-line winds from outflow generated by downdraft, communities vulnerable to thunderstorms are also vulnerable to high winds. **Figure 3.7.4-3** describes the storm conditions within the forecast categories established by the NWS.

Figure 3.7.4-3: Severe Thunderstorm Risk Categories



***Source**: Storm Prediction Center, National Weather Service, NOAA*

The extent of thunderstorm rainfall is described in **Table 3.7.4-a**.

Table 3.7.4-a Thunderstorm Extent (Wind and Rainfall) in Herkimer County

Tornado Extent in Herkimer County, NY	
Highest Thunderstorm Wind	87 knots/100 mph (recorded in West Winfield, Columbia Center, and Jordanville on 7/3/2014)[20]
Heaviest Rainfall Recorded	10.80" (8/23/10)[21]
Speed of Onset	With Warning (minutes to hours)
Duration	Minutes to Several Hours

Strong thunderstorms in Herkimer County occur year-round but are more prevalent from late spring to late summer, between April and August.

Previous Occurrences

The NCDC database shows that Herkimer County experienced 365 events between 1950 and 2016 in the categories of "Thunderstorm Wind" and "Heavy Rain."[22] These events caused seven injuries and property damage totaling $11.4 million. Accompanying conditions such as high wind, hail, and flooding are reported separately by the NWS and described in other subsections. **Table 3.7.4-b** summarizes the types of severe storm events (excluding winter weather) during the period mentioned and shows the impact to people, property, and the natural environment.

Table: 3.7.4-b: Summary of Impacts from Previous Severe Weather Events, 1950–2016 (excluding Winter Weather)

Type	# of Events	Fatalities	Injuries	Property Damage	Crop Damage	Future Probability %	Average Annual Losses
Hail	82	0	0	$513,203	$55, 474	51%	$10,936
High Wind	191	3	13	$13,740,682	$126,215	321%	$266,671
Lightning	0	0	0	0	0	0	0
Flood	85	1	12	$24,592,482	$1,175,304	163%	$266,671
Thunderstorm/ Heavy Rainfall	365	0	7	$11,420,000	0		
Tornado	0	0	0	$0	$0	0%	$0
Tropical Cyclone/ Hurricane	3	0	2	$167,520	$1,282	6%	$20

Flooding resulting from heavy rainfall is the costliest consequence of severe weather affecting the Planning Area. The 85 flood events that occurred between 1960 and 2012[23] resulted in one fatality, 12 injuries, and $24,592,482 in property damage. During this same

[20] Storm Events Database, NCDC (1990 – 2016)
[21] New York State Attorney General, Eric T. Schneiderman, Environmental Protection Bureau. "Current and Future Trends in Extreme Rainfall Across New York State", September 2015, p. 10. Available at: http://www.weather.gov/aly/MajorFloods
[22] Storm Events Database, NCDC (From the period 1950 to November 2016)
[23] 2014, NYS HMP, Table 3.9c, p. 3.9-32, data reported through SHELDUS.

period, flood-related crop damage totaled $1,175, 304. Herkimer County also experienced 191 high wind events[24] leading to three fatalities, 13 injuries, and $13,740,682 in property damage. Notable severe storm events are described in **Section 3.7.0, Base Plan**.

Probability of Future Events

Future probability is calculated by dividing the total for all events classified as heavy rain, strong wind, and thunderstorm wind[25] (381) by the number of years of record (66). Herkimer County's probability of future occurrence for thunderstorms/heavy rainfall is 577%. Because "severe thunderstorms" are not reported as a single event category, the recurrence interval for the hazard varies depending on the classification.

Impacts and Consequences

Severe thunderstorms are primarily a threat to people, the built environment, the natural environment, and the economy through specific elements of the storm, such as hail, high wind, lightning, and flood. Any of these elements of the storm can threaten lives and cause serious damage to property, the environment, and, in catastrophic levels, the economy. Additional details related to the impacts and consequences of these specific severe thunderstorm elements are described in other severe weather subsections of this plan.

Preparedness education and warnings mitigate the threat to health and safety. The NWS uses an alert system providing information on storms and the appropriate community response. This system is illustrated in **Figure 3.7.4-4**

Figure 3.7.4-4: Weather Alert Categories, NWS (www.Weather.gov)

[24] 2014, NYSHMP, Table 3.11d, p. 3.11-11; data reported through SHELDUS, for all wind events including tornadoes and hurricanes.
[25] See Table 3.7.0-b.

Population

All residents of the Planning Area are at risk from the impacts of severe thunderstorms and heavy rainfall. There is increased risk for injury or death to anyone caught outdoors in hail, high wind, lightning, or flood events, which cause fatalities and injuries. Ongoing public education about severe weather impacts and preparedness measures will reduce the risk to the population.

Built Environment and Critical Infrastructure

Severe thunderstorms and heavy rainfall affect all structures. Most buildings are damaged by high wind, lightning, or water intrusion. The level of risk varies based on storm conditions, building integrity, and elevation. Critical facilities and infrastructure are as susceptible other structures to being damaged or destroyed by severe storms. Mitigation measures for high wind include moving overhead power and communication lines underground. Flood mitigation includes elevating emergency generators that support critical infrastructure (power substations, water distribution systems) to avoid inundation.

Natural Environment

Impact to the natural environment typically consists of downed trees. When these hit utility lines, there may be loss of electrical power over an area much larger than the storm path. This type of debris requires a coordinated response and may delay recovery. Impacts to the natural environment from thunderstorm/heavy rainfall are discussed in combination with other impacts of severe weather in **Section 3.7.0, Base Plan**.

Economy

Economic losses from thunderstorms and heavy rainfall stem from direct and indirect impacts to infrastructure, homes, businesses, and industry. Property damage inflicted by severe storm elements that have somewhat lesser impacts on a larger community may devastate a small community.

- Direct Economic Impacts
  - Cost of repairs or replacement for damaged infrastructure, homes, and local businesses and industries
- Indirect Economic Impacts
  - Loss of wages when businesses are temporarily or permanently closed
  - Loss of customers due to business closures
  - Increased costs for supplies or materials

Risk Analysis: Thunderstorm/Heavy Rainfall

Each jurisdiction in the Planning Area conducted an analysis of potential risks and consequences for thunderstorm and heavy rainfall. The compilation of the jurisdictional analyses is described in **Table 3.7.0-f**. Given the average overall risk score (**Table 3.7.0-g**), thunderstorm/heavy rainfall was determined to be a **medium-risk** hazard. Consequently,

a vulnerability assessment was conducted and is presented in the Severe Weather Vulnerability Assessment, **Section 3.7.0.3.**

3.7.5 Severe Weather Profile: Winter Weather

Hazard Problem/Description

Heavy snow and ice can be widespread, effectively immobilizing vital community services and systems. Snow accumulation damages structures, trees, and power lines. Winter weather may isolate residents in rural areas for extended periods of time. Communications and power may be disrupted for days until damages are repaired and services are restored. Even small accumulations of ice are extremely hazardous to motorists and may disrupt delivery of necessary goods and supplies. Herkimer County experiences multiple winter storms annually. Like most New York communities, jurisdictions are prepared to respond rapidly for de-icing roads, snow removal, and opening shelters and warming stations.

Type

This hazard includes all related elements that can occur simultaneously or in succession as part of a severe winter storm. Winter weather elements discussed here include the following:

Winter Weather Type	Description (NWS: National Weather Service)
Blizzard	Conditions expected to prevail for a period of three hours or longer: • Sustained wind or frequent gusts ≧ to 35 miles per hour; and • Considerable falling and/or blowing snow (i.e., reducing visibility to less than one-quarter mile)
Extreme Cold	Cold arctic air combines with brisk winds to compound the effect of the low temperatures
Heavy Snow	Snowfall is forecast a range (e.g., "8 to 12 inches"). Snow may be described as "up to 12 inches" or "8 inches or more" where there is uncertainty. • Snowfall accumulation of ≧ 4 inches in less than 12 hours; or • Snowfall accumulating to 6+ inches in 24 hours or less
Ice Storm	Damaging ice accumulations occurs during freezing rain, stressing trees and utility lines, causing loss of power and communication. Walking and driving extremely dangerous. Ice accumulations is usually ≧ 0.25 inches.
Lake-Effect Snow	Cold, dry air passing over a warmer lake (e.g., the Great Lakes) picks up moisture and heat. Often occurs in snow bands from late fall to early winter (October through March), when lake temperatures are at their warmest relative to the cold air passing overhead. Temperatures 5,000 feet above the ground must be at least 23°F warmer than the lake temperature for this type of snow to develop.

Winter Weather Type	Description (NWS: National Weather Service)
Wind Chill	What it "feels like" outside based on the rate of heat loss from exposed skin. Stronger winds cause the body to cool at a faster rate and skin temperature drops. NWS issues warnings and advisories when wind chill temperatures become hazardous. Wind chill does not affect inanimate objects (e.g., car radiators, water pipes) because they cannot cool below the air temperature.
Winter Storm	Combined heavy snow and/or ice leads the NWS to issue a watch or warning. A watch indicates that conditions exist but the location and timing are uncertain. A warning indicates that severe winter weather conditions are expected or occurring.
Winter Weather	A combination of conditions that is expected to cause great inconvenience and may be hazardous. Travel conditions may be affected.

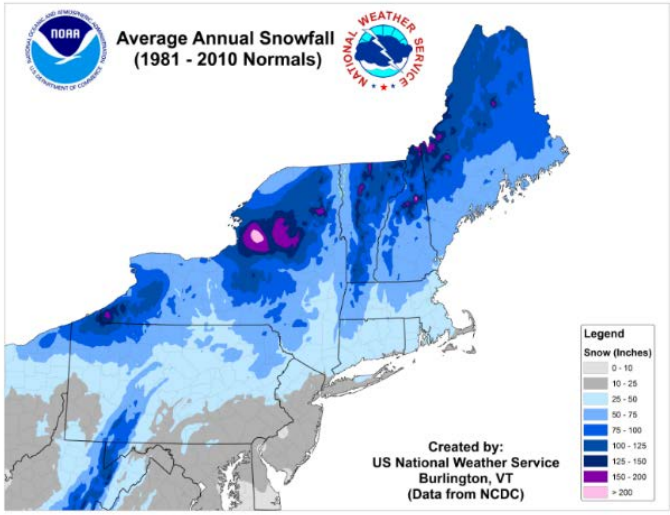
Location

All of Herkimer County is vulnerable to severe winter weather, including extreme cold/ wind chill, ice storms, winter storms, and blizzards. Higher elevations in the northern region are likely to experience more extreme conditions.

Extent

Snowfall levels vary by land elevation. **Figure 3.7.5-1** depicts the range of average annual snowfall in the Herkimer County area based on 1981–2010 National Weather Service records. The range is from 75 inches to more than 200 inches.

Figure 3.7.5-1: Average Annual Snowfall in New England (1981 – 2010)



Source: http://www.weather.gov/btv/climate

Previous Occurrences

The Storm Events Database, NCDC, recorded 353 winter weather events between 1950 and November 2016.

Table 3.7.5-a: Winter Weather Events Summary, Herkimer County (1950 – 11/30/2016)[26]

Event Type(s)	Number of Occurrences	Deaths/ Injuries	Property Damage	Crop Damage
Cold/Wind Chill and Extreme Cold/Wind Chill	55	0	0	0
Frost/Freeze	27	0	0	0
Heavy Snow	44	0	0	0
Ice Storm	4	0	0	0
Lake-Effect Snow	35	0	0	0
Winter Storm and Winter Weather	188	0	$482,300	0
TOTALS	**353**	**0**	**$482,300**	**0**

The following table describes significant winter weather events recorded in the Planning Area.

Table 3.7.5-b: Significant Winter Weather Events in Herkimer County (1950 –11/30/2016)

Event Type	Date(s)	Description
Winter Storm	**March 31-April 1, 1997**	A late season nor'easter produced rain that changed into heavy wet snow over the Mohawk Valley. Snowfall exceeded two feet in the mountains. Wet snow felled trees and power lines, causing widespread power outages and road closures. Property damage statewide was reported at $200,000.
Winter Storm	**January 31, 2000**	This storm resulted in a snow accumulation of a foot or more throughout the western Adirondacks, sometimes falling more than three inches per hour. The storm caused $23,000 in property damage and closed schools and businesses. Snow removal efforts were made more difficult by the presence of large amounts of snow left from previous storms.
Winter Storm	**March 30, 2001**	This storm was the fourth and final nor'easter of March, with an initial mix of snow, sleet and rain that resulted in 6 to 12 inches of snow over the western Adirondacks and elevated sections of the Mohawk Valley. Property damage was reported as $45,000. Impacts in Herkimer County included downed limbs and trees. Power lines were knocked down on West German Street in the town of Herkimer when a large tree was uprooted.

[26] NCDC events are recorded by National Weather Service regions or zones, which splits Herkimer County into the Northern Herkimer Zone and Southern Herkimer Zone.

Event Type	Date(s)	Description
Ice Storm	**December 25, 2009**	Snow and sleet accumulations of four-tenths of an inch affected southern Herkimer County, causing widespread power outages, mainly in areas above 1,000' elevation. Outages occurred in Dolgeville, Manheim, Salisbury, and Frankfort. No deaths, injuries, or property damage was recorded.
Extreme Cold/ Wind Chill	**January 7 - 8, 2015**	An arctic cold front brought bitter cold air into the region, with lows below zero and temperatures at -10 to -30°F in the Adirondacks. Winds caused wind chill values to run as low as -40°F. Communities opened shelters and warming stations for residents needing overnight accommodations. Many school districts delayed start times.

Probability of Future Events

The future probability for winter weather events is calculated by dividing the number of events (353) by the number of years of record (66), resulting a probability of 534%.

Impacts and Consequences

Winter weather mainly affects the health and safety of the population and causes damage to critical infrastructure. Affected utility and communication systems lead to power, radio, and telephone failure.

Population

No deaths or injuries have been recorded from previous winter weather-related events, but the potential for frostbite and hypothermia are the focus for the public. Frostbite is an injury to the body caused by freezing body tissue. Hands, feet, and uncovered skin are the most susceptible areas of the body. Hypothermia, abnormally low body temperature (below 95°F) occurs when the body's rate of heat loss exceeds its ability to produce heat.

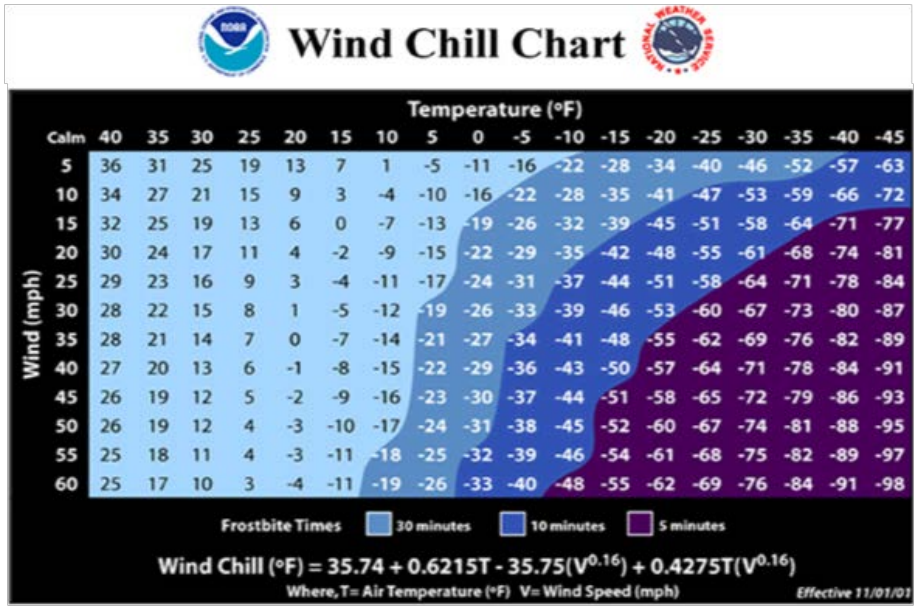
Injuries Due to Ice and Snow	Injuries Related to Cold[27]
• 25% occur in people caught in a storm • Most affect males over 40 years old	• 50% occur in people over 60 years old • More than 75% happen to males • About 20% occur in the home

The National Weather Service uses a Wind Chill Temperature index to calculate how cold air feels on human skin. The chart includes a frostbite indicator, showing where temperature, wind speed, and exposure time produce human frostbite. **Figure 3.7.5-2** depicts three shaded areas of danger that show how long (30, 10, and 5 minutes) a person can be exposed before frostbite develops. As an example, a temperature of 0°F and a wind speed of 15 miles

[27] "Winter Storms: The Deceptive Killers", A Preparedness Guide published by the U.S. Department of Commerce, National Weather Service, NOAA, in partnership with American Red Cross and FEMA; June 2008.

per hour will produce a wind chill temperature of -19°F, which can freeze exposed skin in 30 minutes.

Figure 3.7.5-2: Wind Chill Chart



Wind Chill Chart

Wind (mph) \ Temperature (°F)	Calm	40	35	30	25	20	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45
5		36	31	25	19	13	7	1	-5	-11	-16	-22	-28	-34	-40	-46	-52	-57	-63
10		34	27	21	15	9	3	-4	-10	-16	-22	-28	-35	-41	-47	-53	-59	-66	-72
15		32	25	19	13	6	0	-7	-13	-19	-26	-32	-39	-45	-51	-58	-64	-71	-77
20		30	24	17	11	4	-2	-9	-15	-22	-29	-35	-42	-48	-55	-61	-68	-74	-81
25		29	23	16	9	3	-4	-11	-17	-24	-31	-37	-44	-51	-58	-64	-71	-78	-84
30		28	22	15	8	1	-5	-12	-19	-26	-33	-39	-46	-53	-60	-67	-73	-80	-87
35		28	21	14	7	0	-7	-14	-21	-27	-34	-41	-48	-55	-62	-69	-76	-82	-89
40		27	20	13	6	-1	-8	-15	-22	-29	-36	-43	-50	-57	-64	-71	-78	-84	-91
45		26	19	12	5	-2	-9	-16	-23	-30	-37	-44	-51	-58	-65	-72	-79	-86	-93
50		26	19	12	4	-3	-10	-17	-24	-31	-38	-45	-52	-60	-67	-74	-81	-88	-95
55		25	18	11	4	-3	-11	-18	-25	-32	-39	-46	-54	-61	-68	-75	-82	-89	-97
60		25	17	10	3	-4	-11	-19	-26	-33	-40	-48	-55	-62	-69	-76	-84	-91	-98

Frostbite Times: 30 minutes, 10 minutes, 5 minutes

$$\text{Wind Chill (°F)} = 35.74 + 0.6215T - 35.75(V^{0.16}) + 0.4275T(V^{0.16})$$

Where, T= Air Temperature (°F) V= Wind Speed (mph) Effective 11/01/01

Source: *National Weather Service. Available at: http://www.nws.noaa.gov/om/cold/resources/wind-chill-brochure.pdf*

Built Environment

Structures may be vulnerable to snow-loaded roof failure, or damage to exposed mechanical systems. Structures at higher elevations, where snowfall is typically heavier, are at a higher risk for impacts from winter weather. Critical infrastructure (power and communication lines) is at a high risk for damage or failure during severe winter weather due to downed trees and power lines from storm-related winds and ice accumulation.

Natural Environment

Most of the natural environment in the Planning Area is adaptable to the extremes of winter weather. Crops may be at a higher risk for failure if severe winter weather conditions are extended or combined with other weather conditions such as drought.

Economy

The economic impact includes the cost of preparedness and response. Government agencies and community service providers can generally remove snow, respond to emergencies, and implement contingency plans to address short-term power failure. Costs increase if a community calls for mutual aid from external resources during a severe event or when normally available resources are unavailable.

Risk Analysis: Winter Weather

Each jurisdiction analyzed winter weather risks and consequences. The compilation of the jurisdictional analyses is described in **Table 3.7.0-f**. Based on the average overall risk score

(see **Table 3.7.0-g**), winter weather was determined to be **a medium/high**-risk hazard. Consequently, a vulnerability assessment was conducted and is presented in the Severe Weather Vulnerability Assessment, **Section 3.7.0.3.**

Vulnerability Assessment: Winter Weather

Winter weather events of great magnitude, severity, and frequency call for financial and emergency management resources to prepare for and deal with events. Vulnerability is highest on busy roadways, particularly Interstate 90 and State Road 5, where conditions may cause traffic related deaths and injuries. Road closures restrict or prevent the movement of people, goods, and services (including food and gas), creating the need for emergency sheltering for travelers. Poor road conditions may delay emergency response.

Vulnerable Population

Although the entire population in the Planning Area could be susceptible to the effects of winter weather, those most vulnerable are children under the age of five and residents over the age of 65. Residents with unstable medical conditions and electricity-dependent medical equipment may be vulnerable to power outages and disruption of critical medical, transportation, and social services. **Table 3.7-0-h** (above) describes the total population at risk for all severe weather events, by jurisdiction.

Vulnerable Built Environment

Table 3.7-0-i (above) provides total values for residential and commercial structures at risk, by jurisdiction, for all types of severe weather, including winter weather. Data was not available to identify specific types of structures or estimated losses. Measures such as winterizing homes and designing buildings to withstand the effects of snow and ice (roof loads and de-icing systems) can minimize winter weather impacts. The *Residential Code of New York State* (19 NYCRR 1220) prescribes methods for estimating snow loads based on location.[28]

All exposed power and communication lines are vulnerable to cold, ice, and snow. Burying power cables underground or implementing de-icing systems for above-ground transmission lines, although costly, can reduce the number of power outages. Jurisdiction Annexes provide additional detail about the at-risk built environment, including critical infrastructure such as power, communication, and transportation systems.

Vulnerable Natural Environment

Losses associated with all severe weather types are generally related to the population and built environment, but great damage can occur to vegetation and crops.

Vulnerable Economy

Annualized losses for winter weather, shown in **Table 3.7.0-j** (above) are $1,156,625 for the Planning Area.

[28] "Design Snow Loads", Technical Bulletin, New York State Department of State, Division of Code Enforcement and Administration, January 1, 2003.

SECTION 3.8: SOIL HAZARDS

3.8.1: Hazard Profile

Soil hazards exist in most regions of the United States, including parts of New York. They are most frequently associated with flooding or earthquakes. Soil by itself is not a hazard, but the combination of its chemical makeup with natural- and human-caused conditions may result in hazards that put people, property, and the natural environment at risk.

There have been no documented expansive soils or subsidence events in Herkimer County, although localized soil erosion has occurred from the combined effects of flooding and the natural cycle of erosion and sediment deposition. Based on the potential for impacts to people, the built environment, the natural environment, and the economy, soil hazards are profiled to determine the overall risk to the jurisdictions within the Planning Area.

Hazard/Problem Description

The primary threat from soil hazards is damage to property and the natural environment, but they may also threaten humans.

Landscape stability depends on the combination of soil makeup (e.g., minerals, clay) and the earth's geological formation. Climatic factors such as high wind and heavy rainfall may contribute to the soil erosion hazard. Other types of soil hazard are affected by both natural- and human-caused conditions. Information about soil properties and geological features provides a basis for assessing risks and hazards to buildings and infrastructure.

This section profiles three types of soil hazards: erosion and deposition, expansive soils and subsidence. The primary soil hazard in the Planning Area is erosion and deposition, which creates problems for construction of roads, utilities, and structures. It also contributes to the degradation of creek banks on public and private property. Gullies created by eroding soils undercut unstable slopes causing slope failures. The accompanying soil deposition alters streambeds and degrades the water quality of streams and reservoirs.

Type

The three types of soil hazards addressed in this section are described in **Table 3.8-a.**

Table 3.8-a: Soil Types and Definitions

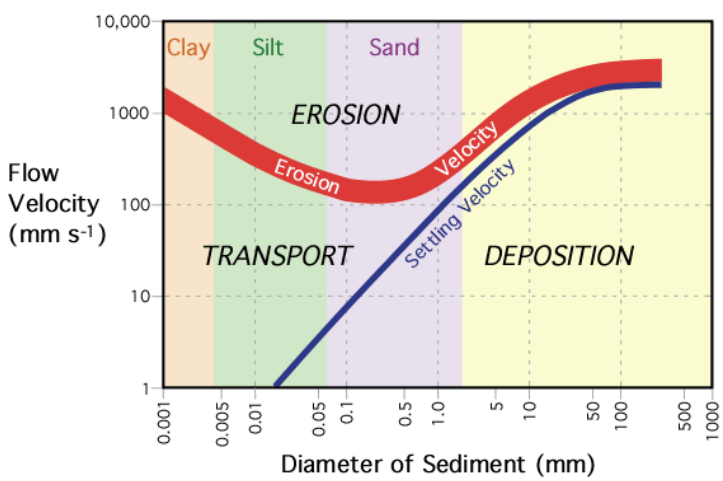
Hazard Type	Description
Erosion and Deposition	Erosion is the removal and simultaneous transportation of earth materials from one location to another by water, wind, waves, or moving ice. Deposition is the placing of the eroded material in a new location. All material that is eroded is later deposited in another location. Erosion and deposition of sediments are a dynamic process with a natural sequence. The forces that cause soil erosion can be very slow and even difficult to detect, or can be rapid and very apparent. Left without protection, the surface soil is exposed to the full force of wind and water and can be further eroded in a short time.

Hazard Type	Description
	Riverine Erosion is the long-term process whereby river banks and riverbeds are worn away, which occurs during a river's tendency for constant course alteration, shape, and depth changes, and the balancing act between the water's sediment transport capacity and its sediment supply. Swiftly moving floodwater causes rapid local erosion, and deposition occurs where flood waters slow down, pool, or lose energy in other ways and the materials settle.
Expansive Soils	Any soil that expands when wet and shrinks when dry is an expansive soil. Expansive soils can exert pressures up to 15,000 pounds per foot, causing the breakdown of building foundations and structural integrity. Roadbeds may also be affected, and could lead to avalanche and collapse when cutting into mountains and hillsides.[1] Soils can be tested using accepted standards of measurement to determine swell potential.
Subsidence	Subsidence occurs with the collapse of the ground surface due to the removal of subsurface support. Occurrences range from broad, regional lowering of the land surface to localized collapse. The primary causes of most subsidence are human activities: underground mining of coal, groundwater or petroleum withdrawal, and drainage of organic soils. Regional lowering of land normally occurs over time (days to a few years) and may damage structures with low strain tolerances such as dams, factories, nuclear reactors, and utility lines. Collapses, such as sudden formation of sinkholes or collapse of an abandoned mine, may destroy buildings, roads, and utilities and threaten lives.

Erosion

To fully understand how moving water exacerbates erosion and deposition, it is necessary to study the natural cycle of streambed movement and its impact on downstream areas. **Figure 3.8-1** illustrates the relationship between stream flow velocity and particle erosion, transport, and deposition.

Figure 3.8-1: Erosion and Transport Characteristics of Streamflow Velocity



***Source**: Physical Geography*

Wind erosion is not a significant factor in the Planning Area because of the geologic makeup of the area and the lack of large exposed areas such as cleared fields and desert.

[1] Definition provided in the 2014 NYS HMP, Section 3.13, p. 3.13-1

Expansive Soils

Expansive soils are composed of minerals capable of absorbing water. As an example, smectite clays increase in volume by 10% or more through water absorption. Change in volume causes damage when it exerts force on a building or other structure. Conversely, as expansive soils dry out, they contract or shrink. This causes structural damage and may leave soil fissures that allow more water to penetrate the surface. The cycle of swelling and shrinkage places repetitive stress on structures.

It is estimated that one-fourth of all homes in the nation experience expansive soil damage. This causes a greater financial loss to property owners than earthquakes, floods, hurricanes, and tornadoes combined.[2] Because of the slow onset of damage, property owners cannot attribute damage to expansive soils. Damage is typically thought to stem from poor construction practices, or owners assume that all buildings exhibit such damage over time.[3]

Subsidence

Subsidence results from natural- and human-caused occurrences, including subsurface mining and extraction of oil or groundwater. Approximately 40% of the land in the United States is underlain by salt and gypsum,[4] termed *karst*. Here water reacts with carbonate bedrock (limestone, dolomite, or marble) causing the stone to dissolve. Karst landscapes exhibit subsidence in the form of sinkholes that occur when underground caves or caverns dissolve, collapsing under the weight of the topmost soil layer. Sinkholes also occur due to manmade activities such as mining. Catastrophic subsidence is most commonly induced by water table lowering, rapid water table fluctuation, diversion of surface water, construction, use of explosives, and impoundment of water.

Location

Various conditions cause erosion, deposition, expansive soils, and subsidence, so different hazards prevail in different locations. Erosion and deposition in the Planning Area occur primarily along the banks of waterways. Although the erosion and deposition process is constantly occurring, bends in the channel are especially susceptible to erosion during high water events such as riverine and ice jam flooding. Specific Herkimer County locations that have experienced or are susceptible to streambank erosion include the following:

- Bellinger Brook
- East Canada Creek
- Fulmer Creek
- Maltanner Brook
- Moyer Creek
- Steele Creek
- West Canada Creek
- Mohawk River

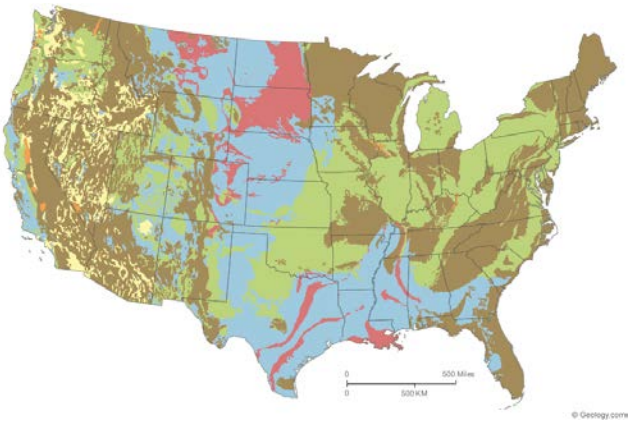
In addition to streambanks, steeply-sloped road cuts are also common locations of erosion that occurs slowly either from gradual or rapid sliding or sudden slope failure. Any steeply-

[2] 2014 NYS HMP, Section 3.13, p. 3.13-3; attributed to the American Society of Civil Engineers.
[3] *Ibid*.
[4] USGS; available at: https://water.usgs.gov/ogw/pubs/fs00165/

sloped road cut within the Planning Area is susceptible to erosion, although most road construction projects mitigate erosion by adding plantings or retaining walls.

Figure 3.8-2 shows the potential for expansive soils by soil type. The map shows Herkimer County comprising two types: 1) soil with less than 50 percent underlain by soils with abundant clays of slight to moderate swelling potential (light green); and 2) soil with little to no clays that has swelling potential (light brown).

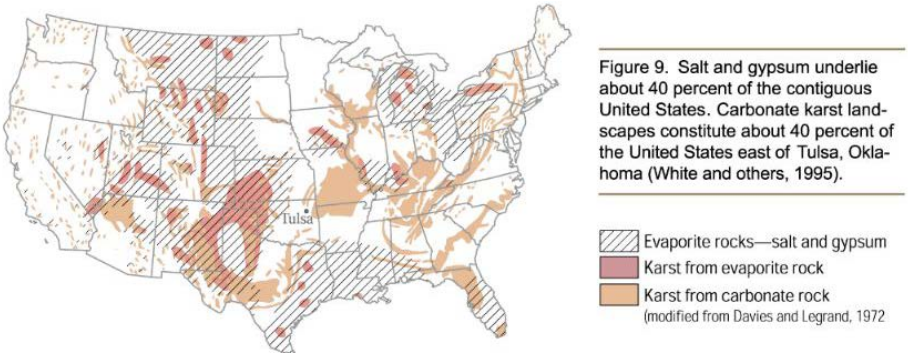
Figure 3.8-2: Expansive Soils Map



***Source**: www.geology.com*

Land subsidence affects parts of at least 45 states. **Figure 3.8-3** illustrates the locations of carbonate karst landscapes in the U.S. The southwest region of New York exhibits this type of landscape; the Planning Area is not included in this region.

Figure 3.8-3: Carbonate Karst Landscapes in the United States



***Source**: USGS, available at: https://water.usgs.gov/ogw/pubs/fs00165/*

Extent

Erosion

The primary cause of erosion in Herkimer County is flooding that results in bank failure along steeply-sloped creeks and streams. Erosion by water is based on the amount and intensity of rainfall and four additional factors:[5]

1. Ability of the soil to hold together
2. Surface cover (which provides protection from the forces of erosion)
3. Distance for action (slope length)
4. Slope gradient

Erosion management solutions address one or more of these factors. Adding organic matter is effective because it increases soil aggregation, stability, and water infiltration.

The dynamic process of streambank erosion is seen during periods of high flow and continues after high water has receded. Normally, creeks and streams erode and deposit sediment at slow average annual rates when soil particles are eroded from the bank by flowing water or by collapse. The base of a bank is eroded by flowing water that over-steepens or undercuts the bank, resulting in a collapse. Bank erosion typically occurs on the outside edge of a bend in a stream where higher flow velocities occur. The nearly vertical, eroding surface is called the cut bank. Stable streams laterally migrate through bank erosion across and down their valley while moving water and sediment from watersheds. Banks of a stable stream generally are low enough to allow floodwater to overflow the bank in approximately two out of every three years.

During periods of high flow, some bends are severely eroded and others undergo little or no erosion. Determining an average annual bank erosion rate is difficult. Geological evidence indicates that stable streams take from decades to centuries to migrate from one valley wall to the opposite wall across their flood plain. Debris flow flooding may also cause erosion by scouring vegetation from creek and stream banks.

Wind also contributes to erosion. Although Herkimer County does not typically have large areas where soil is bare of vegetative cover, it is possible that the sheer force of wind can detach particles protruding from the soil surface. These strike other surface particles as they are blown along. Susceptibility of bare soil surfaces to wind erosion is measured by classifying soils in wind erodibility groups based on the following factors:

- Soil texture and moisture
- Content of organic matter
- Carbonates effervescence
- Mineralogy
- Surface cover and roughness
- Wind velocity

[5] Muckel, Gary B. (Editor). "Understanding Soil Risks and Hazards"; U.S. Department of Agriculture, Natural Resources Conservation Service, National Soil Survey Center, Issued 2004.

- Content of rock fragments
- Direction and the length of unsheltered distance

Mitigation practices focus on maintaining a surface cover and reducing the length of the unsheltered distance with windbreaks or strips of wind-resistant plantings.

Expansive Soils

The extent to which soil expansion occurs is dependent upon the site and the mineral content of the area's soil. The potential for soil expansion can be measured using the Soil Expansion Potential Standard, which is established as an index (see **Table 3.8-b**).

Table 3.8-b: Soil Expansion Potential Index (ASTM D-4829)[6]

Expansion Potential Index
0 to 20 – Very Low
21 to 50 – Low
51 to 90 – Medium
91 to 130 – High
.130 – Very High

Subsidence

Subsidence occurs slowly and continuously or abruptly, as in the case of sudden sinkhole formation. There are no scientific standards or tools to predict occurrence or severity.

Previous Occurrences

Expansive soils and subsidence have been documented elsewhere in New York, but there have been no documented incidents of either hazard in the Planning Area. Flood-related erosion events have occurred in Herkimer County and are documented during flood damage assessment. Previous water basin assessments and flood hazard mitigation plans provide detailed information about erosion stemming from previous flood events. **Table 3.8-c** highlights only the worst instances of flood-related erosion.

Table 3.8-c: Summary of Major Erosion Issues Resulting from Previous Flood Events

Location	Problem Description
Village of Herkimer Bellinger Brook	Large volumes of sediment and woody debris are conveyed down the brook from higher elevations, depositing in the channel at bridges and reducing channel capacity.
Village of Dolgeville East Canada Creek	A high bank failure just downstream of the village of Dolgeville threatened property and contributed sediment to the creek. The formation of a large sediment bar downstream caused the channel to aggrade and flood the adjacent roadway. Sediments originating at the site became trapped by reservoirs associated with downstream hydroelectric dams.

[6] 2014 NYS HMP, Section 3.13; Table 3.13a, p. 3.13-3

Location	Problem Description
Town of German Flatts and Village of Mohawk Fulmer Creek Basin	19 areas of streambank erosion are documented in the *Fulmer Creek Basin Flood Hazard Mitigation Plan*.[7] The size of bank failures range from 3–150 ft in height, and 15–800 ft in length. Five of the sites are described as "severe" and 8 as "moderate".
Towns of Frankfort and Litchfield, Village of Frankfort Moyer Creek	10 sites of streambank erosion are noted in the Streambank Erosion Inventory, *Fulmer Creek Basin Flood Hazard Mitigation Plan* (pp. 82-85). Erosion and sedimentation are defined by the steep slopes of the streambanks.
Towns of Columbia, German Flatts, and Litchfield, Village of Ilion Steele Creek	Five sites of streambank erosion are noted in the Streambank Erosion Inventory, *Fulmer Creek Flood Hazard Mitigation Plan* (pp. 80-81). The highest area of erosion was estimated at 150 ft and the longest at 1,600 ft (Route 51 bank cut).
West Canada Creek/ Maltanner Brook Basin	Minor bank failures and erosion were identified as a high-risk area in the *West Canada Creek Basin Assessment* (April 2014), noting the need to implement sediment control measures in Maltanner Brook Basin to reduce the volume of sediment entering West Canada Creek.[8]

Figure 3.8-4: Bank Erosion within Fulmer Creek Channel

***Source**: "Fulmer Creek Basin Multi-Community Flood Hazard Mitigation Plan", May 2004, Herkimer-Oneida Counties Comprehensive Planning Program.*

Additional information related to erosion resulting from previous flood events is described in **Section 3.5: Flood**

Probability of Future Events

Erosion

Based on previous occurrences and documented impacts from past erosion events, it is highly likely that erosion will occur in the future. Because erosion events are mostly related

[7] *Fulmer Creek Basin Multi-Community Flood Hazard Mitigation Plan* (May 2004); Herkimer-Oneida Counties Comprehensive Planning Program. Table 8, p. 27. This document also contains a Stream Bank Erosion Inventory for Fulmer Creek, Moyer Creek and Steele Creek.

[8] *Emergency Transportation Infrastructure Recovery Water Basin Assessment and Flood Hazard Mitigation Alternative – West Canada Creek*, Milone and McBroom, Inc. NYS DOT and NYS DEC. April 2014, p. 15

to previous flood events, the best methodology for determining future probability is to consider erosion in combination with flooding. The probability for future occurrences of flooding is provided in **Section 3.5, Base Plan.**

Expansive Soils

Except for a localized area within the Town of Amherst there is a sparse historical record of expansive soils events in New York. In addition, there is no documentation of previous occurrences in the Planning Area. Consequently, determination of future probability is difficult, but it can be assumed that should an expansive soils event occur in Herkimer County it would be extremely rare and would also be localized.

Subsidence

A methodology for determining the probability or frequency of land subsidence has not been recommended. Existing maps that illustrate cumulative damage from past events do not imply probability or frequency of occurrence.

Impacts and Consequences

Population

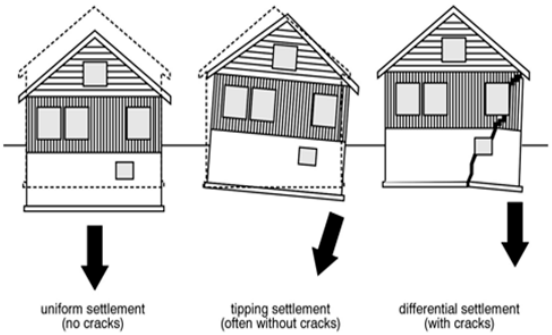
The primary asset at risk to soil hazards is the built and natural environments due to non-seismic soil movement. No soil hazard-related fatalities or injuries have been documented in the Planning Area. No jurisdictions within the Planning Area have been included in previous federal disaster declarations for soil hazards.

Built Environment

Impacts and consequences from soil hazards to the built environment have the potential to be significant, primarily through damage to homes and businesses and critical lifelines such as roads and bridges. Because some soil hazards, such as expansive soils, typically cause damage over a long period, it is difficult to link damage costs to the hazard. Erosion can take place slowly, causing property loss over time, or occur very quickly through a catastrophic failure due to flooding.

Figure 3.8-5 illustrates the impacts of settlement of a structure due to expansive soils.

Figure 3.8-5: Impacts of Expansive Soils on Buildings



***Source**: www.theconstructor.org, as shown in the 2014 NYS HMP, Section 3.13, p. 3.13-2*

Subsidence generally poses a greater risk to property than to human life. The average annual damage in the U.S. from all types of subsidence is conservatively estimated to be $125 million.[9] This primarily includes direct structural damage, property loss, and land depreciation, but it also includes indirect business and personal losses that accrue during periods of repair. Exposure of people and property is a function of the type and duration of subsidence and the extent of the area affected.

- Potential Primary Impacts
  - Damage to essential lifelines such as roads, bridges, and critical facilities (government, public safety, health and medical)
  - Structural damage to homes and businesses
- Potential Secondary Impacts
  - Economic loss

Natural Environment

Although all soil hazards have the potential to cause some of the most significant impacts to the natural environment, erosion is the only previously occurring soil hazard identified as affecting the Planning Area. It has caused severe damage to natural waterways and adjacent lands. The most significant erosion impact to the natural environment is sediment deposition that displaces stream channels and exacerbate localized flooding.

Economy

Economic losses from soil hazards may stem from damage to property and structures, including critical infrastructure. Potential economic losses include:

- Direct Economic Impacts
  - Uninsured losses to property
  - Cost of repairing public infrastructure (e.g., roads, bridges, parks)
- Indirect Economic Impacts
  - Relocation due to uninhabitable homes
  - Loss of wages due to temporary or permanent business closures

Each jurisdiction conducted an analysis of potential impacts and consequences for soil hazards. The compilation of the jurisdictions' analyses is described in **Table 3.8-d.** Additional details about impacts and consequence is provided in the jurisdiction annexes.

[9] Data Source: National Research Council, 1991. More current data has not been identified.

Table 3.8-d: Summary of Soil Hazard Impacts and Consequences, by Jurisdiction

Summary of Soil Hazard Impacts and Consequences, by Jurisdiction	Level of Concern/Ranking	Mass Casualty Potential	Transportation Infrastructure Damaged	Impact on Emergency Response Operations	Communication Failure	Damage to Homes and Businesses	Health and Medical System Impacts	Water System Damage or Failure	Utility System Damage or Failure	Sewer System Damage or Failure	Environmental Damage or Long Term Impact	Agricultural Losses - Crops	Agricultural Losses - Animals	Economic Impact - Direct or Indirect	Civil Unrest	Commodity Shortage	Impact to Public Confidence in Governance	Impacts to Cultural or Social Assets	Impact to Municipal Buildings/Parks
Herkimer County	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Village of Dolgeville	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Town of Fairfield	-	-	-	-	-	-	-	-	-	-	x	-	-	-	-	-	-	-	-
Town of Frankfort	-	-	-	-	-	-	-	-	-	-	x	-	-	-	-	-	-	-	-
Village of Frankfort	-	-	-	-	-	-	-	-	-	-	x	-	-	-	-	-	-	-	-
Town of German	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Town of Herkimer	-	-	-	-	-	-	-	-	-	-	x	-	-	-	-	-	-	-	-
Village of Herkimer	-	-	-	-	-	-	-	-	-	-	x	-	-	-	-	-	-	-	-
Village of Ilion	-	-	-	-	-	x	-	-	-	-	-	-	-	-	-	-	-	-	-
City of Little Falls	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Town of Little Falls	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Town of Manheim	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Village of Mohawk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

**Town of German Flatts used a low (score 3), medium (2), and high (1) ranking system, and added "Level of Concern/Ranking as a category"*

3.8.2: Risk Analysis

Each jurisdiction in the Planning Area conducted a soil hazard risk analysis to consider location, probability of future occurrences, magnitude/severity, and significance. An Overall Risk Score for soil hazards was determined by each jurisdiction.

Table 3.8-e: Summary of Overall Risk Scores for Soil Hazards, by Jurisdiction

Jurisdiction	Location	Probability of Future Occurrences	Magnitude/ Severity	Significance	Overall Risk Score[10]
Herkimer County					
Erosion	3	3	1	1	8
Expansive Soils	1	1	1	1	4
Subsidence	1	1	1	1	4
Village of Dolgeville					
Erosion	2	3	1	2	8
Expansive Soils	1	1	1	1	4
Subsidence	1	1	1	1	4

[10] The scoring methodology is described in Section 3.0, Base Plan.

Jurisdiction	Location	Probability of Future Occurrences	Magnitude/ Severity	Significance	Overall Risk Score[10]
Town of Fairfield					
Erosion	2	2	1	1	6
Expansive Soils	1	1	1	1	4
Subsidence	1	1	1	1	4
Town of Frankfort					
Erosion	2	2	1	1	6
Expansive Soils	1	1	1	1	4
Subsidence	1	1	1	1	4
Village of Frankfort					
Erosion	2	2	1	1	6
Expansive Soils	1	1	1	1	4
Subsidence	1	1	1	1	4
Town of German Flatts					
Erosion	3	4	2	3	12
Expansive Soils	1	1	1	1	4
Subsidence	2	2	1	1	6
Town of Herkimer					
Erosion	2	2	1	1	6
Expansive Soils	1	1	1	1	4
Subsidence	1	1	1	1	4
Village of Herkimer					
Erosion	2	2	1	1	6
Expansive Soils	1	1	1	1	4
Subsidence	1	1	1	1	4
Village of Ilion					
Erosion	2	2	1	1	6
Expansive Soils	1	1	1	1	4
Subsidence	1	1	1	1	4
City of Little Falls					
Erosion	1	1	1	1	4
Expansive Soils	1	1	1	1	4
Subsidence	1	1	1	1	4
Town of Little Falls					
Erosion	1	1	1	1	4
Expansive Soils	1	1	1	1	4
Subsidence	1	1	1	1	4
Town of Manheim					
Erosion	1	2	2	1	6
Expansive Soils	1	1	1	1	4
Subsidence	1	1	1	1	4
Village of Mohawk					
Erosion	1	1	1	1	4
Expansive Soils	1	1	1	1	4
Subsidence	1	1	1	1	4
AVERAGE SCORES					
Erosion					**6.4=Low**
Expansive Soils					**4.0=Low**
Subsidence					**4.2=Low**

The compilation of jurisdiction risk scores, along with consideration of the hazard profile and potential impacts and consequences indicates that, in general, soil hazards are a **low-risk** hazard. Vulnerability to erosion is addressed in more detail in **Section 5: Flood**.

Risk Summary - Soil Hazards

Location – Limited **Probability of Future Occurrence** – Low; moderate (erosion only) **Magnitude/Severity** – Low **Significance** – Low **Overall Risk Score** – Low	The compilation of jurisdiction risk scores, along with consideration of the hazard profile and potential impacts and consequences, indicates that soil hazards are a **low-risk** hazard.
SOIL HAZARDS Priority – Low	

3.8.3: Vulnerability Assessment

The HMWG determined that erosion may be addressed while studying flood vulnerability because erosion occurs primarily during flood events. This is further discussed in **Section 3.5**. There is no documentation of previous occurrences or substantial impacts, so a vulnerability assessment is not justified.

Population and Growth Trends

Jurisdictions developed along the waterways are now "built-out." With little room for development and growth, an increase in risk and vulnerability is not expected in short-term. Several communities have initiated projects to address streambank erosion and restore the equilibrium of the riparian corridor. These projects are occurring in areas that will be maintained as open space and will not see future growth and development.

Impacts of Climate Change[11]

Trends show that annual precipitation rates in the Northeast will continue rising. The frequency of heavy downpours will impact waterways, increasing erosion caused by high waters. Higher rainfall amounts may promote the incidence of expansive soils that undermine structural foundations. Drought-like conditions could occur with a change in the level of underground aquifers that increases carbonate rock erosion.

Factors for Consideration in the Next Planning Cycle

Future monitoring and evaluation of this plan should consider the following factors, as well as other information from NYS HMP updates:

- Have new soil hazard events occurred since adoption of this plan?
- Have new scientific studies, research, or practices changed the methods of predicting soil hazards or assessing risk and vulnerability?
- Are there new land development policies, plans, or practices that address or impact soil hazards, especially erosion?
- Is there new climate change information or data that could affect the risk or vulnerability to soil hazards or provide opportunities for adaptation?

[11] Information in this subsection was obtained from "What Climate Change Means for New York", EPA 430-F-16-034. U.S. Environmental Protection Agency, August 2016

SECTION 3.9: WILDFIRE

3.9.1: Hazard Profile

Wildland fires, or forest fires, have in recent years become a more frequent and costlier hazard. In 2016, Federal firefighting costs for suppression efforts alone totaled $2 billion, an increase of 1,000% since 1985.[1] During the same period, the number of fires decreased slightly, but the size of the fires in total acreage doubled.

In 2002, the last exceptionally dry fire season of New York, forest rangers responded to 324 wildfires burning a total of 2,062 acres statewide. In contrast, similarly dry weather in 1903 spawned over 643 fires that burned 464,000 acres in Adirondack and Catskill Parks alone. Improved outcomes are the result of 125 years of work on the part of State Forest rangers to prevent the hazard and improve response. Forest rangers respond to about 4% of wildfires in the state annually. More than 1,700 fire departments collectively respond to an average of 5,500 wildfires each year.[2]

Hazard/Problem Description

More than half of the acreage in New York State is non-federal forested lands.[3] In addition, there is an undetermined amount of open-space non-forested lands with wildfire potential. While there have been previous occurrences of large-scale wildfire in Herkimer County, the hazard was identified as being of "moderately low" concern in the 2015 HMP DRAFT.[4] Climate change studies suggest that a shift in weather patterns may lead to more wildfires. The hazard was previously confined to one or more seasons but occurrence is now less predictable and fires burn for longer periods. As such, wildfire is profiled here to establish a hazard baseline and determine overall risk for this planning cycle.

Photo Credit: Bureau of Land Management; available at: www.science.howstuffworks.com

Type

A wildfire, or wildland fire, typically begins in forested wilderness or a rural area of combustible vegetation. The source of ignition varies. They include weather conditions like lightning from severe thunderstorms, as well as human causes such as unextinguished campfires or cigarettes thrown from moving vehicles. Some common terms used to discuss wildfire are defined in **Table 3.9-a**.

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[1] https://www.nifc.gov/fireInfo/fireInfo_documents/SuppCosts.pdf
[2] http://www.dec.ny.gov/lands/4975.html
[3] NYS DEC; available at: http://www.dec.ny.gov/lands/4975.html
[4] The hazard and risk assessment conducted as part of the County's general emergency planning using the HIRA-NY software is described in detail in Section 3.0, Base Plan.

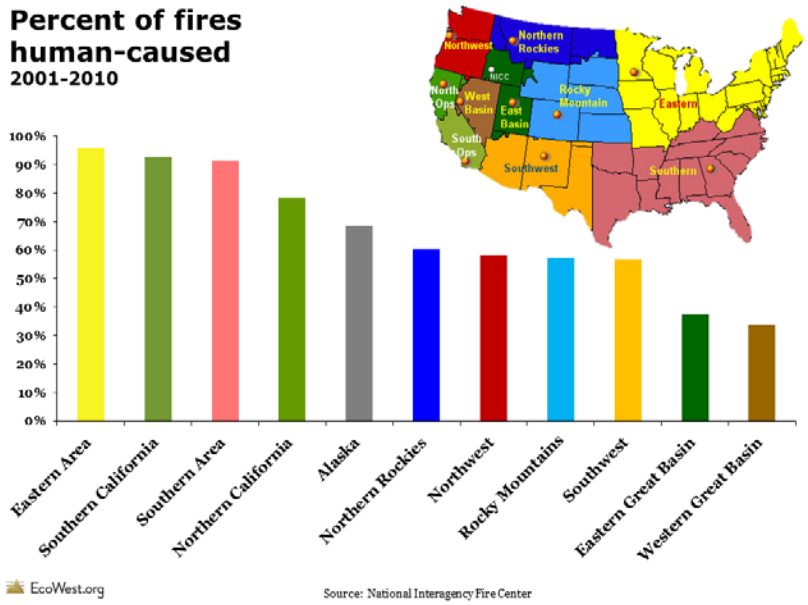
Table 3.9-a: Wildfire Terms

Term	Definition
Wildfire	Unplanned or unwanted fire burning vegetation in areas where development is minimal or non-existent. Referred to as forest fires, brush fires, grass fires, range fires, ground fires, or crown fires.
Wildland Fires	Includes wildfires and fires intentionally set or allowed to burn using a recognized land management plan. Commonly referred to as prescribed fires or controlled burns.
Wildland-Urban Interface Fires	Wildfires that burn or threaten to burn buildings and other structures.
Wildfire Mitigation	Activity designed to reduce or eliminate wildfire risk to people or property by reducing the action, potential effects, or consequences.
Wildland Fire Management	Activity supporting wildfire mitigation and the use of prescribed burns to accomplish ecological goals.
FIREWISE	Community wildland fire safety and prevention program to identify risks to neighborhoods and individual structures and develop a mitigation-based Community Wildfire Protection Plan (CWPP).

***Source**: NYS DEC, FireWise*

Wildfires are capable of spreading rapidly and destroying property, community assets, and natural resources. Human life and health are at risk to the effects of wildfire. Most are human-caused. **Figure 3.9-1** represents the percent of human-caused fires in the U.S., indicating that almost 95% of fires started in the Northeast are human-caused.

Figure 3.9-1: Percent of Human-Caused Fires in the U.S, by Region (2000–2010)



Human-caused wildfires may be intentional as well as unintentional. Open burning of vegetative debris is the largest cause of spring wildfires in New York State,[5] particularly if

[5] Statement by NYS DEC, as reported in the Times Union, April 15, 2015, available at: http://www.timesunion.com/news/article/State-burning-ban-takes-effect-as-spring-heats-up-6199650.php

the weather is dry and leaves have not yet sprouted. Some jurisdictions require that residents secure a permit from fire districts to burn debris.

Location

Wildfire, though uncommon in the region, is generally localized and to strike during dry periods in Adirondack Park's heavily forested areas, the most vulnerable location. The 2015 HMP DRAFT reported that wildfires primarily occur in the Town of Webb, located in Adirondack Park in the northern part Herkimer County.

Extent

A combination of conditions such as available fuel, weather, and topography work together to determine when a wildfire will ignite, how quickly it will spread, and how intense it will become. In general, the vulnerable period for wildfire in New York and the Planning Area is from the end of the visible snow pack in the spring until the end of leaf season in the fall.

Factors that Impact Extent

Fuels

There are two basic types of fuel in the wildland/urban interface area:

- Vegetation
  - Fuel in its natural form consists of living and dead trees, bushes, and grasses. Grasses burn more quickly and with less intensity than trees. Branches and shrubs between 18 inches and 6 feet are "ladder fuels" that help convert a ground fire to a crown fire (in tree tops), causing fire to spread more quickly.
- Structures
  - The extent of fire impact on structures depends on conditions such as: characteristics of the fire (e.g., intensity, wind direction, fuel path); proximity of the structure to the fire path; construction materials (roof, walls, foundation); landscaping (type and combustibility of the material); defensible space (how fire equipment and water sources can access the area); and water supply. Structures near a vegetative fuel source are generally more vulnerable.

Weather Conditions

High temperatures, low humidity, and swift winds increase the probability of ignition and difficulty of control. Short- and long-term drought further exacerbates the problem.

Slope

The upward or downward incline (or slant) of terrain affects wildfire characteristics. For example, a 0% slope near a hillside that rises 30 feet for every 100 feet of horizontal distance represents a 30% slope. Hot gasses rise in front of the fire along the slope face, pre-heating the up-slope vegetation. This causes a grass fire to move upward four times faster and with flames twice as high as a fire on level ground.

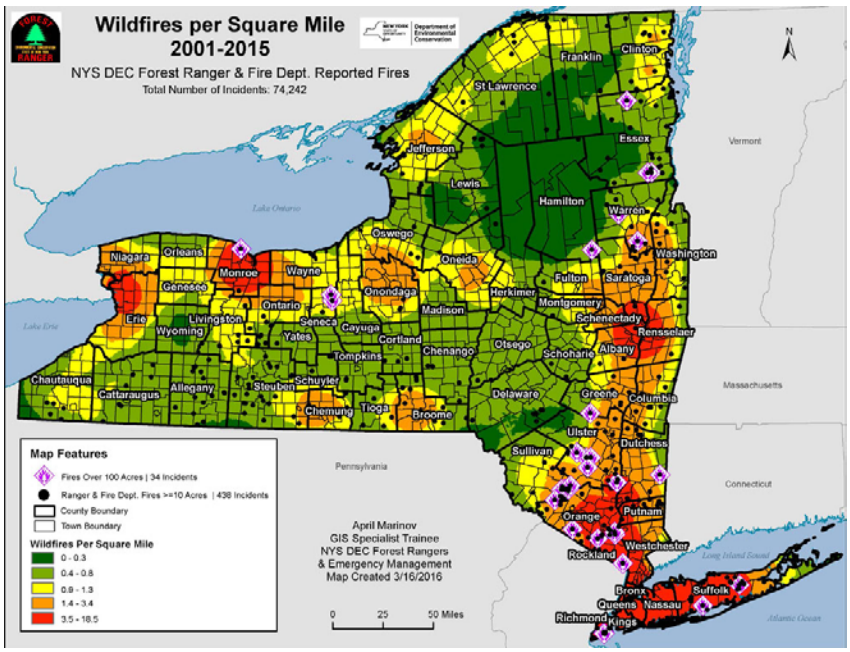
Previous Occurrences

The 2014 NYS HMP reports that many fires occurred statewide between 1960 and 2012 (based on SHELDUS data), particularly in forested areas. There are no reports of fire events taking place in the Planning Area. The 2015 HMP DRAFT documents six wildfire events between 1903 and 1950, but event locations are described as the Adirondacks and do not mention Herkimer County or any part of the Planning Area. The damage for all six of these events was limited to economic lumber industry losses.

Research of the NCDC Storm Events Database for this planning cycle reveals that two wildfire events were reported for the period from 1950 to November 2016. Because Herkimer County is separated into two zones for reporting purposes, the two wildfires were a single occurrence on July 5, 2002, that impacted the Northern and Southern Herkimer zones. Furthermore, the event was not a wildfire, but smoke that resulted from wildfires in northern Quebec, Canada. The smoke had become trapped under an atmospheric "subsidence inversion," resulting in advisories being issued to warn people with respiratory problems living in a wide geographic area to remain indoors. All citizens were advised to refrain from outdoor activity. The smoke temporarily limited visibility on roadways, but no other problems were reported.

Figure 3.9-2 illustrates the incidence and susceptibility of wildfire in the Planning Area. It shows Herkimer County as having a low and moderately low incidence and susceptibility in the northern and central portions of the Planning Area, respectively, and moderately low susceptibility in the rest of the county except for the extreme southwest. There is a higher incidence and susceptibility to wildfire on interstate corridors, possibly because people start fires with cigarettes discarded from passing vehicles.

Figure 3.9-2: Wildfire Incidence and Susceptibility in Herkimer County, 2001–2015



***Source**: NYS DEC*

Probability of Future Events

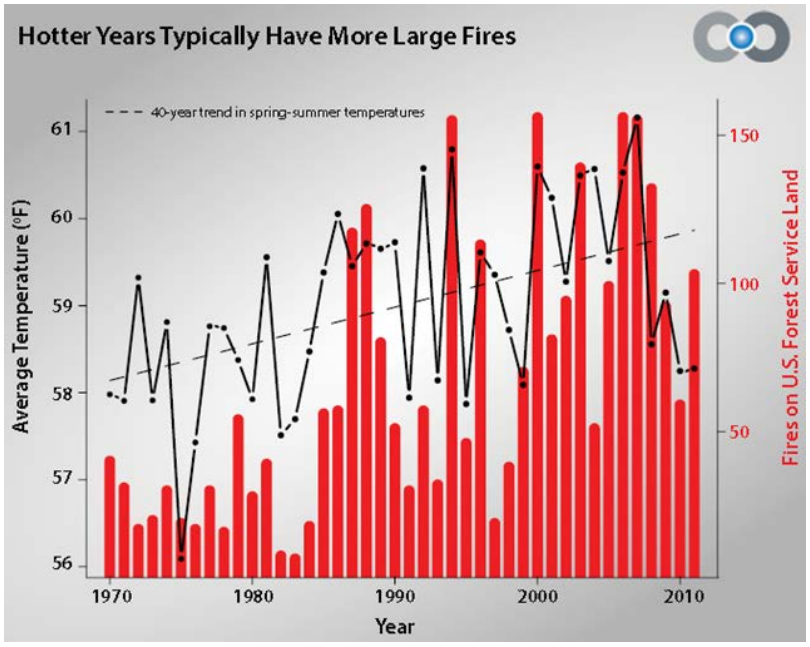
Given a lack of information about previous occurrences, a quantitative probability analysis is hard to conduct. However, it is likely that there will be wildfires in the Planning Area in the future and the potential for wildfires can be monitored in short-term by predictive tools that measure the potential for climate and weather conditions.

Several factors may contribute to an increase in wildfire in the future, including:

- Increasingly hot, dry weather in the U.S.
- Changing weather patterns that could lead to more frequent and severe storms containing lightning.
- Increased residential development in the wildland/urban interface.
- Reduction of funding for controlled, prescribed burns in heavy-fuel areas.

Figure 3.9-3 provides a visual trend of the number of wildfires on U.S. Forest Service Land as they relate to records of warmer spring-summer temperatures, by year. As the 40-year temperature trend has risen by more than one degree, the number of wildfires has generally trended upwards as well.

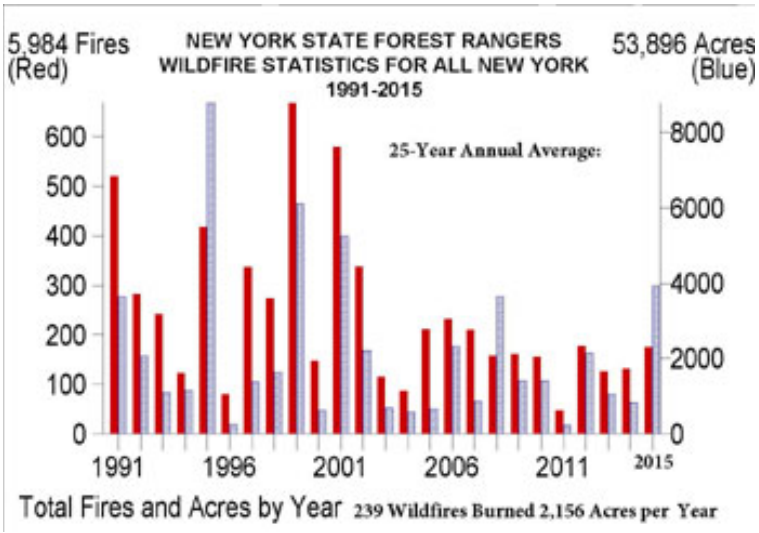
Figure 3.9-3: Temperature Trend in Relation to Large Wildfires on U.S. Forest Land, 1970 – 2010



***Source**: Climate Central*

In apparent contrast to the information provided in Figure 3.9-3, which appears to indicate an increase in large-size fires in relation to the general trend of increasing temperatures, the actual number of fires and size of fires (in acres) has decreased based on the 25-year annual averages for wildfires for all of New York.

Figure 3.9-4: Wildfire Statistics for All New York, 1991–2015



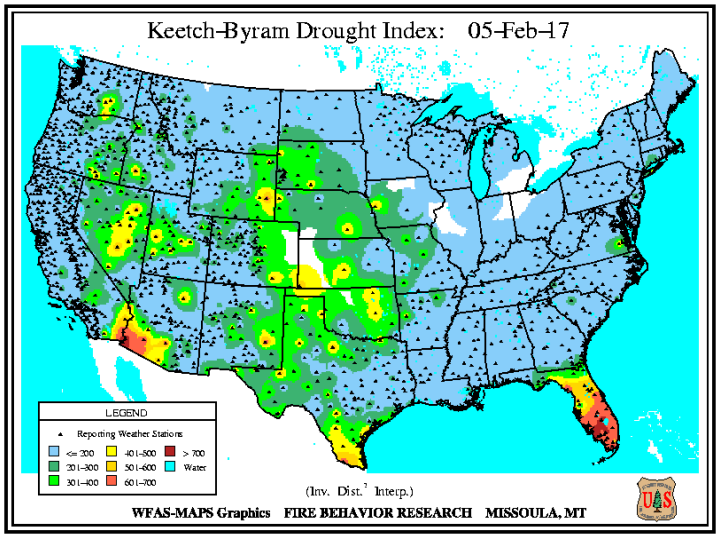
***Source**: NYS DEC; available at:* http://www.dec.ny.gov/lands/42378.html

The likelihood of a fire starting and growing is monitored daily by several systems. The primary system used in the U.S. today is the National Fire Danger Rating System (NFDRS), which characterizes burn conditions for areas of 10,000 to 100,000 acres. NFDRS recognizes four types of fires:

- **Ground Fires** burn in natural litter, duff, roots, or high organic soils. Once started they are very difficult to detect and control.
- **Surface Fires** burn in grasses and low shrubs (≦ 4-ft tall) or in lower tree branches. Surface fires may move rapidly. Ease of control depends upon the fuel involved.
- **Crown Fires** burn in the tops of trees. They are very difficult to control because wind plays an important role in crown fires.
- **Spotting Fires** may be produced by crown fires and fueled by wind and topographical conditions. Large burning embers are thrown ahead of the main fire. Once spotting begins, the fire will be very difficult to control.

The NFDRS has several components based on fire behavior. The components include the potential for spread and ignition; the Keetch-Byram Drought Index (KBDI); and the burning index. The KBDI determines forest fire potential based on daily water availability. The drought factor is weighed against the availability of precipitation and soil moisture. The drought index ranges from 0 to 800, where an index of 0 represents no moisture depletion, and an index of 800 represents dry conditions. **Figure 3.9-5** shows an example of the KBDI map of the U.S. for February 5, 2017. On this day, the KBDI for New York was below 300. Although the KBDI cannot predict that a wildfire will occur, it may be used to anticipate when they will likely to occur and how quickly they might spread. Because dry soil conditions increase the chance of dramatic fire spread, the index is closely monitored by state and local agencies responsible for fire prevention. The index enables agencies to ensure that they have adequate resources on hand should an event occur.

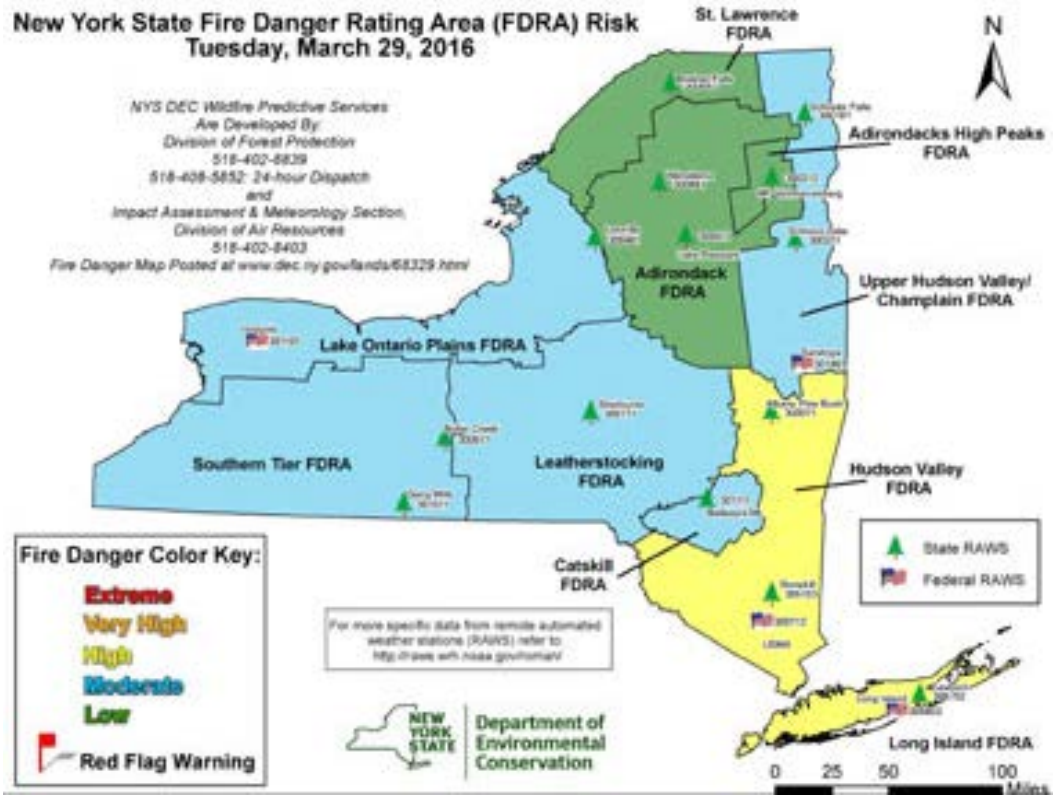
Figure 3.9-5: Keetch-Byram Drought Index U.S. Map for February 5, 2017



***Source**: Wildland Fire Assessment System, available at:* http://www.wfas.net/images/firedanger/kbdi.png

The NY DEC Division of Forest Protection maintains a color-coded Fire Danger Rating Area (FDRA) Risk map.

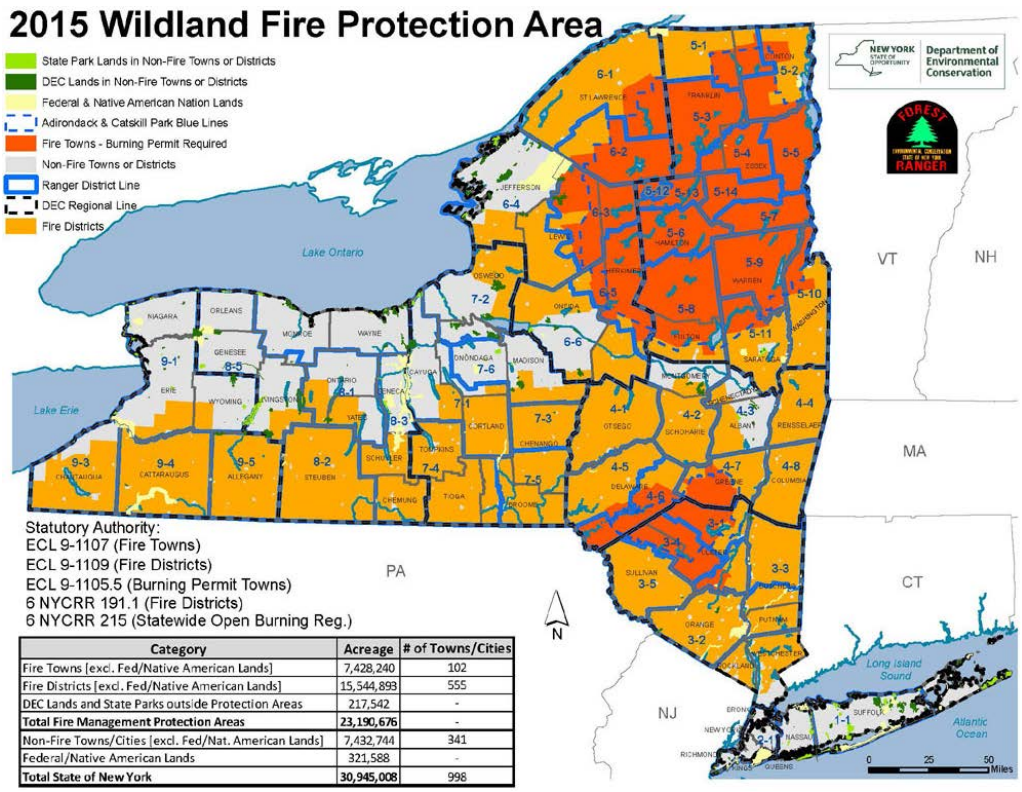
Figure 3.9-6: New York State Fire Danger



***Source**: NYS DEC, Division of Forest Protection, Wildfire Predictive Services, available at:* http://www.dec.ny.gov/images/legal_protection_images/firedangersm.jpg

The Department of Environmental Conservation's Division of Forest Protection ("Forest Ranger Division") is designated as New York's lead agency for wildfire mitigation. It is the policy of the state that local government and emergency services are the first line of defense for emergency response, so in the case of wildfire, the local fire department has the primary responsibility (incident command) for the control and containment of wildfires in their jurisdiction. The Forest Ranger Division has a statutory requirement to provide a forest fire protection system for 657 of the 932 townships throughout New York. This area excludes cities and villages and covers 23.5 million acres of land including state-owned lands outside the 657 towns.[6] **Figure 3.9-7** illustrates the boundaries of the Wildland Fire Protection Areas within the state. All of the state-managed land within the Planning Area is under the protective authority of the State Forest Ranger Division. Local fire districts and agencies coordinate fire operations with their state agency partners.

Figure 3.9-7: Wildland Fire Protection Areas



Category	Acreage	# of Towns/Cities
Fire Towns [excl. Fed/Native American Lands]	7,428,240	102
Fire Districts [excl. Fed/Native American Lands]	15,544,893	555
DEC Lands and State Parks outside Protection Areas	217,542	-
Total Fire Management Protection Areas	**23,190,676**	-
Non-Fire Towns/Cities [excl. Fed/Nat. American Lands]	7,432,744	341
Federal/Native American Lands	321,588	-
Total State of New York	**30,945,008**	998

***Source**: www.dec.ny.gov*

According to NYS DEC Forest Ranger Division wildfire occurrence data from 1988 through 2012, 95% of wildfires in New York are caused by humans, while lightning is responsible for 5%. Debris burning accounts for 35% of all wildfires, incendiary fires account for 17%, campfires cause 13%, and children are responsible for 5%. Smoking, equipment, railroads and miscellaneous causes contribute to the remaining 30% of wildfires. Beginning in 2010,

[6] http://www.dec.ny.gov/lands/42378.html

New York enacted revised open burning regulations that ban brush burning statewide from March 15 through May 15, a period when 47% of all fire department-response wildfires occur. Forest ranger data indicates that this new statewide ban resulted in 74% fewer wildfires caused by debris burning in upstate New York from 2010–2012 when compared to the previous 10-year average. Debris burning has been prohibited in New York City and Long Island for more than 40 years.[7] Since compliance with this regulation is a continuing objective, forest ranger and fire department historical fire occurrence data will serve as a benchmark for analysis of wildfire occurrence.

Impacts and Consequences

Although there is the potential for fatalities and injuries from future wildfires, there is no documentation that either of these has resulted from previous events. The primary concern related to impacts and consequences for wildfires are to structures and infrastructure, such as roads, bridges, and utility and communication lines.

Areas where structures are closer together have the potential for greater damage to structures and infrastructure, life and health impacts, and strain on existing healthcare facilities and emergency responders. Wide-reaching wildfires, though uncommon in the region, would be more likely to strike heavily forested areas, such as the Adirondack Park, during dry periods.

Population at Risk

Although there is a potential for fatalities or injuries in relation to wildfires, neither has resulted from previous events in Herkimer County. The primary impact to the population in general, and specific to medically-vulnerable populations, is a threat to health from smoke affecting air quality. Air quality advisories and warnings are issued to the public in such events to help limit exposure.

Built Environment

Although the potential for wildfire in the Planning Area is low, based on previous occurrences Herkimer County could have limited structures at risk to wildfire. The threat to the built environment from wildfire is considered to be low. Critical infrastructure such as roads, bridges, and utility and communication lines are minimally at risk from wildfire. If private property is impacted, it would be expected to be limited to a very small amount of properties at risk.

Natural Environment

The nature of wildfire poses a threat to the natural environment through changes to the landscape, such as deforestation, and potential loss of sensitive areas.

Economy

Any impacts to the economy of Herkimer County would be secondary, resulting from indirect loss of revenues for the timber industry, recreational tourism, or costs to uninsured property owners. No long-term impacts to the economy are anticipated from wildfire.

[7] http://www.dec.ny.gov/lands/42378.html

Impacts Summary

The following primary and secondary impacts described below are provided only as guidance, should the hazard risk increase in the future.

- Potential Primary Impacts
  - Life, safety, and health of residents from primary hazard as well as secondary effects to air quality from smoke.
  - Structural damage to buildings and infrastructure networks such as water, power and communication lines, and transportation routes.
  - Temporary road closures.
- Potential Secondary Impacts
  - Loss of vegetative cover.
  - Secondary economic impact to the timber industry (long-term) and tourism industry (short-term).

Each jurisdiction in the Planning Area conducted an analysis of risks and consequences for wildfire. The compilation of the jurisdictions' analyses is presented in **Table 3.9-b**

Table 3.9-b: Summary of Analysis of Wildfire Impacts and Consequences, by Jurisdiction

Summary of Wildfire Impacts and Consequences, by Jurisdiction	Level of Concern/Ranking[8]	Mass Casualty Potential	Transportation Infrastructure Damaged	Impact on Emergency Response Operations	Communication Failure	Damage to Homes and Businesses	Health and Medical System Impacts	Water System Damage or Failure	Utility System Damage or Failure	Sewer System Damage or Failure	Environmental Damage or Long Term Impact	Agricultural Losses - Crops	Agricultural Losses - Animals	Economic Impact - Direct or Indirect	Civil Unrest	Commodity Shortage	Impact to Public Confidence in Governance	Impacts to Cultural or Social Assets	Impact to Municipal Buildings/Parks
Herkimer County	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Village of Dolgeville	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Town of Fairfield	-	-	X	X	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-
Town of Frankfort	-	-	x	x	-	-	-	-	-	-	x	-	-	-	-	-	-	-	-
Village of Frankfort	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Town of German Flatts*	L	L	L	L	L	M	L	L	M	L	L	M	M	M	M	M	M	L	M
Town of Herkimer	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Village of Herkimer	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Village of Ilion	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

[8] This category was considered only by the Town of German Flatts.

Summary of Wildfire Impacts and Consequences, by Jurisdiction	Level of Concern/Ranking[8]	Mass Casualty Potential	Transportation Infrastructure Damaged	Impact on Emergency Response Operations	Communication Failure	Damage to Homes and Businesses	Health and Medical System Impacts	Water System Damage or Failure	Utility System Damage or Failure	Sewer System Damage or Failure	Environmental Damage or Long Term Impact	Agricultural Losses - Crops	Agricultural Losses - Animals	Economic Impact - Direct or Indirect	Civil Unrest	Commodity Shortage	Impact to Public Confidence in Governance	Impacts to Cultural or Social Assets	Impact to Municipal Buildings/Parks
City of Little Falls	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Town of Little Falls	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Town of Manheim	-	-	x	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Village of Mohawk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

**Town of German Flatts used a low (score 3), medium (2), and high (1) ranking system, and added "Level of Concern/Ranking"*

Additional details related to the summary of the impacts and consequences analysis are provided in the jurisdiction annexes.

3.9.2: Risk Analysis

Each jurisdiction in the Planning Area conducted a wildfire risk analysis that considered location, probability of future occurrences, magnitude/severity, and significance. These inputs generated an Overall Risk Score for wildfire.

Table 3.9-c: Summary of Risk Scores, by Jurisdiction

Jurisdiction	Location	Probability of Future Occurrences	Magnitude/ Severity	Significance	Overall Risk Score[9]
Herkimer County	2	1	1	1	5
Village of Dolgeville	2	1	1	1	5
Town of Fairfield	2	1	1	1	5
Town of Frankfort	2	1	1	1	5
Village of Frankfort	1	1	1	1	4
Town of German Flatts	4	1	2	2	9
Town of Herkimer	1	1	1	1	4
Village of Herkimer	1	1	1	1	4
Village of Ilion	1	1	1	1	4
City of Little Falls	1	1	1	1	4
Town of Little Falls	1	1	1	1	4
Town of Manheim	2	1	1	1	5
Village of Mohawk	1	1	1	1	4
AVERAGE SCORE					**4.8=Low**

[9] The scoring methodology is described in Section 3.0 of the Base Plan

Risk Summary – WILDFIRE

Location – Limited **Probability of Future Occurrence** – Low **Magnitude/Severity** – Low **Significance** – Low **Overall Risk Score** – Low	The compilation of jurisdiction risk scores, along with consideration of the hazard profile and potential impacts and consequences, indicates that wildfire is a **low-risk** hazard for all jurisdictions. Consequently, a vulnerability assessment is not justified during this planning cycle.
WILDFIRE Hazard Priority – Low	

3.9.3: Vulnerability Summary

Future Population Growth and Development Trends

While there is some limited potential for continued development within the wildland-urban interface areas in the Planning Area, the economic climate does not currently support large scale development. In addition, the State Land Master Plan that covers the Adirondack Park lands within the Planning Area strictly control development. As a result, no extensive population growth or development is expected within wildfire-prone areas in Herkimer County within the next planning cycle.

Impacts of Climate Change

Increasing temperatures may have contributed to larger wildfires, when they do occur. In addition, increases in the number and severity of thunderstorms could lead to more wildfires caused by lightning strikes. Drier winters result in less moisture on the land, and warmer springs pull moisture into the air more quickly, turning shrub, brush, and grass into kindling. Decades of aggressive policies that called for fires to be put out as quickly as they started have also aggravated the problem by limiting the elimination of dry vegetation. Cutbacks in government spending have reduced funding for controlled burns in some areas, leaving higher levels of vegetative fuels. Intentional controlled or "prescribed" burns can reduce the risk and severity of the hazard.

Factors for Consideration in the Next Planning Cycle

Future monitoring, evaluation, and updating of this plan should consider the following factors related to wildfire, as well as other information from NYS HMP updates:

- Have wildfire events occurred since the adoption of this plan?
- Has new scientific research or methodology changed the ability to predict wildfire events or assess risk and vulnerability?
- Has there been significant change in the population, built environment, natural environment, or economy that could affect the risk or vulnerability to wildfire?
- Is there new evidence related to the impacts of climate change that could affect the level of risk or vulnerability to wildfire?

SECTION 3.10: EPIDEMIC

3.1.1: HAZARD PROFILE

Infectious disease outbreaks, or "epidemics," occur worldwide. The cause, nature, and treatment of each disease differs, but all create increased demand on health and medical resources. One such event, the influenza pandemic of 1918 to 1919 (known as the "Spanish Flu" or "La Grippe") resulted in an estimated 20 to 40 million fatalities worldwide. It also killed more people than did the Bubonic Plague ("Black Death") between the years 1347 and 1351.[1] Studies of the Spanish Flu tell us how viruses spread and how they can be controlled, but the potential for epidemics and pandemics is greater today than in years past given the level of world travel. New York State was affected the Spanish Flu, and by Yellow Fever and cholera outbreaks in the late 18th and early 19th centuries. The evolutionary nature of viruses and emerging diseases create new challenges for, and demands, on the healthcare system.

> *The Spanish Flu infected 28% of all Americans. An estimated 675,000 Americans died of influenza, ten times as many as in World War 1.* (*"The Influenza Pandemic of 1918"*, Stanford University, https://virus.stanford.edu/uda/)

Hazard/Problem Description

Epidemics strain the healthcare system over a widespread area, resulting in: limited access to medical care; reduced inventories of critical medications and medical supplies; and the need for countermeasures such as isolation, quarantine, and vaccination. The medical community is challenged by the need to provide adequate care for many people while conducting a public education campaign to share timely preventive information. Efforts to manage perception encourage the public to take steps to avoid further outbreaks, achieve timely medical response and recovery, and maintain civil order.

A pandemic occurs when a new virus emerges and spreads. The word novel is the medical term for a new strain or previously unidentified disease. This type virus can emerge directly from animal reservoirs or result from mutations in a previously circulating virus.

Type

Outbreaks may erupt at any time in pockets of the population. The term epidemic describes a situation in which an outbreak expands quickly, simultaneously affecting many individuals in the community. An epidemic can result from illnesses including, but not limited to, influenza, meningitis, measles, and tuberculosis. An epidemic does not have to

[1] Source: https://virus.stanford.edu/uda/

be a contagious disease. Conditions such as cancer, West Nile fever, and obesity are "epidemic" if they affect many in the population at the same time. There are two main sources of infectious disease epidemics, and some epidemics have characteristics that are common to both:

> **Common Source Outbreak:** Affected individuals are exposed to a common agent. The exposure can be singular, meaning that all affected individuals develop a disease following a single exposure and incubation course, also called a "point source outbreak"; or exposure may be continuous and variable with multiple, intermittent exposures to the source.
>
> **Propagated outbreak:** Disease is spread person-to-person, and affected individuals may become independent reservoirs that lead to further exposure.

One group of infectious diseases that can lead to epidemics is called "zoonotic" diseases. These originate with animals but are transmitted to humans. Examples are Ebola virus, influenza ("bird" or "swine" flu), bacteria, fungi, and parasites. Of 1,415 pathogens known to infect humans, 61% are zoonotic.[2] Transmission through zoonotic sources is through the air, animal bites, and saliva.

Newly apparent, or emerging, diseases are transmitted by an infectious agent or microbial toxin. These include the Ebola virus, enterovirus D68, Middle East Respiratory Syndrome (MERS), legionella, and Zika virus. Transmission of infectious diseases occurs by the following primary modes:

- Airborne transmission (inhalation)
- Biological transmission (ingestion)
- Contact transmission (through skin/fluids)

Studies of the transmission patterns of the Spanish Flu of 1918 and 1919 linked outbreaks to soldiers returning from the war who brought the initial wave of influenza to military camps throughout the U.S. The path of the infection followed trade routes and shipping lanes. It was thought to be more severe in humid climates, such as those found in Southern port cities. Studies of the Spanish Flu and other epidemics prompted development of the preventive health methods integral to the current public health system.

Health and medical epidemics are under continual Public Health surveillance and management. These include HIV/AIDS, tobacco use, West Nile Virus, influenza strains, obesity, and emerging diseases. For hazard mitigation planning, the HMWG addressed epidemics or outbreaks from viruses or other sources not currently monitored by the Public Health system.

Location

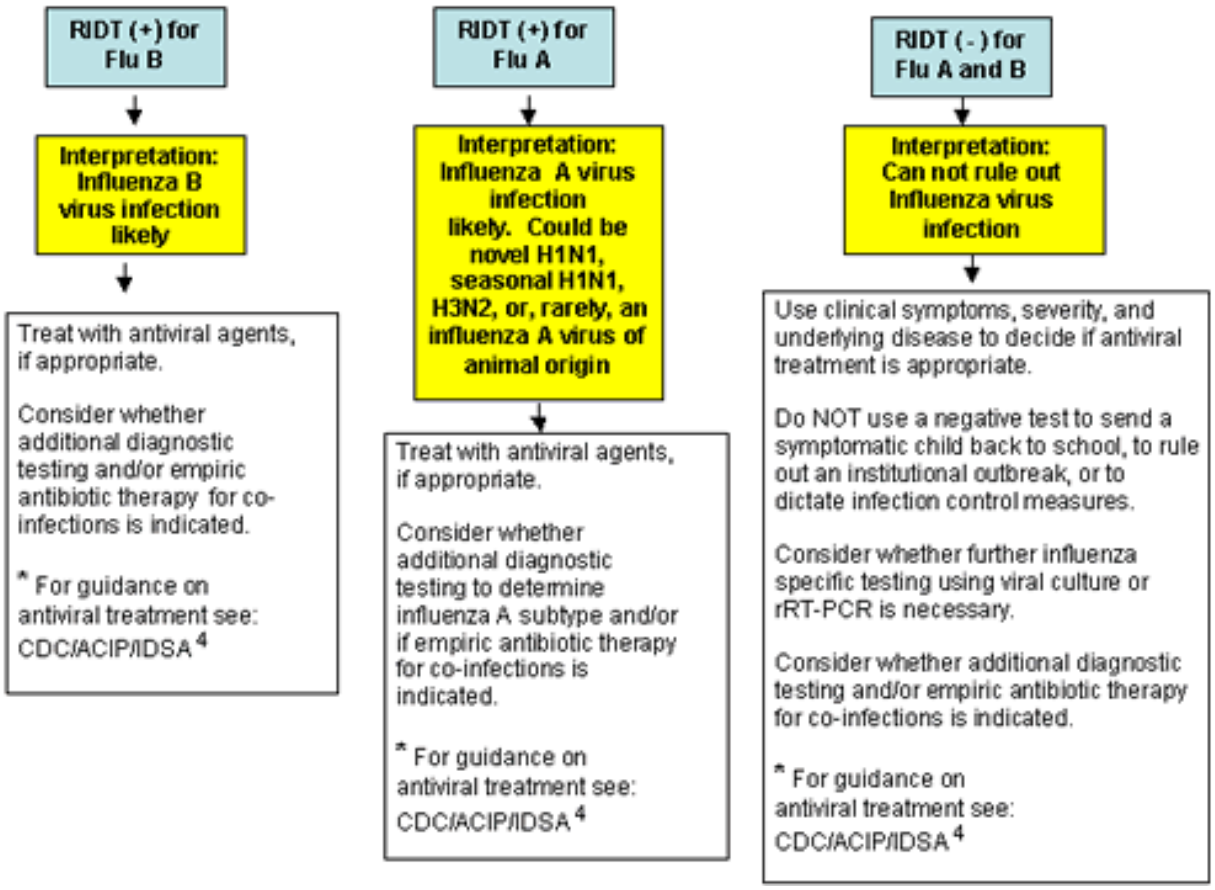
All areas of Herkimer County are susceptible to epidemic infectious disease outbreaks.

[2] "Zoonosis". *Medical Dictionary*. Retrieved February 22, 2017.

Extent

The Public Health service uses guidelines, protocols, procedures, models, algorithms, and other tools to establish monitoring thresholds, surveillance procedures, and treatment regimens based on the characteristics of a disease. This approach incorporates the most recent medical knowledge of how the disease is transmitted and progresses. They are specific to the type of infectious disease, geography, climate, medical care requirements, and social practices. **Figure 3.10-1** illustrates a model in use for the rapid detection of influenza.

Figure 3.10-1: Algorithm to Assist in Interpretation of Rapid Influenza Diagnostic Test (RIDT)[3]



Treatment of infectious diseases varies widely. While monitoring a potential epidemic, the medical community is developing effective medical treatment and countermeasures to quickly control the outbreak should it occur.

The Public Health system, well-tested and robust, functions at all government levels and with private sector partnerships. Federal, state, and county-level public health agencies

[3] "Interim Guidance for the Detection of Novel Influenza a Virus Using Rapid Influenza Diagnostic Tests", CDC, August 10, 2009 https://www.cdc.gov/h1n1flu/guidance/rapid_testing.htm

communicate and coordinate efforts to identify health threats. They also share information about outbreaks, new practices and protocols, and preventive measures. The system uses multiple control activities to expand the line of defense. **Table 3.10-a** describes steps in identifying an outbreak, preventing additional exposure, and providing treatment. Other methods may be incorporated into this process depending on the type of outbreak and resources needed.

Table 3.10-a: Public Health Communicable Disease Monitoring and Containment

Measure	Description
Disease Surveillance Systems	• Maintained by health epidemiology officials and staff, supported by healthcare facilities and providers • Require reporting of specific communicable diseases by medical providers, schools, healthcare facilities, residential facilities, and the public • Aid in quickly identifying potential outbreaks and establishing medical countermeasures to shield against widespread exposure • Implement contact tracing to identify paths of exposure
Protective Actions: Public Education and Information	• Public notification • Description of appropriate measures to prevent exposure/illness • Manage perceptions through rumor control activities
Medical Countermeasures	• Isolation (separation from other persons) • Quarantine (prohibiting any non-medical individuals from entering or leaving premises where a case of a communicable disease exists) • Mass Prophylaxis (medication/vaccination) • Mass Patient Care System/Alternate Care Sites
Strategic National Stockpile	• Pre-packaged, strategically located Federal repository of antibiotics, vaccines, chemical antidotes, antitoxins, and other critical medical equipment and supplies • Mass dispensing of medication/vaccination to the population through Points of Dispensing (PODs) • Capability to dispense to 100% of the population within 48 hours

The primary goal of the New York State Department of Health (NYSDOH) is to partner with county-level agencies to reduce the incidence of communicable diseases through "rigorous surveillance, rapid detection, investigation, implementation of prevention measures, and containment of community and healthcare-associated communicable diseases and disease outbreaks using scientifically sound epidemiological principles and interventions…."[4]

[4] "An Invitation to Bid for Staffing Services to Perform Communicable Disease and Infection Control Surveillance and Investigation", Division of Epidemiology, April 15, 2016

Figure 3.10-2: Strategic National Stockpile Warehouse

Herkimer County Public Health (HCPH) is the lead agency for preparedness, response, recovery, and mitigation of events that affect community health or medical needs. The CEMP outlines the role of HCPH, including detection, activation, operations, and recovery. The *Public Health Emergency Preparedness and Response Plan* (PHEPRP), Appendix 11 of the CEMP, outlines the mitigation function. The plan specifies that HCPH will:

- Coordinate with Herkimer County Emergency Services to assess short and long-term mitigation measures to reduce the impact of the emergency/disaster on the County's critical infrastructure and key resources.
- Assess the emergency's impact on HCPH's ability to perform required services, the extent of potential damage to community health and medical infrastructure, and the impacts to the population.
- Develop an After Action Report (AAR) to identify actions taken, or how preventive measures and response measures could be improved in the next emergency.

The after-action report is used to revise the preparedness plan by citing areas of improvement and recommending training. The PHEPRP states that "mitigation opportunities that may lessen the impact of the next disaster or incident" will be identified and implemented.[5]

Previous Occurrences

Epidemics are hard to monitor because the term epidemic is used to describe a range of infectious and non-infectious conditions. The diseases in question tend to develop and linger over time, making statistical reporting periods hard to identify. Current laws protecting private medical information constrain sharing disease-related data past the most basic level. Local and state health officials maintain records documenting outbreaks and the prevention and containment actions taken.

Probability of Future Events

Based on the history and characteristics of epidemics, there is a **high** potential for this hazard to occur in the Planning Area. On the other hand, the county's robust Public Health

[5] PHEPRP, CEMP, Appendix 11, pp. 348, 385, & 392.

system monitors potential conditions and situations from which an epidemic may arise to prevent and minimize outbreak. HCPH maintains comprehensive emergency and contingency plans developed with input from community partners. Its preparedness program includes ongoing training and exercises to ensure that the plans are effective and personnel can perform assigned roles. The PHEPRP, **Attachment 5** describes HCPH policy and procedures for communicable disease surveillance, investigation, reporting, and control.

Impacts and Consequences

Epidemics primarily impact the human population. Infectious disease outbreaks strain the healthcare system of a community, region, or widespread area. Additional resources for emergency medical services, clinics, hospitals, laboratories, doctor's offices, mortuary services, and suppliers of pharmaceuticals, medical supplies, and equipment are needed to respond to an increased demand for care. If the epidemic affects healthcare workers, there is a critical need for additional medical personnel.

The HCPH staff of 20 employees manage multiple programs and priorities. A widespread epidemic in the Planning Area would tax the staff and require mutual aid in the form of medical personnel and support services overseen by professional staff and volunteers. The PHEPRP includes medical surge provisions to acquire more personnel and other medical resources. The plan also addresses the activation of one or more Alternate Care Site(s) should existing facilities become inadequate to meet the need.

There would be little impact to the built environment from most infectious disease outbreaks. In a rare event, such as an intentional release of anthrax, the building in which the bacteria is released may be closed for decontamination for weeks or months.

Animal-based zoonotic diseases impact livestock and contaminate the food supply, causing direct and indirect economic loss. Direct losses, affecting health and medical facilities and providers, include increases in payroll, purchasing of medicines and supplies, operational hours, and similar service-delivery costs. Indirect costs include temporary closures of government offices and businesses and temporary loss of critical services, such as transportation, daycare, and routine healthcare. Such losses may exhaust the resources of a community of limited means.

- Impact Summary: Potential Primary Impacts
  - Life, safety, and health of residents
  - Temporary government, office, and business closures
  - Disruption of critical services and supplies (communication, transportation, utilities, food)
  - Expanded need for mortuary services
- Impact Summary: Potential Secondary Impacts

- Lack of medical resources (personnel, medications, supplies, equipment, and systems)
- Disruption of supply access and delivery systems
- Disruption of local economy

Each jurisdiction in the Planning Area analyzed epidemic risks and consequences. The compilation of the jurisdictions' analyses is described in **Table 3.10-b**. Additional details about impacts and consequences analysis are included in the Jurisdiction Annexes.

Table 3.10-b: Summary of Analysis of Epidemic Impacts and Consequences, by Jurisdiction

Summary of Epidemic Impacts and Consequences, by Jurisdiction	Level of Concern/Ranking[6]	Mass Casualty Potential	Transportation Infrastructure Damaged	Impact on Emergency Response Operations	Communication Failure	Damage to Homes and Businesses	Health and Medical System Impacts	Water System Damage or Failure	Utility System Damage or Failure	Sewer System Damage or Failure	Environmental Damage or Long Term Impact	Agricultural Losses - Crops	Agricultural Losses - Animals	Economic Impact - Direct or Indirect	Civil Unrest	Commodity Shortage	Impact to Public Confidence in Governance	Impacts to Cultural or Social Assets	Impact to Municipal Buildings/Parks
Herkimer County	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Village of Dolgeville	-	x	-	x	-	-	x	-	-	-	-	-	-	-	-	-	-	-	-
Town of Fairfield	-	x	-	x	-	-	x	-	-	-	x	-	x	-	x	-	x	-	-
Town of Frankfort	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Village of Frankfort	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Town of German	3	2	3	2	3	3	1	2	3	2	3	3	2	2	3	2	3	3	3
Town of Herkimer	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Village of Herkimer	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Village of Ilion	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
City of Little Falls	-	x	-	x	-	-	x	-	-	-	-	-	-	x	x	x	x	-	-
Town of Little	-	x	-	x	-	-	x	-	-	-	-	-	-	x	x	x	x	-	-
Town of Manheim	-	x	-	x	-	-	x	-	-	-	-	-	-	-	-	-	-	-	-
Village of Mohawk	-	x	-	x	-	-	x	-	-	-	-	-	-	-	-	-	-	-	-

**Town of German Flatts used a low (score 3), medium (2), and high (1) ranking system, and added "Level of Concern/Ranking"*

The PHEPRP and CEMP reinforce each other should there be a natural, technological, or human-caused disaster with health and medical impacts. The 2017 Herkimer HMP is linked to the PHEPRP by reference. The HMP addresses the risks and vulnerabilities of the Planning Area only to the extent required to identify mitigation actions. The authority to control infectious disease comes from NYS Public Health Law 2100. NYSDOH contracts with epidemiology staff to conduct enhanced communicable disease surveillance and carry out

[6] This category was considered only by the Town of German Flatts.

responsibilities associated with an outbreak. Other Federal and State laws and regulations govern public health emergency preparedness and response. These include NYS Executive Law 2-b, Section 24, which authorizes the County Executive or Chief Presiding Officer to proclaim a local state of emergency "in the event of a disaster or emergency, or in the event of a reasonable threat of immediate danger where the public is imperiled."[7] This and other policies promote mutual aid assistance and resources necessary to maintain the county's health and well-being. Guidelines for requesting assistance and resources are established in the CEMP and PHEPRP.

3.10.2: Risk Analysis

Each jurisdiction in the Planning Area conducted an epidemic risk analysis to consider location, probability of future occurrences, magnitude/severity, and significance. From this activity, an Overall Risk Score for epidemic was determined by each jurisdiction. **Table 3.10-c** summarizes the jurisdictions' scores.

Table 3.10-c: Summary of Overall Risk Scores for Epidemic, by Jurisdiction

Jurisdiction	Location	Probability of Future Occurrences	Magnitude/ Severity	Significance	Overall Risk Score[8]
Herkimer County	2	1	1	1	5
Village of Dolgeville	3	1	1	2	7
Town of Fairfield	2	1	1	1	5
Town of Frankfort	1	1	1	1	4
Village of Frankfort	1	1	1	1	4
Town of German Flatts	4	1	4	2	11
Town of Herkimer	3	1	1	1	6
Village of Herkimer	1	1	1	1	4
Village of Ilion	4	1	1	1	7
City of Little Falls	4	2	4	4	14
Town of Little Falls	4	2	4	4	14
Town of Manheim	1	1	1	1	4
Village of Mohawk	1	1	1	1	4
AVERAGE SCORE					**6.8 = Low**

The HMWG reviewed other sources of information about the risk of epidemic. The 2015 HMP DRAFT ranked epidemic as a moderately low hazard but included no documentation to support this finding. The Public Health Risk Assessment, periodically conducted by HCPH, is incorporated in the PHEPRP and was reviewed during this mitigation planning process. Epidemic was not seen as a hazard of high concern, likely because of extensive surveillance protocols followed by the public health system. The current mitigation planning committee determined epidemic should be profiled in the 2017 Herkimer HMP because of the potential for widespread infectious disease outbreaks. The hazard is still

[7] Appendix 11, Herkimer CEMP, p. 333.
[8] The scoring methodology is described in Section 3.0 of the Base Plan

ranked as being of **low concern** because the state public health system has strong resources and capabilities.

Risk Summary: EPIDEMIC

Location – Segment of the population to Widespread outbreak **Probability of Future Occurrence** – Medium Low **Magnitude/Severity** – Low **Significance** – Low **Overall Risk Score** – Low	The compilation of jurisdiction risk scores, along with consideration of the hazard profile and potential impacts and consequences, indicates that epidemic is a **low-risk** hazard.
EPIDEMIC Hazard Priority – Low	

3.1.3: Vulnerability Assessment

Based on the capabilities and resources of the statewide public health system, and the jurisdictional analysis of impacts and consequences, the HMWG determined that epidemic is a **low-risk** hazard. For this reason, a vulnerability assessment to quantify potential loss from epidemic is not justified, and no mitigation actions are necessary at this point.

Future Population and Development Trends

It is unlikely that growth in population or land development will affect the risk and vulnerability of the public to epidemics. Public health resources are in place for day-to-day epidemiological surveillance and detection of widespread infectious disease. Should an outbreak exceed local capabilities and resources, regional, state, and federal resources are available for response and recovery support. If it grows to pandemic proportions, plans and procedures are in place to further expand response and containment. One area of concern is the increasing number of Herkimer County residents age 65 and over. Frail members of this demographic segment may require enhanced medical and support services.

Factors for Consideration in the Next Planning Cycle

Future monitoring, evaluation, and updating of this plan will consider the following factors and information from New York State Hazard Mitigation Plan updates:

- Have epidemic events occurred since adoption of this plan?
- Has new scientific research or methodology changed the ability to prevent or contain epidemic events or assess risk and vulnerability?
- Have there been changes in the population, built environment, natural environment, or economy that could affect the risk or vulnerability to epidemic?
- Is there new evidence related to the impacts of climate change that could affect the level of risk or vulnerability to epidemic?

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SECTION 3.11: TRANSPORTATION ACCIDENT (with HAZARDOUS MATERIALS)

3.11.1: HAZARD PROFILE

Hazard/Problem Description

For most communities, transportation is how residents move from one place to another. A transportation accident affects the lives and property of those involved, as well as those near the event if hazardous materials are involved. Safe and timely transportation of goods and materials depends on a complex infrastructure network; accidents disrupt this network.

Type

Accidents occur in multiple transportation "modes," or means of travel, all of which are in Herkimer County: highway/road, rail, air, and water transportation. While this plan defines "transportation accident" as a single hazard, most transportation accidents stem from natural and man-made conditions. Natural hazards that cause such accidents include:

- Extreme weather
- Geophysical events (earthquake)
- Geomagnetic storms

Man-made events with the potential to impact infrastructure or cause transportation accidents include:

- Technical failure or human error
- Infrastructure failure (deferred maintenance, improper management, design flows, or exceeding design capacities)

The above hazards may be considered rare events and seen as having indirect effects on transportation systems. Those showing more direct cause are considered here:

- Mass casualty incident
- Hazardous material spill or release
- Loss of critical infrastructure

> *The **resilience** of a transport system is its capability to resume operations at a level similar to that before a disruption occurred.*
>
> *"The Geography of Transport Systems,"* Jean-Paul Rodrigue (2017), https://people.hofstra.edu/geotrans/eng/ch9en/conc9en/ch9c5en.html

A transportation accident may have multiple interrelated impacts or consequences. If it is accompanied by a hazardous material spill or atmospheric release, an event may include mass casualties and loss of critical infrastructure. During the planning process, the HMWG identified the potential for hazardous material spill or release during transportation accident as a threat of **high** concern.

Location

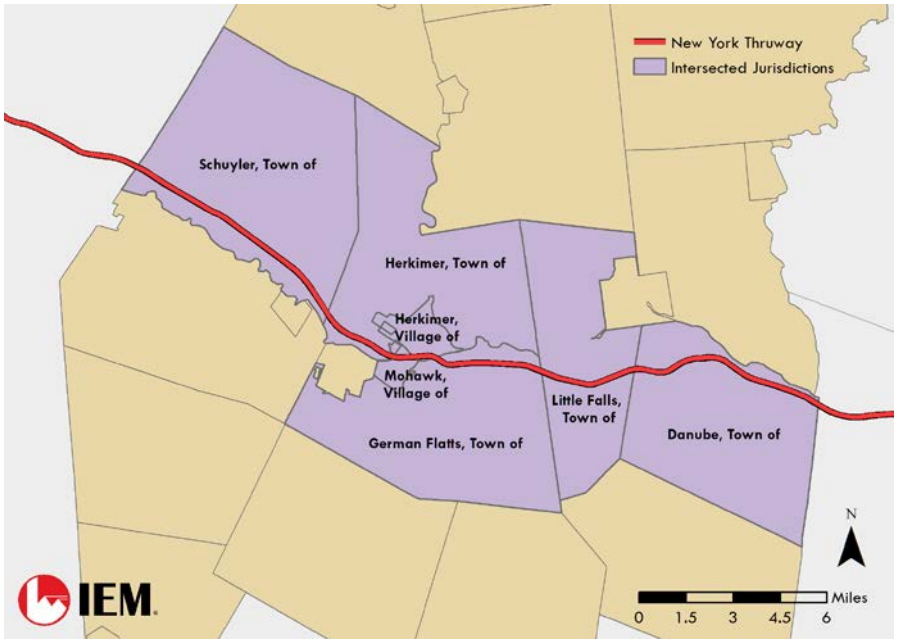
Freight consisting of known and unknown chemicals cross through the county on state roads and on Interstate 90, also called the New York State Thruway (see **Figure 3.11-1**). The major east-west rail line connecting Albany to western New York, in what is known as the "Empire Corridor," is a transit mode for large numbers of passengers and commodities. Commercial boat and barge traffic passes through Herkimer County on the Mohawk River and Erie Canal, but this plan considers water transportation accidents to be of low concern. Major state and local roads are the primary sites of transportation accidents. Routes crossing Herkimer County include, but are not limited to, U.S. 20; New York State Thruway (Interstate 90); and State Routes 5, 5S, 8, 28, 29, 29A, 51, 80, 167, 169, 170, and 365. The *Herkimer County Department of Highways Annual Report 2015* identified 578.31 miles of county-maintained roads in Herkimer County.

Figure 3.11-1: Map of the New York Thruway (Interstate 90)

Source: *www.thruway.ny.gov*

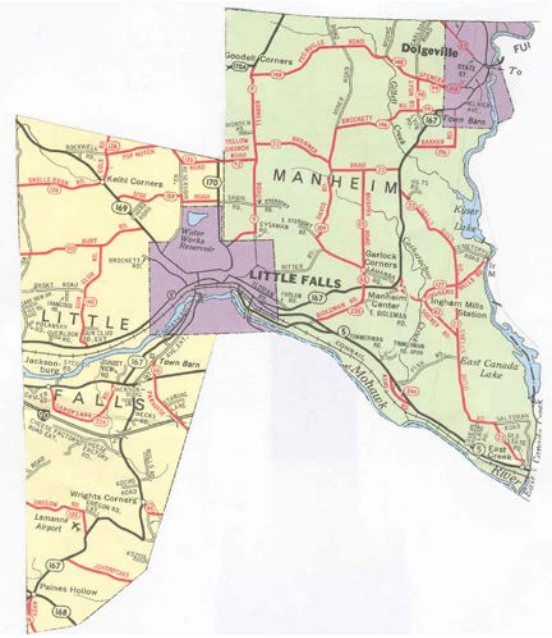
Figure 3.11-2 shows that the Thruway passes through the Towns of Danube, German Flatts, Herkimer, Little Falls, and Schuyler; and the Villages of Herkimer and Mohawk. State and county routes connect the municipalities within the county. Commercial carriers hauling large amounts of hazardous materials are more likely to be traveling along the Thruway. The *Herkimer County Comprehensive Emergency Management Plan* (CEMP), updated April 2015, contains a series of maps showing area transportation routes. A sample map is included as **Figure 3.11-3**.

Figure 3.11-2: Interstate 90 Crossing Southern Herkimer Communities



***Source**: NYS GIS Clearinghouse, ESRI*

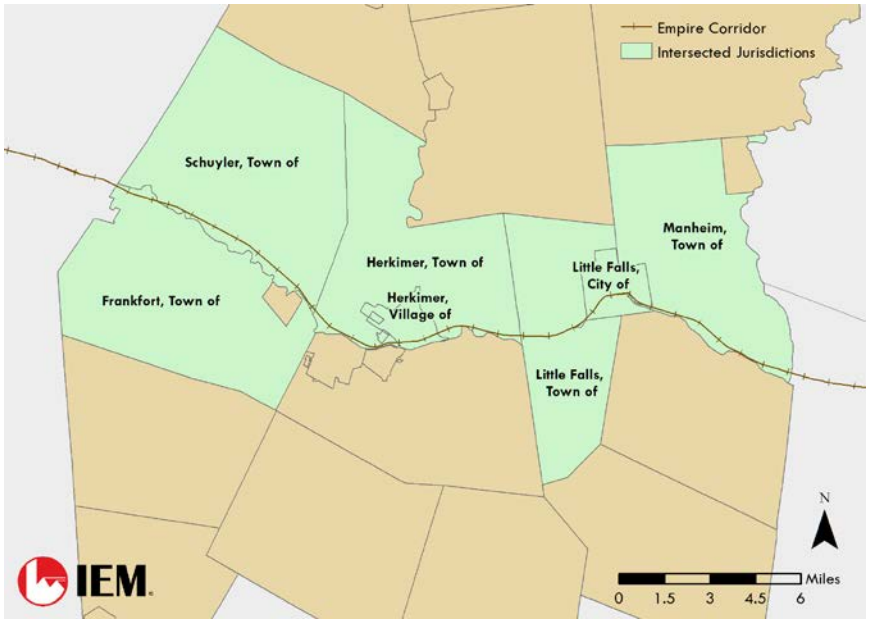
Figure 3.11-3: Major Transportation Routes – Sample Map - Herkimer County CEMP



***Source**: Herkimer County Comprehensive Emergency Management Plan, updated April 2015, p. 234*

The railway Empire Corridor is in the southern portion of the Planning Area, on the north bank of the Mohawk River. **Figure 3.11-4** shows that the line passes through the City of Little Falls, the Village of Herkimer, and (west to east) the Towns of Schuyler, Frankfort, Herkimer, Little Falls, and Manheim. The Amtrak, Conrail, Baltimore & Ohio, Buffalo & Pittsburgh, and New York-Lake Erie Railway companies operate along this corridor.

Figure 3.11-4: Empire Rail Corridor Crossing Southern Herkimer Communities



***Source**: NYS GIS Clearinghouse, ESRI*

The potential exists for water- and air-based transportation accidents to occur. Barges with hazardous loads pass through the Erie Barge Canal. Although commercial aircraft fly over the region, there are no commercial passenger airports in the county. Seven airports serve corporate and private aircraft, listed here in **Table 3.11-a**.

Table 3.11-a: Airports in Herkimer County

Airport	Location
• Frankfort-Highland Airport • Kermizian Airport • Mohawk Air Park • Mohawk Aviation Center Airport • Old Forge Airport • Richfield Airport • Sky-Ranch Airport	Town of Frankfort Town of Ohio Town of Schuyler Town of German Flatts Town of Webb Town of Warren Town of Little Falls

The privately-owned Tgp-245 Heliport, which belongs to Tennessee Gas Pipeline, is in the Town of Winfield.

Extent

The New York State Department of Environmental Conservation (NYS DEC) receives about 16,000 reports annually of confirmed and suspected hazardous materials releases.[1]

[1] Based on data reported by the NYS DEC at http://www.dec.ny.gov/chemical/8428.html.

Roughly 90 percent of releases involve petroleum products. The rest involve various hazardous substances, unknown materials, untreated sewage, and cooking grease.

Most transportation accidents are limited in scale and sufficiently managed by state and local resources. New York State Police, the Herkimer County Sheriff's Office, and municipal police departments cooperate under the National Incident Management System (NIMS), Incident Command System (ICS) to facilitate response and recovery. Law enforcement and fire personnel, Emergency Medical Services (EMS) agencies, county and private medical providers, and highway personnel also support incident response. The office of Herkimer County Emergency Management is activated to provide incident support and coordination when the incident is beyond effective handling by local agencies. The CEMP outlines the conditions and provisions for mobilizing the county's incident management system.

Although transportation accident is not identified as a hazard in the CEMP, several sections of the plan describe its consequences, detailed in **Table 3.11-b**.

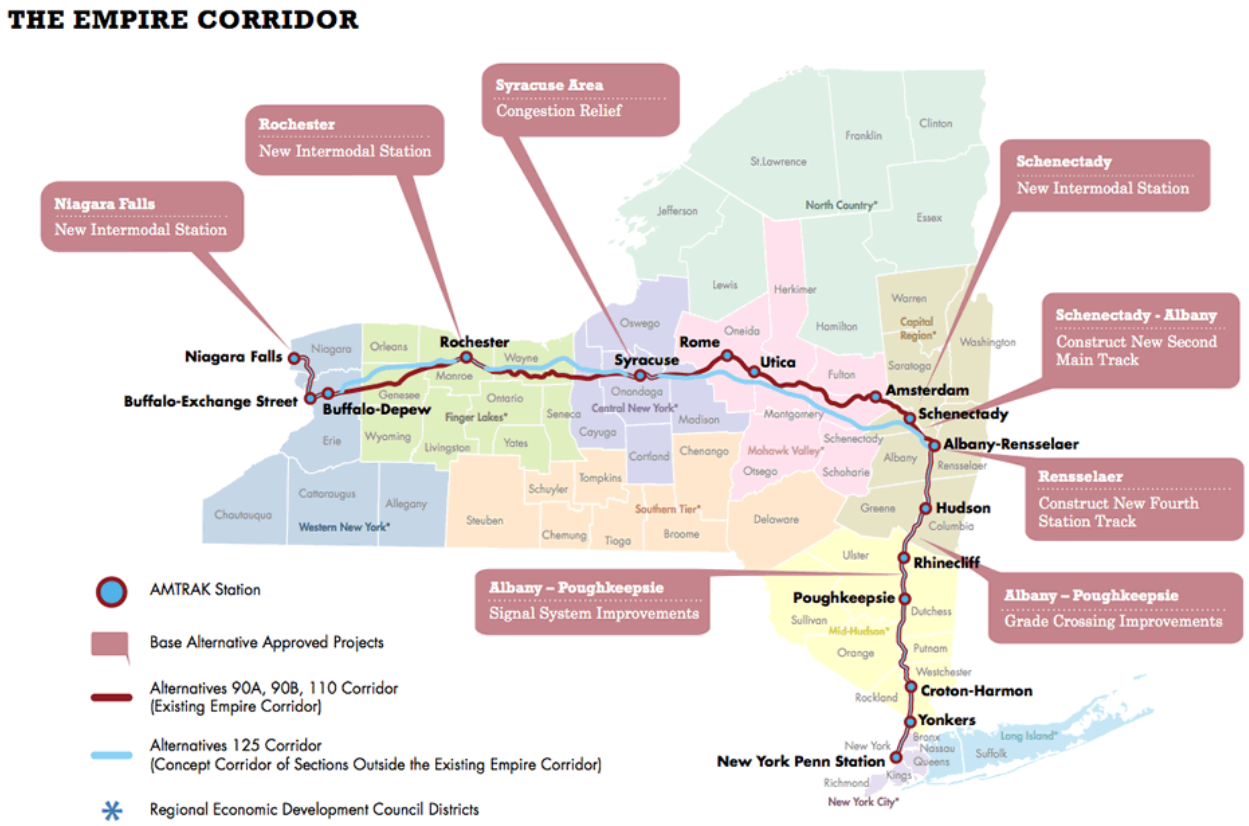
Table 3.11-b: Sections of the Herkimer CEMP that Address Transportation Accidents/Hazardous Materials

CEMP Section	Description
Base Plan	• Establishes responsibility of local government for initial response; the county assists when local resources are fully committed • Describes process to monitor "identified hazard areas" (p. 19), which includes toxic exposure levels
Appendix 5 - NYS Highway Emergency Task Force Policy and Procedures	• Addresses debris clearance on roads and public property • Prioritizes clearing roads for emergency response vehicles
Appendix 6 – Mass Evacuation Annex	• Establishes the authorities and responsibilities for initiating mass evacuation and sheltering • Describes the process and procedures for issuing public warnings and evacuation/shelter-in-place messages, and conducting evacuation and shelter operations
Appendix 8 - Hazardous Materials	• Supports the authorities of the County Mutual Aid Plan, NYS General Municipal Laws #204 (f) and 209 (e), and SARA Title III for multi-agency response to hazardous materials incidents • Analyzes hazardous chemicals used/stored at 33 fixed sites • Outlines response protocols for a hazardous materials incident occurring in transit or at a fixed site • Establishes safety protocols for responders • Identifies vulnerability zones and describes procedures for issuing public warnings and protective measures for evacuation and/or shelter-in-place • Identifies critical facilities and special risk housing within vulnerability zones • Identifies technical and mutual aid contacts

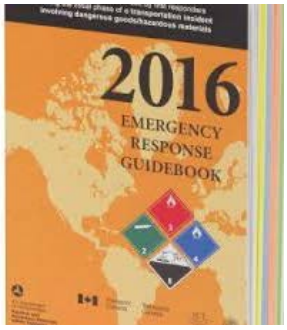
CEMP Section	Description
Appendix 9 – Mass Casualty Incident Response Plan	• Assigns responsibilities for incident management. Establishes response protocols to incidents involving five or more patients, or an event that exceeds routine Emergency Medical Services (EMS) resources of the responsible agencies, requiring other resources to assist in the initial emergency • Presents a list of service providers in Herkimer County

The Northeast Alliance for Rail website (www.northeastallianceforrai.org) received a $150 million grant in September 2011 from the U.S. Department of Transportation (DOT) to make improvements to passenger rail service on the Empire Corridor. Funds were used to update service, reduce delays, and improve reliability along the corridor. **Figure 3.11-5** visually summarizes the improvements. Most upgrades took place outside the Planning Area, but the grant shows DOT's commitment to maintaining a safe and efficient rail system.

Figure 3.11-5: Map of Planned Improvements to the Empire Corridor Rail System (2014)



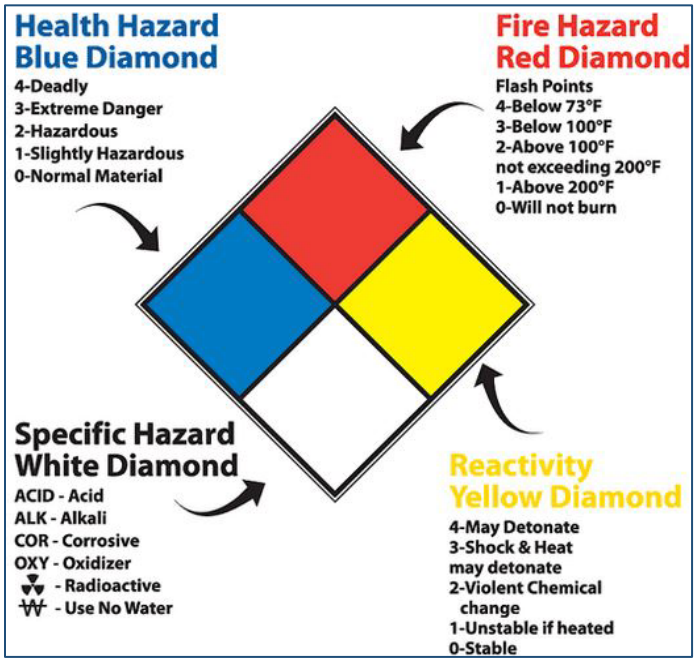
***Source**: www.alloveralbany.com/archive/2014/03/05/thinking-about-high-speed-rail-in-new-york*



The level of risk in transportation accidents involving hazardous materials is reduced by several programs that help responders manage such incidents. The U.S. Department of Transportation maintains and distributes the *Emergency Response Guidebook* to response agencies as the official guide for hazardous materials incidents. The book contains a list of all chemicals in transit and establishes detailed guidance on: establishing vulnerability zones; conducting response operations appropriate to the chemical; taking protective actions; maintaining personnel safety; and implementing first aid. Fire, law enforcement, and emergency medical services personnel carry the book as a matter of course to quickly identify the level of threat posed by a substance and provide a timely response.

The U.S. Department of Transportation, under the authority of *49 Code of Federal Regulations, Part 172*, manages the hazardous materials markings, labeling, and placarding system. This system designates visible placards (signs) that provide critical information about hazardous materials in transit (see **Figure 3.11-6**). The placards identify the hazard class or division, such as explosives, gases, flammable liquid, and radioactive materials; category of material; identification number; and the hazardous material in question. Labels are diamond-shaped and are must be affixed on two sides of non-bulk containers. Diamond-shaped placards must also be placed on all four sides of a bulk container.

Figure 3.11-6: Hazardous Materials Placard System



***Source**: environmentalsafetysvc.com/nfpa.html*

Previous Occurrences

Transportation accidents involving hazardous materials are hard to track and there are many reporting systems, event locations, types of material, and conditions describing "hazardous materials" events. Incidents may be reported as occurring at either a fixed location or in transit. Data extracted from several sources show the types of information available:

- http://www.city-data.com/fire/fire-Herkimer-New-York.html includes an incident on May 8, 2006, on German Street in Herkimer which involved "combustible and flammable gas or liquid spills or leaks" that could have led to "chemical release, reaction or toxic condition."
- http://www.city-data.com/fire/fire-Herkimer-New-York.html reports an incident on May 21, 2006, on Mohawk Street in Herkimer involving "gasoline or other flammable liquid spill."
- CNYhomepage.com on May 16, 2017, reported a hazardous materials incident at a healthcare facility that resulted in six employees being transported to the Little Falls Hospital for "decontamination."
- http://www.city-data.com/fire/fire-Herkimer-New-York.html reported 20 incidents of oil or flammable liquid or gas leaks or spills, but did not indicate whether these events were associated with materials at a fixed facility or in transit.

Probability of Future Events

There is a high potential for a transportation accident anywhere in the Planning Area, ameliorated by the aforementioned marking system and ongoing monitoring processes. The NYSDEC maintains a "Spill Response Program for Petroleum and Hazardous Materials" with trained response personnel assigned to regional offices statewide. The program also operates a spill hotline to receive incident notifications, allowing prompt response to known and suspected releases. Entities storing, using, or transporting hazardous materials are required to notify the spill hotline if a known or suspected release occurs. This program involves local fire personnel, emergency medical services, law enforcement teams, public health, and medical agencies, all of whom follow protocols outlined in the CEMP to prevent or minimize an incident. Decontamination plans include training and exercises to ensure that procedures are effective and personnel are prepared to complete their assigned tasks.

Impacts and Consequences

The HMWG recognizes that substances from hazardous materials spills or releases may be conveyed by air, water, or explosion during a transportation accident. Events may result in fatalities and injuries and/or damage to the built environment, including critical infrastructure and public and private property. Hazardous substances are known to kill or injure plants, fish, and wildlife; damage habitats; and affect agricultural livestock and the food supply. The entity responsible for a spill or release is responsible for cleanup. Such operations vary according to the type of release, site characteristics, disposal requirements, and the impact to soil and water. NYSDEC monitors long-term effects from a spill or release.

A transportation accident involving the release of a hazardous material may cause direct and indirect economic losses. Direct losses affect response agencies and health and medical facilities and providers, resulting in increased costs for payroll, purchasing medicine and supplies, and extended operational hours. Indirect costs stem from temporary roadway closures after the accident, and shelter-in-place or evacuation. Temporary loss of critical infrastructure (transportation routes) and temporary limited access to emergency response services may affect a community's well-being.

- Impact Summary – Potential Primary Impacts
  - Life, safety, and health of residents – potential mass casualties
  - Temporary closure of transportation corridors
  - Disruption of critical services and supplies (emergency response vehicles, utility crews, essential goods, medical providers)
  - Expanded need for mortuary services
- Impact Summary – Potential Secondary Impacts
  - Exposure to hazardous materials
  - Limited economic loss
  - Contamination of natural environment
  - Long-term impact to the environment

Each jurisdiction in the Planning Area conducted an analysis of potential risks and consequences for transportation accidents. The compilation of these analyses is described in **Table 3.11-c**. Additional summaries of impacts and consequences analysis are provided in the jurisdiction annexes.

Table 3.11-c: Summary of Analysis of Transportation Accident Impacts and Consequences, by Jurisdiction

Summary of Transportation Accident Hazard Impacts and Consequences, by Jurisdiction	Level of Concern/Ranking	Mass Casualty Potential	Transportation Infrastructure Damaged	Impact on Emergency Response Operations	Communication Failure	Damage to Homes and Businesses	Health and Medical System Impacts	Water System Damage or Failure	Utility System Damage or Failure	Sewer System Damage or Failure	Environmental Damage or Long Term Impact	Agricultural Losses - Crops	Agricultural Losses - Animals	Economic Impact - Direct or Indirect	Civil Unrest	Commodity Shortage	Impact to Public Confidence in Governance	Impacts to Cultural or Social Assets	Impact to Municipal Buildings/Parks
Herkimer County	-	x	-	x	-	-	x	-	-	-	-	-	-	x	-	-	x	x	-
Village of Dolgeville	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Town of Fairfield	-	x	x	x	-	-	x	-	-	-	x	-	-	-	x	-	x	-	-
Town of Frankfort	-	x	-	x	-	-	x	-	-	-	x	-	-	-	x	-	x	-	-

Summary of Transportation Accident Hazard Impacts and Consequences, by Jurisdiction	Level of Concern/Ranking	Mass Casualty Potential	Transportation Infrastructure Damaged	Impact on Emergency Response Operations	Communication Failure	Damage to Homes and Businesses	Health and Medical System Impacts	Water System Damage or Failure	Utility System Damage or Failure	Sewer System Damage or Failure	Environmental Damage or Long Term Impact	Agricultural Losses - Crops	Agricultural Losses - Animals	Economic Impact - Direct or Indirect	Civil Unrest	Commodity Shortage	Impact to Public Confidence in Governance	Impacts to Cultural or Social Assets	Impact to Municipal Buildings/Parks
Village of Frankfort	-	x	-	x	-	-	x	-	-	-	x	-	-	-	x	-	x	-	-
Town of German Flatts*	L	M	L	M	L	L	H	M	L	M	L	L	M	M	L	M	L	L	L
Town of Herkimer	-	-	x	x	-	x	x	x	-	-	x	-	-	x	x	-	-	-	-
Village of Herkimer	-	-	-	x	-	-	x	-	-	-	-	-	-	-	x	-	-	-	-
Village of Ilion	-	x	x	x	x	x	x	x	-	-	x	-	-	-	-	x	-	-	-
City of Little Falls	-	x	x	x	-	x	x	x	x	x	x	-	-	x	-	x	x	x	-
Town of Little Falls	-	x	x	x	-	x	x	x	x	x	x	-	-	x	-	x	x	x	-
Town of Manheim	-	-	x	x	-	-	x	-	-	-	-	-	-	-	x	-	-	-	-
Village of Mohawk	-	-	-	x	-	-	x	-	-	-	-	-	-	-	x	-	-	-	-

**Town of German Flatts used a low, medium, and high ranking system, and added "Level of Concern/Ranking"*

The CEMP is activated in the event of any natural, technological, or human-caused emergency or disaster that exceeds the resources of local agencies. This section of the 2017 Herkimer HMP refers to the CEMP. The HMP addresses Planning Area risks and vulnerabilities only to identify potential mitigation actions for the hazard.

The key Federal law addressing emergency response preparedness for hazardous materials is called the Superfund Amendments and Reauthorization Act (commonly referred to as ARA Title III), located in Title 42, Chapter 115 of the U.S. Code. The stand-alone law, the Emergency Planning and Community Right-to-Know Act (EPCRA) of 1986, encourages local and state emergency planning efforts. The law also ensures that the public and local governments know about community-based chemical hazards. Such regulations and supporting policies underpin the work of a local open forum called the "Local Emergency Planning Committee" (LEPC). LEPC provides oversite for EPCRA implementation, and all-hazards planning for the four phases of emergency management: preparedness, response, recovery, and mitigation. Meetings of the Comprehensive Emergency Planning Committee (CEPC) allows members to review and update plans and procedures, offer training, and conduct exercises. More information about CEPC's role and responsibilities is included in the CEMP, **Annex 8**, *Herkimer County Plan for Hazardous Materials Incident Response*. The New York State General Municipal Law 204-f requires a county to develop a plan for fire service response to hazardous materials incidents.

3.11.2: Risk Analysis

Each jurisdiction in the Planning Area conducted a risk analysis that considered location, probability of future occurrences, magnitude/severity, and significance, resulting in an Overall Risk Score for transportation accident. **Table 3.11-d** summarizes the scores.

Table 3.11-d: Summary of Overall Risk Scores for Transportation Accident, by Jurisdiction

Jurisdiction	Location	Probability of Future Occurrences	Magnitude/ Severity	Significance	Overall Risk Score[2]
Herkimer County	2	3	3	3	11
Village of Dolgeville	4	3	1	2	10
Town of Fairfield	3	2	2	2	9
Town of Frankfort	3	2	2	2	9
Village of Frankfort	3	2	2	2	9
Town of German Flatts	4	1	1	1	7
Town of Herkimer	4	3	3	4	14
Village of Herkimer	4	3	3	4	14
Village of Ilion	4	3	3	4	14
City of Little Falls	4	4	4	4	16
Town of Little Falls	4	4	4	4	16
Town of Manheim	2	2	2	2	8
Village of Mohawk	1	2	1	1	5
AVERAGE SCORE					**10.9 = Medium**

The HMWG reviewed other sources of risk information. Several previous documents did not consider transportation accidents or hazardous materials incidents, including the 2015 HMP DRAFT. The CEMP, Appendix 11 presents the Public Health Emergency Preparedness and Response Plan (PHEPRP), which identifies hazards that pose the highest threat to the population. Based on the most current PHEPRP risk assessment, "Hazardous Materials in Transit" was the highest rated hazard, followed by "Transportation Accident," and "Incident at Fixed Facility" (CEMP, p. 350). The CEMP, Appendices 6 and 7 provide for mass evacuation and sheltering that could result from an incident. The CEMP, **Appendix 10** serves as the hazardous materials incident response plan.

The HMWG discussed risk assessment inconsistencies: this hazard was ranked **medium** risk in the 2015 HMP Draft, and it is addressed in the CEMP and PHEPRP. The group agreed that transportation accident should be profiled in the current plan because of the potential for impact and the community's level of incident response preparedness. Because many resources are in place to support preparedness and response, the hazard was found to be of **low** concern. While there is a high likelihood for occurrence, the Hazardous Materials Placard System, CEMPC efforts, and capabilities of response show there is in place a robust program to minimize occurrence and maximize response. As such, the HMWG determined

[2] Scoring methodology is described in **Section 3.0, Base Plan**.

that transportation accidents with hazardous material spills or releases do not pose a high enough risk to conduct a vulnerability assessment. There are no additional mitigation measures or actions likely to reduce hazard risk and vulnerability.

Risk Summary: TRANSPORTATION ACCIDENT (with HAZARDOUS MATERIALS)

Location – Segment of the population to widespread area **Probability of Future Occurrence** – Medium High **Magnitude/Severity** – Low **Significance** – Low **Overall Risk Score** – Low	The compilation of jurisdiction risk scores, along with consideration of the hazard profile, potential impacts and consequences, and other factors indicates that transportation accident is a **low-risk** hazard.
Transportation Accident (with Hazardous Materials) Hazard Priority – Low	

3.11.3: Vulnerability Assessment

Based on the substantial capabilities and resources within the statewide transportation system and the jurisdictional analysis of impacts and consequences, the HMWG determined that transportation accident is a **low-risk** hazard. As such, a vulnerability assessment to quantify potential loss due to transportation accident is not justified, and no actions are necessary in this planning cycle to address mitigation of this hazard.

Future Population and Development Trends

It is unlikely that future population growth or land development will affect the risk and vulnerability of transportation accidents involving hazardous materials. Much of the preparedness and response plans and resources are committed to monitoring facilities and vendors that store, use, or transport hazardous materials and rapid detection of potential spills or releases can be anticipated. If an incident that exceeds local capabilities and resources occurs in a jurisdiction, regional, state, and federal resources are available for support. If a spill or release requires public evacuation or other protective measures, the CEMP provides for a coordinated response system that can quickly access additional resources and technical assistance. One area of concern is the increasing number of residents age 65 and over who may need medical and support services to evacuate a contaminated area.

Impacts of Climate Change

Climate change will have little impact on transportation accidents because events generally result from technological or human causes. “Anthropogenic” is the term used to describe the effect of humans on climate change. More attention has been given by climate change experts to the impact of climate change on community systems and services. The report Climate Change and the Adaptation of Transport Infrastructure, by Dr. Adolf Ng and Dr. Jean-Paul Rodrigue, shows how conditions lead to additional risks and uncertainties and includes these points:

- Increases in intense precipitation events may impair air travel (e.g., turbulence) and flooding may damage transportation infrastructure.
- More frequent hurricanes may increase the risk of damage and failure to key infrastructure along coastal and tidal waters.
- Heat waves may impact construction activity and impair the integrity of road beds.
- Severe weather impacts to coastal port infrastructure servicing inland areas may restrict access and cause delay in delivery of critical goods.
- Some impacts on transportation infrastructure, like flooding, may be gradual and moderate compared to changes from other events, such as hurricanes.
- While **adaptation** measures lessen reduce future impacts, we don't yet know the extent to which climate change will affect transportation infrastructure, and whether **mitigation** measures are feasible, cost-effective, or necessary.
- Adaptation measures are localized and require information sharing and cooperation for best practices to be effective.

Future studies and scientific evidence reviewed during the next mitigation planning cycle may provide more exact guidance and information about reducing the risk from and vulnerability to transportation accidents.

Factors for Consideration in the Next Planning Cycle

Future monitoring, evaluation, and updating of this plan should consider the following factors related to transportation accidents, as well as other information from New York State Hazard Mitigation Plan updates:

- Have transportation/hazardous materials events occurred since adoption of this plan?
- Has new scientific research or methodology changed the ability to prevent or contain transportation/hazardous events or assess risk and vulnerability?
- Has there been any change in the population, built environment, natural environment, or economy that could affect the risk or vulnerability to transportation/hazardous materials events?
- Is there new evidence related to the impacts of climate change that could affect the level of risk or vulnerability to transportation/hazardous materials events?

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SECTION 4: MITIGATION STRATEGY

Requirements:

- **§201.6 (c)(3)**: [The Plan documents] each jurisdiction's existing authorities, policies, programs and resources and its ability to expand on and improve these existing policies and programs.
- **§201.6 (c)(3)(ii)**: [The Plan addresses] each jurisdiction's participation in the NFIP and continued compliance with NFIP requirements, as appropriate.
- **§201.6 (c)(3)(i):** [The Plan includes] goals to reduce/avoid long-term vulnerabilities to the identified hazards.
- **§201.6 (c)(3)(ii):** [The Plan identifies and analyzes] a comprehensive range of specific mitigation actions and projects for each jurisdiction being considered to reduce the effects of hazards, with emphasis on new and existing buildings and infrastructure.
- **§201.6 (c)(3)(iv); Requirement §201.6 (c)(3)(iii):** [The Plan contains] an action plan that describes how the actions identified will be prioritized (including cost benefit review), implemented, and administered by each jurisdiction.
- **§201.6 (c)(4)(ii):** [The Plan describes] a process by which local governments will integrate the requirements of the mitigation plan into other planning mechanisms, such as comprehensive or capital improvement plans, when appropriate.

4.0. Overview

The planning process—diligently supported by the HMWG, stakeholders, and jurisdictions—enabled the community to develop a comprehensive mitigation strategy and action plan for implementation. This section covers the following:

- 4.1. Mitigation Goals and Objectives
- 4.2. Mitigation Capabilities
- 4.3. Mitigation Actions
- 4.4. Action Plan for Implementation
    - Implementation Tools and Jurisdiction Action Plans
    - Potential Funding and Resources

The following associated appendices contain detailed information that supports the mitigation strategy process, development and prioritization of mitigation actions, and the implementation plan described in this section:

- Appendix 4-A: Mitigation Goals and Objectives
- Appendix 4-B: Capabilities Assessment and NFIP Survey
- Appendix 4-C: Mitigation Actions
- Appendix 4-D: Implementation Tools for Mitigation Actions

4.1. Mitigation Goals and Objectives

The HMWG initiated the goal-setting process at the Herkimer HMP August 10, 2016, Kick-Off meeting. Attendees brainstormed to generate ideas and establish context for community hazard mitigation efforts. The goals and objectives were refined at the November 16, 2016, HMWG meeting, and were approved by the group as a set of countywide goals on December 7, 2016. **Appendix 4-A, Goals and Objectives**, describes the steps involved in developing HMP goals and objectives.

Mitigation Goals and Objectives – Countywide

- **Goal 1: Protect Life and Property** (*Category: Structure and Infrastructure Projects*)
    - **Objective 1.1**: Implement mitigation activities that will assist in protecting lives and property by making homes, businesses, infrastructure, and critical facilities more resistant to hazards.
    - **Objective 1.2**: Encourage homeowners and businesses to take preventative actions in areas that are especially vulnerable to hazards.
    - **Objective 1.3**: Review existing local ordinances, building codes, safety inspection procedures, and applicable rules to ensure that they include the most recent and generally accepted standards for the protection of buildings.
    - **Objective 1.4**: Ensure that public and private facilities and infrastructure meet established building codes and immediately enforce the codes to address any identified deficiencies.
    - **Objective 1.5**: Encourage homeowners, renters, and businesses to purchase insurance (i.e., NFIP) coverage for damages caused by hazards.
    - **Objective 1.6:** Encourage the establishment of policies at the county and local level to ensure that mitigation strategy prioritization and implementation and/or projects benefit essential facilities, services, and infrastructure.
- **Goal 2: Increase Public Awareness** *(Category: Education and Awareness Programs)*
    - **Objective 2.1:** Develop and implement additional education and outreach programs to increase public awareness of the risks associated with hazards and to educate the public on specific, individual preparedness activities.
    - **Objective 2.2:** Provide information on tools, partnership opportunities, funding, resources, and current government initiatives to assist in implementing mitigation activities.
- **Goal 3: Encourage Partnerships** *(Category: Local Plans and Regulations)*
    - **Objective 3.1:** Strengthen inter-jurisdiction and inter-agency communication, coordination, and partnerships to foster hazard mitigation strategies and/or projects designed to benefit multiple jurisdictions.

  - **Objective 3.2:** Identify and implement activities that engage public agencies with individual citizens, non-profit organizations, business, and industry to more effectively implement mitigation activities.
  - **Objective 3.3**: Integrate the recommendations of this plan into existing local and county policies and programs.
- **Goal 4**: Promote sustainable mitigation actions that preserve or restore the functions of natural systems *(Category: Natural Systems Protection)*
  - **Objective 4.1**: Incorporate hazard considerations into land-use planning and natural resource management.
  - **Objective 4.2**: Implement mitigation activities that encourage environmental stewardship and protection of the environment.
  - **Objective 4.3**: Build on past efforts to describe flood events by conducting additional flood studies and creating flood models.

4.2. Mitigation Capabilities

The HMWG used a two-step approach in conducting the capabilities assessment.[1] First, a contractor compiled information from existing policies, studies, and plans, many recommended by jurisdictional representatives. This information was presented to the HMWG for review. Also reviewed were data included in the 2015 HMP Draft, which focused on a range of hazards. In the second step, each jurisdiction completed the Capabilities Assessment Worksheet (**Appendix 4-B**) and a National Flood Insurance Program (NFIP) survey form. The worksheet enabled jurisdictions to assess their strengths in the following areas:

- Planning and Regulatory
- Administrative and Technical
- Safe Growth
- Financial
- Education and Outreach

Jurisdictions considered both internal and external capabilities. While smaller jurisdictions do not have internal capacity for all technical functions, they provide services through contractual arrangements or agreements with other local jurisdictions, outside agencies, or vendors. State and federal agencies also provide technical assistance to extend the range of available local capabilities. Summary descriptions of the county or countywide Planning Area capabilities defined in the jurisdictions' assessments, and a narrative analysis of key findings for each capability are provided in **Table 4-a**. Jurisdiction-specific capability information can be found in the Jurisdiction Annexes.

[1] See **Appendix 4-B** for a comprehensive description of the capabilities assessment process and copies of the associated worksheets from the "Local Hazard Mitigation Plan Data Collection Guide".

Table 4-a: Summary of Mitigation Capabilities, all Jurisdictions

Planning and Regulatory Capabilities[2]
▪ 18 of 30 municipalities in the County have a Comprehensive/Master Plan; however, some have not been recently updated. ▪ 24 municipalities have zoning ordinances. ▪ 19 municipalities have subdivision regulations. ▪ 19 municipalities have a site plan review process. ▪ 26 of 30 municipalities have floodplain management policies; 1 municipality does not have flood zones within its incorporated geographical boundaries. ▪ 3 municipalities have erosion control provisions. ▪ All municipalities have adopted the current version of the New York State Building Code. ▪ The *Herkimer County Comprehensive Emergency Management Plan* (CEMP), updated April 2015, is a countywide plan that integrates all jurisdictions in preparedness, response, recovery, and mitigation; several municipalities have a local emergency operations plan (EOP) or (LEOP). ▪ Many communities have old Flood Insurance Rate Maps (FIRMs), that do not acknowledge infrastructure upgrades and development. The Flood Insurance Study (FIS) was conducted in September 2011 but is still preliminary; the FIRMs for Herkimer County jurisdictions were updated to Digital FIRMs (DFIRMS) in 2011, but are also preliminary. ▪ No municipalities identified a Community Wildfire Protection Plan applicable to their jurisdiction. ▪ The Village of Frankfort has a brownfields redevelopment plan/program in progress. ▪ The City of Little Falls is a Local Waterfront Revitalization Program (LWRP) community (NYS Department of State).
Analysis While many planning and regulatory tools are in place within the Planning Area, many municipalities recognize the benefit of incorporating hazard mitigation in future municipal planning and regulatory processes, and some jurisdictions developed mitigation actions during this process to enhance planning and regulatory capabilities.

[2] Source: "Land Use Laws, Herkimer County", Herkimer-Oneida Counties Comprehensive Planning Program, September 2016, and jurisdictional capabilities assessments.

Administrative and Technical Capabilities
▪ Most municipalities utilize outside contractors for engineering, land development, GIS, grant writing, and other local technical service needs. ▪ Few municipalities have a full-time floodplain manager on staff, and the responsibilities of this position are typically one of the responsibilities assigned to a staff person, or contracted to an external vendor. ▪ Many municipal employees hold multiple positions, or hold a full-time job in addition to serving as an elected official or government employee. GIS services are limited within municipal staff and frequently require contracting for services.
Analysis Most municipalities have limited administrative and technical capabilities, and a small number of employees who handle the duties of more than one position. Many land development and engineering functions of local government are carried out through contracted services. The regional Herkimer-Oneida Counties Comprehensive Planning Program (HOCCPP) has extensive growth management and land use planning capabilities and experience with previous local flood risks and mitigation studies. The HOCCPP staff works under contractual agreements with many local governments to enhance planning capabilities and support development and implementation of mitigation actions.

Safe Growth Capabilities
▪ Most municipalities do not have a Comprehensive Plan that covers land use, transportation, environmental management, zoning, public safety, or redevelopment. ▪ Many waterfront communities have limited geographic area available for development. ▪ Most communities do not have access to maps, other than older FIRMs, that identify hazard areas that could be impacted by development. ▪ Most new construction is in-fill development within existing residential, commercial or industrial zoning. ▪ There is limited economic pressure or opportunity for medium- to large-scale development within the rural jurisdictions in the Planning Area. ▪ The NYS Building Code contains provisions to strengthen or elevate construction to withstand hazard forces. The standard in NYS is two feet above the BFE, except in an A Zone, where the BFE is three feet (http://www.dec.ny.gov/lands/40576.html). Evacuation routes are addressed in the *Herkimer County Comprehensive Emergency Management Plan*, 2015 (Appendix 6), which describes the responsibilities and procedures for mass evacuation in response to any hazard condition that impacts Herkimer County. School buses are identified as a resource for mass evacuation. ▪ Although most municipalities continually address infrastructure and capital improvement projects, few have formal capital improvement programs or plans.

Analysis

Most municipalities lack a comprehensive growth management plan and, as such, have limited safe growth capabilities. Many waterfront communities are "built-out," meaning there is little land available for development. Despite this lack of planning mechanisms, several waterfront communities are redeveloping flood-prone areas along creeks and rivers using elevation, acquisition, and other programs. These communities could benefit from participation in the Local Waterfront Revitalization Program.[3] Technical assistance and tools for community planning is available through state programs such as the "Smart Growth Checklist" (NYS DOT), ClimAID Adaptation Toolkit (NYSERDA), and "Creating the Community You Want: Municipal Options for Land Use Control" (NYS DOS).

Financial Capabilities

- Most municipalities do not have a capital improvements plan that provides funding for projects outside of the jurisdiction's annual operational budget.
- Some municipalities have the authority to incur debt through general obligation bonds and/or special tax bonds.
- Most jurisdictions participate in the Community Development Block Grant program.
- Most jurisdictions obtain external financial support from state, federal, and public/private partnership funding sources.
- Some jurisdictions institute Impact Fees or Storm Water Utility Fees to cover the cost of serving newly developed areas of the community. Such fees also expand the availability of potential financial resources to fund hazard mitigation projects.

Analysis

Rising operational costs and limited financial resources are an every-day challenge to most of the local governments in the Planning Area. Some jurisdictions have been successful at accessing grant funding for specific purposes from multiple sources. Most acknowledge that the process for identifying grants, developing and submitting applications, and managing grant-funded projects is challenging with limited staff. Many grant programs provide technical assistance to potential applicants.

Education and Outreach Capabilities

- Most municipalities identified organizations to help integrate hazard mitigation into community programs to increase public involvement.
- Agencies like the American Red Cross Citizen Preparedness Corps program include a strong outreach component.

[3] General information about the Local Waterfront Revitalization Program is available through the NYS Department of State, at https://www.dos.ny.gov/opd/programs/lwrp.html

- School-based programs presented by public safety agencies could be enhanced to include hazard mitigation components.
- Herkimer County is designated as a StormReady community, which includes components of public education and training.
- Community Rating System (CRS) initiatives within the NFIP can increase public awareness of and involvement in hazard mitigation.
- One community (Village of Ilion) participates in the CRS program.

Analysis

Jurisdictions use all means at their disposal to promote hazard mitigation and increase the involvement of local officials, stakeholders, and the public. It is vital that jurisdictions that that did not participate in the current planning process be informed about the community benefits of hazard mitigation planning and implementation. NYS DHSES mitigation staff is available to educate these communities and encourage their participation. Educational tools and materials are available from other state agencies, as well as disaster preparedness and response organizations (such as FEMA), and Non-Governmental Organizations (NGOs) with disaster response missions.

NFIP Assessment and Continued Compliance

Jurisdictions completed NFIP Survey Forms as part of their capabilities assessment. The survey addresses the level of community program participation. **Table 4-b** summarizes the NFIP status for each jurisdiction.

Table 4-b: Summary of NFIP Status, by Jurisdiction[4]

CID	Community Name	Initial FHBM	FIRM	Current Eff Map Date	Regular Emergency Date	# of Policies	# of Claims (Since 1978)	Total Value of Claims
360298	Cold Brook, Village of	02/11/77	07/03/85	12/20/00	07/03/85	4	3	$3,012
360299	Columbia, Town of	03/29/74	07/16/82	07/16/82(M)	07/16/82	2	1	$152
360300	Danube, Town of	04/05/74	07/03/85	07/03/85(M)	07/03/85	4	2	$10,372
360301	Dolgeville, Village of	02/15/74	03/16/83	03/16/83	03/16/83	56	51	$208,002
360302	Fairfield, Town of	03/29/74	07/30/82	10/18/88	07/30/82	2	1	$0
360303	Frankfort, Town of	03/01/74	04/17/85	12/20/00	04/17/85	12	4	$11,601
360304	Frankfort, Village of	03/22/74	04/03/84	03/07/01	04/03/84	27	7	$23,206
360305	German Flatts, Town of	03/29/74	05/15/85	05/15/85(M)	05/15/85	15	12	$90,140
360306	Herkimer, Town of	03/08/74	04/17/85	04/17/85(M)	04/17/85	4	7	$26,835
360307	Herkimer, Village of	05/10/74	06/01/78	06/17/02	06/01/78	26	10	$126,682
360308	Ilion, Village of	02/08/74	02/01/84	09/08/99	02/01/84	239	178	$1,292,951
360309	Litchfield, Town of	03/15/74	09/24/84	05/07/01	09/24/84	5	5	$14,183
360310	Little Falls, City of	03/08/74	04/04/83	04/04/83	04/04/83	19	11	$295,678
360311	Little Falls, Town of	04/05/74	03/28/80	03/28/80(M)	03/28/80	1	4	$14,372
360312	Manheim, Town of	03/08/74	05/01/85	05/01/85(M)	05/01/85	4	6	$63,943
360313	Middleville, Village of	05/17/74	07/03/85	07/03/85(M)	07/03/85	4	10	$180,183
360314	Mohawk, Village of	03/22/74	04/01/78	09/08/99	04/17/78	21	34	$865,284
361111	Newport, Town of	11/15/74	08/05/85	06/02/99	08/05/85	7	7	$41,096
360315	Newport, Village of	03/29/74	07/03/85	04/02/91	07/03/85	8	7	$75,842

[4] Herkimer County does not participate in the NFIP. All land within county geographical boundaries is part of an incorporated municipality (city, town or village) that is an NFIP participant.

CID	Community Name	Initial FHBM	FIRM	Current Eff Map Date	Regular Emergency Date	# of Policies	# of Claims (Since 1978)	Total Value of Claims
361110	Norway, Town of	11/01/74	07/03/85	07/03/85(M)	07/03/85	-	-	$0
361408	Ohio, Town of	01/03/75	09/24/84	09/24/84(M)	09/24/84	5	1	$1,853
360316	Poland, Village of	03/08/74	07/18/85	06/02/99(M)	07/18/85	2	1	$0
361121	Russia, Town of	11/01/74	06/02/99	06/02/99	12/19/84	4	5	$127,836
360317	Salisbury, Town of	06/07/74	07/03/85	07/03/85(M)	07/03/85	6	1	$14,468
360318	Schuyler, Town of	03/15/74	07/03/85	06/20/01	07/03/85	11	2	$450
360319	Stark, Town of	06/07/74	05/15/85	05/15/85(M)	05/15/85	13	12	$126,747
360320	Warren, Town of	06/28/74		(NSFHA)	12/19/84	-	-	-
360321	Webb, Town of	07/18/75	07/30/82	07/30/82(M)	07/30/82	71	2	$461
360322	West Winfield, Village of	02/15/74	07/03/85	07/03/85(M)	07/03/85	1	2	$7,042
360323	Winfield, Town of	03/01/74	07/03/84	07/03/85(M)	07/03/85	1	1	$60,692
Shaded communities participated in the 2017 HMP process.								

***Source**: NFIP Community Status Book, August 2, 2016*

As of August 2016, the Village of Ilion included the largest number of policyholders, highest number of claims, and the highest total cost of claims ($1,292,951) of all jurisdictions. The Village of Dolgeville filed the second highest number of claims (51), but ranks fourth in the total claims paid. The Village of Mohawk has the second highest total for claims paid ($865,284). Residents of the Towns of Norway and Warren hold no policies or claims, and there are no Special Flood Hazard Areas (SFHAs) in the Town of Warren.

Planning Area jurisdictions have demonstrated their commitment to maintaining compliance with the NFIP. This is shown in the measures and processes documented in their capabilities assessments, NFIP survey forms, and mitigation action items. Most of the mitigation actions included in this plan address flood risk reduction.

Current Flood Mitigation Projects

Four communities are undergoing acquisition and demolition buy-out projects for repetitive flood loss properties. In June 2015, these communities requested $9,461,669 from the FEMA Hazard Mitigation Grant Program (HMPG) to purchase and raze 77 homes in the floodplain:[5]

- German Flatts – 3 homes ($735,206)
- Village of Herkimer – 1 home ($118,262)
- Village of Ilion – 44 homes ($5,240,756)
- Village of Mohawk – 29 homes ($3,367,443)

An additional $2 million in combined Federal and State grants was designated for floodplain restoration projects for land that will be converted to open space after houses are removed.[6] Funding stipulations require that these jurisdictions maintain compliance with the NFIP by:

- Enforcing county and municipal floodplain codes and ordinances.

[5] NYS DHSES Mitigation Planning Grant Application (Superstorm Sandy HMGP – 4085)
[6] These projects are sponsored by the HOCCPP and other stakeholders, such as NYS DEC.

- Ensuring that stormwater plans and practices are meet floodplain regulations.
- Enhancing floodplain management through voluntary Community Rating System (CRS) participation.
- Implementing flood mitigation actions.
- Identifying opportunities for flood mitigation education and outreach.
- Annually monitoring and evaluation of the Herkimer HMP.
- Maintaining the jurisdiction's NFIP policies.
- Adopting the NYS State Building Code requirement for base flood elevation plus two feet.
- Adopting the Herkimer County Flood Insurance Study (FIS) and Digital Flood Insurance Rate Maps (DFIRM-preliminary) *[Herkimer County FEMA Risk Map updates conducted in September 2011 are still designated as "preliminary" for Herkimer County jurisdictions as of December 2016].*
- Developing municipal Comprehensive Plans.

These measures, along with ongoing public involvement in mitigation planning, will allow Herkimer County to set and maintain flood mitigation standards.

Capabilities in Evacuation, Sheltering, and Temporary Housing

State policy gives Herkimer County the authority to develop emergency management plans and procedures to address disaster preparedness, response, recovery, and mitigation. The Herkimer County Office of Emergency Services (HCOEM) is responsible for developing, maintaining and implementing these plans and procedures in cooperation with municipalities. The Herkimer CEMP, updated April 2015, addresses all county emergency management responsibilities. The plan is housed at the Herkimer County Office of Emergency Services and available for public review.

The CEMP also describes the county's plans and procedures for mass evacuation and sheltering, including how the county will provide temporary disaster housing in the wake of specific hazard events. **Table 4-c** summarizes CEMP elements that support NYS DHSES requirements for developing evacuation routes; identify ADA-compliant shelters; and identify sites away from hazard zones that can be used for temporary or relocated housing.[7]

Table 4-c: Summary of Evacuation, Sheltering, and Temporary Housing Plans and Procedures (Herkimer County CEMP)

Plan Section	Provisions
CEMP, Annex 6: Mass Evacuation Management	• All-hazards • Evacuation Zones • Authority – NYS Executive Law, Article 2-B

[7] NYS DHSES *Hazard Mitigation Planning Standards*, 2014

Plan Section	Provisions
	• Ordered by Local Government Chief Executive • Scope: Alert, Mobilization, Movement, Maintenance, Return • Evacuation of General Population and Special Facilities • Operational procedures: Direction & Control, Organization, On-Scene Operations, Designation of Transportation Routes, • Municipalities request support of the County • Transportation assistance for vulnerable populations • Relocation of Community Resources • Temporary Relocation and Care (shelters & mass feeding)
CEMP, Annex 7: Sheltering & Red Cross Disaster Planning Information for Families	• Shelter Actions procedures o Director, County Office of Emergency Services initiates activation of shelters in coordination with ARC • Situation Assessment to determine hazard, location, type of impact(s), estimated number of persons to be sheltered, access to evacuation routes • Shelter & Mass Feeding Sites • Provision for Sheltering-in-Place
CEMP, Annex 11: Public Health Emergency Preparedness and Response Plan	• Any hazard potentially impacting the health of a large segment of the public (extreme weather/natural disasters, biological, hazardous materials (chemical, radiological/nuclear) • Identifies Essential Public Health Functions in a disaster • Defines Special/Vulnerable/At Risk Populations and identifies related facilities • Provides Hazard Analysis/Vulnerability Assessment for Public Health
CEMP Basic Plan - Temporary Disaster Housing	• Responsible Agency – American Red Cross • Activity of Long-term reconstruction and recovery phase • Recovery Assistance need • ***Pre-designated sites for temporary housing are identified in jurisdictional annexes***

Appendix 4-B, Capabilities Assessment includes two lists of disaster shelters. The first includes shelters mentioned in the CEMP and managed by the American Red Cross (ARC) in partnership with Herkimer County. A second, expanded list, of ARC non-school shelters is included should the need of extraordinary circumstances exceed the capacity of first-line shelters**.**

While they value the integral partnership between the county and local jurisdictions, several communities developed their own evacuation and sheltering in cooperation with HCOEM. Communities designated sites at which temporary housing could be located. The jurisdiction annexes describe each municipality's temporary housing plans.

4.3. Mitigation Actions

The 2015 HMP Draft provided a good starting point for developing mitigation actions during the 2017 planning process. The HMWG reviewed the list of previously-identified mitigation actions to determine their status and applicability to the current planning process. The Group also reviewed flood-related studies and plans that have been produced since that time and communities determined the best way to merge yet-relevant data from 2015 and later plans with new action items. The NYS DHSES "Local Hazard Mitigation Planning Standards" (updated 2017) now includes an Action Worksheet required for all

mitigation strategies included in a local hazard mitigation plan. **Appendix 4-C, Mitigation Actions** describes the process used to develop mitigation actions.

Identification and Analysis of Mitigation Actions

At its October 19, 2016, meeting, the HMWG defined the hazards of highest concern, for which mitigation actions were developed. Jurisdictions were asked to develop "problem statements" as a starting point to define the hazard issue, and then form alternative solutions to address the problems. Jurisdictions submitted a total of 111 mitigation actions. The actions summarized in **Table 4-e** address the hazard of concern, project type, and supporting goals and objectives. All Action Worksheets are included in the Jurisdiction Annexes**.**

4.4. Action Plan for Implementation

Mitigation is successful when incorporated into the government's day-to-day functions and integrated with the priorities of community-based planning. In this vein, the Action Plan describes how strategies were prioritized, how they will be implemented and administered, and how the mitigation plan will be incorporated into existing planning mechanisms.

An implementation schedule was created for each action. The schedule addresses routine monitoring, follow-up meetings, available funding opportunities, and parallel efforts to promote a safe, sustainable community. Communities are being asked to fold mitigation actions into existing programs to achieve multiple community objectives where feasible. This approach is particularly effective for costly and technically complicated projects. Communities will be on the lookout for funding opportunities while assessing the benefit-cost ration of each action. Pre-qualifying community projects by identifying funding and knowing their feasibility—financial and otherwise—positions jurisdictions to submit grant applications when funding is available.

Implementation Roles and Responsibilities

Plan implementation is the joint responsibility of the HMWG and adopting jurisdictions. Under the leadership of the Herkimer County Mitigation Coordinator, the HMWG will:

- Spearhead hazard mitigation activity.
- Identify existing mechanisms to institute mitigation goals, objectives, and strategies.
- Disseminate hazard mitigation ideas and activities to all participants.
- Implement high-priority, low/no-cost recommended actions.
- Ensure hazard mitigation remains a consideration for community decision makers.
- Maintain regular monitoring of multi-objective cost-share opportunities to help the community implement the recommended actions for which no current funding exists.
- Monitor and assist in implementation and updating of this strategy.
- Report progress and recommended changes to municipal legislators.
- Inform and solicit public input.

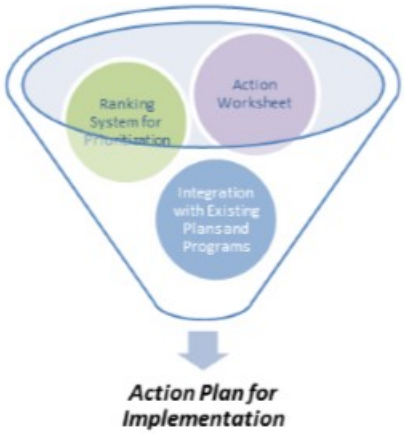
By adopting this plan, each jurisdiction accepts responsibility for plan implementation. Adopting and Participating Jurisdictions have agreed to:

- Participate in the HMWG to identify ways to institute mitigation goals, objectives, and actions.
- Report to the community governing boards and the public on the status of the plan and mitigation opportunities.
- Review and promote mitigation proposals, considering stakeholder concerns about hazard mitigation.
- Post relevant information on the jurisdiction's website or otherwise make it publicly available.
- Conduct ongoing public education promoting the benefits of hazard mitigation.

Implementation Components

The HMWG adopted a mitigation action development and prioritization methodology that was used by all jurisdictions to establish the Action Plan for Implementation. **Figure 4-1** visually depicts how the HMWG and jurisdictions prioritized mitigation actions.

Figure 4-1: Mitigation Action Development and Action Plan Process



The following section discusses the components of the Action Plan for Implementation.

Component 1: Action Worksheets

The Action Worksheet, developed by NYS DHSES Mitigation Office, served as template for jurisdictions to identify and develop mitigation action items.

After completing the Action Worksheets, jurisdictions were offered technical assistance from NYS DHSES Mitigation staff who attended HMWG meetings during the mitigation

strategy development process in November and December 2016. The process followed the state's *Local Mitigation Planning Standards* (2015) and allowed staff to help develop viable and actionable projects.

In addition to prioritizing actions, this step advanced the Action Plan for Implementation by:

- Assigning one or more responsible agencies to manage each action.
- Identifying potential resources (funding, technical assistance, and materials).
- Establishing an implementation timeframe.

Component 2: Ranking System for Prioritization

Jurisdictions independently evaluated and prioritized their mitigation actions. This resulted in the jurisdiction-specific list of prioritized actions included in each Jurisdiction Annex.

Table 4-d defines the Ranking System used by each jurisdiction to organize mitigation priorities.

Table 4-d: Ranking System for Prioritization of Mitigation Actions

Category	Points	Criteria
(1) Life Safety/Property Protection	4	Likely to protect more than 50% of the population and/or critical infrastructure and community assets.
	3	Likely to protect at least 50 % of the population and/or critical infrastructure and community assets.
	2	Could potentially protect up to 25 % of the population and could potentially protect critical infrastructure and community assets
	1	Could potentially protect up to 10 % of the population and could potentially protect critical infrastructure and community assets
	0	Potential for protecting lives and critical infrastructure and/or community assets cannot be determined at this time.
(2) Funding Availability	4	Little to no direct expenses
	3	Can be funded by operating budget
	2	Grant funding identified
	1	Grant funding needed
	0	Potential funding source unknown
(3) Probability of Matching Funds	4	Funding match is available or funding match not required
	-	N/A
	2	Partial funding match available
	-	N/A
	0	No funding match available or funding match unknown
(4) Benefit Cost Review	4	Likely to meet Benefit Cost Review
	-	N/A
	2	Benefit Cost Review not required

Category	Points	Criteria
	-	N/A
	0	Benefit Cost Review unknown
(5) Environmental Benefit	4	Environmentally sound and relatively easy to implement; or no adverse impact on environment.
	3	Environmentally acceptable and not anticipated to be difficult to implement
	2	Environmental concerns and somewhat difficult to implement because of complex requirements
	1	Difficult to implement because of significantly complex requirements and environmental permitting
	0	Very difficult to implement due to extremely complex requirements and environmental permitting problems
(6) Technical Feasibility	4	Proven to be technically feasible
	-	N/A
	2	Expected to be technically feasible
	-	N/A
	0	Technical feasibility unknown or additional information needed
(7) Timeframe of implementation	4	1 year or less (Short Term)
	-	N/A
	2	2 – 5 years (Long-Term)
	-	N/A
	0	More than 5 years (Long-Term)
Minimum = 0 Maximum = 28	**Ranking Level: Low: 0-10 Medium: 11-20 High: 21-28**	

Actions were given a high, medium, or low priority base on total scores assigned during the ranking process (**Table 4-d**).[8] The list of prioritized actions determined by each jurisdiction was rolled-up into a single list of mitigation actions for this section of the Base Plan; however, each action described in the list is linked to the proposing jurisdiction and is consistent with the outcome of the individual jurisdiction's ranking process.

The following abbreviations are used in **Table 4-e** to define project types**:**

- **LPR** – Local Plans and Regulations
- **SIP** – Structure and Infrastructure Projects
- **NSP –** Natural Systems Protection
- **EAP** – Education/Awareness Program

The following abbreviations are used in **Table 4-e** to identify submitting jurisdiction:

[8] The Town of German Flatts developed an additional level of prioritizing actions based on a "tier" system, using a letter sub-set to rank actions within each tier/level. See Annex 9 – Town of German Flatts.

- **CLF** – City of Little Falls
- **DOL** – Village of Dolgeville
- **GF** – Town of German Flatts
- **HC** – Herkimer County
- **IL** – Village of Ilion
- **MA** – Town of Manheim
- **MO** – Village of Mohawk
- **TLF** – Town of Little Falls
- **TOH** – Town of Herkimer
- **TOF –** Town of Frankfort
- **OFF –** Town of Fairfield
- **VFR** – Village of Frankfort
- **VOH** – Village of Herkimer

The actions summarized in **Table 4-e** are associated with a hazard and project type (the abbreviations are the same as those used in **Table 4-d**). Communities are listed in the table in the same order as the jurisdiction annexes appears in the HMP. Herkimer County is listed first, followed by all other communities in alphabetical order.

Table 4-e: Summary List of Prioritized Mitigation Actions, all Jurisdictions

	Project #	Mitigation Action	Mitigation Goal/ Objective	Hazard/ Project Type*	Life Safety & Property	Funding Availability	Matching Funds	Benefit Cost Review	Environmental Benefit	Technical Feasibility	Timeframe to Implementation	TOTAL SCORE
Herkimer County												
1	HC-001	Countywide Culvert & Ditch Bank Stabilization	1/1.1	Flood/SIP	4	2	2	2	4	4	4	22
2	HC-002	Countywide Bridge (non-structural) Maintenance Schedule	1/1.1	Flood/SIP	4	2	2	2	3	4	4	21
3	HC-003	Countywide Large Culvert (6' to 20') Replace/Repair	1/1.1	Flood/SIP	4	1	2	2	2	4	4	19
4	HC-004	Countywide Asset Management Plan	3/3.1	Multiple/LPR	4	1	2	2	4	2	4	19
5	HC-005	Development of Climate Change Coalition	3/3.1	Multiple/LPR	4	3	4	2	4	4	4	25
6	HC-006	Climate Change Baseline Assessment	3/3.2	Multiple/LPR	4	1	0	2	3	4	2	16
Village of Dolgeville												
7	DOL-001	Update Village Flood Maps	1.3	Regulatory	1	3	3	4	4	4	4	23
8	DOL-002	Replace Dolgeville Mill bridge	4.4	Flood/SIP	4	1	1	4	3	2	2	17
9	DOL-003	Replace Highway 29 bridge	4.4	Flood/SIP	4	1	1	4	3	2	2	17
10	DOL-004	Develop an emergency evacuation plan	4.4	Flood/SIP	4	4	4	4	4	4	4	26
Town of Fairfield												
11	TOFF-001	Evaluate the feasibility of creating a sediment control dam for the upper portions of Maltanner Creek	1/1.1	Flood/SIP	4	1	1	4	4	4	4	22
12	TOFF-002	Develop a stream repair / maintenance program for West Canada & Maltanner Creeks that includes monitoring bank failures	1/1.1	Flood/SIP	4	1	1	4	4	4	4	22
13	TOFF-003	Replace Farrington Road Bridge	1/1.1	Flood/SIP	2	1	1	4	4	4	2	18
Town of Frankfort												
14	TOF-001	Frankfort Gorge Road Crossings	1/1.1	Flood/SIP	2	1	1	4	4	4	4	22
15	TOF-002	Install storm sewers along Extension Roads	1/1.1	Flood/SIP	2	1	1	4	4	4	2	18
16	TOF-003	Acme Road ramp to Route 5S	1/1.1	Flood/SIP	2	1	1	4	4	4	2	18
Village of Frankfort												
17	VFR-004	Adopt sediment management standards	4/4.1	Flood/NSP	2	2	2	4	4	2	2	18
18	VFR-005	Install a stream gauge on Moyer Creek	4/4.1	Flood/NSP	4	1	2	4	4	4	4	23
19	VFR-006	Lehman Park Bank Stabilization	4/4.1	Flood/NSP	3	4	4	4	3	4	4	26
Town of German Flatts												
20	GF-001	Creekside Floodplain Bench Construction (STA 59+00 - STA 74+00)	4/4.2	Flood/NSP	4	1	4	4	4	4	3	24
21	GF-002	Creekside Floodplain Bench Acquisitions/Easements	4/4.2	Flood/SIP	4	1	4	4	4	4	4	25
22	GF-003	Mid-Fulmer GreenPlain Design* (STA 91+00 - STA 166+00)	4/4.2	Flood/NSP	4	1	4	4	4	4	4	25
23	GF-004	Mid-Fulmer GreenPlain Construction (STA 91+00-STA 166+00)	4/4.2	Flood/NSP	4	1	4	4	4	4	3	25
24	GF-005	Upper Fulmer GreenPlain Design* (STA 175+00 - STA 233+00)	4/4.2	Flood/NSP	4	1	4	4	4	4	4	25

	Project #	Mitigation Action	Mitigation Goal/ Objective	Hazard/ Project Type*	Life Safety & Property	Funding Availability	Matching Funds	Benefit Cost Review	Environmental Benefit	Technical Feasibility	Timeframe to Implementation	TOTAL SCORE
25	GF-006	Upper Fulmer GreenPlain Construction* (STA 175+00 - STA 233+00)	4/4.2	Flood/NSP	4	1	4	4	4	4	3	24
26	GF-007	Structure Acquisition in Mid and Upper GreenPlain Areas	4/4.2	Flood/SIP	4	1	4	4	4	4	4	25
27	GF-008	Floodplain Easements in Mid and Upper GreenPlain Areas	4/4.2	Flood/SIP	4	1	4	4	4	4	4	25
28	GF-009	Tributary Assessments, Study, and/or Design for Flow Control/Disbursement	4/4.3	Flood/LPR	3	1	4	2	4	4	3	21
31	GF-010	Misc. Stream Bank Stabilizations (Design and Construction)	4/4.2	Flood/NSP	4	1	4	2	4	4	4	23
32	GF-011	Fulmer Creek Floodplain Mapping Update	4/4.3	Flood/LPR	3	4	4	2	4	4	2	23
33	GF-012	NYS Rt 28 Bridge Widening (BIN-01020020)	1/1.1	Flood/SIP	4	1	4	4	4	4	2	23
34	GF-013	NYS Rt 168 Bridge Widening (N of Casey Rd) (BIN 01038960)	1/1.1	Flood/SIP	4	1	4	4	4	4	2	23
35	GF-014	Town Comprehensive Plan	1/1.6	All/LPR	4	1	4	2	4	4	3	22
36	GF-015	Land Use Regulations	1/1.3	All/LPR	4	1	4	2	4	4	3	22
37	GF-016	Update Fulmer Creek Basin Multi-Community Flood HMP	3/3.1,3.3	Flood/LPR	4	1	4	2	4	4	4	23
38	GF-017	*Culvert Right-Sizing and Drainage Improvements (Design & Construction)*	1/1.1	Flood/SIP	See individual projects below							
39	GF-017a	Mason Rd. Culvert	1/1.1	Flood/SIP	1	1	4	4	4	4	3	21
40	GF-017b	Warren Road	1/1.1	Flood/SIP	1	1	4	4	4	4	3	21
41	GF-017c	Bell Hill Road	1/1.1	Flood/SIP	1	1	4	4	4	4	3	21
42	GF-017d	Hellenbeck Rd Culvert	1/1.1	Flood/SIP	1	1	4	4	4	4	3	21
43	GF-017e	Heath Road	1/1.1	Flood/SIP	1	1	4	4	4	4	3	21
44	GF-017f	Pine Bush Rd Bridges/Culverts (Upper)	1/1.1	Flood/SIP	1	1	4	4	4	4	3	21
45	GF-017g	Miller Road	1/1.1	Flood/SIP	1	1	4	4	4	4	3	21
46	GF-017h	Putts Hill Rd Culvert	1/1.1	Flood/SIP	1	1	4	4	4	4	3	21
47	GF-017i	Obreza Culvert	1/1.1	Flood/SIP	1	1	4	4	4	4	3	21
48	GF-018	Richfield Street Bridge Replacement	1/1.1	Flood/SIP	4	1	4	4	4	4	2	23
49	GF- 019	Second St Bridge Replacement and Walls	1/1.1	Flood/SIP	4	1	4	4	4	2	2	21
50	GF-020	Susceptibility Analysis - Roads within Town of German Flatts	1/1.6	Flood/LPR	3	1	4	2	4	4	4	22
51	GF-021	Ilion Gorge - Analysis of Bank Stabilization(s), Debris Blockage, and Landslide	4/4.3	Flood/LPR	3	1	4	4	4	4	4	24
52	GF-022	Ilion Gorge - Engineering Design of Bank Stabilization(s), Debris Blockage, and Landslide	4/4.2	Flood/LPR	3	1	4	4	4	4	3	23
53	GF-023	Ilion Gorge - Construction of Bank Stabilization(s), Debris Blockage, and Landslide Mitigation	4/4.2	Flood/SIP	3	1	4	4	4	2	3	21
54	GF-024	Pine Bush Rd Sediment Basin	4/4.2	Flood/SIP	3	1	4	2	4	4	3	21
55	GF-025	Enhance Town GF Community Center as Emergency Shelter	1/1.1	All/SIP	1	1	4	2	4	4	4	20
56	GF-026	Fulmer Creek Early Warning System	2/2.1	Flood/EAP	4	1	4	4	4	4	3	24
57	GF-027	Develop State Program for Mitigation Acquisition	3/3.1	Flood/SIP	4	4	4	4	4	2	3	25
58	GF-028	Wetland Enhancement Study - Upper Fulmer Creek and Steele Creek Watersheds	4/4.3	Flood/LPR	4	1	4	2	4	4	4	23
59	GF-029	Wetland Enhancement Design - Upper Fulmer Creek and Steele Creek Watersheds	4/4.3	Flood/LPR	4	1	4	2	4	4	3	22
60	GF-030	Wetland Enhancement Construction - Upper Fulmer Creek and Steele Creek Watersheds	4	Flood/NSP	4	1	4	2	4	4	4	23
61	GF-031	Town-wide Assessment of Dry Hydrant Placement	1/1.4	Wildfire/Fire	4	1	4	2	4	4	4	23
62	GF-032	Installation of Dry Hydrants	1/1.4	Wildfire/Fire	4	1	4	2	4	4	3	22
Town of Herkimer												
63	TOH-001	Beaver Creek Culvert Expansion	1/1.1	Flood/SIP	2	2	2	4	4	2	4	20
64	TOH-002	Establish List of Alternative Potable Water Sources	4/4.1	Drought/EAP	4	4	4	2	4	4	4	26
65	TOH-003	West Canada Creek - Landslide, Erosion & Flooding Solution	4/4.2	Flood/NSP	3	1	2	4	3	2	4	21
66	TOH-004	East Herkimer Water District Bank Stabilization	4/4.2	Flood/SIP	3	1	2	4	4	2	4	20
67	TOH-005	Fiddletown Rd & North Creek Rd Bridge Elevation	1/1.1	Flood/SIP	3	1	2	4	3	2	4	18
68	TOH-006	Folts Road Bank Stabilization	1/1.1	Flood/SIP	1	1	4	4	3	2	4	19
69	TOH-007	Herkimer Levee Stabilization Engineering Study	4/4.3	Flood/SIP	4	1	2	2	3	2	4	18

	Project #	Mitigation Action	Mitigation Goal/ Objective	Hazard/ Project Type*	Life Safety & Property	Funding Availability	Matching Funds	Benefit Cost Review	Environmental Benefit	Technical Feasibility	Timeframe to Implementation	TOTAL SCORE
70	TOH-008	West Canada Creek at Kast Bridge Bank Stabilization for Erosion Control	4/4.2	Flood/NSP	2	1	2	4	3	2	4	18
71	TOH-009	Oberle Rd Bank Stabilization	4/4.2	Flood/SIP	2	1	2	4	3	2	4	18
72	TOH-010	Osborne Hill Rd Culvert Replacement and Expansion	1/1.1	Flood/SIP	2	1	2	4	3	2	4	18
73	TOH-011	Petrie Levee Operation Engineering Study	4/4.3	Flood/NSP	4	1	2	2	2	2	4	17
73	TOH-012	Piper, Main and Folts Roads Stabilization Engineering Study	4/4.3	Flood/SIP	2	1	2	2	3	2	4	16
75	TOH-013	Hydroelectric Dam Removal (Trafalgar Power, Inc.) & Bank Stabilization	4/4.2	Flood/SIP	3	1	2	4	2	2	4	18
76	TOH-014	West German Street Embankment Engineering Study	4/4.3	Flood/SIP	3	1	2	2	3	2	4	17
77	TOH-015	Designation/Relocation of Temporary Housing	1/1.1	Flood/LPR	3	3	4	2	3	4	4	23
Village of Herkimer												
78	VOH-001	Bellinger Creek Bank Stabilization	1/1.1	Flood/SIP	2	1	1	4	4	4	4	22
79	VOH-002	Mohawk River LAMP Study	1/1.1	Flood/SIP	2	1	1	4	4	4	4	22
Village of Ilion												
80	IL-001	Route 51 Bridge Replacements	1/1.1	Flood/SIP	3	4	4	4	3	4	4	26
81	IL-002	35 Property Acquisitions (FEMA Buy-out Program)	1/1.1	Flood/SIP	1	3	4	4	3	4	4	23
82	IL-003	Steel Creek Dam/Falls Removal	4/4.2	Flood/SIP	3	0	4	2	1	2	4	16
83	IL-004	Reservoir Decommissioning	4/4.2	Flood/SIP	4	0	4	4	3	4	4	23
84	IL-005	Steele Creek Stream Bank Erosion Engineering Study	4/4.3	Flood/SIP	2	0	4	2	2	0	2	12
85	IL-006	Electric Sub-Station Flood Protection	1/1.1	Flood/SIP	4	3	4	4	4	4	2	25
86	IL-007	Conduct Ilion Gorge Bank Stabilization Analysis	4/4.3	Flood/SIP	4	0	4	4	3	4	4	23
87	IL-008	Develop and engineering design for Ilion Gorge	4/4.3	Flood/SIP	4	0	4	4	3	4	4	23
City of Little Falls												
88	CLF-001	Cemetery Creek Debris Removal and Side Bank Stabilization	4/4.1	Flood	2	1	2	4	3	2	4	18
89	CLF-002	Emerg. Gen. for Critical Facilities (Public Service and Shelters)	1/1.1	All	4	1	2	4	4	4	4	23
Town of Little Falls												
90	TLF-001	Emergency Generator - Town Offices and Garage	1/1.1	All	3	1	2	4	4	4	4	22
91	TLF-002	Concurrency btwn town planning docs and 2018 FEMA Maps	1/1.3	All	4	4	4	4	4	4	4	28
Town of Manheim												
92	MA-001	Saltsman Road Stabilization	1/1.1	Flood/SIP	2	1	2	4	3	2	4	18
93	MA-002	Remove Sediment from East Canada Creek	1/1.1	Flood/SIP	3	1	1	4	3	4	2	18
94	MA-003	Timmerman Road Stabilization	1/1.1	Flood/SIP	2	1	2	4	3	2	4	18
Village of Mohawk												
95	MO-001	Bridges (Rte. 28, W. Main and Rte. 5s)	1/1.1	Flood/SIP	4	1	4	4	4	4	2	23
96	MO-002	Brookside Floodplain Bench	4/4.2	Flood/NSP	4	1	4	4	4	4	3	24
97	MO-003	Minnow Brook Restoration	4/4.2	Flood/NSP	2	1	4	4	4	2	2	19
98	MO-004	Minnow Brook Culvert Replacement	1/1.1	Flood/SIP	2	1	4	4	4	2	4	21
99	MO-005	Storm Sewer Systems Upgrade	1/1.1	Flood/SIP	3	1	4	4	4	4	3	23
100	MO-006	Storm Sewer System GIS Enhancement	1/1.1	Flood/SIP	3	1	4	4	4	4	4	24
101	MO-007	Floodproof Street Department Building	1/1.1	Flood/SIP	2	1	4	4	4	4	3	22
102	MO-008	Assessment of Tree Trimming Needs for Electric Utility	1/1.1	High Wind/SIP	2	1	4	4	4	4	4	23
103	MO-009	Susceptibility Analysis - Roads, Streams and Drainage	1/1.6	Flood/SIP	3	1	4	4	4	4	4	24
104	MO-010	Floodproof Electric Sub-Station	1/1.1	Flood/SIP	4	1	4	4	4	4	3	24
105	MO-011	Electric Switching Enhancements	1/1.1	Flood/SIP	4	1	4	4	4	4	3	24
106	MO-012	Susceptibility Analysis and Implementation - Utility Poles and Distribution System	1/1.1	Flood/SIP	4	1	4	4	4	4	3	24
107	MO-013	LED Street Lighting	1/1.1	Severe Weather/SIP	4	1	4	4	4	4	3	24
108	MO-014	Brookside Waterline Crossing	1/1.1	Flood/SIP	2	1	4	4	4	4	4	23
109	MO-015	Waterline Reinforcements	1/1.1	Flood/SIP	2	1	4	4	4	4	2	21
110	MO-016	Sewer System Bypass	1/1.1	Flood/SIP	2	1	4	4	4	2	3	20
111	MO-017	Sewer System - Flooding Retrofits	1/1.1	Flood/SIP	2	1	4	4	4	4	3	22

Component 3: Integration into Existing Plans and Procedures

In December, 2016, jurisdictions were given an Action Plan for Implementation worksheet that outlined ways a community could integrate mitigation goals, objectives, and actions into existing plans, procedures, and programs. Each jurisdiction selected appropriate actions appropriate to its community for the implementation plan.

The mitigation goals, objectives, and actions developed in this planning process can be integrated into existing plans and procedures by two separate, but parallel means, which are further described below:

- Integration into existing jurisdiction-based plans and procedures
- Integration into previous hazard-specific planning processes (e.g., basin assessments and flood hazard mitigation plans)

Jurisdiction-Based Action Plans for Implementation

Jurisdictions identified mitigation actions they would implement going forward. They also selected measures described in **Table 4-f** to document how goals and actions would be integrated with existing local processes. All of this is outlined in the Jurisdiction Annexes.

Table 4-f: Summary of Jurisdiction Action Plans for Implementation, by Jurisdiction

JURISDICTION	ACTION PLAN FOR IMPLEMENTATION														
	Integrate goals into Comp Plan	Goals consistent with land development regulations	Goals consistent with building/zoning codes	Maintain NFIP requirements	Enhance Floodplain mgmt. with CRS	Goals consistent with economic development plans	Continue public involvement in mitigation	Identify opportunities for education/outreach	Goals consistent with stormwater plans/procedures	Update emergency plans - evacuation & shelter	Maintain enforcement of existing policies	Monitor funding opportunities	Incorporate goals into existing govt. functions	Incorporate goals into development processes	Other
Herkimer County							x	x		x	x	x	x		
Dolgeville, Village of	x	x	x	x			x	x	x	x	x	x	x	x	
Frankfort, Town of		x	x	x		x	x	x	x		x	x	x	x	
Frankfort, Village of		x	x	x		x	x	x	x		x	x	x	x	
German Flatts, Town of		x	x	x		x	x	x			x	x	x	x	
Herkimer, Town of		x	x	x		x	x	x	x	x	x	x	x	x	
Herkimer, Village of		x	x	x		x	x	x	x		x	x	x	x	
Ilion, Village of	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
Little Falls, City of				x		x	x	x	x	x	x	x	x	x	
Little Falls, Town of			x	x			x	x		x	x	x	x	x	
Manheim, Town of		x	x	x		x	x	x	x		x	x	x	x	
Mohawk, Village of	x	x	x	x		x	x	x	x		x	x	x	x	

Previous Plans and Studies that Inform and Implement Mitigation Actions

Previously conducted plans and studies included recommended mitigation actions. Some were or are being funded through New York Rising, HMGP, and others programs. These documents are summarized in **Appendix 2, Planning Process Documentation.** Elements from previous works are integrated into sections of this plan as described in **Appendix 2:** hazard and vulnerability, critical facilities and infrastructure, and mitigation action updates.

Table 4-g: Summary of Flood Mitigation Programs, Plans, Studies or Reports

Program, Plan, Study or Report	*Source*	*Date*
Emergency Transportation Infrastructure Recovery Basin Assessment and Flood Hazard Mitigation Alternatives - Bellinger Brook at the Village of Herkimer	NYSDOT & NYSDEC	April 2014
Emergency Transportation Infrastructure Recovery Basin Assessment and Flood Hazard Mitigation Alternatives – East Canada Creek	NYSDOT & NYSDEC	April 2014
Fulmer Creek Multi-Community Flood Hazard Mitigation Plan	Herkimer-Oneida Counties Comprehensive Planning Program	May 2004
Emergency Transportation Infrastructure Recovery Basin Assessment and Flood Hazard Mitigation Alternatives – Fulmer Creek	NYSDOT, NYSDEC	April 2014
Finger Lakes – Lake Ontario Watershed Protection Alliance (FLLOWPA), Herkimer County Water Quality Coordinating Committee (WQCC)*	NYS Environmental Protection Fund; Water Resources Board http://www.fllowpa.org/county.html#Herkimer	On-going
Floodplain Coordination and Outreach (Ecology and Environment, Inc.), Final Report	DHS-FEMA Competitive Grant, NYS Office of General Services	10/17/12
Greater Catskills Flood Remediation Program	NYS Housing Trust Fund Corporation/NYS Homes and Community Renewal GCFRP@nyshcr.org	April 2008, Updated 3/15/2012
Mohawk Valley Regional Sustainability Plan	Cleaner, Greener Communities (NYSERDA)	2011-2012 (Adopted 2013)
Mohawk River Basin Program and Action Agenda, 2012-2016 ("Mighty Waters" Working Group)	NYSDEC, NYSDOS	2012
Moyer Creek Multi-Community Flood Hazard Mitigation Plan	Herkimer-Oneida Counties Comprehensive Planning Program	June 2004
Emergency Transportation Infrastructure Recovery Basin & Assessment and Flood Hazard Mitigation Alternatives – Moyer Creek	NYSDOT, NYSDEC	April 2014
Emergency Transportation Infrastructure Recovery Basin Assessment and Flood Hazard Mitigation Alternatives – Maltanner Creek	NYSDOT, NYSDEC	April 2014
NY Rising Community Reconstruction and Countywide Resiliency Plan – Herkimer County	New York State (NYSDEC, NYSDOS)	July 31, 2014
Steele Creek Multi-Community Flood Hazard Mitigation Plan & Emergency Transportation Infrastructure Recovery Basin Assessment and Flood Hazard Mitigation Alternatives – Steele Creek	Herkimer-Oneida Counties Comprehensive Planning Program; NYSDOT, NYSDEC	October 2004 Assessment – April 2014
Emergency Transportation Infrastructure Recovery Basin Assessment and Flood Hazard Mitigation Alternatives – West Canada Creek	NYSDOT, NYSDEC	April 2014

Plans and Studies on the Impacts of Climate Change

New York State has conducted extensive research and developed many tools for use in estimating the impacts of climate change on the population, built environment, natural environment, and economy. These plans and studies are integrated into the sections of this plan and summarized in **Appendix 2, Planning Process Documentation**, providing context for some identified actions and a connecting link to support implementation.

Progress on Mitigation Actions

Because the Herkimer HMP is a new plan, there was no existing method in place to identify previous mitigation actions addressed at the county or jurisdictional level. The plan monitoring process described in **Section 5, Plan Maintenance,** institutes and provides a timetable and schedule for documenting risk-reduction progress. **Appendix 4-C, Mitigation Actions** explains the process used to gather data about completed mitigation actions and a template to track progress during the current and future planning cycles. **Appendix 4-C, Mitigation Actions** is a tracking document that allows the community to track implementation of all actions, including those identified outside of the current hazard mitigation planning process. A comprehensive list of previously identified actions and their status as of October 2016 (if available) is also included.

As previously mentioned, actions listed in the Herkimer HMP duplicate those mentioned in previous plans and studies if affected communities deemed the strategy to be important. Every attempt was made to link any action included in this plan to its original plan or study. Prioritization of an action in an earlier planning effort did not influence the prioritization of those actions in the development of this plan.

Mitigation Implementation Tools

Many local policies and plans can support implementation of the mitigation actions and plan, including building codes, zoning policies, land use planning, subdivision regulations, and capital improvements planning. Each of these is described in **Appendix 4-D, Implementation Tools,** with statements about their applicability and effectiveness.

Potential Funding and Technical Assistance

It would be hard to implement mitigation actions without funding and technical support. Communities identified resources from local, state, or federal government; not-for-profit agencies; public/private partnerships; and the private sector. Internal funding sources are identified and discussed in **Section 4.2, Mitigation Capabilities** (above). **Appendix 4-D, Implementation Tools** lists government and non-government hazard mitigation funding resources that also provide regulatory and technical assistance. The list is not exhaustive.

SECTION 5: PLAN MAINTENANCE

Requirements:

- **§201.6(c) (4)(i):** [There is a] description of the method and schedule for keeping the plan current (monitoring, evaluating and updating the mitigation plan within a 5-year cycle).
- **§201.6(c)(4)(iii):** [The plan discusses] how the community will continue public participation in the plan maintenance process.

5.0: Overview

The hazard mitigation plan shapes the mitigation activities undertaken by a jurisdiction during the five-year period for which it the plan is approved. The plan may require updating as conditions change, new data becomes available, or mitigation actions are successfully concluded.

Concurrent plan implementation and maintenance support successful implementation of the mitigation strategy. **Section 4, Mitigation Strategy** discusses steps Herkimer County jurisdictions will take to integrate mitigation goals and objectives into other planning mechanisms. Implementation and maintenance processes allow the HMWG to periodically assess project status against benchmarks and, if necessary, adjust the plan. This is done through actions outlined in **Section 5** subsections:

- 5.1: Monitoring the Plan
- 5.2: Evaluating the Plan
- 5.3: Updating the Plan

At the outset, Herkimer County, FEMA Region II, and NYS DHSES determined that municipalities could join the planning process as either "adopting" or "participating" jurisdictions.[1] Jurisdictions with the resources to complete all phases of the process would be able to adopt the plan. Jurisdictions with limited manpower could participate in planning activities as time permits. Their contribution was deemed to be vital, but they would not be required to complete a jurisdiction annex or adopt the plan. During the next planning cycle, these jurisdictions will be able to reassess their situation and decide whether to continue as "participating jurisdiction" or become an "adopting jurisdiction."

In December 2016, the HMWG reviewed a proposed plan maintenance process. The process includes scheduled activities to effectively monitor and update the plan throughout its five-year period of performance. The HMWG and adopting jurisdictions voted to approve plan maintenance process outlined below.

[1]A detailed description of this process is provided in **Section 2: Planning Process**.

5.1: Monitoring the Plan

This plan maintenance step tracks implementation of the plan over time.

The Herkimer County Comprehensive Emergency Management Plan (CEMP) designates the Director of Herkimer County Emergency Services as the County Mitigation Coordinator (CMC). **Appendix 5, Plan Maintenance Documentation** summarizes CEMP provisions for countywide coordination of mitigation planning activities, including the development of a Multi-Jurisdictional Hazard Mitigation Plan. Participating jurisdictions identified an individual (by position or title) who would be responsible for monitoring jurisdiction action items during the planning cycle. Jurisdiction annexes list a community's primary and alternate mitigation planning contacts.

Table 5-a: Herkimer HMP Monitoring Roles and Responsibilities

Position	Plan Monitoring Roles and Responsibilities
Herkimer County Mitigation Coordinator (CMC)	• Coordinate and facilitate the monitoring process • Maintain schedule of monitoring activities • Collect progress data and disseminate progress reports • Maintain records and document all monitoring activities
HMWG	• Participate in the monitoring process as requested by the CMC • Assist in collecting and analyzing data • Help disseminate reports to stakeholders and the public • Promote the mitigation planning process with public input
Jurisdiction Representatives	• Represent the jurisdiction during the monitoring process • Collect, analyze, and report data to the CMC and HMWG • Maintain records and documentation of all jurisdictional monitoring activities • Assist in disseminating reports to stakeholders and the public • Promote the mitigation planning process with the public and solicit public input

Table 5-b: Herkimer County HMP Monitoring Procedure and Schedule

Monitoring Procedure Herkimer County and adopting jurisdictions will monitor the status of mitigation actions ***annually and/or following a disaster***
Step 1: County Mitigation Plan Coordinator (CMC) – Initiate Monitoring Process
• Notify jurisdictions and stakeholders to initiate the annual/post-disaster review

o Disseminate to jurisdiction representatives the current list of mitigation actions and the Mitigation Action Progress Report Form*,[2] o Distribute the Action Worksheet Form for use in recommending new actions
Step 2: County Mitigation Plan Coordinator and HMWG – Assess Status of Actions
• Assess status of current actions, including those implemented and funded, and identify new mitigation opportunities o Are mitigation actions being implemented and monitored? o Are different or additional resources now available? o Have new mitigation actions been identified? o Have any mitigation actions been completed?
Step 3: County Mitigation Plan Coordinator and HMWG – Assess New Mitigation Opportunities
• Has a disaster occurred that presents opportunities for mitigation? • Is there a new initiative, agency priority, existing planning mechanism or information that is not represented in the current actions?
Step 4: County Mitigation Plan Coordinator and HMWG – Prepare and Disseminate Status Report to jurisdictions, elected officials, stakeholders and the public
• Status of current and implemented actions • Proposed new actions* • Potential funding sources • New opportunities for mitigation (e.g., actions in development, new programs)
** Jurisdictions may at any time develop new mitigation actions. The current list will be reviewed at least annually and following a disaster. New actions will be described and ranked employing the tools used to develop actions for this plan: Action Worksheets and the Ranking System for Prioritizing Actions.*

5.2: Evaluating the Plan

This plan maintenance step assesses the effectiveness of the plan at achieving its stated purpose and goals.

Jurisdictional representatives were designated as responsible for evaluating the degree to which their respective communities meet the goals outlined in the plan.

[2] Appendix 5 includes the Mitigation Action Progress Report Form.

Table 5-c: Herkimer HMP Evaluating Roles and Responsibilities

Plan Evaluation Roles and Responsibilities	
Herkimer County Mitigation Coordinator (CMC)	• Coordinate and facilitate the evaluation process • Maintain schedule of evaluation activities • Collect data and disseminate reports • Maintain records and documentation of all evaluation activities
HMWG	• Participate in the evaluation process • Assist in collecting and disseminating information • Assist in disseminating reports to stakeholders and the public • Promote the mitigation planning process with the public and solicit public input
Jurisdiction Representatives	• Represent the jurisdiction during the evaluation process • Collect and report data to the HMWG and CMC • Maintain records and documentation of all jurisdictional evaluation activities • Assist in disseminating information and reports to stakeholders and the public

Table 5-d outlines the procedures and schedule that Herkimer County and its jurisdictions will take **annually and/or following disaster(s)** to evaluate plan effectiveness.

Table 5-d: Plan Evaluation Steps

Action	Responsible Party	Tasks	Deliverable/Outcome
Initiate Annual Review	Herkimer County Mitigation Plan Coordinator	Notify lead agency/individual in each jurisdiction to facilitate annual evaluation	Work plan, schedule, and assigned resources to implement plan review
Invite MWG and Key Stakeholders	Herkimer County Mitigation Plan Coordinator (or designee)	Invite HMWG members, key stakeholders, and new agency representatives to help with plan monitoring and evaluation	Develop participant invitation list: invited jurisdictions, new existing and stakeholders, and other key planning partners
Review Policies and Regulations	Herkimer County Mitigation Plan Coordinator (or designee) and HMWG	Research new or updated laws, policies, regulations, initiatives, and studies that affect hazard risk assessment or identified mitigation actions	Status report: existing and new policies, regulations, initiatives and/or studies

Action	Responsible Party	Tasks	Deliverable/Outcome
Review Programs	Herkimer County Mitigation Plan Coordinator (or designee) and HMWG	Assess changes in county and state agencies and/or their procedures, new grant programs or areas of focus, integrate into current planning mechanisms	Status report: existing and new stakeholders, procedures, grant programs, planning mechanisms, new focus areas
Hazards	Herkimer County Mitigation Plan Coordinator (or designee) and HMWG	Research new or updated data and information that contributes to the risk assessments, loss estimates, or vulnerabilities in assets, by jurisdiction	Status report: recent disasters, hazard impacts and losses, lessons learned, status of jurisdictional facilities and infrastructure; ***update HMP annually to reflect new risk assessment and capability data gathered from review of hazard events and impacts***
Mitigation Actions	Herkimer County Mitigation Plan Coordinator (or designee) and HMWG	Assess progress in previously implemented actions that reduce vulnerability and losses, and identify new mitigation actions	Status report: Completed actions, pending actions, implementation status of actions *[collected through monitoring procedure]*
Outcomes	Herkimer County Mitigation Plan Coordinator (or designee)	Maintain and document the HMP review process, including any plan updates; prepare summary report	Summary report: Mitigation Strategy Annual Update, to incorporate results of annual monitoring and evaluation

5.3: Updating the Plan

This plan maintenance step reviews and revises the plan on an established schedule to reflect changes in development, progress in local mitigation efforts, and changes in priorities.

The plan review and revision process will run through the five-year life cycle of the plan. Monitoring and evaluation activities that are conducted annually and following a disaster will allow communities to maintain currency of plan components (e.g., hazard identification, risk assessment) with mitigation actions. Plan completion, or the end of the life cycle, occur five years after the date of the first adoption by the first Herkimer County jurisdiction, or five years after April 17, 2017. **Section 6** discusses the adoption timetable.

Table 5-e: Plan Update Roles and Responsibilities

Plan Update Roles and Responsibilities	
Herkimer County Mitigation Coordinator	• Coordinate the review, revision, and update process • Schedule of all plan update activities • Collect data and disseminate reports • Maintain records and documentation of evaluation efforts • Promote public participation and input into the process
HMWG	• Participate in the plan review, revision, and update process as requested by the Herkimer County Mitigation Coordinator • Assist in collecting and disseminating updates • Help disseminate reports to stakeholders and the public • Promote the mitigation planning process with stakeholders and the public, solicit public input
Jurisdiction Representatives	• Represent the jurisdiction during the planning cycle, including the plan review, revision, and update process • Collect and report data to the HMWG and Co. Mitigation Coordinator • Maintain records and documentation of all jurisdictional plan review and revision • Disseminate information and reports to stakeholders and the public

The update process reviews the plan throughout the five-year cycle. All sections will have been reviewed at some point, reducing the time and resources expended in the fifth year. Each jurisdiction is responsible for maintaining its annex and may establish an internal schedule consistent with that set by the CMC. For example, a jurisdiction with many concurrent short-term projects may determine that a semi-annual review is appropriate.

Table 5-f: Herkimer HMP Plan Five-Year Update Process and Schedule

Five-Year Plan Update Schedule and Process[3]	
Monitoring and Evaluation Activities – *Ongoing throughout the five-year planning cycle*	• Monitoring and evaluation results, meeting documentation, and other documents collected during the plan five-year life cycle and used in update • Multiple meetings with elected officials, HMWG, local jurisdictions, state and federal agencies, and interested parties will be conducted • Activities, meetings, and interactions will be tracked and documented throughout the planning cycle • Conduct an annual review using the most recent Herkimer HMP.
Update Risk Assessment – *Conducted in the 1st Quarter, fifth year of the planning cycle*	• County Mitigation Plan Coordinator/designee, HMWG, and jurisdictions will identify key stakeholders to help with the updated risk assessment • Monitoring and evaluation results will be incorporated • Changes since the previous plan approval will be identified

[3] This process and schedule was adapted from and is consistent with the 2014 NYS HMP plan maintenance process.

	• Each hazard will be assessed and updated to include new data since the date of plan approval/adoption • Occurrences and changes in low-ranked hazards will be identified/assessed • Any significant changes in jurisdictional risk assessments will be noted during plan review and integrated into the updated Herkimer HMP
Review and Update Goals and Objectives *Conducted in the 2nd Quarter, fifth year of the planning cycle*	• County Mitigation Plan Coordinator/designee, jurisdictions and key partners will assess the status of current HMP goals and objectives for potential revision • Assessment whether mitigation goals and objectives have been integrated with existing planning mechanisms • Significant changes in mitigation goals will be assessed and incorporated as appropriate in the updated HMP • Monitoring and evaluation results will be utilized to modify the goals and objectives and describe achievements
Review and Update Mitigation Actions *Conducted in the 3rd Quarter, fifth year of the planning cycle*	• County Mitigation Plan Coordinator/designee will receive input from key partners and jurisdictions updates on the status of mitigation actions • Monitoring and evaluation results will be utilized to assess the effectiveness of mitigation actions in meeting the goals and reducing risks • Assess current jurisdictional mitigation actions to determine how they have contributed to the achievement of goals and objectives • Management and maintenance data used to develop five-year progress reports
Compile and Review *Conducted in the 3rd Quarter, fifth year of the planning cycle*	• County Mitigation Plan Coordinator/designee and HMWG will compile the data and develop the updated HMP • Draft will be made available for stakeholder review and input • Draft will be made available for public review and comment for at least 30 days • Comments and suggestions will be incorporated and the final draft completed
Conducted in the 4th Quarter, fifth year of the planning cycle	• NYSDHSES will review draft HMP update • FEMA reviews update and designates it as approvable pending adoption (APA)
Adopt Plan *Conducted in 4th Quarter, fifth year of planning cycle*	• Updated HMP adopted by jurisdictions prior to the 4/17/2022 expiration date • The plan is adopted by at least one jurisdiction within one year of becoming APA. The date of adoption sets the expiration date for the entire plan. * • Each adopting jurisdiction adopts the both the Multi-Jurisdictional Base Plan and its Jurisdiction Annex.
** As of September 1, 2017, five communities have adopted the 2017 Herkimer County HMP. The Village of Herkimer, the first jurisdiction to do so, adopted the plan on April 17, 2017.*	

Incorporation into Existing Planning Mechanisms

HMWG members and jurisdictional representatives are charged with identifying how to integrate the mitigation plan into existing planning mechanisms. These include resiliency planning, planning for short- and long-term emergency response, and community development. The process includes educating governmental and non-governmental partners on the need for developing mutually supportive activities, ordinances, and policies. Integration supports the community capabilities defined in **Section 4.2, Mitigation Capabilities**:

planning and regulatory; administrative and technical; safe growth; fiscal and resources; and education and outreach.

Continued Public Involvement

References to opportunities for stakeholder and public involvement are addressed in plan maintenance steps described above.

SECTION 6: PLAN ADOPTION

Requirement:

- **§201.6(c) (5):** [The] plan includes documentation that the plan has been formally adopted by the governing body of the jurisdiction requesting approval. For multi-jurisdictional plans, each jurisdiction requesting approval of the plan has documented formal plan adoption.

Adopting the Herkimer County HMP is the final step in the mitigation planning process outlined in the federal Disaster Mitigation Act of 2000. The governing body for each adopting community will formally adopt the Herkimer County Multi-Jurisdictional Hazard Mitigation Plan and their Jurisdiction Annex by passing a resolution. **Appendix 6** includes a template provided to jurisdictions, into which they are encouraged to incorporate community-specific language; and resolutions formally adopted by participating jurisdictions as of September 1, 2017.

Communities must formally adopt the plan for the following reasons.

1. Adoption is required as the last step in the FEMA-proscribed mitigation planning process.
2. Adoption is required by the NYS Department of Homeland Security and Emergency Services (DHSES) per state standards for mitigation planning.
3. Formal adoption by Herkimer County and its jurisdictions shows that community leaders understand the importance of conducting the mitigation planning process and formalizing an actionable plan.
4. Public adoption, like the public planning process, raises awareness among residents and community partners about the need for mitigation planning as a phase of emergency management
5. Adoption helps to secure broad stakeholder support for plan implementation.

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APPENDIX 1: CULTURAL AND HISTORICAL PROPERTIES IN HERKIMER COUNTY

Herkimer County Designated Historical Resources

The National Register of Historic Places is America's official list of cultural resources worthy of preservation. This appendix lists the register's entries in Herkimer County. The SR Date shows when the property was added to the database, and the NR Number is the property's assigned number.

Name	Address	City	Flood Zone	SRDATE	NR Number
Alfred Dolge Hose Co. No. 1	South Main Street	Dolgeville		7/8/1994	94NR00628
(The) Balloon Farm	128 Cemetery Street	Frankfort		12/15/1997	96NR00965
Big Moose Community Chapel	1544 Big Moose Road, Eagle Bay	Webb	100-Year	12/30/1899	12NR06235
Blatchley House	370 Blatchley Road Jordanville	Warren		6/23/2008	08NR05861
Bonfoy-Barstow House	485 E. Main Street	West Winfield		12/30/1899	11NR06221
Bowen, Benjamin, House	7842 Main Street (NY 28)	Newport		9/21/1998	98NR01382
Brace Farm	428 Brace Road	West Winfield		12/30/1899	13NR06442
Breckwoldt-Ward House	90 Van Buren Street	Dolgeville		2/7/2005	97NR01175
Brown-Morey-Davis Farm	2608 Newport Road	Newport		12/30/1899	13NR06465
Church of the Good Shepherd	NY 167, West side	Cullen		6/26/1997	97NR01173
Cold Brook Feed Mill		Cold Brook		6/23/1980	90NR00600
Covewood Lodge	Big Moose Lake	Big Moose vicinity		4/2/2004	03NR05169
Dolge Company Factory Complex	1 S. Main Street	Dolgeville	100-Year	6/23/1980	90NR00574
Emmanuel Episcopal Church	588 Albany Street	Little Falls		12/30/1899	08NR05912
Enlarged Erie Barge Canal Nominated by NPS (2014)	Statewide	Multiple	100-Year	12/30/1899	14NR06559
First United Methodist Church	36 Second Street	Ilion	100-Year	4/15/2003	02NR05047
Fort Herkimer Church	NY 5S	East Herkimer		6/23/1980	90NR00585
Frankfort Hill District No. 10 School	2338 Albany Road	Frankfort		12/30/1899	11NR06211

Name	Address	City	Flood Zone	SRDATE	NR Number
Frankfort Town Hall	140 S. Litchfield Street	Frankfort	500-Year	9/22/1999	99NR01442
Augustus Frisbie House	NY 29A, Salisbury Center	Salisbury		9/22/1999	99NR01496
Goodsell House, Old Forge	2993 Main Street	Webb		1/14/2006	05NR05535
Herkimer County Courthouse	320 N. Main Street	Herkimer		6/23/1980	90NR00591
Herkimer County Historical Society	400 N. Main Street	Herkimer		6/23/1980	90NR00594
Herkimer County Jail	327 N. Main Street	Herkimer		6/23/1980	90NR00592
Herkimer County Trust Company Building	Corner of Ann and Albany Streets	Little Falls		6/23/1980	90NR00596
Herkimer House	Near NY 5s	Danube		6/23/1980	90NR00582
Holy Trinity Monastery, Jordanville	1907 Robinson Road	Warren		12/30/1899	08NR05959
Indian Castle Church	NY 5S	Indian Castle		6/23/1980	90NR00583
Italian Community Bake Oven	NY 167	Little Falls		9/15/2006	06NR05612
James Keith House	2615 Newport Road	Newport		12/30/1899	13NR06466
Jordanville Public Library	189 Main Street	Warren		4/17/1984	90NR00587
Lalino Stone Arch Bridge	319 NY 29	Middleville		10/15/2001	01NR01839
Little Falls City Hall	359 East Main Street	Little Falls		12/30/1899	11NR06230
Little Falls Historic District	Multiple	Little Falls		10/19/2011	11NR06250
Masonic Temple, Newport Lodge No. 455 F & A.M.	7408 Main Street (NYS Rte. 28)	Newport	100-Year	12/30/1899	08NR05965
Meetinghouse Green Road Cemetery	NW of Corner Cross, Meeting House, and Doyle Roads	Winfield		12/30/1899	13NR06443
Menge House Complex	98 Van Buren Street	Dolgeville		9/30/1996	96NR01052
NY Central Railroad Adirondack Division Historic District	NYCRR Right-of-Way, Remsen		100-Year		93NR00500
Newport Stone Arch Bridge	Bridge Street at W. Canada Creek	Newport	100-Year	12/19/1991	91NR00097
Norway Baptist Church (former)	1067 Newport-Gray Road	Newport		4/23/2007	06NR05689
Oak Hill Cemetery	W. German Street	Herkimer		12/30/1899	13NR06460
Old City Road Stone Arch Bridge	Old City Road at City Brook	Fairfield		10/15/2001	01NR01838
Overlook	1 Overlook Drive	Little Falls		12/30/1899	09NR06072
Palatine German Frame House (Wilder House)	4217 NY 5	Herkimer		2/17/2004	03NR05099
Reformed Church (The)	405 N. Main Street	Herkimer		6/23/1980	90NR00593
Remington House	1279 Upper Barringer Road	Kinne Corners		6/26/1997	97NR01228
Remington Stables	1 Remington Avenue	Ilion		6/23/1980	90NR00590
Rice-Dodge-Burgess Farm		Winfield		12/30/1899	15NR00052
Richardson, Thomas, House	317 W. Main Street	Ilion			90NR00589
Route 29 Stone Arch Bridge	NY 29	Fairfield		12/13/2000	00NR01723
Russia Corners Historic District	Military and Church Roads	Russia		6/13/1996	96NR00966
Salisbury Center Covered Bridge	Fairview Road at Spruce Creek	Salisbury	100-Year	6/23/1980	90NR00586

Name	Address	City	Flood Zone	SRDATE	NR Number
Salisbury Center Grange Hall	2550 NY 29	Frankfort		12/11/1998	99NR01428
Sanders, James, House	546 Garden Street	Little Falls		1/24/2006	05NR05536
Snells Bush Church and Cemetery	Snells Bush Road	Manheim		1/15/2004	03NR05137
South Ann Street-Mill Street Historic District	Mohawk, South Ann, Mill Streets	Little Falls		12/28/2007	07NR05813
St. Mary's Cemetery	Sherman Street	Little Falls		12/30/1899	08NR05860
Stuart Perry & William Swezey Houses	7541 & 7551 Main Street	Newport		12/30/1899	12NR06386
Sunset Hill, Mrs. Eugene D. Stocker Estate	102 NY 167	Warren		11/27/2006	06NR05655
Thendara Historic District	124 Birch Street, 2568 SR 28, 108 Forge Street	Webb		12/30/1899	10NR06115
Trinity Episcopal Church	NY 29 (Salisbury Street)	Fairfield		3/29/1993	92NR00387
US Post Office, Dolgeville	41 S. Main Street	Dolgeville		11/17/1988	90NR00599
US Post Office, Frankfort	E. Main Street	Frankfort		5/11/1989	90NR00598
US Post Office, Herkimer	135 Park Avenue	Herkimer		5/11/1989	90NR00595
US Post Office, lion	48 First Street	Ilion	100-Year	5/11/1989	90NR00588
US Post Office, Little Falls	25 W. Main Street	Little Falls		5/11/1989	90NR00597
Yale-Cady Octagon House and Yale Lock Factory Site	7550 N. Main Street (NY 28)	Newport		8/14/2007	07NR05758
Zoller-Frasier Round Barn	Fords Bush Road	Newville		8/3/1984	90NR00584

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APPENDIX 2: Planning Process Documentation

Participation in the Planning Process

Representatives of participating jurisdictions and partner organizations attended meetings, gathered and analyzed data; participated in outreach activities; and developed mitigation actions and strategies. The following tables list activities in which they participated. Back-up documentation is in the plan's working folders, which will be on file with the Herkimer County Office of Emergency Services after the plan is adopted.

Table A2-a: All Participants

1. Invited to Kick-Off Meeting (7/30/16)
2. Attended Kick-Off Meeting (8/10/16)
3. Participation Form Returned
4. Invited to Capabilities Assessment Workshop (8/31/16)
5. Attended Capabilities Assessment Workshop (9/21/16)
6. Submitted Capabilities Assessment
7. Submitted NFIP Form
8. Invited to HIRA Workshop (10/3/16)
9. Attended HIRA Workshop (10/19/16)
10. Submitted HIRA Worksheets
11. Participated in Hazard Survey (Residents or Stakeholders)
12. Invited to Mitigation Strategy 1 Workshop (11/4/16)
13. Attended Mitigation Strategy 1 Workshop (11/16/16)
14. Submitted Mitigation Strategy Worksheets
15. Invited to Mitigation Strategy 2 Workshop (11/28/16)
16. Attended Mitigation Strategy 2 Workshop (12/7/16)
17. Invited to Plan Review Meeting (2/8/17)
18. Attended Plan Review Meeting (02/08/17)
19. Posted/Disseminated Draft Plan Public Review
20. Draft Review - Provided Comments
21. Adopted the Plan (as of 9/1/2017)

Agency/Organization	Participation Record	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
ARC-Herkimer	Tim Klock, Safety Resource Officer	x			x				x			x	x			x	x	x			
Community Flood Action Group	Ramona Gassmann, Member	x			x	x			x	x		x	x			x	x	x			
Community Flood Action Group	Ron Schoonmaker, Member	x			x	x			x			x	x			x		x	x		
Dolgeville - Village	Bruce Lyon, Mayor	x			x		x	x	x		x	x			x	x		x	x		
FEMA, Region 2, Mitigation	Paul Hoole, Planner	x	x		x	x			x			x	x			x		x	x		
Fairfield - Town	Henry Crofoot, Supervisor	x		x	x		x	x	x				x			x		x	x		
Frankfort - Town	Mishele Spaman, Code Enforcement Officer	x			x	x	x		x			x	x		x	x	x	x			
Frankfort - Town	Ron Testa, Highway Superintendent	x			x				x			x	x			x	x	x			
Frankfort - Village	Karlee Tamburro, Clerk	x			x				x			x	x		x	x		x			
Frankfort - Village	Mike Irons, Public Works Foreman	x			x				x			x	x		x	x		x			
German Flatts - Town	Frank Spatto, Supervisor	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x		
Herkimer - Town	Dominic Frank, Supervisor	x			x	x	x	x	x	x	x	x	x	x	x	x	x	x	x		
Herkimer - Town	Jeremy Silverman, Grants Consultant	x	x		x				x			x	x			x		x			

Agency/Organization	Participation Record	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Herkimer - Village	Amanda Viscomi, Clerk Treasurer	x			x				x			x				x		x	x		
Herkimer - Village	Anthony Brindisi, Mayor	x	x		x				x			x				x		x			
Herkimer - Village	James Franco, DPW Superintendent	x			x				x			x	x	x		x	x	x	x		
Herkimer - Village	Jeff Crim, Police Captain	x	x		x				x			x	x			x		x			
Herkimer - Village	John Spanfelner, Fire Chief	x	x		x		x	x	x	x	x	x	x			x		x			
Herkimer - Village	Scott Blais, Water Superintendent	x	x		x				x			x	x			x		x			
Herkimer County Community College	Dr. Cathleen McColgin, President	x	x		x				x			x	x			x		x			
Herkimer County Community College	Nick Laino, Sr., V.P. for Admin.	x	x		x				x			x	x			x		x			
Herkimer Co. Emergency Services	Matt Palumbo, Dep. Director	x			x	x			x			x	x			x		x			
Herkimer Co. Emergency Services	Robert Vandawalker, Director	x	x		x	x			x	x		x	x		x	x		x	x		
Herkimer Co. Highway Department	Stephanie Tyoe, Engineer	x	x		x	x	x		x	x	x	x	x		x	x	x	x	x		
Herkimer Co. Office on Aging	Kathy Fox, Director	x	x		x				x			x	x			x		x			
Herkimer Co.	Jim Wallace, Administrator	x	x		x				x			x				x		x			
Herkimer Co. Legislature	Bernard Peplinski, Chair	x	x		x				x	x		x	x			x	x	x	x		
Herkimer Co. Public Health	Christina Cain, Director	x			x				x			x	x			x		x			
Herkimer Co. Public Health	Diane Ward, EP Coordinator	x			x	x			x	x		x	x			x	x	x	x		
Herkimer Co. Sheriff's Office	Chris Farber, Sheriff	x	x		x				x			x	x			x		x			
Herkimer Co. Sheriff's Office	Scott Scherer, Undersheriff	x	x		x	x			x	x	x	x	x			x	x	x	x		
Herkimer Co. Soil & Water Conservation District	Gerry Smithson, Manager	x	x	x	x				x			x	x			x		x			
Herkimer-Oneida Comp. Community Planning Prog.	Jessica Breiten, Chief Planner	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x		
Ilion - Village	F. Hartmann, Trustee	x			x	x			x			x	x			x		x			
Ilion - Village	Jim Trevett, Fire Chief	x			x				x			x	x			x	x	x			
Ilion - Village	Terry Leonard, Mayor	x	x		x	x	x	x	x	x	x	x	x		x	x		x			
Ilion - Village	Tim Paris, Police Chief	x	x		x				x			x	x			x		x			
Lewis County	Robert MacKenzie, EM Dir.	x	x		x				x			x	x			x		x			
Litchfield - Town	Clifford Coffin, Highway Superintendent	x			x				x			x	x			x		x			
Litchfield - Town	John Coy, Dep. Highway Superintendent	x			x				x			x	x			x		x			
Little Falls - City	Michael Masi, Police Chief	x	x		x				x			x	x			x		x			
Little Falls - City and Town	Robert Parese, Fire Chief/HMWG Chair	x	x	x	x	x	x		x	x	x	x	x		x	x	x	x	x		
Manheim - Town	Carl Stallman, Highway Superintendent	x	x		x				x			x	x			x		x			
Manheim - Town	John Haughton, Supervisor	x			x		x	x	x		x	x	x			x		x			
Mohawk - Village	George Cryer, Trustee/Deputy Mayor	x			x				x			x	x			x	x	x	x		
Mohawk - Village	Michael Shedd, DPW Superintendent	x			x		x	x	x		x	x	x		x	x		x	x		
American Red Cross Mohawk Valley Chapter	Adam Hohl, Disaster Program Manager	x	x		x				x			x	x			x	x	x	x		
Mohawk Valley Chapter, American Red Cross	Diann Fischer, Vol. Director	x			x				x			x	x			x	x	x			
Newport - Town	Jason Coffin, Superintendent	x			x				x			x	x			x		x			
Norway - Town	Howard Caton, Highway Superintendent	x	x		x				x			x	x			x		x			
NYS DOT	Brian Olds, Asst. Engineer	x	x		x	x			x	x	x	x	x			x		x			
NYS DOT	Dave Kozyra, DREM	x			x				x			x	x			x		x	x		
NYS DOT	Matt Howard, REM, Safety Evaluation Engineer	x			x				x			x	x			x		x			

Agency/Organization	Participation Record	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
NYS DHSES	Corrina Cavallo, Planning Supervisor	x	x		x	x			x			x	x			x		x	x		
NYS DHSES	Gerald Pederson, Regional Coordinator	x	x		x	x			x		x	x	x			x		x			
NYS DHSES	Jennifer Romano, Regional Coordinator	x	x		x				x			x	x			x		x			
NYS Police	Sgt. Tom Rogers, Troop D	x	x		x				x			x	x			x		x			
Ohio - Town	Scott Bagatis, Supervisor	x			x				x			x	x			x		x			
Oneida-Herkimer Solid Waste Authority	William A. Rabbia, Exec. Director	x	x		x				x			x	x			x		x			
Russia - Town	Ray Jenkins, Superintendent	x			x				x			x	x			x		x			
Salisbury - Town	Robert Grose, Councilman	x			x				x			x	x			x		x			
Webb - Town	Dave Berkstresser, Town Board	x	x		x				x			x	x			x		x			
Webb - Town	Ron Johnston, Police Chief	x	x		x				x			x	x			x		x			
West Winfield - Village	Carl Wheat, Fire/Police	x			x				x			x	x			x		x			
Winfield - Town	Bill Kwasniewski, Councilman	x			x				x			x	x			x		x			

Table A2-b: All Jurisdictions

Adopting (A) or Participating (P) Jurisdiction	Record of Participation - Herkimer Co. Jurisdictions	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
	Cold Brook -Village	x			x				x				x									
	Columbia -Town	x			x				x				x									
	Danube - Town	x			x				x				x		x							
A	Dolgeville -Village	x			x		x	x	x		x	x	x		x	x	x	x	x			
A	Fairfield -Town	x		x	x	x	x	x	x		x		x					x				x
A	Frankfort -Town	x		x	x		x	x	x		x		x	x		x	x	x				
A	Frankfort -Village	x		x	x		x	x	x		x		x	x	x	x		x				
A	German Flatts -Town	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x			x
A	Herkimer Co.	x	x	x	x	x	x		x	x	x	x	x	x	x	x	x	x	x			
A	Herkimer -Town	x	x		x		x	x	x	x	x		x	x	x	x	x	x	x			
A	Herkimer -Village	x	x		x		x	x	x		x		x	x	x	x		x	x			x
A	Ilion - Village	x	x	x	x	x	x	x	x			x	x	x	x	x		x	x			x
	Litchfield -Town	x			x				x	x			x	x		x		x				
A	Little Falls -City	x	x	x	x		x	x	x	x		x	x	x	x	x	x	x	x			
A	Little Falls -Town	x	x	x	x		x	x	x	x		x	x	x	x	x	x	x	x			
A	Manheim -Town	x	x		x		x	x	x				x	x		x		x				
	Middleville -Village	x			x				x				x									
A	Mohawk -Village	x	x	x	x		x	x	x		x		x	x	x	x	x	x	x			x
	Newport -Town	x	x		x				x				x	x		x		x				
	Newport -Village	x			x				x				x			x		x				
	Norway -Town	x	x		x				x				x	x		x		x				
	Ohio -Town	x			x				x				x	x		x		x				
	Poland -Village	x			x				x				x			x						
	Russia -Town	x			x				x				x	x		x		x				
	Salisbury -Town	x			x				x				x	x		x		x				
	Schuyler -Town	x			x				x				x									
	Stark, -Town	x			x				x				x									
	Warren -Town	x			x				x				x									
	Webb -Town	x	x		x				x				x	x		x		x				
	West Winfield - Village	x			x				x				x			x		x				
	Winfield -Town	x			x				x				x	x		x		x				

Adopting (A) or Participating (P) Jurisdiction	Record of Participation - Herkimer Co. Jurisdictions	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
	HOCCPP -Designee for German Flatts, Ilion, & Mohawk	x	x	x	x	x			x	x		x	x	x	x	x	x	x	x			

Table A2-c: Roles and Responsibilities (Participation Forms Submitted)

Entity	Point of Contact	ROLE			HAZARD MITIGATION RESPONSIBILITIES															PLANNING PROCESS ROLES											
		HMWG	**Stakeholders**	**Neighboring Jurisdiction**	Land Use/Planning	Data Collection	Critical Infrastructure	Health/Human Services	Economic Development	Housing	Natural/Cultural Resources	Transportation	Environmental Management	Finance/Budget/Admin	Government	Education	Engineering/Public Works	Public Safety (Fire, LE, EM)	Other	Capability Assessment	Hazard/Risk Assessment	Technical Data/Hazard Info.	Review drafts/provide input	Planning Resource/SME	Mgmt. Support for Planning	Develop Mitigation Strategy	Mitigation Project Sponsor	Jurisd. Planning. Committee	Outreach Activities	Implementation/Monitor.	Other
NYS DHSES	Gerald Pedersen, Reg. Coordinator		x				x											x		x	x		x								
Herkimer Co. Community College	Nick Laino, Sr. V.P. for Administration		x							x		x		x											x						
New York State Police	Sgt. Tom Rogers	x																x		x	x										
Herkimer Co. Office for the Aging	Kathy Fox, Director	x						x				x				x				x	x		x	x					x		
Mohawk Valley Chapter, American Red Cross	Adam Hohl, Disaster Program Manager		x					x								x							x	x						x	
Herkimer Co. Highway	Stephanie Tyoe, Sr. Civil Engineer		x				x					x					x			x	x	x	x								
Village of Ilion	Terry Leonard, Mayor	x			x	x	x	x						x	x	x	x	x		x	x	x	x	x	x	x	x	x	x	x	
Oneida-Herkimer Solid Waste Authority	William R. Rabbia, Exec. Dir.		x				x					x					x						x								
Town of Fairfield	Henry Crofoot, Supervisor	x			x	x	x	x		x	x			x	x		x			x	x	x	x	x	x	x				x	
Town of German Flatts	Frank Spatto, Supervisor	x			x		x		x		x	x	x	x	x		x	x		x	x	x	x			x	x	x		x	
HOCCPP	Jessica Breiten, Chief Planner		x		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x			x	x	x	x	x			x		
Town of Webb	David Berkstresser, Councilman	x			x		x	x			x		x					x		x			x								
Town of Litchfield	Clifford Coffin, Highway Supt.	x						x				x		x	x		x			x	x	x	x			x	x				
Town of Mohawk	Mike Shedd, DPW Superintendent	x					x					x			x		x			x	x		x			x	x	x		x	
City of Little Falls	Robert Parese, Fire Chief, ***HMWG Chair***	x			x	x	x				x	x		x	x		x	x		x	x	x	x	x	x	x	x	x	x	x	
Town of Little Falls	Robert Parese, Fire Chief, ***HMWG Chair***	x			x	x	x				x	x		x	x		x	x		x	x	x	x	x	x	x	x	x	x	x	
Village of Frankfort	Karlee Tamburro, Clerk	x			x	x	x								x		x	x				x	x			x	x				

Table A2-d: Participants in Previous HMP Planning Initiatives

Name	Organization	All-Hazard Mitigation Planning Team (2008-2010)	CEPC: 2014-2015 Draft Hazard Mitigation Plan	Hazard Mitigation Working Group (2016-2017)
Robert Parese	City of Little Falls/Town of Little Falls	x		x
Jim Wallace	Herkimer Co. Administration		x	x
Robert Vandawalker	Herkimer Co. Emergency Services	x	x	x
Stephanie Tyoe	Herkimer Co. Highway Department		x	x
Bernard Peplinski	Herkimer Co. Legislature		x	x
Kathy Fox	Herkimer Co. Office for the Aging		x	x
Diann Ward	Herkimer Co. Public Health		x	x
Christopher Farber	Herkimer Co. Sheriff's Office		x	x
Scott Scherer	Herkimer Co. Sheriff's Office		x	x
Jim Trevett	Ilion Fire Department		x	x
Sgt. Tom Rogers	New York State Police		x	x
Henry Crofoot	Town of Fairfield		x	x
John Spanfelner	Village of Herkimer Fire Department	x		x
* CEPC: *Comprehensive Emergency Planning Committee*				

HMWG Meeting Documentation

The following documentation demonstrates the scope of six HMWG meetings conducted between August 2016 and February 2017 for the planning process. Documentation includes:

- Contact List
- Email Distribution List
- Meeting Packets (invitations, agendas, minutes, presentations, hand-outs, sign-in sheets, and other materials)
    - August 10, 2016
    - September 21, 2016
    - October 19, 2016
    - November 16, 2016
    - December 7, 2016
    - February 8, 2017

In addition to attending scheduled HMWG meetings, jurisdiction and agency representatives coordinated meetings and information sessions with fellow legislators and staff and stakeholders to assist with data gathering and analysis.

APPENDIX 2-A: Meeting Documentation

APPENDIX 2-A: Meeting Documentation

Herkimer County Multi-Jurisdictional Hazard Mitigation Plan

Kick-Off Meeting

AGENDA

August 10, 2016

9:30 - 11:30 a.m.

Herkimer County Community College

- Welcome and Introductions
- Mitigation Planning
  - Purpose and Overview
- Today's Goals
- Mitigation Planning Process
- Planning Organization
  - Working Group
  - Stakeholders
  - Public
- Planning Phases
- Project Timeline
  - Meeting Schedule
- Opportunities for Review and Input
- Outreach Strategy
- Work Ahead
  - Capabilities Assessment
  - Hazard Worksheet
- Today's Outcomes
  - Next Meeting
- Adjournment

NEW YORK STATE | Homeland Security and Emergency Services

ANDREW M. CUOMO
Governor

JOHN P. MELVILLE
Commissioner

July 22, 2016

Name
Jurisdiction
Address 1
Address 2

Dear _____:

A new planning process to develop the Herkimer County Multi-Jurisdictional Hazard Mitigation Plan is being initiated with the county, its jurisdictions and key partners. As a jurisdiction with significant interests in planning and activities related to hazard risk reduction and resiliency, you are being invited to participate in this endeavor.

In the coming months, participants from all 30 jurisdictions in Herkimer County, as well as key stakeholder agencies and organizations, will come together to review the impacts from past hazard events, assess vulnerabilities, examine current capabilities related to mitigation and risk reduction, and develop goals, objectives and actions that align risk reduction strategies with other community objectives.

Your involvement in the planning process, as an Adopting or Participating Jurisdiction, will help develop the plan, identify opportunities for and barriers to implementation, and ensure that relevant information from your jurisdiction is incorporated. The successful outcome of the process rests on the cooperative partnerships that will be developed between the county's municipalities, as well as its stakeholders, and the public. The attached sheet describes the roles and responsibilities of Adopting and Participating Jurisdictions.

Funding support for the project is being provided through the New York State Division of Homeland Security and Emergency Services. The planning process will be facilitated by a team led by Ms. Nancy Freeman, who participated in the 2014 update of the New York State Hazard Mitigation Plan.

You are invited to attend the project Kick-Off meeting to discuss the process and provide key input specific to your jurisdiction.

Date: Wednesday, August 10, 2016
Time: 9:30am – 11:30am
Location: Herkimer County Community College
Robert McLaughlin College Center (RMCC) Room 288
100 Reservoir Road
Herkimer, NY 13350

1220 Washington Ave, Bldg. 7a – 4th Floor, Albany, NY 12242 | (518) 292-2304 | dhses.ny.gov

HERKIMER COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN

February 8, 2017

Plan Review Meeting – Herkimer County Emergency Services

Name	Position/Title	Agency	Jurisdiction	Address	Primary Phone	Email	CEPC	S	Signature
R. Vandenwater	Director	Herk Co EMO		71 Reservoir Rd, Herkimer					R. Vandenwater
R. Schoonmaker	ADVISOR	CFAG		153 W. North St Ilion					
B. Peplinski	G Chair	Herk. Co		293 State Route 51 Ilion		bpep@yahoo.com			
J. BREITEN	CHIEF PLNR	HOCCPP		321 MAIN ST UTICA	798-5710	ON-FILE			
R. PARESE	FIRE CHIEF	City of Little Falls T/O LF		659 E. MAIN ST	315-534-2218				
M Shedd	Supervisor	Mohawk		28 Columbia St Mohawk	717-8497	mohawkmayor@hotmail			
DWard	RN	HCPH		301 N. Washington St	315-867-1610	dward@herkimercountyny.gov			
T. Franco	DPW Supt	V of Herk		130 Green Street		TFRANCO@VOHERK.COM			
A Viscomi	Clerk Treas	V of Herk		120 Lorca St	315-866-3303	mvc@village.herkimerny.us			
Jenny Ryan	Deputy Mayor	Mohawk		28 Columbia St Mohawk	866-4332	Mohawk@hotmail			
Stephanie Tyde	Sr Civil Eng	HCHwy		323 THIRD AVE HRK	867-1330	styde@herkimerc			
Scott Sherer	Undersheriff	ACSO		320 N. MAIN ST Herk	867-1167	SSherer@herkimercounty.org			
Don Fay	Supervisor	T of Herk		1149 N. Prospect	866-2690	Supervisor@Tof			
Bruce Lyon	MAYOR	V. of Dolgeville	Dolgeville	41 N. Main St.	429-3112	village@VillageofDolgeville.org			Bruce Lyon
DAVID KOZYRA	EMERG. MANAGER	NYSDOT		207 GENESEE ST. UTICA	263-5267	DAVE.KOZYRA@DOT.ny.gov			
Paul Hoole	Mit Planner	FEMA				paul.hoole@fema.dhs.gov			
Frank Spatto	Supervisor	T of German Flatts		66 E Main St Mohawk	315 866 4960	gfst supervisor@dreamscape.com			

2/27/2017

Herkimer County
Multi-Jurisdictional
Hazard Mitigation Plan

Plan Review – INITIAL DRAFT

Herkimer County
Multi-Jurisdictional
Hazard Mitigation Plan

Objectives

- Review plan format and overview of contents
- Discuss plan review process and schedule
- Approve Initial Draft to release for public comment
- Discuss methods of dissemination

Plan Overview – Scope

- Planning Requirements
  - Disaster Mitigation Act of 2000 and 44 CFR, Part 201.6
  - New York State Mitigation Hazard Planning Standards
- "New" plan
- Applies to Herkimer County and 10 municipalities – "Planning Area"
- "Participating Jurisdictions" – 20
- "Adopting Jurisdictions" – 10

Plan Organization

Base Plan
- Executive Summary and 6 Sections
- Appendices

31 Jurisdiction Annexes
- Jurisdiction-specific information
- Attachments

Base Plan

- Executive Summary
- Section 1: Introduction
- Section 2: Planning Process
- Section 3: Hazard Identification and Risk Assessment/Vulnerability Analysis
- Section 4: Mitigation Strategy
- Section 5: Plan Maintenance
- Section 6: Plan Adoption

Section 1: Introduction

- Purpose, Background and Scope
- Plan Organization
- Herkimer County Profile
  - History, Geography/climate, Topography, Transportation, Economy, Education, Government, Demographics, Special Features, Environment, Cultural & Historical Assets, Population Trends and Projections, Special Populations at Risk, Future Growth and Development

Section 2: Planning Process

- Background – previous planning efforts
- 6-Step Planning Process
- Planning Organization – CCPC/HMWG
- Adopting and Participating Jurisdictions
- Roles and Responsibilities
- Meetings
- Public Involvement
- Other Community Planning Efforts

Herkimer County Planning Process and Timeline

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Section 3: HIRA

- 3.0: Overview and Methodology
  - Process, hazards considered, hazards omitted
  - Impacts and Consequences Summary
  - Hazards Profiled
  - Assets at Risk
  - Critical Facilities/Infrastructure Summary
  - Risk Assessment Summary
  - Vulnerability Analysis Summary
  - Future Growth and Development
  - Impacts of Climate Change

Hazard Subsections

- 3.1 Avalanche
- 3.2 Drought
- 3.3 Earthquake
- 3.4 Extreme Temperature
- 3.5 Flood
- 3.6 Landslide
- 3.7 Severe Weather
- 3.8 Soil Hazards
- 3.9 Wildfire
- 3.10 Epidemic
- 3.11 Transportation Accidents

Hazard Subsections

Hazard Profile	Vulnerability Assessment
• Hazard Description • Type • Location • Extent • Previous Occurrences • Probability of Future Events • Impacts and Consequences • Analysis of Risk	• Vulnerability Summary • Population • Buildings and Critical Infrastructure< • Natural Environment • Economy • Future Trends, Future Growth and Development • Impacts of Climate Change • Topics for Consideration in the Next Planning Cycle

Section 4: Mitigation Strategy

- Mitigation Goals and Objectives (Appendix 4-A)
- Mitigation Capabilities (Appendix 4-B)
- Mitigation Actions (Appendix 4-C)
  - Action Plan the Implementation
  - Implementation Tools (Appendix 4-D)
  - Jurisdiction Action Plans
  - Potential Funding and Resources

Mitigation Goals

- Goal 1: Protect Life and Property
  - (Priority: Warning and Emergency Notify)
- Goal 2: Increase Public Awareness
  - (Capacity: Education and Awareness Programs)
- Goal 3: Encourage Partnerships
  - (Ecologic: Local Plan and Regulations)
- Goal 4: Promote sustainable mitigation actions that preserve or restore the functions of natural systems
  - (Ecologic: Natural Systems Protection)

Mitigation Capabilities Summary

- Summary and Analysis
  - Planning and Regulatory
  - Administrative and Technical
  - Safe Growth
  - Financial
  - Education and Outreach
- NFIP Assessment and Continued Compliance
- Evacuation, Sheltering and Temporary Housing

Mitigation Actions

- Summary Table – all jurisdictions
  - 73 Action Worksheets
- Action Plan for Implementation
  - Roles and Responsibilities
    - County Mitigation Coordinator (Herkimer CEMP)
    - HMWG
    - Identification Representatives
  - Implementation Components
    - Identification (Hazard, Vulnerability, Resources, Timeline)
    - Prioritization (Ranking System)
    - Integration into Existing Plans and Procedures
      - Jurisdiction Plans
      - Other planning efforts and responsibilities
  - Implementation Tools
  - Funding and Resources
  - Progress on Mitigation Actions

Section 5: Plan Maintenance

- Subsections:
  - Monitoring the Plan
  - Evaluating the Plan
  - Updating the Plan
- Roles and Responsibilities
- Procedures and Schedules
- Continued Public Involvement

Monitoring the Plan

- Annually and/or following major disaster(s)
- Mitigation Action Progress Report Form (Appendix 5-A)
- Status of current actions
- Assess progress in implementing and funding actions
- Identify new opportunities for mitigation actions
- Identify new funding, resources, agency priorities, planning mechanisms

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Evaluating the Plan

- Annually and/or following major disaster(s)
- Assess effectiveness of the plan in achieving purpose and goals
  - Annual Plan Review
  - Participation of Stakeholders
  - Review Policies and Regulations
  - Review Programs
  - Review Hazards, Risks and Vulnerabilities
  - Review Annual Monitoring Report
- Produce Summary Report – *Mitigation Strategy Annual Update*

Updating the Plan: 5-Year Cycle

- Years 1 – 4:
  - Monitor and Assume Administrative changes
  - Revise plan to address progress
  - Public input
- Year 5:
  - Update Risk Assessment (1st qtr)
  - Review and Update Goals and Objectives (2nd qtr)
  - Review and Update Mitigation Actions (3rd qtr)
  - Public input (4th qtr)
  - Revise Plan (1st qtr)
  - NYS DHSES Review and FEMA Approval (2nd qtr)
  - Accept Revised Plan (4th qtr)

Section 6: Plan Adoption

- Purpose of Adopting the Plan
- Difference between "Adopting" and "Participating" Jurisdictions
- Sample Resolution to Adopt the Plan (Appendix 6-A)
  - Instructions to Incorporate fully executed Resolution into the Final Plan

Jurisdiction Annexes

- Jurisdiction Profile
- Hazard Profile and Risk Assessment
- Capabilities Assessment and NFIP Status
- Mitigation Actions & Ranking Sheet
- Action Plan for Implementation
- Jurisdiction-specific information

Plan Review Schedule

- HMWG Review and Input – DATES
- 30-Day Public Review and Comment Period – DATES
- NYS DHSES Review DATES
- FEMA Review and "Approval Pending Adoption" – DATES

ACTION REQUESTED

- APPROVE RELEASE OF INITIAL DRAFT FOR PUBLIC REVIEW AND COMMENT

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Next Steps - When Initial Draft is Released for Review

- Provide Input
- Return COMMENT FORMS
- Disseminate Initial Draft Plan for Public Review and Comment
  - Post INITIAL DRAFT on Website
  - Provide COPIES in Municipal Buildings, Libraries, etc.
  - Provide Comment FORM
- Disseminate to Neighboring Jurisdictions
- RETURN ALL COMMENTS BY [DATE TBD]

Questions?

Nancy.Freeman@iem.com
or
352-572-9325

Next Meeting

- Review input and comments
- Consider any changes to the plan
- Date: March 15 or 22, 2017?
- Approve "Preliminary" Final Plan

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If you are personally unable to attend, please consider sending a designated representative who is authorized on your behalf to represent your jurisdiction during the Herkimer County planning project.

Please respond by email to nancy.freeman@iem.com with your intent to participate in this important event.

We look forward to seeing you!

Sincerely,

Corrina Cavallo
Supervisor, Mitigation Planning
Division of Homeland Security &
Emergency Services

Nancy Freeman
Senior Hazard Mitigation Planner
IEM

1220 Washington Ave, Bldg. 7a – 4th Floor, Albany, NY 12242 | (518) 292-2304 | dhses.ny.gov

Herkimer County Multi-Jurisdictional Hazard Mitigation Plan (HMP)

MINUTES AUGUST 10, 2016 9:30 – 11:30 AM HCCC , HERKIMER, NY

MEETING CALLED BY	NYS DHSES and Contractor (IEM)
TYPE OF MEETING	Plan Kick-Off Meeting
FACILITATOR	Nancy Freeman, IEM
NOTE TAKER	Nancy Freeman, IEM
ATTENDEES	38 attendees – (List Attached)

Agenda topics

PROJECT INTRODUCTION — CORRINA CAVALLO, NYS DHSES & NANCY FREEMAN, IEM

DISCUSSION: Ms. Cavallo described the background of previous mitigation planning efforts in Herkimer County and the funding recently awarded by FEMA through NYS DHSES to conduct the current hazard mitigation planning process.

Ms. Freeman provided statistical information related to past disasters and their costs to a community in relation to lives and dollars. The top three costliest hazards in Herkimer County (1960-2012) were (1) winter storms, (2) flood, and (3) high winds.

Meeting attendees participated in a short activity to identify the best assets and biggest challenges in their communities, and to describe their visions of what their communities should be in 10 years.

CONCLUSIONS: Results of the visioning activity were discussed and documented. Results will provide a starting point for discussion at the strategy session in November 2016.

ACTION ITEMS	PERSON RESPONSIBLE	DEADLINE
No action required at this time.		

MITIGATION PLANNING PROCESS — NANCY FREEMAN

DISCUSSION: Ms. Freeman presented a short explanation of the planning process, key sectors involved in the process, and the steps that will be followed in developing the Herkimer County HMP. She explained that the process will follow FEMA guidelines for local hazard mitigation planning. A one-page description of the planning process, the "Local Hazard mitigation Plan – Process Chart", was distributed for review by attendees.

CONCLUSIONS: No questions.

ACTION ITEMS	PERSON RESPONSIBLE	DEADLINE
No action required at this time.		

PLANNING ORGANIZATION - WORKING GROUP - — NANCY FREEMAN

DISCUSSION: Ms. Freeman described the make-up of the Working Group, which will include at least one representative from each jurisdiction, as well as representation from key stakeholder agencies and organizations. Specific disciplines were highlighted as participants in order to ensure broad representation and technical expertise.

The possibility of forming the Working Group as a sub-committee of the Comprehensive/County Emergency Planning Committee (CEPC) was discussed, with no opposition expressed.

Jurisdictional packets distributed to those present at today's meeting include a Sample Memorandum of Agreement that can be used as a template for jurisdictions or other agencies and organizations to adopt to demonstrate their commitment to and participation in

this mitigation planning process.

CONCLUSIONS	Roben Vandawalker, Herkimer County Emergency Services Director, offered to contact the CEPC Chairman, who was unable to attend today's meeting, to obtain consent for the Working Group to form as a CEPC sub-committee. This would allow the Working Group to conduct business independently, but maintain coordination with the CEPC.

In addition, he will solicit suggestions from the CEPC chair for a chairperson for the Mitigation Working Group.

ACTION ITEMS	PERSON RESPONSIBLE	DEADLINE
R. Vandawalker to contact CEPC Chairman for consent to form Working Group as a CEPA sub-committee, and solicit suggestions for a chair.	R. Vandawalker	9/9/16

PLANNING PHASES AND SCHEDULE — **NANCY FREEMAN**

DISCUSSION	Ms. Freeman described the proposed Work Program and timeline, which was available as a handout at the meeting. It describes each of the six project phases, and provides details related to activities to be conducted during each phase, including who will be the lead and support for each activity. In addition, the timeline shows milestones that will demonstrate progress toward completion of the plan by the target date.

Ms. Cavallo explained that the timeline for completion of the HMP is guided by deadlines for three communities that received waivers from FEMA to complete projects. They must have an approved and adopted plan by April 25, 2017.

CONCLUSIONS	No questions related to the Work Program and timeline.

ACTION ITEMS	PERSON RESPONSIBLE	DEADLINE
Finalize Work Program and Timeline and disseminate to meeting attendees through email.	N. Freeman	8/31/16

WORK AHEAD - CAPABILITY AND HAZARDS WORKSHEETS — **NANCY FREEMAN**

DISCUSSION	Ms. Freeman described two worksheets that were disseminated to jurisdictional representatives at the meeting, (1) Capability Assessment, and the (2) Hazards Worksheet.

The Capability Assessment provides several tables that are to be completed by Jurisdiction Planning Committees (JPC) to document the level of capability of each jurisdiction in relation to administrative and technical, safe growth, financial, and education and outreach. A follow-up NFIP worksheet will be distributed prior to the Capability Workshop in September.

CONCLUSIONS	Ms. Freeman and Ms. Cavallo will follow –up with jurisdictions that were unable to attend today's meeting to ensure that they receive these worksheets in preparation for the next meeting, and provide any guidance that may be needed to complete the worksheets.

ACTION ITEMS	PERSON RESPONSIBLE	DEADLINE
Ms. Freeman will follow-up with jurisdictions that were unable to attend the meeting to ensure they receive the worksheets and are instructed on how to complete them.	N. Freeman	9/14/16
An NFIP Worksheet will be distributed prior to the September meeting	N. Freeman	9/14/16

OUTREACH STRATEGY — **NANCY FREEMAN**

DISCUSSION	Ms. Freeman highlighted points in the planning process where there will be opportunities for review and input of the plan drafts in development. In addition, Ms. Freeman will prepare and disseminate a short description of the mitigation planning process to inform communities, agencies and organizations about the purpose and goal.

CONCLUSIONS	There will be targeted outreach to all stakeholders and the public to inform them of these opportunities and solicit input. A Draft Outreach Strategy will be disseminated to through the email contact group list for review and input.

ACTION ITEMS	PERSON RESPONSIBLE	DEADLINE
Disseminate an announcement of the Herkimer County Multi-Jurisdictional Mitigation Plan development, including the purpose, benefits, expected participation, and timeframe.	N. Freeman	9/9/16
Distribute the Draft Outreach Strategy for review and input.	N. Freeman	9/9/16

NEXT STEPS	Follow-up materials will be distributed through an email contact list based on today's meeting sign-in list.
SPECIAL NOTES	The next two Working Group meetings were tentatively scheduled for 9/21/6 and 10/19/16. Ms. Freeman will monitor Action Items in the interim.
NEXT MEETING	**September 21, 2016 – TIME AND LOCATION TO BE DETERMINED**

HERKIMER COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN

August 10, 2016

Kick-Off Meeting – Herkimer County Community College

Name	Position/Title	Agency	Jurisdiction	Address	Primary Phone	Email	CEPC	S	Signature
JESS BRETTEN	CHIEF PLNR	HCCCPP	HO Co	321 MAIN ST UTICA	798-5710	jbretten@ocgov.net			
Gerald Pedersen	NYS OEM/RC	NYS OEM	Region IV	10 Addison Dr E Syracuse	315-663-4181	gerald.pedersen@dhses.ny.gov			
Carl Stillman	Hwy Supt	Town of Manheim	Herk. Co.	PO Box 73 Dolgeville	315/429-9631				
Tom Rogers	SGT-BAND	NYSP	Troop D	PO Box 30 ONEIDA	315-366-6651	THOMAS.ROGERS@TROOPERS.NY.GOV			
Matt Palumbo	Dep. Director	Herk. Co.	Herk Co.	71 Reservoir Rd Herkimer	315-867-1754	MPalumbo@HerkimerCounty.org			
Adam Hohl	Disaster Prog. Mgr	Red Cross	Mohawk Valley	1415 Genesee St, Utica	315-219-0457	adam.hohl@redcross.org			
RA Mackenzie 3	Director of Emergency Management	Lewis County	Lewis	5252 Outer Stone St Lowville	315-376-5305	robert.mackenzie@lewiscounty.ny.gov			
B Peplinski	Co Chair	Herk Co	Laidlaw	7935 Rt 51 Ilion NY	3158226874	bpep@ymail.com			
Bob Vandewalker	Herkimer EMD	Herk. Co	Herk Co	71 Reservoir Rd, Herkimer 13350	315-867-1272	rvan@herkimercounty.org			
Howard Cutler	Supt of Highways	T/N Norway	Herk Co	3013 Newport Rd Middleville Rd	315-845-8272	Norwayhighway@nrtc.net			
DAVE BERKSTRESSER	TOWER & ROADS	TOWN OF WEBB	HERK	BOX 852 OLD FORGE 13420	3153698578	BERK4.59@HOTMAIL.COM			
J Walls	Herk C.	Herk Co		109 Mary St	867-1122	jwalls@herkimercounty.org			
Frank Spotto	German Flatts Supervisor	Germanflatts	Herk	66 E Main St Mohawk	866-4960	gsted@dreamscape.com			
Tim Paris	Chief	IPD	Ilion	55 First St Ilion	894-9941	iliondpd@iliontp.com			
Bill Rabbia	Executive Director	OHSWA	O-H	1600 Genesee St. Utica	733-1224	billr@ohswa.org			

HERKIMER COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN

August 10, 2016

Kick-Off Meeting – Herkimer County Community College

Name	Position/Title	Agency	Jurisdiction	Address	Primary Phone	Email	CEPC	S	Signature
Jim Tracy II	Fire Chief	Ilion	Herk Co	1 Central Ave	894-6048	ilionfd@ilionny.com			
Tiffany Leonard	Mayor	Ilion	V/ Ilion	49 Morgan St	895 7449	mayorleonard@ilion			
Jennifer Romano	OEM	NYS DHSES	NYS	10 Adler Dr. E. Syr	518-883-3048	jennifer.romano@dhses.ny.gov			
Brian Olds	Asst. Engr.	NYS DOT	Herk Co	1315th Ave Herk.	315 866 1123	Brian.olds@dot.ny.gov			
Chris Fasher	HC Sheriff	Sheriff	Herk Co.	320 N main st	315 867 1167	cfasher@herkimercounty.org			
Gerry Smithson	Manager	Soil & Water	Herk. Co.	5653 St. Rte 5 Herkimer	866-3520	gerry.smithson@ny.nacdnet.net			
Ron Johnston	Webb Pd Chief	Webb PD	Webb	PO 1121 Old Forge	369-3157	webbpd@frontier.com			
Scott Blais	Water Supt	Herk Village	Herk	120 Green St	315 868-1717	sblais.voh@gmail.com			
Robert Parese	Fire Chief	City of Little Falls	Herk Co	659. E. Main St	315-574-5221	rparese@cityofliffalls.net			
Cathleen McCobin	President	Herkimer CCC	Herk Co	100 Reservoir Rd	866-0300	mccolgicc@herkimer.edu			
Jeff Crim	Captain	Herkimer PD	V/ Herk	120 Green St Herk	866-4330	jac@villageherkimer.ny.us			
Nick Laino	Sr Vice President for Admin & Finance	HCCC	Herk Co.	100 Reservoir Rd	866-0300	lainont@herkimer.edu			

HERKIMER COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN

August 10, 2016

Kick-Off Meeting – Herkimer County Community College

Name	Position/Title	Agency	Jurisdiction	Address	Primary Phone	Email	CEPC	S	Signature
Scott Scherer	Undersheriff	HCSO	Herkimer	320 N. Main St Herk	315-867-1167	sscherer@herkimercountyny.org			
Anthony Brindisi	Mayor	U/Herkimer	Herkimer	120 Green ST Herk	315 866 3306	herkimer dare@yahoo	County		
Stephanie Tuoe	Engineer	HC Highway	Herkimer	313 Third Ave Herk	315-867-1320	stuoze@herkimercountyny.org			
Michael Mosi	Chief of Police	L.F.P.D	City of Ill. Falls	659 E Main St L.F	315-823-1123	lfpdchief@cityofilifalls.net			
Kathy Fox	Director	OFA	Herkimer County	109 Mary St. Herkimer	867-1021	kathyfox@herkimercounty.org			
Jeremy Silverman	Consultant	GEMS LLC representing Town of Herkimer	Herkimer	208 Genesee St. Utica 13502	518 842-6500	jeremy@gemsgrants.com			
Paul Hoole	Planner	FEMA	Reg 2	11A Clinton Sq. Albany NY	518-396-3849	paul.hoole@fema.dhs.gov			
+ Corrina Cavollo		DHSES							
+ Nancy Freeman		IEM							

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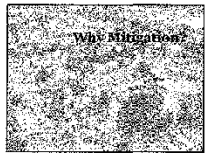

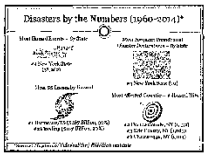

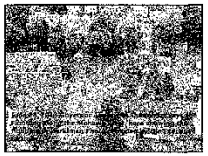

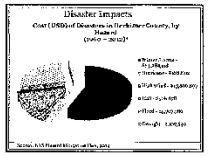

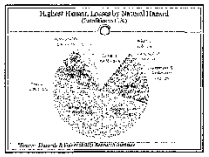

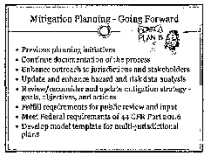

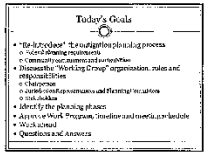

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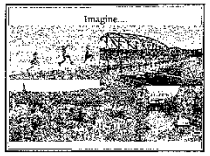

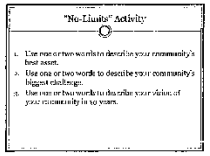

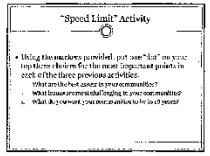

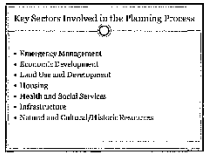

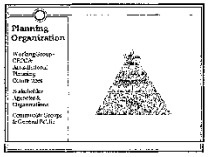

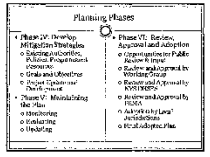

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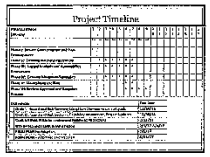

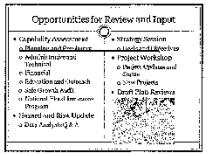

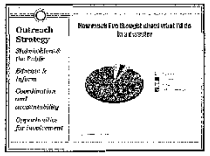

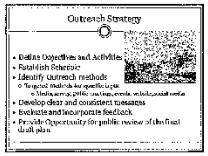

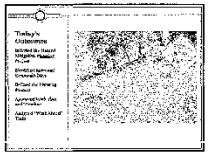

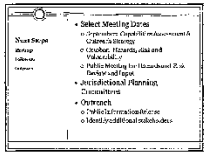

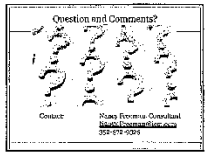

LOCAL HAZARD MITIGATION PLAN (LHMP) - PROCESS CHART

PROCESS AND ORGANIZATION	**1. Determine Planning Area and Resources**	
	• Multi-jurisdictional Plan • Lead Contact for Planning Process	Document Planning Process - Meetings, Minutes, Sign-ins
	2. Planning Team	
	• Identify Planning Team Members ○ Multi-jurisdictional • Engage Local Leadership • Promote Participation and Buy-in • Initial Steps for Planning Team	Document Planning Process - Planning Team Roles, Engagement, and Input
	3. Outreach Strategy	
	• Strategy Framework • Developing Strategy • Continuing Public Outreach over Time	Document Planning Process - Stakeholder and Public Involvement
ANALYSIS AND DECISION MAKING	**4. Review Community Capabilities**	
	• Capability Assessment • Types of Capabilities • NFIP	Document - Community Capabilities
	5. Conduct Risk Assessment	
	• Define Risk Assessment • Conduct Risk Assessment • Document Risk Assessment	Document - Hazards and Risk Assessment
	6. Develop Mitigation Strategy	
	• Identify Goals and Objectives • Identify/Update Actions • Develop Action Plan for Implementation • Update Mitigation Strategy • Communicate Mitigation Action Plan	Document - Update and Development Process for Mitigation Strategy, Goals, Objectives, and Actions, including Alternatives
	7. Keep Plan Current [Maintenance]	
	• Plan Maintenance Procedures • Continue Public Involvement	Document - Plan Maintenance Procedures and Schedule
	8. Review and Adopt the Plan	
	• Local Plan Review • State and EMA Plan Review • Local Adoption of the Plan • Additional Considerations • Celebrate Success	Document - Adoption Process - Jurisdiction, Date, and Method of Adoption (minutes, signed resolutions, etc.)
RESOURCES	**9. Create Safe and Resilient Community**	
	• Challenges to Achieving Mitigation Goals • Recommendations for Success • Funding and Assistance	Appendix to LHMP

3

HERKIMER COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN

PARTICIPATION DOCUMENTATION FORM

Jurisdiction/Agency/Organization	**Point of Contact:** (Name & Title/Position)	**Date:**
Address:	**Email:**	**Phone:**
Jurisdiction/Agency/Organization - Primary Role: (select one) ___CEPC (Planning Group) ___Stakeholder ___Neighboring Jurisdiction		
Area (s) of Responsibility related to Hazard Mitigation: (select all that apply) _____ Land Use policies and planning _____ Data collection and dissemination _____ Critical infrastructure _____ Health and Human Services _____ Economic Development _____ Housing _____ Natural and Cultural Resources	_____ Transportation _____ Environmental Management _____Finance/Budget and/or Administration _____ Government _____ Education _____ Engineering/Public Works _____ Public Safety (Fire, Law Enforcement or Emergency Management) _____ Other (Describe)_____	
Planning Process Role(s): (select all that apply) ___ Participate in Capabilities Assessment ____Participate in Hazard and Risk Assessment ____Provide Technical Data and Hazard Information ____Review Plan Drafts and Provide Input ____ Planning Team Resource/Subject Matter Expert ____Management Level Support for the Planning Effort ____Mitigation Strategy Development ____Mitigation Project Sponsor	_____Coordinate Jurisdictional Planning Committee ____ Participate in Outreach Activities _____Participate in Implementation of the Plan and Monitoring Progress ____ Other (Describe)_____	

8/2/16

HERKIMER COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN

HAZARD MITIGATION WORKING GROUP - *ROLES AND RESPONSIBILITIES*

PARTICIPATING JURISDICTION REPRESENTATIVE(S):*

Role: Represent your jurisdiction as the Point of Contact and working member of the Mitigation Working Group; to coordinate all aspects of the planning process within your jurisdiction.

Responsibilities:

- Participate in developing the Work Program and Schedule with the Mitigation Working Group
- Assist in organizing and attending scheduled meetings of the Mitigation Working Group
- Assist the Mitigation Working Group with developing and conducting an outreach strategy to involve other Working Group members, stakeholders, and the public, as appropriate to represent your Jurisdiction
- Identify community resources available to support the planning effort, including technical expertise, in-kind services, and project development and implementation, as available
- Coordinate your jurisdiction's Mitigation Planning Committee (JPC)
- Provide jurisdiction-specific data and feedback to develop the risk assessment and mitigation strategy, including a specific mitigation action plan for your Jurisdiction
- Submit the draft plan to your Jurisdiction for review
- Work with the Mitigation Working Group to incorporate your jurisdiction's comments into the draft plan

ADOPTING JURISDICTION REPRESENTATIVE(S):*

Role: Represent your jurisdiction as the Point of Contact and working member of the Mitigation Working Group; to coordinate all aspects of the planning process ***and plan adoption*** within your jurisdiction.

Responsibilities:

- Carry out all responsibilities described above
- Ensure that all data, information, and input requested for your jurisdiction are provided at the appropriate time
- **Submit the draft plan to your respective governing body for consideration and adoption**
- **After adoption, coordinate plan maintenance activities with other Herkimer County jurisdictions to monitor, evaluate, and work toward plan implementation**

SUBJECT MATTER STAKEHOLDER(S):

Role: Represent your agency, department, discipline, or organization as the Point of Contact and stakeholder representative to the Mitigation Working Group.

Responsibilities:

- Participate in Mitigation Working Group meetings through attendance and assistance in identifying, locating, collecting, compiling, and/or analyzing relevant information and data
- Participate with the Mitigation Working Group in developing the risk assessment and mitigation strategy
- Coordinate review of the plan and feedback from the entity you are representing
- Identify potential resources from your agency, department, discipline, or organization that could support the mitigation strategy, including specific mitigation actions and potential funding sources

**All jurisdictions will select their level of participation as either a participating jurisdiction or an adopting jurisdiction. Although this selection will be declared at the outset of the planning process, a jurisdiction may choose to select the other option at any time during the plan development, with the approval of their jurisdiction and written notification to the Mitigation Working Group and Contractor.*

Herkimer County Multi-Jurisdictional Hazard Mitigation Plan

Capabilities Assessment Workshop

September 21, 2016

9:30 - 11:30 a.m.

Herkimer County Emergency Services

AGENDA

- Welcome and Introductions
- Mitigation Planning Case Study
- Today's Objectives & Tasks
- What is a Capability?
- Mitigation Core Capabilities
  - Community Systems and Strategies
- Types of Capabilities
  - Planning and Regulatory
  - Administrative and Technical
  - Financial
  - Education and Outreach
  - National Flood Insurance Program
- Other Capabilities
  - Planning, technical assistance, programs, projects, etc.
- Capability Assessment Process and Documentation
  - Review – Capabilities in last Draft Plan
  - Capability Worksheet
  - NFIP Worksheet
- Submitting completed worksheets
- Next Meeting & Adjournment

Herkimer County Multi-Jurisdictional Hazard Mitigation Plan

MINUTES SEPTEMBER 21, 2016 9:30 – 11:30 AM HERKIMER CO EM SRVS , HERKIMER, NY

MEETING CALLED BY	NYS DHSES and Contractor (IEM)
TYPE OF MEETING	Capabilities Assessment Workshop Meeting
FACILITATOR	Nancy Freeman, IEM
NOTE TAKER	N. Freeman
ATTENDEES	18 attendees (see list attached), representing 7 jurisdictions in the planning area; regional, state, and federal agencies, and special interest organizations.

Agenda topics

WORKING GROUP BUSINESS — **NANCY FREEMAN**

DISCUSSION: Ms. Freeman announced that Chief Robert Parese, City of Little Falls Fire Chief, had agreed to serve as Working Group chair and thanked Chief Parese for taking on this responsibility.

Introductions from attendees were made and new members were thanked for their interest and participation.

CONCLUSIONS: N/A

ACTION ITEM	PERSON RESPONSIBLE	DEADLINE
No action required		

OUTREACH STRATEGY — **NANCY FREEMAN**

DISCUSSION: Ms. Freeman presented the draft Outreach Strategy and highlighted the description of activities for the Hazard Mitigation Working Group (HMWG), stakeholders and the public.

The draft strategy was distributed for review and input. A jurisdiction-specific flyer highlighting the benefits of participating in the mitigation planning process was prepared and disseminated by email and mail to those jurisdictions that have not yet attended a meeting. In addition, two versions of a hazard survey (one for technical stakeholders, one for residents) were provided for meeting attendees to fill out. She asked that the jurisdictions assist in distributing these forms when they are disseminated to ensure broad input.

Ms. Freeman asked if a jurisdiction would be willing to serve as the "official" website for Herkimer County Multi-Jurisdictional Hazard Mitigation Plan.

CONCLUSIONS: As no changes were presented, the Strategy was approved by general consent. Ms. Freeman will add additional meeting dates and correct one date error.

Bob Vandawalker agreed to host the planning project information on his department's website. Ms. Freeman will coordinate web postings with him, based on the schedule in the Outreach Strategy

ACTION ITEMS	PERSON RESPONSIBLE	DEADLINE
Disseminate approved Outreach Strategy, jurisdiction flyer, and hazard surveys to the HMWG	N. Freeman	10/5/16
Forward information and documentation of the planning project to Mr. Vandawalker for posting on the Herkimer County Emergency Services website.	N. Freeman/R. Vandawalker	10/5/16

CAPABILITIES ASSESSMENT — **NANCY FREEMAN**

DISCUSSION: A short orientation on mitigation capabilities and their relationship to the hazard, risk and projects development process was presented. Ms. Freeman stressed that the purpose of this assessment is not a "pass/fail" audit, but the opportunity to identify capabilities and resources that can assist in implementing mitigation activities and characterize gaps that can be addressed through potential mitigation actions and initiatives.

The first step in the assessment was to review information provided in the 2014 draft plan to validate that it was accurate and current. Next, the Capabilities Assessment forms that addressed planning and regulatory, administrative and technical, fiscal, smart growth, and education and outreach were provided for each jurisdiction and attendees worked within jurisdictional groups to complete the forms.

National Flood Insurance Program (NFIP) assessment forms were also provided for each jurisdiction and attendees began work on these forms. Much of the information for these forms should be obtained from the jurisdiction's floodplain administrator so each jurisdiction agreed to follow-up with the floodplain administrator for their community and return the forms when completed.

CONCLUSIONS: All forms are due by October 5, 2016.

ACTION ITEMS	PERSON RESPONSIBLE	DEADLINE
Submit completed Capabilities Assessment forms and NFIP forms to Nancy Freeman	Jurisdiction representatives	10/5/16

NEXT STEP – HAZARDS WORKSHOP NANCY FREEMAN

DISCUSSION: Ms. Freeman discussed the process that will be used to identify and categorize hazards in a format that is compatible with the list of natural hazards provided in FEMA's planning guidance.

CONCLUSIONS: At the Oct 19 meeting, attendees will review the hazards that were identified and profiled in the 2014 draft plan, and reconsider the hazard definitions and categories. In addition, the jurisdictions will be developing their hazards, risks and vulnerabilities.

ACTION ITEMS	PERSON RESPONSIBLE	DEADLINE
Meeting notice and materials will be emailed/mailed	N. Freeman	10/5/16

NEXT MEETING – FUTURE MEETINGS NANCY FREEMAN

DISCUSSION: Meeting dates for the two strategy meetings to be held in November and December were discussed.

CONCLUSIONS: The Mitigation Strategy 1 meeting will be held on November 16, 2016 (location to be determined), and the Strategy 2 meeting will be on December 7, 2016 (location to be determined). Attendees agreed that the Herkimer County Emergency Services office was convenient for the October meeting, if it is available. If not, Mayor Leonard of the Village of Ilion offered to host, as a back-up.

During informal conversation following the meeting, there was a suggestion that the Working Group consider "doubling up" on the Strategy meetings by presenting each meeting twice in two different locations. As an example, the morning session could be in Old Forge and the same agenda would be presented in the afternoon session in Herkimer or another location in the south part of the county.

ACTION ITEMS	PERSON RESPONSIBLE	DEADLINE
Confirm availability of Herkimer County Emergency Services for October meeting. If not available, contact Mayor Leonard to schedule meeting in Ilion	N. Freeman	9/27/16
Solicit input at the Oct meeting on holding two sessions for both Strategy meetings	N. Freeman	10/19/16

NEXT STEPS	Jurisdictions will complete and submit Capabilities Assessment and NFIP forms
SPECIAL NOTES	N/A
NEXT MEETING	**October 19, 2016, 9:30 am to 12:00 pm –Herkimer County Emergency Services Office**

HERKIMER COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN

Capabilities Assessment Workshop – SIGN IN SHEET

Last	First	Title	Position	Municipality/Agency	Address	City	State	Zip	Work	Mobile	Fax	Email	INITIALS
Berkstaiser	Nick	Mr.	Town Board	Town of Webb	Box 852	Old Forge	NY	13420	315-369-8578			berk45@hotmail.com	
Blais	Scott	Mr.	Water Supt.	Village of Herkimer	120 Green St.	Herkimer	NY	13350	315-868-1717			sblais.voh@gmail.com	
Breiten	Jessica	Ms.	Chief Planner	HOCCPP	321 Main St.	Utica	NY	13501	315-798-5710			jbreiten@ocgov.net	JB
Brindisi	Anthony	Mayor	Mayor	Village of Herkimer	120 Green St.	Herkimer	NY	13350	315-866-8306			herkimerdare@ county	
Cain	Christina	Ms.	Director	Herkimer County Public Health	310 N. Washington	Herkimer	NY	13350	315-867-1176			ccain@herkimercounty.org	
Caton	Howard	Mr.	Hwy Supt.	Town of Norway	3018 Military Rd.	Newport	NY	13416	315-845-8272				
Crim	Jeff	Captain	Captain	Village of Herkimer	120 Green St.	Herkimer	NY	13350	315-866-4330			jac@village.herkimer.ny.us	JC
Farber	Chris	Sheriff	Sheriff	Herkimer County	320 N. Main St.	Herkimer	NY	13350	315-867-1167			cfarber@herkimercounty.org	
Fox	Kathy	Ms.	Director, OFA	Herkimer County	109 Mary, St, Suite 1101	Herkimer	NY	13350	315-867-1121			kathyfox@herkimercounty.org	
Hohl	Adam	Mr.	Disaster Progr. Mgr.	American Red Cross - Mohawk Valley	1415 Genesee St.	Utica	NY	13502	315-219-0457			adam.hohl@redcross.org	
Hoole	Paul	Mr.	Planner	FEMA Region 2	11A Clinton Ave., Ste 742	Albany	NY	12207	518-396-3849	518-742-0419	518-396-3856	paul.hoole@fema.dhs.gov	PMH
Johnston	Ron	Chief	Police Chief	Town of Webb	P.O. Box. 1121	Old Forge	NY	13420	315-369-3157			webbpd@outlook.com	
Klimek	Anthony	Mr.	CEO.Floodplain Adm.	Town of German Flatts	P.O. Box 57	Mohawk	NY	13407	315-866-1370			aklimek100@aol.com	
Laino	Nick	Mr.	Sr. VP for Admin.	HCCC	100 Reservoir Rd.	Herkimer	NY	13350	315-866-0300			lainonf@herkimer.edu	
Leonard	Terry	Mayor	Mayor	Village of Ilion	49 Morgan St.	Ilion	NY	13357	315-895-7449			mayorleonard@ilionny.com	TML
MacKenzie	R.A.	Mr.	Dir., Fire and EM	Lewis County	5252 Outer Stowe St.	Lewisville	NY	13367	315-376-5305			robertmackenzie@lewiscounty.ny.gov	
Masi	Michael	Chief	Chief of Police	City of Little Falls	659 E. Main St.	Little Falls	NY	13365	315-823-1123			fpdchief@cityofllittlefalls.net	
McColgin	Cathleen	Dr.	President	HCCC	100 Reservoir Rd.	Herkimer	NY	13350	315-866-0300			mccolgicc@herkimer.edu	
Olds	Brian	Mr.	Asst. Engr.	NYS DOT	131 5th Ave.	Herkimer	NY	13350	315-866-1123			Brian.olds@dot.ny.gov	BO
Palumbo	Matt	Mr.	Dep. Director	Herkimer County	71 Reservoir Rd.	Herkimer	NY	13350	315-867-~~1754~~ 1154			mpalumbo@herkimercounty.org	M
Parese	Robert	Chief	Fire Chief	City of Little Falls	659 E. Main St.	Little Falls	NY	13365	315-574-5221	315-534-2218		rparese@cityofllittlefalls.net	KP.
Paris	Tim	Chief	Police Chief	Village of Ilion	55 First St.	Ilion	NY	13357	315-894-9911			ilionpd@ilionny.com	
Pederson	Gerald	Mr.	Region IV Coord.	NYSOEM	10 Adler Dr.	E. Syracuse	NY		315-663-4181			gerald.pederson@dhses.ny.gov	GP
Peplinski	Bernard	Mr.	Co. Chair	Herkimer County	798 St. Rt. 5	Ilion	NY	13357	315-822-6979			bpep@ymail.com	
Rabbie	Bill	Mr.	Executive Dir.	Oneida-Herkimer Solid Waste Autho.	1600 Genesee St.	Utica	Ny	13502	315-733-1224			billr@ohswa.org	
Rogers	Tom	Sgt.	Sgt	NY State Police - Troop D	P.O. Box 30	Oneida	NY		315-366-6059			thomas.rogers@Troopers.ny.gov	
Romano	Jennifer	Ms.	OEM	NYSDHSES	10 Adler Dr.	E. Syracuse	NY		818-813-3048			Jennier.romano@dhses.ny.gov	
Santa Maria	Steven	Mr.	CD Dir/Fire Coord.	Fulton County	2714 Sthwy 29	Johnstown	NY	12095	518-736-5858	518-848-0979	518-762-4938	ssmaria@fultoncountyny.gov	
Scherer	Scott	Undersheriff	Undersheriff	Herkimer County	320 N. Main St.	Herkimer	NY	13350	315-867-1167			sscherer@herkimercounty.org	SS
Silverman	Jeremy	Mr.	GEMSI.LLC	Town of Herkimer (Consultant)	210B Genesee St.	Utica	NY	13502	518-842-6500			jeremy@gamsgrants.com	
Smithson	Gerry	Mr.	Manager	Herkimer Co. Soil & Water	5658 St. Rte. 5	Herkimer	NY	13350	315-816-2520			gerry.smithson@ny.nacdnet.net	
Spotto	Frank	Mr.	Town Supervisor	Town of German Flatts	66 E. Main St.	Mohawk	NY	13407	315-866-4980			gft@dreamspace.com	FS
Stallm__	Carl	Mr.	Hwy Supt.	Town of Manheim	P.O. Box 32	Dolgeville	NY	13328	315-429-9681				
Truett	Jim	Chief	Fire Chief	Village of Ilion	1 Central Ave.	Ilion	NY	13357	315-894-6048			ilionfd@ilionny.com	
Tyce	Stephanie	Ms.	Engineer	Herkimer Co. Highway	313 Third Ave.	Herkimer	NY	13350	315-867-1380			styce@herkimercounty.org	SJT
Vandawalker	Bob	Mr.	Director, Emerg. Srvcs	Herkimer County	71 Reservoir Rd.	Herkimer	NY	13350	315-869-1212			rvan@herkimercounty.org	RVW
Wallace	James	Mr.	County Admin.	Herkimer County	109 Mary St.	Herkimer	NY	13350	315-867-1112			jwwallace@herkimercounty.org	

HERKIMER COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN

17 ATTENDEES

September 21, 2016

Capabilities Assessment Workshop – Herkimer County Emergency Services

Name	Position/Title	Agency	Jurisdiction	Address	Primary Phone	Email	CEPC	Stake-holder	Signature
Diane Ward	EP Coordinator	HCPH	County	1216 S. Main St	315-867-1610	dward@herkimercounty.org			Diane Ward
Gerald Pedersen	NYSOEM	Reg'l Coord	State	10 Nelson - E. Syracuse	315-669-4784	gerald.pedersen@dhses.ny.gov			[illegible]
HENRY CROFOOT	SUPERVISOR	TW/FAIRFIELD	Town	439 KELLY RD. LITTLE FALLS	315-868-4704	FSUPERVISOR@LOCALNET.COM			[illegible]
JON SCHOONMAKER	CFAG	CFAG	ILION	153 W. NORTH ST.	315 894-0854	SCHOONY52@YAHOO.com			[illegible]
~~Robert Kuntzwalker~~	ADVISOR Director	EMO	Herk. Co	11 Reservoir Rd	Herkimer	rvan@herkimercounty.org			
~~DEPC~~									
F Hartmann	Trustee	-	Ilion	585 5th Ave	894-5961	Ilion			[illegible]
Ramona Gassikian	CFAG	CFAG	Ilion	6 Mausert Place - Ilion	985-3929	Mbg@twcny.rr.com			Ramona Gassikian
~~Frank P Sorrito~~	Supervisor	~~Herkimer~~ FLATS	~~Herkimer~~ FLATS	66 E MAIN ST MOHAWK	866 1370	~~[illegible]~~ ffsuper@dreamscape.com			[illegible]
CORRINA CAVALLO		NYS DHSES	STATE						

NYS – Herkimer Co. Multi-Jurisdictional Hazard Mitigation Plan

August 30 2016 -

EMAILED invitation to:

- Working Group Email Distribution List (jurisdictions and stakeholders)
- Municipal clerks list

September 7, 2016 -

PHONE CALLS and MAILOUTS to: [Municipal contacts without email]

- Village of Cold Brook
  - Beverly Van Valkenburg, Mayor/Supervisor 315-826-~~7795~~ DISCONNECTED
    - Darlene Przelski, Clerk
- Town of Danube
  - Richard Mosher, Mayor/Supervisor 315-823-3400 Left message 10:23 am
    - Mary Herringshaw, Clerk
- Town of Fairfield
  - Henry Crofoot, Mayor/Supervisor 315-823-2747 No answer/no voice mail
    - Mary Dineen, Clerk
- Town of Little Falls
  - Brian Marhaver, Mayor/Supervisor 315-823-1202 Left message 10:26 am
    - Sandra Regan, Clerk
- Village of Middleville
  - Craig Fox, Mayor/Supervisor 315-891-7645 Spoke with Mary – she will give information to Mr. Fox 11:10 am
    - Ann Marvin, Clerk
- Town of Salisbury
  - Jean Daley, Mayor/Supervisor 315-429-8581 Left message 10:29 am
    - Stanley Bilinski, Clerk Hours: T & F – 9-1:30, W & Th 12-5:30
- Town of Stark
  - Richard Bronner, Mayor/Supervisor 315-858-1467 Spoke with Mr. Bronner – he is unable to attend, but will send a representative 10:30 am
    - Lynn Rogers, Clerk
- Town of Warren
  - Lisa Van Winkler, Mayor/Supervisor 315-858-1207 Left message 10:33 am
    - Anne Halkowich

MEETING ANNOUNCEMENT: *Herkimer County Multi-Jurisdictional Hazard Mitigation Plan* Working Group

PURPOSE: Capabilities Assessment Workshop

DATE: September 21, 2016

TIME: 9:30 a.m. to 11:30 a.m.

LOCATION: Herkimer County Emergency Services
71 Reservoir Rd.
Herkimer, NY 13350

This notice will serve as your invitation to the next meeting of the *Herkimer County Multi-Jurisdictional Hazard Mitigation Plan* Working Group. The purpose of this meeting is to review and verify your community's existing authorities, policies, programs and resources available to accomplish hazard mitigation. In addition, the activity that will be conducted at the meeting will assist your community in identifying potential opportunities and/or gaps in implementing mitigation actions specific to your jurisdiction.

We encourage you to attend along with those in your community who can assist in providing technical information and expertise in community policy development, planning and land use, emergency management, and floodplain management. Your community team will have the opportunity to jointly complete your capabilities assessment at the meeting.

In preparation for the meeting, please review the two worksheets attached to this invitation – the Capability Assessment Survey Form and the NFIP Survey Form – to identify specific information that will be needed at the meeting. You may find it helpful to print both documents and begin filling in basic information prior to the meeting.

The completion of your jurisdiction's Capabilities Assessment at the September meeting will provide the foundation for the next step in the planning process at the October 19, 2016 Hazards Workshop, which is to identify specific hazards and risks to your community and its assets and infrastructure.

Please respond to Nancy.Freeman@iem.com **by September 14, 2016** to let me know how many will be attending from your jurisdiction, so that we may have sufficient materials prepared. If you have any questions, you may reach me by phone at (352)572-9325.

I look forward to seeing you on September 21!

Herkimer County Multi-Jurisdictional Hazard Mitigation Plan

Herkimer County, New York

9/6/2016

MEETING ANNOUNCEMENT:

Herkimer County Multi-Jurisdictional Hazard Mitigation Plan Working Group

PURPOSE:

Capabilities Assessment Workshop

DATE: September 21, 2016

TIME: 9:30 a.m. to 11:30 a.m.

LOCATION:

Herkimer County Emergency Services
71 Reservoir Rd.
Herkimer, NY 13350

YOU ARE INVITED!

The next meeting of the ***Herkimer County Multi-Jurisdictional Hazard Mitigation Plan*** Working Group will be held on September 21, 2016 for the purpose of reviewing and verifying your community's existing authorities, policies, programs and resources available to accomplish hazard mitigation. This activity will assist your community in identifying potential opportunities and/or gaps in implementing mitigation actions specific to your jurisdiction.

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Please respond to Nancy.Freeman@iem.com or by phone at 352-572-9325 by September 14, 2016 to let me know how many will be attending from your jurisdiction, so that we may have sufficient materials prepared.

We look forward to seeing you!

Cordially,

Nancy Freeman, Mitigation Planning Consultant

Attachments: Herkimer_Capabilities Assessment Workshop Agenda 09.21.16

Herkimer Co HMP Capability Assessment Survey Form – Updated 08.25.16

Herkimer Co HMP – NFIP Survey Form 08.02.16

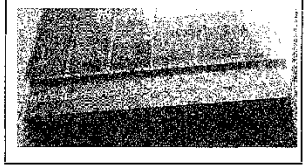
9/17/2016

Herkimer County Multi-Jurisdictional Hazard Mitigation Plan

Capability Assessment Workshop

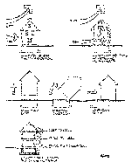
September 21, 2016

The importance of planning....



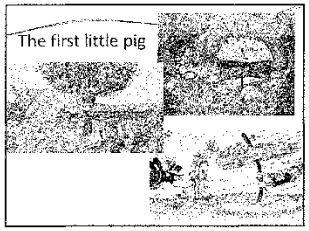
~~Hazard Mitigation~~ Planning – Case Study

- Structural Protection from high winds

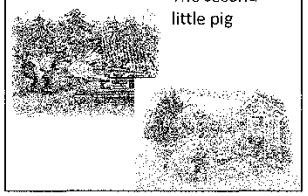


The three little pigs

The first little pig



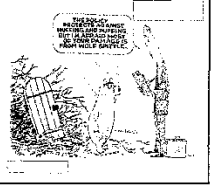
The second little pig



1

9/17/2016

Monitor and Revise the Plan - Re-evaluate capabilities, hazard, and vulnerability. Adjust goal, objective, and action commensurate with level of risk.



The Third Little Pig

Measuring progress in mitigation!

Today's Objectives

- **Identify your community's existing authorities, policies, programs, and resources available to accomplish mitigation**
- **Assess mitigation capabilities for each jurisdiction, and identify potential opportunities, resources and/or gaps**

Tasks - Step by Step

- Understand mitigation capabilities
- Review capabilities identified in the last Draft Plan
- Complete Capability and NFIP Worksheets
- Assess opportunities for supporting mitigation goals, objectives and actions

What is a "Capability"?

- The expression or the articulation of the capacity, materials, and expertise an organization needs in order to perform core functions
- The measure of the ability of an entity (department, organization, person, system) to achieve its objectives, specially in relation to its overall mission
- The ability to do something

2

9/17/2016

Mitigation Core Capabilities

- *Planning*
  - *Through planning process (44 CFR, Part 201.6)*
- *Public Information and Warning*
  - *Through education and outreach and public participation*
- *Operational Coordination*
  - *Through the mitigation strategy and information into other planning efforts, maintenance plan, and plan implementation*
- *Community Resilience*
  - *Through leadership, partnerships, and public involvement*
- *Long-term vulnerability reduction*
  - *Through identified mitigation actions to reduce or eliminate risks to threats and hazards*
- *Risk and disaster resilience assessment*
  - *Through threat and hazard risk assessments*
- *Threats and hazard identification*
  - *Through threat and hazard risk assessments*

Source: National Preparedness Q & A, FEMA Webinar, September 20, 2016, (http://www.fema.gov/media-library/assets/videos/83187)

Community Systems & Supporting Strategies

- Economic
  - Prosperous, more competitive, and resilient economy and to restore economic vitality following an incident
- Health and Social Services
  - Providing health and social services to promote the health, independence, and well-being of the whole community
- Housing
  - Building more resilient housing and incorporating mitigation activities as part of new construction or rebuilding activities
- Infrastructure
  - Providing and strengthening essential infrastructure and services, including transportation infrastructure and modes, to reduce vulnerability and increase resilience.
- Natural and Cultural Resources
  - Conserving, protecting and restoring the natural and cultural assets of the community

Types of Capabilities

- **Planning and regulatory**
  - Implementation of policies, laws, ordinances, plans and programs that guide and manage growth and development (Local, State, and Federal)
  - Enforcement of zoning, land development regulations, and building codes
  - Ability to change and improve policies and regulations as needed

Types of Capabilities

- **Administrative and Technical**
  - Community's staff, skills and tools that can support mitigation planning and implement specific mitigation actions
    - Engineers
    - Planners
    - Emergency managers
    - GIS analysts
    - Grant writers
    - Building inspectors
    - Floodplain managers
  - Intergovernmental coordination

Types of Capabilities

- **Financial**
  - Resources that can be accessed to fund mitigation actions
    - Internal
    - External
    - Revenue sources (recurring and non-recurring)
    - Local match and cost-share capacities

Types of Capabilities

- **Education and Outreach**
  - Existing methods and programs to support mitigation planning and activities
    - Fire safety programs at local schools
    - Community programs and hazard awareness campaigns
      - CERT, FireWise, StormReady
      - NFIP/CRS
      - Climate Smart
    - Media/Public Information
    - Fairs and special events

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Types of Capabilities

- **National Flood Insurance Program**
  - Planning and Regulatory
    - Floodplain management regulations, FIRMs, compliance history, CRS (if applicable)
  - Administrative and Technical
    - Floodplain administrators or staff, responsibilities
  - Financial
    - Summary of flood insurance coverage, number of policies, claims history (including repetitive loss properties)
  - Education and Outreach
    - Availability of flood insurance initiatives (CRS)

Other Capabilities

- Local and Regional plans and studies
  - Fulmer Creek Basin Flood Hazard Mitigation Plan (2004)
  - Moyer Creek Basin Flood Hazard Mitigation Plan (2004)
  - Steel Creek Basin Flood Hazard Mitigation Plan (2004)
  - Finger Lakes – Lake Ontario Watershed Protection Alliance
  - Mohawk Valley Regional Sustainability Plan (date?)
  - Emergency Transportation Infrastructure Recovery Water Basin Assessment and Flood Hazard Mitigation Alternatives, Bellinger Brook at the Village of Herkimer (2014), and West Canada Creek (2014)
  - Herkimer County Community Health Assessment (2013)
  - Others?

Other Capabilities

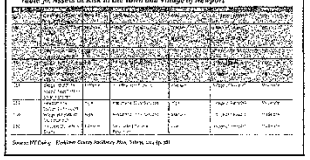
- Climate Smart (DEC) Certification Program
  - Process can overlap with mitigation plan development and implementation
- Local Waterfront Revitalization Program (DOS)
  - City of Little Falls – approved 12/15/2010
  - Process can identify hazards and potential risks, and develop activities that don't conflict with mitigation strategy
- Local and regional plans and studies

NY Rising Community Reconstruction Program and Countywide Resiliency Plan (July 31, 2014)

- Planning and implementation process to provide rebuilding and resiliency assistance to communities heavily damage by recent tropical events and flooding (2001-2013)
- Involved community participation and State-provided expertise
- Identified community assets/infrastructure
- Flood risk mapping and assessment
- Projects

NY Rising – Resiliency Plan

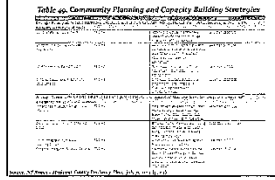
Table 36. Assets at Risk in the Town and Village of Newport



Source: NY Rising – Herkimer County Resiliency Plan, July 31, 2014, p. 38

NY Rising – Resiliency Plan

Table 49. Community Planning and Capacity Building Strategies



Source: NY Rising – Herkimer County Resiliency Plan, July 31, 2014, p. 53

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Capability Review – Last Draft Plan

- "Summary of Record of Review of Jurisdictional Existing Plans by Municipality in Herkimer County"
- Information received from 22 of 30 jurisdictions
- Documented existence of policies and plans related to growth management, capital improvements, floodplain management, emergency operations, zoning, building code, drainage.
- Review of hazard rankings using HAZNY
- Documented existing maps (critical facilities, land use, HAZUS)

Capability Assessment Process

- Jurisdictional Planning Committees
  1. Review information provided in last draft plan.
  2. Complete "Capability Assessment" worksheet to document capabilities in the required categories
  3. Complete NFIP Worksheet
- Identify strengths and gaps/opportunities
- We will be documenting –
  - What existing plans, studies, reports, and technical information were identified and reviewed
  - How relevant information is incorporated into the plan

Capability Assessment Worksheet

- Respond to the information requested
  - Short answer
  - Yes or No

National Flood Insurance Program Worksheet

- Provide comments in response to questions
- Floodplain manager
- Floodplain ordinances
- Building and zoning policies
- Claims and compliance information

Submit Capability Assessment and NFIP Worksheets – by 10/5/16

Scan and email to:
Nancy.freeman@fem.com

OR, USPS mail to:
Nancy Freeman
12500 NW 56th Ave.
Gainesville, FL 32653

Call for Technical Assistance - 352-572-9325

Multi-Jurisdictional Plan

- Requires individual review and assessment by each jurisdiction
- Access to documents
- Methods
  - Survey Forms for each jurisdiction
  - Meetings, conference calls, interviews

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Next Steps

- Jurisdictional Planning Committees
- Planning Assistance
- Outreach Activities
- Next County Working Group Meeting –
  Hazard Workshop
  October 19, 2016
  9:30 a.m. – 12:00 p.m.
  (location to be confirmed)

The Herkimer County Multi-Jurisdictional Hazard Mitigation Plan Capabilities Assessment Distributed at this meeting is included in the Herkimer County HMP as Appendix 2-B

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HERKIMER COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN

NFIP – COMMUNITY STATUS BOOK REPORT (08/02/16)

CID	Community Name	Init FHBM Identified	Init FIRM Identified	Curr Eff Map Date	Reg-Emer Date	Has NFIP Survey	Returned Survey
360298	Cold Brook, Village of	02/11/77	07/03/85	12/20/00	07/03/85		
360299	Columbia, Town of	03/29/74	07/16/82	07/16/82(M)	07/16/82		
360300	Danube, Town of	04/05/74	07/03/85	07/03/85(M)	07/03/85		
360301	Dolgeville, Village of	02/15/74	03/16/83	03/16/83	03/16/83		
360302	Fairfield, Town of	03/29/74	07/30/82	10/18/88	07/30/82		
360303	Frankfort, Town of	03/01/74	04/17/85	12/20/00	04/17/85		
360304	Frankfort, Village of	03/22/74	04/03/84	03/07/01	04/03/84		
360305	German Flatts, Town of	03/29/74	05/15/85	05/15/85(M)	05/15/85		
360306	Herkimer, Town of	03/08/74	04/17/85	04/17/85(M)	04/17/85		
360307	Herkimer, Village of	05/10/74	06/01/78	06/17/02	06/01/78		
360308	Ilion, Village of	02/08/74	02/01/84	09/08/99	02/01/84		
360309	Litchfield, Town of	03/15/74	09/24/84	05/07/01	09/24/84		
360310	Little Falls, City of	03/08/74	04/04/83	04/04/83	04/04/83		
360311	Little Falls, Town of	04/05/74	03/28/80	03/28/80(M)	03/28/80		
360312	Manheim, Town of	03/08/74	05/01/85	05/01/85(M)	05/01/85		
360313	Middleville, Village of	05/17/74	07/03/85	07/03/85(M)	07/03/85		
360314	Mohawk, Village of	03/22/74	04/01/78	09/08/99	04/17/78		
361111	Newport, Town of	11/15/74	08/05/85	06/02/99	08/05/85		
360315	Newport, Village of	03/29/74	07/03/85	04/02/91	07/03/85		
361110	Norway, Town of	11/01/74	07/03/85	07/03/85(M)	07/03/85		
361408	Ohio, Town of	01/03/75	09/24/84	09/24/84(M)	09/24/84		
360316	Poland, Village of	03/08/74	07/18/85	06/02/99(M)	07/18/85		
361121	Russia, Town of	11/01/74	06/02/99	06/02/99	12/19/84		
360317	Salisbury, Town of	06/07/74	07/03/85	07/03/85(M)	07/03/85		
360318	Schuyler, Town of	03/15/74	07/03/85	06/20/01	07/03/85		
360319	Stark, Town of	06/07/74	05/15/85	05/15/85(M)	05/15/85		
360320	Warren, Town of	06/28/74		(NSFHA)	12/19/84		
360321	Webb, Town of	07/18/75	07/30/82	07/30/82(M)	07/30/82		
360322	West Winfield, Village of	02/15/74	07/03/85	07/03/85(M)	07/03/85		
360323	Winfield, Town of	03/01/74	07/03/84	07/03/85(M)	07/03/85		

	CID	Community Name	County	Population	CRS Class	# NFIP Policies	# RLP	# RLP Losses	# BCX Claims	CAV Date	FIRM Date
	360298	COLD BROOK, VILLAGE OF	HERKIMER COUNTY	420		4	0	0	0		12/20/2000
	360299	COLUMBIA, TOWN OF	HERKIMER COUNTY	1387		2	0	0	0	7/19/1997	7/16/1982
	360300	DANUBE, TOWN OF	HERKIMER COUNTY	1098		4	0	0	0	4/9/1999	7/3/1985
	360301	DOLGEVILLE, VILLAGE OF	HERKIMER COUNTY	2166		56	3	7	2	5/30/2006	3/16/1983
	360302	FAIRFIELD, TOWN OF	HERKIMER COUNTY	1446		2	0	0	0		10/18/1988
	360303	FRANKFORT, TOWN OF	HERKIMER COUNTY	7478		11	0	0	0	4/23/2002	12/20/2000
	360304	FRANKFORT, VILLAGE OF	HERKIMER COUNTY	2537		28	1	2	0	8/26/2015	3/7/2001
	360305	GERMAN FLATTS, TOWN OF	HERKIMER COUNTY	2471		17	0	0	0	11/3/2010	5/15/1985
	360306	HERKIMER, TOWN OF	HERKIMER COUNTY	2464		5	0	0	0	10/10/2007	4/17/1985
	360307	HERKIMER, VILLAGE OF	HERKIMER COUNTY	7498		28	0	0	0	8/9/2001	6/17/2002
CRS	360308	ILION, VILLAGE OF	HERKIMER COUNTY	8601		341	24	52	2	8/2/2012	9/8/2009
	360309	LITCHFIELD, TOWN OF	HERKIMER COUNTY	1450		5	1	2	0	3/15/1995	5/7/2001
	360310	LITTLE FALLS, CITY OF	HERKIMER COUNTY	4867		19	1	2	2	6/17/2015	4/4/1983
	360311	LITTLE FALLS, TOWN OF	HERKIMER COUNTY	1600		1	0	0	0		3/28/1980
	360312	MANHEIM, TOWN OF	HERKIMER COUNTY	1055		4	1	2	2	6/21/2004	5/1/1985
	360313	MIDDLEVILLE, VILLAGE OF	HERKIMER COUNTY	525		4	3	6	2	10/4/2010	7/3/1985
	360314	MOHAWK, VILLAGE OF	HERKIMER COUNTY	2986		23	5	13	13	8/19/2014	9/8/1999
	361111	NEWPORT, TOWN OF	HERKIMER COUNTY	900		7	0	0	0	9/6/1990	6/2/1999
	360315	NEWPORT, VILLAGE OF	HERKIMER COUNTY	908		7	1	2	0		4/2/1991
	361110	NORWAY, TOWN OF	HERKIMER COUNTY	700		0	0	0	0		7/3/1985
	361408	OHIO, TOWN OF	HERKIMER COUNTY	925		4	0	0	0	2/14/1985	9/24/1984
	360326	POLAND, VILLAGE OF	HERKIMER COUNTY	452		2	0	0	0		6/2/1999
	361121	RUSSIA, TOWN OF	HERKIMER COUNTY	2405		4	1	2	2	9/17/2001	6/2/1999
	360317	SALISBURY, TOWN OF	HERKIMER COUNTY	1741		7	0	0	0	7/8/1993	7/3/1985
	360318	SCHUYLER, TOWN OF	HERKIMER COUNTY	3508		11	0	0	0	9/16/2002	6/20/2001
	360319	STARK, TOWN OF	HERKIMER COUNTY	759		15	2	6	0	6/23/2015	5/15/1985
	360320	WARREN, TOWN OF	HERKIMER COUNTY	1077		0	0	0	0		
	360321	WEBB, TOWN OF	HERKIMER COUNTY	1750		70	0	0	0	9/5/2013	7/30/1982
	360322	WEST WINFIELD, VILLAGE OF	HERKIMER COUNTY	878		1	0	0	0	9/23/1992	7/3/1985
	360323	WINFIELD, TOWN OF	HERKIMER COUNTY	1020		3	0	0	0	7/27/1992	7/3/1985
		Totals	HERKIMER CO	67072		685	43	96	25		

2/26/2017 Herkimer Hazard Mitigation Plan - Capabilities Meeting Fol... - Freeman, Nancy

Herkimer Hazard Mitigation Plan - Capabilities Meeting Follow-Up

Wed 10/5/2016 4:37 PM

To: adam.hohl@redcross.org <adam.hohl@redcross.org>; aklimek100@aol.com <aklimek100@aol.com>; berk45@hotmail.com <berk45@hotmail.com>; billr@ohswa.org <billr@ohswa.org>; bpep@ymail.com <bpep@ymail.com>; Brian.olds@dot.ny.gov <Brian.olds@dot.ny.gov>; ccain@herkimercounty.org <ccain@herkimercounty.org>; cfarber@herkimercounty.org <cfarber@herkimercounty.org>; clerkton@ntcnet.com <clerkton@ntcnet.com>; cosborn@townofwinfieldny.org <cosborn@townofwinfieldny.org>; diann.fischer2@redcross.org <diann.fischer2@redcross.org>; dward@herkimercounty.org <dward@herkimercounty.org>; fpdchief@cityoflittlefalls.net <fpdchief@cityoflittlefalls.net>; FSupervisor@localnet.com <FSupervisor@localnet.com>; gerald.pederson@dhses.ny.gov <gerald.pederson@dhses.ny.gov>; gerry.smithson@ny.nacdnet.net <gerry.smithson@ny.nacdnet.net>; gft@dreamspace.com <gft@dreamspace.com>; herkimercare@county <herkimercare@county>; ilionfd@ilionny.com <ilionfd@ilionny.com>; ilionpd@ilionny.com <ilionpd@ilionny.com>; jac@village.herkimer.ny.us <jac@village.herkimer.ny.us>; jbreiten@ocgov.net <jbreiten@ocgov.net>; Jennifer.romano@dhses.ny.gov <Jennifer.romano@dhses.ny.gov>; jeremy@gemsgrants.com <jeremy@gemsgrants.com>; jkinney@townoffrankfort.com <jkinney@townoffrankfort.com>; judygokey@ntcnet.com <judygokey@ntcnet.com>; jwwallace@herkimercounty.org <jwwallace@herkimercounty.org>; kathyfox@herkimercounty.org <kathyfox@herkimercounty.org>; lainonf@herkimer.edu <lainonf@herkimer.edu>; litchfield.townclerk@gmail.com <litchfield.townclerk@gmail.com>; mayorbennett@ntcnet.com <mayorbennett@ntcnet.com>; mayorleonard@ilionny.com <mayorleonard@ilionny.com>; mccolgicc@herkimer.edu <mccolgicc@herkimer.edu>; mpalumbo@herkimercounty.org <mpalumbo@herkimercounty.org>; ohio@ntcnet.com <ohio@ntcnet.com>; patwoyto@hotmail.com <patwoyto@hotmail.com>; paul.hoole@fema.dhs.gov <paul.hoole@fema.dhs.gov>; rbg@twony.rr.com <rbg@twony.rr.com>; Rickvof@gmail.com <Rickvof@gmail.com>; robert.mackenzie@lewiscounty.ny.gov <robert.mackenzie@lewiscounty.ny.gov>; rparese@cityoflittlefalls.net <rparese@cityoflittlefalls.net>; rvan@herkimercounty.org <rvan@herkimercounty.org>; sblais.voh@gmail.com <sblais.voh@gmail.com>; schnoony52@yahoo.com <schnoony52@yahoo.com>; sscherer@herkimercounty.org <sscherer@herkimercounty.org>; ssmaria@fultoncountyny.gov <ssmaria@fultoncountyny.gov>; styoe@herkimercounty.org <styoe@herkimercounty.org>; supervisor@ntcnet.com <supervisor@ntcnet.com>; thomas.rogers@Troopers.ny.gov <thomas.rogers@Troopers.ny.gov>; townclerk@ntcnet.com <townclerk@ntcnet.com>; townclerk@townofschuyler.com <townclerk@townofschuyler.com>; village1villageofdolgeville@yahoo.com <village1villageofdolgeville@yahoo.com>; villageofwestwinfield@yahoo.com <villageofwestwinfield@yahoo.com>; webbpc@outlook.com <webbpd@outlook.com>;

Cc: Corrina.Cavallo@dhses.ny.gov <Corrina.Cavallo@dhses.ny.gov>;

Greetings, Working Group and Stakeholders: My intent is not to inundate everyone with information today, but it is looking more and more like my location will be getting some impact from Hurricane Matthew and I wanted to get this out while I still have power for my computer!

Thanks to all those who participated in the Capabilities Assessment Workshop on September 21 in Herkimer. There was some great discussion and information submitted from several jurisdictions. If your jurisdiction has not submitted the two worksheets from the meeting, please try to get them completed and sent to me by October 12.

The attachments to this email include the Capabilities Assessment meeting minutes, the approved Outreach Strategy, two versions of a hazard survey, and a Public Information Flyer about the Hazard Mitigation Planning Process.

Instructions for Surveys:

1. Hazard Survey for Technical Stakeholders - this is for anyone who is <u>not a</u> designated representative from their jurisdiction to the Hazard Mitigation Working Group. You may complete this survey and submit to me at the email address below. Also, feel free to make copies of this survey and distribute to others who are key stakeholders in Herkimer County's network of local, regional or state agencies, private sector, or other supporting entities.

https://outlook.office.com/owa/?viewmodel=ReadMessageItem&ItemID=AAMkADg4YmY3Y2YzLTcxYTYtNDU2ZC05N2ZjLTdhYjM3NjFhMTg2OQBGAAAAAAB... 1/2

2/26/2017 Herkimer Hazard Mitigation Plan - Capabilities Meeting Fol... - Freeman, Nancy

2. Hazard Survey for Citizens - this is for all jurisdictions, agencies and organizations to print/copy and distribute to citizens in your jurisdictions. the Public Information Flyer can be posted with the copies of the surveys to inform citizens about the planning process and benefits to their communities. Consider making the surveys available through websites, town halls, police and fire stations, libraries, museums, grocery stores or any major gathering point for your citizens. If you would collect the completed surveys for your jurisdiction, they can be mail them to me at the address below. The results will help inform our hazard and risk assessment process, and also help prioritize potential mitigation actions in the plan.

These surveys are an important piece of our initial outreach strategy, so your help in distributing, completing, and submitting the surveys by November 1 will be greatly appreciated!

Thanks,
Nancy

Mailing Address:
Nancy Freeman, Senior Hazard Mitigation Planner
IEM
12500 NW 56th Ave.
Gainesville, FL 32653

(352)572-9325 (mobile)
Nancy.Freeman@iem.com

https://outlook.office.com/owa/?viewmodel=ReadMessageItem&ItemID=AAMkADg4YmY3Y2YzLTcxYTYtNDU2ZC05N2ZjLTdhYjM3NjFhMTg2OQBGAAAAAAB... 2/2

Herkimer County Multi-Jurisdictional Hazard Mitigation Plan

Hazard Identification and Risk Assessment Workshop

October 19, 2016

9:30 – 12:00 p.m.

Herkimer County Emergency Services

AGENDA

- Welcome and Introductions
- Today's Objectives & Tasks
- Risk Assessment Process
- Hazard Identification & Description
  - Categories and Types
    - Previous Occurrences
    - Hazard Events Worksheet
    - Hazard Impacts and Consequences Worksheet
  - Approve Comprehensive Hazard List
- Identify Community Assets
  - Review Previously Identified Assets
  - Critical Facility Worksheet - Asset Inventory
- Analyze Risk
  - Hazard Index & Analysis Worksheet
- Summary of Vulnerability
  - Problem Statements
- Submitting completed worksheets
- Next Meeting & Adjournment

Herkimer County Multi-Jurisdictional Hazard Mitigation Plan

MINUTES OCTOBER 19, 2016 9:30 AM – 12:30 PM HERKIMER CO EM SRVS , HERKIMER, NY

MEETING CALLED BY	NYS DHSES and Contractor (IEM)
TYPE OF MEETING	Hazard Identification and Risk Assessment Workshop Meeting
FACILITATOR	Nancy Freeman, IEM
NOTE TAKER	N. Freeman
ATTENDEES	10 attendees (see list attached), representing 7 jurisdictions; regional, state, and federal agencies; and special interest organizations.

Agenda topics

WORKING GROUP BUSINESS — CHIEF ROBERT PARESE

DISCUSSION: The meeting was called to order by Chief Robert Parese, City of Little Falls Fire Department. The minutes from the last meeting, the Capabilities Assessment Workshop on September 21, 2016, were presented for approval.

CONCLUSIONS: N/A

ACTION ITEMS	PERSON RESPONSIBLE	DEADLINE
A motion was made, seconded and passed unanimously to accept the minutes as presented.	N/A	N/A

HAZARD IDENTIFCATION AND RISK ASSESSMENT PROCESS — NANCY FREEMAN

DISCUSSION: Ms. Freeman presented an overview of the Hazard Identification and Risk Assessment (HIRA) Process that the Working Group would follow for the plan.

The process formed the agenda for the workshop, which started with identifying and describing hazards. The list of hazards developed for the 2014 Draft Plan was provided for discussion, along with a comparison of the hazard list provided by FEMA Local Hazard Mitigation Plan guidance. Ms. Freeman described a methodology to align some hazards within categories in order to streamline the assessment process, and also provide a more concise framework for developing mitigation actions.

Working Group members were provided with worksheets to document "Historic Hazard Events" and "Hazard Impacts and Consequences and worked with other jurisdiction members to complete the forms.

CONCLUSIONS: Working Group members discussed various options in presenting the hazard list in the plan.

By general consent, the Working Group determined that "Transportation Accident" should be added to the list for consideration as a Technological Hazard. The final proposed list of hazards was presented for approval.

ACTION ITEMS	PERSON RESPONSIBLE	DEADLINE
A motion was made by Dominic Frank, and seconded by Stephanie Type to approve the final hazard list, as amended. The motion passed unanimously.	N/A	N/A

RISK ASSESSMENT — NANCY FREEMAN

DISCUSSION: A short orientation on the risk assessment process was presented. A "Hazard Index and Analysis" worksheet was provided for Working Group members to complete for their jurisdictions. This worksheet provided a ranking structure to assess location, extent, previous occurrences, and likelihood of future events based on specific criteria linked to numeric scores. The sum of these scores then provided an Overall Risk Score for each hazard. Participants were then asked to determine the five highest ranked hazards for their jurisdiction.

CONCLUSIONS: Chief Parese asked for a motion to accept the risk scoring methodology to determine the hazards of highest

concern.

All completed forms are due by November 1, 2015.

ACTION ITEMS	PERSON RESPONSIBLE	DEADLINE
Submit completed Hazard and Risk Assessment forms to Nancy Freeman	Jurisdiction representatives	11/1/16
A motion was made by Scott Scherer and seconded by Dominic Frank to accept the risk scoring methodology. The motion passed unanimously.	N/A	N/A

VULNERABILITY ASSESSMENT — **NANCY FREEMAN**

DISCUSSION: Ms. Freeman discussed the process that will be used to define vulnerabilities for each hazard, which include population, built environment, natural environment and economy. Another worksheet was distributed as guidance for this step of the process, and to provide descriptions of critical infrastructure and community assets that will be identified in each jurisdiction. Impacts on future development and climate change are also to be considered. In addition, Working Group members were asked to develop a "problem statement" for each of their top five hazards, as determined by the Overall Risk Score ranking process.

CONCLUSIONS: All completed worksheets are due by November 1, 2016

ACTION ITEMS	PERSON RESPONSIBLE	DEADLINE
Submit completed Vulnerability Assessment forms to Nancy Freeman	Jurisdiction representatives	11/1/16

NEXT STEPS – FUTURE MEETINGS — **NANCY FREEMAN**

DISCUSSION: Topics for the two strategy meetings to be held in November and December were discussed. The purpose of the first meeting will be to review/revise and approve the goals and objectives that will provide the foundation for Development of mitigation actions, and review previously identified projects. The Mitigation Strategy 1 meeting will be held on November 16, 2016 at the Herkimer County Emergency Services office in Herkimer and the Strategy 2 meeting will be on December 7, 2016 (location to be determined).

CONCLUSIONS: Working Group members were asked to bring their completed "problem statements" to the first strategy meeting, on November 16.

ACTION ITEMS	PERSON RESPONSIBLE	DEADLINE
None required.		

NEXT STEPS: Jurisdictions will complete and submit all HIRA worksheets by November 1, 2016

ADDITIONAL NOTES: N/A

NEXT MEETING: November 16, 2016, 9:30 am to 12:00 pm, at Herkimer County Emergency Services, Herkimer

HERKIMER COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN
HIRA MEETING - OCTOBER 19, 2016

NAME	TITLE	AGENCY	PHONE	EMAIL
Robert Vandawalker	Director	Herk. Co EMO	315-867-1212	rvan@herkimercounty
Bernard Peplinski	Chair	Herk. Co. Leg.	315-822-6974	bpep@ymail.com
Robert Paresse	Fire Chief	Little Falls	315-534-2218	rparese@cityofl.littlefalls.ne
Diane Ward	RN	HCPH	315-867-1610	dward@herkimercounty.o
Jessica Breiten	Chief Plnr	HCCPP	315 798-570	JBREITEN@OCGOV.NET
Scott Scherer	Undersheriff	HCSO	315-867-1162	SSscherer@herkimercounty.org
Brian Olds		NYSDOT-Herkimer	315 866-1123	Brian.olds@dot.ny.go
Frank P Spatto		Town of German Flatts	315 866 4960	
Dominic Frank		Town of Herkimer	315-866-5104	supervisor@townofherkimer.org
Ramona Gassmann		Comm. Flood Advisory Group	315 485-3929	rbg@twcny.rr.com
Corinna Cavallo				(rbg@twcny.rr.com)
Nancy Freeman				

NYS – Herkimer Co. Multi-Jurisdictional Hazard Mitigation Plan

October 5, 2016 -

EMAILED invitation to HIRA Workshop:

- Working Group Email Distribution List (jurisdictions and stakeholders)
- Municipal clerks list

October 5, 2016 -

MAILOUTS to: [Municipal contacts without email]

- Village of Cold Brook
  - Beverly Van Valkenburg, Mayor/Supervisor 315-826-7795
    - Darlene Przelski, Clerk
- Town of Danube
  - Richard Mosher, Mayor/Supervisor 315-823-3400
    - Mary Herringshaw, Clerk
- Town of Little Falls
  - Brian Marhaver, Mayor/Supervisor 315-823-1202
    - Sandra Regan, Clerk
- Village of Middleville
  - Craig Fox, Mayor/Supervisor 315-891-3208
    - Ann Marvin, Clerk
- Town of Salisbury
  - Jean Daley, Mayor/Supervisor 315-429-8581
    - Stanley Bilinski, Clerk
- Town of Stark
  - Richard Bronner, Mayor/Supervisor 315-858-1467
    - Lynn Rogers, Clerk
- Town of Warren
  - Lisa Van Winkler, Mayor/Supervisor 315-8581207
    - Anne Halkowich

MEETING ANNOUNCEMENT: *Herkimer County Multi-Jurisdictional Hazard Mitigation Plan* Working Group

PURPOSE: Hazard Identification and Risk Assessment (HIRA) Workshop

DATE: October 19, 2016

TIME: 9:30 a.m. to 12:00 p.m.

LOCATION: Herkimer County Emergency Services
71 Reservoir Rd.
Herkimer, NY 13350

This notice will serve as your invitation to the next meeting of the *Herkimer County Multi-Jurisdictional Hazard Mitigation Plan* Working Group. The purpose of this meeting is to review and verify your community's hazards, including previous occurrences and potential future events, and assess your jurisdiction's level of risk related to each hazard. In addition, the activities that will be conducted at the meeting will assist your community in identifying critical facilities, infrastructure and other community assets specific to your jurisdiction that may be especially vulnerable to hazards.

We encourage you to attend along with those in your community who can assist in providing technical information and expertise in hazard characteristics, past disaster events and critical infrastructure and community assets. Your community team will have the opportunity to jointly complete several hazard and risk-related worksheets at the meeting.

In preparation for the meeting, please review the worksheets attached to this invitation to identify specific information that will be needed at the meeting. You may find it helpful to print these documents and begin filling in basic information prior to the meeting.

The completion of your jurisdiction's hazard and risk assessment at the October meeting will provide the foundation for the next step in the planning process at the November 16, 2016 Mitigation Strategy Workshop 1, which is to define goals and objectives to address the hazards of greatest concern and risks to your community and its assets and infrastructure.

Please respond to Nancy.Freeman@iem.com **by October 14, 2016** to let me know how many will be attending from your jurisdiction, so that we may have sufficient materials prepared. If you have any questions, you may reach me by phone at (352)572-9325.

I look forward to seeing you on October 19!

Attachments: Herkimer_HIRA Workshop Agenda 10.19.16

Herkimer_HIRA Worksheet #3 Historic Hazard Event 10.19.16

Herkimer_HIRA Worksheet #4 Hazard Impacts and Consequences 10.19.16

Herkimer_HIRA Worksheet #5 Hazard Index and Analysis 10.19.16

Herkimer County Multi-Jurisdictional Hazard Mitigation Plan

Herkimer County, New York

10/5/2016

MEETING ANNOUNCEMENT:

Herkimer County Multi-Jurisdictional Hazard Mitigation Plan Working Group

PURPOSE:

Hazard Identification and Risk Assessment Workshop

DATE: October 19, 2016

TIME: 9:30 a.m. to 12:00 p.m.

LOCATION:

Herkimer County Emergency Services
71 Reservoir Rd.
Herkimer, NY 13350

YOU ARE INVITED!

This notice will serve as your invitation to the next meeting of the ***Herkimer County Multi-Jurisdictional Hazard Mitigation Plan*** Working Group. The purpose of this meeting is to review and verify your community's hazards, including previous occurrences and potential future events, and assess your jurisdiction's level of risk related to each hazard. In addition, the activities that will be conducted at the meeting will assist your community in identifying critical facilities, infrastructure and other community assets specific to your jurisdiction that may be especially vulnerable to hazards.

We encourage you to attend along with those in your community who can assist in providing technical information and expertise related to hazards and their impacts, as well as critical infrastructure and community assets. Your community team will have the opportunity to jointly complete several hazard and risk-related worksheets at the meeting.

In preparation for the meeting, please review the worksheets enclosed with this invitation to identify specific information that will be needed at the meeting. You may find it helpful to print these documents and begin filling in basic information prior to the meeting. The completion of your jurisdiction's hazard and risk assessment at this meeting will prepare us for the next step in the planning process at the November 16, 2016 Mitigation Strategy Workshop 1, which is to define goals and objectives to address the hazards of greatest concern, and risks to your community and its assets and infrastructure.

Please respond to Nancy.Freeman@iem.com **by October 14, 2016** to let me know how many will be attending from your jurisdiction Please feel free to contact me at (352) 572-9325 if you have any questions.

We look forward to seeing you on October 19!

Cordially,

Nancy Freeman, Mitigation Planning Consultant

10/16/2016

HAZARD IDENTIFICATION & RISK ASSESSMENT WORKSHOP

HERKIMER COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN

HIRA PROCESS

- Step 1 • Identify and Describe Hazards
- Step 2 • Identify Community Assets
- Step 3 • Analyze Risk
- Step 4 • Summarize Vulnerability

TODAY'S OUTCOME

1. **Review and approve a comprehensive list of hazards**
   - Review previous and current hazard occurrences and available risk and vulnerability data
2. **Identify additional sources for hazard and risk information**
3. **Develop Jurisdictional Hazard Profiles**

TODAY'S OUTCOME

4. **Identify Community Assets**
   - Review critical facilities, infrastructure and other assets identified in previous planning studies
5. **Begin Analysis of Risk**
   - Population
   - Built Environment
   - Natural Environment
   - Economy
6. **Summarize Overall Risk by Hazard**
   - Prioritize/scale hazards to identify hazards of highest concern
   - Determine if low priority hazards can be excluded from further development in the plan
7. **Identify additional sources for risk assessment data**

DEFINITIONS

- **Natural Hazard** - source of harm or difficulty created by a meteorological, environmental, or geological event
- **Technological Hazard** – results from accident or the failure of systems and structures
- **Human-Caused Incident or Threat** – results from intentional actions of an adversary
- **Community assets** – the people, structures, facilities and systems that have value to the community

DEFINITIONS

- **Impact** – the consequences or effects of the hazard on the community and its assets
- **Risk** - The potential for damage, loss, or other impacts created by the interaction of natural hazards with community assets
- Exposure of:
  - People
  - Built Environment
  - Natural Environment
  - Economy

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DEFINITIONS

- **At-Risk Populations**
  - Individuals who may need additional assistance before, during or after a disaster in order to maintain or stabilize functional needs or activities of daily living (special medical needs, vision-impaired, dialysis-dependent, etc.)
- **Vulnerable Populations**
  - Individuals who, due to increased risk in their living situations may be more severely impacted by the effects of a disaster (residents in flood zones, sub-standard housing, transient, migrant workers, transportation-dependent, etc.)

DEFINITIONS

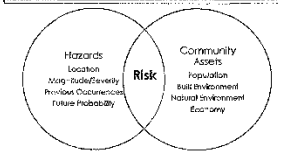
- **Vulnerability** - characteristics of community assets that make them susceptible to damage or impact from a given hazard
- ***Measures of vulnerability***
  - ***Quantitative – assigns values to measure the potential losses to the assets at risk.*** (i.e., type, number, and total value of existing buildings, infrastructure and critical facilities in a hazard area)
  - ***Qualitative*** – description of the types of impacts that might occur during a hazard event

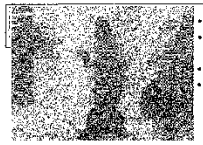
DEFINITIONS

- **Risk Assessment** – product or process that collects information and assigns values to risks for the purpose of informing priorities, developing or comparing courses of action, and informing decision making

> ***"A Risk Assessment is the process of measuring the potential loss of life, personal injury, economic injury, property damage, and environmental impact resulting from hazards."***

RELATIONSHIP OF RISK





- Hazard, Type
- Impact/ Consequence
- Risk
- Vulnerability

Example: Hazard and Vulnerability Assessment

1. DESCRIBE HAZARDS

- Natural Hazard List – FEMA, *Local Hazard Mitigation Planning Handbook*
- Hazards identified in the 2014 Draft Plan
- Additional hazards for consideration

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1. DESCRIBE HAZARDS

- **Location**
  - Geographic area affected by the hazard
  - Maps and narratives
- **Extent** – characteristics of magnitude or strength
  - Scientific measurement system, such as the Enhanced Fujita Scale (tornado), or Richter Scale (earthquake)
  - Water depth
  - Wind speed
  - Speed of onset (warning time)
  - Duration (the longer the duration, the greater the extent)

1. DESCRIBE HAZARD

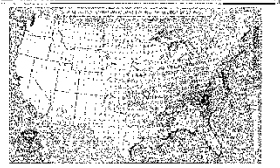
- **Previous Occurrences**
  - Historical Data
  - Multiple sources
  - Helps to estimate the likelihood of future events
  - Predicts potential impacts
- **Likelihood of Future Events**
  - Historical Frequencies
  - Statistical probabilities
  - General descriptions or rankings

EXAMPLE: PREVIOUS OCCURRENCES

NCDC – Summary of Storm Event Days reported between 01/01/2008 and 03/31/2016

Number of County/Zone areas affected:	3
Number of Days with Event:	217
Number of Days with Event and Death:	0
Number of Days with Event and Death or Injury:	0
Number of Days with Event and Property Damage:	17
Number of Days with Event and Crop Damage:	0
Number of Event Types reported:	20

EXAMPLE: PREDICTING FUTURE EVENTS USING HISTORICAL FREQUENCIES



WORKSHEET #3: HISTORIC HAZARD EVENTS

- **Document significant hazard events by jurisdiction**
  - Type and magnitude
  - Location
  - Date
  - Injuries/Fatalities
  - Property Damage ($)
    - Repetitive Flood Loss ($)
  - Infrastructure Damage ($)
  - Crop Damage ($)
- Business/economic impacts ($ direct & indirect)
- Road/school/other closures (days lost)
- Other Damage
- Insured Losses
- Federal/state disaster relief funding
- Opinion on likelihood of reoccurrence
- Source of information

HERKIMER COUNTY HAZARDS*

Hazard	HAZMY Range (2014)
Flood	High
Severe Storm (including hurricane)	Moderately High
Ice Storm	Moderately High
Ice Jam	Moderately High
Winter Storm (Severe)	Moderately High
Wildfire	Moderately High
Landslide	Moderately Low
Tornado	Moderately Low
Epidemic (human and agricultural)	Moderately Low
Earthquake	Moderately Low
Extreme Temperatures (heat)	Moderately Low
Drought	Moderately Low

*Source: 2014 Draft Herkimer County Mitigation Plan

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HAZARD COMPARISON – FEMA AND HAZNY

*Ice Storm - defined in three places: (1) Severe Storm (p. 84), (2) Ice storm (pp. 92-93); (3) Winter Storm (several describes heavy snowfall, extreme cold, & ice storms (pp. 180-183)

**Ice Jam – defined in three places: (1) Flood (pp.80-82); (2) Page 82 references Section 4-5, (pp. 87-99); (3) Winter Storms

***Flood: *Riverine overbank; flash; alluvial fan; mudflows or debris; ice jams; dam and levee breaks; local drainage or high groundwater levels; (including lake levels; coastal*

Hazard	
Dam Failure	*Dam Failure – 2014 Apendix*
Drought	Drought (1/25)
Earthquake	Earthquake (1/26)
Erosion	
Expansive Soils	
Extreme Cold	Winter Storm (2/29)
Extreme Heat	Extreme Temps (1/30)
Flood***	Flood (1/31)
Hail	Severe Storm (3/4)
Hurricane	Severe Storm (2/8)
Landslide	Landslide (2/10)
Lightning	Severe Storm (2/15)
Sea Level Rise	
Severe Wind	Severe Storm (2/16)
Severe Winter Weather	Winter Storm (2/19) & Severe Storm (2/21)
Storm Surge	
Subsidence	
Tornado	Tornado (2/24)
Tsunami	
Wildfire	Wildfire (2/27)
	Epidemic (3/3)
	Ice Storm (3/5)
	**Ice Jam (3/7)

OTHER HAZARDS TO CONSIDER

- **Transportation Accident** (include hazardous materials)
- **Chemical Spill**
- **Structure/Industrial Fire**
- **Epidemic** (human and animal)
- **Impacts of Climate Change** *(specific hazards affected by climate change)*

Potential Future Impacts from Climate Change: temperature, precipitation, water quantity/ quality, snow, storm frequency and intensity, wind speed and direction, humidity and evaporation

HAZARD "CATEGORIES"

- **Flood-Related Hazards**
  - Riverine & Flash Floods
  - Ice Jam & Debris Flow
  - High Groundwater & Local Drainage
  - Dam/Levee Failure
- **Soil Hazards** (resulting from erosion, expansive soil and subsidence)
- **Biological Hazards** (human and agricultural epidemics)
- **Severe Weather**
  - Hail
  - High wind (hurricane, straight line, tornado)
  - Lightning
  - Thunderstorm/heavy rainfall
  - Winter storm (snow, ice, extreme cold)
- Fire (wildfire & structure fire)

PROPOSED HAZARD CATEGORIES AND TYPES

- Flood
- Severe Weather
- Soil Hazards

This method of categorizing hazards would reduce the number of "hazards" profiled in the Plan from 12 to 8.

Avalanche	
Drought	
Earthquake	
Extreme Heat	
Flood: Dam/Levee Failure	
Flood: Ice Jam & Debris Flow	
Flood: High Groundwater & Local Drainage	
Flood: Riverine & Flash Flood	
Landslide	
Sea Level Rise	
Severe Weather: Hail	
Severe Weather: High Wind (hurricane, straight line)	
Severe Weather: Lightning	
Severe Weather: Thunderstorm/Heavy Rain	
Severe Weather: Tornado	
Severe Weather: Winter Weather (snow, ice, extreme cold)	
Storm Surge	
Soil Hazards: Erosion	
Soil Hazards: Expansive Soils	
Soil Hazards: Subsidence	
Tsunami	
Wildfire	
Epidemic	
Climate Change Drivers	

HMWG ACTION REQUIRED -

- **"Adopt the modified list of hazards based on the FEMA hazard list, with the proposed hazard categories and classifications."**

HAZARDS DESCRIPTIONS

- **Surveys and needs assessments**
- **Historical data/past disasters**
- **Hazard-Specific Statistics** (NOAA, NHC, NCDC, SHELDUS, etc.)
- **Land-use planning data** (GIS, FIRMs, USGS, etc.)
- **Community knowledge**

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HAZARD DESCRIPTIONS

- **Location**
- **Extent** (strength or magnitude)
  - Value (Ex., Enhanced Fujita Scale - tornado, Richter Scale - earthquake)
  - Other measures (Ex., water depth, wind speed)
  - Speed of onset (warning or no warning)
  - Duration (hours, days, weeks, etc.)
- **Previous Occurrences**
- **Likelihood of Future Events**
  - Statistical probabilities – usually based on historical frequency (Ex., 0.1% annual chance of flood, or "100-year flood")
  - General descriptions ("Highly likely, likely, unlikely")

WORKSHEET #4: HAZARD IMPACTS & CONSEQUENCES

- Review the hazard list and determine which hazards are applicable to your jurisdiction.
- Any additional hazards that have the potential to occur in your jurisdiction?
- Check the box for each impact/consequence that may result from each hazard.
- You may add additional impacts/consequences, if needed.

2. IDENTIFY COMMUNITY ASSETS

- ***People***
  - Concentrations of resident population
  - Visiting population
  - Access and functional needs populations ("At-Risk")
  - Demographic trends to predict vulnerability
  - Locations that provide health and social services critical to disaster recovery
- ***Economy***
  - Major employers, economic sectors and commercial centers
  - Dependencies between economic sectors and businesses and the infrastructure needed to support them

2. IDENTIFY COMMUNITY ASSETS (CONTINUED)

- ***Built Environment***
  - Existing structures (types, age, construction type)
  - Infrastructure and critical facilities (inventory of location, construction materials, age, life expectancy of specific critical infrastructure and facilities in the planning area
  - Dependencies between infrastructure systems, critical facilities, and the people they serve
  - Cultural institutions
  - Future Development
- ***Natural Environment***
  - Most valuable assets that can provide protective functions that reduce the magnitude of hazards events
  - Critical habitat areas and other environmental features that are important to protect

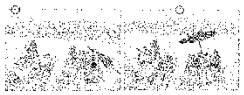
3. ANALYZE RISK

- Exposure - existing and future assets located in identified hazard areas
  - Historical
    - Previous reported events predict potential impacts and losses (flood, wildfire, extreme temperature)
  - Scenario
    - Projected impacts of a particular event, "What If..." (earthquake, tornadoes)

Methods can be expressed:

- Qualitatively – describe types of impacts that might occur during a hazard event
- Quantitatively - assign values and measure the potential losses to the assets at risk

QUANTIFYING RISK



RISK = HAZARD x EXPOSURE

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WORKSHEET #5 – HAZARD INDEX AND RISK ANALYSIS

- **For each hazard, determine a score for:**
  - Location
  - Probability of Future Occurrences
  - Magnitude/Severity
  - Significant
- **Add your scores for each hazard to determine the Overall Risk Score**

HAZARD PRIORITIES BASED ON OVERALL RISK SCORE

Determine the top 5 hazard priorities for **your** jurisdiction.

1. _____
2. _____
3. _____
4. _____
5. _____

HMWG ACTION REQUIRED -

- **Adopt the numeric ranking scale for risk based on the hazard index and risk analysis.**

ADDITIONAL RISK ANALYSIS

- Property Appraiser's Data
- GIS mapping
- Statistical analysis
- New Data
- New Sources

QUANTITATIVE EXAMPLE - TABLE: SUMMARY OF POTENTIAL HAZARD-RELATED EXPOSURE/LOSS IN HERKIMER COUNTY

	Population	Residential		Commercial		Critical Facilities	
Hazard Type Analyzed	Exposed Population	Number of residential Buildings	Potential Exposure Loss for Residential Buildings in Dollars	Number of Commercial Buildings	Potential Exposure/Loss for Commercial Buildings in Dollars	Number of Critical Facilities	Potential Exposure for Critical Facilities in Dollars
Drought							
Earthquake							
Extreme Heat							

QUALITATIVE EXAMPLE: RISK PROBLEM STATEMENTS

- The North Creek Sewage Treatment Plan is located in the 100-year floodplain and has been damaged by past flood events. It serves 10,000 residential and commercial properties.
- The schools are a central focus of the community and offer opportunities to educate the public about hazards, risk and mitigation. In addition, many school facilities are vulnerable to one or more hazards, including flooding, earthquake, tornado and severe winter storms.

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SUMMARIZE VULNERABILITY

- **Risk Problem Statements – Issues of Greatest Concern**
  - Each Priority Hazard
  - Specific location(s)
  - Based on analysis of past events, impacts, and losses
    - Population
    - Built Environment
      - Homes
      - Business and industry
      - Critical facilities and infrastructure
      - Other Community costs
    - Natural Environment
    - Economy
  - Consider impacts from future development and climate change

NFIP WORKSHEET – REPETITIVE FLOOD LOSS, BY JURISDICTION

- Number of policies
- Number of claims
- Total loss ($)
- Number of repetitive loss properties

NEXT MEETING

- **Miligation Strategy Workshop 1- Goals and Objectives**
  - **November 16, 2016**
  - Location(s)

SUBMIT WORKSHEETS BY NOV. 1

- Scan and Email:
  Nancy.Freeman@iem.com
- Mail:
  Nancy Freemon
  12500 NW 56th Ave.
  Gainesville, FL 32653
- Questions: 352-672-9325

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WORKSHEET #3: HISTORIC HAZARD EVENT

Jurisdiction: _____ **Date:** _____

Please fill out one sheet for each significant hazard event with as much detail as possible. Attach supporting documentation, photocopies of newspaper articles, or other original sources.

Type of Event	
Nature and magnitude of event	
Location	
Date of event	
Injuries	
Fatalities	
Property damage	
Infrastructure damage	
Crop damage	
Business/economic impacts	
Road/school/other closures	
Other damage	
Insured losses	
Federal/state disaster relief funding	
Opinion on likelihood of occurring again	
Source of information	
Comments	

Prepared by: _____
Phone _____
Email _____
Date _____

Participants: _____
_____

Please return worksheets by mail or email to:
Nancy Freeman, IEM
12500 NW 56th Ave.,
Gainesville FL 32653
email: Nancy.Freeman@iem.com

WORKSHEET #4: HAZARD IMPACTS & CONSEQUENCES

For the purpose of this worksheet:

- **Flood** category includes: **Riverine overbank, flash, debris flow, ice jam, dam/levee failure, high groundwater & local drainage and fluctuating lake levels.**
- **Hail, High Wind, Lightning, Thunderstorm/Heavy Rain, Tornado, and Winter Weather (Snow, ice, extreme cold)** are considered as elements of the **"Severe Weather"** category.
- **Erosion, Expansive Soils and Subsidence** are considered as elements of the **"Soil Hazards"** category.

INSTRUCTIONS

This activity should be conducted with your Local Planning Committee.

1. Review the list of hazards provided and determine which hazards are applicable to your jurisdiction.

2. Add any additional hazards that have the potential to occur in or impact your jurisdiction.

3. Using the list of impacts and consequences described in the column headings, check the appropriate boxes to indicate which impacts/consequences may result from the hazard. You may add additional impacts/consequences that are not already described.

PARTICIPANTS: (Name, Position/Title, Agency)

1.

2.

3

4.

5.

WORKSHEET #4: HAZARD IMPACTS & CONSEQUENCES **JURISDICTION_____ DATE_____**

Hazards for Consideration (FEMA)	Primary Hazard*	Mass Casualty Potential	Transportation Infrastructure damaged	Impact on Emergency Response Operations	Communication Failure	Damage to homes and businesses	Health and Medical System Impacts	Water system damage or failure	Utility System Damage or Failure	Sewer system damage or failure	Environmental Damage or Long Term Impact	Agricultural Losses - Crops	Agricultural Losses - Animals	Economic Impact-Direct or Indirect	Civil Unrest	Commodity Shortage	Impact to Public's Confidence in Governance	Impacts to cultural or historical assets	[Other]	[Other]	[Other]
Avalanche																					
Dam Failure	*[Dam Failure - Appendix]*																				
Drought	**Drought (172)**																				
Earthquake	**Earthquake (186)**																				
Erosion																					
Expansive Soils																					
Extreme Cold	**Winter Storm (229)**																				
Extreme Heat	**Extreme Temps (180)**																				
Flood**	**Flood (323)**																				
Hail	**Severe Storm (281)**																				
Hurricane	**Severe Storm (281)**																				
Landslide	**Landslide (202)**																				
Lightning	**Severe Storm (281)**																				
Sea Leavel Rise																					
Severe Wind	**Severe Storm (281)**																				
Severe Winter Weather	**Winter Storm (229) & Severe Storm (281)**																				
Storm Surge																					
Subsidence																					
Tornado	**Tornado (201)**																				
Tsunami																					
Wildfire	**Wildfire (207)**																				
	Epidemic (190)																				
	***Ice Storm (253)**																				
	****Ice Jam (232)**																				

*2014 (DRAFT) County Hazard Mitigation Plan

Herkimer County Multi-Jurisdictional Hazard Mitigation Plan

Proposed Hazard Groupings by Type

Avalanche
Drought
Earthquake
Extreme Heat
Flood: Dam/levee Failure
Flood: Ice Jam & Debris Flow
Flood: High Groundwater & Local Drainage
Flood: Riverine & Flash Flood
Landslide
Se Leavel Rise
Severe Weather: Hail
Severe Weather: High Wind (hurricane, straight line)
Severe Weather: Lightning
Severe Weather: Thunderstorm/Heavy Rain
Severe Weather: Tornado
Severe Weather: Winter Weather (snow, ice, extreme cold)
Storm Surge
Soil Hazards: Erosion
Soil Hazards: Expansive Soils
Soil Hazards: Subsidence
Tsunami
Wildfire
Epidemic
Climate Change (Impacts)

WORKSHEET #5: HAZARD INDEX AND RISK ANALYSIS
Jurisdiction_____ **Date**_____

Hazard	Location	Probability of Future Occurrences	Magnitude/ Severity	Significance	Overall Risk Score*
Avalanche					
Drought					
Earthquake					
Extreme Heat					
Flood: Dam/Levee Failure					
Flood: Ice Jam & Debris Flow					
Flood: High Groundwater and Local Drainage					
Flood: Riverine & Flash Flood					
Landslide					
Severe Weather: Hail					
Severe Weather: High Wind					
Severe Weather: Lightning					
Severe Weather: Thunderstorm/Heavy Rain					
Severe Weather: Tornado					
Severe Weather: Winter Weather					
Soil Hazards: Erosion					
Soil Hazards: Expansive Soils					
Soil Hazards: Subsidence					
Wildfire					
Epidemic					
Climate Change (Impacts)					

Definitions and Ranking for Classifications

Location (Geographic Area Affected)

1 pt. - Negligible: Less than 10 percent of planning area or isolated single-point occurrences
2 pt. - Limited: 10 to 25 percent of the planning area or limited single-point occurrences
3 pt. - Significant: 25 to 75 percent of the planning area or frequent single-point occurrences
4 pt. - Extensive: 75 to 100% of the planning area or consistent single-point occurrences

Probability of Future Occurrences

1 pt. - Unlikely: No previous record of occurrence; recurrent interval of greater than every 100 years.
2 pt. - Low: Occurs less than once every 10 years or more.
3 pt. - Medium: Occurs less than once every 5 to 10 years
4 pt. - High: Occurs once very year or up to once every five years;

Magnitude/Severity (based on historic events or future probability)

1 pt. - Weak: Limited classification on scientific scale, slow speed of onset or short duration of event, resulting in little or no damage
2 pt. - Moderate: Moderate classification on scientific scale, moderate speed of onset or moderate duration of event, resulting in some damage loss of services for days.
3 pt. - Severe: Severe classification on scientific scale, fast speed of onset or long duration of event, resulting in devastating damage and loss of services for weeks or months
4 pt. - Extreme: Extreme classification on scientific scale, immediate onset or extended duration of event, resulting in catastrophic damage and uninhabitable conditions

Hazard	Scale/Index	Weak	Moderate	Severe	Extreme
Drought	Palmer Drought Severity Index[1]	-1.99 to +1.99	-2.00 to -2.99	-3.00 to -3.99	-4.99 and below
Earthquake	Modified Mercalli Scale[2]	I to IV	V to VII	VII	IX to XII
	Richter Magnitude[3]	2, 3	4, 5	6	7, 8
Hurricane Wind	Saffir-Simpson Hurricane Wind Scale[4]	1	2	3	4,5
Tornado	Enhance Fujita Tornado Damage Scale[5]	EF0, EF1	EF2	EF3	EF4, EF5

Significance

1 pt. - Negligible: No potential impact or the event has a no expected potential for mitigation
2 pt. - Low: Two or more criteria fall in lower classifications or the event has a minimal impact on the planning area. This rating is sometimes used for hazards with a minimal or unknown record of occurrences or for hazards with minimal mitigation potential.
3 pt. - Medium: The criteria fall mostly in the middle ranges of classifications and the event's impacts on the planning area are noticeable but not devastating. This rating is sometimes used for hazards with a high extent rating but very low probability rating.
4 pt. - High: The criteria consistently fall in the high classifications and the event is likely/highly likely to occur with severe strength over a significant to extensive portion of the planning area.

Overall Risk Score

- Low – 4-8 points (Minimal potential impact. The occurrence and potential cost of loss of life and damage to property is minimal.)
- Medium – 9-12 points (Moderate potential impact or moderate threat level to the general population and/or built environment. The potential damage is more isolated and less costly than a widespread disaster.)
- High – 13-16 points (Widespread potential impact or high threat to the general population and/or built environment. The potential for damage is widespread. Hazards in this category may have occurred in the past.)

[1] Cumulative meteorological drought and wet conditions: http//ncdc.noaa.gov/
[2] Earthquake intensity and effect on population and structures: http://earthquake.usgs.gov
[3] Earthquake magnitude as a logarithmic scale, measured by a seismograph: http://spc.noaa.gov
[4] Hurricane rating based on sustained wind speed: http://nhc.noaa.gov
[5] Tornado rating based on set of estimated wind speed based on damage: http//spc.noaa.gov

Prepared by: _____
Phone _____
Email _____
Date _____

Participants: _____
_____
_____

Please return worksheets by mail or email to:
Nancy Freeman, IEM
12500 NW 56th Ave.,
Gainesville FL 32653
Email: Nancy.Freeman@iem.com

WORKSHEET #6: VULNERABILITY ASSESSMENT

Jurisdiction: _____ **Date:** _____

The purpose of this worksheet is to assess the vulnerable populations, buildings, critical facilities, infrastructure, economy and other important community assets by using the best available and most current data to complete the table and questions that follow. Use the table on the next page to compile a detailed inventory of specific assets at risk including critical facilities and infrastructure; natural, cultural, and historical assets; and economic assets as defined below. These may include hospitals, fire stations, or historic buildings. In the hazard specific column of the asset inventory table, indicate if there is a specific hazard to which the asset is at risk.

Critical Facilities

FEMA generally defines four kinds of critical facilities:

- Police stations, fire stations, vehicle and equipment storage facilities, and emergency operations centers that are needed for emergency response activities before, during, and after a hazard event.
- Hospitals, nursing homes, and housing likely to have occupants who may not be sufficiently mobile to avoid injury or death during a hazard event
- Public and private utility facilities that are vital to maintaining or restoring normal services to hazard areas before, during, and after a hazard event
- Structures or facilities that produce, use, or store highly volatile, flammable, explosive, toxic, and/or water-reactive materials

FEMA's HAZUS-MH loss estimation software uses the following three categories of critical assets. 'Essential facilities' are those that if damaged would have devastating impacts on disaster response and/or recovery. 'High potential loss facilities' are those that would have a high loss or impact on the community. 'Transportation and lifeline facilities' include transportation and utilities infrastructure. Examples include:

Essential Facilities	High Potential Loss Facilities	Transportation and Lifeline
Hospitals and other medical facilities	Power plants	Highways, bridges, and tunnels
Police stations	Dams/levees	Railroads and facilities
Fire stations	Military installations	Bus facilities
Emergency Operations Centers	Hazardous material sites	Airports
	Schools	Water treatment facilities
	Day care centers	Natural gas facilities and pipelines
	Nursing homes	Oil facilities and pipelines
	Main government buildings	

Natural, Cultural, and Historical Assets

Natural resource assets may include wetlands, threatened and endangered species, or other environmentally sensitive areas. Cultural assets may be associated with the beliefs, customs, arts, etc., of a particular society, group, place or time. Historical assets include structures, properties, collections and artifacts recognized for their historical significance. Historical assets may or may not be formally listed on state and/or federal registers as "historic sites".

Economic Assets

Economic assets at risk may include major employers or primary economic sectors, such as agriculture, whose losses or inoperability would have severe impacts on the community and its ability to recover from disaster.

Critical Facility/Asset Inventory

Jurisdiction: _____ **Date:** _____

Name of Asset	Facility Type	Replacement Value	Hazard Information

Summary of Potential Hazard-Related Exposure/Loss in [jurisdiction]*

	Population	Residential		Commercial		Critical Facilities	
Hazard Type	Exposed Population	Number of Residential Buildings	Potential Exposure/Loss for Residential Buildings (x $1,000)	Number of Commercial Buildings	Potential Exposure/Loss for Commercial Buildings (x $1,000)	Number of Critical Facilities	Potential Exposure for Critical Facilities (x $1,000)
Avalanche							
Drought							
Earthquake							
Extreme Heat							
Flood (Loss)							
• Dam/Levee Failure							
• Ice Jam & Debris Flow							
• High Groundwater & Local Drainage							
• Riverine & Flash Flood							
Landslide							
Severe Weather: Hail, High Wind, Lightning, Thunderstorm/Heavy Rain, Tornado							
Severe Weather: Winter Weather							
Soil Hazards							
• Erosion							
• Expansive Soils							
• Subsidence							
Wildfire							
Epidemic							
Climate Change (Impacts)							

** Represents best available data at this time*

Additional Hazard, Risk, and Vulnerability Questions

Localized/Stormwater Flooding

1. Please describe the localized/stormwater flood issue specific to your jurisdiction in paragraph form. In addition, please provide a list detailing types and location of localized/stormwater flooding problems. If available, also attach a map of problem areas.

Earthquake Vulnerability

1. Does the local building code require reinforced masonry buildings? If not, how many unreinforced masonry buildings are in the jurisdiction?

Special Populations

1. Describe any hazard-related concerns or issues regarding the vulnerability of access and functional needs populations, such as the elderly, disabled, low-income, or migrant farm workers.

Future Development

1. Describe development trends and expected growth areas and how they relate to hazard areas and vulnerability concerns/issues. Please provide zoning/land use maps and GIS layers, maps, and/or tables, if available, detailing areas targeted for future development within your jurisdiction.

2. By property type (residential, commercial, industrial, etc.), identify the numbers of structures and/or development areas built since 2008 and provide details on whether any of the new development falls within any hazard areas. If available, provide this information in table format. (Data may be obtained through property appraiser records, number of building permits (by type) per year, etc.)

Prepared by: _____
Phone _____
Email _____

Date _____
Participants: _____
_____
_____

Please return worksheets by mail or email to:
Nancy Freeman, IEM
12500 NW 56th Ave.
Gainesville FL 32653
Email: Nancy.Freeman@iem.com

SURVEYS WILL BE ACCEPTED UNTIL NOVEMBER 1, 2016

HERKIMER COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN
SURVEY FOR TECHNICAL STAKEHOLDERS

This questionnaire is designed to assist Herkimer County and its municipalities in the development of their Multi-Jurisdictional Hazard Mitigation Plan by identifying stakeholder/ agency concerns about natural hazards and to better understand stakeholder preferences in reducing risk and loss from natural and other hazards. Please take a few minutes to complete this questionnaire.

The purpose of the Natural Hazard Mitigation Plan is to:

- Identify the most recent data for floods, severe storms and other natural hazards;
- Become eligible for FEMA mitigation grants to fund measures that reduce the threats posed by floods, severe storms and other hazards to important buildings and infrastructure; and
- Help Herkimer County and its municipalities to identify high risk situations and prioritize mitigation actions.

1. Please enter your contact information:

Name	
Agency Affiliation	
Position/Title	
Phone	
Email	

2. Perceived Risk from Natural Hazards.

Risk means the threats to people, buildings, infrastructure and the environment. Risk depends on the combination of two factors:

• The frequency and severity of hazard events
• The vulnerability of the built environment to each hazard, the quantity of buildings, infrastructure and people exposed to a given hazard.

Which of the following hazards do you think pose the greatest threat to Herkimer County over the next 20 years? ***Rank the hazards with 1 posing the greatest threat, 2 posing the next greatest threat and so on. ("OTHER" is optional.)***

__ Avalanche
__ Drought
__ Earthquake
__ Epidemic (animal)
__ Epidemic (human)
__ Extreme Heat

Herkimer County Hazard Mitigation Survey - Stakeholders Page 1

SURVEYS WILL BE ACCEPTED UNTIL NOVEMBER 1, 2016

__ Floods (including riverine, flash floods, alluvial fan, ice jams, dam/levee break)
__ Human-caused (terrorism, civil unrest, cyber-attack)
__ Landslide
__ Severe Storm (hail, high wind/hurricane/tornado, lightning, thunderstorm/heavy rain)
__ Severe Winter Storm (snow, ice, extreme cold)
__ Soil Hazards (erosion/deposition, expansive soils, subsidence
__ Technological (hazardous material incident, transportation incident, utility failure)
__ Wildfire
__ Other _____
__ Other _____

3. Imagine that someone gave you $1,000,000 to make Herkimer County less vulnerable to hazards, what would you spend it on?

4. Mitigation Priorities of Community Assets:

Mitigation means actions taken to reduce damages, economic losses and casualties in future disaster events.

Rank your preferences for the mitigation priorities the jurisdiction should follow from 1 to 12, with 1 being the highest priority, 2 being the next highest priority, etc.:

__ Reduce damage to electric power, gas, water and sewer systems
__ Reduce damage to roads and bridges
__ Reduce damage to hospitals
__ Reduce damage to fire stations and police stations
__ Reduce damage to schools
__ Reduce damage to public buildings
__ Reduce damage to private buildings
__ Reduce deaths and injuries
__ Protect the natural environment from disasters
__ Protect historical and cultural landmarks
__ Protect private property
__ Prevent future development in high hazard areas

Herkimer County Hazard Mitigation Survey - Stakeholders Page 2

SURVEYS WILL BE ACCEPTED UNTIL NOVEMBER 1, 2016

5. Strategies to Reduce Risk and Losses from Disasters

A number of activities can reduce your community's risk from natural hazards. These activities can be both regulatory and non-regulatory.

Please rank your level of support for the following strategies to reduce loss of life, property damage and economic loss from future disasters in Herkimer County.

Strategy	Agree Strongly	Agree	Neutral	Disagree	Disagree Strongly	Not Sure
I support a regulatory approach to reducing risk						
I support non-regulatory approach to reducing risk						
I support a mix of both regulatory and non-regulatory approaches to reducing risk						
I support policies to prohibit development in high hazard areas						
I support the use of local tax dollars to reduce risks and losses from natural hazard						
I support steps to safeguard the local economy following a disaster event						
I support the disclosure of natural hazard risks during real estate transactions						
I support making public buildings more resistant to hazards						
I support making utilities more resistant to hazards						
I support making bridges more resistant to hazards						
Other _____						

6. Please feel free to provide any additional comments in the space provided:

TO SUBMIT SURVEY, PLEASE SCAN AND EMAIL TO: Nancy.Freeman@iem.com

Herkimer County Hazard Mitigation Survey - Stakeholders Page 3

SURVEYS WILL BE ACCEPTED UNTIL NOVEMBER 1, 2016

SURVEY FOR RESIDENTS OF HERKIMER COUNTY AND ITS MUNICIPALITIES

Sponsored by the Herkimer County Hazard Mitigation Working Group

This questionnaire is designed to assist Herkimer County and its municipalities in the development of the *Herkimer County Multi-Jurisdictional Hazard Mitigation Plan* by identifying public concerns about hazards and to better understand public preferences in reducing risk and loss from natural and other hazards. The Hazard Mitigation Plan will serve as the comprehensive, long-term plan to identify hazards that potentially impact Herkimer County, and develop a strategy to implement effective mitigation actions by focusing resources on the greatest risks and vulnerabilities. Please take a few minutes to complete this questionnaire.

The purpose of the Hazard Mitigation Plan is to:

- Identify the most recent data for floods, severe storms and other types of hazards;
- Become eligible for FEMA mitigation grants to fund measures that reduce the threats posed by floods, severe storms and other hazards to important buildings and infrastructure; and
- Help Herkimer County and its municipalities to identify high risk situations and prioritize mitigation actions.

1. Please provide general demographic information about yourself to better assist us in effectively targeting public information related to hazard mitigation: ***(Information in this section is optional and will be used only to identify demographic groups.)***

Jurisdiction in which you live
How many years have you lived in this jurisdiction?
Age Group (age 18 and over) ____18 - 45 ____46 - 65 ____ 66 – 80 ____ 81 or over
Highest Level of Education Completed: ____ Less than 9th Grade ___ High School ___ Vocational School ____ College ____ Graduate/Professional Degree
Do you own or rent your home? Own ___ Rent
Income range: __ <$10,000/year __ $10,000-$40,000 __ $40,000 – $60,000 __ $60,000 – $75,000 __ >$75,000

2. Within the past five years have you or someone in your household directly experienced a disaster such as an earthquake, severe windstorm, flood, wildfire or other type of disaster?

__ Yes
__ No

If "YES", what type of disaster(s) did you or someone in your household experience?
_____

Herkimer County Hazard Mitigation Working Group – September 2016 Page 1

SURVEYS WILL BE ACCEPTED UNTIL NOVEMBER 1, 2016

3. How concerned are you about the following hazards affecting your community?

Hazard	Very Concerned	Somewhat Concerned	Neutral	Not Very Concerned	Not Concerned
Avalanche	☐	☐	☐	☐	☐
Drought	☐	☐	☐	☐	☐
Earthquake	☐	☐	☐	☐	☐
Epidemic (Animal)	☐	☐	☐	☐	☐
Epidemic (Human)	☐	☐	☐	☐	☐
Extreme Heat	☐	☐	☐	☐	☐
Flood	☐	☐	☐	☐	☐
Human-Caused (terrorism, civil unrest, cyber attack)	☐	☐	☐	☐	☐
Hurricane	☐	☐	☐	☐	☐
Landslide	☐	☐	☐	☐	☐
Severe Thunderstorm	☐	☐	☐	☐	☐
Severe Winter Storm	☐	☐	☐	☐	☐
Technological (hazardous materials, utility failure)	☐	☐	☐	☐	☐
Tornado	☐	☐	☐	☐	☐
Wildfire	☐	☐	☐	☐	☐
Other_____	☐	☐	☐	☐	☐

4. Have you ever previously received information about how to make your home safer from disasters?

If so:

How long ago? _____

From whom did you ***last*** receive information?

- ☐ News media
- ☐ Government agency
- ☐ Insurance agent or company
- ☐ Utility company
- ☐ University or research institution
- ☐ Neighbor/friend/family member
- ☐ Elected Official
- ☐ American Red Cross
- ☐ Other non-profit organization
- ☐ Social media
- ☐ Not sure
- ☐ Other: _____

5. Whom would you ***most trust*** to provide you with information about how to make your home safer from disasters?

- ☐ News media
- ☐ Government agency
- ☐ Insurance agent or company
- ☐ Utility company
- ☐ University or research institution
- ☐ Neighbor/friend/family member
- ☐ Elected Official
- ☐ American Red Cross
- ☐ Other non-profit organization
- ☐ Social media
- ☐ Not sure
- ☐ Other: _____

Herkimer County Hazard Mitigation Working Group – September 2016 Page 2

SURVEYS WILL BE ACCEPTED UNTIL NOVEMBER 1, 2016

6. What is the most effective way for you to receive information about how to make your household and home safer from natural disasters?

- ☐ Newspapers
- ☐ Television - __News __Ads
- ☐ Radio - ___News ___Ads
- ☐ Internet –online news
- ☐ Email
- ☐ Social media

Other Methods:

- ☐ Schools
- ☐ Outdoor advertisement
- ☐ Books
- ☐ Mail
- ☐ Fire Department/Rescue
- ☐ Chamber of Commerce
- ☐ Employer
- ☐ Public meetings/workshops
- ☐ Library
- ☐ University or research institution
- ☐ Other _____

7. Prior to receiving this survey, were you aware of your jurisdiction's opportunity to participate in hazard mitigation planning and projects?

- ☐ Yes
- ☐ No

8. Prior to receiving this survey, were you aware that your jurisdiction must have a Hazard Mitigation Plan, adopted by your jurisdiction's government, in order to be eligible for federal pre- and post-disaster hazard mitigation funds?

- ☐ Yes
- ☐ No

COMMUNITY VULNERABILITIES AND HAZARD MITIGATION STRATEGIES

In order to assess community risk, we need to understand which community assets may be vulnerable to hazards in the region. Vulnerable assets are those community features, characteristics, or resources that may be impacted by hazards (e.g., populations with functional needs, critical infrastructure, economic components, environmental resources, etc.). The next set of questions focuses on vulnerable assets in your community and your preferred strategies to mitigate risk to those assets.

9. Community assets are features, characteristics, or resources that either make a community unique or allow the community to function. In your opinion, which of the following *categories* are most susceptible to the impacts caused by hazards in your jurisdiction?

(Please rank the community assets in order of vulnerability, 1 being most vulnerable and 6 being least vulnerable.)

Herkimer County Hazard Mitigation Working Group – September 2016 Page 3

SURVEYS WILL BE ACCEPTED UNTIL NOVEMBER 1, 2016

Community Assets	Potential Hazard Impact	Order of Vulnerability
Human	Loss of life and/or injuries	_____
Economic	Business closures and/or job losses	_____
Infrastructure	Damage or loss of bridges, utilities, schools, etc.	_____
Cultural/Historic	Damage or loss of libraries, museums, fairgrounds, etc.	_____
Environmental	Damage or loss of forests, rangeland, waterways, etc.	_____
Governance	Ability to maintain order and/or provide public amenities and services	_____

10. Next we would like to know what specific types of community assets are most important to you. ***(Check the corresponding box for each asset.)***

Community Assets	Very Important	Somewhat Important	Neutral	Not Very Important	Not Important
Elder-care facilities	☐	☐	☐	☐	☐
Schools (K-12)	☐	☐	☐	☐	☐
Hospitals	☐	☐	☐	☐	☐
Major bridges	☐	☐	☐	☐	☐
Fire & Police Stations	☐	☐	☐	☐	☐
Museums/Historic Buildings	☐	☐	☐	☐	☐
Major employers	☐	☐	☐	☐	☐
Small businesses	☐	☐	☐	☐	☐
College/University	☐	☐	☐	☐	☐
City Hall/Courthouse	☐	☐	☐	☐	☐
Parks	☐	☐	☐	☐	☐
Other: _____	☐	☐	☐	☐	☐
Other: _____	☐	☐	☐	☐	☐
Other: _____	☐	☐	☐	☐	☐

SURVEYS WILL BE ACCEPTED UNTIL NOVEMBER 1, 2016

11. Hazards can have a significant impact on a community, but planning for these events and taking action prior to a disaster can help lessen the impacts. The following statements will help determine citizen priorities regarding planning for hazards in your county. **Please tell us how important each one is to you.**

Statements	Very Important	Somewhat Important	Neutral	Not Very Important	Not Important
Protecting private property	☐	☐	☐	☐	☐
Protecting critical facilities (e.g., transportation networks, hospitals, fire stations)	☐	☐	☐	☐	☐
Preventing development in hazard areas	☐	☐	☐	☐	☐
Enhancing the function of natural features (e.g., streams, wetlands)	☐	☐	☐	☐	☐
Protecting historical and cultural landmarks	☐	☐	☐	☐	☐
Protecting and reducing damage to utilities	☐	☐	☐	☐	☐
Strengthening emergency services (police, fire, rescue)	☐	☐	☐	☐	☐
Disclosing natural hazard risks during real estate transactions	☐	☐	☐	☐	☐
Promoting cooperation among public agencies, citizens, non-profit organizations, and businesses	☐	☐	☐	☐	☐

12. Please feel free provide any additional comments related to mitigation in the space below:

PLEASE SUBMIT YOUR COMPLETED SURVEY IN THE LOCATION INDICATED.

THANK YOU FOR YOUR TIME AND INTEREST!

Herkimer County Multi-Jurisdictional Hazard Mitigation Plan

Mitigation Strategy Workshop 1

AGENDA

November 16, 2016

9:30 – 12:00 p.m.

Herkimer County Emergency Services

- Welcome and Call to Order
- Today's Objectives & Tasks
- Mitigation Strategy
- Mitigation Project Development
- Summary of Hazard & Risk Workshop
- Goals and Objectives
  - Discuss, Refine and Approve
- Mitigation Actions
  - Types of Actions
  - How to Identify Actions
  - Evaluating and Prioritizing Actions
    - Benefit-Cost Review
    - Evaluation Criteria
    - Action Prioritization
- Action Plan for Implementation
- Next Meeting & Adjournment

.Herkimer County Multi-Jurisdictional Hazard Mitigation Plan

MINUTES NOVEMBER 16, 2016 9:30 AM – 12:30 PM HERKIMER CO EM SRVS , HERKIMER, NY

MEETING CALLED BY	NYS DHSES and Contractor (IEM)
TYPE OF MEETING	Mitigation Strategy Workshop 1
FACILITATOR	Nancy Freeman, IEM
NOTE TAKER	N. Freeman
ATTENDEES	33 attendees (see list attached), representing 7 jurisdictions; regional, state, and federal agencies; and special interest organizations.

Agenda topics

WORKING GROUP BUSINESS CHIEF ROBERT PARESE

DISCUSSION The meeting was called to order by Chief Robert Paresa, City of Little Falls Fire Department. The minutes from the last meeting, the Hazard Identification and Risk Assessment Workshop on October 19, 2016, were presented for approval.

CONCLUSIONS N/A

ACTION ITEMS	PERSON RESPONSIBLE	DEADLINE
A motion was made by Frank Spatto, seconded by Dominic Frank to accept the minutes as presented. The motion passed unanimously.	N/A	N/A

MITIGATION STRATEGY PROCESS PRESENTATION PAUL HOOLE, FEMA, REGION 2

DISCUSSION Mr. Hoole gave a presentation on "Developing a Mitigation Strategy", emphasizing the importance of the planning process to produce an accurate risk assessment that supports meaningful and realistic mitigation actions. The presentation walked through the strategy-development process and described the range of mitigation actions and alternatives that should be considered when defining a project or action. In addition, Mr. Hoole discussed the Action Plan for Implementation and how it should serve to integrate specific actions with existing planning mechanisms, whenever possible.

CONCLUSIONS

ACTION ITEMS	PERSON RESPONSIBLE	DEADLINE
No actions required.	N/A	N/A

GOALS AND OBJECTIVES NANCY FREEMAN

DISCUSSION A short orientation was provided on how goals set the long-term vision for the mitigation plan and its actions for implementation. Worksheet #7 – The Mitigation Strategy – Goals and Objectives" was distributed to HMWG members for review. The worksheet provided a summary of the visioning questions gathered at the kick-off Meeting, and the four goals and related objectives that were defined in the 2014 DRAFT Herkimer County Hazard Mitigation Plan. Ms. Freeman noted that these goals did not need to be retained for the current plan, and asked working group members to review them and acknowledge one of the choices at the end of the worksheet. She also emphasized that jurisdictions are free to Develop their own goals and objectives, but they should support the county-wide goals selected for the plan.

CONCLUSIONS HMWG members should review the goals and objectives, and develop additional if it is deemed appropriate.

ACTION ITEMS	PERSON RESPONSIBLE	DEADLINE
Submit goals and objectives to Ms. Freeman by December 1, 2016	Jurisdiction representatives	12/1/16

HAZARD MITIGATION ASSISTANCE GRANTS JOSEPH SIKORA, NYS DHSES MITIGATION

DISCUSSION	Mr. Sikora presented an overview of federal hazard mitigation grants available through Hazard Mitigation Assistance, which includes Hazard Mitigation Grant Program (HMGP), Pre-Disaster Mitigation (PDM), and Flood Mitigation Assistance (FMA). He described the various programs, criteria for eligibility, and types of projects that could potentially be funded. In addition, he stressed the importance of gathering as much information and data as possible when completing the "Action Worksheet", as this will facilitate the grant application process, if this is the desired funding option.
CONCLUSIONS	

ACTION ITEMS	PERSON RESPONSIBLE	DEADLINE
No action required.	N/A	N/A

MITIGATION ACTION WORKSHEETS CORRINA CAVALLO

DISCUSSION	Ms. Cavallo provided guidance on completing the mitigation action worksheets, using the most current template developed by NYS DHSES. She led meeting attendees through each component of the worksheet and gave helpful suggestions on how to develop a project, obtain information and the importance of providing as much information as possible during the planning process. She offered the opportunity for jurisdictions to submit draft action worksheets to NYS DHSES for a courtesy review to provide technical assistance.
CONCLUSIONS	Working Group members were provided with copies of the Action Worksheets and asked to develop mitigation actions to support the "problem statements" developed at the last meeting. **All completed Action Worksheets are due by December 5, 2016**

ACTION ITEMS	PERSON RESPONSIBLE	DEADLINE
Jurisdictions should send their completed Action Worksheets to Corrina.Cavallo@dhses.ny.gov and Nancy.Freeman@iem.com prior to the next meeting for review.	Jurisdiction representatives	12/5/16

NEXT STEPS

NEXT STEPS	Jurisdictions will complete and submit all Action Worksheets to Nancy.Freeman@iem.com by December 5, 2016
SPECIAL NOTES	ALL WORKSHEETS PREVIOUSLY DISTRIBUTED TO JURISDICTIONS SHOULD BE COMPLETED AND RETURNED TO Nancy.Freeman@iem.com BY DECEMER 5, 2016.
NEXT MEETING	**December 7, 2016, 9:30 am to 12:00 pm, at Herkimer County Emergency Services, Herkimer**

HERKIMER COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN

November 16, 2016

Mitigation Strategy 1 Workshop – Herkimer County Emergency Services

Name	Position/Title	Agency	Jurisdiction	Address	Primary Phone	Email	CEPC	Stake-holder	Signature
Bob Vandenburgh	Director	Herk EMO	Herk Co						
Ron Schoonmaker	CEO								
[illegible]	Supervisor	Manheim	Herk Co	6356 State Route 167	429-9631	[illegible]	[illegible]	✓	
Robert Quackenbush	Councilman	Salisbury	Herk Co	PO Box 101 Salisbury	429 9572				
Michael Stride	Superintendent	Mohawk	Mohawk	28 Columbia St Mohawk	717 8993	[illegible]			
BRIAN OLDS	NYSDOT Resident Engr	NYSDOT	Herkimer Co.	131 5th Ave Herk.	866-1123	brian.olds@dot.ny.gov			
Bill Kwasniewski	Councilman	Dolgeville	Herk Co.	501 Fairfield, Wil	832-7089	wwstar@twcny.rr.com			
Robert Paresse	Fire Chief	City of L.F.	Herk Co	659 E Main St LF	315-534-2218	rparesse@cityofl.[illegible]			
Diann Fischer	Am Red Cross Vol		Herk Co	716 Westwood Dr Her	315-868-0408	diann.fischer2@redcross.org			
Karlee Tamburro	Clerk	Village	Frankfort	110 Railroad St	315 895 7651	[illegible]			
Scott Bagatis	Supervisor	Ohio	Herkimer Co	234 Mills Rd	315 866 7963	[illegible]			
Mike Irons	Foreman	Village	Herk	110 Railroad St	315 894-0620	[illegible]			
Bernard Replinski	Chair	Co Leg	Herk Co	743 State Route 51	315 822-0970	[illegible]			
Terry Leonard	Mayor	Ilion	Ilion	49 Morgan St	895 7449	[illegible]			
Matt [illegible]	Dep Sheriff	Herk Co	Herk Co						
[illegible]	Trustee Deputy	Mohawk	Herk Co	15 [illegible]	866-4069	[illegible]			
Fred Hartmann	Trustee	Ilion	Herk	55 S 5th Ave	895 5961	—			
RaMona Gassmann	Flood Community Group	Ilion	Herk	6 Mauser Place Ilion	985-3929	rbg@twcny.rr.com			
Clifford [illegible]	Highway Supt	T/Litchfield	Herk	8045 Danville Rd	894-2935	[illegible]			
John Coy	Deputy	T/Litchfield	Herk	8045 Danville Rd	" "				
Cave Wheat	Village Br	V/Winfield	Herk	321 N St W Winfield	822 6743	cc wheat@gmail.com			
Frank Sparta	Supervisor	Cosby Manor	Herk	66 E [illegible] Mohawk	866 4960				
Michele Spoons	CEO	T/Frankfort	Herk	201 3rd Ave	894-0922	frankfortadm@gmail.com			
Jessica Breiten	PLNR	HOCCAP	H-O Co.	321 Main St Utica	798 5710	jbreiten@occaa.net			
Matt Ward	REM	NYSDOT	R2	207 Genesee St Utica	793-2440	matthew.ward@dot.ny.gov			
DAVE KOZYRA	DREM	NYSDOT	R-2	207 GENESEE ST UTICA	793-2640	DAVE.KOZYRA@DOT.NY.GOV			

HERKIMER COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN

November 16, 2016

Mitigation Strategy 1 Workshop – Herkimer County Emergency Services

Name	Position/Title	Agency	Jurisdiction	Address	Primary Phone	Email	CEPC	Stake-holder	Signature
Jim Trevett	Fire Chief	V/O Ilion	Village	1 Central Ave	894-6048	[illegible]			
Dean Francis	Supervisor	Town of Litchfield	Town	[illegible]	[illegible]	[illegible]			
Rory Jenkins	Director	V/O Poland		Poland NY	826-3415	[illegible]	[illegible]		
Nancy Nelson	Superintendent	T/O Norway	Town	[illegible]	895-5472	Nancy.Nelson@[illegible]	[illegible]		
Jason Collins	Superintendent	T/O Newport	Town	3765 Newport Rd Newport, NY	845-3555	[illegible]			
Adam Hohl	Director Prog Mgr	ARC	Mohawk Valley	1415 Genesee St, Utica	219-0457	Adam.Hohl@redcross.org			
David Shepherdson	Code Enforcement	T/O Webb	Town	[illegible]	369-3540	[illegible]			

2/26/2017

Mitigation Strategy Workshop 1

Herkimer County Multi-Jurisdictional Hazard Mitigation Plan

November 16, 2016

Agenda

- Mitigation Strategy -FEMA
- Mitigation Project Development - NYS DHSES
- Summary of Hazard & Risk Workshop
- Goals and Objectives
- Mitigation Actions
- Action Plan for Implementation

Summary of HIRA Workshop

- Historic Hazard Events
- Hazard Impacts and Consequences
- Hazard Index and Analysis (Overall Risk Score)
  - Identify hazards of highest concern
- Critical Facilities and Community Infrastructure List
- Problem Statements should identify how a specific hazard(s) impact community vulnerabilities
  - Flooding
  - Built Environment - including Infrastructure and Assets
  - Natural Environment
  - Economy

Hazards of Highest Concern

- Flood (all types)
- Severe Weather (including Winter Weather)
- Earthquake
- Epidemic
- Transportation Accidents
- Extreme Heat

Overview

- What is a Mitigation Strategy?

A Strategy is made up of three required components:

- *Goals*
- *Mitigation Actions*
- *Action Plan for Implementation*

What are Mitigation Goals?

- General guidelines that explain what the community wants to achieve with the plan
  - Broad, policy-type statements
  - Long-term
  - Represent vision for reducing or avoiding losses from identified hazards
    - Example: "Minimize new development in hazard-prone areas"
- Objectives may be developed to provide more detailed description of the Goals
  - Smaller than specific actions, but are measurable
  - Connect goals with actual mitigation actions

What are Mitigation Actions?

- Specific projects and activities that help achieve the Goals
  - Reduce an identified level of risk or vulnerability
  - Address the root cause of the problem, considering all alternatives
- Categories:
  - Local Plans and Regulations
  - Structure and Infrastructure Projects
  - Natural Systems Protection
  - Education and Awareness Programs

Action Plan for Implementation

- Describes how the mitigation actions will be implemented
  - Prioritization process
  - Administration
  - Incorporation into community's existing planning mechanisms
  - Jurisdiction specific
  - Potential Funding Sources

EXAMPLE: Mitigation Strategy

Goal	Objective	Action
Minimize new development in hazard-prone areas	Adopt a zoning ordinance to prohibit development in floodplains	Amend zoning ordinance to include floodplain overlays

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2/26/2017

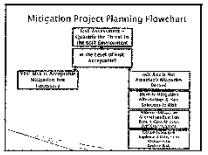
Establishing Mitigation Goals

- Risk Assessment findings
  - Problem statements
  - Hazards of high concern
  - Assets at risk
- Outreach findings
  - Hazard Survey
- Community Goals
  - Existing plans and policy documents
- State hazard mitigation goals

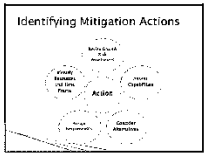
Worksheet #7 ~ Goals & Objectives

- Review 2014 Goals and Objectives
  - Do they address all hazards and vulnerabilities?
- Do they cover the entire planning area?
- Are there additional goals and/or objectives needed to support your jurisdiction?

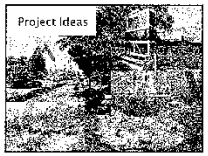
Mitigation Project Planning Flowchart



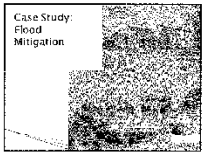
Identifying Mitigation Actions

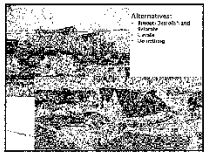


Project Ideas



Case Study: Flood Mitigation





Action Worksheet*

- Risk/vulnerability (problem)
- Potential actions/projects (alternatives considered)
- Action/Project to be implemented
  - Cause of Action/Project
  - Action/Project Description
  - Summary of Evaluation (benefits, estimated cost, other details considered)
- Plan for Implementation
  - Responsible Organization
  - Priority
  - Timeline
  - Potential Funding Sources
  - Local Planning Mechanisms
- Progress Report

Documenting Completed Projects*

- The original problem and the estimated annual damages.
- The project, its cost, and the damages avoided since implementation
- Other options considered, their estimated costs and challenges or why they were deemed not feasible
- How well the project performed in subsequent events, if your basic assumptions were accurate, and what you'd change if you were doing it again
- Social, political or environmental considerations that supported/challenged the proposal
- Stakeholders, supporters, and other factors that contributed to its successful implementation

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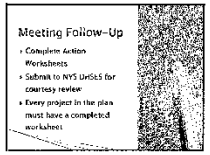

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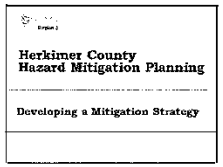

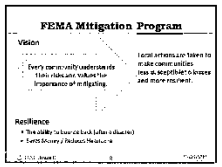

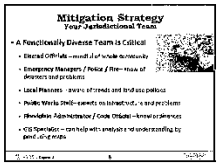

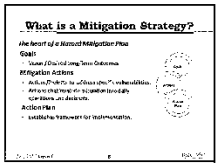

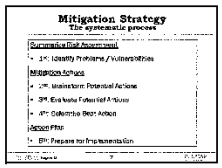

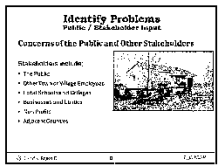

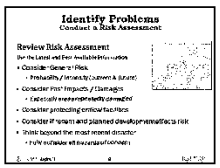

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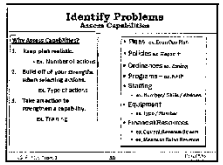

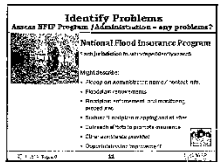

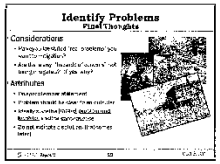

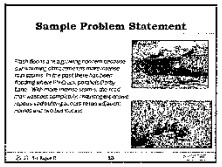

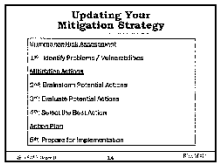

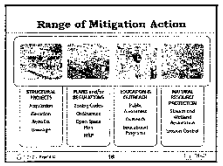

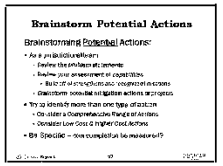

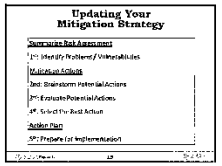

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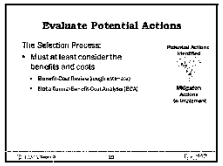

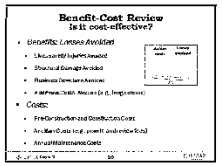

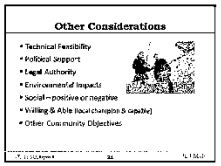

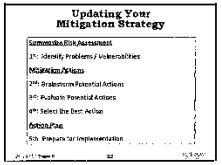

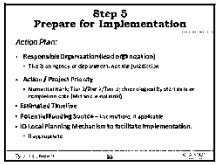

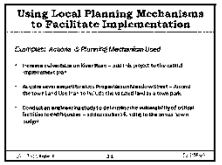

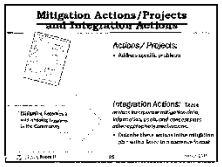

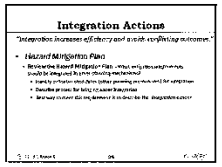

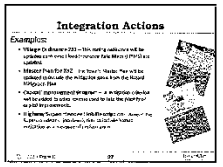

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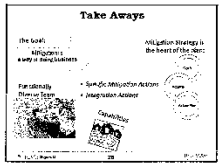

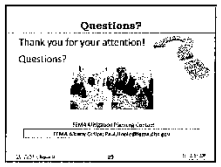

Homeland Security and Emergency Services

Hazard Mitigation Program

Herkimer County

November 16, 2016

November 16, 2016

Learning Objective

- Participants will: gain an understanding of the Hazard Mitigation Program and the process to receive hazard mitigation funding.

November 16, 2016

Hazard Mitigation

Mit-i-ga-tion \ n. : sustained actions that eliminate or reduce long-term risk to people and improved property from natural hazards

- Creates safer communities, reduces loss of life and damage to improved property, and diminishes financial and emotional stress
- Breaks the cycle of disaster damage and loss
- Allows communities to rebuild more quickly
- Saves money: every mitigation $ spent avoids an average of $4 in future damages

November 16, 2016

3 Hazard Mitigation Programs

- Hazard Mitigation Grant Program (HMGP)
- Pre-Disaster Mitigation Program (PDM)
- Flood Mitigation Assistance Program (FMA)
  - Includes former Repetitive Flood Claims program
  - Includes former Severe Repetitive Loss program

[NB: HMGP is tied to NYS disaster declarations]
[NB: PDM & FMA are nationally competitive and announced once a year, subject to Congressional appropriation]

November 16, 2016

Requirements: Applicants

- Eligible Applicant: NYS, acting through DHSES
- Eligible Sub-applicants:
  - State agencies & local governments
  - Federally-recognized Indian Tribal Governments
  - State-recognized Indian Tribes
  - Private non-profits providing government services (HMGP only, not PDM or FMA)

[NB: PNPs participating in property acquisition must have land conservation as a mission]

- Individuals/businesses are not eligible applicants

November 16, 2016

Requirements: Mitigation Plans

- Generally speaking, sub-applicants seeking project funds must be covered by a current all-hazards mitigation plan at the time of award
  [A current mitigation plan is one approved by FEMA and adopted by the community; some plans cover a community while others were regional or county-wide efforts]
- Sub-applicants that have begun the update process when grants are announced should be able to meet this requirement

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Requirements: Cost-Effectiveness

- Projects must be cost-effective as determined by a Benefit-Cost Analysis (BCA)
- BCA must verify that future benefits (losses to be avoided) equal or exceed the project's cost

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Requirements: 25% Local Share

- FEMA funds typically provide up to 75% reimbursement of eligible costs, up to the amount of the award
- In-kind services or materials may be used toward the 25% non-Federal match
- Other Federal funds cannot, with some exceptions:
  - Increased Cost of Compliance (ICC) payouts from a National Flood Insurance Program (NFIP) policy
  - Most HUD Community Development Block Grants (CDBG)

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Questions & Contact

For more information, please contact us:

Hazard Mitigation Programs
NYS Division of Homeland Security & Emergency Services
1220 Washington Avenue, Bldg. 7A, Floor 4
Albany, NY 12242

- 518-292-2304
- nysoemhazmit@dhses.ny.gov
- www.dhses.ny.gov/recovery

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Non-Federal Match Sources

- The value of a sub-applicant's staff & expenses in processing an application
- Donations, private funds, and non-Federal funds
- HUD Community Development Block Grants
- Increased Cost of Compliance (ICC) funds received from an National Flood Insurance Program (NFIP) policy can pay up to $30,000 for qualifying work

November 16, 2016 10

What HMGP Will Pay For

- Hazard mitigation plan creation or updates
- Acquiring or elevating properties
- Minor localized flood reduction measures
- Roadway elevation, culvert enlargements
- Storm water drainage system expansion/upgrade
- Retention or detention basins
- Streambank stabilization to protect infrastructure
- Placing overhead electrical systems underground

  [NB: State establishes priorities every cycle]

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What HMGP Will Not Pay For

- Preparedness activities: shelters, sandbags
- Projects dependent on other phases for benefits
- Studies not directly tied to a proposed project to be completed
- Deferred repairs, negligence, operating expenses
- Dredging, limb & debris removal, beach nourishment
- Projects you've already begun or completed

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What is the Process?

- State establishes priorities
- Letter of Intent (LOI) phase:
  - basic sub-applicant info
  - brief narrative describing the problem and proposed solution
- Application phase: detailed SOW, estimate (engineering, construction, etc.), maps, etc.
- Provide requested info so State and FEMA can evaluate environmental impacts

WORKSHEET #7: THE MITIGATION STRATEGY – GOALS AND OBJECTIVES

1. Develop Hazard Mitigation Goals:

At the Kick-Off Meeting on August 10, 2016, attendees participated in a visioning activity that was intended to generate ideas and information related to the broad scope of hazard mitigation in a community.

The responses to the questions highlighted five main characteristics of a community that link closely to areas of hazard vulnerability. The participants were asked the following questions, and the responses are provided below (grouped into community categories):

A. What is the **best asset** in your community?

Government/Services	People	Environment	Economy	Community
Local government support	Experience and resiliency	Water supply	Remington Arms Company	Small, familiar with residents
Village employees	People who live here	Natural beauty	Tourism	Quality of life
Schools	People	Agriculture, land		Quality of life
College	People	Natural environment		Recreational opportunities
Government Services	Participation	Agriculture, tourism		Community involvement
Little Falls Hospital	People	Natural features		Historial values
Access to rail	Great people	Clean water, undeveloped land		Community character, history
		Scenery (woods, water, etc.)		History
		Georgraphy (water, landscape)		Historic - Gateway to Adirondacks
		Recreation and agriculture		Rural, independent
		Picturesque		
		Natural resources		
		Environment		

B. What is the **biggest challenge** in your community?

Government/Services	People	Environment	Economy	Community
Aging infrastructure	Elderly population	Natural Resources	Economy (work force opportunities)	Isolation
Consolidation		Flooding	Private downtown economic investment	Small, too familiar with residents
Taxes		Uncontrollable events/disasters	Jobs	Blighted properties
Economy budgets			Economic development	Migration of talent
Lack of funding for projects			Good employment opportunities	Working together
Funding			Employment	
Finances			Blight, "zombie" properties	
Funding			Tax exempts	
Funding			Poverty	
taxes			Economy	
			Economic development	
			Money	

C. What is your **vision** of your community in 10 years?

Government/Services	People	Environment	Economy	Community
Combined Services (i.e., schools, government, public services)	Younger	Environment Preserved	Increased Number of Jobs	Forward moving and positive
Thriving, Cohesive	Retired and not living there	Free from Flooding	Financially Stable	Thriving Communities
Sound Infrastructure	Attractive to young folks		Convention Center, Hotel Chain, local small businessgrowth	Improved
Rebuilt Communities			Sustainable, partnerships	Vibrant
			Economic Development	Thriving
			Economically Sound	Thriving/Vibrant
			Still building	Livable
			Industry	Revitalized
			Growth	Moving Forward
			Stable tax base	Growth
				Retirement community
				Resilient and Locally prepared

As noted above, the predominant issues identified for the best assets related to the environment; responses related to future visions were in the community category. The majority of responses related to the biggest challenge were in the area of the economy. The information gained from this exercise may assist your jurisdiction in developing your Mitigation Goals and Objectives. In addition, Vision Statements, which describe a clear and long-term desired change resulting from the planning efforts of the community, may assist in defining the community's strategy. A sample vision statement from a mitigation-related plan includes:

- NY Rising Countywide Resiliency Plan, Herkimer County, July 31, 2014 (p. 17)

  "The communitites of Herkimer County, working together, will build an economically vibrant and safe future for all of our residents and ensure a high quality of life. We embrace our waterways as a vital component of our history, culture, and economy, while recognizing the challenges associated with flooding and natural disasters. By promoting sound growth, green infrastructure and open space, mitigating future damage, and transforming our communities through a comprehensive and sustainable approach, Herkimer County will reach its full potential for resiliency."

With these vision statements as a starting point, **review the mitigation Goals and Objectives provided below to determine whether they are (1) sufficient as stated, (2) should be revised. If you feel they need revision, please provide a suggested revision(s).**

Goal 1: Protect Life and Property *[Category: Structure and Infrastructure Projects]*

- **Objective 1-1**: Implement mitigation activities that will assist in protecting lives and property by making homes, businesses, infrastructure, and critical facilities more resistant to hazards.
- **Objective 1-2**: Encourage homeowners and businesses to take preventative actions in areas that are especially vulnerable to hazards.

- **Objective 1-3**: Build upon past efforts to characterize flood events by conducting additional flood studies and creating flood models.
- **Objective 1-4**: Review existing local ordinances, building codes, safety inspection procedures, and applicable rules to help ensure that they employ the most recent and generally accepted standards for the protection of buildings.
- **Objective 1-5**: Ensure that public and private facilities and infrastructure meet established building codes and immediately enforce the codes to address any identified deficiencies.
- **Objective 1-6**: Incorporate hazard considerations into land-use planning and natural resource management.
- **Objective 1-7**: Encourage homeowners, renters, and businesses to purchase insurance coverage for damages caused by hazards.
- **Objective 1-8**: Integrate the recommendations of this plan into existing local and county programs.
- **Objective 1-9**: Implement mitigation activities that encourage environmental stewardship and protection of the environment.

Goal 2: Increase Public Awareness *(Category: Education and Awareness Programs)*

- **Objective 2-1:** Develop and implement additional education and outreach programs to increase public awareness of the risks associated with hazards and to educate the public on specific, individual preparedness activities.
- **Objective 2-2:** Provide information on tools, partnership opportunities, funding, resources, and current government initiatives to assist in implementing mitigation activities.
- **Objective 2-3**: Implement mitigation activities that enhance the technological capabilities of the jurisdictions and agencies in the County to better profile and assess exposure of hazards.

Goal 3: Encourage Partnerships *(Category: Local Plans and Regulations)*

- **Objective 3-1:** Strengthen inter-jurisdiction and inter-agency communication, coordination, and partnerships to foster hazard mitigation strategies and/or projects designed to benefit multiple jurisdictions.
- **Objective 3-2:** Identify and implement ways to engage public agencies with individual citizens, non-profit organizations, business, and industry to implement mitigation activities more effectively.

Goal 4: Provide for Emergency Services (Objectives linked to Goals

- **Objective 4-1:** Encourage the establishment of policies at the local level to help ensure that prioritization and implementation of mitigation strategies and/or projects designed to benefit essential facilities, services, and infrastructure.
- **Objective 4-2**: Where appropriate, coordinate and integrate hazard mitigation activities with existing local emergency operations plans.
- **Objective 4-3**: Identify the need for, and acquire, any special emergency services and equipment to enhance response capabilities for specific hazards.
- **Objective 4-4**: Review and improve, if necessary, emergency traffic routes; communicate such routes to the public and communities.

If your jurisdiction supports adoption of the 2014 Herkimer HMP (DRAFT) Goals and Objectives, as written, the following is a proposed re-alignment of the objectives to be consistent with the categories of mitigation actions.

Types of Mitigation Actions	2014 Herkimer County HMP *Goals*	2014 Herkimer County HMP *Objectives*
Local Plans and Regulations	Goal 3: Encourage Partnerships	1-4, 1-6, 1-8, 2-2, 3-1, 3-2, 4-1, 4-2
Structure and Infrastructure Projects	Goal 1: Protect life and property	1-1, 1-2, 1-5, 1-7,
Natural Systems Protection	[Proposed] *Example* - Goal 4: Promote sustainable mitigation actions that preserve or restore the functions of natural systems	1-3, 1-9
Education and Awareness Programs	Goal 2: Increase Public Awareness	2-1
[Local Plans and Regulations]	Goal 4: Provide for Emergency Services	4-3, 4-4
Enhancing Mitigation Planning		2-3

After reviewing the goals, select **one** of the following choices to validate or not validate the goals provided:

____ The *goals and objectives are comprehensive as they are presented and cover the scope of all potential hazard vulnerabilities and mitigation actions that should be included in the plan. In addition,* ***they are all applicable to my jurisdiction and no additional goals or objectives are needed for my jurisdiction.***

____ *The goals and objectives are not comprehensive and need minor revision to cover the scope of all potential hazard vulnerabilities and mitigation actions that should be included in the plan.* ***With minor revision, they will also be applicable to my jurisdiction and no additional goals and objectives are needed.***

____ *The goals are comprehensive as they relate to the county as a whole; however,* ***they do not sufficiently describe the goals and/or objectives for my jurisdiction.*** *Additional goals (and objectives) that should be considered for my jurisdiction are:*

Goal:

Objective:

Objective:

Goal:

Objective:

Objective:

Goal:

Objective:

Objectives:

HERKIMER COUNTY MULTI-JURISDICTIONAL HAZARD MITIGAITON PLAN

ADDITIONAL SUGGESTIONS FOR GOALS AND OBJECTIVES

1. **New York State Hazard Mitigation Plan, 2014**

Goal 1: Promote a comprehensive state hazard mitigation policy framework for effective mitigation programs that includes coordination between federal, state, and local organizations for planning and programs.

Goal 2: Protect property including public, historic, private structures, and critical facilities and infrastructure.

Goal 3: Increase awareness and promote relationships with stakeholders, citizens, elected officials and property owners to develop opportunities for mitigation of natural hazards.

Goal 4: Encourage the development and implementation of long-term, cost-effective, and resilient mitigation projects to preserve or restore the functions of natural systems.

Goal 5: Build stronger by promoting mitigation actions that emphasize sustainable construction and design measures to reduce or eliminate the impacts of natural hazards.

2. **Sample - Local Hazard Mitigation Plan**

Goal 1: Reduce impacts and damages from hazard events to people, property, local government assets, economy and natural resources

Goal 2: Increase public awareness of hazards and their mitigation

Goal 3: Strengthen communication and coordination among public agencies, nongovernmental organizations (NGOs), businesses and private citizens

Goal 4: Coordinate and integrate hazard mitigation activities with local land development planning activities and emergency operations planning

Goal 5: Reduce costs of disaster response and recovery

HERKIMER COUNTY MULTI-JURISDICITONAL HAZARD MITIGATION PLAN

TYPES OF MITIGATION ACTIONS

Local Plans and Regulations	
Mitigation Measure	***Examples***
These actions include government authorities, policies, or codes that influence the way land and buildings are developed and built.	• Comprehensive plans • Land use ordinances • Subdivision regulations • Development Review • Building codes and enforcement • NFIP Community Rating System • Capital improvement programs • Open space preservation • Stormwater management regulations and master plans • Community wildfire protection plans, fuels Management & Fire Breaks
Structure and Infrastructure Projects	
Mitigation Measure	***Examples***
These actions involve modifying existing structures and infrastructure to protect them from a hazard or remove them from a hazard area. This could apply to public or private structures as well as critical facilities and infrastructure. This type of action also involves projects to construct manmade structures to reduce the impact of hazards. Many of these types of actions are projects eligible for funding through the FEMA Hazard Mitigation Assistance program.	• Acquisitions and elevations of structures in flood prone areas • Utility undergrounding • Structural retrofits (e.g., shelters) • Floodwalls and retaining walls • Detention and retention structures • Culverts • Safe rooms
Natural Systems Protection	
Mitigation Measure	***Examples***
These are actions that minimize damage and losses and also preserve or restore the functions of natural systems.	• Sediment and erosion control • Stream corridor restoration • Forest management • Conservation easements • Wetland restoration and preservation
Education and Awareness Programs	
Mitigation Measure	***Examples***
These are actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. These actions may also include participation in national programs, such as StormReady, or Firewise Communities. Although this type of mitigation reduces risk less directly than structural projects or regulation, it is an important foundation to sustaining mitigation planning and implementation. A greater understanding and awareness of hazards and risk among local officials, stakeholders, and the public is more likely to lead to direct actions.	• Radio or television spots • Websites with maps and information • Social media • Real Estate disclosure • Presentations to school groups or neighborhood organizations • Mailings to residents in hazard-prone areas • StormReady • Firewise Communities

Action Worksheet Instructions	
Name of Jurisdiction: **Name of Haz. Mit. Plan:**	*Give the name of your municipality* *Name of the Hazard Mitigation Plan when it is a Multi-Jurisdictional Plan*
Risk / Vulnerability	
Problem being Mitigated:	*Describe the specific problem or area of concern. Each Action Worksheet should describe a unique problem. A well written problem statement is key to a successful mitigation action.*
Potential Actions/Projects (not being Implemented at this time)	
Actions/Projects Considered with Summary Evaluation of Each:	*For each problem, consider different types of mitigation actions/projects. Document this consideration by naming the potential actions/projects considered and by explaining why each is not being implemented. The documentation of alternatives encourages comprehensive thinking and facilitates the preparation of grant applications.*
Action or Project Intended for Implementation	
Action/Project Number: **Name of Action or Project:**	*Give each action a unique number and name (title) for easy reference. It is recommended that the municipality's initials be part of the action number to avoid confusion in multi-jurisdiction plans. For example, the City of Long Beach might use the number LB-1 for their first action.*
Action or Project Description:	*Describe the work to be done. It should be a unique statement of work, not a generic statement. Sources, such as FEMA's Mitigation Ideas publication, include generic actions to trigger the brainstorming of specific actions that could be taken. These generic actions must be refined into specific actions that address the specific problem at hand.*
Summary of Evaluation **Benefits (losses avoided)** **Estimated Cost** **Other Factors Considered**	*Summarize the evaluation of the action/project. Part of this evaluation must be a consideration of the benefits (losses avoided) and costs for the project. Describe any other factors and how they affected the decision. Factors such as technical, legal, environmental, social, and political considerations. The capacity of the jurisdiction to undertake this work should also be considered.*
Plan for Implementation	
Responsible Organization:	*This should be the name of a department or agency, not the name of the municipality.*
Action/Project Priority:	*Actions may be numbered in priority order or could be assigned a general priority, such as high, medium, or low.*
Timeline for Completion:	*State the target time when the action/project will be completed. Other timeline information might also be provided, such as the estimated start date. All actions must have a point in time when they will be completed in order to be considered a mitigation action as defined by FEMA. Actions which are "ongoing" (e.g. maintenance) reduce risk for the short-term and may be very worthy activities, but they do not meet the definition of mitigation action for this plan. Mitigation action for this plan must reduce risk for the long-term.*
Potential Fund Sources:	*Multiple sources of potential funding should be listed when appropriate.*
Local Planning Mechanisms to be Used in Implementation, if any:	*Other plans (e.g. land use plans) and processes (e.g. capital budgeting process) are often means through which mitigation actions can be more easily implemented. Consider the use of local planning mechanisms and identify any existing planning mechanisms that will be used to implement this action/project.*
Progress Report	
Date of Status Report: **Report of Progress:** **Evaluation of Effectiveness:**	*In the future this space may be used to report on progress. Leave this space blank until it is time to complete a status report.*

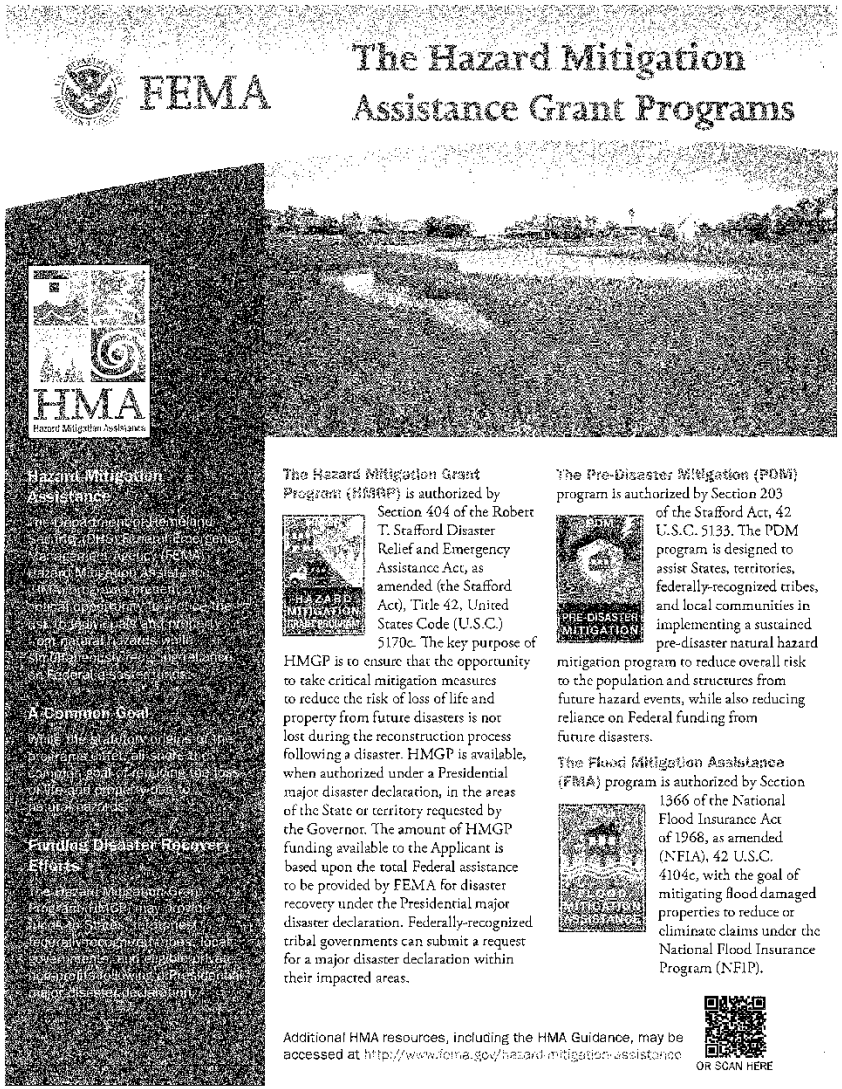
NYS DHSES Hazard Mitigation Planning Standards Updated September 2015

Action Worksheet Example	
Name of Jurisdiction: **Name of Haz. Mit. Plan:**	Town of London, Bristol County NY Bristol County Multi-Jurisdictional Hazard Mitigation Plan
Risk / Vulnerability	
Problem being Mitigated:	The Taunton River is subject to ice jams near River Road. On multiple occasions homes in this area have been flooded. Homeowners have incurred high rebuilding costs, over and above insurance claims. Traffic along this thoroughfare is disrupted during flood events.
Potential Actions/Projects (not being Implemented at this time)	
Actions/Projects Considered with Summary Evaluation of Each:	Taunton River Rock Removal – Remove the large rocks from the river that catch ice flows. This alternative is not being pursued because the financial costs would be very high and the effectiveness of this is in doubt. It would also jeopardize the viability of the river as a fishing destination. Acquire Homes – Offer to purchase the affected homes. Upon taking ownership, remove the homes and return the land to its natural state. This alternative is not being pursued because homeowners do not want to leave the community. Removal of these homes would also diminish the town's tax base. Educate River Road Homeowners – Distribute a brochure to River Road homeowners describing the probability of future flooding and suggesting possible mitigation steps they may take. This option is not being pursued because the homeowners are well aware of the risk and the mitigation actions they may take. They have already several smaller / affordable mitigation actions. They cannot afford to do more.
Action or Project Intended for Implementation	
Action/Project Number: **Name of Action or Project:**	L-1: River Road Home Elevations Program
Action or Project Description:	Offer to partially fund the elevation of homes that have been multiple times over the past thirty-years. When homeowners accept this offer, homes will be elevated above base flood evaluation and according to NYS building code.
Summary of Evaluation **Benefits (losses avoided)** **Estimated Cost** **Other Factors Considered**	Partially funding home elevations makes this option affordable to homeowners and avoids a lessening of the town's tax base. The mitigation action would avoid future flood damage of about $750,000. The cost of the elevation program is expected to be just under $500,000. The program would be voluntary, making it more socially and politically acceptable.
Plan for Implementation	
Responsible Organization:	Town Planning Department
Action/Project Priority:	High
Timeline for Completion:	An application for a FEMA grant will be made in year 1and the program should be completed within 3 years.
Potential Fund Sources:	FEMA Hazard Mitigation Grant Program (HMGP) funds FEMA Pre-Disaster Mitigation Program (PDM) funds
Local Planning Mechanisms to be Used in Implementation, if any:	The administration of this activity will be added to Planning Department's annual work plan.
Progress Report	
Date of Status Report: **Report of Progress:** **Evaluation of Effectiveness:**	No report at this time.

NYS DHSES Hazard Mitigation Planning Standards Updated September 2015

Action Worksheet	
Name of Jurisdiction: Name of Haz. Mit. Plan:	
Risk / Vulnerability	
Problem being Mitigated:	
Potential Actions/Projects (not being Implemented at this time)	
Actions/Projects Considered with Summary Evaluation of Each:	
Action or Project Intended for Implementation	
Action/Project Number: Name of Action or Project:	
Action or Project Description:	
Summary of Evaluation[1] Benefits (losses avoided) Estimated Cost Other Factors Considered	
Plan for Implementation	
Responsible Organization:	
Action/Project Priority:	
Timeline for Completion:	
Potential Fund Sources:	
Local Planning Mechanisms to be Used in Implementation, if any:	
Progress Report	
Date of Status Report: Report of Progress: Evaluation of Effectiveness:	

[1] Summarize the evaluation of potential actions and the action selected for implementation. Always consider the benefits and costs. Other criterion might include: Technical Feasibility, Political Support, Legal Authority, Environmental Impacts, positive and negative Social Impacts, and whether the jurisdiction has a person willing to be the Local Champion for implementation and is this person with the full support of the jurisdiction Administratively Capable of implementing the action selected for implementation.
NYS DHSES Hazard Mitigation Planning Standards June 2014



FEMA

The Hazard Mitigation Assistance Grant Programs

HMA
Hazard Mitigation Assistance

Hazard Mitigation Assistance

The Department of Homeland Security (DHS) Federal Emergency Management Agency (FEMA) Hazard Mitigation Assistance (HMA) grant programs provide a critical opportunity to reduce the risk to individuals and properties from natural hazards while simultaneously preparing communities for future disasters and reducing overall costs of disasters.

A Common Goal

While the statutory authorities of the programs differ, all share a common goal: reducing the loss of life and property to natural hazards.

Funding Disaster Recovery Efforts

The Hazard Mitigation Grant Program (HMGP) provides funds to States, Territories, Federally recognized tribes, local governments, and eligible private non-profits following a Presidential major disaster declaration.

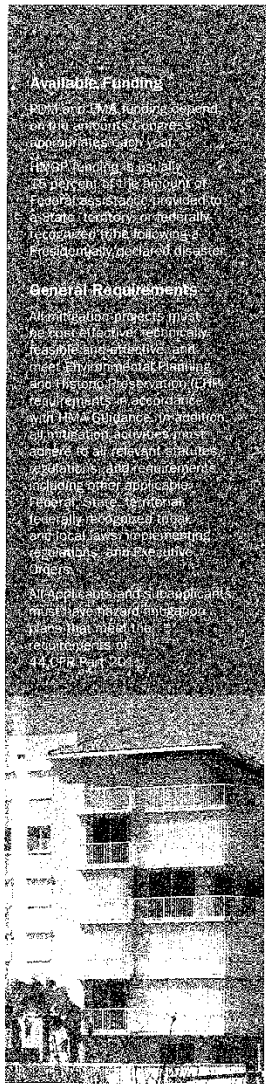
The Hazard Mitigation Grant Program (HMGP) is authorized by Section 404 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, as amended (the Stafford Act), Title 42, United States Code (U.S.C.) 5170c. The key purpose of HMGP is to ensure that the opportunity to take critical mitigation measures to reduce the risk of loss of life and property from future disasters is not lost during the reconstruction process following a disaster. HMGP is available, when authorized under a Presidential major disaster declaration, in the areas of the State or territory requested by the Governor. The amount of HMGP funding available to the Applicant is based upon the total Federal assistance to be provided by FEMA for disaster recovery under the Presidential major disaster declaration. Federally-recognized tribal governments can submit a request for a major disaster declaration within their impacted areas.

The Pre-Disaster Mitigation (PDM) program is authorized by Section 203 of the Stafford Act, 42 U.S.C. 5133. The PDM program is designed to assist States, territories, federally-recognized tribes, and local communities in implementing a sustained pre-disaster natural hazard mitigation program to reduce overall risk to the population and structures from future hazard events, while also reducing reliance on Federal funding from future disasters.

The Flood Mitigation Assistance (FMA) program is authorized by Section 1366 of the National Flood Insurance Act of 1968, as amended (NFIA), 42 U.S.C. 4104c, with the goal of mitigating flood damaged properties to reduce or eliminate claims under the National Flood Insurance Program (NFIP).

Additional HMA resources, including the HMA Guidance, may be accessed at http://www.fema.gov/hazard-mitigation-assistance

OR SCAN HERE



Program Comparisons

Cost Sharing

In general, HMA funds may be used to pay up to 75 percent of the eligible activity costs. The remaining 25 percent of eligible costs are derived from non-Federal sources.

The table below outlines the Federal and State cost share requirements.

Program Cost Share Requirements	Mitigation Activity Award (Percent of Federal/ Non-Federal Share)
HMGP	75 / 25
PDM	75 / 25
PDM (subrecipient is small impoverished community)	90 / 10
PDM (federally-recognized tribal Recipient is small impoverished community)	90 / 10
FMA (insured properties and planning grants)	75 / 25
FMA (repetitive loss property with repetitive loss strategy)	90 / 10
FMA (severe repetitive loss property with repetitive loss strategy)	100 / 0

Eligible Applicants and Subapplicants

States, territories, and federally-recognized tribal governments are eligible HMA Applicants. Each State, territory, and federally-recognized tribal government shall designate one agency to serve as the Applicant for each HMA program. All interested subapplicants must apply to the Applicant.

Individuals and businesses may not apply directly to the State, territory, or FEMA, but eligible local governments may apply on their behalf.

The table below identifies, in general, eligible subapplicants.

Eligible Subapplicants	HMGP	PDM	FMA
State agencies	✓	✓	✓
Federally-recognized tribes	✓	✓	✓
Local governments/communities*	✓	✓	✓
Private nonprofit organizations (PNPs)	✓	✓	

✓ = Subapplicant is eligible for program funding

* Local governments/community may include non federally-recognized tribes, or consistent with definition of local government at 44 CFR 201.2, may include any Indian tribe or authorized tribal organization, or Alaska Native village or organization that is not federally-recognized per 25 U.S.C. 479a et sec.

Eligible Activities

The table below summarizes eligible activities that may be funded by HMA programs. Detailed descriptions of these activities can be found in the HMA Guidance.

Eligible Activities	HMGP	PDM	FMA
1. Mitigation Projects	✓	✓	✓
Property Acquisition and Structure Demolition	✓	✓	✓
Property Acquisition and Structure Relocation	✓	✓	✓
Structure Elevation	✓	✓	✓
Mitigation Reconstruction	✓	✓	✓
Dry Floodproofing of Historic Residential Structures	✓	✓	✓
Dry Floodproofing of Non-Residential Structures	✓	✓	✓
Generators	✓	✓	
Localized Flood Risk Reduction Projects	✓	✓	✓
Non-Localized Flood Risk Reduction Projects	✓	✓	
Structural Retrofitting of Existing Buildings	✓	✓	✓
Non-Structural Retrofitting of Existing Buildings and Facilities	✓	✓	✓
Safe Room Construction	✓	✓	
Wind Retrofit for One- and Two-Family Residences	✓	✓	
Infrastructure Retrofit	✓	✓	✓
Soil Stabilization	✓	✓	✓
Wildfire Mitigation	✓	✓	
Post-Disaster Code Enforcement	✓		
Advance Assistance	✓		
5 Percent Initiative Projects*	✓		
Miscellaneous/Other**	✓	✓	✓
2. Hazard Mitigation Planning	✓	✓	✓
Planning-Related Activities	✓		
3. Technical Assistance			✓
4. Management Costs	✓	✓	✓

* FEMA allows increasing the 5% Initiative amount up to 10% for a Presidential major disaster declaration under HMGP. The additional 5% Initiative funding can be used for activities that promote disaster-resistant codes for all hazards. As a condition of the award, either a disaster-resistant building code must be adopted or an improved Building Code Effectiveness Grading Schedule is required.

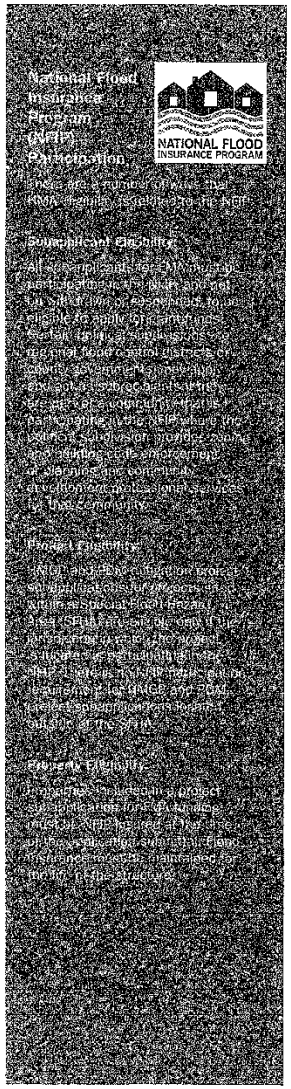
** Miscellaneous/Other indicates that any proposed action will be evaluated on its own merit against program requirements. Eligible projects will be approved provided funding is available.

Management Costs

For HMGP only: The Recipient may request up to 4.89 percent of the HMGP allocation for management costs. The Recipient is responsible for determining the amount, if any, of funds that will be passed through to the subrecipient(s) for their management costs.

Applicants for PDM and FMA may apply for a maximum of 10 percent of the total funds requested in their award application budget (Federal and non-Federal shares) for management costs to support the project and planning subapplications included as part of their application.

Subapplicants for PDM and FMA may apply for a maximum of 5 percent of the total funds requested in a subapplication for management costs.



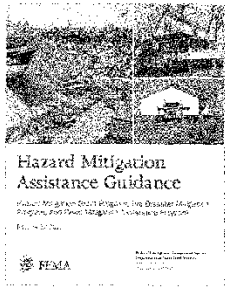
Application Process

Applications for HMGP are processed through the HMGP system (formerly known as National Emergency Management Information System (NEMIS)). Applicants use the Application Development Module of the HMGP System, which enables each Applicant to create project applications and submit them to the appropriate FEMA Region within 12 months of a disaster declaration.

Applications for PDM and FMA are processed through a web-based, electronic grants management system (eGrants), which encompasses the entire grant application process. The eGrants system allows Applicants and subapplicants to apply for and manage their mitigation grant application processes electronically. Applicants and subapplicants can access eGrants at *https://portal.fema.gov*.

FEMA Review and Selection

FEMA will review all subapplications for eligibility and completeness, cost-effectiveness, technical feasibility and effectiveness, and for EHP compliance. Subapplications that do not pass these reviews will not be considered for funding. FEMA will notify Applicants of the status of their subapplications and will work with Applicants on subapplications identified for further review.



Details about the HMA grant application process can be found in the HMA Guidance, which is available at http://www.fema.gov/hazard-mitigation-assistance

GovDelivery Notifications

Stay up-to-date on the HMA Programs by subscribing to GovDelivery notifications. Have updates delivered to an e-mail address or mobile device. To learn more, visit http://www.fema.gov

FEMA

Contact Information

HMA Helpline: 866-222-3580

FEMA eGrants Helpdesk: 1-855-228-3362

Benefit-Cost Analysis Helpline: BCAHelpline@fema.dhs.gov

For HMA independent study and classroom courses, visit http://training.fema.gov

To find your State Hazard Mitigation Office, visit http://www.fema.gov/state-hazard-mitigation-officers

Herkimer County Hazard Mitigation Plan - Actions Update

Freeman, Nancy

11/11/16

To: Herkimer County Working Group- adam.hohl@redcross.org; aklimek100@aol.com; berk45@hotmail.com; billr@ohswa.org; bpep@ymail.com; Brian.olds@dot.ny.gov; ccain@herkimercounty.org; cfarber@herkimercounty.org; clerkton@ntcnet.com; cosborn@townofwinfieldny.org; diann.fischer2@redcross.org; dward@herkimercounty.org; fpdchief@cityoflittlefalls.net; FSupervisor@Localnet.com; gerald.pederson@dhses.ny.gov; gerry.smithson@ny.nacdnet.net; gft@dreamspace.com; herkimerdare@county; ilionfd@ilionny.com; ilionpd@ilionny.com; jac@village.herkimer.ny.us; jbreiten@ocgov.net; Jennifer.romano@dhses.ny.gov; jeremy@gemsgrants.com; jkinney@townoffrankfort.com; judygokey@ntcnet.com; jwwallace@herkimercounty.org; kathyfox@herkimercounty.org; ktamburro@villageoffrankfortny.org; lainonf@herkimer.edu; litchfield.townclerk@gmail.com; mayorbennett@ntcnet.com; mayorleonard@ilionny.com; mccolgicc@herkimer.edu; mpaiumbo@herkimercounty.org; ohio@ntcnet.com; patwoyto@hotmail.com; paul.hoole@fema.dhs.gov; rbg@twony.rr.com; Rickvof@gmail.com; robert.mackenzie@lewiscounty.ny.gov; rparese@cityoflittlefalls.net; rvan@herkimercounty.org; sblais.voh@gmail.com; schnoony52@yahoo.com; sscherer@herkimercounty.org; ssmaria@fultoncountyny.gov; styoe@herkimercounty.org; supervisor@ntcnet.com; supervisor@townofherkimer.org; thomas.rogers@Troopers.ny.gov; townclerk@ntcnet.com; townclerk@townofschuyler.com; village1villageofdolgeville@yahoo.com; villageofwestwinfield@yahoo.com; webbpd@outlook.com

Cc: Corrina.Cavallo@dhses.ny.gov; paul.hoole@fema.dhs.gov

Attachments:

(2)Download all attachments

Herkimer HMP - Mitigation~1.xlsx (54 KB)(Open as Web Page); Herkimer HMP Mitigation A~1.docx (18 KB)(Open as Web Page)

Good morning: I realize many of you probably have a holiday today, but I wanted to get a jump-start on the meeting next week by forwarding the attached documents for your review. If you have time prior to the meeting on Wednesday to review the list of project identified in the 2014 DRAFT of the Hazard Mitigation Plan that would get us one step ahead for the meeting. If you don't have time, please bring the documents with you to the meeting. If you are unable to attend the meeting, I still need your input regarding the status of any of these actions that you are aware of. You may fill out the attached form and email it back to me. The form includes instructions.

The updated list will be a starting point for the current plan in progress.

Thanks for your time and efforts! Have an enjoyable Veteran's Day!
Nancy

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Nancy.Freeman@iem.com

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Freeman, Nancy

Mon 11/28/2016 [illegible]:05 AM

To: adam.hohl@redcross.org <adam.hohl@redcross.org>; aklimek100@aol.com <aklimek100@aol.com>; berk45@hotmail.com <berk45@hotmail.com>; Berky105186@gmail.com <Berky105186@gmail.com>; billr@ohswa.org <billr@ohswa.org>; bpcp@ymail.com <bpcp@ymail.com>; Brian.olds@dot.ny.gov <Brian.olds@dot.ny.gov>; ccain@herkimercounty.org <ccain@herkimercounty.org>; ccwheat@gmail.com <ccwheat@gmail.com>; cfarber@herkimercounty.org <cfarber@herkimercounty.org>; clerkton@ntcnet.com <clerkton@ntcnet.com>; cosborn@townofwinfieldny.org <cosborn@townofwinfieldny.org>; Dave.kozyra@dot.ny.gov <Dave.kozyra@dot.ny.gov>; diann.fischer2@redcross.org <diann.fischer2@redcross.org>; dward@herkimercounty.org <dward@herkimercounty.org>; fpdchief@cityoflittlefalls.net <fpdchief@cityoflittlefalls.net>; frankfortcodes@hotmail.com <frankfortcodes@hotmail.com>; frankfortdpw@yahoo.com <frankfortdpw@yahoo.com>; FSupervisor@Localnet.com <FSupervisor@Localnet.com>; gcryer@twcny.rr.com <gcryer@twcny.rr.com>; gerald.pederson@dhses.ny.gov <gerald.pederson@dhses.ny.gov>; gerry.smithson@ny.nacdnet.net <gerry.smithson@ny.nacdnet.net>; gft@dreamspace.com <gft@dreamspace.com>; herkimerdare@county <herkimerdare@county>; ilionfd@ilionny.com <ilionfd@ilionny.com>; ilionpd@ilionny.com <ilionpd@ilionny.com>; jac@village.herkimer.ny.us <jac@village.herkimer.ny.us>; Jason.hohl@redcross.org <Jason.hohl@redcross.org>; jbreiten@acgov.net <jbreiten@acgov.net>; Jennifer.romano@dhses.ny.gov <Jennifer.romano@dhses.ny.gov>; jeremy@gemsgrants.com <jeremy@gemsgrants.com>; jhaughton@townofmanheim.org <jhaughton@townofmanheim.org>; jkinney@townoffrankfort.com <jkinney@townoffrankfort.com>; judygokey@ntcnet.com <judygokey@ntcnet.com>; jwwallace@herkimercounty.org <jwwallace@herkimercounty.org>; kathyfox@herkimercounty.org <kathyfox@herkimercounty.org>; ktamburro@villageoffrankfortny.org <ktamburro@villageoffrankfortny.org>; lainonf@herkimer.edu <lainonf@herkimer.edu>; litchfield.townderk@gmail.com <litchfield.townderk@gmail.com>; Matthew.howard@dot.ny.gov <Matthew.howard@dot.ny.gov>; mayorbennett@ntcnet.com <mayorbennett@ntcnet.com>; mayorleonard@ilionny.com <mayorleonard@ilionny.com>; mccolgicc@herkimer.edu <mccolgicc@herkimer.edu>; mohawkmuni@hotmail.com <mohawkmuni@hotmail.com>; mpalumbo@herkimercounty.org <mpalumbo@herkimercounty.org>; norwayhighway@ntcnet.com <norwayhighway@ntcnet.com>; ohio@ntcnet.com <ohio@ntcnet.com>; patwoyto@hotmail.com <patwoyto@hotmail.com>; paul.hoole@fema.dhs.gov <paul.hoole@fema.dhs.gov>; rbg@twcny.rr.com <rbg@twcny.rr.com>; Rickvof@gmail.com <Rickvof@gmail.com>; robert.mackenzie@lewiscounty.ny.gov <robert.mackenzie@lewiscounty.ny.gov>; rparese@cityoflittlefalls.net <rparese@cityoflittlefalls.net>; rvan@herkimercounty.org <rvan@herkimercounty.org>; sblais.voh@gmail.com <sblais.voh@gmail.com>; schnoony52@yahoo.com <schnoony52@yahoo.com>; sscherer@herkimercounty.org <sscherer@herkimercounty.org>; ssmaria@fultoncountyny.gov <ssmaria@fultoncountyny.gov>; stype@herkimercounty.org <stype@herkimercounty.org>; supervisor@ntcnet.com <supervisor@ntcnet.com>; supervisor@townofherkimer.org <supervisor@townofherkimer.org>; thomas.rogers@Troopers.ny.gov <thomas.rogers@Troopers.ny.gov>; townclerk@ntcnet.com <townclerk@ntcnet.com>; townclerk@townofschuyler.com <townclerk@townofschuyler.com>; townofrussiahighway@ntcnet.com <townofrussiahighway@ntcnet.com>; townsalsclerk@cnymail.com <townsalsclerk@cnymail.com>; village1villageofdolgeville@yahoo.com <village1villageofdolgeville@yahoo.com>; villageofwestwinfield@yahoo.com <villageofwestwinfield@yahoo.com>; webbpd@outlook.com <webbpd@outlook.com>; wwstar@twcny.rr.com <wwstar@twcny.rr.com>;

Cc: Corrina.Cavallo@dhses.ny.gov <Corrina.Cavallo@dhses.ny.gov>; paul.hoole@fema.dhs.gov <paul.hoole@fema.dhs.gov>;

2 attachments (1 MB)

Herkimer HMP - Mitigation Strategy Meeting 1 Minutes 11.16.16.docx; FEMA-Mit Strategy - Herkimer Co 11.16.16.pdf; NYS DHSES PPT - Herkimer HMP meeting 11.16.16.pdf; Herkimer HMP - Mit Strategy 2 Agenda 12.07.16.docx;

Good morning: I hope everyone had an enjoyable and thankful holiday!

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2/26/2017 Untitled - Freeman, Nancy

This notice will serve as the announcement for the next Herkimer County Hazard Mitigation Working Group meeting on December 7, 2016. The purpose of the meeting will be to continue developing and refining your jurisdiction's mitigation actions for the plan. Representatives from the New York State Division of Homeland Security and Emergency Services will be at the meeting to assist with completion of the Action Worksheets, and we will take the next important step of approving criteria to prioritize the mitigation actions. Later this week, I will be sending out a list of potential funding/technical assistance resources that should help to identify potential support for your actions and projects.

As a reminder, I still need the previous worksheets from a number of jurisdictions. I will be sending out a list later this week as an update, in case you've lost track of what has already been submitted!

Attached are the minutes from the last meeting, copies of Paul Hoole's and Joe Sikora's presentations, and the draft agenda for the December 7 meeting.

See you on the 7th!
Nancy

Thanks,

Nancy Freeman
Senior Hazard Mitigation Planner
IEM
(352)572-9325 (mobile)
Nancy.Freeman@iem.com

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Herkimer County Multi-Jurisdictional Hazard Mitigation Plan

Mitigation Strategy Workshop 2 – Mitigation Actions and Priorities

AGENDA

December 7, 2016

9:30 – 12:00 p.m.

Herkimer County Emergency Services

- Welcome and Call to Order
- Approval of last meeting Minutes
- Today's Objectives & Tasks
- Confirmation of Hazards of Highest Concern
- Continuing Development of Mitigation Actions Development
  - Work Session
- Evaluating and Prioritizing Actions
  - Prioritization Criteria
  - Discuss and Adopt Criteria
- Action Plan for Implementation
  - Discussion
- Next Meeting & Adjournment

Herkimer County Multi-Jurisdictional Hazard Mitigation Plan

MINUTES DECEMBER 7, 2016 9:30 AM – 12:00 PM HERKIMER CO EM SRVS, HERKIMER, NY

MEETING CALLED BY	NYS DHSES and Contractor (IEM)
TYPE OF MEETING	Mitigation Strategy Workshop 2
FACILITATOR	Nancy Freeman, IEM
NOTE TAKER	N. Freeman
ATTENDEES	19 attendees (see list attached), representing 9 jurisdictions; regional and state agencies; special interest organizations.

Agenda topics

WORKING GROUP BUSINESS NANCY FREEMAN

DISCUSSION	The meeting was called to order by Nancy Freeman. [The HMWG Chair was temporarily called from the room.] The minutes from the last meeting, the Mitigation Strategy Workshop 1 meeting, November 16, 2016, were tabled for approval at the next meeting.
CONCLUSIONS	N/A

ACTION ITEMS	PERSON RESPONSIBLE	DEADLINE
No action required.	N/A	N/A

FOLLOW-UP FROM LAST MEETING NANCY FREEMAN

DISCUSSION	Ms. Freeman reminded jurisdiction representatives to complete the HIRA worksheets to finalize their hazards of highest concern, and continue development of mitigation actions on the worksheet provided.

A summary list of the hazards selected by multiple jurisdictions was shown on PowerPoint to initiate discussion and consensus. Several HMWG members questioned the ranking of epidemic as #5 on the list and transportation accidents as #10, indicating they should possibly be reversed. Ms. Freeman confirmed that this initial list was based only on a small sampling of jurisdiction's worksheets. As more worksheets are submitted, the ranking will more than likely change. In addition, there will be a summary ranking of all jurisdictions' hazards in the Base Plan, but each jurisdiction's annex will have the list of hazards as ranked for that jurisdiction.

CONCLUSIONS	Ms. Freeman reminded jurisdictions to consider other factors when determining the hazards of highest concern, such as previous events, damage costs related to hazards, and identified vulnerabilities.

HMWG members discussed various action alternatives to consider when addressing hazard risks.

ACTION ITEMS	PERSON RESPONSIBLE	DEADLINE
No action required.	N/A	N/A

MITIGATION ACTION WORKSHEETS NANCY FREEMAN, CORRINA CAVALLO

DISCUSSION	Ms. Freeman facilitated a short discussion related to progress on completing the Action Worksheets. Ms. Cavallo, NYS DHSES, described the methodology in asking jurisdictions to use the worksheets, which will lead to more fully-developed actions in the plan, as well as enable the identified actions to be more readily implemented when potential funding becomes available.

Four representatives from NYS DHSES Mitigation Office, Marlene White, Kevin Clapp, [add other names] were in attendance at the meeting to meet with jurisdictions one-on-one to assist in developing the action worksheets.

CONCLUSIONS	HMWG members should review alternative projects and complete a worksheet for each mitigation action.

ACTION ITEMS	PERSON RESPONSIBLE	DEADLINE
Submit mitigation actions to Ms. Freeman by December 27, 2016	Jurisdiction representatives	12/27/16

RANKING SYSTEM FOR PRIORITIZING MITIGATION ACTIONS — NANCY FREEMAN

DISCUSSION	Ms. Freeman presented several options for ranking criteria to guide prioritization of mitigation actions. The options were compared with criteria suggested by FEMA and multiple points were discussed, including whether a single system would be adopted for all jurisdictions, or jurisdictions could establish their own criteria.
CONCLUSIONS	Through discussion, the consensus of opinion was that a single ranking system to be used by each jurisdiction would be the best option to for consistency and to ensure that all actions are considered equally.

ACTION ITEMS	PERSON RESPONSIBLE	DEADLINE
Jessica Breiten, HOCCPP, moved that the table labeled as "Option 1" be selected as the ranking criteria, with the following changes: (1) remove "social impact" category; and (2) add Life Safety & Property category. The total point value will remain the same. The motion was seconded by Mike Shedd, Village of Mohawk, and approved unanimously.	N. Freeman (to change system criteria and send out to the group through email)	12/10/16
Ranking System worksheet should be submitted to Nancy.Freeman@iem.com by December 27, 2016	All Jurisdictions	12/27/16

ACTION PLAN FOR IMPLEMENTATION; PLAN MAINTENANCE PROCEDURES — NANCY FREEMAN

DISCUSSION	Ms. Freeman discussed the format that will be used to collect and finalize information needed for the Action Plan for Implementation and Plan Maintenance Procedures. Ms. Freeman will send out the information requested for the action plan for implementation and plan maintenance through email to HMWG members, asking all jurisdictions to respond with the requested information.
CONCLUSIONS	

ACTION ITEMS	PERSON RESPONSIBLE	DEADLINE
Request for Action Plan for implementation, and plan maintenance process and schedule to be sent out by N. Freeman via email. Jurisdictions to respond by 12/28/17	Jurisdiction representatives	12/28/16

NEXT STEPS

NEXT STEPS	**ALL WORKSHEETS PREVIOUSLY DISTRIBUTED TO JURISDICTIONS SHOULD BE COMPLETED AND RETURNED TO Nancy.Freeman@iem.com BY DECEMBER 28, 2016.**
SPECIAL NOTES	
NEXT MEETING	**To be determined – Tentative schedule for 2017 – Feb. 1 or 8, 9:30 am to 12:00 pm, at Herkimer County Emergency Services, Herkimer**

HERKIMER COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN

December 7, 2016

19 Attendees

Mitigation Strategy 2 Workshop – Herkimer County Emergency Services

Name	Position/Title	Agency	Jurisdiction	Address	Primary Phone	Email	CEPC	Stake-holder	Signature
Ron Testa	Hwy Superintendent	Frankfort	Frankfort	1896 Albany Rd.	315 7245461	frkthwy@ntcnet.com			
George Cryer	Deputy Mayor	Mohawk	German Flatt	28 Caroline	315-866-4669	GCryer@Tucker.com			
Michael Shedd	Superintendent	Mohawk	Mohawk	28 Columbia Street	717-8497	mohawkmuni@hotmail			
JESSICA BREITEN	CHIEF PLANNER	HOCCPP	HC-OC	321 Main St Utica	798-5710	JBREITEN@OCGOV.NET			JB
Frank P Spatto	Supervisor	G F Town	HC	66 E Main St Mohawk	866-4960	gfsupervisor@frankmsc.com			
Diane Ward	EP Coordinator	Herk Co Public Health		301 N. Washington St Herkimer	315-867-1600	dward@herkimercounty.org			Diane Ward
Terry Leonard	Mayor	Ilion	Ilion	49 Morgan Street	895 7448	mayorleonard@ilionny.com			
RaMona Gassmann	Advisor Community Flood Advisory Group-(CFAG)	Ilion	Ilion	6 Mauser Place - Ilion	(315) 985-3929	rbg@twcny.rr.com			Ramona Gassmann
James Torrelt	Fire Chief	Ilion	Ilion	1 Centennial Ave Ilion	894-6048	ilionfd@ilionny.com			
JAMES Franco	DPW Supt.	V of Herk.	Herkimer	120 Green Street	866-3321	JFranco105@AOL.com			
Timothy Kloch	Safety	Arc Herkimer	Herkimer	350. S. Washington	574-7973	TKloch@Archerkimer.org			
ROBERT PARESE	FIRE MBF	T/O & City of Little Falls	Little Falls	659 E MAIN ST Little Falls NY	315-534-2213	rparese@cityofLittleFalls.net			
Scott Scherer	Undersheriff	H.C.S.O	Herk Co.	320 N Main St Herk	315-867-1167	sscherer@herkimercountyny.org			
Diann Fischer	DOL/ADir	American Red Cross	Mohawk Valley Herkimer	716 Westwood Dr Herk	315-868-0408	diann.fischer@redcross.org			
Dominic Frank	Supervisor	Town of Herkimer	Town of Herkimer	114 N. Prospect Street	315-866-8104	supervisor@TownofHerkimer.org			
CORRINA CAVALLO	Supervisor Mitigation Planning	DHSES			518-292-1155				
Michele Spaman	CEO	T/O Frankfort	-	201 - 3rd Ave	315-894-0922	Frankfortcodes@Hotmail.com			
STEPHANIE TYOE	SR. CIVIL ENG	HERKIMER Co HIGHWAY	COUNTY	313 THIRD AVE HERK	315-867-1330	styoe@herkimercounty.org			
Bernard Peplinski	Co Chair	Legislator	Herk	7934 RT 51 Ilion	315 822 6814	bpep@ymail.com			

2/26/2017

MITIGATION STRATEGY WORKSHOP 2

HERKIMER COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN

TODAY'S OBJECTIVES

1. Confirm Hazards of Highest Concern
2. Continue development & review of Mitigation Actions
3. Continue worksheet completion
4. Adopt Action Prioritization Criteria/Method
5. Discuss Action Plan for Implementation

HAZARDS OF HIGHEST CONCERN

- Based on Summary of Hazard Index and Risk Analysis Worksheets submitted to date (review)
  - Flood (Riverine/Flash, Ice Jam/Debris Flow, High Groundwater/Poor Drainage)
  2. Severe Weather: Thunderstorm (High Wind, Tornado)
  3. Severe Weather: Winter Weather
  4. Soil Hazards: Erosion
  5. Epidemic
  6. Extreme Heat
  7. Earthquake
  8. Wildfire
  9. Drought
  10. Transportation Accident

ADDITIONAL CONSIDERATIONS

Number of Hazard Events in Herkimer County (1960-2012) – 883	Number of Hazard Events in Herkimer County (2013-2016) - 75
• Winter Storm – 275	• High Wind – 24
• High Wind – 167	• Winter Weather – 20
• Flood – 85	• Flood – 9
• Hail – 34	• Extreme Temp – 9
• Extreme Temp - 15	• Hail - 5

ADDITIONAL CONSIDERATIONS

Total Losses from Disasters in Herkimer County (1960 – 2012)*

PROCESS TO IDENTIFY ACTIONS TO ADDRESS PROBLEM STATEMENTS

1. Problem Statement: Wildfire
   In wildland-urban interface areas, two critical facilities (school and county maintenance shop) and $500 million in property value are at risk, and there is increasing development pressure.
2. Identify Potential Actions
   - Local Planning and Regulations
   - Structure and Infrastructure Projects
   - Natural Systems Protection
   - Education and Awareness Programs

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PROCESS TO IDENTIFY ACTIONS TO ADDRESS PROBLEM STATEMENTS

POTENTIAL ACTIONS: Wildfire

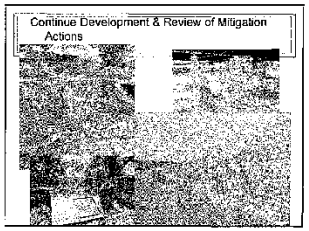
- Local Planning and Regulations
  - Adopt a wildfire mitigation ordinance to specific conditions for the use and development of wildfire hazard areas to mitigation risk to life and property.
- Structure and Infrastructure Projects
  - Retrofit the school and county shop with fire-resistant construction materials and create a defensible space around the perimeters of the buildings.

PROCESS TO IDENTIFY ACTIONS TO ADDRESS PROBLEM STATEMENTS

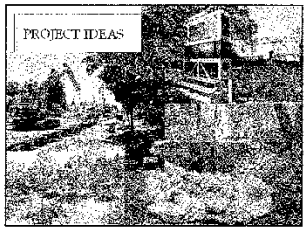
POTENTIAL ACTIONS: Wildfire

- Natural Systems Protection
  - Identify large tracts of vacant land in high hazard areas for acquisition by the Department of Parks to develop trails and preserve open space.
- Education and Awareness Programs
  - Implement a program using Firewise Communities materials to educate property owners in the wildland-urban interface on actions they can take to reduce risk.

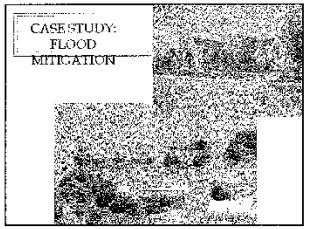
Continue Development & Review of Mitigation Actions

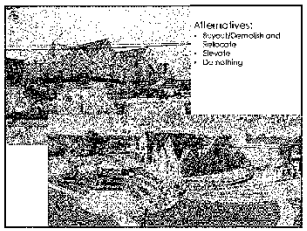


PROJECT IDEAS



CASE STUDY: FLOOD MITIGATION





Alternatives:
- Buyout/Demolish and Relocate
- Elevate
- Do nothing

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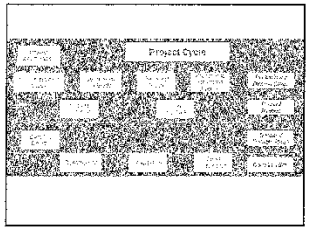

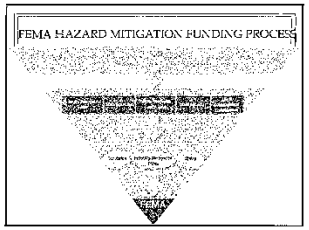

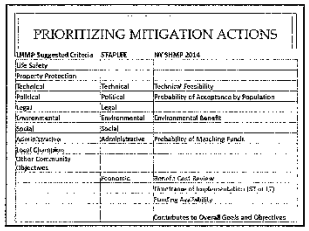

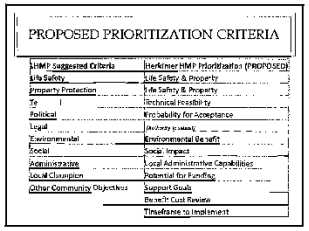

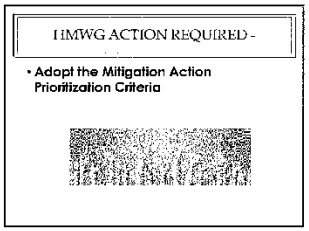

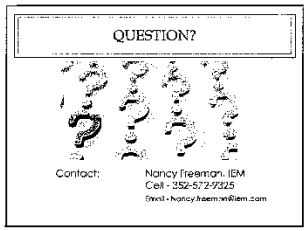

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HERKIMER COUNTY MULTI-JURISDICTION HAZARD MITIGATION PLAN
PROPOSED GOALS AND OBJECTIVES – COUNTYWIDE

Goal 1: Protect Life and Property *[Category: Structure and Infrastructure Projects]*

- **Objective 1.1:** Implement mitigation activities that will assist in protecting lives and property by making homes, businesses, infrastructure, and critical facilities more resistant to hazards.
- **Objective 1.2:** Encourage homeowners and businesses to take preventative actions in areas that are especially vulnerable to hazards.
- **Objective 1.3:** Review existing local ordinances, building codes, safety inspection procedures, and applicable rules to help ensure that they employ the most recent and generally accepted standards for the protection of buildings.
- **Objective 1.4:** Ensure that public and private facilities and infrastructure meet established building codes and immediately enforce the codes to address any identified deficiencies.
- **Objective 1.5:** Encourage homeowners, renters, and businesses to purchase insurance coverage for damages caused by hazards.
- **Objective 1.6:** Encourage the establishment of policies at the local level to help ensure that prioritization and implementation of mitigation strategies and/or projects are designed to benefit essential facilities, services, and infrastructure.

Goal 2: Increase Public Awareness *(Category: Education and Awareness Programs)*

- **Objective 2.1:** Develop and implement additional education and outreach programs to increase public awareness of the risks associated with hazards and to educate the public on specific, individual preparedness activities.
- **Objective 2.2:** Provide information on tools, partnership opportunities, funding, resources, and current government initiatives to assist in implementing mitigation activities.

Goal 3: Encourage Partnerships *(Category: Local Plans and Regulations)*

- **Objective 3.1:** Strengthen inter-jurisdiction and inter-agency communication, coordination, and partnerships to foster hazard mitigation strategies and/or projects designed to benefit multiple jurisdictions.
- **Objective 3.2:** Identify and implement ways to engage public agencies with individual citizens, non-profit organizations, business, and industry to implement mitigation activities more effectively.
- **Objective 3.3:** Integrate the recommendations of this plan into existing local and county programs.

Goal 4: Promote sustainable mitigation actions that preserve or restore the functions of natural systems *[Category: Natural Systems Protection]*

- **Objective 4.1:** Incorporate hazard considerations into land-use planning and natural resource management.
- **Objective 4.2:** Implement mitigation activities that encourage environmental stewardship and protection of the environment.
- **Objective 4.3:** Build upon past efforts to characterize flood events by conducting additional flood studies and creating flood models.

- **Objective 3.3 [1-8]**: Integrate the recommendations of this plan into existing local and county programs.

Goal 4: Promote sustainable mitigation actions that preserve or restore the functions of natural systems

- **Objective 4.1[1-6]**: Incorporate hazard considerations into land-use planning and natural resource management.
- **Objective 4.2 [1-9]**: Implement mitigation activities that encourage environmental stewardship and protection of the environment.
- **Objective 4.3 [1-3]**: Build upon past efforts to characterize flood events by conducting additional flood studies and creating flood models.
- ~~**Objective 4-2**: Where appropriate, coordinate and integrate hazard mitigation activities with existing local emergency operations plans.~~ **[Objective 3.3]**
- ~~**Objective 4-3**: Identify the need for, and acquire, any special emergency services and equipment to enhance response capabilities for specific hazards.~~
- ~~**Objective 4-4**: Review and improve, if necessary, emergency traffic routes; communicate such routes to the public and communities.~~

HERKIMER COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN
PRIORITIZATION SYSTEM FOR RANKING MITIGATION ACTIONS

Category	Points	Criteria
Life Safety/Property Protection	4	Likely to protect more than 50% of the population and/or critical infrastructure and community assets.
	3	Likely to protect at least 50 % of the population and/or critical infrastructure and community assets.
	2	Could potentially protect up to 25 % of the population and could potentially protect critical infrastructure and community assets
	1	Could potentially protect up to 19 % of the population and could potentially protect critical infrastructure and community assets
	0	Potential for protecting lives and critical infrastructure and/or community assets cannot be determined at this time.
Funding Availability	4	Little to no direct expenses
	3	Can be funded by operating budget
	2	Grant funding identified
	1	Grant funding needed
	0	Potential funding source unknown
Probability of Matching Funds	4	Funding match is available or funding match not required
	-	N/A
	2	Partial funding match available
	-	N/A
	0	No funding match available or funding match unknown
Benefit Cost Review	4	Likely to meet Benefit Cost Review
	-	N/A
	2	Benefit Cost Review not required
	-	N/A
	0	Benefit Cost Review unknown
Environmental Benefit	4	Environmentally sound and relatively easy to implement; or no adverse impact on environment.
	3	Environmentally acceptable and not anticipated to be difficult to implement
	2	Environmental concerns and somewhat difficult to implement because of complex requirements
	1	Difficult to implement because of significantly complex requirements and environmental permitting
	0	Very difficult to implement due to extremely complex requirements and environmental permitting problems
Technical Feasibility	4	Proven to be technically feasible
	-	N/A
	2	Expected to be technically feasible
	-	N/A
	0	Technical feasibility unknown or additional information needed
Timeframe of implementation	4	1 year or less
	-	N/A
	2	2 – 5 years
	-	N/A
	0	More than 5 years
Minimum = 0 Maximum = 28	Ranking Level:	Low: 0-10 Medium: 11-20 High: 21-28

Approved by Herkimer HMWG – 12/07/16

RANKING SYSTEM FOR PRIORITIZING MITIGATION ACTIONS

Jurisdiction _____ **Date Submitted** _____

Project #	Mitigation Action	Hazard/ Project Type*	Life Safety & Property	Funding Availability	Matching Funds	Benefit Cost Review	Environmental Benefit	Technical Feasibility	Timeframe to Implement (ST or LT)	TOTAL SCORE

Last Update: 11/26/16

***Abbreviations for Project Types:**

LPR - Local Plans and Regulations

SIP - Structure and Infrastructure Projects

NSP - Natural Systems Protection

EAP - Education and Awareness Program

HERKIMER COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN

Recommended Project Types by Natural Hazards	
Hazard	***Project Type***
Climate Change	Public Awareness Strengthen/Improve/Enforce Building Codes in Hazard Areas Elevation Acquisition Protective Measures for Critical Facilities Reduce Public Infrastructure within High Hazard Areas Identify Locations of Vulnerable Populations Adopt adaptation policies and/or measures
Drought	Public Awareness Drought Preparedness/Planning Drought Resistant Vegetation Increase Water Conservation Standards Retrofit/Upgrade Irrigation System
Earthquake	Public Awareness Planning and Zoning Strengthen/Upgrade/Enforce Building Codes Retrofit/Upgrade Critical Facilities Seismic Retrofit
Extreme Heat/Cold	Public Awareness Identify Location of Vulnerable Populations Establish Heating/Cooling Centers Issue Advisories and Warnings
Flood (Dam/Levee Failure, Ice Jam & Debris Flow, High Groundwater & Local Drainage, Riverine & Flash Flood)	Public Awareness Planning and Zoning Acquisition Relocation Protective Measures for Critical Facilities Storm water Management Elevation Wet/Dry Flood Proofing Reduce public infrastructure within high hazard areas Transfer Development Rights Property swap program
Landslide	Public Awareness Planning and Zoning Open Space Preservation Acquisition of Structures (Demolish & Convert to Open

Recommended Project Types by Natural Hazards	
Hazard	***Project Type***
	Space) Relocation of Structures Bank Stabilization
Severe Storm (Hail, High Wind (hurricane/tropical storm, straight line), Lightning, Thunderstorm/Heavy Rain, Tornado, Winter Weather (snow, ice, extreme cold))	Public Awareness Tree Pruning Strengthen/Improve/Enforce Building Codes in Hazard Areas Wind Resistant Design and Construction Structural Retrofit Safe Room Construction Weather warning system improvements and modernization
Soil Hazards (Erosion, Expansive Soils, Subsidence)	Public Awareness Planning and Zoning Open Space Preservation Acquisition of Structures (Demolish & Convert to Open Space) Relocation of Structures Bank Stabilization
Wildfire	Public Awareness Planning & Zoning (i.e., urban-wildland interface set-back ordinances) Open Space Preservation (especially along the urban-wildland interface) Instituting periodic, proactive tree trimming and brush cutting programs to protect public infrastructure investments
Winter Storm/Ice Storm	Public Awareness Hazard Resistant Construction Tree Pruning Strengthen/Improve/Enforce Building Codes in Hazard Areas Retrofit Critical Structures Redundant Utilities/Communications

2/26/2017 Herkimer HMP - Proposed Action Ranking Criteria - Freeman, Nancy

Herkimer HMP - Proposed Action Ranking Criteria

Freeman, Nancy

Wed 11/30/2016 10:06 AM

To:adam.hohl@redcross.org <adam.hohl@redcross.org>; aklimek100@aol.com <aklimek100@aol.com>; berk45@hotmail.com <berk45@hotmail.com>; Berky105186@gmail.com <Berky105186@gmail.com>; billr@ohswa.org <billr@ohswa.org>; bpep@ymail.com <bpep@ymail.com>; Brian.oles@dot.ny.gov <Brian.oles@dot.ny.gov>; ccain@herkimercounty.org <ccain@herkimercounty.org>; ccwheat@gmail.com <ccwheat@gmail.com>; cfarber@herkimercounty.org <cfarber@herkimercounty.org>; derkton@ntcnet.com <derkton@ntcnet.com>; cosborn@townofwinfieldny.org <cosborn@townofwinfieldny.org>; Dave.kozyra@dot.ny.gov <Dave.kozyra@dot.ny.gov>; diann.fischer2@redcross.org <diann.fischer2@redcross.org>; dward@herkimercounty.org <dward@herkimercounty.org>; fpcchief@cityoflittlefalls.net <fpcchief@cityoflittlefalls.net>; frankfortcoces@hotmail.com <frankfortcoces@hotmail.com>; frankfortcpw@yahoo.com <frankfortcpw@yahoo.com>; FSupervisor@Localnet.com <FSupervisor@Localnet.com>; gcryer@twcny.rr.com <gcryer@twcny.rr.com>; gerald.pederson@dhses.ny.gov <gerald.pederson@dhses.ny.gov>; gerry.smithson@ny.nacdnet.net <gerry.smithson@ny.nacdnet.net>; gft@dreamspace.com <gft@dreamspace.com>; herkimerdare@county <herkimerdare@county>; ilionfc@ilionny.com <ilionfd@ilionny.com>; ilionpd@ilionny.com <ilionpd@ilionny.com>; jac@village.herkimer.ny.us <jac@village.herkimer.ny.us>; jbreiten@ocgov.net <jbreiten@ocgov.net>; Jennfier.romano@dhses.ny.gov <Jennfier.romano@dhses.ny.gov>; jeremy@gemsgrants.com <jeremy@gemsgrants.com>; jhaughton@townofmanheim.org <jhaughton@townofmanheim.org>; jkinney@townoffrankfort.com <jkinney@townoffrankfort.com>; judygokey@ntcnet.com <judygokey@ntcnet.com>; jwwallace@herkimercounty.org <jwwallace@herkimercounty.org>; kathyfox@herkimercounty.org <kathyfox@herkimercounty.org>; ktamburro@villageoffrankfortny.org <ktamburro@villageoffrankfortny.org>; lainonf@herkimer.edu <lainonf@herkimer.edu>; litchfield.townclerk@gmail.com <litchfield.townclerk@gmail.com>; Matthew.howard@dot.ny.gov <Matthew.howard@dot.ny.gov>; mayorbennett@ntcnet.com <mayorbennett@ntcnet.com>; mayorleonard@ilionny.com <mayorleonard@ilionny.com>; mccolgicc@herkimer.edu <mccolgicc@herkimer.edu>; mohawkmuni@hotmail.com <mohawkmuni@hotmail.com>; mpalumbo@herkimercounty.org <mpalumbo@herkimercounty.org>; norwayhighway@ntcnet.com <norwayhighway@ntcnet.com>; ohio@ntcnet.com <ohio@ntcnet.com>; patwoyto@hotmail.com <patwoyto@hotmail.com>; paul.hoole@fema.dhs.gov <paul.hoole@fema.dhs.gov>; rbg@twcny.rr.com <rbg@twcny.rr.com>; Rickvof@gmail.com <Rickvof@gmail.com>; robert.mackenzie@lewiscounty.ny.gov <robert.mackenzie@lewiscounty.ny.gov>; rparese@cityoflittlefalls.net <rparese@cityoflittlefalls.net>; rvan@herkimercounty.org <rvan@herkimercounty.org>; sblais.voh@gmail.com <sblais.voh@gmail.com>; schnoony52@yahoo.com <schnoony52@yahoo.com>; sscherer@herkimercounty.org <sscherer@herkimercounty.org>; ssmaria@fultoncountyny.gov <ssmaria@fultoncountyny.gov>; styoe@herkimercounty.org <styoe@herkimercounty.org>; supervisor@ntcnet.com <supervisor@ntcnet.com>; supervisor@townofherkimer.org <supervisor@townofherkimer.org>; thomas.rogers@Troopers.ny.gov <thomas.rogers@Troopers.ny.gov>; townclerk@ntcnet.com <townclerk@ntcnet.com>; townclerk@townofschuyler.com <townclerk@townofschuyler.com>; townofrussiahighway@ntcnet.com <townofrussiahighway@ntcnet.com>; townsalsclerk@cnymail.com <townsalsclerk@cnymail.com>; village1villageofdolgeville@yahoo.com <village1villageofdolgeville@yahoo.com>; villageofwestwinfield@yahoo.com <villageofwestwinfield@yahoo.com>; webbpc@outlook.com <webbpc@outlook.com>; wwstar@twcny.rr.com <wwstar@twcny.rr.com>;

Cc:Corrina.Cavallo@dhses.ny.gov <Corrina.Cavallo@dhses.ny.gov>; paul.hoole@fema.dhs.gov <paul.hoole@fema.dhs.gov>;

3 attachments (56 KB)

Herkimer - Action Worksheet - NYS DHSES 11.16.16.xlsx; herkimer HMP Ranking System for Mitigation Actions - PROPOSED.docx; Herkimer HMP - LHMP Prioritization Criteria Worksheet 11.26.16.xlsx;

Good morning: In anticipation of next week's meeting (12/7, 9:30 am at Herkimer County Emergency Services), I am sending out two options for ranking criteria for your review.

https://outlook.office.com/owa/?viewmodel=ReadMessageItem&ItemID=AAMkADg4YmY3Y2YzLTcxYTYtNDU2ZC05N2ZjLTdhYjM3NjFhMTg2OQBGAAAAAAB... 1/2

2/26/2017 Herkimer HMP - Proposed Action Ranking Criteria - Freeman, Nancy

After your jurisdiction's actions are identified and described on the Action Worksheets (electronic version attached), the next step is to prioritize them using a set of criteria adopted by the Working Group.

The attached file provides two options for your consideration. We will discuss both options, or additional options, at the meeting and then vote to adopt one set of criteria for all jurisdictions to use. A worksheet that aligns with Option 2 is also attached to show how prioritization of your actions will be tracked. NOTE: The categories on the worksheet may change, depending on which set of criteria is adopted!

Please print these documents and bring with you to the meeting.

Thanks - see you on the 7th!
Nancy

Nancy Freeman
Senior Hazard Mitigation Planner
IEM
(352)572-9325 (mobile)
Nancy.Freeman@iem.com

https://outlook.office.com/owa/?viewmodel=ReadMessageItem&ItemID=AAMkADg4YmY3Y2YzLTcxYTYtNDU2ZC05N2ZjLTdhYjM3NjFhMTg2OQBGAAAAAAB... 2/2

2/26/2017 Herkimer HMP - Letter from Floodplain Administrator - Freeman, Nancy

Herkimer HMP - Letter from Floodplain Administrator

Freeman, Nancy

Mon 1/9/2017 5:59 PM

To: Dominic Frank <supervisor@townofherkimer.org>; Terry Leonard <mayorleonard@ilionny.com>; frankfortcodes@hotmail.com <frankfortcodes@hotmail.com>; rvan@herkimercounty.org <rvan@herkimercounty.org>; rparese@cityoflittlefalls.net <rparese@cityoflittlefalls.net>; jhaughton@townofmanheim.org <jhaughton@townofmanheim.org>; mike shedd <mohawkmuni@hotmail.com>; ktamburro@villageoffrankfortny.org <ktamburro@villageoffrankfortny.org>; gftsuper@dreamscape.com <gftsuper@dreamscape.com>; Breiten, Jessica <jbreiten@ocgov.net>;

1 attachments (17 KB);

Herkimer HMP - Floodplain Manager Letter TEMPLATE 11.04.16.docx;

Good afternoon/evening to you all: You're receiving this email because you are the "official" contact for your jurisdiction, to assist in facilitating a letter from your floodplain administrator to fulfill one of the requirements for the mitigation plan.

The NYS DHSES *Hazard Mitigation Planning Standards* require that your jurisdiction's plans include pre-designated sites for temporary housing units for residents impacted by a disaster or relocation of housing due to acquisition of property for flood mitigation purposes. The attached letter provides the language of this requirement in a template format and can be used by completing the areas highlighted in yellow. If possible, a map with the pre-designated sites should be with the letter. I realize this is short notice; they can be drawn by hand on a base map if no other method is available. They should, however, be sufficiently clear to demonstrate that the designated sites are not located in flood zones or other potential hazard areas.

If you have not pre-designated temporary housing/housing relocation sites, one of your mitigation actions should provide for this. This would require completion of one of the Action Worksheets, and should address the scope of the requirements described in the letter.

I would like to receive the letters and maps (scanned as email attachment) **no later than January 23, 2017.**

Let me know if you have any questions!
Thanks,
Nancy

Nancy Freeman
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https://outlook.office.com/owa/?viewmodel=ReadMessageItem&ItemID=AAMkADg4YmY3Y2YzLTcxYTYtNDU2ZC05N2ZjLTdhYjM3NjFhMTg2OQBGAAAAAAB... 1/1

2/26/2017 Herkimer HMP - Meeting on February 8 - Freeman, Nancy

Herkimer HMP - Meeting on February 8

Freeman, Nancy

Tue 1/17/2017 11:40 PM

To: adam.hohl@redcross.org <adam.hohl@redcross.org>; aklimek100@aol.com <aklimek100@aol.com>; Berky105186@gmail.com <Berky105186@gmail.com>; billr@ohswa.org <billr@ohswa.org>; bpep@ymail.com <bpep@ymail.com>; Brian.olds@dot.ny.gov <Brian.olds@dot.ny.gov>; ccain@herkimercounty.org <ccain@herkimercounty.org>; ccwheat@gmail.com <ccwheat@gmail.com>; cfarber@herkimercounty.org <cfarber@herkimercounty.org>; clerkton@ntcnet.com <clerkton@ntcnet.com>; cosborn@townofwinfieldny.org <cosborn@townofwinfieldny.org>; Dave.kozyra@dot.ny.gov <Dave.kozyra@dot.ny.gov>; diann.fischer2@redcross.org <diann.fischer2@redcross.org>; dward@herkimercounty.org <dward@herkimercounty.org>; fpdchief@cityoflittlefalls.net <fpdchief@cityoflittlefalls.net>; frankfortcodes@hotmail.com <frankfortcodes@hotmail.com>; frankfortdpw@yahoo.com <frankfortdpw@yahoo.com>; frkthwy@ntcnet.com <frkthwy@ntcnet.com>; FSupervisor@Localnet.com <FSupervisor@Localnet.com>; gcryer@twcny.rr.com <gcryer@twcny.rr.com>; gerald.pederson@dhses.ny.gov <gerald.pederson@dhses.ny.gov>; gerry.smithson@ny.nacdnet.net <gerry.smithson@ny.nacdnet.net>; gftsuper@dreamscape.com <gftsuper@dreamscape.com>; herkimerdare@county <herkimerdare@county>; ilionfd@ilionny.com <ilionfd@ilionny.com>; ilionpd@ilionny.com <ilionpd@ilionny.com>; jac@village.herkimer.ny.us <jac@village.herkimer.ny.us>; jbreiten@ocgov.net <jbreiten@ocgov.net>; jeremy@gemsgrants.com <jeremy@gemsgrants.com>; jfranco105@aol.com <jfranco105@aol.com>; jhaughton@townofmanheim.org <jhaughton@townofmanheim.org>; jkinney@townoffrankfort.com <jkinney@townoffrankfort.com>; judygokey@ntcnet.com <judygokey@ntcnet.com>; jwwallace@herkimercounty.org <jwwallace@herkimercounty.org>; kathyfox@herkimercounty.org <kathyfox@herkimercounty.org>; ktamburro@villageoffrankfortny.org <ktamburro@villageoffrankfortny.org>; lainonf@herkimer.edu <lainonf@herkimer.edu>; litchfield.townclerk@gmail.com <litchfield.townclerk@gmail.com>; Matthew.howard@dot.ny.gov <Matthew.howard@dot.ny.gov>; mayorbennett@ntcnet.com <mayorbennett@ntcnet.com>; mayorleonard@ilionny.com <mayorleonard@ilionny.com>; mccolgicc@herkimer.edu <mccolgicc@herkimer.edu>; mohawkmuni@hotmail.com <mohawkmuni@hotmail.com>; mpalumbo@herkimercounty.org <mpalumbo@herkimercounty.org>; norwayhighway@ntcnet.com <norwayhighway@ntcnet.com>; ohio@ntcnet.com <ohio@ntcnet.com>; patwoyto@hotmail.com <patwoyto@hotmail.com>; paul.hoole@fema.dhs.gov <paul.hoole@fema.dhs.gov>; rbg@twcny.rr.com <rbg@twcny.rr.com>; rhawes@archerkimer.org <rhawes@archerkimer.org>; Rickvof@gmail.com <Rickvof@gmail.com>; rparese@cityoflittlefalls.net <rparese@cityoflittlefalls.net>; rvan@herkimercounty.org <rvan@herkimercounty.org>; sblais.voh@gmail.com <sblais.voh@gmail.com>; schnoony52@yahoo.com <schnoony52@yahoo.com>; sscherer@herkimercounty.org <sscherer@herkimercounty.org>; ssmaria@fultoncountyny.gov <ssmaria@fultoncountyny.gov>; styoe@herkimercounty.org <styoe@herkimercounty.org>; supervisor@ntcnet.com <supervisor@ntcnet.com>; supervisor@townofherkimer.org <supervisor@townofherkimer.org>; thomas.rogers@Troopers.ny.gov <thomas.rogers@Troopers.ny.gov>; tklock@archerkimer.org <tklock@archerkimer.org>; townclerk@ntcnet.com <townclerk@ntcnet.com>; townclerk@townofschuyler.com <townclerk@townofschuyler.com>; townofrussiahighway@ntcnet.com <townofrussiahighway@ntcnet.com>; townsalsclerk@cnymail.com <townsalsclerk@cnymail.com>; village1villageofdolgeville@yahoo.com <village1villageofdolgeville@yahoo.com>, villageofwestwinfield@yahoo.com <villageofwestwinfield@yahoo.com>; webbpd@outlook.com <webbpd@outlook.com>; wwstar@twcny.rr.com <wwstar@twcny.rr.com>;

3 attachments (436 KB);

Herkimer HMP -Plan Review Meeting Agenda 02.08.17.docx; Herkimer HMP - Mitigation Strategy Meeting 1 Minutes 11.16.16.docx; Herkimer HMP - Mitigation Strategy Meeting 2 Minutes 12.07.16.docx;

The Herkimer County Multi-Jurisdictional Hazard Mitigation Plan Working Group will meet on Wednesday, February 8, 2017, from 9:30 a.m. to 12:00 p.m., at the Herkimer County Emergency Services Office.

https://outlook.office.com/owa/?viewmodel=ReadMessageItem&ItemID=AAMkADg4YmY3Y2YzLTcxYTYtNDU2ZC05N2ZjLTdhYjM3NjFhMTg2OQBGAAAAAAB... 1/2

2/26/2017 Herkimer HMP - Meeting on February 8 - Freeman, Nancy

The purpose of the meeting is to present the Initial Draft of the Plan, provide an overview of the plan's format and sections, and discuss the process and schedule for the plan's review, approval, and adoption. The meeting agenda is attached. Also, minutes from the past two meetings will be presented for approval. I hope to have the draft plan document to you prior to the meeting, but I don't expect anyone to actually read through the plan prior to the meeting! You will have 30 days following the meeting to review it and provide input.

Thanks to all your hard work in helping to bring this plan together! Review of this initial draft will help to refine the final document and ensure that it is accurate and meets the needs of your jurisdictions.

I look forward to seeing you all on February 8!
Nancy

Thanks,

Nancy Freeman
Senior Hazard Mitigation Planner
IEM
(352)572-9325 (mobile)
Nancy.Freeman@iem.com

https://outlook.office.com/owa/?viewmodel=ReadMessageItem&itemID=AAMkADg4YmY3Y2YzLTcxYTYtNDU2ZC05N2ZjLTdhYjM3NjFhMTg2OQBGAAAAAAB... 2/2

Herkimer County Multi-Jurisdictional Hazard Mitigation Plan

Plan Review Meeting – Initial Draft

AGENDA

February 8, 2017

9:30 – 12:00 p.m.

Herkimer County Emergency Services

- Welcome and Call to Order
- Approval of last meeting Minutes (November and December)
- Today's Objectives & Tasks
- Plan Overview and Format
- Section Reviews
- Plan Review Schedule
  - HMWG Review and Input
  - Public Review and Comment Period
  - NYS DHSES Review
  - FEMA Review
- Next Steps
  - Final Plan Review
  - Adoption of the Plan
- Next Meeting & Adjournment

Herkimer County Multi-Jurisdictional Hazard Mitigation Plan

MINUTES FEBRUARY 8, 2017 9:30 AM – 11:30 PM HERKIMER CO EM SRVS, HERKIMER, NY

MEETING CALLED BY	NYS DHSES and Contractor (IEM)
TYPE OF MEETING	Plan Review
FACILITATOR	Nancy Freeman, IEM
NOTE TAKER	N. Freeman
ATTENDEES	17 attendees (see list attached), representing 7 jurisdictions; regional and state agencies; special interest organizations.

Agenda topics

WORKING GROUP BUSINESS — NANCY FREEMAN

ACTION: The meeting was called to order by Chief Robert Parese, HMWG Chair.

The minutes of the Mitigation Strategy Workshop 1 meeting, November 16, 2016, and the Mitigation Strategy Workshop 2 meetings were presented for approval.

CONCLUSIONS: A typographical error will be corrected on the first page.

ACTION ITEMS	PERSON RESPONSIBLE	DEADLINE
Moved and seconded to approel minutes, as corrected. Passed	N/A	N/A

FOLLOW-UP FROM LAST MEETING — NANCY FREEMAN

DISCUSSION: Ms. Freeman reminded jurisdiction representatives to complete the Action worksheets and ranking matrix to finalize their mitigation strategy.

Ms. Cavallo clarified that NYS DHSES would be requiring only two completed Action Worksheets for specific actions, even though the jurisdictions may submit as many actions as they wish.

CONCLUSIONS:

ACTION ITEMS	PERSON RESPONSIBLE	DEADLINE
Jurisdictions should complete all Action worksheets and ranking matrix, and submit them to Nancy Freeman.	N/A	ASAP

PLAN OVERVIEW — NANCY FREEMAN, CORRINA CAVALLO

DISCUSSION: Ms. Freeman presented a short PowerPoint describing the plan format and contents, including plan requirements, status of "participating" and "adopting" jurisdictions, and how the plan is organized. As of this meeting, there are 12 jurisdictions that have submitted or will be submitting all the worksheets and information required for a complete annex to the plan. The plan will be divided into two parts: Base Plan (which includes an executive summary and six sections) and the Jurisdiction Annexes. Those jurisdictions that have not participated will have a cover page as a "placeholder" in reserve for future annexes. The list of hazards addressed in the plan was presented and the format of the hazard and risk sections was discussed. As of this date, 73 Action Worksheets have been submitted, however, there are still several jurisdictions' worksheets pending.
There was a short discussion of the action plan for implementation and how jurisdictions would initiate their monitoring, evaluating and updating processes. Ms. Freeman showed the plan maintenance section to the work group, and confirmed that the process provides for jurisdictions to conduct their own internal processes, in coordination with the County Mitigation Coordinator (Herkimer Co. Emergency Services Director). Ms. Cavallo stated that jurisdictions could submit updates to NYSDHSES as well as the County at any time. Ms. Freeman will ensure that the plan language clearly describes this process.

CONCLUSIONS: HMWG members will review and provide comments on the INITIAL DRAFT, once it is posted for review.

ACTION ITEMS	PERSON RESPONSIBLE	DEADLINE
None required at this time	N/A	N/A

PLAN REVIEW PROCESS — NANCY FREEMAN

DISCUSSION: Ms. Freeman covered the process for reviewing and commenting on the INITIAL DRAFT once it is posted for review. Mr. Vandawalker agreed to post the DRAFT on the County's Emergency Services website. Once it is posted, Ms. Freeman will notify all HMWG members that the plan is ready for review and provide public notices and comment sheets. She encouraged all jurisdictions and stakeholders to provide a wide dissemination of the DRAFT through websites, public buildings, libraries, public meetings and other appropriate venues to solicit public review and feedback.

Ms. Freeman also provided an overview of the process for NYS DHSES and FEMA review. This will begin concurrently while the plan is posted for comment, but will be completed to allow enough time for the four communities with pending HMGP funding to adopt the plan prior to April 25, 2017.

CONCLUSIONS: Ms. Freeman will coordinate with Mr. Vandawalker to post the INITIAL DRAFT of the plan, and notify all HMWG members when the plan is posted and ready for review. The plan will be ready for review by early March.

ACTION ITEMS	PERSON RESPONSIBLE	DEADLINE
Post INITIAL DRAFT on Herkimer County Emergency Services website	N. Freeman/R. Vandawalker	TBD

PLAN ADOPTION — NANCY FREEMAN

DISCUSSION: The HMWG reviewed the adoption process and schedule. Mr. Hoole and Ms. Cavallo confirmed that both the State and FEMA were aware of the April 25, 2017 deadline for four of the communities to adopt the plan and would closely coordinate the review process with Ms. Freeman, if any revisions of the DRAFT are required prior to adoption.

CONCLUSIONS: Ms. Freeman will monitor the plan review process and coordinate with Ms. Cavallo for any required revisions.

ACTION ITEMS	PERSON RESPONSIBLE	DEADLINE
A schedule for adoption will be compiled following FEMA's determination that the plan is "approvable pending adoption".	N. Freeman	TBD

NEXT STEPS

NEXT STEPS	ALL FINAL WORKSHEETS PREVIOUSLY DISTRIBUTED TO JURISDICTIONS SHOULD BE COMPLETED AND RETURNED TO Nancy.Freeman@iem.com AS SOON AS POSSIBLE IN ORDER TO BE INCLUDED IN THE PLAN IN THIS CYCLE.
SPECIAL NOTES	Ms. Freeman and Barbara Spaulding, IEM Consultant, will follow-up with the Villages of Dolgeville, Frankfort and Herkimer to collect the final worksheets and information needed for their annexes.
NEXT MEETING	**To be determined – If a follow-up meeting is required, the Contractor will coordinate with the HMWG Chair, Herkimer County Emergency Services and NYS DHSES.**

Herkimer County Multi-Jurisdictional Hazard Mitigation Plan

APPENDIX 2-B: Local Hazard Mitigation Data Collection Guide

Herkimer County
Hazard Mitigation Working Group (HMWG)

TERMINOLOGY

Adopting Jurisdiction	A participating jurisdiction that signs a Letter of Commitment to participate in the planning process and to meet all requirements of 44 CFR §201.6 for multi-jurisdictional plans, which include documentation that it has been formally adopted by the governing body.
Capability	In the context of hazard mitigation, capabilities related to loss prevention mechanisms implemented by a jurisdiction or community that act to reduce hazard-related impacts from a hazard event; the expression or the articulation of the capacity, materials, and expertise an organization needs in order to perform core functions
Community Assets	The people, structures, facilities and systems that have value to the community.
Hazard	Something that is potentially dangerous: • Natural – source of harm or difficulty created by a meteorological, environmental, or geological event • Technological – hazards resulting from accidents or the failure of systems and structures • Human-caused – also known as threats, resulting from intentional actions of an adversary
Hazard Mitigation Working Group (HMWG)	The HMWG is a committee composed of local representation from all the jurisdictions that commit to participating in the planning process; and are located within the identified planning area. The HMWG may also include representation from any special district within the county, other agencies and organizations, neighboring jurisdictions, and other public and private stakeholders with an interest in the Herkimer County Multi-Jurisdictional Hazard Mitigation Plan.
Impact	Measured or observed effect of a hazard event that could include social, economic, and environmental sectors; the consequences of effects of the hazard on the community and its assets.
Mitigation	Sustained actions taken to reduce or eliminate long-term risk to life and property from hazards *(Source: 44 CFR §201.3 Mitigation Planning – Definitions)*
Participating Jurisdiction	A geographical area over which a governing body has the power and right to exercise authority; that signs a Letter of Commitment to participate in the planning process and to meet as many requirements of 44 CFR §201.6 for multi-jurisdictional plans as can be met at that time. For the *Herkimer County Multi-Jurisdictional Hazard Mitigation Plan*, it is understood that a Participating Jurisdiction may need to complete additional requirements in the next planning cycle, which will include formal adoption of the plan.
Planning Process	The method in which planning activities are conducted to ensure that all requirements of the Stafford Act, as amended by the Disaster Mitigation Act of 2000, and as described in 44 CFR §201.6 are met in order to have an approved and adoptable plan.
Risk	The potential for damage, loss, or other impacts created by the interaction of natural hazards with community assets; exposure of people, economy, built environment and natural environment.
Risk Assessment	The product or process that collects information and assigns values to risks for the purpose of informing priorities, developing or comparing courses of action, and informing decision making.
Strategy	In the context of hazard mitigation, the identification of a jurisdiction's specific mitigation goals, objectives and actions (collectively referred to as the mitigation strategy) designed to reduce the risk and vulnerability of a community to identified hazards. • Goals are a broad statement of what a jurisdiction would like to work toward to reduce the impacts of hazards. *Ex: Reduce impacts from natural hazards on life, property and the environment.* • Objectives provide more specifics on how to obtain the goal. *Ex: Increase awareness about natural hazards.*

	• Actions are specific projects that will need to be implemented to successfully accomplish identified goals and objectives. *Ex: Develop a natural hazards public outreach program.*
Vulnerability	Characteristics of community assets that make them susceptible to damage from a given hazard. Measure of vulnerability in relation to the built environment includes types, number and total value of existing buildings, infrastructure and critical facilities in the hazard area.

OVERVIEW

This workbook was designed to assist Herkimer County and its municipalities in collecting necessary information, data and documentation to support the hazard mitigation planning process pursuant to the Federal Disaster Mitigation Act (DMA) of 2000.

The essential information needed to support the planning process includes background information about the jurisdiction in general and relative to hazards, risks, vulnerability, mitigation capabilities, and mitigation actions.

The success of the planning process is heavily dependent on the data submitted by each of the adopting/participating jurisdictions represented. The DMA plan development process does not require the development of new data, but requires existing data and updated data, where available.

The goal of this process is to produce a hazard mitigation plan that meets the needs of each participating jurisdiction, as well as the requirements of DMA and other voluntary mitigation-related efforts, such as the Community Rating System (CRS), if directed. In addition, the hazard mitigation plan will contain a list of projects that may be eligible for federal mitigation funding, pre- and post-disaster.

Table 1: Herkimer County Multi-Jurisdictional Hazard Mitigation Planning Process

PROCESS AND ORGANIZATION	**1. Determine Planning Area and Resources**	
	• Multi-jurisdictional Plan • Lead Contact for Planning Process	Document Planning Process - Meetings, Minutes, Sign-ins
	2. Planning Team	
	• Identify Planning Team Members o Multi-jurisdictional • Engage Local Leadership • Promote Participation and Buy-in • Initial Steps for Planning Team	Document Planning Process – Planning Team Roles, Engagement, and Input
	3. Outreach Strategy	
	• Strategy Framework • Developing Strategy • Continuing Public Outreach over Time	Document Planning Process – Stakeholder and Public Involvement
ANALYSIS AND DECISION MAKING	**4. Review Community Capabilities**	
	• Capability Assessment • Types of Capabilities • NFIP	Document – Community Capabilities
	5. Conduct Risk Assessment	
	• Define Risk Assessment • Conduct Risk Assessment • Document Risk Assessment	Document – Hazards and Risk Assessment
	6. Develop Mitigation Strategy	
	• Identify Goals and Objectives • Identify/Update Actions • Develop Action Plan for Implementation • Update Mitigation Strategy • Communicate Mitigation Action Plan	Document – Update and Development Process for Mitigation Strategy, Goals, Objectives, and Actions, including Alternatives
	7. Keep Plan Current [Maintenance]	
	• Plan Maintenance Procedures • Continue Public Involvement	Document – Plan Maintenance Procedures and Schedule
	8. Review and Adopt the Plan	
	• Local Plan Review • State and EMA Plan Review • Local Adoption of the Plan • Additional Considerations • Celebrate Success	Document – Adoption Process - Jurisdiction, Date, and Method of Adoption (minutes, signed resolutions, etc.)
RESOURCES	**9. Create Safe and Resilient Community**	
	• Challenges to Achieving Mitigation Goals • Recommendations for Success • Funding and Assistance	Appendix to LHMP

Source: *Local Mitigation Planning Handbook*, FEMA, March 2013

Participation of Jurisdictions

The DMA planning regulations and guidance stress that each jurisdiction seeking the required FEMA approval of their mitigation plan must:

- Participate in the process;
- Provide information about their specific geographical planning area where the hazards and risk in their area differs from that experienced by the entire area;
- Identify specific projects to be eligible for funding:
- Identify specific capabilities that can support implementation of funded projects; and
- Have the governing board formally adopt the plan.

For the jurisdictional representatives to the Herkimer County Hazard Mitigation Working Group (HMWG), "participation' means that the jurisdictional representatives will:

- Attend and participate in the HMWG meetings;
- Provide available data that is requested of the HMWG member agencies and organizations;
- Review and provide/coordinate comments on the draft plans;
- Advertise, coordinate and participate in the public input process in their jurisdiction; and
- Coordinate the formal adoption of the plan by the governing board.

Categories for all participation in the HMWG are:

- Participating Jurisdiction
- Adopting Jurisdiction
- Subject Matter Stakeholder

Table 2: Hazard Mitigation Working Group Roles and Responsibilities

PARTICIPATING JURISDICTION REPRESENTATIVE(S):
Role: Represent your jurisdiction as the Point of Contact and working member of the Mitigation Working Group; to coordinate all aspects of the planning process within your jurisdiction.
Responsibilities: • Participate in developing the Work Program and Schedule with the Mitigation Working Group • Assist in organizing and attending scheduled meetings of the Mitigation Working Group • Assist the Mitigation Working Group with developing and conducting an outreach strategy to involve other Working Group members, stakeholders, and the public, as appropriate to represent your Jurisdiction • Identifying community resources available to support the planning effort, including technical expertise, in-kind services, and project development and implementation, as available; • Coordinate your jurisdiction's Mitigation Planning Committee (JPC) • Provide jurisdiction-specific data and feedback to develop the risk assessment and mitigation strategy, including a specific mitigation action plan for your Jurisdiction. • Submit the draft plan to your Jurisdiction for review. • Work with the Mitigation Working Group to incorporate your Jurisdiction's comments into the draft plan.
ADOPTING JURISDICTION REPRESENTATIVE(S):
Role: Represent your jurisdiction as the Point of Contact and working member of the Mitigation Working Group; to coordinate all aspects of the planning process ***and plan adoption*** within your jurisdiction.
Responsibilities: • Carry out all responsibilities described ABOVE. • Ensure that all data, information and input requested for your jurisdiction is provided at the appropriate time. • **Submit the draft plan to your respective governing body for consideration and adoption.** • **After adoption, coordinate plan maintenance activities with other Herkimer County Jurisdictions to monitor, evaluate, and work toward plan implementation and future updates.**
SUBJECT MATTER STAKEHOLDER(S):
Role: Represent your agency, department, discipline, or organization as the Point of Contact and stakeholder representative to the Mitigation Working Group.
• Participate in Mitigation Working Group meetings through attendance and assistance in identifying, locating, collecting, compiling and/or analyzing relevant information and data • Participate with the Mitigation Working Group in developing the risk assessment and mitigation strategy • Coordinate review of the plan and feedback from the entity you are representing • Identify potential resources from your agency, department, discipline, or organization that could support the mitigation strategy, including specific mitigation actions and potential funding sources.

DATA COLLECTION WORKBOOK

This workbook contains an explanation of the types of hazard mitigation or loss prevention data that is needed for the hazard mitigation planning process. It identifies specific requirements for general community information; the Risk Assessment process (i.e. Hazard Identification and Profiles; Vulnerability Assessment; and Capability Assessment), as well as defines requirements for development of the Mitigation Strategy.

The worksheets have been developed to facilitate the data collection process. They should be completed by each jurisdiction's planning committee, or at a minimum, the jurisdictional representative to the HMWG. Each worksheet includes specific instructions and directions on the deadline for submittal. Completion of the data collection workbook will serve two purposes:

1. It will help facilitate the collection of the necessary information from the local perspective; and

2. It will function as evidence of participation in the planning process.

The worksheets which follow are provided in a logical order that follow specific elements of the planning process.

Worksheet #1:	Capability Assessment
Worksheet #2:	NFIP Survey Form
Worksheet #3:	Historic Hazard Event
Worksheet #4:	Hazard Impacts & Consequences
Worksheet #5:	Hazard Analysis
Worksheet #6:	Vulnerability Assessment
Worksheet #7:	The Mitigation Strategy - Goals and Objectives
Worksheet #8:	The Mitigation Strategy – Actions
Worksheet #8a:	The Ranking System for Prioritizing Mitigation Actions
Worksheet #8b:	Action Plan for Implementation
Worksheet #9:	Plan Maintenance Procedures

WORKSHEET #1: CAPABILITY ASSESSMENT

JURISDICTION: _____ DATE:

Participants:

Name	***Position/Title***	***Department/Agency***

PLANNING AND REGULATORY

Planning and regulatory capabilities are the plans, policies, codes, and ordinances that prevent and reduce the impacts of hazards. Please indicate which of the following your jurisdiction has in place.

Plans	**Yes or No? Year**	• **Does the plan address hazards?** • **Does the plan identify projects to include in the mitigation strategy?** • **Can the plan be used to implement mitigation actions?**
Comprehensive/Master Plan		
Capital Improvements Plan		
Economic Development Plan		
Impact fees for new development		
Local Emergency Operations Plan		
Continuity of Operations Plan		
Transportation Plan		
Stormwater Management Plan		
Community Wildfire Protection Plan		
Other special plans (e.g., brownfields redevelopment, disaster recovery, Local Waterfront Redevelopment Plan, climate change adaptation, etc.)		
Building Code, Permitting, and Inspection	**Yes or No?**	**Are codes adequately enforced?**
Building Code		
Building Code Effectiveness Grading Schedule (BCEGS) Score		

Fire Department ISO rating		
Site Plan review requirements		
Land Use Planning and Ordinances	**Yes or No?**	• **Is the ordinance an effective measure for reducing hazard impacts?** • **Is the ordinance adequately administered and enforced?**
Zoning ordinance		
Subdivision ordinance		
Floodplain ordinance		
Natural hazard specific ordinance (stormwater, steep slope, wildfire)		
Flood insurance rate maps		
Acquisition of land for open space and public recreation uses		
Other		
How can these capabilities be expanded and improved to reduce risk?		

ADMINISTRATIVE AND TECHNICAL

Identify whether your community has the following administrative and technical capabilities. These include staff and their skills and tools that can be used for mitigation planning and to implement specific mitigation actions. If your jurisdiction does not have local staff resources, please indicate if these are available through agreement with other entities, or at the county level to provide the services or technical assistance.

Staff/Personnel Resources	Have Capability Y/N	Department/ Agency and Position	Effective Coordination ?	Adequate Staffing?	Integrated into Mitigation Planning?
A. Planner(s) or engineer(s) with knowledge of land development and land management practices					
B. Engineer/professionals trained in construction practices related to buildings and/or infrastructure					
C. Planners/Engineer(s) with an understanding of natural and/or manmade hazards					
D. Floodplain manager					
E. Surveyor(s)					
F. Staff with education or expertise to assess the community's vulnerability to hazards					
G. Personnel skilled in GIS and/or HAZUS					

Staff/Personnel Resources	Have Capability Y/N	Department/ Agency and Position	Effective Coordination ?	Adequate Staffing?	Integrated into Mitigation Planning?
H. Scientist familiar with hazards of the community					
I. Emergency manager					
J. Grant writer(s)					
k. Warning systems or services (automated callout, sirens, etc.)					

SAFE GROWTH CAPABILITIES

This worksheet identifies potential gaps in your community's growth guidance instruments and improvements that could be made to reduce vulnerability to future development.

Comprehensive Plan ****	**Yes**	**No**
Land Use		
1. Does the future land-use map clearly identify natural hazard areas?		
2. Do the land-use policies discourage development or redevelopment within natural hazard areas?		
3. Does the plan provide adequate space for expected future growth in areas located outside natural hazard areas?		
Transportation		
1. Does the transportation plan limit access to hazard areas?		
2. Is transportation policy used to guide growth to safe locations?		
3. Are movement systems designed to function under disaster conditions (e.g., evacuation)?		
Environmental Management		
1. Are environmental systems that protect development from hazards identified and mapped?		
2. Do environmental policies maintain and restore protective ecosystems?		
3. Do environmental policies provide incentives to development that is located outside protective ecosystems?		
Public Safety		
1. Are the goals and policies of the comprehensive plan related to those of the FEMA-approved Local Hazard Mitigation Plan?		
2. Is safety explicitly included in the plan's growth and development policies?		
3. Does the monitoring and implementation section of the plan cover safe growth objectives?		

Zoning Ordinance	Yes	No
1. Does the zoning ordinance conform to the comprehensive plan in terms of discouraging development or redevelopment within natural hazard areas?		
2. Does the ordinance contain natural hazard overlay zones that set conditions for land use within such zones?		
3. Do rezoning procedures recognize natural hazard areas as limits on zoning changes that allow greater intensity or density of use?		
4. Does the ordinance prohibit development within, or fining of, wetlands, floodways, and floodplains?		
Subdivision Regulations	**Yes**	**No**
1. Do the subdivision regulations restrict the subdivision of land within or adjacent to natural hazard areas?		
2. Do the regulations provide for conservation subdivisions or cluster subdivisions in order to conserve environmental resources?		
3. Do the regulations allow density transfer where hazard areas exist?		
Capital Improvement Program and Infrastructure Policies	**Yes**	**No**
1. Does the capital improvement program limit expenditures on projects that would encourage development in areas vulnerable to natural hazards?		
2. Do infrastructure policies limit extension of existing facilities and services that would encourage development in areas vulnerable to natural hazards?		
3. Does the capital improvement program provide funding for hazard mitigation projects identified in the FEMA-approved Local Hazard Mitigation Plan?		
Other	**Yes**	**No**
1. Do small area or corridor plans recognize the need to avoid or mitigate natural hazards?		
2. Does the building code contain provision to strengthen or elevate construction to withstand hazard forces?		
3. Do economic development or redevelopment strategies include provisions for mitigation of natural hazards?		
4. Is there an adopted evacuation and shelter plan to deal with emergencies from natural hazards?		

FINANCIAL CAPABILITIES

Identify whether your jurisdiction has access to or is eligible to use the following funding resources for hazard mitigation.

Funding Resource	Access/ Eligibility (Y/N)	Has the funding resource been used in the past and for what type of activities/	Could the resource be used to fund future mitigation actions?
Capital improvements project funding			
Authority to levy taxes for specific purposes			
Fees for water, sewer, gas or electric services			
Impact fees for new development			
Storm water utility fee			
Incur debt through general obligation bonds and/or special tax bonds			
Incur debt through private activities			
Community Development Block Grant			
Other federal funding programs			
State funding programs			
Public/Private partnership funding sources			
How can these capabilities be expanded and improved to reduce risk?			

EDUCATION AND OUTREACH

Identify education and outreach programs and methods already in place that could be used to implement mitigation activities and communicate hazard-related information.

Program/Organization	Yes/No	Describe program/organization and how relates to disaster resilience and mitigation. Could the program/organization help implement future mitigation activities?
Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.		
Ongoing public education or information program (e.g., responsible water use, fire safety, household preparedness, environmental education, household recycling, etc.)		
Natural disaster or safety related school programs		
StormReady certification		
Firewise Communities certification		
Public-private partnership initiatives addressing disaster-related issues		
Other		
How can these capabilities be expanded and improved to reduce risk?		

WORKSHEET #2: NFIP SURVEY FORM

National Flood Insurance Program (NFIP) Survey Form

Jurisdiction: _____ Floodplain/NFIP Administrator_____

Phone: _____Date:_____ Email: _____

Jurisdiction Participants: _____

Please provide the information below to document your community's participation in and continued compliance with the NFIP, as well as to identify areas for improvement that could be potential mitigation actions. Indicate the source of information, if different from the one included.

NFIP Topic	Source of Information	Comments
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	
How many structures are exposed to flood risk within the community?	Community Floodplain Administrator (FPA)	
Describe any areas of flood risk with limited NFIP policy coverage	Community FPA and FEMA Insurance Specialist	
Staff Resources		
Is the Community FPA or NFIP Coordinator certified?	Community FPA	
Is floodplain management an auxiliary function?	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	
Compliance History		
Is the community in good standing with NFIP?	State NFIP Coordinator, FEMA NFIP Specialist, community records	
Are there any outstanding compliance issues (i.e., current violations)?		
When was the most recent Community Assistance Visit (CAV)		

or Community Assistance Contact (CAC)?		

WORKSHEET #3: HISTORIC HAZARD EVENT

Jurisdiction: _____ Date: _____

Please fill out one sheet for each significant hazard event with as much detail as possible. Attach supporting documentation, photocopies of newspaper articles, or other original sources.

Type of Event	
Nature and magnitude of event	
Location	
Date of event	
Injuries	
Fatalities	
Property damage	
Infrastructure damage	
Crop damage	
Business/economic impacts	
Road/school/other closures	
Other damage	
Insured losses	
Federal/state disaster relief funding	
Opinion on likelihood of occurring again	
Source of information	
Comments	

Prepared by: _____
Phone _____
Email _____
Date _____

Participants: _____
_____
_____

Please return worksheets by mail or email to:
Nancy Freeman, IEM
12500 NW 56th Ave.,
Gainesville FL 32653
email: Nancy.Freeman@iem.com

WORKSHEET #4: HAZARD IMPACTS & CONSEQUENCES **JURISDICTION_____ DATE_____**

Hazards for Consideration (FEMA)	Primary Hazard*	Mass Casualty Potential	Transportation Infrastructure damaged	Impact on Emergency Response Operations	Communication Failure	Damage to homes and businesses	Health and Medical System Impacts	Water system damage or failure	Utility System Damage or Failure	Sewer system damage or failure	Environmental Damage or Long Term Impact	Agricultural Losses -Crops	Agricultural Losses - Animals	Economic Impact-Direct or Indirect	Civil Unrest	Commodity Shortage	Impact to Public's Confidence in Governance	Impacts to cultural or historical assets	[Other]	[Other]	[Other]
Avalanche																					
Dam Failure	*[Dam Failure - Appendix]*																				
Drought	**Drought (172)**																				
Earthquake	**Earthquake (186)**																				
Erosion																					
Expansive Soils																					
Extreme Cold	**Winter Storm (229)**																				
Extreme Heat	**Extreme Temps (180)**																				
Flood**	**Flood (323)**																				
Hail	**Severe Storm (281)**																				
Hurricane	**Severe Storm (281)**																				
Landslide	**Landslide (202)**																				
Lightning	**Severe Storm (281)**																				
Sea Leavel Rise																					
Severe Wind	**Severe Storm (281)**																				
Severe Winter Weather	**Winter Storm (229) & Severe Storm (281)**																				
Storm Surge																					
Subsidence																					
Tornado	**Tornado (201)**																				
Tsunami																					
Wildfire	**Wildfire (207)**																				
	Epidemic (190)																				
	***Ice Storm (253)**																				
	****Ice Jam (232)**																				
	*2014 (DRAFT) County Hazard Mitigation Plan																				

WORKSHEET #4: HAZARD IMPACTS & CONSEQUENCES

INSTRUCTIONS

This activity should be conducted with your Local Planning Committee.

1. Review the list of hazards provided and determine which hazards are applicable to your jurisdiction.

2. Add any additional hazards that have the potential to occur in or impact your jurisdiction.

3. Using the list of impacts and consequences described in the column headings, check the appropriate boxes to indicate which impacts/consequences may result from the hazard. You may add additional impacts/consequences that are not already described.

PARTICIPANTS: (Name, Position/Title, Agency)

1.

2.

3

4.

5.

WORKSHEET #5: HAZARD INDEX AND ANALYSIS

Jurisdiction _____ Date_____

Hazard	Location	Probability of Future Occurrences	Magnitude/ Severity	Significance	Overall Risk Score*
Avalanche					
Drought					
Earthquake					
Extreme Heat					
Flood: Dam/Levee Failure					
Flood: Ice Jam					
Flood: Riverine & Flash Flood					
Flood: High Groundwater and Local Drainage					
Landslide					
Severe Weather: Hail					
Severe Weather: High Wind					
Severe Weather: Lightning					
Severe Weather: Thunderstorm/Heavy Rain					
Severe Weather: Tornado					
Severe Weather: Winter Weather					
Soil Hazards: Erosion					
Soil Hazards: Expansive Soils					
Soil Hazards: Subsidence					
Wildfire					
Epidemic					
Transportation Accidents					

Definitions and Ranking for Classifications

Location (Geographic Area Affected)

1 pt. - Negligible: Less than 10 percent of planning area or isolated single-point occurrences
2 pt. - Limited: 10 to 25 percent of the planning area or limited single-point occurrences
3 pt. - Significant: 25 to 75 percent of the planning area or frequent single-point occurrences
4 pt. - Extensive: 75 to 100% of the planning area or consistent single-point occurrences

Probability of Future Occurrences

1 pt. - Unlikely: No previous record of occurrence; recurrent interval of greater than every 100 years.
2 pt. - Low: Occurs less than once every 10 years or more.
3 pt. - Medium: Occurs less than once every 5 to 10 years
4 pt. - High: Occurs once very year or up to once every five years;

Magnitude/Severity (based on historic events or future probability)

1 pt. - Weak: Limited classification on scientific scale, slow speed of onset or short duration of event, resulting in little or no damage
2 pt. - Moderate: Moderate classification on scientific scale, moderate speed of onset or moderate duration of event, resulting in some damage loss of services for days.
3 pt. - Severe: Severe classification on scientific scale, fast speed of onset or long duration of event, resulting in devastating damage and loss of services for weeks or months
4 pt. - Extreme: Extreme classification on scientific scale, immediate onset or extended duration of event, resulting in catastrophic damage and uninhabitable conditions

Hazard	Scale/Index	Weak	Moderate	Severe	Extreme
Drought	Palmer Drought Severity Index[1]	-1.99 to +1.99	-2.00 to -2.99	-3.00 to -3.99	-4.99 and below
Earthquake	Modified Mercalli Scale[2]	I to IV	V to VII	VII	IX to XII
	Richter Magnitude[3]	2, 3	4, 5	6	7, 8
Hurricane Wind	Saffir-Simpson Hurricane Wind Scale[4]	1	2	3	4,5
Tornado	Enhance Fujita Tornado Damage Scale[5]	EF0, EF1	EF2	EF3	EF4, EF5

Significance

1 pt. - Negligible: No potential impact or the event has a no expected potential for mitigation
2 pt. - Low: Two or more criteria fall in lower classifications or the event has a minimal impact on the planning area. This rating is sometimes used for hazards with a minimal or unknown record of occurrences or for hazards with minimal mitigation potential.
3 pt. - Medium: The criteria fall mostly in the middle ranges of classifications and the event's impacts on the planning area are noticeable but not devastating. This rating is sometimes used for hazards with a high extent rating but very low probability rating.
4 pt. - High: The criteria consistently fall in the high classifications and the event is likely/highly likely to occur with severe strength over a significant to extensive portion of the planning area.

[1] Cumulative meteorological drought and wet conditions: http//ncdc.noaa.gov/
[2] Earthquake intensity and effect on population and structures: http://earthquake.usgs.gov
[3] Earthquake magnitude as a logarithmic scale, measured by a seismograph: http://spc.noaa.gov
[4] Hurricane rating based on sustained wind speed: http://nhc.noaa.gov
[5] Tornado rating based on set of estimated wind speed based on damage: http//spc.noaa.gov

Overall Risk Score

- Low – 4-8 points (Minimal potential impact. The occurrence and potential cost of damage to life and property is minimal.)
- Medium – 9-12 points (Moderate potential impact or moderate threat level to the general population and/or built environment. The potential damage is more isolated and less costly than a widespread disaster.)
- High – 13-16 points (Widespread potential impact or high threat to the general population and/or built environment. The potential for damage is widespread. Hazards in this category may have occurred in the past.)

.

Prepared by: _____
Phone _____
Email _____
Date _____

Participants: _____
_____
_____

Please return worksheets by mail or email to:
Nancy Freeman, IEM
12500 NW 56th Ave.,
Gainesville FL 32653
email: Nancy.Freeman@iem.com

WORKSHEET #6: VULNERABILITY ASSESSMENT

Jurisdiction: _____ Date: _____

The purpose of this worksheet is to assess the vulnerable populations, buildings, critical facilities, infrastructure, economy and other important community assets by using the best available and most current data to complete the table and questions that follow. Use the table on the next page to compile a detailed inventory of specific assets at risk including critical facilities and infrastructure; natural, cultural, and historical assets; and economic assets as defined below. These may include hospitals, fire stations, or historic buildings. In the hazard specific column of the asset inventory table, indicate if there is a specific hazard to which the asset is at risk.

Critical Facilities

FEMA generally defines four kinds of critical facilities:

- Police stations, fire stations, vehicle and equipment storage facilities, and emergency operations centers that are needed for emergency response activities before, during, and after a hazard event.
- Hospitals, nursing homes, and housing likely to have occupants who may not be sufficiently mobile to avoid injury or death during a hazard event
- Public and private utility facilities that are vital to maintaining or restoring normal services to hazard areas before, during, and after a hazard event
- Structures or facilities that produce, use, or store highly volatile, flammable, explosive, toxic, and/or water-reactive materials

FEMA's HAZUS-MH loss estimation software uses the following three categories of critical assets. 'Essential facilities' are those that if damaged would have devastating impacts on disaster response and/or recovery. 'High potential loss facilities' are those that would have a high loss or impact on the community. 'Transportation and lifeline facilities' include transportation and utilities infrastructure. Examples include:

Essential Facilities	High Potential Loss Facilities	Transportation and Lifeline
Hospitals and other medical facilities	Power plants	Highways, bridges, and tunnels
Police stations	Dams/levees	Railroads and facilities
Fire stations	Military installations	Bus facilities
Emergency Operations Centers	Hazardous material sites	Airports
	Schools	Water treatment facilities
	Day care centers	Natural gas facilities and pipelines
	Nursing homes	Oil facilities and pipelines
	Main government buildings	

Natural, Cultural, and Historical Assets

Natural resource assets may include wetlands, threatened and endangered species, or other environmentally sensitive areas. Cultural assets may be associated with the beliefs, customs, arts, etc., of a particular society, group, place or time. Historical assets include structures, properties, collections and artifacts recognized for their historical significance. Historical assets may or may not be formally listed on state and/or federal registers as "historic sites".

Economic Assets

Economic assets at risk may include major employers or primary economic sectors, such as agriculture, whose losses or inoperability would have severe impacts on the community and its ability to recover from disaster.

Critical Facility/Asset Inventory

Jurisdiction: _____ **Date**: _____

Name of Asset	Facility Type	Replacement Value	Hazard Information

Summary of Potential Hazard-Related Exposure/Loss in [jurisdiction]*

Hazard Type	Population	Residential		Commercial		Critical Facilities	
	Exposed Population	Number of Residential Buildings	Potential Exposure/Loss for Residential Buildings (x $1,000)	Number of Commercial Buildings	Potential Exposure/Loss for Commercial Buildings (x $1,000)	Number of Critical Facilities	Potential Exposure for Critical Facilities (x $1,000)
Avalanche							
Drought							
Earthquake							
Extreme Heat							
Flood (Loss)							
• **Dam/Levee Failure**							
• **Ice Jam & Debris Flow**							
• **High Groundwater & Local Drainage**							
• **Riverine & Flash Flood**							
Landslide							
Severe Weather: Hail, High Wind, Lightning, Thunderstorm/Heavy Rain, Tornado							
Severe Weather: Winter Weather							
Soil Hazards							
• Erosion							
• Expansive Soils							
• Subsidence							
Wildfire							
Epidemic							
Transportation Accidents							
Climate Change (Impacts)							

** Represents best available data at this time*

Additional Hazard, Risk, and Vulnerability Questions

Localized/Stormwater Flooding

1. Please describe the localized/stormwater flood issue specific to your jurisdiction in paragraph form. In addition, please provide a list detailing types and location of localized/stormwater flooding problems. If available, also attach a map of problem areas.

Earthquake Vulnerability

1. Does the local building code require reinforced masonry buildings? If not, how many unreinforced masonry buildings are in the jurisdiction? If available, also attach an inventory of URM buildings or GIS data layer providing that information.

Special Populations

1. Describe any hazard-related concerns or issues regarding the vulnerability of access and functional needs populations, such as elderly, disabled, low-income, or migrant farm workers.

Future Development

1. Describe development trends and expected growth areas and how they relate to hazard areas and vulnerability concerns/issues. Please provide zoning/land use maps and GIS layers, maps, and/or tables detailing areas targeted for future development within your jurisdiction.

2. By property type (residential, commercial, industrial, etc.) detail the numbers of structures and/or development areas built since 2008 and provide details on whether any of the new development falls within any hazard areas. If available, provide this information in table format.

Prepared by: _____
Phone _____
Email _____
Date _____
Participants: _____
_____
_____

Please return worksheets by mail or email to:
Nancy Freeman, IEM
12500 NW 56th Ave., Gainesville FL 32653
email: Nancy.Freeman@iem.com

WORKSHEET#7: THE MITIGATION STRATEGY – GOALS AND OBJECTIVES

1. Develop Hazard Mitigation Goals:

At the Kick-Off Meeting on August 10, 2016, attendees participated in a visioning activity that was intended to generate ideas and information related to the broad scope of hazard mitigation in a community.

The responses to the questions highlighted five main characteristics of a community that link closely to areas of hazard vulnerability. The participants were asked the following questions, and the responses are provided below (grouped into community categories):

A. What is the **best asset** in your community?

Government/Services	People	Environment	Economy	Community
Local government support	Experience and resiliency	Water supply	Remington Arms Company	Small, familiar with residents
Village employees	People who live here	Natural beauty	Tourism	Quality of life
Schools	People	Agriculture, land		Quality of life
College	People	Natural environment		Recreational opportunities
Government Services	Participation	Agriculture, tourism		Community involvement
Little Falls Hospital	People	Natural features		Historial values
Access to rail	Great people	Clean water, undeveloped land		Community character, history
		Scenery (woods, water, etc.)		History
		Georgraphy (water, landscape)		Historic - Gateway to Adirondacks
		Recreation and agriculture		Rural, independent
		Picturesque		
		Natural resources		
		Environment		

B. What is the **biggest challenge** in your community?

Government/Services	People	Environment	Economy	Community
Aging infrastructure	Elderly population	Natural Resources	Economy (work force opportunities)	Isolation
Consolidation		Flooding	Private downtown economic investment	Small, too familiar with residents
Taxes		Uncontrollable events/disasters	Jobs	Blighted properties
Economy budgets			Economic development	Migration of talent
Lack of funding for projects			Good employment opportunities	Working together
Funding			Employment	
Finances			Blight, "zombie" properties	
Funding			Tax exempts	
Funding			Poverty	
taxes			Economy	
			Economic development	
			Money	

C. What is your **vision** of your community in 10 years?

Government/Services	People	Environment	Economy	Community
Combined Services (i.e., schools, government, public services)	Younger	Environment Preserved	Increased Number of Jobs	Forward moving and positive
Thriving, Cohesive	Retired and not living there	Free from Flooding	Financially Stable	Thriving Communities
Sound Infrastructure	Attractive to young folks		Convention Center, Hotel Chain, local small business growth	Improved
Rebuilt Communities			Sustainable, partnerships	Vibrant
			Economic Development	Thriving
			Economically Sound	Thriving/Vibrant
			Still building	Livable
			Industry	Revitalized
			Growth	Moving Forward
			Stable tax base	Growth
				Retirement community
				Resilient and Locally prepared

As noted above, the predominant issues identified for the best assets related to the environment; responses related to future visions were in the community category. The majority of responses related to the biggest challenge were in the area of the economy. The information gained from this exercise may assist your jurisdiction in developing your Mitigation Goals and Objectives. In addition, Vision Statements, which describe a clear and long-term desired change resulting from the planning efforts of the community, may assist in defining the community's strategy. A sample vision statement from a mitigation-related plan includes:

- NY Rising Countywide Resiliency Plan, Herkimer County, July 31, 2014 (p. 17)

  "The communitites of Herkimer County, working together, will build an economically vibrant and safe future for all of our residents and ensure a high quality of life. We embrace our waterways as a vital component of our history, culture, and economy, while recognizing the challenges associated with flooding and natural disasters. By promoting sound growth, green infrastructure and open space, mitigating future damage, and transforming our communities through a comprehensive and sustainable approach, Herkimer County will reach its full potential for resiliency."

With these vision statements as a starting point, **review the mitigation Goals and Objectives provided below to determine whether they are (1) sufficient as stated, (2) should be revised. If you feel they need revision, please provide a suggested revision(s).**

Goal 1: Protect Life and Property *[Category: Structure and Infrastructure Projects]*

- **Objective 1-1**: Implement mitigation activities that will assist in protecting lives and property by making homes, businesses, infrastructure, and critical facilities more resistant to hazards.
- **Objective 1-2**: Encourage homeowners and businesses to take preventative actions in areas that are especially vulnerable to hazards.
- **Objective 1-3**: Build upon past efforts to characterize flood events by conducting additional flood studies and creating flood models.
- **Objective 1-4**: Review existing local ordinances, building codes, safety inspection procedures, and applicable rules to help ensure that they employ the most recent and generally accepted standards for the protection of buildings.
- **Objective 1-5**: Ensure that public and private facilities and infrastructure meet established building codes and immediately enforce the codes to address any identified deficiencies.

- **Objective 1-6**: Incorporate hazard considerations into land-use planning and natural resource management.
- **Objective 1**-7: Encourage homeowners, renters, and businesses to purchase insurance coverage for damages caused by hazards.
- **Objective 1**-8: Integrate the recommendations of this plan into existing local and county programs.
- **Objective 1**-9: Implement mitigation activities that encourage environmental stewardship and protection of the environment.

Goal 2: Increase Public Awareness *(Category: Education and Awareness Programs)*

- **Objective 2-1:** Develop and implement additional education and outreach programs to increase public awareness of the risks associated with hazards and to educate the public on specific, individual preparedness activities.
- **Objective 2-2:** Provide information on tools, partnership opportunities, funding, resources, and current government initiatives to assist in implementing mitigation activities.
- **Objective 2-3**: Implement mitigation activities that enhance the technological capabilities of the jurisdictions and agencies in the County to better profile and assess exposure of hazards.

Goal 3: Encourage Partnerships *(Category: Local Plans and Regulations)*

- **Objective 3-1:** Strengthen inter-jurisdiction and inter-agency communication, coordination, and partnerships to foster hazard mitigation strategies and/or projects designed to benefit multiple jurisdictions.
- **Objective 3-2:** Identify and implement ways to engage public agencies with individual citizens, non-profit organizations, business, and industry to implement mitigation activities more effectively.

Goal 4: Provide for Emergency Services (Objectives linked to Goals

- **Objective 4-1:** Encourage the establishment of policies at the local level to help ensure that prioritization and implementation of mitigation strategies and/or projects designed to benefit essential facilities, services, and infrastructure.
- **Objective 4-**2: Where appropriate, coordinate and integrate hazard mitigation activities with existing local emergency operations plans.
- **Objective 4-**3: Identify the need for, and acquire, any special emergency services and equipment to enhance response capabilities for specific hazards.
- **Objective 4-**4: Review and improve, if necessary, emergency traffic routes; communicate such routes to the public and communities.

If your jurisdiction supports adoption of the 2014 Herkimer HMP (DRAFT) Goals and Objectives, as written, the following is a proposed re-alignment of the objectives to be consistent with the categories of mitigation actions.

Types of Mitigation Actions	2014 Herkimer County HMP *Goals*	2014 Herkimer County HMP *Objectives*

Local Plans and Regulations	**Goal 3:** Encourage Partnerships	1-4, 1-6, 1-8, 2-2, 3-1, 3-2, 4-1, 4-2
Structure and Infrastructure Projects	**Goal 1:** Protect life and property	1-1, 1-2, 1-5, 1-7,
Natural Systems Protection	[Proposed] ***Example*** **-** Goal 4: Promote sustainable mitigation actions that preserve or restore the functions of natural systems	1-3, 1-9
Education and Awareness Programs	**Goal 2:** Increase Public Awareness	2-1
[Local Plans and Regulations]	**Goal 4:** Provide for Emergency Services	**4-3, 4-4**
Enhancing Mitigation Planning		2-3

After reviewing the goals, select **one** of the following choices to validate or not validate the goals provided:

____ The *goals and objectives are comprehensive as they are presented and cover the scope of all potential hazard vulnerabilities and mitigation actions that should be included in the plan. In addition,* ***they are all applicable to my jurisdiction and no additional goals or objectives are needed for my jurisdiction****.*

____ *The goals and objectives are not comprehensive and need minor revision to cover the scope of all potential hazard vulnerabilities and mitigation actions that should be included in the plan.* ***With minor revision, they will also be applicable to my jurisdiction and no additional goals and objectives are needed****.*

____ *The goals are comprehensive as they relate to the county as a whole; however,* ***they do not sufficiently describe the goals and/or objectives for my jurisdiction****. Additional goals (and objectives) that should be considered for my jurisdiction are:*

Goal:

Objective:

Objective:

Goal:

Objective:

Objective:

Goal:

Objective:

Objective:

Worksheet #8: The Mitigation Strategy – Actions

One of the planning process' last joint activities will be for the HMWG members to review previously identified mitigation actions and projects to determine progress, and develop new actions and projects which will involve preparing brief descriptions of the actions that would effectively reduce future disaster losses. This section provides guidance on the categories of mitigation actions to be considered and a mitigation project outline with one project provided as an example.

Types of Mitigation Actions

Local Plans and Regulations	
Mitigation Measure	***Examples***
These actions include government authorities, policies, or codes that influence the way land and buildings are developed and built.	• Comprehensive plans • Land use ordinances • Subdivision regulations • Development Review • Building codes and enforcement • NFIP Community Rating System • Capital improvement programs • Open space preservation • Stormwater management regulations and master plans • Community wildfire protection plans, fuels Management & Fire Breaks
Structure and Infrastructure Projects	
Mitigation Measure	***Examples***
These actions involve modifying existing structures and infrastructure to protect them from a hazard or remove them from a hazard area. This could apply to public or private structures as well as critical facilities and infrastructure. This type of action also involves projects to construct manmade structures to reduce the impact of hazards. Many of these types of actions are projects eligible for funding through the FEMA Hazard Mitigation Assistance program.	• Acquisitions and elevations of structures in flood prone areas • Utility undergrounding • Structural retrofits (e.g., shelters) • Floodwalls and retaining walls • Detention and retention structures • Culverts • Safe rooms

Natural Systems Protection	
Mitigation Measure	***Examples***
These are actions that minimize damage and losses and also preserve or restore the functions of natural systems.	• Sediment and erosion control • Stream corridor restoration • Forest management • Conservation easements • Wetland restoration and preservation
Education and Awareness Programs	
Mitigation Measure	***Examples***
These are actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. These actions may also include participation in national programs, such as StormReady, or Firewise Communities. Although this type of mitigation reduces risk less directly than structural projects or regulation, it is an important foundation to sustaining mitigation planning and implementation. A greater understanding and awareness of hazards and risk among local officials, stakeholders, and the public is more likely to lead to direct actions.	• Radio or television spots • Websites with maps and information • Social media • Real Estate disclosure • Presentations to school groups or neighborhood organizations • Mailings to residents in hazard-prone areas • StormReady • Firewise Communities

In addition to the mitigation action categories described in the table above, the plan will compile and present a summary of preparedness actions (which will not be used for compliance with DMA 2000) that have been taken or are in place to prepare for or respond to hazard incidents, such as:

Evacuation and sheltering

- Communications
- Emergency Planning
    - Activating resources for response
    - Pre-staging equipment
    - Monitoring water levels
    - Shutting of power to threatened areas
    - Closing streets or bridges
- Emergency Response Equipment (excluding emergency generators)

(Name of Jurisdiction)

Action Worksheet			
Project Name:			
Project Number:			
Risk / Vulnerability			
Hazard of Concern:			
Description of the Problem:			
Action or Project Intended for Implementation			
Description of the Solution:			
Is this project related to a Critical Facility?	**Yes** ☐	**No** ☐	
(If yes, this project must intend to protect the Critical Facility to the 500-year flood event or the actual worst damage scenario, whichever is greater.)			
Level of Protection:		**Estimated Benefits (losses avoided):**	
Useful Life:			
Estimated Cost:			
Plan for Implementation			
Prioritization:		**Desired Timeframe for Implementation:**	
Estimated Project Timeline:		**Potential Funding Sources:**	
Responsible Organization:		**Local Planning Mechanisms to be Used in Implementation, if any:**	
Three Alternatives Considered (including No Action)			
Alternatives:	**Action**	**Estimated Cost**	**Evaluation**
	No Action	$0	
Progress Report (for plan maintenance)			
Date of Status Report:			
Report of Progress:			
Update Evaluation of the Problem and/or Solution:			

PART 2: THE MITIGATION STRATEGY – PRIORITIZING ACTIONS

The Hazard Mitigation Working Group adopted a single prioritization methodology that will be used by all jurisdictions to evaluate and rank all mitigation actions. All jurisdictions will evaluate their mitigation actions separately from the other jurisdictions, which will result in a jurisdiction-specific list of prioritized actions presented within the jurisdiction's annex.

All prioritized jurisdiction actions will be rolled-up into a single list of mitigation actions that will be included in the Base Plan; however, each action described in the list will be linked to the proposing jurisdiction and will be consistent with the outcome of its ranking process.

The following Ranking System will be used by each jurisdiction to determine the priority of every mitigation action proposed in the plan.

RANKING SYSTEM FOR PRIORITIZATINGMITIGATION ACTIONS

Category	Points	Criteria
(1) Life Safety/Property Protection	4	Likely to protect more than 50% of the population and/or critical infrastructure and community assets.
	3	Likely to protect at least 50 % of the population and/or critical infrastructure and community assets.
	2	Could potentially protect up to 25 % of the population and could potentially protect critical infrastructure and community assets
	1	Could potentially protect up to 10 % of the population and could potentially protect critical infrastructure and community assets
	0	Potential for protecting lives and critical infrastructure and/or community assets cannot be determined at this time.
(2) Funding Availability	4	Little to no direct expenses
	3	Can be funded by operating budget
	2	Grant funding identified
	1	Grant funding needed
	0	Potential funding source unknown
(3) Probability of Matching Funds	4	Funding match is available or funding match not required
	-	N/A
	2	Partial funding match available
	-	N/A
	0	No funding match available or funding match unknown
(4) Benefit Cost Review	4	Likely to meet Benefit Cost Review
	-	N/A
	2	Benefit Cost Review not required
	-	N/A
	0	Benefit Cost Review unknown
(5) Environmental Benefit	4	Environmentally sound and relatively easy to implement; or no adverse impact on environment.
	3	Environmentally acceptable and not anticipated to be difficult to implement
	2	Environmental concerns are somewhat difficult to implement because of complex requirements
	1	Difficult to implement because of significantly complex requirements and environmental permitting
	0	Very difficult to implement due to extremely complex requirements and environmental permitting problems

(6) Technical Feasibility	4	Proven to be technically feasible
	-	N/A
	2	Expected to be technically feasible
	-	N/A
	0	Technical feasibility unknown or additional information needed
(7) Timeframe of implementation	4	1 year or less (Short Term)
	-	N/A
	2	2 – 5 years (Long-Term)
	-	N/A
	0	More than 5 years (Long-Term)
Minimum = 0 **Maximum = 28**	**Ranking Level:** **Low: 0-10 Medium: 11-20 High: 21-28**	

WORKSHEET: #8a RANKING SYSTEM FOR PRIORITIZING MITIGATION ACTIONS

Worksheet #8a provides a format to list each action your jurisdiction described on an Action Worksheet, and, using the criteria provided above prioritize the action for implementation.

Instructions:

1. Provide the information requested in the first three columns.

2. Using the Ranking System provided above, assign a numerical score for each category. If exact data is unavailable, a "best guess" is acceptable.

3. Add the individual scores in Columns 1 – 7 to obtain a *Total Score* (Column 8).

4. The total score represents the action's priority. Using the Ranking Level guide provided at the end of the Ranking System criteria, identify which actions are high, which actions are medium and which actions are low.

Action priorities may be re-considered at any time based on the plan maintenance schedule, availability of new data, or changes in scope, cost, time frame or other characteristics of the action.

WORKSHEET #8a: RANKING SYSTEM FOR PRIORITIZING MITIGATION ACTIONS

JURISDICTION _____ Date Submitted_____

Project #	Mitigation Action	Hazard/ Project Type*	(1) Life Safety & Property	(2) Funding Availability	(3) Matching Funds	(4) Benefit Cost Review	(5) Environmental Benefit	(6) Technical Feasibility	(7) Timeframe to Implement *(Short Term or Long Term)*	(8) TOTAL SCORE
Sample : 1	**Elevate 4 homes on Elm Street**	**Flood/SIP**	**1**	1	2	4	3	4	ST	15=M

***Abbreviations for Project Types:**

LPR - Local Plans and Regulations
SIP - Structure and Infrastructure Projects
NSP - Natural Systems Protection
EAP - Education and Awareness Program

WORKSHEET #8b: ACTION PLAN FOR IMPLEMENTATION

The process to identify, develop, and prioritize actions provides information that will be used to document the Action Plan for Implementation (implementation strategy). The Action Worksheet completed for each action, and the prioritization process identified the goal(s) and objective(s) addressed by the action, lead agency, support agency or agencies (if appropriate), estimated cost, and start and end dates of the action.

To complete the implementation strategy, additional information is needed to describe how the plan's goals and objectives will be incorporated into your jurisdiction's plans and procedures.

INSTRUCTIONS:

Complete the jurisdiction information below and select all the methods (described in the table) that your jurisdiction will use to incorporate the mitigation plan risk assessment, goals and objectives into your existing plans and procedures.

WORKSHEET #8b: Action Plan for Implementation

Jurisdiction/Agency/Organization	**Point of Contact:** (Name & Title/Position)	**Date:**
Address:	**Email:**	**Phone:**

Identify how your jurisdiction's hazard mitigation risk assessment, goals and objectives will be incorporated into your existing plans and procedures. (Select all that apply)

_____ Integrate goals into local comprehensive plan _____ Review/update land development regulations for consistency with mitigation goals _____ Review/update building/zoning codes for consistency with mitigation goals _____ Maintain regulatory requirements of floodplain management program (NFIP) _____ Enhance floodplain management through Community Rating System (CRS) _____ Review /update economic development plans and policies for consistency with mitigation goals _____ Continue public involvement in mitigation planning _____Identify opportunities for mitigation education and outreach	_____ Review/update stormwater plans and procedures for consistency with mitigation goals _____ Review/update emergency plans to address evacuation and sheltering _____ Maintain ongoing enforcement of existing policies _____ Monitor funding opportunities _____ Incorporate goals and objectives into day-to-day government functions _____ Incorporate goals into day-to-day development policies, reviews & priorities _____ Other (Describe)_____

PLAN MAINTENANCE PROCEDURES – Monitoring, Evaluating and Updating the Plan

The mitigation plan is a living document that guides action over time. As conditions change, new information becomes available, or actions progress over the life of the plan, adjustments may be necessary to maintain its relevance.

The HMWG will use the plan maintenance procedures to track progress in implementing actions and to inform the plan update. The plan must include a description of the method and schedule for monitoring, evaluating, and updating it within a 5-year cycle.

A critical part of plan maintenance is continuing to provide opportunities for public involvement in the plan and its implementation. References to opportunities for public involvement are addressed in plan maintenance steps.

Plan Maintenance Steps

Monitoring Implementation - This plan maintenance step tracks implementation of the plan over time.

Evaluating Effectiveness – This plan maintenance step assesses the effectiveness of the plan at achieving its stated purpose and goals.

Updating the Plan – This plan maintenance step reviews and revises the plan at least once every 5 years to reflect changes in development, progress in local mitigation efforts, and changes in priorities.

The procedures described in the plan for each step will:

- Assign responsibility for monitoring
- Identify schedule for monitoring
- Describe how information will be reported

WORKSHEET #9: PLAN MAINTENANCE PROCEDURES [PROPOSED]

Worksheet #9 provides a description of monitoring, evaluating and updating procedures that your jurisdiction will use to maintain the plan. These procedures will be a part of your jurisdiction annex.

There will also be a section of the Base Plan that describes the procedures to monitor, evaluate, and update the plan on a countywide basis. These procedures will also involve participation of all jurisdictions in order to maintain various elements of the Base Plan.

Instructions:

Review the **proposed** procedures for monitoring, evaluating and updating the plan and consider how your jurisdiction will implement the procedures.

Jurisdiction/Agency/Organization	Point of Contact: (Name & Title/Position)	Date:
Address:	Email:	Phone:

(1) Who (by position/title) will be your jurisdiction's representative to the Herkimer County Hazard Mitigation Work Group (HMWG) and be responsible for monitoring, evaluating and updating your jurisdiction's annex during the planning cycle? _____

Monitoring Procedure: The following steps describe how Herkimer County and its jurisdictions will monitor mitigation progress annually and/or following major disaster(s)

Step 1: County Mitigation Plan Coordinator – Initiate Monitoring Process

- Notify lead agency/individual in each jurisdiction to facilitate annual review
  - Disseminate Mitigation Action Progress Report Form for mitigation action updates to jurisdiction representatives, along with the current list of mitigation actions in the plan
  - Disseminate Mitigation Action Worksheet Form to representatives of agencies with potential new mitigation actions

Step 2: County Mitigation Plan Coordinator and HMWG – Collect and assess Status of Actions (current and new)

- Assess progress in current actions, including implemented and funded actions, and any new opportunities for mitigation actions
  - Are there different or additional resources now available?
  - Are mitigation actions being implemented and monitored?
  - Have new mitigation actions been identified?
  - Have any mitigation actions been completed?

Step 3: County Mitigation Plan Coordinator and HMWG – Assess New Opportunities for Mitigation

- Has a major disaster occurred that presents opportunities for mitigation?
- Is there a new initiative, agency priority, or information that is not represented in the current actions?

Step 4: County Mitigation Plan Coordinator and HMWG – Prepare and Disseminate Status Report to All Herkimer County jurisdictions and Stakeholders, including elected officials.

- Status of current and implemented actions
- Proposed new actions*
- Potential funding sources
- New opportunities for mitigation (actions in development, new programs, etc.)

**Jurisdictions may, annually or following a major disaster, add new mitigation actions to their current list of prioritized actions by using the Action Worksheets and Ranking System for Prioritizing Actions.*

Evaluation Process: The following process describes the steps that Herkimer County and its jurisdictions will take annually and/or following major disaster(s) for evaluation.

Action	Responsible Party	Tasks	Deliverable/Outcome
Initiate Annual Review	County Mitigation Plan Coordinator	Notify lead agency/individual in each jurisdiction to facilitate annual evaluation	Work plan, schedule, and assigned resources to implement plan review process
Invite HMWG and Key Stakeholders	County Mitigation Plan Coordinator (or other designee)	Invite HMWG members and key stakeholders, and new agency representatives to participate in the plan monitoring and evaluation process	List of invited jurisdictions and existing and new stakeholders and other key planning partners' invitation to participate

Review Policies and Regulations	County Mitigation Plan Coordinator (or other designee)	Research new or updated laws, policies, regulations, initiatives, and studies that contribute to the hazard risk assessment or identified mitigation actions	Status report: existing and new policies, regulations, initiatives and/or studies
Review Programs	County Mitigation Plan Coordinator (or other designee)	Assess changes in county and state agencies and/or their procedures, new grant programs, or new areas of focus	Status report: existing and new stakeholders, procedures, grant programs and/or new areas of focus
Hazards	County Mitigation Plan Coordinator (or other designee)	Research new or updated data and information that contributes to the risk assessments, loss estimates, or vulnerabilities in assets, by jurisdiction	Status report: recent disasters, hazard impacts and losses, lessons learned, status of jurisdictional facilities and infrastructure; *update Herkimer HMP annually to reflect new risk assessment and capability data gathered from review of hazard events and impacts*
Mitigation Actions	County Mitigation Plan Coordinator (or other designee)	Assess progress in previously implemented actions that reduce vulnerability and losses, and any new opportunities for mitigation actions	Status report: Completed actions, pending actions, implementation status of actions *[collected through monitoring procedure]*
Outcomes	County Mitigation Plan Coordinator (or other designee)	Maintain and complete documentation of the Herkimer HMP review process, including any needed plan updates, and prepare summary report	Summary report: Mitigation Strategy Annual Update (incorporating results of annual monitoring and evaluation process)

Five-Year Plan Update Schedule and Process	
Monitoring and Evaluation Activities – *Ongoing throughout the five-year planning cycle*	• Monitoring and evaluation results, meeting documentation, and other pertinent documents will be collected throughout the five year life cycle of the plan and used in the next Herkimer HMP update • Multiple meetings with elected officials, HMWG, local jurisdictions, state and federal agencies, and interested parties will be conducted • Activities, meetings, and interactions will be tracked and documented throughout the planning cycle • The annual evaluation review will be conducted using the most recent update of the Herkimer HMP as the basis.
Update Risk Assessment – *Conducted in the 1st Quarter of the fifth year of the planning cycle*	• County Mitigation Plan Coordinator/designee, HMWG, and all jurisdiction representatives will identify key stakeholders to contribute to the updated risk assessment • Monitoring and evaluation results will be incorporated • Changes since the previous plan approval will be identified • Each hazard will be assessed and updated to include new data since the date of plan approval/adoption

	• New hazard occurrences and potential changes in low-ranked hazards will be identified and assessed • Any significant changes in jurisdictional risk assessments will be noted during plan review and integrated into the updated Herkimer HMP
Review and Update Goals and Objectives – *Conducted in the 2nd Quarter of the fifth year of the planning cycle*	• County Mitigation Plan Coordinator/designee will coordinate with jurisdictions and key partners to assess the status of current HMP goals and objectives for potential revision • Any significant changes in mitigation goals, especially those that are not consistent with the current plan goals, will be assessed and incorporated as appropriate in the updated HMP • Monitoring and evaluation results will be utilized to modify the goals and objectives and describe achievements
Review and Update Mitigation Actions – *Conducted in the 3rd Quarter of the fifth year of the planning cycle*	• County Mitigation Plan Coordinator/designee will coordinate with jurisdictions and key partners to obtain an update on the current status of actions • Monitoring and evaluation results will be utilized to assess the effectiveness of mitigation actions in meeting the goals and reducing risks • Assess jurisdictional mitigation actions implemented since the plan was last approved and adopted and how they have contributed to the achievement of goals and objectives • Management and maintenance data from the implemented activities will be used to describe progress in the previous five years
Compile and Review *Conducted in the 3rd Quarter of the fifth year of the planning cycle*	• County Mitigation Plan Coordinator/designee and HMWG will compile the data and develop the updated HMP • Draft will be made available for stakeholder review and input • Draft will be made available for public review and comment • All comments and suggestions will be incorporated and the final draft completed
Conducted in the 4th Quarter of the fifth year of the planning cycle	• FEMA review of draft HMP update
Adopt Plan *Conducted in 4th Quarter - Fifth year of planning cycle*	• Updated HMP will be adopted prior to the plan expiration date **(Date TBD, 2022)**

APPENDIX 2-C: Outreach Strategy and Documentation

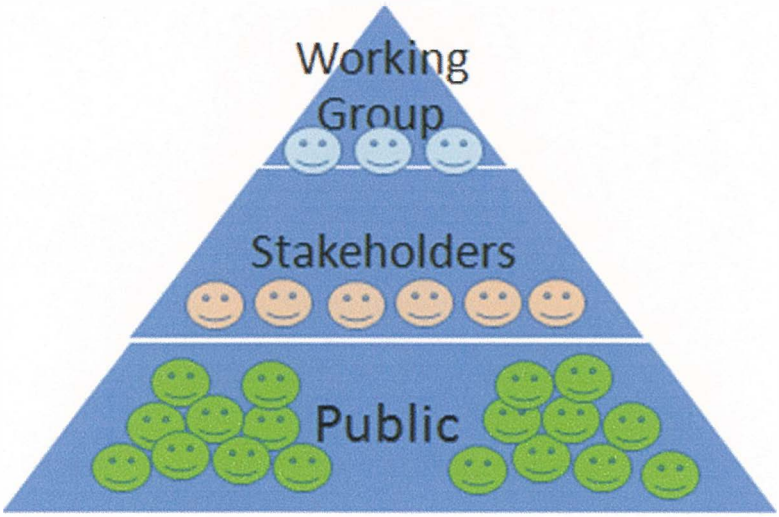
HERKIMER COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN

OUTREACH STRATEGY[1]

Purpose:

- Required by 44 CFR Part 201.6
- Develop on-going support for the plan and its strategies
- Enhance "buy-in" from jurisdictions, stakeholders and the public, resulting in greater success in implementing mitigation actions and projects to reduce risk.
- Integrate mitigation planning into community planning and resiliency practices
- Provide an on-going opportunity for public agencies, non-governmental and community-based organizations, private sector, and residents to participate in and support mitigation planning, activities and initiatives.

Three Tiers of Participation:



[1] Approved by the Herkimer HMWG on 9/21/16

Tier/Role	Responsibilities	Participation Level	Key Milestones
Working Group (CEPC) *Core oversight group; Jurisdiction's Point of Contact for the Working Group, which will make decisions, guide the planning process and agree upon the final contents of the plan.* • *Elected Officials* • *Lead Local Contact* • *Jurisidctional representatives* • *County EM and floodplain mgrs.* • *NYS DHSES* • *Contractor*	Participate in all planning activities; assist in identifying and collecting information and data; identify and assist in development of projects; coordinate with local jurisdiction; review and approve plan drafts and final plan; participate in plan maintenance	Participation begins with Kick-Off meeting and continues throughout the plan maintenance cycle.	• Hazard and Risk Analysis • Capabilities Assessment • Mitigation Strategy (goals, objectives, projects) • Draft Plans • Final Plan • Adoption of Plan
Stakeholders: *Person, Group or institution that can affect or be affected by a course of action identified in the mitigation plan:* • *Local elected officials and local agencies* • *Special Districts and Authorities* • *Non-Governmental Organizations* • *Regional, State and Federal Agencies* • *Educational Institutions* • *Major Employers* • *Land Use and Development Agencies* • *Professional Associations* • *Neighboring Jurisdictions* • *Neighborhood groups* • *Cultural institutions* • *Access and functional needs agencies*	Inform the Working Group on specific topics or provide input from specific points of view • Provide technical assistance and expertise • Participate in outreach activities • Provide input on the draft mitigation plan	• Invited to Kick-Off Meeting • Outreach activities (requests for information and/or participation) • Project development and plan support (resources, partnerships and technical expertise) • Plan review - comments and input • Plan Maintenance (provide updated information as requested)	• Hazard and Risk Analysis • Capabilities Assessment • Mitigation Strategy (goals, objectives, projects) • Draft Plans • Final Plan
Public: *Become informed about mitigation and community priorities, issues and opportunities; provide support for the plan and its related activities*	Involvement in the planning process through information sharing and opportunities to provide input.	Respond to invitations for participation, review and input through multiple venues • Media releases • Surveys • Community meetings • Presentations	• Information/media releases • Educational Publications • Surveys • Draft Plans • Final Plan

OUTREACH METHODS AND SCHEDULE

Hazard Mitigation Working Group (HMWG) Meetings

- Representatives of Participating Jurisdictions and Adopting Jurisdictions

Topic/Activity	Method	Lead	Start Date	End Date	Phase
Kick-off meeting – 8/10/16	(1) Invitation letters and emails; 2) Meeting at Herkimer County Community College	Contractor, NYSDHSES	8/10/16	8/10/16	P*
Meeting 2 - Capabilities Assessment 9/21/16	(1) Invitation letters and emails with worksheets for jurisdictions (2) Meeting at Herkimer County Emergency Services (3) Follow-up emails and phone calls to non-participating jurisdictions (4) Mitigation Planning flyer for jurisdictions	Contractor; NYSDHSES; HMWG; stakeholders	8/30/16	10/15/16	P
Meeting 3 – HIRA 10/19/16	(1) Invitation letters and emails with worksheets for jurisdictions (2) Meeting location TBD (3) Follow-up emails and phone calls	Contractor; NYSDHSES; HMWG; stakeholders	9/28/16	11/1/16	P
Meeting 4 – Strategy 1 11/16/16	(1) Invitation letters and emails with worksheets for jurisdictions (2) Meeting location TBD (3) Follow-up emails and phone calls	Contractor; NYSDHSES; HMWG; stakeholders	10/28/16	11/30/16	P
Meeting 5 - Strategy 2 12/7/16	(1) Invitation letters and emails with worksheets for jurisdictions (2) Meeting location TBD (3) Follow-up emails and phone calls	Contractor; NYSDHSES; HMWG; Stakeholders	11/416	12/30/16	P
Meeting 6 – Plan Review Process 02/08/17	(1) Invitation letters and emails with review comment sheets	Contractor; NYSDHSES; HMWG; Stakeholders; public	2/1/17	2/15/17	P

Topic/Activity	Method	Lead	Start Date	End Date	Phase
Draft 1 Review	(1) Invitation letters and emails with review comment sheets	Contractor; NYSDHSES; HMWG; Stakeholders; Public	3/8/17	4/8/17	P
Final Plan Review	(1) Invitation letters and emails with review comment sheets	Contractor; NYSDHSES; HMWG; Stakeholders; public	4/8/17	4/15/17	P
Plan Maintenance Cycle	(1) Semi-annual meetings, at a minimum (2) Email HMP updates, notification of funding availability; conduct hazard updates, progress updates; implement plan evaluation and update process; ensure integration with other planning processes	Contractor; NYSDHSES; HMWG	4/25/17	[On-going]	O

Phase: P = planning process, O = On-going

Stakeholders

- Outreach consists of meeting invitations and targeted methods for specific input

Topic/Activity	Method	Lead	Start Date	End Date	Phase
Kick-off meeting – 8/10/16	(1) Invitation letters and emails; 2) Meeting at Herkimer County Community College	Contractor, NYSDHSES	8/10/16	8/10/16	P*
Meeting 2 - Capabilities Assessment 9/21/16	(1) Invitation letters and emails with worksheets (2) Meeting at Herkimer County Emergency Services (3) Follow-up emails and phone calls to non-participating jurisdictions (4)Mitigation Planning flyer for jurisdictions	Contractor; NYSDHSES; HMWG; stakeholders	8/30/16	10/15/16	P
Hazard Survey	(1) Online, pre-printed and available at identified locations	Contractor; HMWG	9/21/16	10/19/16	P
Meeting 3 – HIRA 10/19/16	(1) Invitation letters and emails with worksheets (2) Meeting at Herkimer County Emergency Services (3) Follow-up emails and phone calls (4) Worksheets for jurisdictions	Contractor; NYSDHSES; HMWG; stakeholders	9/28/16	11/1/16	P
Meeting 4 – Strategy 1 11/16/16	(1) Invitation letters and emails with worksheets (2) Meeting at Herkimer County Emergency Services (3) Follow-up emails and phone calls	Contractor; NYSDHSES; HMWG; stakeholders	10/28/16	11/30/16	P
Meeting 5 – Strategy 2 12/7/16	(1) Invitation letters and emails with worksheets (2) Meeting at Herkimer County Emergency Services (3) Follow-up emails and phone calls	Contractor; NYSDHSES; HMWG; stakeholders	11/30/16	12/30/16	P
Draft 1 Review	(1) Invitation letters and emails with review	Contractor; NYSDHSES;	12/01/16	12/30/16	P

	comment sheets	HMWG; Stakeholders; Public			
Agency contact	(1) Individual contact with specific agencies by phone, email and onsite interview for data collection and verification, as needed	Contractor	9/1/16	3/1/17	
Topic/Activity	**Method**	**Lead**	**Start Date**	**End Date**	**Phase**
Draft 2 Review	(1) Invitation letters and emails with review comment sheets	Contractor; NYSDHSES; HMWG; Stakeholders; public	1/1/17	1/30/17	P
Final Plan Review	(1) Invitation letters and emails with review comment sheets	Contractor; NYSDHSES; HMWG; Stakeholders; public	2/1/17	3/1/17	P
Plan Maintenance Cycle	(1) Semi-annual meetings (2) Email HMP updates, notification of funding availability; hazard updates; progress updates; implement plan evaluation and update schedule	Contractor; NYSDHSES; HMWG	April 2017	[On-going]	O

**Phase: P=planning process, O=On-going*

Public

- Outreach must include an opportunity to comment on the plan during the drafting stage and prior to plan approval. Other activities and methods ensure public participation and on-going support for implementing mitigation measures

Topic/Action	Method	Lead	Start Date	End Date	Phase
Informational/ media release	(1) Website http://herkimercounty.org/content/EmergencyManagement (2) Media releases	Contractor; HMWG	9/21/16	4/25/17	P, O
Educational publication	(1) Brochures – FEMA HMA; Herkimer LHMP (2) Flyer for jurisdictions	Contractor; HMWG	9/21/16	4/25/17	P, O
Community Meetings – #1 Hazard Mitigation Planning; (12/7/16) #3- Presentation of Strategy and Projects (1/___/17)	#1 Handout: Hazard questionnaire/survey #2 Summary: priority hazards, populations at risk; property and infrastructure in hazard-prone areas #3 Presentation & input form	Contractor; HMWG	9/20/16	4/25/17	P
Hazard Questionnaire/ Survey	Online, pre-printed and available at identified locations	Contractor; HMWG	9/21/16	11/1/16	P
Draft Plan Reviews (December, January)	Notification to public through websites, media release, social media, posted notices.	Contractor; HMWG	11/30/16	3/1/17	P
Presentations to Governing Bodies	Overview of mitigation plan and process; expected outcome and benefits	Contractor; HMWG	9/21/16	4/15/17	P
Interviews	Structured discussion with local officials – phone and face-to-face	Contractor; HMWG	9/21/16	12/30/16	P
Community Events	Mitigation information and educational materials	Contractor; HMWG	9/21/16	4/25/17	P, O

**Phase: P=planning process, O=On-going*

Hazard Mitigation Planning* for Herkimer County's residents

Disasters can happen any time, any where, and any place! They can cause loss of life; damage buildings and infrastructure; and have devastating consequences on a community's economic, social, and environmental well-being. Hazard mitigation planning is a process that identifies hazards and their risks to your community, and analyzes vulnerability of people, property, the environment and the economic. The outcome of the planning process is a comprehensive mitigation strategy that includes sustained actions that address the greatest opportunities to reduce or eliminate disaster damages and the long-term risk to human life and property that result from these hazards .

In August 2016, Herkimer County and its thirty municipalities initiated a collaborative planning effort to develop the ***Herkimer County Multi-Jurisdictional Hazard Mitigation Plan.*** The benefits gained during this planning process, and the mitigation actions that will ultimately implement the Plan, will have great significance to your community's future sustainability.

This is your community's plan! To have value, the plan must represent the current needs and values of your community and be useful for officials, stakeholders and citizens. Consider the critical importance of mitigation to:

- ✓ Protect public safety and prevent loss of life and injury.
- ✓ Reduce harm to existing and future development.
- ✓ Prevent damage to a community's unique economic, cultural, and environmental assets.

Your participation is needed! You can support the planning effort by:

- ✓ Learning about hazard mitigation and how to reduce your vulnerability to various hazards such as flood, severe weather, and wildfire
- ✓ Participating in the Hazard Mitigation Survey, providing information about hazard events and their impacts.
- ✓ Verifying information related to community assets and vulnerabilities.
- ✓ Reviewing the plan components and providing input to ensure relevancy to your community.

This planning project is being funded by a grant from FEMA, provided to the New York State Division of Homeland Security and Emergency Services.

SURVEY FINDINGS – 11/4/16

SURVEY FOR RESIDENTS OF HERKIMER COUNTY AND ITS MUNICIPALITIES [Total submitted = 12[1]]

Sponsored by the Herkimer County Hazard Mitigation Working Group

This questionnaire is designed to assist Herkimer County and its municipalities in the development of the *Herkimer County Multi-Jurisdictional Hazard Mitigation Plan* by identifying public concerns about hazards and to better understand public preferences in reducing risk and loss from natural and other hazards. The Hazard Mitigation Plan will serve as the comprehensive, long-term plan to identify hazards that potentially impact Herkimer County, and develop a strategy to implement effective mitigation actions by focusing resources on the greatest risks and vulnerabilities. Please take a few minutes to complete this questionnaire.

The purpose of the Hazard Mitigation Plan is to:

- Identify the most recent data for floods, severe storms and other types of hazards;
- Become eligible for FEMA mitigation grants to fund measures that reduce the threats posed by floods, severe storms and other hazards to important buildings and infrastructure; and
- Help Herkimer County and its municipalities to identify high risk situations and prioritize mitigation actions.

1. Please provide general demographic information about yourself to better assist us in effectively targeting public information related to hazard mitigation: ***(Information in this section is optional and will be used only to identify demographic groups.)***

Jurisdiction in which you live **Ilion – 8** **Little Falls (C) - 2** **Village of Dolgeville – 1** **German Flatts – 1**
How many years have you lived in this jurisdiction? **Range = 20 – 69 years** **Average = 42.4 years**
Age Group (age 18 and over) ____18 - 45 __**(4)**__46 - 65 __**(7)**__ 66 – 80 ____ 81 or over
Highest Level of Education Completed: ____ Less than 9th Grade _**(2)**__ High School ___ Vocational School _**(6)**___ College __**(2)**__ Graduate/Professional Degree
Do you own or rent your home? _**(6)**_ Own _**(1)**_ Rent
Income range: __ <$10,000/year _**(5)**_ $10,000-$40,000 __ $40,000 – $60,000 _**(1)**_ $60,000 – $75,000 **(3)**__>$75,000

2. Within the past five years have you or someone in your household directly experienced a disaster such as an earthquake, severe windstorm, flood, wildfire or other type of disaster?

_**(7)**_ Yes
_**(4)**_ No

If "YES", what type of disaster(s) did you or someone in your household experience?

Flood (7)

[1] Additional Resident Surveys were received after the deadline to submit.

SURVEY FINDINGS – 11/4/16

3. How concerned are you about the following hazards affecting your community?

Hazard	Very Concerned	Somewhat Concerned	Neutral	Not Very Concerned	Not Concerned
Avalanche (9 responses)	1 (11%)		1(11%)	1 (11%)	**6 (67%)**
Drought (9)		2 (22%)	**5 (56%)**	2 (22%)	
Earthquake (9)			4(45%)	**5 (55%)**	
Epidemic (Animal) (9)		4 (45%)	**3 (33%)**	2 (22%)	
Epidemic (Human) (9)	2 (22%)	**5 (56%)**	1 (11%)	1 (11%)	
Extreme Heat (9)		3 (33%)	**4 (45%)**	2 (22%)	
Flood (11)	**11 (100%)**				
Human-Caused (terrorism, civil unrest, cyberattack) (10)	**5 (50%)**	**4 (40%)**	1 (10%)		
Hurricane (9)		3 (33%)	**4 (45%)**	2 (22%)	
Landslide (11)	2 (18%)	**6 (55%)**		2 (18%)	1 (9%)
Severe Thunderstorm (11)	**5 (45.5%)**	**5 (45.5%)**	1 (9%)		
Severe Winter Storm (11)	**6 (55%)**	4 (36%)	1 (9%)		
Technological (hazardous materials, utility failure) (10)	3 (30%)	**6 (60%)**		1 (10%)	
Tornado (9)		2 (22%)	**4(45%)**	3 (33%)	
Wildfire (8)		3 (37.5%)	1 (12.5%)	**4 (50%)**	
Other: Transportation Accident (1)		**1 (100%)**			
Other: Micro-Bursts, High Straight-Line Winds (1)	**1 (100%)**				

4. Have you ever previously received information about how to make your home safer from disasters?

If so:

How long ago? **Range = 1 month – 15 years** **Average = 2 yrs. (1.9875)**

From whom did you ***last*** receive information?

2 - News media
6 - Government agency
□ Insurance agent or company
2 - Utility company
□ University or research institution
□ Neighbor/friend/family member

1 - Elected Official
2 - American Red Cross
□ Other non-profit organization
2 - Social media
□ Not sure
□ Other: _____

5. Whom would you ***most trust*** to provide you with information about how to make your home safer from disasters?

- **1 -** News media
- **7 - Government agency**
- **1 -** Insurance agent or company
- **5 -** Utility company
- **1 -** University or research institution
- □ Neighbor/friend/family member
- **1 -** Elected Official
- **5 -** American Red Cross
- □ Other non-profit organization
- □ Social media
- □ Not sure
- □ Other: _____

6. What is the most effective way for you to receive information about how to make your household and home safer from natural disasters?

- **4 -** Newspapers
- **5 - Television** – **3 -** News **1 -** Ads
- □ Radio - ___News ___Ads
- **1 -** Internet –online news
- □ Email
- **1 -** Social media

Other Methods:

- **1 -** Schools
- □ Outdoor advertisement
- □ Books
- **4 -** Mail
- **2 -** Fire Department/Rescue
- □ Chamber of Commerce
- □ Employer
- **1 -** Public meetings/workshops
- □ Library
- □ University or research institution
- □ Other _____

7. Prior to receiving this survey, were you aware of your jurisdiction's opportunity to participate in hazard mitigation planning and projects?

- **9 - Yes**
- **2 -** No

8. Prior to receiving this survey, were you aware that your jurisdiction must have a Hazard Mitigation Plan, adopted by your jurisdiction's government, in order to be eligible for federal pre- and post-disaster hazard mitigation funds?

- **6 - Yes**
- **5 -** No

COMMUNITY VULNERABILITIES AND HAZARD MITIGATION STRATEGIES

In order to assess community risk, we need to understand which community assets may be vulnerable to hazards in the region. Vulnerable assets are those community features, characteristics, or resources that may be impacted by hazards (e.g., populations with functional needs, critical infrastructure, economic components, environmental resources, etc.). The next set of questions focuses on vulnerable assets in your community and your preferred strategies to mitigate risk to those assets.

9. Community assets are features, characteristics, or resources that either make a community unique or allow the community to function. In your opinion, which of the following *categories* are most susceptible to the impacts caused by hazards in your jurisdiction?

(Please rank the community assets in order of vulnerability, 1 being most vulnerable and 6 being least vulnerable.)

Community Assets	Potential Hazard Impact	Order of Vulnerability
Human (Total Pts. -17)	Loss of life and/or injuries	____1____
Economic (Total Pts. -27)	Business closures and/or job losses	____3____
Infrastructure (Total Pts. -19)	Damage or loss of bridges, utilities, schools, etc.	____2____
Cultural/Historic (Total Pts. -44)	Damage or loss of libraries, museums, fairgrounds, etc.	____6____
Environmental (Total Pts. -36)	Damage or loss of forests, rangeland, waterways, etc.	____5____
Governance (Total Pts. -30)	Ability to maintain order and/or provide public amenities and services	____4____

10. Next we would like to know what specific types of community assets are most important to you. ***(Check the corresponding box for each asset.)***

Community Assets	Very Important	Somewhat Important	Neutral	Not Very Important	Not Important
Elder-care facilities (10 responses)	4 (40%)	3 (30%)	3 (30%)		
Schools (K-12) (9)	5 (56%)	3 (33%)		1 (11%)	
Hospitals (9)	8 (89%)		1 (11%)		
Major bridges (10)	7 (70%)	2 (20%)	1 (10%)		
Fire & Police Stations (10)	7 (70%)	3 (30%)			
Museums/Historic Buildings (9)	1 (11.5%)	2 (22.5%)	3 (33%)	3 (33%)	
Major employers (10)	5 (50%)	2 (20%0	3 (30%)		
Small businesses (8)	1 (12.5)	5 (62.5)	2 (25%)		
College/University (8)	1 (12.5)	2 (25%)	3 (37.5)		2 (25%)
City Hall/Courthouse (10)	6 (60%)	2 (20%))	1 (!0%)	1 (10%)	
Parks (9)		4 (44.5)	2(22.5%)	3 (33%)	
Other: _____					

11. Hazards can have a significant impact on a community, but planning for these events and taking action prior to a disaster can help lessen the impacts. The following statements will help determine citizen priorities regarding planning for hazards in your county. **Please tell us how important each one is to you**.

Statements	**Very Important**	**Somewhat Important**	**Neutral**	**Not Very Important**	**Not Important**
Protecting private property **(10 responses)**	**6 (60%)**	3 (30%)	1 (10%)		
Protecting critical facilities (e.g., transportation networks, hospitals, fire stations) **(11)**	**10 (91%)**	1 (9%)			
Preventing development in hazard areas **(11)**	**5 (46%)**	2 (18%)	4 (36%)		
Enhancing the function of natural features (e.g., streams, wetlands) **(11)**	4(36%)	**5 (46%)**	2 (18%)		
Protecting historical and cultural landmarks **(11)**		**6 (54%)**	5 (46%)		
Protecting and reducing damage to utilities **(11)**	**8 (73%)**	3 (27%)			
Strengthening emergency services (police, fire, rescue) **(11)**	**7 (64%)**	3 (27%)	1 (9%)		
Disclosing natural hazard risks during real estate transactions **(11)**	**4 (36%)**	**4(36%)**	3 28%		
Promoting cooperation among public agencies, citizens, non-profit organizations, and businesses **(11)**	5 (46%)	**6 (54%)**			

12. Please feel free provide any additional comments related to mitigation in the space below:

Comment 1: "The 2013 floods in the Mohawk Valley were largely caused by organic debris clogging the waterways particularly at bridges and culverts, in years past there were on going efforts to clean the river and creek banks by public works but this has diminished to insignificant efforts now. These efforts were preventative in nature and not reactive, please restore proactive preventative measures before spending tax dollars on reactive mitigations."

Comment 2: "Make all levels of government accountable for disaster prevention and recovery not just small local government agencies."

SURVEYS WILL BE ACCEPTED UNTIL NOVEMBER 1, 2016

HERKIMER COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN
SURVEY FINDINGS FOR TECHNICAL STAKEHOLDERS [TOTAL SUBMITTED = 9]

This questionnaire is designed to assist Herkimer County and its municipalities in the development of their Multi-Jurisdictional Hazard Mitigation Plan by identifying stakeholder/ agency concerns about natural hazards and to better understand stakeholder preferences in reducing risk and loss from natural and other hazards. Please take a few minutes to complete this questionnaire.

The purpose of the Natural Hazard Mitigation Plan is to:

- Identify the most recent data for floods, severe storms and other natural hazards;
- Become eligible for FEMA mitigation grants to fund measures that reduce the threats posed by floods, severe storms and other hazards to important buildings and infrastructure; and
- Help Herkimer County and its municipalities to identify high risk situations and prioritize mitigation actions.

1. Please enter your contact information:

Agency Affiliations	**Herkimer County (3), Local Jurisdictions (2) Regional Agencies (1) New York State (2 agencies), Community-Based Organizations (1)**

2. Perceived Risk from Natural Hazards.

Risk means the threats to people, buildings, infrastructure and the environment. Risk depends on the combination of two factors:

• The frequency and severity of hazard events
• The vulnerability of the built environment to each hazard, the quantity of buildings, infrastructure and people exposed to a given hazard.

Which of the following hazards do you think pose the greatest threat to Herkimer County over the next 20 years? ***Rank the hazards with 1 posing the greatest threat, 2 posing the next greatest threat and so on. ("OTHER" is optional.)***

1 – Flood (Average Score 1.9)
1 – Severe Winter Storm (1.9)
2 – Severe Storm (2.0)
3 – Technological Hazards (3.7)
4 – Soil Hazards (6.2)
5 – Drought (6.4)
6 – Human-Caused (6.9)
7 – Landslide (7.0)
8 – Extreme Heat (7.4)
9 - Epidemic (human) (7.7)
10 – Earthquake (7.8)
11 – Epidemic (animal) (8.0)
12 – Avalanche (9.2)
13 – Wildfire (9.3)

SURVEYS WILL BE ACCEPTED UNTIL NOVEMBER 1, 2016

3. Imagine that someone gave you $1,000,000 to make Herkimer County less vulnerable to hazards, what would you spend it on?

- Mitigation Surveys
- Herkimer County DHS
- Emergency Operations Center at the airport (warehouse for emergency equipment – generators, pumps, light plants, potable water, etc.)
- Flooding
- Projects to improve drainage, ground stabilization and infrastructure
- Repair rivers and streams
- Improve GIS capability
- Update plans
- Flood mitigation
- Small stream protection
- Improve resilience of public facilities (generators, power supply, reserve equipment)

4. Mitigation Priorities of Community Assets:

Mitigation means actions taken to reduce damages, economic losses and casualties in future disaster events.

Rank your preferences for the mitigation priorities the jurisdiction should follow from 1 to 12, with 1 being the highest priority, 2 being the next highest priority, etc.:

1 – Reduce deaths and injuries (Average 3.0)
1 - Reduce damage to electric power, gas, water and sewer systems (3.0)
2 - Reduce damage to hospitals (3.6)
3 - Reduce damage to roads and bridges (4.0)
4 - Reduce damage to fire stations and police stations (5.1)
5 - Reduce damage to schools (6.3)
6 - Reduce damage to public buildings (7.6)
7 - Reduce damage to private buildings (7.7)
8 - Protect the natural environment from disasters (8.1)
9 – Protect private property (8.3)
10 - Protect historical and cultural landmarks (10.7)
10 - Prevent future development in high hazard areas (10.7)

SURVEYS WILL BE ACCEPTED UNTIL NOVEMBER 1, 2016

5. Strategies to Reduce Risk and Losses from Disasters

A number of activities can reduce your community's risk from natural hazards. These activities can be both regulatory and non-regulatory.

Please rank your level of support for the following strategies to reduce loss of life, property damage and economic loss from future disasters in Herkimer County.

Strategy	Agree Strongly	Agree	Neutral	Disagree	Disagree Strongly	Not Sure
I support a regulatory approach to reducing risk	25%	25%	12.5%	**37.5%**		
I support non-regulatory approach to reducing risk	12.5%	**50%**	12.5%	25%		
I support a mix of both regulatory and non-regulatory approaches to reducing risk	22%	**67%**	11%			
I support policies to prohibit development in high hazard areas	**56%**	22%	22%			
I support the use of local tax dollars to reduce risks and losses from natural hazard	22%	22%	**34%**	22%		
I support steps to safeguard the local economy following a disaster event	22%	**45%**	22%			11%
I support the disclosure of natural hazard risks during real estate transactions	**67%**	22%	11%			
I support making public buildings more resistant to hazards	**55%**	34%	11%			
I support making utilities more resistant to hazards	**78%**	22%				
I support making bridges more resistant to hazards	**66%**	34%				

6. Please feel free to provide any additional comments in the space provided:

No additional comments provided.

TO SUBMIT SURVEY, PLEASE SCAN AND EMAIL TO: Nancy.Freeman@iem.com

HERKIMER COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN

PUBLIC INPUT SOUGHT ON MULTI-HAZARD PLAN

Public Review and Comment Period from _____ to _____

To identify the potential hazards and risks that could cause a large scale community disaster, and to qualify for mitigation funding from FEMA, Herkimer County, supported by a planning grant from New York State Division of Homeland Security and Emergency Services, is partnering with local jurisdictions and stakeholder agencies and organizations to develop a countywide *Multi-Jurisdictional Hazard Mitigation Plan*.

The public is invited to review the initial draft plan over the next 30 days, and is encouraged to provide input in relation to the plan.

The plan is part of a concentrated effort to reduce the vulnerability of citizens and taxpayers as well as the impact to property in Herkimer County and its municipalities during a disaster.

Public Comment Forms are available at: _____

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APPENDIX 2-D: REFERENCES TO EXISTING POLICIES, PLANS, STUDIES AND REPORTS

Table A2-D-a lists the primary policies, plans, studies, and reports reviewed. Other materials were reviewed as appropriate to discuss specific hazard events and other topics.

Table A2-D-a: Reviewed Policies, Plans, Studies, and Reports

Document	How It Was Integrated into this Plan
New York State, 2014 New York State Hazard Mitigation Plan, DHSES Services, January 2014 [***Note: Herkimer County had not adopted a local hazard mitigation plan when the State's plan was being developed, but County-specific information was included in the plan.]***	• Hazard-specific events, impacts and vulnerabilities from **Section 3, Base Plan** referenced in hazard sections • Mitigation goals and objectives guided in developing local goals and objectives in **Section 4, Base Plan** • Mitigation actions provided were reviewed in the development of local actions in **Section 4, Base Plan** • Funding sources were reviewed, updated, and referenced in **Appendix 4-D, Base Plan** • Plan monitoring, evaluating, and update process and schedule were adapted for Herkimer County in **Section 5, Base Plan.**
***Herkimer County All-Hazard Mitigation Plan*, FINAL DRAFT**, August 2015 [not adopted]	• Background about previous planning efforts and outcomes is integrated into **Sections 1 and 2, Base Plan** • Hazard profiles and data were reviewed, updated, and integrated into **Section 3, Base Plan** • Mitigation goals, objectives, and actions were reviewed and updated in **Section 4, Base Plan**
Herkimer County Comprehensive Emergency Management Plan, April 2015	• Section II – Risk Reduction is the framework for ongoing hazard mitigation planning and is described in detail in **Appendix 5, Base Plan**. • CEMP, Appendices 6 and 7 referred to in **Section 4, Base Plan** • CEMP Appendix 11 referred to in **Section 3.10, Base Plan**

Previous planning efforts have resulted in the development of many flood-related mitigation strategies. Some of these have been funded, were completed, are in progress, or project funding is pending. NYS has conducted, researched, and created programs on climate change. Because climate change has broad implications for the frequency and severity of natural hazards, state resources were reviewed and integrated into the capabilities assessments, hazard risk and vulnerability assessment, and mitigation strategy.

Table A2-D-b: Summary of Flood-Related Programs, Plans, Studies, and Reports Integrated into this Plan

Program, Plan, Study, or Report	*Source*	*Date*
Emergency Transportation Infrastructure Recovery Basin Assessment and Flood Hazard Mitigation Alternatives – Bellinger Brook at the Village of Herkimer	**NYSDOT & NYSDEC**	**April 2014**

Program, Plan, Study, or Report	*Source*	*Date*
In response to severe flooding in June 2013, the New York State Department of Transportation (NYSDOT) and the NYS Department of Environmental Conservation (NYSDEC) assessed Bellinger Brook in the Village of Herkimer. The project included field assessment; mitigation needs; and hydrologic assessment. The report documents flooding history in the basin and identifies three high-risk areas and proposes 14 mitigation actions.		
How the information is incorporated in this Plan: • Flood event summaries were reviewed, updated, and included in **Section 3.5**, **Flood Hazard and Risk,** and jurisdiction annexes • Recommended actions were reviewed, updated, and incorporated by reference as mitigation actions in **Section 4, Mitigation Strategy**		
Emergency Transportation Infrastructure Recovery Basin Assessment and Flood Hazard Mitigation Alternatives – East Canada Creek	**NYSDOT & NYSDEC**	**April 2014**
In response to severe flooding in June 2013, NYSDOT and NYSDEC assessed East Canada Creek between the Village of Dolgeville and the Mohawk River. The project included field assessment; analysis of flood mitigation needs; hydrologic assessment; and recommendations for flood mitigation. The report documents flood history, and identifies three transportation and hydroelectric infrastructure concerns and individual property-based risk areas. It proposes eight mitigation actions ranging in cost from less than $100,000 to $1 to 5 million.		
How the information is incorporated in this Plan: • Flood event summaries **Section 3.5**, **Flood Hazard and Risk** and jurisdiction annexes • Recommended actions were reviewed, updated referred to in **Section 4, Mitigation Strategy**		
Fulmer Creek Multi-Community Flood Hazard Mitigation Plan; Emergency Transportation Infrastructure Recovery Basin Assessment and Flood Hazard Mitigation Alternatives – Fulmer Creek	**Herkimer-Oneida Counties Comprehensive Planning Program (HOCCP); NYSDOT, NYSDEC**	**Plan - May 2004 Assessment - April 2014**
The plan was developed in 2004 by communities located along the creek. The plan evaluated flood risks and hazards; provided hazard education; fostered public participation; and developed non-structural recommendations to alleviate flood-related impacts. The process included enhancements of floodplain data management and mapping needed for both structural and non-structural alternative investigations. The Fulmer Creek Basin impacts the Village of Mohawk, and Towns of German Flatts, Warren, Columbia, Little Falls, and Stark. The Plan identifies historical flood events, causes, impacts, and factors that exacerbate flooding. It graphically depicts the flood hazard area; and identifies population, housing, critical facilities, and socio-economic characteristics. The planning process followed the ten-step Community Rating System guidance, which includes public input and participation. It identified existing efforts, program gaps, and detailed the status of floodplain management and programs in the six subject communities. Recommendations to communities fall into six categories. After the June 2013 flooding, NYSDOT and NYSDEC conducted a Basin Assessment of Fulmer Creek (2014) that documented flooding history; analyzed flood mitigation needs in affected areas; included a hydrologic assessment; and made recommendations for flood mitigation identifies three high-risk areas. Recommended actions ranging in cost from less than $100,000 to more than $5 million.		
How the information is incorporated in this Plan: • Flood history and data was reviewed and integrated into **Section 3.5**, **Flood Hazard and Risk**, and jurisdiction annexes • Recommended actions were reviewed, updated, and incorporated by reference as mitigation actions in **Section 4, Mitigation Strategy** • Reviewed flood mitigation alternatives for appropriate application to potential flood mitigation projects		

Program, Plan, Study, or Report	*Source*	*Date*
Finger Lakes – Lake Ontario Watershed Protection Alliance (FLLOWPA), Herkimer County Water Quality Coordinating Committee (WQCC)*	**NYS Environmental Protection Fund; Water Resources Board** http://www.fllowpa.org/county.html#Herkimer	**On-going**
The WQCC implements initiatives to monitor, assess, and protect water quality, including best management practices for water supply, data development and enhancement, agriculture, nutrients, on-site septic systems, erosion and sedimentation, stormwater, and flood hazard mitigation. The program is implemented through the Herkimer County Soil and Water Conservation District. Each county receives an equal share of funding to carry out programs and is leveraged for additional monies through grants, local appropriations, and in-kind services and resources.		
How the information is incorporated in this Plan: • Identified as a potential funding source for watershed protection projects (**Appendix 4-D**)		
Mohawk River Basin Floodplain Assessment, Floodplain Coordination and Outreach– Final Report, (Ecology and Environment, Inc.)	**DHS-FEMA Competitive Grant, NYS Office of General Services**	**10/17/12**
The project included a floodplain assessment for a segment of the Mohawk River that covers four counties, including Herkimer. It estimated the extent of potential damage to structures at risk from future flooding scenarios, using the Hazards US Software (HAZUS) to estimate the physical, economic, and social impacts of disasters. The report includes flood zone maps that identify the location and types of facilities in and near the zones, and ranks facilities by risk and importance. The study recommended how to determine site-specific risk-reduction actions. The project identified 115 critical facilities and 686 residential structure losses (per Census Block, per 1,000 square feet) in Herkimer County. The study estimated economic losses of $31,500 per Census Block; and a displaced population of 1,281; and total structural debris 3,037 tons per Census Block.		
How the information is incorporated in this Plan: • Information about location, extent, previous occurrences, and critical facilities was integrated into the flood hazard and risk section and jurisdiction annexes. • Technical data illustrated by maps was included by reference. • Mitigation strategy and actions were incorporated by reference (some pre-identified through this plan/study/report)		
Greater Catskills Flood Remediation Program	**NYS Housing Trust Fund Corporation/NYS Homes and Community Renewal** GCFRP@nyshcr.org	**April 2008, Updated 3/15/2012**
The 2015 DRAFT Herkimer County Hazard Mitigation Plan included a newspaper article announcing this program to assist with buyouts of flood-damaged homes in numerous communities. Herkimer County was designated to receive $750,000.		
How the information is incorporated in this Plan: • Program was reviewed; however, it is not an on-going funding source and was not integrated into this plan.		
Mohawk Valley Regional Sustainability Plan	**Cleaner, Greener Communities: New York State Energy Research and Development Authority (NYSERDA)**	**2011-2012 (Adopted 2013)**

Program, Plan, Study, or Report	*Source*	*Date*
The Plan was developed through the Mohawk Valley Planning Consortium and a team of regional and local representatives from the six Mohawk Valley counties, led by Otsego County, as well as technical experts, to identify broad goals and specific strategies to achieve a more sustainable future for the people of the Mohawk Valley region. The region studied in this plan includes the southern portion of Herkimer County. The Plan provides goals, themes, preliminary targets, progress measures and implementation actions that can link to the mitigation planning process. In addition, specific actions and implementation steps identified in the Sustainability Plan have the potential to interact with mitigation strategies and actions, and provide the opportunity for cross-sector coordination to ensure that joint goals and objectives are attained. Each implementation action includes a short summary of potential climate adaptation impacts as well as opportunities in carrying out the action. The Action Plan was reviewed in 2013 around five economic development strategies, 1) Grow Business, 2) Build Workforce Alignment and Education, 3) Create Pathways to Innovation, 4) Revive Infrastructure, and 5) Force Partnerships. Projects recommended by the Action Plan were incorporated in the Herkimer County NY Rising Countywide Resiliency Plan (MVR Plan, pp. 20-21).		
How the information is incorporated in this Plan: • Specific implementation steps identified in the Sustainability Plan that are applicable to the mitigation planning process were reviewed during the mitigation strategy development process to identify and incorporate common goals, strategies and actions, and alternate solutions, if applicable, consistent with the mitigation strategy, goals, objectives and priorities.		
Mohawk River Basin Program and Action Agenda, 2012-2016 ("Mighty Waters" Working Group)	**NYSDEC, NYSDOS**	**2012**
The Program is maintained through the NYSDEC, but managed as a partnership initiative through the NYSDEC and NYSDOS, which jointly oversee this regional "ecosystem-based" management (EBM) approach. The Action Agenda was created through a cabinet-level working group to integrate economic development, community revitalization, environmental quality, and flood hazard risk reduction in the Mohawk River basin. **Goal 3** addresses flood hazard risk reduction, promoting "flood hazard risk reduction and enhanced flood resiliency by providing the tools to ensure that communities are prepared for climate change and important cultural, recreational, economic and environmental assets protected." (Agenda, p. 8). The Agenda identifies four main types of flood events for which strategies are required, and defines seven 2016 targeted actions, and eight longer range actions related to this goal. **Goal 4** promotes Smart Growth, identifying actions that also consider the long-term effects of hazards related to climate change. The Mohawk River Basin Program Steering Committee, a multi-jurisdictional and multi-discipline group, oversees the development and implementation of the Agenda and reports to the Mighty Waters Working Group. Herkimer-Oneida Counties Comprehensive Planning Program is represented on the Steering Committee.		
How the information is incorporated in this Plan: • Historic flood event summaries were reviewed, and referenced in Section 3.5 (flood hazard and risk) and jurisdictional annexes, as applicable. • Recommended actions were reviewed, updated, and incorporated by reference as mitigation actions in Section 4 (Mitigation Strategy), as appropriate		
Moyer Creek Multi-Community Flood Hazard Mitigation Plan; Emergency Transportation Infrastructure Recovery Basin & Assessment and Flood Hazard Mitigation Alternatives – Moyer Creek	**HOCCP; NYSDOT, NYSDEC**	**Plan - June 2004 Assessment – April 2014**

Program, Plan, Study, or Report	*Source*	*Date*
The Flood Hazard Mitigation Plan was developed in 2004 to address repetitive flooding in the creek's watershed through a comprehensive planning process that reviewed and evaluated flood risks and hazards in each community within the basin, the Village of Frankfort and the Towns of Frankfort and Litchfield. In addition, the process developed non-structural activities and recommendations to alleviate flood-related impacts. The planning process considered existing efforts and programs and protection alternatives, and made several recommendations to reduce the impacts of future flooding. The plan was designed to be adopted and maintained by the participating communities. In response to severe flooding in June 2013, the NYSDOT and NYSDEC conducted a water basin assessment of the East Canada Creek. The project included field assessment, analysis of flood mitigation needs in affected areas; hydrologic assessment; and identification of long-term recommendations for mitigation of future flood hazards. The assessment documents flooding history in the basin and identifies three high-risk areas proposing eleven recommended actions that take into consideration alternative approaches. The costs of recommended actions range from less than $100,000 to more than $5 million.		
How the information is incorporated in this Plan: • Flood event summaries were reviewed, updated and included in Section 3.5 (flood hazard and risk) and jurisdictional annexes, as appropriate • Recommended actions were reviewed, updated, and incorporated by reference as mitigation actions in Section 4 (Mitigation Strategy), as appropriate		
Emergency Transportation Infrastructure Recovery Basin Assessment and Flood Hazard Mitigation Alternatives – Maltanner Creek	**NYSDOT, NYSDEC**	**April 2014**
In response to severe flooding in June 2013, the NYSDOT and NYSDEC conducted a water basin assessment of the Maltanner Creek, which flows into West Canada Creek and is located in the Town of Fairfield and the Village of Middleville. The project included field assessment, analysis of flood mitigation needs in affected areas; hydrologic assessment; and identification of long-term recommendations for mitigation of future flood hazards. The assessment documents flooding history in the basin and identifies five high-risk areas proposing seven recommended actions that take into consideration alternative approaches. The costs of recommended actions range from less than $100,000 up to $5 million.		
How the information is incorporated in this Plan: • Flood event summaries were reviewed, updated and included in Section 3.5 (flood hazard and risk) and jurisdictional annexes, as appropriate • Recommended actions were reviewed, updated, and incorporated by reference as mitigation actions in Section 4 (Mitigation Strategy), as appropriate		
NY Rising Community Reconstruction Program – NY Rising Countywide Resiliency Plan - Herkimer County	**NYSDEC, NYSDOS**	**July 31, 2014**
The NY Rising Community Reconstruction Program, jointly funded through the NYSDEC and the New York Department of State (NYSDOS), announced the $8.1 million award for NY Rising Community Reconstruction Plan projects in response to 2013 Mohawk River flooding in Oneida, Herkimer and Montgomery counties with each County receiving $2.7 million. The funding supports work with communities by providing planners to oversee development of local reconstruction plans and projects to ensure a focus on resiliency. These plans identify projects needed to reduce risk and expand economic development in NY Rising communities. An additional $1.3 million was made available to Oneida and Herkimer counties to implement resiliency projects identified in a 2013 state-commissioned study. The study assessed risks to 13 watersheds in the Mohawk Valley where flooding caused significant problems. These studies identified the causes of flooding and provided specific project recommendations. The projects identified address long-term approaches to becoming more resilient to repetitive flooding events in the affected communities. The *NY Rising Countywide Resiliency Plan* for Herkimer County was developed by a Planning Committee that identified critical assets in the community and assessed the assets' exposure to risk.		

Program, Plan, Study, or Report	*Source*	*Date*
How the information is incorporated in this Plan: • Community Vision was reviewed for consistency with mitigation planning vision, goals and objectives. • Flood event summaries were reviewed, updated and referenced in Section 3 (hazard and risk assessment) and jurisdictional annexes, as appropriate • Recommended actions were reviewed and updated. Many projects have been integrated into the list of projects with funding shifted to the Dormitory Authority of the State of New York (DASNY) for project management. Some individual projects were selected by the Working Group and incorporated as mitigation actions in Section 4 (Mitigation Strategy) to indicate broad support, need for funding, or other priorities.		
Steele Creek Multi-Community Flood Hazard Mitigation Plan; Emergency Transportation Infrastructure Recovery Basin Assessment and Flood Hazard Mitigation Alternatives – Steele Creek	**HOCCP; NYSDOT, NYSDEC**	**Plan - October 2004 Assessment – April 2014**
The Flood Hazard Mitigation Plan was developed in 2004 to address repetitive flooding in the creek's watershed through a comprehensive planning process that reviewed and evaluated flood risks and hazards in each community within the basin, the Village of Ilion and the Towns of Columbia, Frankfort, German Flatts, Litchfield and Winfield. In addition, the process developed non-structural activities and recommendations to alleviate flood-related impacts. The planning process considered existing efforts and programs and protection alternatives, and made several recommendations to reduce the impacts of future flooding. The plan was designed to be adopted and maintained by the participating communities. After the June 2013 severe flooding, NYSDOT and NYSDEC assessed the Steele Creek basin and included field assessment; mitigation needs; hydrologic assessment; and long-term recommendations. The assessment documents flooding history in the basin and identifies three high-risk areas, proposing recommended actions. The costs of recommended actions range from less than $100,000 to more than $5 million.		
How the information is incorporated in this Plan: • Flood event summaries were reviewed, updated and included in Section 3.5 (flood hazard and risk) and jurisdictional annexes, as appropriate • Recommended actions were reviewed, updated, and incorporated by reference as mitigation actions in Section 4 (Mitigation Strategy), as appropriate		
Emergency Transportation Infrastructure Recovery Basin Assessment and Flood Hazard Mitigation Alternatives – West Canada Creek	**NYSDOT, NYSDEC**	**April 2014**
In response to severe flooding in June 2013, the NYSDOT and NYSDEC studied the West Canada Creek, and impacted communities within the basin -- the Village of Middleville, and the Towns of Fairfield and Newport. The project included field assessment; mitigation needs; hydrologic assessment; and long-term recommendations. The assessment documents flooding history in the basin and identifies two high-risk areas.		
How the information is incorporated in this Plan: • Flood event summaries were reviewed, updated and included in Section 3.5 (flood hazard and risk) and jurisdictional annexes, as appropriate • Recommended actions were reviewed, updated, and incorporated by reference as mitigation actions in Section 4 (Mitigation Strategy), as appropriate		

Summary of Climate Change-Related Plans and Studies

The plans and studies described in **Table A2-D-c** served as references for sections describing impacts of climate change.

Table A2-D-c: Climate Change-Related Plans and Studies Integrated into this Plan

Report, Plan, Study or Program	Source	Date
Climate Action Plan Interim Report	**New York State Climate Action Council**	**November 2010**
Prepared in response to the directive established by Executive Order No. 24 to set a goal to reduce by the year 2050 greenhouse gas emissions in NYS by 80% below the levels emitted in 1990. Analyzes how economic sectors can reduce greenhouse gas emissions and adapt to climate change.		
How the information is incorporated in this Plan: • Chapter 2: Climate Projections and Vulnerabilities was reviewed and referenced in Section 3 (hazard and risk assessment), in relation to the affected hazards • Chapter 11: Adapting to Climate Change was reviewed for recommended actions, and incorporated by reference as mitigation actions in Section 4 (Mitigation Strategy), as appropriate		
Climate Smart Communities: A Guide for Local Officials	**NYSDEC, NYSERDA, NYSDOS, New York State Public Service Commission**	**February 2009**
This concise guide serves as a "user manual" for New York communities pursuing the Climate Smart Certification Program. It presents a series of talking points to describe why and how the climate is changing and what communities can do to adapt to these changes. A step-by-step process is provided to direct action in initiating climate adaptation measures in a local community.		
How the information is incorporated in this Plan: • Impacts of climate change in Section 3.0, as well as specific hazard subsections, where applicable. • Information related to organizing a local climate action committee was integrated by reference into a mitigation action to address climate change.		
Responding to Climate Change in New York State [Integrated Assessment for Effective Climate Change Adaptation Strategies in New York State] **(ClimAID)**	**NYSERDA**	**November 2010**
The report serves as a foundation of the state's climate change policy and initiatives. It was undertaken to "provide decision-makers with cutting edge information on the state's vulnerability to climate change and to facilitate the development of adaptation strategies informed by both local experience and scientific knowledge."[1] The report examines climate change impacts in a number of sectors, including water resources, coastal zones, ecosystems, agriculture, energy, transportation, telecommunications and public health. The full report provides detailed technical data and information related to effective methods for adaptation.		
How the information is incorporated in this Plan: • Climate risks included in the plan are highlighted in the section that discusses impacts of climate change in Section 3.0, as well as specific hazard subsections, where applicable. • The future use of data and information from the plan is noted in the county's mitigation action to address climate change (Section 4, Base Plan).		
Climate Change Websites: Complete descriptions follow https://www.nyclimatescience.org/ https://www.nyserda.ny.gov/climaid http://www.dec.ny.gov/energy/76910.html http://nysrise.org/news/ http://www.dec.ny.gov/energy/96511.html http://toolkit.climate.gov/		

[1] "Responding to Climate Change in New York State, Synthesis Report", 2011; NYSERDA, p. 3

Plan for Climate Change

Climate change planning protects residents, avoids or reduces damage to property and public infrastructure, and reduces personal hardship.

Numerous resources are available to the mitigation planning committee, including the following:

Resource: ***NY State 2014 Hazard Mitigation Plan: Section 3.4 – Climate Change***
Description: Climate Change was first discussed in the 2011 NYS mitigation plan and expanded in 2014 update. The Climate Change section highlights current initiatives and reports on adaptation strategies being developed by the state.
Location: http://www.dhses.ny.gov/recovery/mitigation/plan.cfm

Resource: ***Responding to Climate Change in New York State (ClimAID) – 2014 Update***
Description: ClimAID is a climate analysis of the seven regions of New York State. The report, produced by the NYS Energy Research and Development Authority (NYSERDA), builds on data released in 2014 by the worldwide Intergovernmental Panel on Climate Change.
Location: https://www.nyserda.ny.gov/climaid

Resource: **New York Climate Change Science Clearinghouse**
Description: The Clearinghouse is a gateway for policymakers, local planners, and the public to identify and access documents, data, websites, tools, and maps relevant to climate change adaptation and mitigation across New York State. The goal of the NYCCSC is to support scientifically sound and cost-effective decision-making. The vision is a dynamic site where users can find information in multiple ways, including through interactive tools that use data from different sources.
Location: https://www.nyclimatescience.org/

Resource: **FEMA: *Climate Resilient Mitigation Activities***

Description: FEMA provides fact sheets, job aids and cost-benefit analysis tools to support community efforts to reduce the risk associated with climate change. Climate Resilient Mitigation Activities are eligible for Hazard Mitigation Grant Program funding available following a major disaster; and for competitive grants under the annual Pre-Disaster Mitigation and Flood Mitigation Assistance programs.
Location: https://www.fema.gov/climate-resilient-mitigation-activities-hazard-mitigation-assistance

Resource: **NYS Climate Smart Communities Climate Smart Resiliency Planning: A Planning Evaluation Tool**
Description: Designed specifically for NYS Communities, this NYSDEC-developed resource is a self-administered planning assessment tool designed to help local officials assess their communities' readiness and resilience in the face of changing weather patterns and rising sea levels.
Location: See the Climate Smart Resiliency Planning link on the right under "Important Links" http://www.dec.ny.gov/energy/82168.html

Policies

- 44 CFR §201.6 – Local Mitigation Plans
- 6 NYCRR Subpart 673.5(b) (Dam Classifications)
- 6 NYCRR Part 502 & Residential Building Code of New York State (Proposed reconstruction and repair of Substantially Damaged Structures in a Floodplain)
- Disaster Mitigation Act of 2000 (Public Law 106-390)
- Executive Order 11988 & 24 CFR Part 55 (Proposed Federal Actions in a Floodplain)
- Building Code of NYS, Section 1603.1 (Wind Speed/Seismic Design Specifications)
- Executive Order No. 24 (2009) Establishing a Goal to Reduce Greenhouse Gas Emissions Eighty Percent by the Year 2050 and Preparing a Climate Action Plan.
- Federal Energy Regulatory Commission (FERC), 18 CFR 12.22-24
- *Hazard Mitigation Assistance Unified Guidance*, June 1, 2010, FEMA
- CP-49/Climate Change and DEC Action, New York State Department of Environmental Conservation Policy, October 22, 2010
- Smart Growth Public Infrastructure Policy Act, September 2010, New York State
- U.S. Army Corps of Engineers (USACE), EP 1110-2-13, Dam Safety Preparedness
- New York State Department of Environmental Conservation, Environmental Conservation Law (ECL) Article 15, Part 673 (Dam Safety)
- 2016 Model Local Law for Flood Damage Prevention, as authorized by the New York State Constitution, Article IX, Section 2, and Environmental Conservation Law, Article 36;

Plans

- *Fulmer Creek Basin Multi-Community Flood Hazard Mitigation Plan,* May 2004, Herkimer-Oneida Counties Comprehensive Planning Program
- *Herkimer County Comprehensive Emergency Management Plan, updated April 2015.*
- *Herkimer County EMS Mass Casualty Incident Response Plan, undated*
- *Levee Analysis and Mapping Plan, Herkimer Levee*, (Village of Herkimer and Town of Herkimer, Herkimer County, New York; FEMA RiskMap, December 2016.
- *Moyer Basin Multi-Community Flood Hazard Mitigation Plan*, June 2004, Herkimer-Oneida Counties Comprehensive Planning Program
- *New York Rising Countywide Resiliency Plan, Herkimer County,* July 31, 2014, NY Rising Community Reconstruction Program
- *Steele Creek Basin Multi-Community Flood Hazard Mitigation Plan,* October 2004, Herkimer-Oneida Counties Comprehensive Planning Program

Studies and Reports

- "Cleaner, Greener Communities Sustainability Plan for the Mohawk Valley", *Mohawk Valley Regional Sustainability Plan*, undated, New York State Energy Research and Development Authority
- *Emergency Transportation Infrastructure Recovery, Water Basin Assessment and Flood Hazard Mitigation Alternatives – Bellinger Brook at the Village of Herkimer, Herkimer County, New York*, April 2014
- *Emergency Transportation Infrastructure Recovery, Water Basin Assessment and Flood Hazard Mitigation Alternatives – East Canada Creek, Herkimer County, New York*, April 2014
- *Emergency Transportation Infrastructure Recovery, Water Basin Assessment and Flood Hazard Mitigation Alternatives – Fulmer Creek, Herkimer County, New York*, April 2014
- *Flood Insurance Study, Herkimer County, New York (All Jurisdictions)*, (Preliminary), September 30, 2011, Flood Insurance Study Number 36043CV000A, FEMA
- *Emergency Transportation Infrastructure Recovery, Water Basin Assessment and Flood Hazard Mitigation Alternatives Maltanner Creek, Herkimer County, New York*, April 2014
- *Emergency Transportation Infrastructure Recovery, Water Basin Assessment and Flood Hazard Mitigation Alternatives – Moyer Creek, Herkimer County, New York*, April 2014
- *Mohawk River Basin Action Agenda, 2012-2016*, New York State Department of Environmental Conservation
- *Emergency Transportation Infrastructure Recovery, Water Basin Assessment and Flood Hazard Mitigation Alternatives – Steele Creek, Herkimer County, New York*, April 2014-01
- *Emergency Transportation Infrastructure Recovery, Water Basin Assessment and Flood Hazard Mitigation Alternatives – West Canada Creek, Herkimer County, New York*, April 2014
- *Mohawk River Floodplain Assessment, October 17, 2012, Floodplain Coordination and Outreach, New York State Department of Environmental Conservation*
- "Recommendations to Improve the Strength and Resilience of the Empire State's Infrastructure", undated, NYS 2100 Commission
- "Smart Growth Checklist: A Checklist for Proposed Development Projects in Your Community", New York State Department of Transportation
- Frumhoff, Peter C., McCarthy, James J., and Melillo, Jerry M, "Confronting Climate Change in the U.S. Northeast, Science, Impacts, and Solutions". A report of the Northeast Climate Impacts Assessment, Union of Concerned Scientists; July 2007

APPENDIX 2-E: PLAN REVIEW DOCUMENTATION

The following table documents input received from review of the INITIAL DRAFT and public comments submitted during the 30-day review period.

Date	Plan Section	Comment
10/5/17	Planning – General Comment	It's great that 13 jurisdictions (including the County) participated in the planning process. This represents a good first step in Herkimer County mitigation planning. For the plan update, I hope that more communities will choose to be involved. The far northern and southernmost jurisdictions were not included. Those included are somewhat more homogenous than would be the case if more far-flung municipalities were involved. Perhaps leaders of communities currently involved can encourage other when supervisors/mayors meet as a group. The County Legislature could also play a role in promoting the effort countywide.
10/22/17	Annex 12, Page 12.1, 12.2	Ilion has a new Fire Chief Robert Paddock only change I can see.
10/22/17	Annex 12	I think you have done a great job on the entire plan. A lot of hard work by a lot of good people.

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APPENDIX 3: HAZARD IDENTIFICATION/RISK ASSESSMENT DOCUMENTATION

A. National Flood Insurance Program

Table A3-a: Herkimer County NFIP Summary

Community	Total Premiums	Number Policies	Total Coverage	Claims Since 1978	Total Paid Since 1978	Rep Loss Properties	Population	Map Date
Cold Brook (V)	$3,285	4	$290,600	3	$3,012	-	420	12/20/2000
Dolgeville (V)	$45,010	56	$6,317,300	51	$208,002	7	2,166	03/16/1983
Frankfort (V)	$31,519	27	$2,818,400	7	$23,206	2	2,537	03/07/2001
Herkimer (V)	$16,528	26	$5,022,600	10	$126,682	-	7,498	06/17/2002
Ilion (V)	$220,404	239	$20,335,300	178	$1,292,951	52	8,601	09/08/1999
Middleville (V)	$7,092	4	$510,800	10	$180,883	6	525	07/03/1985
Mohawk (V)	$10,340	21	$3,981,200	34	$865,284	13	2,986	09/08/1999
Newport (V)	$9,160	8	$929,100	7	$75,842	2	908	04/02/1991
Poland (V)	$701	2	$600,000	1	$0	-	452	06/02/1999
West Winfield (V)	$619	1	$41,000	2	$7,042	-	878	07/03/1985
Columbia (T)	$1,925	2	$145,000	1	$152	-	1,387	07/16/1982
Danube (T)	$3,630	4	$702,000	2	$10,372	-	1,098	07/03/1985
Fairfield (T)	$747	2	$525,000	1	$0	-	1,446	10/18/1988
Frankfort (T)	$8,686	12	$2,742,000	4	$11,601	-	7,478	12/20/2000
German Flatts (T)	$7,202	15	$1,316,900	12	$90,140	-	2,471	05/15/1985
Herkimer (T)	$2,711	4	$835,600	7	$26,835	-	2,464	04/17/1985
Litchfield (T)	$2,078	5	$450,800	5	$14,183	2	1,450	05/07/2001
Little Falls (C)	$37,214	19	$6,366,500	11	$295,678	2	4,867	04/04/1983
Little Falls (T)	$373	1	$350,000	4	$14,372	-	1,600	03/28/1980
Manheim (T)	$5,746	4	$770,000	6	$63,943	2	1,055	05/01/1985
Newport (T)	$10,836	7	$879,600	7	$41,096	-	900	06/02/1999
Norway (T)	$0	-	$0			-	700	07/03/1985
Ohio (T)	$4,115	5	$565,000	1	$1,853	-	925	09/24/1984
Russia (T)	$2,187	4	$1,250,000	5	$127,836	2	2,405	06/02/1999
Salisbury (T)	$2,770	6	$1,104,600	1	$14,468	-	1,741	07/03/1985
Schuyler (T)	$7,110	11	$896,900	2	$450	-	3,508	06/20/2001
Stark (T)	$13,250	13	$3,223,200	12	$126,747	6	759	05/15/1985
Warren (T)	$0	-	$0			-	1,077	
Webb (T)	$64,984	71	$15,432,500	2	$461	-	1,750	07/30/1982
Winfield (T)	$1,273	3	$376,000	1	$60,692	-	1,020	07/03/1985
Totals	**$521,495**	**576**	**$78,777,900**	**387**	**$3,683,783**	**96**	**67,072**	

B. Previous Hazard Events

The information provided in **Table A3-b** is extracted from multiple documents and sources. It is intended to be a reference for mitigation planning purposes only and is not a comprehensive listing of hazard events impacting the Herkimer County Planning Area.

Table A3-b: All Hazard Events Documented from Previous Sources, 1889–2014

DATE	HAZARD	DESCRIPTION	SOURCE	LOCATION(S)	COST*
7/26/1889	Flood	Floods water rose 14' within minutes.	2015 Draft County HMP/ Newspaper articles	Newville	$20-25,000
3/18-19/1905	Flood	Newspaper article documenting flood event.	Moyer Creek Flood HMP (2004)	Moyer Creek	
4/19/1905	Flood	Village of Frankfort	Moyer Creek Flood HMP (2004)	Moyer Creek	
8/17/1908	Flood	Bridge destroyed on Beaver Brook. South Main St. submerged, and lightning struck the Priam & Builick mill.	2015 Draft County HMP/ Newspaper articles	Dolgeville, Beaver Brook	$10,000
2/28 to 3/3/1910	Flood	Severe winter conditions: thick ice, heavy snow, and heavy rainfall. Ice buildup blocked channels. Flooding on major streets in Herkimer crossed canal into the Village.	2015 Draft County HMP/ Newspaper articles	Herkimer	$500,000+
4/4/1910	Flood: Ice Jam	Ice jam flooded part of Frankfort village and had to be dynamited. (Coincided with 1910 Herkimer flood, when downtown Herkimer was under water).	Moyer Creek Flood HMP (2004)	Moyer Creek	
1/11/1912	Flood: Ice Jam	Ice piled to the "top of hip boots."	2015 Draft County HMP/ Newspaper articles	Dolgeville	
1910, 1913, and 1914	Flood	USACE Floodplain database.	Steele Creek Flood HMP (2004)	Steele Creek	
3/1/1913	Flood	Flooding in the northeast. Mohawk River at Little Falls at 19'.	2015 Draft County HMP/ NOAA	Mohawk River, Little Falls	
3/27/1913	Flood	West Canada Creek at Herkimer was "swept away"; railroad washouts and landslides at St. Johnsville, Yost, and Dugway. East Canada Creek at its highest level in a dozen years. River at Little Falls reported to be highest in 50 years. Herkimer streets submerged include Dewey Ave. and Williams, South Main, Steel and Stimson Streets.	2015 Draft County HMP/ Newspaper articles	Herkimer County	
Spring 1921	Flood	Newspaper reported that the State Senate and Assembly will finance a $25,000 dredging and concrete embankment project to prevent flooding.	Fulmer Creek Flood HMP (2004) /NOAA	Fulmer Creek	
September 1921	Flood	Recorded Flood Event.	Fulmer Creek Flood HMP (2004) /NOAA	Fulmer Creek	

DATE	HAZARD	DESCRIPTION	SOURCE	LOCATION(S)	COST*
6/11/1922	Flood	USACE Floodplain database – 18% of the Village of Ilion inundated. Philips and Whitney St. bridges destroyed.	Steele Creek Flood HMP (2004)	Steele Creek	
March 1936	Flood	Recorded Flood Event	Fulmer Creek Flood HMP (2004) /NOAA	Fulmer Creek	
9/21/1938	Flood	Greatest flood of record [pre-2004]. Village required a "certificate of Indebtedness" for cleanup and repairs to sewers, streets, and village property	Moyer Creek Flood HMP (2004)	Moyer Creek	
2/21/1939	Flood: Ice Jam	Most streets in Herkimer were partially or fully submerged in water. Fulmer Creek (in Mohawk) and Steele Creek saw high flood waters.	2015 Draft County HMP/ Newspaper articles	Herkimer County	
1/4/1943	Severe Weather: Winter Weather	Per the New York Telephone Company, 3,000 + Mohawk Valley poles were leveled by an ice storm. Eight thousand people were without phones and/or power for 10 days. Downed trees countywide damaged roof structures. Snow was hip deep and roads impassable on Rte. 28 between Mohawk and Richfield Springs. Ilion experienced heavier snowfall in the gorge than areas south due to elevation.	2015 Draft County HMP/ Newspaper articles	Mohawk Valley, Mohawk, Ilion	Statewide $1 million
10/2-3/1945	Flood	East Canada Creek at Dolgeville was noted by local reports to have reached 15.1', with max discharge was 24,000 with Max Gauge height of 9' nearly destroyed Daniel Green Factory at Dolgeville (289 sq. mi. drainage area). The Max Gauge Height of West Canada Creek at Kast Bridge was 8.08'.	2015 Draft County HMP/ NOAA/USGS: *Maximum Known Stages and Discharges of New York Streams, 1865 – 1989, with Descriptions of Five Selected Floods, 1913-1985*	Dolgeville, East Canada Creek, West Canada Creek	Statewide $1 million (property); $100,000 (roads)
7/6/1948	Flood	Property damage from flash flood on three creeks in Ilion and Mohawk (Tory, Miller, and an unnamed creek). Water backed up from under-sized culverts under W. Main St. and flowed over the road to the Erie Canal. Rainfall 3.14" in Ilion.	2015 Draft County HMP/ USGS	Ilion, Mohawk	$2,000
8/31/1950	Flood	Possibly the largest flood event recorded on Fulmer Creek	Fulmer Creek Flood HMP (2004)/ NOAA	Fulmer Creek	
9/9-10/1950	Flood	Washouts reported on Frankfort Gorge Road. Conditions in Herkimer described as the worst since 1910. Rte. 20 flooded for a quarter mile east of the Rte. 8 intersection at bridge. Village of Frankfort streets were flooded, families evacuated, significant property damage. Bridge washed out in East Frankfort; other bridges were impassable. Rte. 5S between Ilion and East Frankfort was closed for 10 hours due to washout, damage, and debris. Flow from Bellinger Brook in the Village of	2015 Draft County HMP/ Newspaper articles/USGS	Herkimer County, Herkimer, Frankfort, Ilion, Moyer Creek, Bellinger Brook	$50,000+ State roads/ bridges); $50,000+ property

DATE	HAZARD	DESCRIPTION	SOURCE	LOCATION(S)	COST*
		Herkimer cut a new channel across an athletic field, depositing debris across the west section of the village. In Herkimer, rainfall totaled 2.65 inches in several hours; Ilion and Frankfort received 3.29".			
March 1952	Flood	Recorded Flood Event.	Fulmer Creek Flood HMP (2004) /NOAA	Fulmer Creek	
1/27/1954	Flood	Heavy rains and ice damage caused 5 creeks to clog and overflow: Sterling Creek, Oriskany Creek, Big Creek, Sauquoit Creek and West Canada Creek.	2015 Draft County HMP/ Newspaper articles	Herkimer Creek	
3/2/1955	Flood: Ice Jam	Water levels at Little Falls 4' above normal, causing a landslide at Oriskany Bluff and washouts on the Thruway. Ice jam at Stratford sent 4' of water onto roads.	2015 Draft County HMP/ Newspaper articles	East Canada Creek Dolgeville, Little Falls	
1/29-30/1957	Flood	Herkimer water system was down for 3 days, street lights and gas supply for 2 days. The river channel was dynamited several multiple times to clear ice and debris.	2015 Draft County HMP/ Newspaper articles	Herkimer County	
1/15/1962	Flood: Ice Jam	50 property owners filed claims against the State seeking more than $100,000 in damages	Fulmer Creek Flood HMP (2004)/NOAA	Fulmer Creek	$100,000
1/17/1962	Flood: Ice Jam	Ice jamming reported at the "Old Rte. 5S" bridge	Fulmer Creek Flood HMP (2004) /NOAA	Fulmer Creek	
3/13/1962	Flood	Newspaper article documenting flood event	Moyer Creek Flood HMP (2004)	Moyer Creek	
8/13/1963	Flood	Village completes channel modifications with a donation of equipment from NYSDOT	Moyer Creek Flood HMP (2004)	Moyer Creek	
3/5/1964	Flood	Extended rain event (12 hour "downpour") causes flooding	Moyer Creek Flood HMP (2004)	Moyer Creek	
2/6/65	Flood	West Canada Creek flooded in Herkimer, impacting 20 homes in Pullman Flats. High water was due to ice jam at the junction of West Canada Creek and the Mohawk River.	2015 Draft County HMP/ Newspaper articles	Herkimer	
12/14/1965	Flood: Ice Jam	Newspaper reports that DOT is dredging deeper channel under Main Street bridge to allow ice to pass.	Fulmer Creek Flood HMP (2004) /NOAA	Fulmer Creek	
12/7/1968	Severe Weather: Winter Weather	An ice storm affected in Ilion Gorge, Paines Hollow, Thompson Road (Dolgeville) and Reservoir Road (Little Falls). Over 10,000 homes were without power in Herkimer and Oneida Counties.	2015 Draft County HMP/NOAA	Herkimer	
6/18/1970	Severe Weather: Hail	The magnitude of hail was 1".	2015 Draft County HMP/NOAA	Herkimer	
6/19/1970	Severe Weather: High Wind/ Tornado	An F1 tornado with a width of 33 yards traveled 2 miles. A woman in Poland was killed when one of several trees fell onto a parked car. A man was electrocuted in Westmoreland due to a downed power	2015 Draft County HMP/ Newspaper articles	Newport, Poland	$250,000; 2 fatalities

DATE	HAZARD	DESCRIPTION	SOURCE	LOCATION(S)	COST*
		line. 10,000+ homes without after 8 5mph wind leveled 1,000 trees.			
2/13/1971	Flood: Ice Jam	Roads and 125 homes affected on West Main, East Main, Harter, Charles, Devendorf, Lock, and Erie Streets. 300 locations without power for 6 hours. Rte. 5S closed.	Fulmer Creek Flood HMP (2004) /NOAA	Fulmer Creek	
2/131971	Flood	Flood required NYSDOT to clear bridge.	Moyer Creek Flood HMP (2004)	Moyer Creek	
2/13/1971	Flood	Roads closed because of rain and snowmelt.	Steele Creek Flood HMP (2004)	Steele Creek	
May 1972	Flood	No additional information available.	NYS Hazard Mitigation Plan (2014)	Herkimer	
5/30/1973	Flood	Thunderstorm north of Herkimer destroyed the Kast Bridge Inn foundation and a railroad bridge. The 5-ft. drain pipe for the brook was exceeded by 10-12 ft. deep water.	2015 Draft County HMP/ Newspaper articles	Herkimer	
2/13/1974	Flood	Newspaper article documents erosion problems on residential properties.	Fulmer Creek Flood HMP (2004) (2004)/NOAA	Fulmer Creek	
7/3/1974	Flood	Storm event damages village sewer and water systems.	Moyer Creek Flood HMP (2004)	Moyer Creek	
9/23/1976	Flood	State agrees to clean out Moyer Creek to alleviate ice jams.	Moyer Creek Flood HMP (2004)	Moyer Creek	
2/1/1977	Flood: Ice Jam	Documented ice jam at railroad bridge.	Moyer Creek Flood HMP (2004)	Moyer Creek	
8/29/1977	Severe Weather: Hail	The magnitude of hail was 1.75”.	2015 Draft County HMP /NOAA		
3/1/1979	Flood-ice jam	Ice jam on the Mohawk River caused flooding.	2015 Draft County HMP /NOAA	Mohawk River	
3/6/1979	Flood: Ice Jam	East Canada Creek ice jam impacted Dolgeville-Stratford areas and other areas in the Mohawk Valley.	2015 Draft County HMP / Newspaper articles	Dolgeville, Herkimer	$142,000
2/11/1981	Flood: Ice Jam	Moyer Creek flooded from ice jam at West Main Street bridge. Lock, Mill and Main Streets, 100 people evacuated. Damage to residential and commercial structures.	Moyer Creek Flood HMP (2004); 2015 Draft County HMP/ Newspaper articles	Moyer Creek, Frankfort	
2/16/1981	Flood: Ice Jam	NYSDOT crews cleared ice from Rte. 5 and 5S bridges. Fire Department hosed blockage from under Main Street bridge. Village crews dredged 2 ft. of sediment from under bridge.	Moyer Creek Flood HMP (2004)	Moyer Creek	
4/1/1982	Flood	Families along Gorge Road in southern Ilion concerned about flooding and high water damming driveway bridge. Tree trunks, branches and litter from Steel Creek.	2015 Draft County HMP/ Newspaper articles	Steele Creek, Ilion	
6/29/1982	Flood	Flooding from Fulmer Creek impacted Holt Brothers and sewage treatment plant. Moyer Creek flooded residential cellars near the gorge (Rte. 171). Sand bags at Otsego St. bridge 5’ above arch.; at Steele Creek,	Fulmer Creek Flood HMP (2004); Moyer Creek Flood HMP (2004)	Fulmer Creek, Moyer Creek, Steele Creek	
2/17/1983	Flood: Ice Jam	High pressure hoses used to clear Rte. 51 bridge.	Steele Creek Flood HMP (2004)	Steele Creek	

DATE	HAZARD	DESCRIPTION	SOURCE	LOCATION(S)	COST*
7/31/1983	Severe Weather: Hail	The magnitude of hail was 1".	2015 Draft County HMP/NOAA	Herkimer	
10/7/1983	Earthquake	Registered 5.2 on the Richter Scale, epicenter 20 km east of Blue Mountain Lake on Hamilton County. The initial shock and tremors were felt throughout Herkimer County.	2015 Draft County HMP/ Newspaper articles	Adirondacks	
7/11/1984	Severe Weather: High Wind/ Tornado	An F0 tornado passed through the county, traveling 15 miles with a width of 100 yards.	2015 Draft County HMP/NOAA	Herkimer	$3,000
9/4/1984	Flood	Newspaper articles note clean-up of Ilion Gorge Rd., 3 miles south to Ilion.	Steele Creek Flood HMP (2004)	Steele Creek	
8/29/1985	Flood	Newspaper article reported Small Cities grant for retaining wall.	Steele Creek Flood HMP (2004)	Steele Creek	
7/22/1986	Flood	Ten families evacuated. A temporary river flowed down Spofford Ave, causing the road to peel up. Beaver Brook overflowed its banks, causing Beaver St. to be submerged in 4' of water. Three-mile section between Rtes. 28 and 169 closed due to debris from timber and mud from West Canada Creek overflow.	2015 Draft County HMP/ Newspaper articles	Dolgeville	
8/7/1986	Severe Weather: Hail	The magnitude of hail was .75".	2015 Draft County HMP/NOAA	Herkimer	
3/8/1987	Flood: Ice Jam	Ice jam south of Main Street bridge.	Fulmer Creek Flood HMP (2004) (2004)/NOAA	Fulmer Creek	
1988	Flood	Newspaper reports sand bags needed for Otsego St. bridge.	Steele Creek Flood HMP (2004)	Steele Creek	
1988	Flood	Reports of Rte. 51/Otsego St. bridge could overtop.	Steele Creek Flood HMP (2004)	Steele Creek	
1/24/1990	Flood	Village requested DEC approval dredge Moyer Creek at Main Street.	Moyer Creek Flood HMP (2004)	Moyer Creek	
1/26/1990	Flood	The Village Board recorded bank erosion on Tory Creek near Catherine Street.	Fulmer Creek Flood HMP (2004)/NOAA	Mohawk	
5/17/1990	Severe Weather: High Wind/ Tornado	An F0 tornado passed through the county, traveling 1 mile with a width of 13 yards. One 1 person injured.	2015 Draft County HMP/NOAA	Herkimer	$250,000
6/21/1990	Severe Weather: Hail	The magnitude of hail was 1.75".	2015 Draft County HMP/NOAA	Herkimer	
8/28/1990	Severe Weather: High Wind/ Tornado	An F1 tornado with a width of 57 yards traveled two miles through the county.	2015 Draft County HMP/NOAA	Herkimer	$2,500,000 3 injuries
Fall 1990	Flood	Newspaper article noted sediment dredging near Holt Bros.	Fulmer Creek Flood HMP (2004)/ NOAA	Fulmer Creek	
12/23/1990	Flood	Recurrent flooding on Fifth Avenue Extension and Kernan Avenue.	Moyer Creek Flood HMP (2004)	Moyer Creek	

DATE	HAZARD	DESCRIPTION	SOURCE	LOCATION(S)	COST*
5/9/1991	Flood	Newspaper article noted SWCD study of erosion on Rte. 168.	Fulmer Creek Flood HMP (2004)/ NOAA	Fulmer Creek	
6/12/1991	Severe Weather: Hail	The magnitude of hail was .88"	2015 Draft County HMP/NOAA	Herkimer	
8/4/1992	Severe Weather: High Wind/ Tornado	An F0 tornado ten yards wide passed through the county.	2015 Draft County HMP/NOAA	Herkimer	$25,000
3/31/1993	Flood-Snow Melt	Rain compounded by snow melt caused flooding areawide. The Mohawk River flooded between Utica and Mohawk.	2015 Draft County HMP/NOAA	Mohawk River	$50,000
4/10-22/1993	Flood	Flooding continued across much of northern New York from earlier rain runoff. West Canada Creek among hardest hit areas *[May be related to two previous listings for March and April 1993.]*	2015 Draft County HMP/NOAA	Herkimer	$500,000
4/16/1993	Severe Weather: High Wind	No additional information available.	2015 Draft County HMP/NOAA	Frankfort	$5,000
5/3/1993	Flood	Newspaper article notes two NRCS (SCSI) projects totaling $80,000 for bank stabilization projects, debris removal, removal of sediments, etc.	Fulmer Creek Flood HMP (2004)/ NOAA	Fulmer Creek	[$500,000]
8/2/1993	Severe Weather: High Wind	No additional information available.	2015 Draft County HMP/NOAA	Ilion	$5,000
8/24/1993	Severe Weather: High Wind, Hail	The magnitude of hail was .88".	2015 Draft County HMP/NOAA	Herkimer, Schuyler, Manheim	$5,000
8/31/1993	Severe Weather: High Wind	No additional information available.	2015 Draft County HMP/NOAA	Middleville, Newport, Russia, Dolgeville, Webb, Old Forge, Fairfield, Norway, Little Falls	$50,000
8/31/1993	Drought	Prolonged drought caused $50 million in crop damage throughout the mid-Hudson Valley	2015 Draft County HMP/NOAA	Mid-Hudson Valley	$50 million
12/22/1993	Flood	The Town Board noted multiple resident properties experiencing bank/bridge erosion	Fulmer Creek Flood HMP (2004)/ NOAA	German Flatts	
2/21/1994	Flood: Ice Jam	Flooding and ice jamming caused great damage: Herkimer Co. sewage treatment plant ($107,000); NYS Thruway Authority ($84,000); NYSDOT ($316,000); County Highway Department ($171,000); Repair peeled pavement from Lock, Charles, Erie, and Harter St. ($19,000); Water system, sanitary sewer and electrical system damage estimate ($112,000); repair and rebuild 4 catch basins ($6,700); Village requests for state assistance - labor, materials, equipment ($18,000); Mohawk Police Dept. - labor and equipment	Fulmer Creek Flood HMP (2004)/ NOAA	Fulmer Creek	$834,700

DATE	HAZARD	DESCRIPTION	SOURCE	LOCATION(S)	COST*
		($1,000). Main St. closure affected 35 businesses. Over 70 homes affected, 40 structures evacuated because there was no power, 20 homes with water in the basements.			
2/21/1994	Flood: Ice Jam	Ice 2' thick covered 300 ft. of West Main Street.	Moyer Creek Flood HMP (2004)	Moyer Creek, Herkimer	$687,000
4/13/1994	Landslide	80' mudslide caused by heavy rains, 30 trees uprooted, several downed utility poles caused power outage.	2015 Draft County HMP/ Newspaper article	Herkimer, Frankfort	$50,000
4/13-17/1994	Flood	No additional information available.	2015 Draft County HMP/NOAA	Herkimer	$50,000
5/6/1994	Flood	Herkimer County SWCD requested a Public Law 566 erosion/flood study.	Fulmer Creek Flood HMP (2004)/ NOAA	Fulmer Creek	
6/15/1994	Flood	The Village of Mohawk received $385,625 Emergency Management grant for February flood damage.	Fulmer Creek Flood HMP (2004)/ NOAA	Fulmer Creek	
6/27/1994	Flood	Flash flooding occurred along Ferguson Creek when 3.6" of rain fell in a 50-minute period. A total of 4.2" fell in a 3-hour period.	2015 Draft County HMP/NOAA	Ferguson Creek	$5,000
6/29/1994	Severe Weather: High Wind	No additional information available.	2015 Draft County HMP/NOAA	Webb	$1,000
7/8-9/1994	Flood	No additional information available.	2015 Draft County HMP/NOAA	Mohawk, Ilion, Herkimer, Newport, Ohio, Frankfort, Russia, Little Falls	$5,000
7/25/1994	Severe Weather: High Wind	No additional information available.	2015 Draft County HMP/NOAA	Ilion, German Flatts, Fairfield	$5,000
7/30/1994	Severe Weather: High Wind	No additional information available.	2015 Draft County HMP/NOAA	Dolgeville, Little Falls	$5,000
11/5/1994	Flood	Newspaper reported that NYSDOT and the county began annual program of dredging under Main St. bridge. "Several hundred yards" of material removed on each side of the bridge.	Fulmer Creek Flood HMP (2004)/ NOAA	Fulmer Creek	
12/8/1994	Flood	DEC correspondence notes drainage/flooding on Weston property, North Street	Steele Creek Flood HMP (2004)	Steele Creek	
1/7/1995	Flood	Newspaper reported that Village of Mohawk will receive a $100,000 DEC Aid to Locations grant for wall reconstruction and other projects.	Fulmer Creek Flood HMP (2004)/ NOAA	Fulmer Creek	
2/25/1995	Severe Weather: Winter Weather	A heavy mixture of snow and freezing rain occurred across the Adirondacks and other areas of the state. Snowfall exceeded 11 inches. Treacherous conditions caused man traffic accidents. Ice accumulations of downed tree limbs and power lines in southern Herkimer County left 1,000+ customers without power.	2015 Draft County HMP/NOAA	Herkimer County	$50,000

DATE	HAZARD	DESCRIPTION	SOURCE	LOCATION(S)	COST*
3/7/1995	Flood: Ice Jam	Smaller ice jam "threatening" the Village of Mohawk at 5S bridge. Village declares state of emergency. County Highway Department provided crane to remove ice jams. Mud slide on Tory Creek near Catherine St.	Fulmer Creek Flood HMP (2004)/; 2015 Draft County HMP/NOAA	Fulmer Creek	
5/29/1995	N/A	No additional information available.	2015 Draft County HMP/NOAA	Russia	$5,000
6/11/1995	Flood	Thunderstorms ahead of a cold front caused flash flooding from 3" to 4" of rainfall. Roads accumulated up to 2' of standing water from creek overflow.	2015 Draft County HMP/NOAA	German Flatts	$2,000
7/6/1995	Severe Weather: High Wind	No additional information available.	2015 Draft County HMP/NOAA	Hinckley Reservoir	$5,000
7/15/1995	Severe Weather: High Wind	No additional information available.	2015 Draft County HMP/NOAA	Herkimer County	$50,000 (Herkimer Co.), $10 million (statewide)
7/17/1995	Flood: Urban	Heavy rains caused urban from backed up as storm drains.	2015 Draft County HMP/NOAA	Ilion	$20,000
7/20/1995	Flood	The Village of Frankfort requests permit from state to clean up Moyer Creek.	Moyer Creek Flood HMP (2004)	Moyer Creek	
8/3/1995	Severe Weather: High Wind	No additional information available.	2015 Draft County HMP/NOAA	Big Moose, Eagle Bay	$5,000 (Big Moose), $7,000 (Eagle Bay)
8/31/1995	Severe Weather: High Wind	No additional information available.	2015 Draft County HMP/NOAA	Schuyler	$5,000
9/3/1995	Severe Weather: High Wind	Severe thunderstorms downed trees and wires in several locations, one tree damaging two mobile homes.	2015 Draft County HMP/NOAA	Schuyler	$5,000
9/14/1995	Severe Weather: High Wind	No additional information available.	2015 Draft County HMP/NOAA	Salisbury	$1,000
October 1995	Flood	Newspaper reported that dredging of sediment and debris from Main Street bridge channel is under way.	Fulmer Creek Flood HMP (2004)/	Fulmer Creek	
10/21-22/1995	Flood	East Canada Creek flooded in Dolgeville, moderate flooding reported on Moose River.	2015 Draft County HMP/NOAA	Herkimer	$50,000
1/19/1996	Flood: Ice Jam	FEMA assistance approved.	Fulmer Creek Flood HMP (2004)/ Moyer Creek Flood HMP (2004)/ 2015 Draft County HMP; NOAA; USACE; CRREL	Herkimer County, Mohawk River, Fulmer Creek, Moyer Creek	$2.8 million countywide
1/20/1996	Flood: Ice Jam	Rapid snow melt countywide. Roads washed out and homes destroyed. $1.25+ million in damage at Burrows Paper Co. in Little Falls. Major highways closed.	Fulmer Creek Flood HMP (2004)/ 2015 Draft County HMP/NOAA	Mohawk River, Fulmer Creek	

DATE	HAZARD	DESCRIPTION	SOURCE	LOCATION(S)	COST*
1/23/1996	Flood: Ice Jam	Ice jamming and overbank flooding impacted Emrich property and nearby trailer park. Town hired track-hoe for Rte. 168 bank stabilization.	Fulmer Creek Flood HMP (2004)/	Fulmer Creek	$775,000 (est.)
1/24/1996	Flood: Ice Jam	Newspapers reported the total Herkimer County damage estimates for 1/19/96 flooding at $2.9 million. Total Village of Mohawk estimates are $75,000 and Town of German Flatts is $600,000. Streets and basements flooded in Dolgeville causing $10,000 damage.	Fulmer Creek Flood HMP (2004)/ 2015 Draft County HMP/NOAA	Fulmer Creek, East Canada Creek, Dolgeville	$2,900,000
1/31/1996	Flood: Ice Jam	Newspapers reported that NCRS has approved a $30,000 grant for 280 feet of erosion control. Town of German Flatts share is $10,000.	Fulmer Creek Flood HMP (2004)/	Fulmer Creek	
2/2/1996	Flood	Minor flooding along the Mohawk River in Herkimer County when the river went 1' above flood stage at Little Falls. Roads at the industrial park near Little Falls were flooded. West Canada Creek flooded in southern Herkimer County from the Hinckley Reservoir downstream to the Mohawk River. Flooding was confined to low-lying areas. Minor flooding at McKeever from the Moose River.	2015 Draft County HMP/NOAA	Mohawk River, Moose River, West Canada Creek	
2/9/1996	Flood	USACE secures authorization of $300,000 for Flood Control Feasibility Studies.	Fulmer Creek & Steele Creek Flood HMPs (2004)	Fulmer Creek, Steele Creek	
2/21/1996	Flood: Ice Jam	Ice jam forms under Rte. 5S bridge but clears itself.	Fulmer Creek Flood HMP (2004)/	Fulmer Creek	
2/24-26/1996	Flood: Ice Jam	Ice jam on East Canada Creek causes flooding of streets and basements in Dolgeville.	2015 Draft County HMP/NOAA	Dolgeville, East Canada Creek	$8,000
2/28/1996	Flood: Ice Jam	An ice jam developed along the East Canada Creek at State Rte. 29 bridge in Dolgeville. Water backed into cellars of nearby buildings.	2015 Draft County HMP/NOAA	Dolgeville, East Canada Creek	$4,000
3/15/1996	Flood: Ice Jam	Ice jam forms under Main St. Rte. 5S bridges but clears itself.	Fulmer Creek Flood HMP (2004)/	Fulmer Creek	
4/22/1996	Severe Weather: High Wind	No additional information available.	2015 Draft County HMP/NOAA	Little Falls	$50,000
5/10/1996	Flood	Hazard grant obtained to remove RR bridge in lower reach, the site of frequent jams.	Moyer Creek Flood HMP (2004)	Moyer Creek	
5/10/1996	Severe Weather: High Wind	No additional information available.	2015 Draft County HMP/NOAA	Cedarville	$15,000
7/14/1996	Severe Weather: High Wind	No additional information available.	2015 Draft County HMP/NOAA	Newport	$4,000
7/23/1996	Flood	Reconstruction activities begin from Feb. 1994 storm with FEMA and NYS funds; reconstruction of Lock Street, Erie Street with full curbing and storm drains ($110,000 SEMO grant); reconstruction of	Fulmer Creek Flood HMP (2004)/	Fulmer Creek	

DATE	HAZARD	DESCRIPTION	SOURCE	LOCATION(S)	COST*
		northeastern retaining wall ($13,15[7] FEMA and State Funds).			
7/24/1996	Severe Weather: High Wind	No additional information available.	2015 Draft County HMP/NOAA	Herkimer	$5,000
8/27/1996	Flood	Stationary showers and thunderstorms with torrential downpours resulted in flash flooding at Ilion. Numerous streets flooded, including: East and West Main Streets, Central Avenue, and Otsego St., including side streets. Several homes and businesses were flooded. The Ilion Post Office, Lennox Brothers Pharmacy, and Remington Arms Credit Union sustained flood damage.	2015 Draft County HMP/NOAA	Ilion	$150,000
11/9/1996	Flood	Low pressure system produced 4-5" of rain over most of central New York, with resulting runoff causing minor flooding along the Mohawk River.	2015 Draft County HMP/NOAA	Mohawk River	
1/19/1997	Flood: Ice Jam	Small jam at Main St. bridge.	Steele Creek Flood HMP (2004)	Steele Creek	
1/21/1997	Severe Weather: Winter Weather	Light sleet and freezing rain cause treacherous driving conditions, resulting in school closures and traffic accidents. Route 28 in northern Herkimer County was closed from McKeever to Old Forge for part of the day.	2015 Draft County HMP/NOAA	Herkimer County	$35,000
2/22/1997	Severe Weather: High Wind	No additional information available.	2015 Draft County HMP/NOAA	Little Falls, Salisbury	$40,000
7/15/1997	Flood, Severe Weather: High Wind	Torrential rain across the northern portion of the Town of Herkimer caused flash flooding of several streams and road washouts. Frequent lightning strikes accompanied the storm, resulting in several fires.	2015 Draft County HMP/NOAA	Herkimer County	$70,000
7/17/1997	Severe Weather: High Wind	No additional information available.	2015 Draft County HMP/NOAA	Frankfort	$1,000
7/18/1997	Severe Weather: High Wind	Winds downed trees and wires in northern Herkimer County.	2015 Draft County HMP/NOAA	Big Moose, Old Forge	$14,000
8/27/1997	Severe Weather: High Wind	Thunderstorm winds downed trees, large limbs, and wires at Salisbury Center.	2015 Draft County HMP/NOAA	Salisbury	$6,000
1/7-11/1998	Flood	Moose River crested 2.5' over flood stage. Hinckley Dam overflow caused flooding on West Canada Creek, Spencer Creek, East Canada Creek.	2015 Draft County HMP/NOAA	Herkimer County	
1/9/1998	Severe Weather: Hail	A severe thunderstorm produced nickel-sized hail.	2015 Draft County HMP/NOAA	Little Falls	
4/2/1998	Flood	Rapid snowmelt caused the Hinckley Reservoir to overtop. 2' of water spilled over for several days.	2015 Draft County HMP/NOAA	Hinckley Reservoir, West Canada Creek	
5/19/1998	Severe Thunderstorm: High Wind	A silo collapsed in high winds in North Winfield,.	2015 Draft County HMP/NOAA	Dolgeville, Fairfield	$3,000

DATE	HAZARD	DESCRIPTION	SOURCE	LOCATION(S)	COST*
5/31/1998	Severe Weather: High Wind	Residential and commercial damage, widespread power outages in eastern NY.	2015 Draft County HMP/NOAA	Frankfort, Dolgeville, Litchfield/Cedarville	$80,000
6/20/1998	Flood	Thunderstorms with torrential rain produced flash flooding in southern Herkimer County. Roads washed out in the Towns of Schuyler and Newport. Livestock killed in Fairfield.	2015 Draft County HMP/NOAA	Schuyler, Newport, Fairfield	$6,000
6/26/1998	Severe Weather: High Wind	Wind damage caused downed trees and power lines, resulting in power outages.	2015 Draft County HMP/NOAA	Old Forge	$5,000
9/6/1998	Severe Weather: High Wind	Widespread wind damage occurred across multiple counties. Wind in Herkimer County, estimated at 78 mph, downed scores of trees and power lines, leaving many without power.	2015 Draft County HMP/NOAA	Old Forge	
9/7/1998	Severe Weather: Hail, High wind, Lightning	Frequent horizontal lightning and strong NW winds uprooted trees and took down electric and phone lines. Wind speed was estimated at 78 mph. Power was not fully restored for 4 days in some areas. Golf-ball sized hail damaged crops. A farm lost more than 100 acres of silo corn. Herkimer County declared disaster.	2015 Draft County HMP/ Newspaper articles	Herkimer County, Ilion, Fairfield, Little Falls	$25,000
9/26/1998	Severe Weather: High Wind	A microburst equivalent to an F1 tornado.	2015 Draft County HMP/NOAA	Columbia Center, Greater Mohawk Valley	$50,000
1/26/1999	Flood	Flooding occurred on the Moose River.	2015 Draft County HMP/NOAA	Moose River	
7/3/1999	Severe Weather: High Wind	Fallen trees.	2015 Draft County HMP/NOAA	West Winfield	$1,000
7/4/1999	Flood	Three storms brought from 5-7" of rain in < 12-hour period. Flash flooding in Ilion. Spencer and Tory Creeks overflowed in Mohawk. Roads and bridges were closed. People were reported trapped in floating cars and had to be rescued. Prospect St. Bridge and the Fifth Ave. Extension, which caused extensive flooding in 1996, were affected. A small home in Little Falls was badly damaged by a mudslide. A large gabion wall along Maltanner Creek in Middleville near Arnold's Restaurant collapsed. State of Emergency declared in Ilion and German Flatts. Mohawk River crested slightly over flood stage of 15'at Little Falls.	2015 Draft County HMP/NOAA	Ilion, Mohawk, Middleville, East Frankfort	$250,000
7/6/1999	Severe Weather: High Wind	A microburst with wind clocked at 90 mph struck Little Falls, where a barn imploded. Many downed trees and power lines.	2015 Draft County HMP/NOAA	Little Falls, Poland, Salisbury	$40,000
8/1/1999	Drought	Peak of the long-term drought in eastern NY that began in July of 1998. The 14-month period saw regional rainfall and melted snowfall at 80% of normal. At the	2015 Draft County HMP/NOAA	Herkimer County	

DATE	HAZARD	DESCRIPTION	SOURCE	LOCATION(S)	COST*
		Albany International Airport, 35.41" of water equivalent was recorded from July 1998 through August 1999, compared to the 30-year normal of 42.82". The long-term drought, combined with the heat of the summer, resulted in a drought warning and a declaration of agricultural disaster. The Mohawk Valley and Western Adirondacks were hard hit. The drought resulted in record low levels of the Mohawk River, numerous forest fires in the Adirondacks, wells going dry. Water restrictions implemented.			
1/23/2000	Flood: Ice Jam	Flood watch declaration, 6 ft. of ice buildup on creek bed	Steele Creek Flood HMP (2004)	Steele Creek	
2/26/2000	Flood	Moose River exceeded flood stage at McKeever by 4/10'.	2015 Draft County HMP/NOAA	Moose River	
4/9/2000	Flood	The Mohawk River exceeded flood stage at the Little Falls gauge, rising to 15.8', nearly a foot above flood stage.	2015 Draft County HMP/NOAA	Mohawk River	$50,000
4/13/2000	Flood	Widespread 1 – 2" rainfall in the Adirondack Watershed resulted in rapid snowmelt. The combination of rain and melting snow led to runoff, causing streams and rivers to rise above flood stage. The Moose River crested at 12.07' exceeding the 11.0' flood stage. West Canada Creek exceeded its 12.27' flood stage.	2015 Draft County HMP/NOAA	Moose River, West Canada Creek	
4/20/2000	Earthquake	The quake, measuring 3.7 on the Richter Scale, was the second in a week. The first measured 2.3. Both were believed to have their epicenter in the Town of Newcomb in Essex County. The quake was felt in 12 states and Canada. No injuries or major damage were reported. It was noted to be the strongest earthquake in the southern Adirondacks in nearly two decades. The largest earthquake to occur in New York State was in 1944, with a 5.8 on the Richter Scale and epicenter in Massena.	2015 Draft County HMP/ Newspaper articles	Adirondacks	
5/10/2000	Flood	The Mohawk River crested at 17.5' at Little Falls and 1.4' above the 280-foot flood stage at Tribes Hill. Torrential rains caused both the West and East Canada Creeks to overflow, washing out roads in western Herkimer County. Rain caused drainage systems in Middleville to back up, leading to flash flooding. A culvert under Park St. near Reservoir Rd in Herkimer became clogged with debris and resulted in runoff	2015 Draft County HMP/NOAA	Mohawk River, West Canada Creek, East Canada Creek, Little Falls, Middleville	$55,000

DATE	HAZARD	DESCRIPTION	SOURCE	LOCATION(S)	COST*
		flooding roads and basement. Some residents were forced to evacuate.			
5/13/2000	Flood, Severe Weather: High Wind	A swath of 2 – 4" rain fell in about a 36-hour period. Wind damage was noted in Ephratah with gusts est. to 70 mph downing streets; dime-sized hail. Roads closed in Middleville near Newport; State Rte. 28 closed between Herkimer and Middleville. West Canada Creek spilled over banks and washed away a bridge near Middleville. Street flooding noted in Dolgeville. Moyer Creek overtopped at Columbia Center; other roads washed out, pavement torn apart. State of Emergency declared for Herkimer County.	2015 Draft County HMP/NOAA	Dolgeville, Middleville, Newport, Fairfield	$200,000
6/2/2000	Severe Weather: High Wind	No additional information available.	2015 Draft County HMP/NOAA	Cedarville	$17,000
7/14/2000	Flood	County Rte. 51 (Ilion) closed due to flooding and mudslides. Roads were closed in the towns of Mohawk and Herkimer. Steel Creek overflowed its banks near the town of Ilion.	2015 Draft County HMP/NOAA	Steele Creek, Mohawk, Herkimer, Ilion	$75,000
8/1/2000	Severe Weather: High Wind	Downed trees and wires in Russia from 4" of rainfall. Fast-moving nearly 12" on Military Road in Poland.	2015 Draft County HMP/NOAA	Poland, Russia	$15,000
9/2/2000	Flood	Series of slow-moving thunderstorms produced brief heavy rainfall up to 4" in south-central Herkimer Co. Resulting flash flooding occurred on the streets of Herkimer. Carden Creek (East Herkimer) overflowed onto a nearby road and flooded nearby basements. Parts of State Rte. 5 in Little Falls were closed due to 2' of water and mud.	2015 Draft County HMP/NOAA	Herkimer, Carden Creek, Little Falls, Frankfort	$29,000
4/9/2001	Landslide	Excessive rains and rapid snowmelt produced a mudslide in the town of Mohawk, covering portions of Rte. 334 and blocking traffic.	2015 Draft County HMP/NOAA	German Flatts, Mohawk	$100,000
8/9/2001*	Severe Weather: High Wind	A large storm system caused widespread damage, including downed trees and power poles in Russia, Ohio, Norway, Poland, Fairfield, Salisbury and Dolgeville. In Poland, a 2/10 mi. wide swath of snapped trees and six snapped power poles was found on Rte. 8. Winds estimated at 60 to 80 mph. Hail with 2" diameter also reported. On Rte. 28 (Newport), damage occurred from straight line winds at same estimated speed. One tree struck a house and car.	2015 Draft County HMP/NOAA **Same information listed in the DRAFT plan as 8/2/1993*	Russia, Ohio, Norway, Poland, Fairfield, Salisbury, Dolgeville, Fairfield	$65,000
4/30-5/6/2002	Earthquake	The largest earthquake since 1983 shook Hamilton Co. with a force of 5.1 on the Richter Scale. Caused	2015 Draft County HMP/ Newspaper article	Clinton & Hamilton Counties	

DATE	HAZARD	DESCRIPTION	SOURCE	LOCATION(S)	COST*
		"unprecedented damage" to roadways in Clinton Co. No information about impact in Herkimer County.			
5/28/2002	Flood	Scattered thunderstorm produced torrential rainfall in Herkimer County, with local amounts of up to 3' accumulated near Old Forge, causing flash flooding and numerous road wash-outs.	2015 Draft County HMP/NOAA	Old Forge	$10,000
5/31/2002	Severe Weather: High Wind	No additional information available.	2015 Draft County HMP/NOAA	Ilion	$9,000
6/27/2002	Severe Weather: High Wind	Thunderstorm winds knocked down trees and power lines in Newport.	2015 Draft County HMP/NOAA	Newport	$20,000
8/16/2002	Severe Weather: Hail	Storms produced wind damage in Little Falls, bringing down large limbs.	2015 Draft County HMP/NOAA	Little Falls	$5,000
1/24/2003	Flood: Ice Jam	An ice jam on Steele Creek near Ilion caused water to briefly exceed bank full. The jam was specifically located at the Phillip St. bridge, causing some basements to take in water. The jam broke up with no further problems.	2015 Draft County HMP/NOAA	Ilion	
2/2/2003	Flood: Ice Jam	An ice jam formed on West Canada Creek near Rte. 5. More ice settled under the jam, causing it to lift and build in place. Low-lying fields were flooded upstream of the jam.	2015 Draft County Hazard Mitigation Plan/USACE/ CRREL	Herkimer	
5/1/2003	Severe Weather: High Wind	Scattered wind damage reported: a wire was blown down to Rte. 28 in Old Forge; shingles were ripped from a home south of Mohawk; and a barn was destroyed in Mohawk.	2015 Draft County HMP/NOAA	Mohawk, Old Forge	$50,000
8/6/2003	Flood	For the fourth straight day, torrential rains brought flooding with 4" of rain between Mohawk and Ilion. Tory and Spencer Creeks overflowed, flood water reached to the car hoods and filled basements in both towns. State of Emergency declared in Mohawk. Most flooding occurred in the area between the Holt Brothers car dealership on West Main St. near Petrie Ave., and Warren Rd.	2015 Draft County HMP/NOAA	Ilion, Mohawk	$25,000
3/3/2004	Flood: Ice Jam	A jam on the Mohawk River at Herkimer moved out and headed downstream. No additional information available.	2015 Draft County HMP Plan/USACC, CRREL	Herkimer	
4/29/2004	Severe Weather: Hail	A single thunderstorm cell produced large hail ranging from nickel to quarter-size near Beaver River.	2015 Draft County HMP/NOAA	Beaver River	
5/24/2004	Flood	The Mohawk River exceeded flood stage by 1.25' at the Lake Delta gauge. Peak lake level at the gauge on the upper Mohawk River was the highest ever recorded, estimated by USGS as a 100-year event. West Canada	2015 Draft County HMP/NOAA	Mohawk River, West Canada Creek, Ilion, Middleville	

DATE	HAZARD	DESCRIPTION	SOURCE	LOCATION(S)	COST*
		Creek left its banks in low-lying areas between Newport and Herkimer, topped flood stage by 1.15' at the Hinckley gauge. Flooding occurred along Acme Rd. in Ilion. Maltanner Creek overflowed.			
6/9/2004	Severe Weather: High Wind	Numerous trees down across the town of West Winfield; one car was flattened by a large tree.	2015 Draft County HMP/NOAA	West Winfield	$5,000
6/29/2004	Flood	Flood waters washed a Dolgeville restaurant on Main St. into East Canada Creek, washed out a bridge on Otsego St. near the high school. In Mohawk, Fulmer Creek flooded, causing evacuation of population using pay loaders. A trailer park was evacuated due to flooding of the West Canada Creek. Other impacted areas include Manheim, Newport, Salisbury, Stark, and Inghams Mills.	2015 Draft County HMP/NOAA	West Canada Creek, East Canada Creek, Fulmer Creek, Dolgeville, Manheim, Middleville, Newport, Salisbury, Stark, Mohawk,	
7/1/2004	Severe Weather: Hail	Nickel- and penny-sized hail observed in Poland; quarter sized hail covered the ground 2 miles south of McKeever.	2015 Draft County HMP/NOAA	Poland	
11/28/2004	Flood	Water across Rte. 5S in Frankfort.	2015 Draft County HMP/NOAA	Frankfort	
11/17/2005	Flood	Hinckley Reservoir began to flood, remaining above flood stage until early morning of 11/18/2005. Water crested at 1227.31', .31' above flood stage.	2015 Draft County HMP/NOAA	Hinckley Reservoir	
6/28-29/2006	Flood	Creek Road residents were evacuated for fear that Robinson Rd. Pond dam would break. Steele Creek was the third bridge in Ilion to collapse. Mohawk River was 4.5' above flood stage, closing the Thruway from Syracuse to Schenectady. 3,000+ National Grid customers were without power and two power substations were washed away. In June 2007, a newspaper article noted that the storm was the largest in 100 years and indicated problems such as creek walls in German Flatts and landslides west of Little Falls still needed to be addressed. Flooding on Main St. in Dolgeville resulted in evacuations with water level to the bottom of the Route 29 bridge. Building (restaurant), including power and gas lines, washed downstream into East Canada Creek at Dolgeville. A house was lifted off its foundation in Little Falls, due to a mud slide. Rtes. 5 and 168 were closed due to flooding and mudslides.	2015 Draft County HMP/ Newspaper articles/NOAA	Herkimer County, Mohawk River, Steele Creek, East Canada Creek	$20 million (est.)
7/4/2006	Flood	47 of Erie's 52 locks closed.	2015 Draft County HMP/NOAA	Erie Canal	
7/20/2006	Severe Weather: High Wind	Law enforcement personnel reported trees and wire blown down over a widespread area near Ilion.	2015 Draft County HMP/NOAA	Ilion	

DATE	HAZARD	DESCRIPTION	SOURCE	LOCATION(S)	COST*
7/22-24/2006	Flood	State of Emergency declared for southern Herkimer Co. due to widespread flash flooding. Fulmer Creek flooded Route 168. Mobile home park evacuated. 200 people were evacuated from lion, Dolgeville, Mohawk and Frankfort. Sandbags placed throughout the Town and City of Little Falls. The road to Fischer Elementary School was washed away, as were portions of Rtes. 51 and 168. Herkimer Co. received 3.9" of rain. Steele Creek caused the 3rd St. bridge in Ilion to collapse. Rte. 28s was closed. In German Flatts, Rte. 5s was flooded and covered with branches and debris. Flash flooding in Middleville.	2015 Draft County HMP/NOAA	Herkimer County, Little Falls, Dolgeville, Mohawk, German Flatts, Ilion, Frankfort	
7/25/2006	Severe Weather: High Wind	Trees and power lines were blown down along Rte. 29A near Red School House Rd. near Salisbury Center, with pea-sized hail reported.	2015 Draft County HMP/NOAA	Salisbury	
11/7/2006	Landslide	A mudslide along Rte. 5s, caused by heavy rains, destroyed a house.	2015 Draft County HMP/ Newspaper article	Little Falls	
11/16/2006	Flood	East Canada Creek at Dolgeville exceeded flood stage of 10.0' and crested at 10.05' Rte. 5 near Little Falls and Rte. 5S near German Flatts closed due to flooding. Two mudslides closed Rte. 28 between Newport and Middleville.	2015 Draft County HMP/NOAA	West Canada Creek, East Canada Creek, Dolgeville, Little Falls, Middleville, Newport, Grant	
11/17/2006	Landslide, Flood	Seventy-five feet of bank on the side of the highway opposite West Canada Creek slid across the road, taking five telephone poles, bending the guardrail and making the road impassable. DOT put a detour in place. Sections of German St. in Herkimer were blocked off as water rose to a foot.	2015 Draft County HMP/ Newspaper article	Middleville, Newport	
11/26/2006	Flood	West Canada Creek at Kast Bridge exceeded flood stage	2015 Draft County HMP/NOAA	West Canada Creek	
3/15/2007	Flood	Roads and bridges were closed in Newport, in the Ilion Gorge, and near State Road 16.	2015 Draft County HMP/NOAA	Herkimer County, Ilion, Dolgeville	
4/24/2007	Flood	Snowmelt caused moderate flooding at Hinckley Reservoir, which exceeded flood stage by 1.11'.	2015 Draft County HMP/NOAA	West Canada Creek, Hinckley	
5/31/2007	Severe Weather: Hail	Penny-sized hail reported during a thunderstorm in Russia.	2015 Draft County HMP/NOAA	Russia	
8/25/2007	Severe Thunderstorm: High Wind	Numerous trees and wires were reported down in Russia and West Winfield.	2015 Draft County HMP/NOAA	Russia, West Winfield	
9/13/2007	Drought	Severe drought conditions developed over the previous six weeks across northern Herkimer Co. 90-day rainfall deficits of 8" to 12" in the Adirondack Region per Palmer Drought Severity. Streamflow	2015 Draft County HMP/NOAA	Herkimer County	

DATE	HAZARD	DESCRIPTION	SOURCE	LOCATION(S)	COST*
		dropped to lower 10 percentile of recorded flows. Shallow wells and farm ponds ran dry, low reservoir halted recreational activities and limited hydropower. Conditions ended 10/1/2007 after heavy rains.			
6/10/2008	Severe Weather: High Wind	Trees and wires reported down near Old Forge.	2015 Draft County HMP/NOAA	Old Forge	
6/22/2008	Severe Weather: High Wind	Peak wind gusts of 60 mph were estimated near Dolgeville.	2015 Draft County HMP/NOAA	Dolgeville	
7/20/2008	Severe Thunderstorm: High Wind	Trees and wires were reported down on Russia Road.	2015 Draft County HMP/NOAA	Poland	
7/7/2009	Severe Weather: High Wind	Thunderstorm downed trees onto wires.	2015 Draft County HMP/NOAA	Mohawk	
7/11/2009	Severe Weather: High Wind	Thunderstorm downed trees.	2015 Draft County HMP/NOAA	Little Falls	
7/16/2009	Severe Weather: High Wind	Thunderstorm winds downed a tree on Rte. 5.	2015 Draft County HMP/NOAA	Herkimer	
8/18/2009	Severe Weather: High Wind	Wires reported down on Spencer and Cline Streets.	2015 Draft County HMP/NOAA	Dolgeville	
8/29/2009	Flood	Jordanville Road closed from flash flooding in southern Herkimer County. A basement wall collapsed and a driveway washed out on Shoemaker Rd. in Mohawk.	2015 Draft County HMP/NOAA	Herkimer County, Mohawk	
12/25/2009	Severe Weather: Winter Weather	Ice accumulations of up to 4/10" and brisk winds created power outages, mainly in areas above 1,000' elevation. Most outages in Dolgeville, but towns of Manheim, Salisbury and Frankfort were also affected.	2015 Draft County HMP/NOAA	Herkimer County, Dolgeville, Manheim, Salisbury, Frankfort	
1/25/2010	Flood: Ice Jam	A large ice jam was reported on the East Canada Creek up to the Route 29 bridge in Dolgeville.	2015 Draft County HMP/NOAA	Dolgeville	
7/31/2010	Flood	Moderate residential, government, and commercial damage	2015 Draft County HMP/ Internet Article	Middleville	
4/26/2011	Flood	Severe storm system, widespread flooding and damage to homes, businesses, and infrastructure (DR-1993).	2015 Draft County HMP/NOAA	Herkimer County	$500,000+
8/26/2011	Flood	Remnants of Hurricane Irene battered the county, leaving the Village of Herkimer under water as well as many other jurisdictions (DR-4020).	2015 Draft County HMP/NOAA	Herkimer County	
9/9/2011	Flood	Remnants of Tropical Storm Lee, widespread flooding and damage to homes, businesses, and infrastructure (DR-4031).	2015 Draft County HMP/NOAA	Herkimer County	
6/26/2011	Flood	Severe storm system, widespread flooding and damage to homes, businesses, and infrastructure (DR-4129).	2015 Draft County HMP/NOAA	Herkimer County	
5/8/2014	Flood	Severe storm system, widespread flooding and damage to homes, businesses, and infrastructure (DR-4180).	2015 Draft County HMP/NOAA	Herkimer County	$500,000+

** Costs estimated in some cases.*

C. Critical Facilities and Infrastructure

Table A2-c: Herkimer County Critical Facilities and Infrastructure

Name	Type	Jurisdiction	Address/Intersection
Sky-Ranch	Airport	Little Falls (T)	
Mohawk Aviation Center	Airport	German Flatts (T)	
Kermizian Airport	Airport	Ohio	
Old Forge	Airport	Webb	
Richfield	Airport	Warren	
Mohawk Air Park	Airport	Schuyler	
Frankfort-Highland	Airport	Frankfort (T)	
Tgp-245	Airport	Winfield (T)	
Millers Mills Community Baptist Church	Place of Worship	Columbia (T)	647 Millers Mills Road
Calvary Baptist Church	Place of Worship	Frankfort (V)	406 Ingersoll Avenue
Jordanville Federated Church	Place of Worship	Warren (T)	209 Main Street
Temple Beth Joseph	Place of Worship	Herkimer (V)	327 North Prospect Street
First Baptist Church	Place of Worship	Herkimer (V)	135 North Washington Street
First Baptist Church	Place of Worship	Ilion (V)	8 Second Street
The Federated Church	Place of Worship	West Winfield (V)	452 East Main Street
Inghams Mills Baptist Church	Place of Worship	Manheim (T)	443 Inghams Mills Road
First Baptist Church	Place of Worship	Newport (V)	7497 Main Street
Saint Bartholomew Church	Place of Worship	Webb (T)	103 Crosby Boulevard
Mohawk Valley Christian Academy	Private School	Little Falls (C)	156 W Monroe Street
Herkimer High School	Public School	Little Falls (C)	801 West German Street
Herkimer Elementary School	Public School	Herkimer (T)	255 Gros Boulevard
Barringer Road Elementary School	Public School	Ilion (V)	326 Barringer Road
Ilion Junior Senior High School	Public School	Ilion (V)	1 Golden Bomber Drive
James A Green High School	Public School	Dolgeville (V)	38 Slawson Street
Dolgeville Elementary School	Public School	Dolgeville (V)	38 Slawson Street
Dolgeville Middle School	Public School	Dolgeville (V)	38 Slawson Street
Benton Hall Academy	Public School	Little Falls (C)	1 Ward Square
Little Falls High School	Public School	Little Falls (T)	1 High School Road
Little Falls Middle School	Public School	Little Falls (T)	1 High School Road
Remington Elementary School	Public School	Ilion (V)	77 East North Street

Name	Type	Jurisdiction	Address/Intersection
Poland Junior Senior High School	Public School	Poland (V)	74 Cold Brook Street
Poland Elementary School	Public School	Poland (V)	74 Cold Brook Street
West Canada Valley Elementary School	Public School	Newport (T)	5447 State Route 28
West Canada Valley Junior Senior High School	Public School	Newport (T)	5447 State Route 28
Frankfort Schuyler Central High School	Public School	Frankfort (V)	605 Palmer Street
Frankfort Schuyler Elementary School	Public School	Frankfort (T)	610 Reese Road
West Frankfort Elementary School	Public School	Frankfort (T)	160 School Lane
Frankfort Schuyler Middle School	Public School	Frankfort (V)	605 Palmer Street
Town of Webb School	Public School	Webb (T)	3002 Main Street
Mount Markham Elementary School	Public School	Winfield (T)	500 Fairground Road
Mount Markham Middle School	Public School	West Winfield (V)	500 Fairground Road
Mount Markham Senior High School	Public School	Winfield (T)	500 Fairground Road
Harry M Fisher Elementary School	Public School	Mohawk (V)	10 Fisher Avenue
Gregory B Jarvis Junior Senior Hs	Public School	Mohawk (V)	28 Grove Street
Owen D Young Central School	Public School	Stark (T)	2316 State Route 80
Herkimer Fulton Hamilton Otsego BOCES	Public School	Herkimer (T)	352 Gros Boulevard
Herkimer County Community College	College	Little Falls (C)	100 Reservoir Road
Herkimer County BOCES-Practical Nursing Program	College	Herkimer (T)	295 W Main Street
BIN: 2263570	Bridge	Webb (T)	Snowmobile Trail/Moose River
BIN: 3307680	Bridge	German Flatts (T)	Spinnerville Road/Steele Creek
BIN: 7715300	Bridge	Webb (T)	Adirondack Scenic RR/Moose River
BIN: 7715310	Bridge	Webb (T)	Adirondack Scenic RR/Moose River
BIN: 7715320	Bridge	Webb (T)	Adirondack Scenic RR/Moose River
BIN: 7715360	Bridge	Webb (T)	Adirondack Scenic RR/Moose River
BIN: 7715370	Bridge	Webb (T)	Adirondack Scenic/Beaver River
BIN: 3307950	Bridge	Ohio (T)	Gray Wilmurt Road/West Canada Creek
BIN: 1051350	Bridge	Stark (T)	Route 168/Ohisa Creek
BIN: 3307740	Bridge	Manheim (T)	Ingham Mills Road/East Canada Creek
BIN: 7714380	Bridge	Herkimer (V)	CSX RR/Over 922b 922b23011003
BIN: 1078410	Bridge	Little Falls (C)	Route 167/Route 5
BIN: 3308080	Bridge	Salisbury (T)	Emmonsburg Road/East Canada Creek
BIN: 2204590	Bridge	Danube (T)	Tibbitts Road/Nowadaga Creek
BIN: 7020240	Bridge	Webb (T)	Adirondack Scenic RR/28 28 23081097
BIN: 1004720	Bridge	Cold Brook (V)	Route 8/Cold Brook
BIN: 1004730	Bridge	Cold Brook (V)	Route 8/Cold Brook

Name	Type	Jurisdiction	Address/Intersection
BIN: 1004740	Bridge	Ohio (T)	Route 8/Cold Brook
BIN: 1004750	Bridge	Ohio (T)	Route 8/West Canada Creek
BIN: 1004760	Bridge	Ohio (T)	Route 8/West Canada Creek
BIN: 1020020	Bridge	Mohawk (V)	Route 28/Fulmer Creek
BIN: 1020079	Bridge	Herkimer (V)	Mohawk Street, Route 28/Route 28
BIN: 1020090	Bridge	Herkimer (T)	Route 28/Hydraulic Canal
BIN: 1020110	Bridge	Middleville (V)	Route 8/West Canada Creek
BIN: 1020120	Bridge	Middleville (V)	Route 28/Maltanner Creek
BIN: 1020130	Bridge	Fairfield (T)	Route 28/Kenyon Creek
BIN: 1020140	Bridge	Newport (T)	Route 28/White Creek
BIN: 1020160	Bridge	Russia (T)	Route 28/Mill Creek
BIN: 1020230	Bridge	Webb (T)	Route 28/Moose River
BIN: 1020250	Bridge	Webb (T)	Route 28/Middle Branch, Moose River
BIN: 1020260	Bridge	Webb (T)	Route 28/Moose River
BIN: 1020520	Bridge	Middleville (V)	Route 29/Maltanner Creek
BIN: 1051170	Bridge	Dolgeville (V)	Route 29/East Canada Creek
BIN: 3311070	Bridge	Russia (T)	S. State Street/West Canada Creek
BIN: 7050300	Bridge	Manheim (T)	CSX RR/River Road
BIN: 7051210	Bridge	Frankfort (T)	Former Western NY & Buffalo RR/Highway
BIN: 7307650	Bridge	Frankfort (T)	County Road 37/CSX RR-Amtrak
BIN: 7714340	Bridge	Frankfort (T)	Albany Ex-NYC RR/CR 37-Old SH 5s
BIN: 7714390	Bridge	Herkimer (V)	CSX RR/Dewey Avenue
BIN: 7714400	Bridge	Herkimer (V)	CSX RR/Dump Road
BIN: 4308230	Bridge	Herkimer (V)	Exit 30 from I - I9/Erie Barge Canal
BIN: 4423010	Bridge	Danube (T)	Service Road/Erie Barge Canal
BIN: 4423040	Bridge	Schuyler (T)	Railroad Street/CSX RR/Amtrak
BIN: 4423060	Bridge	Schuyler (T)	Dyke Rd. (Co Rd. 37)/NYS Barge Canal
BIN: 4423070	Bridge	Ohio (T)	North Lake Road/North Lake
BIN: 4423081	Bridge	German Flatts (T)	Interstate 9 westbound/Route 5s
BIN: 4423082	Bridge	Herkimer (V)	Interstate 90 eastbound/Route 5s
BIN: 4423090	Bridge	Schuyler (T)	CSX RR/NYS Barge Canal
BIN: 5002419	Bridge	Herkimer (T)	Interstate 90/Over Highway 5
BIN: 5002781	Bridge	Danube (T)	Interstate 90/Over Highway 5s
BIN: 5002782	Bridge	Danube (T)	Interstate 90/Over Highway 5s
BIN: 5510001	Bridge	Danube (T)	Interstate 90 westbound/Exit 29a Ramp

Name	Type	Jurisdiction	Address/Intersection
BIN: 5510002	Bridge	Danube (T)	Interstate 90 eastbound/Exit 29a Ramp
BIN: 5510010	Bridge	Danube (T)	Ramp to from I-90 Route16/Route 5s
BIN: 5516010	Bridge	Danube (T)	County Road 188 River Road/I-90
BIN: 5516021	Bridge	Danube (T)	Interstate 90 westbound/Depot Road
BIN: 5516022	Bridge	Danube (T)	Interstate 90 eastbound/Depot Road
BIN: 5516030	Bridge	Little Falls (T)	Paradise Road (CR 66)/Interstate 90
BIN: 5516049	Bridge	Herkimer (V)	Interstate 90/Exit 30 Ramp
BIN: 5516051	Bridge	Schuyler (T)	Interstate 90/Watkins Road (CR 211)
BIN: 5516060	Bridge	Schuyler (T)	Interstate 90/Bridenbaker Creek
BIN: 5516071	Bridge	Schuyler (T)	Interstate 90 westbound/CR 53 (Millers Grove)
BIN: 5516072	Bridge	Schuyler (T)	Interstate 90 eastbound/ CR 53 (Millers
BIN: 5516080	Bridge	Schuyler (T)	County Road 11 (Carder Lane)/Interstate
BIN: 5516091	Bridge	Schuyler (T)	Interstate 90 westbound/Sterling Creek
BIN: 5516092	Bridge	Schuyler (T)	Interstate 90 eastbound/Sterling Creek
BIN: 5516100	Bridge	Schuyler (T)	Interstate 90/Burch Creek
BIN: 5516110	Bridge	Schuyler (T)	Interstate 90/Knapp Creek
BIN: 5516120	Bridge	Schuyler (T)	Interstate 90/Woods Creek
BIN: 5516130	Bridge	Schuyler (T)	Dyke Road (CR 37)/Interstate 90
BIN: 5516140	Bridge	Schuyler (T)	Interstate 90/Budlong Creek
BIN: 7020081	Bridge	Herkimer (V)	CSX RR/State Road 28
BIN: 7020082	Bridge	Herkimer (V)	CSX RR/State Road 28
BIN: 3307850	Bridge	Newport (T)	White Creek Road/White Creek
BIN: 3307860	Bridge	Norway (T)	Elm Tree Road/Big Bill Brook
BIN: 3307880	Bridge	Norway (T)	Newport-Gray Road/Big Bill Brook
BIN: 3307890	Bridge	Norway (T)	County Road 111/Big Bill Brook
BIN: 3307900	Bridge	Norway (T)	Black Creek Road/Black Creek
BIN: 3307910	Bridge	Ohio (T)	Gray Wilmurt Road/Black Creek
BIN: 3307920	Bridge	Ohio (T)	Gray Wilmurt Road/Black Creek (N.
BIN: 3307930	Bridge	Ohio (T)	Gray Wilmurt Road/Mounts Creek
BIN: 3307940	Bridge	Ohio (T)	Gray Wilmurt Road/Fourmile Brook
BIN: 3307960	Bridge	Ohio (T)	County Road 73/Black Creek
BIN: 3307970	Bridge	Ohio (T)	Santmire Road/Mounts Creek
BIN: 3307980	Bridge	Russia (T)	Gravesville Road/Mill Creek
BIN: 3307990	Bridge	Russia (T)	County Road 47/Mill Creek
BIN: 3308010	Bridge	Russia (T)	County Road 113/Prospect Power Channel

Name	Type	Jurisdiction	Address/Intersection
BIN: 3308040	Bridge	Russia (T)	Stormy Hill Road/Black Creek
BIN: 3308050	Bridge	Salisbury (T)	County Road 164/Spruce Creek
BIN: 3308060	Bridge	Salisbury (T)	County Road 164/Cold Brook
BIN: 3308090	Bridge	Salisbury (T)	County Road 221/Spruce Creek
BIN: 3308120	Bridge	Schuyler (T)	Cosby Manor Road/Wood Creek
BIN: 3308140	Bridge	Schuyler (T)	County Road 180/Sterling Creek
BIN: 3308150	Bridge	Schuyler (T)	Mowers Road/Sterling Creek
BIN: 3308160	Bridge	Schuyler (T)	Hawthorne Road/Sterling Creek
BIN: 3308190	Bridge	Winfield (T)	North Winfield Road/North Winfield Creek
BIN: 2204750	Bridge	Ohio (T)	Farr Road/Black River
BIN: 2204760	Bridge	Ohio (T)	Farr Road/Twin Lakes Stream
BIN: 2204780	Bridge	Salisbury (T)	Kingsley Road/Spruce Creek
BIN: 2204790	Bridge	Salisbury (T)	Fairview Road/Spruce Creek
BIN: 2204810	Bridge	Salisbury (T)	Red Mill Road/Spruce Creek
BIN: 2204820	Bridge	Salisbury (T)	Bingham Mill Road/Trammel Creek
BIN: 2204830	Bridge	Salisbury (T)	Bingham Mill Road/Trammel Creek
BIN: 2204840	Bridge	Salisbury (T)	Bingham Mill Road/Trammel Creek
BIN: 2204850	Bridge	Salisbury (T)	James Road/Trammel Creek
BIN: 2204860	Bridge	Schuyler (T)	Spain Gulf Road/Sterling Creek
BIN: 2204890	Bridge	Stark (T)	Moyer Road/Otsquago Creek
BIN: 2204900	Bridge	Warren (T)	Hopkins Rd/Ocquionis Creek
BIN: 2204920	Bridge	Webb (T)	Bullock Road Over Beaver River
BIN: 2204930	Bridge	Webb (T)	Greenbridge Rd./ Moose River (Middle Branch)
BIN: 2204940	Bridge	Webb (T)	Rondaxe Road/Moose River (North
BIN: 2204950	Bridge	Webb (T)	Covey Road/Outlet South Bay
BIN: 2204980	Bridge	Winfield (T)	Doyle Road/North Winfield Circle
BIN: 2204990	Bridge	Winfield (T)	Jones Road/Unadilla River
BIN: 2205000	Bridge	Winfield (T)	Sale Road/Unadilla River (Branch)
BIN: 1020550	Bridge	Salisbury (T)	Highway 29/Spruce Creek
BIN: 1026470	Bridge	West Winfield (V)	Highway 51/Unadilla River
BIN: 1026490	Bridge	Ilion (V)	Highway 51/Steele Creek
BIN: 1030870	Bridge	Stark (T)	Highway80/Otsquago Creek
BIN: 1030880	Bridge	Stark (T)	Highway 80/Otsquago Creek
BIN: 1030890	Bridge	Stark (T)	Highway 80/Otsquago Creek
BIN: 1030900	Bridge	Stark (T)	Highway 80/Otsquago Creek

Name	Type	Jurisdiction	Address/Intersection
BIN: 1030910	Bridge	Stark (T)	Highway 80/Otsquago Creek
BIN: 1038940	Bridge	Manheim (T)	Highway 167/Crum Creek
BIN: 1038950	Bridge	Manheim (T)	Highway 167/Gillett Creek
BIN: 1038960	Bridge	German Flatts (T)	Highway 168/Fulmer Creek
BIN: 1038970	Bridge	German Flatts (T)	Highway 168/Fulmer Creek
BIN: 1038980	Bridge	German Flatts (T)	Highway 168/Fulmer Creek
BIN: 1038990	Bridge	German Flatts (T)	Highway 168/Fulmer Creek
BIN: 1039000	Bridge	German Flatts (T)	Highway 168/Fulmer Creek
BIN: 1039010	Bridge	German Flatts (T)	Highway 168/Fulmer Creek
BIN: 1039040	Bridge	Stark (T)	Highway 168/Otsquago Creek Tributary
BIN: 1039060	Bridge	Frankfort (T)	Highway 171/Moyer Creek
BIN: 1039070	Bridge	Frankfort (T)	Highway 171/Moyer Creek
BIN: 1039080	Bridge	Frankfort (T)	Highway 171/Moyer Creek
BIN: 1039090	Bridge	Frankfort (T)	Highway 171/Moyer Creek
BIN: 1039100	Bridge	Frankfort (T)	Highway 171/Moyer Creek
BIN: 1039110	Bridge	Frankfort (T)	Highway 171/Moyer Creek
BIN: 1039120	Bridge	Frankfort (T)	Highway 171/Moyer Creek
BIN: 1039130	Bridge	Frankfort (T)	Highway 171/Moyer Creek
BIN: 1051190	Bridge	Frankfort (T)	Dyke Road/Highway 5s
BIN: 1051200	Bridge	Frankfort (T)	Highway 5s/Ferguson Creek (West
BIN: 1051220	Bridge	Frankfort (T)	Mucky Run Road/Highway 5s
BIN: 1051230	Bridge	Frankfort (T)	Higby Road/Highway 5s
BIN: 1051241	Bridge	Frankfort (T)	Highway 5s/Moyer Creek
BIN: 1051242	Bridge	Frankfort (T)	Highway 5s/Moyer Creek
BIN: 1051250	Bridge	Frankfort (T)	Highway 171/Highway 5s
BIN: 1051261	Bridge	Frankfort (T)	Highway 5s/County Road 81 (Reese Road)
BIN: 1051262	Bridge	Frankfort (T)	Highway 5s/County Road 81 (Reese Road)
BIN: 1051340	Bridge	German Flatts (T)	Highway 168/Fulmer Creek
BIN: 1051360	Bridge	Stark (T)	Highway 168/Otsquago Creek
BIN: 1053750	Bridge	Ohio (T)	Highway 365/Finch Pond Outlet
BIN: 1002360	Bridge	Schuyler (T)	Highway 5/Budlong Creek
BIN: 1002370	Bridge	Schuyler (T)	Highway 5/Knapp Brook
BIN: 1002380	Bridge	Schuyler (T)	Highway 5/Interstate 90
BIN: 1002390	Bridge	Schuyler (T)	Highway 5/Sterling Creek
BIN: 1002400	Bridge	Schuyler (T)	Highway 5/Bridenbecker Creek

Name	Type	Jurisdiction	Address/Intersection
BIN: 1002429	Bridge	Herkimer (T)	Highway 5/CSX RR
BIN: 1002430	Bridge	Herkimer (V)	Highway 5/Hydraulic Canal
BIN: 1002440	Bridge	Herkimer (V)	Highway 5/West Canada Creek
BIN: 1002450	Bridge	Manheim (T)	Highway 5/Crum Creek
BIN: 1002720	Bridge	Ilion (V)	Main Street/Steele Creek
BIN: 1002730	Bridge	Mohawk (V)	West Main Street/Fulmer Creek
BIN: 1002760	Bridge	German Flatts (T)	Highway 5s/Interstate 90
BIN: 1002770	Bridge	German Flatts (T)	Highway 5s/Interstate 90
BIN: 1002790	Bridge	Danube (T)	Highway 5s/Nowadaga Creek
BIN: 1004710	Bridge	Russia (T)	Highway 8/Cold Brook
BIN: 5516052	Bridge	Schuyler (T)	Interstate 90 eastbound/Watkins Road (CR
BIN: 2263750	Bridge	Herkimer (V)	East Smith Street/Hydraulic Canal
BIN: 1039050	Bridge	Fairfield (T)	Highway 169/Stony Creek
BIN: 2255540	Bridge	Little Falls (C)	South Ann Street/Mohawk River
BIN: 3307600	Bridge	Danube (T)	County Road 102/Nowadaga Creek
BIN: 1015840	Bridge	Winfield (T)	Highway 20/Unadilla River
BIN: 5038912	Bridge	Little Falls (T)	Interstate 90 westbound/Highway 167
BIN: 1078760	Bridge	Herkimer (T)	Highway 28/Unnamed Creek
BIN: 2204740	Bridge	Ohio (T)	Harvey Bridge Road/West Canada Creek
BIN: 3308200	Bridge	Winfield (T)	North Winfield Road/North Winfield Creek
BIN: 3308220	Bridge	Webb (T)	South Shore Road/Twin Pond Outlet
BIN: 3366130	Bridge	Frankfort (T)	County Road 37/Ferguson Creek
BIN: 3366140	Bridge	Frankfort (T)	Bleeker Street Extension/Ferguson Creek
BIN: 3366150	Bridge	Winfield (T)	County Road 141/North Winfield Creek
BIN: 3366940	Bridge	Frankfort (T)	County Road 37/Old State Hwy 5s
BIN: 3369210	Bridge	Salisbury (T)	Emmonsburg Road/Carr Creek
BIN: 4020060	Bridge	Herkimer (V)	Highway 28/State Barge Canal
BIN: 4050290	Bridge	Little Falls (C)	Highway 169/River Road
BIN: 405118A	Bridge	Herkimer (T)	Highway 51/CSX RR/Amtrak
BIN: 405118B	Bridge	Herkimer (T)	Highway 51/CSX RR/Amtrak
BIN: 4051180	Bridge	Ilion (V)	Highway 51/Highway 5
BIN: 2255530	Bridge	Little Falls (C)	Hansen Avenue/Mohawk River
BIN: 2255580	Bridge	Frankfort (T)	Brice Road/Moyer Creek
BIN: 2263590	Bridge	Russia (T)	Black Creek Road/Black Creek
BIN: 2263610	Bridge	Salisbury (T)	Fairview Road/Spruce Creek

Name	Type	Jurisdiction	Address/Intersection
BIN: 2263620	Bridge	Frankfort (T)	Old State Route 5s/Ferguson Creek
BIN: 2263710	Bridge	Frankfort (V)	Hilltop Road/ Over Moyer Creek
BIN: 2263720	Bridge	Frankfort (V)	West Main Street/Moyer Creek
BIN: 2263730	Bridge	Herkimer (V)	East Steele Street/Hydraulic Canal
BIN: 2263760	Bridge	Herkimer (V)	Eastern Street/Hydraulic Canal
BIN: 2266820	Bridge	Herkimer (V)	West German Street/Bellinger Brook
BIN: 2266830	Bridge	Herkimer (V)	Maple Grove Avenue/Bellinger Brook
BIN: 2266840	Bridge	Ilion (V)	Richfield Street/Steele Creek
BIN: 2266870	Bridge	Ilion (V)	Second Street/Steele Creek
BIN: 2266880	Bridge	Little Falls (C)	William Street/Mohawk River
BIN: 2267890	Bridge	Herkimer (T)	Eatonville Road/North Creek
BIN: 2267970	Bridge	Russia (T)	Wheelertown Road/Little Black Creek
BIN: 2268960	Bridge	Salisbury (T)	Military Road/Beaver Creek
BIN: 2269130	Bridge	Ohio (T)	Atwood Lake Road/Four Mile Creek
BIN: 2269140	Bridge	Ohio (T)	Atwood Lake Road/Four Mile Creek
BIN: 3307530	Bridge	Columbia (T)	County Road 85/Unadilla River
BIN: 3307540	Bridge	Danube (T)	Carrying County Road 136/Unknown
BIN: 3307550	Bridge	Danube (T)	Johnny Cake Road/Unknown Creek
BIN: 3307570	Bridge	Danube (T)	Newville Road/Nowadaga Creek
BIN: 3307580	Bridge	Danube (T)	County Road 102/Nowadaga Creek
BIN: 3307630	Bridge	Frankfort (T)	County Road 13/Ferguson Creek
BIN: 3307640	Bridge	Frankfort (T)	County Road 13/Ferguson Creek
BIN: 3307660	Bridge	Schuyler (T)	County Road 37/Mohawk River
BIN: 3307690	Bridge	German Flatts (T)	County Road 68/Fulmer Creek
BIN: 3307700	Bridge	Herkimer (T)	West End Road/West Canada Creek
BIN: 3307720	Bridge	Manheim (T)	County Road 246/Crum Creek
BIN: 3307730	Bridge	Manheim (T)	Dockey Road/Crum Creek
BIN: 3307760	Bridge	Manheim (T)	Brockett Road/Gillett Creek
BIN: 3307770	Bridge	Manheim (T)	Peckville Road/Gillett Creek
BIN: 3307790	Bridge	Newport (T)	Newport Road/Shedd Brook
BIN: 3307800	Bridge	Newport (T)	Newport Road/Shedd Brook
BIN: 3307810	Bridge	Newport (T)	Newport Road/Wright Creek
BIN: 3307820	Bridge	Newport (T)	Newport Road/Wright Creek
BIN: 3307830	Bridge	Newport (V)	Old State Road/West Canada Creek
BIN: 3307840	Bridge	Poland (V)	Old State Road/West Canada Creek

Name	Type	Jurisdiction	Address/Intersection
BIN: 1069820	Bridge	Litchfield (T)	Route 51/Steele Creek
BIN: 1069830	Bridge	Litchfield (T)	Route 51/Steele Creek
BIN: 1069840	Bridge	Litchfield (T)	Route 51/Steele Creek
BIN: 1069850	Bridge	Litchfield (T)	Route 51/Steele Creek
BIN: 1073590	Bridge	German Flatts (T)	Route 168/Flatt Creek
BIN: 1073630	Bridge	Frankfort (T)	Route 5s/West Main Street/Acme Road
BIN: 1073640	Bridge	Ilion (V)	Route 5s/Steele Creek
BIN: 1074020	Bridge	Ilion (V)	Route 5s/Highway 51
BIN: 1074520	Bridge	Mohawk (V)	Route 5s/Fulmer Creek
BIN: 1094230	Bridge	Frankfort (T)	Route 5s/McGowan Creek
BIN: 2204570	Bridge	Columbia (T)	Casler Road/Unadilla Lake Out
BIN: 2204610	Bridge	Fairfield (T)	Farrington Road/City Brook
BIN: 2204620	Bridge	Herkimer (T)	Shells Bush Road/West Canada Creek
BIN: 2204630	Bridge	Herkimer (T)	Fiddletown Road/North Creek
BIN: 2204660	Bridge	Newport (T)	Woodchuck Hill Rd/White Creek
BIN: 2204670	Bridge	Ohio (T)	Tea Cup Street/Mill Creek
BIN: 2204680	Bridge	Ohio (T)	Amberg Road/Mill Creek
BIN: 2204690	Bridge	Ohio (T)	Billy Hamlin Road/Mill Creek
BIN: 2204700	Bridge	Ohio (T)	Reinhardt Road/Black Creek
BIN: 2204730	Bridge	Ohio (T)	Haskell Road/Mill Creek
BIN: 3307590	Bridge	Danube (T)	County Road 102/Nowadaga Creek
BIN: 3307620	Bridge	Fairfield (T)	County Road 7/North Creek
BIN: 4038920	Bridge	Little Falls (C)	Route 167/West Mill St
BIN: 3307750	Bridge	Manheim (T)	Murphy Road/Crum Creek
BIN: 3308130	Bridge	Schuyler (T)	Shortlots Road/Sterling Creek
BIN: 5038911	Bridge	Little Falls (T)	Interstate 90 eastbound/State Road 167
BIN: 4423050	Bridge	Schuyler (T)	Moss Road/Erie Barge Canal
BIN: 7050320	Bridge	Manheim (T)	CSX RR/River Road
BIN: 3308210	Bridge	Webb (T)	Big Moose Road/Moose River
BIN: 1020560	Bridge	Salisbury (T)	Route 29/Spruce Creek
BIN: 2266860	Bridge	Ilion (V)	Third Street/Steele Creek
Birnie Bus Service Inc.	Bus Station	Herkimer (V)	613 Middleville Road
YMCA of the Mohawk Valley	Day Care Center	Frankfort (T)	
YMCA of the Mohawk Valley	Day Care Center	German Flatts (T)	
YMCA of the Mohawk Valley	Day Care Center	Mohawk (V)	

Name	Type	Jurisdiction	Address/Intersection
YMCA of the Mohawk Valley	Day Care Center	German Flatts (T)	
YMCA of the Mohawk Valley	Day Care Center	Little Falls (C)	
YMCA of the Mohawk Valley	Day Care Center	Mohawk (V)	
Strawberry Patch Learning	Day Care Center	Poland (V)	
Step by Step Childcare	Day Care Center	Herkimer (T)	
Mohawk Reformed Church	Day Care Center	Mohawk (V)	
MVCAA, Inc. Mt. Markham Head Start	Day Care Center	West Winfield (V)	
MVCAA, Inc. Little Falls Head Start	Day Care Center	Little Falls (C)	
MVCAA, Inc. Ilion Head Start	Day Care Center	Ilion (V)	
MVCAA, Inc. Herkimer PERC Head Start	Day Care Center	Herkimer (V)	
MVCAA, Inc. Herkimer Head Start	Day Care Center	Herkimer (V)	
MVCAA Herkimer BOCES Head Start	Day Care Center	Herkimer (T)	
Little Tykes Daycare	Day Care Center	Dolgeville (V)	
Little Plumbs Daycare	Day Care Center	Russia (T)	
Kiddie Kare Day Care	Day Care Center	Warren (T)	
Herkimer Reformed Church	Day Care Center	Herkimer (V)	
HCCC Child Care Center	Day Care Center	Herkimer (V)	
Federated Church of West Winfield, NY - Community	Day Care Center	West Winfield (V)	
Discovery Island Child Care	Day Care Center	Herkimer (T)	
A Little Mommy & Daddy Daycare	Day Care Center	Ilion (V)	
Chlorination Treatment Plant	Water Treatment Plant	Frankfort (T)	
Chlorination Treatment Plant	Water Treatment Plant	Danube (T)	
Water Softener Plant	Water Treatment Plant	Manheim (T)	
Chlorination Treatment Plant	Water Treatment Plant	Manheim (T)	
Chlorination Treatment Plant	Water Treatment Plant	German Flatts (T)	
Polyphosphate Injection	Water Treatment Plant	Schuyler (T)	
Chlorination Treatment Plant	Water Treatment Plant	Schuyler (T)	
Chlorination Treatment Plant	Water Treatment Plant	Little Falls (T)	
Water Treatment Plant	Water Treatment Plant	Webb (T)	
Water Treatment Plant	Water Treatment Plant	Webb (T)	
Cold Brook Filtration Plant	Water Treatment Plant	Salisbury (T)	
Cold Brook Filtration Plant	Water Treatment Plant	Salisbury (T)	
Cold Brook Slotted Screen	Water Treatment Plant	Salisbury (T)	
Industrial Dr. Treatment Plant	Water Treatment Plant	Frankfort (V)	
Industrial Dr. Treatment Plant	Water Treatment Plant	Frankfort (V)	

Name	Type	Jurisdiction	Address/Intersection
Well 1 Treatment Plant	Water Treatment Plant	German Flatts (T)	
Well 2 Treatment Plant	Water Treatment Plant	German Flatts (T)	
Gravesville Treatment Plant	Water Treatment Plant	Russia (T)	
Water Treatment Plant @ HCCC	Water Treatment Plant	Herkimer (V)	
Water Treatment Plant @ HCCC	Water Treatment Plant	Herkimer (V)	
Ilion Slow Sand Water Treatment Plant	Water Treatment Plant	German Flatts (T)	
Ilion Slow Sand Water Treatment Plant	Water Treatment Plant	German Flatts (T)	
Ilion Slow Sand Water Treatment Plant	Water Treatment Plant	German Flatts (T)	
Ilion Slow Sand Water Treatment Plant	Water Treatment Plant	German Flatts (T)	
Ilion Slow Sand Water Treatment Plant	Water Treatment Plant	German Flatts (T)	
Ilion Slow Sand Water Treatment Plant	Water Treatment Plant	German Flatts (T)	
Ilion Slow Sand Water Treatment Plant	Water Treatment Plant	German Flatts (T)	
Spruce Lake Slow Sand Filter	Water Treatment Plant	Salisbury (T)	
Aeration Weirs	Water Treatment Plant	Little Falls (C)	
Military Road (Junction) Treatment Plant	Water Treatment Plant	Salisbury (T)	
Middleville Water Treatment Plant	Water Treatment Plant	Fairfield (T)	
Emergency Well Treatment Plant	Water Treatment Plant	Mohawk (V)	
Mohawk Village Treatment Plant	Water Treatment Plant	Mohawk (V)	
Skunk Hills Treatment Plant	Water Treatment Plant	Newport (V)	
Storage Facility Treatment Plant For Furman Springs	Water Treatment Plant	Newport (V)	
Old Forge Water Treatment Plant -North Street	Water Treatment Plant	Webb (T)	
Old Forge Water Treatment Plant -North Street	Water Treatment Plant	Webb (T)	
Old Forge Water Treatment Plant -North Street	Water Treatment Plant	Webb (T)	
Poland Treatment Plant	Water Treatment Plant	Poland (V)	
Vanhornesville Water Treatment Plant	Water Treatment Plant	Stark (T)	
Water Treatment Plant	Water Treatment Plant	West Winfield (V)	
Pumphouse-Loop D	Water Treatment Plant	Webb (T)	
Pumphouse-Loop A	Water Treatment Plant	Webb (T)	
Water Treatment Plant	Water Treatment Plant	Litchfield (T)	
Water Treatment Plant	Water Treatment Plant	Litchfield (T)	
Water Treatment Plant	Water Treatment Plant	Litchfield (T)	
Treatment Facilities	Water Treatment Plant	Newport (T)	
Treatment Facilities	Water Treatment Plant	Newport (T)	
Water Treatment Plant	Water Treatment Plant	Frankfort (T)	
Water Softener	Water Treatment Plant	Litchfield (T)	

Name	Type	Jurisdiction	Address/Intersection
Chlorination Building	Water Treatment Plant	Litchfield (T)	
Water Treatment Plant	Water Treatment Plant	Litchfield (T)	
Water Treatment Plant	Water Treatment Plant	Litchfield (T)	
Water Treatment Plant	Water Treatment Plant	Litchfield (T)	
Treatment Plant1	Water Treatment Plant	Manheim (T)	
Treatment Plant (Chlorination)	Water Treatment Plant	Columbia (T)	
Treatment Plant (Chlorination)	Water Treatment Plant	Columbia (T)	
Chlorination Treatment Plant	Water Treatment Plant	Russia (T)	
Chlorination Treatment Plant	Water Treatment Plant	Schuyler (T)	
Chlorination Treatment Plant	Water Treatment Plant	Winfield (T)	
Chlorination Treatment Plant	Water Treatment Plant	Salisbury (T)	
Reverse Osmosis Treatment	Water Treatment Plant	Danube (T)	
Particulate Filters	Water Treatment Plant	Danube (T)	
Degassifier	Water Treatment Plant	Danube (T)	
Water Treatment Plant/ Chlorination	Water Treatment Plant	Danube (T)	
Chlorine Injection	Water Treatment Plant	Webb (T)	
Chlorination Facilities	Water Treatment Plant	Webb (T)	
Treatment	Water Treatment Plant	Danube (T)	
Treatment	Water Treatment Plant	Danube (T)	
Entry Point – Water Treatment Plant	Water Treatment Plant	Fairfield (T)	
Treatment Plant (CL2 and Carbon Filter)	Water Treatment Plant	Little Falls (T)	
Treatment Plant (CL2 and Carbon Filter)	Water Treatment Plant	Little Falls (T)	
Treatment Plant (CL2 and Carbon Filter)	Water Treatment Plant	Little Falls (T)	
Treatment Plant (CL2 and Carbon Filter)	Water Treatment Plant	Little Falls (T)	
Chlorination Treatment Plant	Water Treatment Plant	Schuyler (T)	
Treatment Plant - Polyphosphate	Water Treatment Plant	Schuyler (T)	
Treatment Plant	Water Treatment Plant	Herkimer (T)	
Treatment Plant	Water Treatment Plant	Herkimer (T)	
Treatment Plant	Water Treatment Plant	Herkimer (T)	
Ultraviolet Disinfection	Water Treatment Plant	Webb (T)	
Basement Treatment Plant	Water Treatment Plant	Salisbury (T)	
Basement Treatment Plant	Water Treatment Plant	Salisbury (T)	
Basement Treatment Plant	Water Treatment Plant	Salisbury (T)	
Basement Treatment Plant	Water Treatment Plant	Salisbury (T)	
Treatment Plant #1	Water Treatment Plant	Norway (T)	

Name	Type	Jurisdiction	Address/Intersection
Treatment Plant #2	Water Treatment Plant	Norway (T)	
Softener/Chlorinator	Water Treatment Plant	Columbia (T)	
Softener/Chlorinator	Water Treatment Plant	Columbia (T)	
Softener/Chlorinator	Water Treatment Plant	Columbia (T)	
Softener/Chlorinator	Water Treatment Plant	Webb (T)	
Treatment Plant	Water Treatment Plant	Salisbury (T)	
Treatment Plant	Water Treatment Plant	Salisbury (T)	
Treatment Plant	Water Treatment Plant	Salisbury (T)	
Water Treatment Plant 001	Water Treatment Plant	Norway (T)	
Chlorination	Water Treatment Plant	Herkimer (T)	
Water Softener	Water Treatment Plant	Warren (T)	
Ultraviolet Disinfection Unit	Water Treatment Plant	Warren (T)	
Ultraviolet Disinfection Unit	Water Treatment Plant	Manheim (T)	
Chlorinator	Water Treatment Plant	Litchfield (T)	
Treatment Plant	Water Treatment Plant	Webb (T)	
Treatment Plant	Water Treatment Plant	Webb (T)	
Treatment Plant	Water Treatment Plant	Webb (T)	
Hinckley Calcium Hypo and Meter Station	Water Treatment Plant	Russia (T)	
Treatment Plant – Prospect Soda Ash Tower	Water Treatment Plant	Russia (T)	
Treatment Plant – Prospect Soda Ash Tower	Water Treatment Plant	Russia (T)	
Old Forge Volunteer Fire Department	EMS Station	Webb (T)	116 Fulton Street
Big Moose Fire Department	EMS Station	Webb (T)	1449 Big Moose Road
Eagle Bay Fire Department	EMS Station	Webb (T)	5516 State Route 28
Ilion Fire Department	EMS Station	Ilion (V)	1 Central Avenue
West Winfield Volunteer Fire Department	EMS Station	West Winfield (V)	373 West Main Street
Frankfort Volunteer Fire Department	EMS Station	Frankfort (V)	158 South Litchfield Street
Salisbury (T) Volunteer Fire Department	EMS Station	Salisbury (T)	2549 State Highway 29
Kuyahoora Volunteer Ambulance Corps	EMS Station	Poland (V)	39 Case Street
Rural/Metro Corporation - Herkimer	EMS Station	Herkimer (V)	219 West Steele Street
Little Falls Fire Department	EMS Station	Little Falls (C)	659 East Main Street
Cedarville Fire Department	EMS Station	Litchfield (T)	960 State Highway 51
Frankfort Hill Fire Department	EMS Station	Frankfort (T)	2235 Albany Road
Herkimer Fire Department	EMS Station	Herkimer (V)	125 North Washington Street
Frankfort Center Fire Department Rescue	EMS Station	Frankfort (T)	799 Center Road
East Herkimer Volunteer Fire Department	EMS Station	Herkimer (T)	193 Main Road

Name	Type	Jurisdiction	Address/Intersection
Schuyler Volunteer Fire Company Inc., Main Station	EMS Station	Schuyler (T)	120 Newport Road
Mohawk Valley Ambulance Corps	EMS Station	Mohawk (V)	15 State Highway 5s
Salisbury (T) and Stratford Volunteer Ambulance Service Station 1	EMS Station	Salisbury (T)	843 State Highway 29a
Salisbury (T) and Stratford Volunteer Ambulance Service Station 2	EMS Station	Dolgeville (V)	75 North Helmer Avenue
Columbia Litchfield Fire District	EMS Station	Litchfield (T)	960 State Highway 51
Schuyler Volunteer Fire Company Inc., Substation	EMS Station	Schuyler (T)	3597 State Highway 5
Big Moose Fire Department	Fire Station	Webb (T)	1449 Big Moose Road
Old Forge Volunteer Fire Department	Fire Station	Webb (T)	116 Fulton Street
Eagle Bay Fire Department	Fire Station	Webb (T)	5516 State Route 28
Schuyler Volunteer Fire Company Inc., Substation	Fire Station	Schuyler (T)	3597 State Highway 5
Van Hornesville Fire Department Station 2	Fire Station	Stark (T)	2225 State Route 80
Poland Fire Department Station 1	Fire Station	Poland (V)	11 Case Street
Newport Fire Department	Fire Station	Newport (V)	7370 Main Street
West Winfield Volunteer Fire Department	Fire Station	West Winfield (V)	373 West Main Street
Frankfort Volunteer Fire Department	Fire Station	Frankfort (V)	158 South Litchfield Street
Middleville Volunteer Fire Dept./E W Corey Hose Co.	Fire Station	Middleville (V)	41 North Main Street
Salisbury (T) Volunteer Fire Department	Fire Station	Salisbury (T)	2549 State Highway 29
Poland Fire Department Station 2	Fire Station	Ohio (T)	2853 State Highway 8
Frankfort Hill Fire Department	Fire Station	Frankfort (T)	2235 Albany Road
Mohawk Fire Department	Fire Station	Mohawk (V)	28 Columbia Street
Little Falls Fire Department	Fire Station	Little Falls (C)	659 East Main Street
Dolgeville Volunteer Fire Department	Fire Station	Dolgeville (V)	20 South Helmer Avenue
Cedarville Fire Department	Fire Station	Litchfield (T)	960 State Highway 51
Herkimer Fire Department	Fire Station	Herkimer (V)	125 North Washington Street
Frankfort Center Fire Department Rescue	Fire Station	Frankfort (T)	799 Center Road
East Herkimer Volunteer Fire Department	Fire Station	Herkimer (T)	193 Main Road
Schuyler Volunteer Fire Company Inc., Main Station	Fire Station	Schuyler (T)	120 Newport Road
Salisbury (T) Volunteer Fire Department Station 2	Fire Station	Salisbury (T)	2031 State Route 29
Columbia Litchfield Fire District	Fire Station	Litchfield (T)	960 State Highway 51
Van Hornesville Fire Department Station 1	Fire Station	Stark (T)	591 Wagner Hill Road
Ilion Fire Department	Fire Station	Ilion (V)	1 Central Avenue
Remington Arms Company Fire Brigade	Fire Station	Ilion (V)	14 Hoefler Avenue
Andrew Klisch Dam	Dam	Warren (T)	Tributary Oquianis Creek

Name	Type	Jurisdiction	Address/Intersection
Station 245 Dam	Dam	Winfield (T)	Tributary, Unadilla River
Palumbo Wetland Dam	Dam	Warren (T)	Tributary, Susquehanna River
West Winfield Dam	Dam	West Winfield (V)	Unadilla River
Van Hornesville Dam	Dam	Stark (T)	OTSQUAGO CREEK
Chepatchet Mill Dam	Dam	Winfield (T)	UNADILLA RIVER
Carl Gogol Recreational Pond Dam	Dam	Columbia (T)	Tributary Oquianis Creek
Richard Young Wildlife Pond Dam	Dam	Stark (T)	Tributary, Ohisa Creek
Carl Gogol Farm Pond Dam	Dam	Columbia (T)	Tributary Oquianis Creek
John Miseneck Pond Dam	Dam	Warren (T)	Tributary, Fulmer Creek
Millers Mills Dam	Dam	Columbia (T)	Unadilla River
Raymond Gifford Wildlife Marsh Pond Dam	Dam	Warren (T)	Tributary Oquianis Creek
(129-0726)	Dam	Litchfield (T)	Steele Creek
Flat Creek Pond Dam	Dam	Columbia (T)	Flat Creek
Bubb's Pond Dam	Dam	Columbia (T)	Tributary, Steele Creek
Ilion Reservoir #3 Dam	Dam	German Flatts (T)	Tributary, Mohawk River
Ilion Reservoir #2 Dam	Dam	German Flatts (T)	Steele Creek
Oliver Decker Farm Pond Dam	Dam	German Flatts (T)	Tributary, Trout Creek
Jackson Brothers Wildlife Marsh Dam	Dam	Litchfield (T)	Tributary, Moyer Creek
Ilion Reservoir #1 Dam	Dam	German Flatts (T)	Tributary, Steele Creek
(128-0700)	Dam	Ilion (V)	Tributary, Steele Creek
Allen Bullet Pond Dam	Dam	Litchfield (T)	Moyer Creek
(128-0698)	Dam	Ilion (V)	Steele Creek
Remington Arms Co Dam	Dam	Ilion (V)	Tributary, Mohawk River
Lock E-16 Dam At Rocky Rift	Dam	Manheim (T)	Erie Canal-Mohawk River
Lock E-18 Dam Herkimer	Dam	Mohawk (V)	Erie Canal Mohawk River
John Leitz Pond Dam	Dam	Frankfort (T)	Tributary, Moyer Creek
Frankfort Reservoir Dam	Dam	Frankfort (T)	Tributary, Mohawk River
East Canada Lake Dam	Dam	Manheim (T)	East Canada Creek
John Wolanin Wildlife Marsh Pond Dam	Dam	Frankfort (T)	Tributary, Moyer Creek
East Canada Creek Dam	Dam	Manheim (T)	East Canada Creek
State Diverting Dams (North & South)	Dam	Little Falls (C)	Mohawk River
Lock E-17	Dam	Little Falls (C)	Mohawk River
Middle Falls Dam	Dam	Little Falls (C)	Mohawk River
Gilbert Knitting Mills Dam	Dam	Little Falls (C)	Mohawk Rover
Frankfort Recreational Dams #1 & #2	Dam	Schuyler (T)	Mohawk River

Name	Type	Jurisdiction	Address/Intersection
Graffenburg Reservoir Dam	Dam	Frankfort (T)	Tributary, Starch Factory Creek
Camp Ballou Dam	Dam	Frankfort (T)	Tributary, Ferguson Creek
Power Canal Diversion Dam	Dam	Herkimer (T)	West Canada Creek
Little Falls District Reservoir Dam	Dam	Little Falls (C)	Tributary, Mohawk River
Little Falls Reservoir Dam	Dam	Little Falls (C)	Tributary, Mohawk River
Dolgeville Dam	Dam	Dolgeville (V)	East Canada Creek
(142-0585a)	Dam	Dolgeville (V)	East Canada Creek
Pape Swimming Pond Dam	Dam	Schuyler (T)	Wood Creek
Beaver Brook Site #1 Dam	Dam	Dolgeville (V)	Beaver Brook
Daniel Green Company Dam	Dam	Dolgeville (V)	East Canada Creek
Dolgeville Rod & Gun Club Pond Dam	Dam	Manheim (T)	Tributary, Ransom Creek
George R Cogar Pond Dam	Dam	Schuyler (T)	Tributary, Sterling Creek
George R Cogar Recreation Pond Dam	Dam	Schuyler (T)	Tributary, Sterling Creek
(142-1195)	Dam	Salisbury (T)	Spruce Creek
(142-0600)	Dam	Salisbury (T)	Spruce Creek
(142-0601)	Dam	Salisbury (T)	Spruce Creek
(142-0602)	Dam	Salisbury (T)	Spruce Creek
(142-0603)	Dam	Salisbury (T)	Spruce Creek
(142-0622)	Dam	Salisbury (T)	Spruce Creek
Beaver Creek Dam	Dam	Salisbury (T)	Beaver Creek Dam
Middleville Reservoir Dam	Dam	Fairfield (T)	Tributary, West Canada Creek
Mang Brook Reservoir Dam	Dam	Salisbury (T)	Mang Brook
Spruce Lake Dam	Dam	Salisbury (T)	Spruce Creek
Dolgeville Reservoir Dam	Dam	Salisbury (T)	Cold Brook
Unpermitted Dam Salisbury (T)	Dam	Salisbury (T)	Tributary, Mohawk
(157-0576)	Dam	Salisbury (T)	East Canada Creek
Newport Dam	Dam	Newport (V)	West Canada Creek
Newport Reservoir Dam	Dam	Newport (T)	Tributary, West Canada Creek
(157-0590)	Dam	Salisbury (T)	Trammel Creek
Kehler Dam	Dam	Salisbury (T)	Mill Creek
G Clifford Pond Dam	Dam	Norway (T)	Tributary, White Creek
Klondike Reservoir Dam	Dam	Salisbury (T)	Tributary, Spruce Creek
Christian Lake Dam	Dam	Salisbury (T)	Tributary, Trammel Creek
Morrison's Hatchery Dam	Dam	Russia (T)	Tributary, West Canada Creek
Gravesville Pond Dam	Dam	Russia (T)	Mill Creek

Name	Type	Jurisdiction	Address/Intersection
Nelson Folts Pond Dam	Dam	Russia (T)	Cold Brook
Black Creek Reservoir Dam	Dam	Norway (T)	Black Creek
Hodge Farm Pond Dam	Dam	Russia (T)	Tributary, West Canada Creek
Herkimer Reservoir Dam	Dam	Russia (T)	Mill Creek
Nine Mile Feeder Dam	Dam	Russia (T)	West Canada Creek
Glass Dam C	Dam	Russia (T)	Tributary, West Canada Creek
Glass Dam D	Dam	Russia (T)	Tributary, West Canada Creek
Glass Dam E	Dam	Russia (T)	Tributary, West Canada Creek
Trenton Falls Dam	Dam	Russia (T)	West Canada Creek
John V Owens Recreational Pond Dam	Dam	Russia (T)	Tributary, West Canada Creek
Jerseyfield Lake Dam	Dam	Salisbury (T)	Mill Creek
Prospect Dam	Dam	Russia (T)	West Canada Creek
Hinckley Dam	Dam	Russia (T)	West Canada Creek
Clinton Etlmer Pond Dam	Dam	Ohio (T)	Terrific Springs Brook
(141-0753)	Dam	Ohio (T)	West Canada Creek
Lake Gay Dam	Dam	Russia (T)	Kreskern Brook
(141-0754)	Dam	Ohio (T)	West Canada Creek
Lake Charlotte Dam	Dam	Russia (T)	Kreskern Brook
Lake Margarite Dam	Dam	Russia (T)	Kreskern Creek
Finches Pond Lower Dam	Dam	Ohio (T)	Conklin Brook
Finches Pond Upper Dam	Dam	Ohio (T)	Conklin Brook
Maple Lake Dam	Dam	Russia (T)	Muskrat Brook
South Lake Dam	Dam	Ohio (T)	South Branch Black River
North Lake A Dam (Spillway)	Dam	Ohio (T)	North Lake Outlet
North Lake C Dam	Dam	Ohio (T)	Tributary, Black River
North Lake B Dam	Dam	Ohio (T)	Tributary, Black River
Sand Lake Dam	Dam	Webb (T)	Grindstone Creek
Bisby Lake Dam #3	Dam	Webb (T)	
Woodhull Lake Dam	Dam	Webb (T)	Tributary, Sand Lake
Second Bisby Lake Dam	Dam	Webb (T)	Tributary, Black River
Canachagala Inlet Dam	Dam	Ohio (T)	Canachagala Brook
Canachagala Outlet Dam	Dam	Ohio (T)	Canachagala Brook
Little Moose Lake Dam	Dam	Webb (T)	Little Moose Lake Outlet
LAKE EASKA	Dam	Webb (T)	
Thendara Dam	Dam	Webb (T)	M. Branch Moose River

Name	Type	Jurisdiction	Address/Intersection
Joslyn's Dam	Dam	Ohio (T)	Limerun Creek
Old Forge Reservoir Dam	Dam	Webb (T)	M. Branch Moose River
Lake Serene Dam	Dam	Webb (T)	Beaver Brook
Rondaxe Lake Dam	Dam	Webb (T)	N. Branch Moose River
Big Moose Lake Dam	Dam	Webb (T)	Moose River
Woods Lake Dam	Dam	Webb (T)	Twitchell Creek Tributary
Moshier Dam	Dam	Webb (T)	Beaver River
Stillwater Reservoir Dam	Dam	Webb (T)	Beaver River
(138-0565)	Dam	Webb (T)	Oswegatchie River Tributary
Little Falls Hospital	Hospital	Little Falls (C)	140 Burwell St
Intermodal Terminal	Rail Terminal	Herkimer (V)	
Intermodal Terminal	Rail Terminal	Mohawk (V)	
Little Falls City Police Department	Police Station	Little Falls (C)	659 East Main Street
Frankfort Village Police Department	Police Station	Frankfort (V)	110 Railroad Street
Herkimer County Community College - Campus	Police Station	Herkimer (V)	100 Reservoir Road
Herkimer County Sheriff's Office	Police Station	Herkimer (V)	320 North Main Street
Webb Town Police Department	Police Station	Webb (T)	3139 State Route 28
Ilion Village Police Department	Police Station	Ilion (V)	55 1st Street
Dolgeville Village Police Department	Police Station	Dolgeville (V)	41 North Main Street
Frankfort Town Police Department	Police Station	Frankfort (V)	140 South Litchfield Street
Herkimer Village Police Department	Police Station	Herkimer (V)	120 Green Street
Mohawk Village Police Department	Police Station	Mohawk (V)	28 Columbia Street
New York State Police Troop D Zone 1 - Herkimer	Police Station	Herkimer (T)	126 Gros Boulevard
New York State Police Troop D Zone 1 - Poland	Police Station	Poland (V)	11 Case Street
New York State Police Troop D Zone 1 - West	Police Station	West Winfield (V)	179 South Street
New York State Police Troop D Zone 1 - Old Forge	Police Station	Webb (T)	3139 State Route 28
Herkimer County Emergency Operations Center	EOC	Herkimer (V)	71 Reservoir Road
Town of Webb	Municipal Hall	Webb (T)	183 Park Ave
Town of Ohio	Municipal Hall	Ohio (T)	234 Nellis Rd
Town of Russia	Municipal Hall	Poland (V)	Route 28
Village of Poland	Municipal Hall	Poland (V)	9 Case Street
Town of Norway	Municipal Hall	Norway (T)	3013 Military Road
Village of Newport	Municipal Hall	Newport (V)	7370 Main Street
Village of Middleville	Municipal Hall	Middleville (V)	3 South Main Street
Town of Fairfield	Municipal Hall	Fairfield (T)	1218 Hardscrabble Road

Name	Type	Jurisdiction	Address/Intersection
Town of Salisbury (T)	Municipal Hall	Salisbury (T)	126 State Route 29a
Village of Dolgeville	Municipal Hall	Dolgeville (V)	41 North Main Street
Town of Manheim	Municipal Hall	Manheim (T)	6356 State Route 167
City of Little Falls	Municipal Hall	Little Falls (C)	659 Main Street
Town of Little Falls	Municipal Hall	Little Falls (T)	478 Flint Avenue Extension
Town of Danube	Municipal Hall	Danube (T)	438 Creek Road
Town of Stark (T) (T)	Municipal Hall	Stark (T)	Elmwood Road
Town of Columbia	Municipal Hall	Columbia (T)	Columbia Center Road
Town of German Flatts (T)	Municipal Hall	Mohawk (V)	66 East Main Street
Village of Mohawk	Municipal Hall	Mohawk (V)	28 Columbia Street
Village of Ilion	Municipal Hall	Ilion (V)	49 Morgan Street
Village of West Winfield	Municipal Hall	West Winfield (V)	79 South Street
Town of Winfield	Municipal Hall	Winfield (T)	306 Stone Road
Town of Litchfield	Municipal Hall	Litchfield (T)	Cedarville Road
Village of Frankfort	Municipal Hall	Frankfort (V)	110 Railroad Street
Town of Frankfort	Municipal Hall	Frankfort (V)	140 South Litchfield Street
Town of Schuyler	Municipal Hall	Schuyler (T)	2090 State Route 5
Town of Herkimer	Municipal Hall	Herkimer (V)	114 North Prospect Street
Village of Herkimer	Municipal Hall	Herkimer (V)	120 Green Street
Village of Cold Brook	Municipal Hall	Cold Brook (V)	529 Main Street
Town of Newport	Municipal Hall	Newport (T)	2788 Newport Road
Town of Warren	Municipal Hall	Warren (T)	383 Hogsback Road
Van Allen Nursing Home	Nursing Home	Little Falls (C)	755 East Monroe Street
Valley Health Services	Nursing Home	Herkimer (V)	690 West German Street
Mohawk Valley Health Care Center	Nursing Home	Ilion (V)	99 6th Avenue
Folts Homes	Nursing Home	Herkimer (V)	104 North Washington Street
The Country Manor	Nursing Home	Herkimer (T)	4338 State Route 28
Middleville Rest Home	Nursing Home	Middleville (V)	19 North Main Street
Folts-Claxton Manor	Nursing Home	Herkimer (V)	104 North Washington Street
Mohawk Homestead	Nursing Home	Mohawk (V)	62 East Main Street
Smith Television Of New York License Holdings, Inc.	Antenna	Fairfield (T)	Kallett Hill Davis Road
CNG Transmission Corporation	Antenna	Frankfort (T)	Higby Road, 6.4 KM SE
Roser Communications Network, Inc.	Antenna	German Flatts (T)	Shoemaker Hill
Roser Communications Network, Inc.	Antenna	Stark (T)	Routes 204 & 95
Galaxy Utica Licensee LLC	Antenna	Little Falls (C)	341 S. Second Street

Name	Type	Jurisdiction	Address/Intersection
Central New York News, Inc.	Antenna	German Flatts (T)	Bell Hill Road, S. of Ilion
New Cingular Wireless PCS, LLC	Antenna	Norway (T)	Newport Gray Road
New Cingular Wireless PCS, LLC	Antenna	German Flatts (T)	Shoemaker Hill Road
Corney's Electronics, Inc.	Antenna	Little Falls (T)	Oregon Rd
Crown Atlantic Company, LLC	Antenna	Manheim (T)	543 Ritter Road
American Towers, Inc.	Antenna	Warren (T)	3 MI NE
Tennessee Gas Pipeline Company	Antenna	Winfield (T)	Burgess Road 2 MI SE
Crown Atlantic Company, LLC	Antenna	Litchfield (T)	Roberts Road
JPJ Electronic Communications, Inc.	Antenna	Frankfort (T)	657 DUTCH HILL ROAD
Crown Atlantic Company, LLC	Antenna	Herkimer (T)	930 WESTWOOD DRIVE
American Towers, Inc.	Antenna	Danube (T)	Route 5S (091932)
General Communications Consulting Corp.	Antenna	Frankfort (T)	Higby Road
SBA Towers, Inc.	Antenna	Schuyler (T)	345 Millers Grove Road
SBA Towers, Inc.	Antenna	Little Falls (C)	1961 State Route 5S
Antenna	Antenna	Frankfort (T)	NAD27 Coordinates 43-02-15 N X 75-11-45 W
M. Celenza Communications	Antenna	Danube (T)	North side of Route 5s, Little Falls
M. Celenza Communications	Antenna	Danube (T)	North side of Route 5s, Little Falls
M. Celenza Communications	Antenna	Danube (T)	North side of Route 5s, Little Falls
M. Celenza Communications	Antenna	Danube (T)	North side of Route 5s, Little Falls
New Cingular Wireless PCS, LLC	Antenna	Webb (T)	300 McCauley Road
Ilion 1	Oil and Gas Well	Ilion (V)	
Wadell Charles R	Oil and Gas Well	Winfield (T)	
Skranko 1	Oil and Gas Well	Warren (T)	
Puskarenko 1	Oil and Gas Well	Stark (T)	
Menhennett 1	Oil and Gas Well	Winfield (T)	
Beardslee	Electric Substation	Manheim (T)	
Cogent Little Falls GP	Electric Substation	Little Falls (C)	
Daniel Green	Electric Substation	Ohio (T)	
Dolgeville Hydro	Electric Substation	Dolgeville (V)	
Dry Lots Wind	Electric Substation	Litchfield (T)	
Fairfield Wind 1	Electric Substation	Fairfield (T)	
Fairfield Wind 2	Electric Substation	Little Falls (T)	
Fairfield Wind Project	Electric Substation	Fairfield (T)	
Herkimer	Electric Substation	Herkimer (T)	
Ilion LP	Electric Substation	Ilion (V)	

Name	Type	Jurisdiction	Address/Intersection
Ilion Municipal	Electric Substation	Ilion (V)	
Inghams	Electric Substation	Manheim (T)	
Jordanville Wind Farm	Electric Substation	Stark (T)	
Little Falls Hydroelectric	Electric Substation	Little Falls (C)	
Mohawk Valley Landfill Gas Rec	Electric Substation	Herkimer (V)	
Moshier	Electric Substation	Webb (T)	
Newport Hydroelectric	Electric Substation	Newport (V)	
Salisbury (T)	Electric Substation	Manheim (T)	
Schuyler	Electric Substation	Frankfort (T)	
Stillwater Reservoir Hydroelectric	Electric Substation	Webb (T)	
Tap	Electric Substation	Herkimer (T)	
Valley	Electric Substation	Herkimer (V)	
Watkins Road	Electric Substation	Schuyler (T)	
Union Tools	Wastewater Facility	Frankfort (V)	4167 Acme Road
Mohawk Valley Sanitary Landfill	Wastewater Facility	Frankfort (T)	3020 Southside Road
Chicago Pneumatic Tool Company	Wastewater Facility	Frankfort (T)	2200 Bleecker Street
Remington Arms Company	Wastewater Facility	Ilion (V)	14 Hoefler Avenue
Remington Steam Plant	Wastewater Facility	Ilion (V)	11 Remington Avenue
Utica Holding Company	Wastewater Facility	Frankfort (T)	2200 Bleecker Street
Herkimer Water Pollution Control Facility	Wastewater Facility	Herkimer (V)	501 S Washington Street
Little Falls Water Pollution Center	Wastewater Facility	Little Falls (C)	River Road East
Dolgeville Wastewater Treatment Plant	Wastewater Facility	Dolgeville (V)	Van Buren Street
Herkimer Co. SD Wastewater Treatment Facility	Wastewater Facility	Mohawk (V)	106 W Main Street
Old Forge Sewer District Wastewater Treatment Plant	Wastewater Facility	Webb (T)	117 Pullman Ave
NYS Van Hornesville State Fish Hatchery	Wastewater Facility	Stark (T)	1285 Chyle Rd

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APPENDIX 4-A: MITIGATION STRATEGY – GOAL SETTING PROCESS[1]

The process of developing a comprehensive set of goals and objectives involved the following steps, which were conducted during HMWG meetings.[2]

STEP 1 – Visioning Activity

At the Kick-Off Meeting on August 10, 2016, attendees participated in a visioning activity intended to generate ideas and information about community hazard mitigation. Participants addressed concerns about five facets of the community that are vulnerable to hazards. The collective responses to questions posed are shown below.

- What is the **best asset** in your community?

Government/Services	People	Environment	Economy	Community
Local government support	Experience and resiliency	Water supply	Remington Arms Company	Small, familiar with residents
Village employees	People who live here	Natural beauty	Tourism	Quality of life
Schools	People	Agriculture, land		Quality of life
College	People	Natural environment		Recreational opportunities
Government Services	Participation	Agriculture, tourism		Community involvement
Little Falls Hospital	People	Natural features		Historial values
Access to rail	Great people	Clean water, undeveloped land		Community character, history
		Scenery (woods, water, etc.)		History
		Georgraphy (water, landscape)		Historic - Gateway to Adirondacks
		Recreation and agriculture		Rural, independent
		Picturesque		
		Natural resources		
		Environment		

- What is the **biggest challenge** in your community?

Government/Services	People	Environment	Economy	Community
Aging infrastructure	Elderly population	Natural Resources	Economy (work force opportunities)	Isolation
Consolidation		Flooding	Private downtown economic investment	Small, too familiar with residents
Taxes		Uncontrollable events/disasters	Jobs	Blighted properties
Economy budgets			Economic development	Migration of talent
Lack of funding for projects			Good employment opportunities	Working together
Funding			Employment	
Finances			Blight, "zombie" properties	
Funding			Tax exempts	
Funding			Poverty	
taxes			Economy	
			Economic development	
			Money	

[1] The information in this appendix is extracted from Worksheet #7, "Local Hazard Mitigation Plan Data Collection Guide."
[2] See, also, **Appendix 2.A** for meeting documentation of the planning process.

- What is your **vision** of your community in 10 years?

Government/Services	People	Environment	Economy	Community
Combined Services (i.e., schools, government, public services)	Younger	Environment Preserved	Increased Number of Jobs	Forward moving and positive
Thriving, Cohesive	Retired and not living there	Free from Flooding	Financially Stable	Thriving Communities
Sound Infrastructure	Attractive to young folks		Convention Center, Hotel Chain, local small business growth	Improved
Rebuilt Communities			Sustainable, partnerships	Vibrant
			Economic Development	Thriving
			Economically Sound	Thriving/Vibrant
			Still building	Livable
			Industry	Revitalized
			Growth	Moving Forward
			Stable tax base	Growth
				Retirement community
				Resilient and Locally prepared

Data shows that the community considers the environment to be one of its best assets. The economy is considered the biggest challenge. The information gleaned from this exercise helped jurisdictions focus on how best to expand on current capabilities, and how to develop Mitigation Goals and Objectives.

STEP 2 – Discussion and Review of Previous Goals and Objectives

On November 16, 2016, the HMWG was given this summary of the visioning process:

> *Vision statements that describe a clear and long-term desired change resulting from the planning efforts of the community may assist in defining the community's strategy.*

The following is sample vision statement from a mitigation-related plan:

> *"The communitites of Herkimer County, working together, will build an economically vibrant and safe future for all of our residents and ensure a high quality of life. We embrace our waterways as a vital component of our history, culture, and economy, while recognizing the challenges associated with flooding and natural disasters. By promoting sound growth, green infrastructure and open space, mitigating future damage, and transforming our communities through a comprehensive and sustainable approach, Herkimer County will reach its full potential for resiliency."*
>
> *NY Rising Countywide Resiliency Plan, Herkimer County, July 31, 2014 (p. 17)*

Reviewing these statements, members were asked to review the following mitigation Goals and Objectives[3] to determine whether they are sufficient as stated or should be revised.

[3] Goals and Objectives developed during the 2014 Herkimer County hazard mitigation planning process.

Goal 1: Protect Life and Property [Category: Structure and Infrastructure Projects]

- **Objective 1-1**: Implement mitigation activities that will assist in protecting lives and property by making homes, businesses, infrastructure, and critical facilities more resistant to hazards.
- **Objective 1-2**: Encourage homeowners and businesses to take preventative actions in areas that are especially vulnerable to hazards.
- **Objective 1-3**: Build upon past efforts to characterize flood events by conducting additional flood studies and creating flood models.
- **Objective 1-4**: Review existing local ordinances, building codes, safety inspection procedures, and applicable rules to help ensure that they employ the most recent and generally accepted standards for the protection of buildings.
- **Objective 1-5**: Ensure public and private facilities and infrastructure meet established building codes and immediately enforce the codes to address any identified deficiencies.
- **Objective 1-6**: Incorporate hazard considerations into land-use planning and natural resource management.
- **Objective 1-7**: Encourage homeowners, renters, and businesses to purchase insurance coverage for damages caused by hazards.
- **Objective 1-8**: Integrate the recommendations of this plan into existing local and county programs.
- **Objective 1-9**: Implement mitigation activities that encourage environmental stewardship and protection of the environment.

Goal 2: Increase Public Awareness (Category: Education and Awareness Programs)

- **Objective 2-1:** Develop and implement additional education and outreach programs to increase public awareness of the risks associated with hazards and to educate the public on specific, individual preparedness activities.
- **Objective 2-2:** Provide information on tools, partnership opportunities, funding, resources, and current government initiatives to assist in implementing mitigation activities.
- **Objective 2-3**: Implement mitigation activities that enhance the technological capabilities of the jurisdictions and agencies in the County to better profile and assess exposure of hazards.

Goal 3: Encourage Partnerships (Category: Local Plans and Regulations)

- **Objective 3-1:** Strengthen inter-jurisdiction and inter-agency communication, coordination, and partnerships to foster hazard mitigation strategies and/or projects designed to benefit multiple jurisdictions.

- **Objective 3-2:** Identify and implement ways to engage public agencies with individual citizens, non-profit organizations, business, and industry to implement mitigation activities more effectively.

Goal 4: Provide for Emergency Services (Objectives linked to Goals)

- **Objective 4-1:** Encourage the establishment of policies at the local level to help ensure prioritization and implementation of mitigation strategies and/or projects designed to benefit essential facilities, services, and infrastructure.
- **Objective 4-2:** Where appropriate, coordinate and integrate hazard mitigation activities with existing local emergency operations plans.
- **Objective 4-3:** Identify the need for, and acquire, any special emergency services and equipment to enhance response capabilities for specific hazards.
- **Objective 4-4:** Review and improve, if necessary, emergency traffic routes; communicate such routes to the public and communities.

STEP 3 – Review of Proposed Goals and Objectives

The group reviewed the mitigation goals and objectives of the 2014 DRAFT *Herkimer County All-Hazards Mitigation Plan (Herkimer HMP)*, and those of the *New York State Hazard Mitigation Plan*, December 2014. Both were considered for their applicability to identified hazard impacts and consequences. The HMWG was asked to consider realigning the objectives associated with the 2014 DRAFT Herkimer HMP Goals. **Table A4-A-a** was used as a determine whether the current goals and objectives support effective potential types of mitigation action.

Table A4-A-a: Linkage Between Types of Mitigation Actions and Potential Goals and Objectives

Types of Mitigation Actions	2014 Herkimer County HMP *Goals*	2014 Herkimer County HMP *Objectives*
Local Plans and Regulations	**Goal 3**: Encourage Partnerships	1-4, 1-6, 1-8, 2-2, 3-1, 3-2, 4-1, 4-2
Structure and Infrastructure Projects	**Goal 1**: Protect life and property	1-1, 1-2, 1-5, 1-7,
Natural Systems Protection	[Proposed] ***Example*** **-** Goal 4: Promote sustainable mitigation actions that preserve or restore the functions of natural systems	1-3, 1-9
Education and Awareness Programs	**Goal 2**: Increase Public Awareness	2-1
[Local Plans and Regulations]	**Goal 4**: Provide for Emergency Services	**4-3, 4-4**

Types of Mitigation Actions	2014 Herkimer County HMP *Goals*	2014 Herkimer County HMP *Objectives*
Enhancing Mitigation Planning		2-3

After reviewing the goals, HMWG members were asked to select **one** of the following choices to validate or not validate the goals provided:

____ The *goals and objectives are comprehensive as they are presented and cover the scope of all potential hazard vulnerabilities and mitigation actions that should be included in the plan. In addition,* ***they are all applicable to my jurisdiction and no additional goals or objectives are needed for my jurisdiction****.*

____ *The goals and objectives are not comprehensive and need minor revision to cover the scope of all potential hazard vulnerabilities and mitigation actions that should be included in the plan.* ***With minor revision, they will also be applicable to my jurisdiction and no additional goals and objectives are needed****.*

____ *The goals are comprehensive as they relate to the county as a whole; however,* ***they do not sufficiently describe the goals and/or objectives for my jurisdiction****. Additional goals (and objectives) that should be considered for my jurisdiction are: [Space provided to insert additional goals and objectives.]*

STEP 4 – Adoption of Goals and Objectives

The HMWG reviewed and discussed various options for goals and objectives at the November 16, 2016, meeting. Based on general discussion, the goals as presented in the 2014 DRAFT Herkimer HMP were realigned and minimally redefined, and presented to the HMWG on December 7, 2016. The HMWG, which included representatives from participating jurisdictions and stakeholder agencies and organizations, approved the goals and objectives as revised. The group agreed that they represent the countywide mitigation strategy, setting the framework for new mitigation actions.

HERKIMER COUNTY MULTI-JURISDICTION HAZARD MITIGATION PLAN
GOALS AND OBJECTIVES – COUNTYWIDE

Goal 1: Protect Life and Property (Category: Structure and Infrastructure Projects)

- **Objective 1.1**: Implement mitigation activities that will assist in protecting lives and property by making homes, businesses, infrastructure, and critical facilities more resistant to hazards.
- **Objective 1.2**: Encourage homeowners and businesses to take preventative actions in areas that are especially vulnerable to hazards.

- **Objective 1.3**: Review existing local ordinances, building codes, safety inspection procedures, and applicable rules to help ensure that they employ the most recent and generally accepted standards for the protection of buildings.
- **Objective 1.4**: Ensure that public and private facilities and infrastructure meet established building codes and immediately enforce the codes to address any identified deficiencies.
- **Objective 1.5**: Encourage homeowners, renters, and businesses to purchase insurance coverage for damages caused by hazards.
- **Objective 1.6:** Encourage the establishment of policies at the local level to help ensure that prioritization and implementation of mitigation strategies and/or projects are designed to benefit essential facilities, services, and infrastructure.

Goal 2: Increase Public Awareness (Category: Education and Awareness Programs)

- **Objective 2.1:** Develop and implement additional education and outreach programs to increase public awareness of the risks associated with hazards and to educate the public on specific, individual preparedness activities.
- **Objective 2.2:** Provide information on tools, partnership opportunities, funding, resources, and current government initiatives to assist in implementing mitigation activities.

Goal 3: Encourage Partnerships (Category: Local Plans and Regulations)

- **Objective 3.1:** Strengthen inter-jurisdiction and inter-agency communication, coordination, and partnerships to foster hazard mitigation strategies and/or projects designed to benefit multiple jurisdictions.
- **Objective 3.2:** Identify and implement ways to engage public agencies with individual citizens, non-profit organizations, business, and industry to implement mitigation activities more effectively.
- **Objective 3.3**: Integrate the recommendations of this plan into existing local and county programs.

Goal 4: Promote sustainable mitigation actions that preserve or restore the functions of natural systems *(Category: Natural Systems Protection)*

- **Objective 4.1**: Incorporate hazard considerations into land-use planning and natural resource management.
- **Objective 4.2**: Implement mitigation activities that encourage environmental stewardship and protection of the environment.
- **Objective 4.3**: Build upon past efforts to characterize flood events by conducting additional flood studies and creating flood models.

APPENDIX 4-B: MITIGATION CAPABILITIES ASSESSMENT[1]

STEP 1 – Capability Assessment Orientation and Worksheet

At the Capabilities Assessment Meeting on September 21, 2016, the group discussed core capabilities and how they support mitigation strategy. This overview generated discussion of the status of jurisdictional planning and regulatory, administrative and technical, safe growth, financial, and educational and outreach capabilities and how they support mitigation planning.

The HMWG and jurisdiction representatives reviewed **Worksheet #1** of the document included starting on page 8 in **Appendix 2-B, Data Collection Guide**. The contractor went through the first section with the group and asked those present to complete the worksheet by the October 19, 2016, meeting.

STEP 2 – NFIP Assessment

The HMWG was provided with **Worksheet #2: NFIP Survey Form** at the September 21, 2016, meeting. The survey form is included as page 14 in **Appendix 2-B, Data Collection Guide**. The contractor went through the first section with the group and asked those present to complete the worksheet by the October 19, 2016, meeting.

STEP 3 – Analysis of Capabilities and NFIP Compliance

Jurisdictions submitted the Capability Assessment and NFIP Survey Form. Summaries of their submission are included in **Section 4.2, Base Plan** and in the jurisdiction annexes.

STEP 4 – Capabilities for Evacuation, Sheltering, and Temporary Housing

The contractor and Herkimer County Emergency Management Coordinator studied the County's *Comprehensive Emergency Management Plan* (CEMP), updated April 2015. Together they reviewed the county's plan and procedures for evacuation routes, sheltering, and temporary disaster housing. CEMP sections that address these responsibilities are summarized in **Section 4-2, Base Plan** (**Table 4-C**). Locally, the American Red Cross is responsible for managing shelters. **Table A4-B-a** provides shelter locations as of October 2016. As indicated in the CEMP, Annex 7 – Herkimer County Sheltering Annex, if shelter activation is anticipated, the Director of the County Office of Emergency Services determines the appropriate shelter facilities to use based on a situational assessment. This includes the type of hazard, location, potential evacuation/access routes, estimated number of persons to be sheltered, and the needs of those being sheltered.

[1] The information in this appendix is extracted from Worksheet #1, "Local Hazard Mitigation Plan Data Collection Guide". Additional meeting documentation for the planning process is provided in **Appendix 2-A**.

Table A4-B-a: Emergency Shelters (Herkimer County CEMP, April 2015)

Community Building	Auxiliary Power	Capacity
Dolgeville H.S. –Dolgeville	Yes	500
Frankfort Schuyler H.S. – Frankfort	No	400
Reese Road Elementary – Frankfort	No	320
Herkimer H.S. – Herkimer	No	300
Herkimer Elementary – Herkimer	No	300
Herkimer College – Herkimer	No	300
Central Valley Academy H.S. – Ilion	No	300
CVA-Barringer Road Elementary – Ilion	No	200
CVA-Remington Elementary – Ilion	No	200
Litchfield Town Hall – Litchfield	Yes	30
Little Falls H.S. – Little Falls	No	250
Benton Hall Academy – Little Falls	No	200
CVA-Gregory B. Jarvis M.S. – Mohawk	Yes	400
CVA-Fisher Elementary – Mohawk	No	350
Poland Central H.S. – Poland	No	300
Owen D. Young H.S. – Van Hornesville	No	100
Mt. Markham H.S. – W. Winfield	Yes	400
Mt. Markham M.S. – W. Winfield	No	400
Mt. Markham Elementary – W. Winfield	No	300
TOTALS	**4 Generators**	**6,550**

The American Red Cross, Mohawk Valley Chapter also maintains the following list of facilities that can be used for sheltering in Herkimer County along with government facilities.

Figure A4-B-1: ARC Herkimer County Shelters (October 2016)

Dolgeville - Dolgeville Central School (K-12) (formerly James Green High School)
Dolgeville - Oppenhiem Day Treatment
Dolgeville - Oppenhiem Senior Citizens Center
Frankfort - Frankfort Schuyler CSD
Frankfort - Frankfort Schuyler Central High School
Frankfort - Reese Road Elementary School
Frankfort - West Frankfort Elementary School
Herkimer - Herkimer Central School District
Herkimer - Herkimer Elementary School
Herkimer - Herkimer High School
Herkimer - First United Methodist Church
Herkimer - Herkimer Area Resource Center
Herkimer - Herkimer County Community College
Ilion - Central Valley School District
Ilion - Barringer Road Elementary School
Ilion - Barringer Road Elementary School
Ilion - Central Valley Academy
Mohawk - Gregory B Jarvis Middle School
Mohawk - Harry M Fisher Elementary School
Ilion - Ilion Municipal Building
Ilion - Litchfield Town Hall
Ilion - Remington Elementary School - BOCES
Little Falls - Little Falls City School District
Little Falls - Benton Hall Academy (Elementary)
Little Falls - Little Falls High School

Mohawk - Blessed Sacrament Church
Mohawk - The Mohawk Homestead
Mohawk - YMCA of the Mohawk Valley
Newport - KCO, Kuyahoora Community Outreach
Newport - Middleville Volunteer Fire Department
Newport - West Canada Valley CSD
Newport - West Canada Valley Jr./Sr. High School
Old Forge - Niccolls Memorial Presbyterian Church
Old Forge - North Woods Masonic Lodge #849
Old Forge - Saint Bartholomews Church
Old Forge - Town of Webb Union Free School (K-12)
Poland - Poland Central School (K-12)
Van Hornesville - Owen D Young Central School (K-12)
West Winfield - Millers Mills Community Baptist Church
West Winfield - Mount Markham CSD
West Winfield - Mount Markham Elementary School
West Winfield - Mount Markham High School
West Winfield - Mount Markham Middle School

APPENDIX 4-C: PROGRESS ON MITIGATION ACTIONS

Documenting Progress on Mitigation Actions

Jurisdictions recently formulated a system for documenting progress on mitigation actions completed to date, and the benefits secured therefrom. This plan initiates the formal process of collecting data that will enable communities to assess the outcomes and benefits of mitigation actions. The schedule to maintain, monitor, and evaluate the plan includes steps to measure progress.[1] **Section 5** and **Appendix 5, Base Plan** fully discuss these steps.

Table A4-C-a is a template for communities to use in documenting mitigation action updates and the risk-reduction benefits from each.

Table A4-C-a: Sample Table: Summary of Completed Mitigation Actions, All Jurisdictions

Jurisdiction	Project #/Title	Project Source	Responsible Entity	Completion Date	Total Project Cost	Benefits Achieved ($ value or description)
Example:						
Village of Ilion	IL-001 – Replace Otsego and Second St. Bridges	NYS DOT, federal/local match	Ilion/German Flatts Public Works, NYSDOT	2019	$6 million	$100,000 in flood claims saved, easier evacuation management

Previously Identified Mitigation Actions

Previously completed mitigation plans and studies included recommended mitigation actions, shown in **Table A4-C-b**. Many were incorporated into the current mitigation planning process. In the next five years, the community will attempt to further integrate these projects by reviewing this table annually and monitoring the status of identified projects. Likewise, as the 2004 Flood Hazard Mitigation Plans for local creeks are updated, new projects may be identified and added to the list.

Information included here is current as of the publication date of the 2017 Herkimer County Hazard Mitigation Plan.

[1] Section 5: Plan Maintenance

Table A4-C-b: Summary of Pending Mitigation Actions from External Plans

Jurisdiction/ Entity	Project #	Project Title	Status	Comments	Source/ Funding	Cost	Date
Herkimer County	T-002	Transportation Safety Improvements	In Progress	Ongoing	NYSDOT	Unknown	12/7/2016
Herkimer County	T-004	Transportation Infrastructure and-Safety Improvements	In Progress	Rehabilitation/Reconstruction of Roads and Infrastructure	NYSDOT	Unknown	12/7/2016
Herkimer County	T-008	Transportation Infrastructure and-Safety Improvements	In Progress	Ongoing, tied to projects in T-004	NYSDOT	Unknown	12/7/2016
Herkimer County	T-015	Transportation Infrastructure Improvement	In Progress	Ongoing, tied to projects in T-004	NYSDOT	Unknown	12/7/2016
American Red Cross	38	Emergency Shelters	In Progress		Unknown	Unknown	12/7/2016
American Red Cross	U-007	Emergency Generator Program	Unknown	Citizens Preparedness Corps Educational Initiative	Unknown	Unknown	12/7/2016
American Red Cross	U-015	Emergency Preparedness, Power Loss	In Progress	Citizens Preparedness Corps Educational Initiative	Unknown	Unknown	12/7/2016
American Red Cross	T-011	Hazmat Spill Mitigation Education	In Progress	Citizens Preparedness Corps Educational Initiative	Unknown	Unknown	9/19/2016
German Flatts - Town	n/a	Fulmer Design	Complete	Phase 1 - 30% design	NYSDOS/ LWRP	$400,000	9/19/2016
German Flatts - Town	n/a	Truck Ramp Site - Fulmer	Design in progress. 2017Construction	Design and Construction Administration	Mohawk Basin Program/ NYSDEC	$510,000	9/19/2016
German Flatts - Town	n/a	Crouch Bank Design - Fulmer	MMI working on contract with ESD and MWBE requirements	Design only (no bid specs) Permitting included	ESD/DEC (MMI)	$141,986	9/19/2016
German Flatts - Town	n/a	Steele Creek Phasing & Implementation	MMI working on contract with ESD and MWBE requirements	Planning (no permitting)	ESD/DEC (MMI)	$200,000	9/19/2016
Frankfort - Town	n/a	Frankfort Main Street Design	MMI working on contract with ESD and MWBE requirements	Planning & design (no permitting)	ESD/DEC (MMI)	$150,000	9/19/2016
Ilion -Village	n/a	Steele - Otsego-2nd St. Design	MMI working on contract with ESD and MWBE requirements	Planning & design (no permitting)	ESD/DEC (MMI)	$110,440	9/19/2016

Jurisdiction/ Entity	Project #	Project Title	Status	Comments	Source/ Funding	Cost	Date
Ilion -Village	n/a	Columbia Parkway	MMI working on contract with ESD and MWBE requirements	Planning & design (no permitting, bid specs)	ESD/DEC (MMI)	$84,080	9/19/2016
German Flatts - Town	n/a	Emrich Floodplain Bench	Public hearing and contract development Oct. 2016	Bidding Assist. And Construction	ESD/DEC (GF)	$392,480	9/19/2016
German Flatts - Town	n/a	Emrich Floodplain Bench	Approved	Materials Only	DEC (Trees/Tributaries)	$25,000	9/19/2016
German Flatts - Town	n/a	Emrich Floodplain Bench	Approved	Volunteer Labor for revegetation	HCSWCD Labor	$9,700	9/19/2016
German Flatts - Town	n/a	Emrich Floodplain Bench	Approved	Trucking/Labor	Town in-kind	$16,000	9/19/2016
German Flatts - Town	n/a	Crouch Bank - Construction	Approved. Waiting for DOS Project Info Packet	Bid Docs and Construction	DASNY	$1,080,080	9/19/2016
Ilion -Village	n/a	Columbia Pkwy Construction	Approved, Await DOS Project Info Packet	Bid Docs and Construction	DASNY	$235,920	9/19/2016
German Flatts - Town	n/a	Leatherstocking Floodplain Bench	Have EFC/Town Contract. Const. 2017	Bidding Assist and Construction	EFC	$517,778	9/19/2016
German Flatts - Town	n/a	Leatherstocking Park Construction	Have NYS Parks/Town Contract. Const. 2017	Bidding Assist and Construction	OPRHP	$227,000	9/19/2016
Norway - Town	n/a	Newport-Gray Road Stream Bank Protection	Approved for funding	Install approximately 150 linear feet of stacked and pinned stone along the streambank to protect the road	NY Rising: DOS-DASNY	$60,000	4/5/2016
Frankfort - Village	n/a	Drainage Repairs	Funding approved	Restore and rehabilitate Moyer Creek bank failure near Lehman Park; replace collapsed pipe and rehab access road to the Village's drinking water holding tank	NY Rising: DOS-DASNY	$490,000	4/5/2016
Manheim - Town	n/a	Timmerman Road Ditch Repair	Funding approved	Rehab damaged ditch along road to prevent recurring flooding and reduce risk of damage to the road	NY Rising: DOS-DASNY	$264,000	4/5/2016
Danube - Town	n/a	Creek Road Stream Bank Stabilization	Funding approved	Install 300 linear ft. of stacked and pinned stone along streambank	NY Rising: DOS-DASNY	$100,000	4/5/2016

Jurisdiction/ Entity	Project #	Project Title	Status	Comments	Source/ Funding	Cost	Date
Little Falls - City	n/a	Drainage Repairs	Funding approved	Repair Industrial Park Creek drainage system, Carden and Frederick Creek underground drainage lines	NY Rising: DOS-DASNY	$150,000	4/5/2016
Little Falls - City	n/a	Drainage Repairs	Funding approved	Repair or replace culverts at Smith Street, Frederick Creek, and Carden Creek; identify roads at high risk for closure and alternate routes of access	NY Rising: DOS-DASNY	$320,000	4/5/2016
Herkimer County	RS6-a,b,c,d	Vulnerable Population Registry and Services	Valid, not currently funded	Develop a plan to ensure emergency services for vulnerable populations, including provision of medical supplies and temporary housing	NY Rising	Unknown	9/19/2016
German Flatts - Town	RS7	Improve Shelter Capacity	Valid, not currently funded	Utilize Town of German Flatts Emergency Shelter; develop HCCC as emergency shelter	NY Rising	Unknown	9/19/2017
Herkimer County	RS8	Flood Protection for Health and Social Service Facilities	Valid, not currently funded	Evaluate feasibility of elevating or re-aligning flood-prone roads; identify and map areas isolated by flooding	NY Rising	Unknown	9/19/2016
Herkimer County	RS9	Resilient Housing	Valid, not currently funded	Increase housing stock resiliency by developing housing in downtown areas and outside of flood zones. Acquire at-risk properties to reduce flood losses and spur revitalization	NY Rising	Unknown	9/19/2016
Herkimer County	RS10	Improve Power and Telecommunication Systems	Valid, not currently funded	Research utility infrastructure at highest risk of flooding; back-up power generation	NY Rising	Unknown	9/19/2016
Herkimer County	RS13	Creek Restoration and Capacity Improvements	Steele Creek in progress; others valid, not currently funded	Utilize a combination of streambank restoration/re-alignment and maintenance, green infrastructure, and other tools to reduce erosion and stormwater runoff and mitigate flooding and losses	NY Rising	Unknown	9/19/2016

APPENDIX 4-D: IMPLEMENTATION TOOLS FOR MITIGATION ACTIONS

Mitigation actions must be funded and implemented into existing planning processes to be effective. The plans, studies, programs, and other resources shown here are among the mitigation-related tools available to carry out the activities proposed in this plan.

Herkimer County Comprehensive Emergency Management Plan

The *Herkimer County Comprehensive Emergency Management* Plan (Herkimer CEMP), April 2015, provides a framework to support implementation of mitigation efforts. This plan identifies risk reduction [hazard mitigation] as a critical function of the county's[1] emergency management responsibilities and includes the following provisions:

- Director of the Herkimer County Office of Emergency Services has been designated by the Chairman, Herkimer County Legislature, as the County Hazard Mitigation Coordinator. Responsibilities of the role are described, and the Coordinator participates as a member of the County's Comprehensive Emergency Planning Committee (CEPC).[2]
- The CEPC is responsible for identifying and analyzing hazards and vulnerabilities.
- The hazard analysis is a method for analyzing and ranking the identified hazards. This includes identifying geographic areas and populations at risk to specific hazards, and establishing priorities for hazards deemed to be ***high*** risk.
- The hazard analysis will be reviewed and updated at least every three years.
- County agencies are authorized to promote policies, programs, and activities to reduce hazard risks in their area of responsibility.
    - Encourage municipalities to adopt comprehensive community development plans, zoning ordinances, subdivision regulations, and building codes considering significant hazards.
    - Promote compliance with and enforcement of existing laws, regulations, and codes related to risks from multiple hazards.
- The CEPC is to conduct risk reduction workshops for municipalities to encourage involvement in the county risk reduction program.
- The CEPC meets bi-annually to identify specific hazard reduction actions that could be implemented.
- Produce a Risk Reduction Report that prioritizes and recommends mitigation actions.
- The Risk Reduction Report is to be reviewed, revised, and approved by the County Office of Emergency Services and presented to the Chief Administrative Officer, County Legislature, via the Chairman for consideration and funding.

[1] *Herkimer County Comprehensive Emergency Management Plan*, April 2015. Section II, Risk Reduction.
[2] The Hazard Mitigation Working Group functioned as a sub-committee of the CEPC.

Previous Flood Hazard Mitigation Plans, Studies, Reports, and Programs

Many potential actions identified and discussed during the planning process were defined and proposed in reports from previous flood hazard mitigation planning initiatives. These include the Mohawk River Valley Action Plan, Basin Assessments for multiple creeks, and the NY Rising Resiliency Plan. Some mitigation actions presented in this plan may duplicate or overlap previously-defined actions. The current plan includes previously identified funded or unfunded actions to ensure that actions are evaluated and incorporated into a project database that in carried into the next planning cycle.

The description of related policies, plans, studies, reports, and programs to support implementation of mitigation actions is presented in **Section 2, Base Plan** and **Appendix 2-E.**

Mitigation Implementation Tools

Table A4-D-a covers mitigation-related policies and plans available to local governments.[3]

Table A4-D-a: Mitigation Implementation Tools

Policy/Planning Process	Description	Applicability	Effectiveness
Building Codes	The State has adopted the IBC code. Local governments can adopt and enforce this code.	The adoption and enforcement of building codes relates the design and construction of structures to standards established for withstanding a variety of forces.	All structures built after 2002 must comply with the IBC code, which includes provisions for building in the floodplain. NYS set a freeboard standard of two feet above base flood elevation.
Zoning	Laws and ordinances regulate development by dividing land into zones and setting development criteria for each. Zoning decisions are delegated to local government.	Zoning keeps inappropriate development away from hazard-prone areas and designates areas for conservation, public use, or agriculture.	Communities can designate areas as "open space" to reducing the effect of flooding by allowing spaces for water to flow unimpeded.
Land Use Planning	Comprehensive land use planning prevents development in hazardous areas and allows development that minimizes hazard damage.	Local governments can use land use planning to identify those areas subject to damage from hazards and keep inappropriate development out of these areas. Land use planning can also be used regionally when governments collaborate.	Communities can incorporate a mitigation review into the land use planning process, thereby potentially minimizing development in identified hazard areas.

[3] NYS HMP, 2014, pp 4-28 and 29.

Policy/Planning Process	Description	Applicability	Effectiveness
Subdivision Regulations	Sets construction and location standards for subdivision layout and infrastructure.	Contains standards for such things as stormwater management, erosion control, and subdivision size.	Urban flooding is often a result of building residential or commercial developments without adequate stormwater drainage. These regulations have the potential to reduce the impact of urban flooding on a community.
Capital Improvement Planning	Identifies where major public expenditures will be made over the next five to ten years.	Secure hazard-prone areas for low-risk uses; strengthen, replace or realign roads and utilities; and prescribe standards for the design and construction of new facilities.	Reduce the level of public funding spent on construction in hazard-prone areas.
Building Codes	The State has adopted the IBC code. Local governments can adopt and enforce this code.	The adoption and enforcement of building codes relates the design and construction of structures to standards established for withstanding a variety of forces.	All structures built after 2002 must comply with the IBC code, which includes provisions for building in the floodplain. NYS set a freeboard standard of two feet above base flood elevation.
Zoning	Divide the community into zones and set development criteria for each. Zoning decisions are delegated to local government.	Zoning keeps inappropriate development away from hazard-prone areas and designates areas for conservation, public use, or agriculture.	Communities can designate areas as "open space" to reducing the effect of flooding by allowing spaces for water to flow unimpeded.
Land Use Planning	Prevents development in hazardous areas and allows development that minimizes hazard damage.	Identify areas subject to hazard damage and avoid inappropriate development here. Land use planning can also be used regionally when governments collaborate.	Incorporate mitigation review into the land use planning process, thereby potentially minimizing development in identified hazard areas.
Subdivision Regulations	Sets construction and location standards for subdivision layout and infrastructure.	Contains standards for such things as stormwater management, erosion control, and subdivision size.	Urban flooding often results from building without adequate storm water drainage. Regulations reduce the impact of urban flooding.
Capital Improvement Planning	Identifies where major public expenditures will be made over the next five to ten years.	Secure hazard-prone areas for low-risk uses; identify roads or utilities that need strengthening, replacement, or realignment; and can prescribe standards for the design and construction of new facilities.	Reduce the level of public funding spent on construction in hazard-prone areas.

Jurisdiction-Based Action Plans for Implementation

The process to identify, develop, and prioritize actions provides information that builds the countywide Action Plan for Implementation (implementation strategy). The Action Worksheet completed for each action, and the prioritization process conducted by each jurisdiction identified the goal(s) and objective(s) addressed by the action, lead agency, support agency or agencies (if appropriate), estimated cost, and timeframe of the action.

To strengthen the jurisdiction's implementation strategy, each jurisdiction, using **Worksheet #8b,** also selected measures to show how the plan's goals and objectives will be incorporated into the jurisdiction's existing activities. The process selected by each jurisdiction establishes the framework for implementing its mitigation actions.

WORKSHEET #8b: Action Plan for Implementation

Jurisdiction/Agency/Organization	**Point of Contact:** (Name & Title/Position)	**Date:**
Address:	**Email:**	**Phone:**

Identify how your jurisdiction's hazard mitigation risk assessment, goals and objectives and actions will be incorporated into your existing plans and procedures. (Select all that apply)

_____ Integrate goals into local comprehensive plan _____ Review/update land development regulations for consistency with mitigation goals _____ Review/update building/zoning codes for consistency with mitigation goals _____ Maintain regulatory requirements of floodplain management program (NFIP) _____ Enhance floodplain management through Community Rating System (CRS) _____ Review /update economic development plans and policies for consistency with mitigation goals _____ Continue public involvement in mitigation planning _____ Identify opportunities for mitigation education and outreach	____ Review/update stormwater plans and procedures for consistency with mitigation goals ____ Review/update emergency plans to address evacuation and sheltering ____ Maintain ongoing enforcement of existing policies ____ Monitor funding opportunities ____ Incorporate goals and objectives into day-to-day government functions ____ Incorporate goals into day-to-day development policies, reviews and priorities ____ Other (Describe)_____

Each jurisdiction's selected implementation measures are described in its jurisdiction annex.

Implementation Resources

The following table is only a partial list of organizations that support mitigation actions, but it serves as a starting point for additional research. **Table A4-D-b** provides a longer list of federal, state, and other entities that have programs, funding, technical assistance, or other mitigation-related resources.[4]

Table A4-D-b: Potential Resources for Implementing Mitigation Actions
(R) Regulatory, (T) Technical, (F) Financial

Program	Description	Lead Agency	R	T	F
Federal Grant and Assistance Programs for Governments https://www.cfda.gov/index?s=program&mode=list&tab=list	Catalog of federal disaster assistance and hazard-related grants and assistance	FEMA		x	x
Grants.gov http://www.grants.gov/web/grants/home.html	Searchable catalog of federal grant opportunities in health and human services	U.S. Department of Health and Human Services (HHS)	x	x	x
National Earthquake Hazards Reduction Program http://www.nehrp.gov/index.htm	Program research to advance understanding earthquakes occurrence and impact	National Institute of Science and Technology (NIST)		x	
Decision, Risk and Management Science Program http://www.nsf.gov/funding/pgm_summ.jsp?pims_id_5423	Scientific research to increasing effectiveness and understanding of individual, group, organizational, and societal decision making	National Science Foundation (NSF)		x	
Societal Dimensions of Engineering, Science, and Technology Program http://nsf.gov/funding/pgm_summ.jsp?pims_id=5323&org=SES	Proposals benefiting the study of interactions of engineering, science, technology, and society	NSF		x	
Aquatic Ecosystem Restoration http://www.nae.usace.army.mil/Missions/Public-Services/Ecosystem-Restoration-Authorities/	Support for aquatic ecosystem restoration projects (e.g., wetlands) that improve the quality of the environment; Regulatory and adaptive initiatives for Climate Change	U.S. Army Corps of Engineers (USACE)	x	x	x
Beneficial Uses of Dredged Materials https://www.epa.gov/cwa-404/beneficial-use-dredged-material	Protect, restore, and create aquatic and ecological habitats, including those related to dredging on authorized Federal wetlands	Environmental Protection Agency (EPA)	x	x	x

[4] 2014 NYS HMP, Section 4, p. 4-89 to 4-102

Program	Description	Lead Agency	R	T	F
Water Grants https://www.epa.gov/nps/watershed-funding	Grants for water and wastewater infrastructure projects; a catalog of federal funding for watershed protection projects	EPA		x	x
Urban Waters Small Grants Program http://www2.epa.gov/urbanwaters	Protect and restore urban waters by improving water quality through activities that also support community revitalization and other local priorities	EPA		x	x
http://portal.hud.gov/hudportal/HUD?src=/program_offices/comm_planning/communitydevelopment/programs	Grants to states and local governments to develop viable communities (e.g., housing, suitable living environment, expanded economic opportunities) and recover from federally declared disasters; principally for low- and moderate-income areas	U.S. Department of Housing and Urban Development (HUD)	x	x	x
Disaster Housing Assistance Program https://portal.hud.gov/hudportal/HUD?src=/program_offices/public_indian_housing/publications/dhap	Emergency assistance for housing, including minor repair of home to create livable conditions, mortgage and rental assistance	U.S. Dept. of Housing and Urban Development (HUD)			x
HOME Investment Partnerships Program https://portal.hud.gov/hudportal/HUD?src=/program_offices/comm_planning/affordablehousing/programs/home/	Grants to state and local government and consortia for permanent and transitional housing (including financial support for property acquisition and rehabilitation for low-income persons)	HUD			x
HUD Disaster Resources https://portal.hud.gov/hudportal/HUD?src=/info/disasterresources	Grants and a disaster assistance for housing, including mortgage assistance	HUD			x
Section 108 Loan Guarantee https://portal.hud.gov/hudportal/HUD?src=/hudprograms/section108	Offers states and local governments a source of financing for community development activities, such as housing rehabilitation, economic development, and large-scale physical development projects.	HUD			x
National Flood Insurance Program https://www.fema.gov/national-flood-insurance-program	Formula grants to States to assist FEMA communities to comply with NFIP floodplain management requirements (Community Assistance Program)	FEMA	x		
Hazard Mitigation Assistance (HMA) http://www.fema.gov/hazard-mitigation-assistance	Funds eligible mitigation activities that reduce disaster losses and protect life and property from future disaster damages – ***[includes FMA, HMGP, PDM, below]***	FEMA		x	x

Program	Description	Lead Agency	R	T	F
Flood Mitigation Assistance (FMA) Program http://www.fema.gov/flood-mitigation-assistance-program	Grants to states and communities for pre-disaster mitigation planning and projects to help reduce or eliminate the long-term risk of flood damage to structures insurable under the National Flood Insurance Program	FEMA		x	x
Hazard Mitigation Grant Program (HMGP) http://www.fema.gov/hazard-mitigation-grant-program	Grants to states and communities for planning and projects providing long-term hazard mitigation measures following a major disaster declaration	FEMA		x	x
Pre-Disaster Mitigation (PDM) Competitive Grant Program http://www.fema.gov/pre-disaster-mitigation-grant-program	Grants to states and communities for planning and projects that provide long-term hazard pre-disaster mitigation measures	FEMA		x	x
Public Assistance: Hazard Mitigation Funding under Section 406 https://www.fema.gov/95261-hazard-mitigation-funding-under-section-406-stafford-act	Discretionary funding available under Section 406 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act following a federally-declared disaster	FEMA			x
Assistance to Firefighters Grant Program https://www.fema.gov/welcome-assistance-firefighters-grant-program	Provide funding for fire equipment, staffing, facility construction and emergency response costs	FEMA			x
Partners for Fish and Wildlife http://www.fws.gov/partners	Financial and technical assistance to private landowners interested in pursuing restoration projects affecting wetlands and riparian habitats	U.S. Fish and Wildlife Service (USFWS)		x	x
National Trust Preservation Funds (NTPF) http://forum.savingplaces.org/build/find-funding/grant-seekers/preservation-funds	Funding awarded to nonprofit organizations and public agencies for planning and education projects	National Trust for Historic Preservation (NTHP)		x	x
Historic Preservation Financial Assistance http://www.achp.gov/funding-general.html	Federal financial assistance specifically for historic preservation	Advisory Council on Historic Preservation		x	x
FHWA Emergency Relief Program http://www.fhwa.dot.gov/programadmin/erelief.cfm	Funding to repair or reconstruct Federal-aid highways that have suffered serious damage from (1) natural disasters, or (2) catastrophic failures from an external cause	U.S. Department of Transportation (USDOT)			x
Transportation Investment Generating Economic Recovery (TIGER) https://www.transportation.gov/tiger	Investing in critical road, rail, transit, and port projects across the nation	USDOT		x	x

Program	Description	Lead Agency	R	T	F
Emergency Loan Program https://www.fsa.usda.gov/programs-and-services/farm-loan-programs/emergency-farm-loans/	USDA's Farm Service Agency (FSA) provides emergency loans to help producers recover from production and physical losses due to drought, flooding, other natural disasters, and quarantine	USDA			x
Emergency Watershed Protection (WP) Program https://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/landscape/ewpp/	Relieves imminent hazard to life and property caused by floods, fires, drought, windstorms, and other natural occurrences	National Resources Conservation Service (NRCS)		x	x
Financial Assistance https://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/financial/	Financial assistance to help plan and implement conservation practices that address natural resource concerns or opportunities to help save energy, improve soil, water, plant, air, animal and related resources on agricultural lands and non-industrial private forest land	NRCS		x	x
Homeland Security Grant Program https://www.fema.gov/homeland-security-grant-program	Supports efforts to build and sustain core capabilities across five mission areas: Prevention, Protection, Mitigation, Response, and Recovery	U.S. Department of Homeland Security (DHS)		x	x
Emergency Management Performance Grant (EMPG) Program https://www.fema.gov/emergency-management-performance-grant-program	Assists local, tribal, territorial, and state governments in enhancing and sustaining all-hazards emergency management capabilities	DHS		x	x
Land & Water Conservation Fund http://www.lwcfcoalition.org/	Funding allows 4 federal agencies to acquire and develop private lands for public outdoor recreation areas and facilities; and congressional appropriate for matching funds for state and local government land acquisition projects	U.S. Bureau of Land Management, Forestry Service, Fish & Wildlife Service and National Park Service		x	x
Missions and Appropriations http://www.usace.army.mil/Missions/Emergency-Operations/	Federal budget and funding to support research, feasibility studies, construction and disaster relief	USACE	x	x	x
Flood Plain Management Services Program http://www.iwr.usace.army.mil/Portals/70/docs/frmp/FPMS_Factsheet_13SEP2012.pdf	Foster public understanding of how to deal with flood hazards and to promote prudent use and management of the Nation's flood plains.	USACE		x	

Program	Description	Lead Agency	R	T	F
	Provides 1) General Technical Services, and 2) General Planning Guidance				
Economic Injury Disaster Loans https://www.sba.gov/loans-grants/see-what-sba-offers/sba-loan-programs/disaster-loans	Low-interest disaster loans to businesses, private non-profit organizations, homeowners, and renters. SBA disaster loans can be used to repair or replace the damaged property, equipment, inventory, or other business assets.	Small Business Administration (SBA)			x
New York State Grant Opportunities https://grantsgateway.ny.gov/IntelliGrants_NYSGG/module/nysgg/goportal.aspx	Centralized listing of funding programs & grant opportunities	New York State		x	x
DHSES Grant Programs http://www.dhses.ny.gov/grants	Centralized listing of Homeland Security grants	NYS Division of Homeland Security & Emergency Services (DHSES)		x	x
Grant & Bid Opportunities http://www.dos.ny.gov/funding	Grant, bid, and funding opportunities including Local Waterfront Revitalization Program, and Watershed Protection	NYS Department of State (DOS)		x	x
Local Government Records Management Improvement Fund (LGRMIF) Disaster Recovery Grant http://www.archives.nysed.gov/grants/grants_lgrmif.shtml	Grants for disaster recovery projects related to damage caused by a sudden, unexpected event involving fire, water, man-made or natural phenomena where a timely response is necessary to prevent loss of vital or archival records, or to ensure timely access to vital records	NYS Archives/NYS Education Department		x	x
The New York State Emergency Services Revolving Loan http://www.dhses.ny.gov/ofpc/services/loan/	Repair firefighting apparatus, ambulances, or rescue vehicles; renovation, rehabilitation, or repair of facilities that house firefighting equipment, ambulances, rescue vehicles, and related equipment	NYS DHSES			x
NY Rising Community Reconstruction Program https://stormrecovery.ny.gov/sites/default/files/crp/community/documents/herkimer_county_resiliency_plan_final.pdf	Provides additional rebuilding and revitalization assistance to communities several damaged by Hurricanes Sand and Irene and Tropical Storm Lee. [Projects funded through DASNY]	NYS Housing Trust Fund Corporation (HTFC)/Dormitory Authority of the State of New York (DASNY)			x
Climate Change Programs http://www.dec.ny.gov/energy/43384.html	Studies and plans related to the impacts of climate change addresses	NYS Dept. of Environmental Conservation	x	x	

Program	Description	Lead Agency	R	T	F
Environmental Protection Fund (EPF) http://www.nysparks.com/grants	Matching grants for the acquisition, planning, development and improvement of parks, historic properties	NYS Parks, Recreation & Historic Preservation (NYSOPRHP)			x
Recreational Trails Program (RTP) http://www.nysparks.com/grants	Matching grants for the acquisition, development, rehabilitation and maintenance of trails and trail-related projects	NYSOPRHP			x
Main Street Program http://www.nyshcr.org/programs/nymainstreet/	Financial resources and technical assistance to strengthen the economic vitality of the traditional Main Streets and neighborhoods. Funds village centers, revitalization of historic downtowns, mixed-use neighborhood commercial districts	NYS Homes and Community Renewal		x	x
Energy-Related Funding Opportunities http://www.nyserda.ny.gov/Funding-Opportunities.aspx	Funding to private or institutional entities submitting project plans to address NYSERDA's broad energy and environmental challenges	New York State Research & Development Authority (NYSERDA)		x	x
Environmental Protection and Improvement Grants http://www.dec.ny.gov/regulations/2590.html	Technical assistance grants to community groups with significant threat sites of environmental concern; available for community organizations, not-for-profit organizations and others	NYSDEC		x	x
Green Innovation Grant Program (GIGP) https://www.efc.ny.gov/Default.aspx?tabid=461	Grants for projects using creative storm-water infrastructure design and create cutting-edge green technologies, innovative stormwater management in areas that preserve and restore natural landscape features, such as floodplains and wetlands	NYSDEC Environmental Facility Corporation (EFC)			x
NYS Environmental Protection Fund; Water Resources Board http://www.dec.ny.gov/about/92815.html	Funds capital projects that protect the environment and enhance communities. Generally large projects that purchase land or construct facilities. Most projects that receive grants of EPF money combine it with other funding sources that require matching funds.	NYS Environmental Protection Fund; Water Resources Board		x	x

Program	Description	Lead Agency	R	T	F
Strategic Development Plans/Feasibility Studies https://esd.ny.gov/strategic-planning-and-feasibility-studies-program	Up to $100,000 for strategic development, feasibility studies, and facilities assessment and planning for economic development. Preference given to distressed communities, especially those supporting NY Rising Recovery	NYS Empire State Development			x
Floodplain Mitigation Support http://www.herkimercountyswcd.com/What-We-Do.html	Assistance with mitigation actions such as plantings on floodplain benches or erosion sites, culvert and proper channel sizing for streams; mapping; conservation education	Herkimer County Soil & Water Conservation District		x	
Citizen Preparedness Corps http://www.redcross.org/local/new-york/eastern-new-york/online-citizens-preparedness-training	Citizen training program for disaster preparedness, response and recovery for individuals, families and businesses	American Red Cross, Mohawk Valley Chapter		x	
ARC Herkimer County http://www.archerkimer.org/	Support services for vulnerable populations: transportation, family support, clinical services	ARC Herkimer County		x	x
Foundation Center http://foundationcenter.org	Online tool to locate funders, proposal writers, and information on private philanthropy	Foundation Center		x	x
American Red Cross http://redcross.org	Shelter, food, support, supplies, and assistance to populations impacted by disaster	American Red Cross, Mohawk Valley Chapter		x	x
Rockefeller Foundation https://www.rockefellerfoundation.org/our-work/grants/	Supports resiliency initiatives that meet their goals of revaluing ecosystems, advancing health, securing livelihoods, and transforming cities	Rockefeller Foundation		x	x
The Nature Conservancy http://www.nature.org	Partners with government, business, and non-profits to protect sensitive lands and waters	The Nature Conservancy		x	x
The Trust for Public Land http://www.tpl.org/services/conservation-finance	Assistance to state and local governments for conservation land purchases, finance, and park design & development	The Trust for Public Land		x	x
New York Land Protection Program & Conservation Finance Program http://www.osiny.org/site/PageServer?pagename=Program_NYLand	Acquisition and conservation easements; grants and short-term, low-cost bridge loans for land transactions in selected landscapes in the eastern United States	Open Space Institute		x	x
Public Health Programs http://www.cdcfoundation.org	Funding, expertise, leadership and/or connections to specific groups for projects addressing priority public health challenges	CDC Foundation		x	x

Capacity Building

Workforce development and community education support local capacity to mitigate and efficiently respond to disaster. Training opportunities for staff and volunteers build the capabilities of floodplain managers, building inspectors, water resource engineers, and others.

The organizations listed here offer free (or low-cost) training and educational materials on all-hazards planning and mitigation and hazard-specific issues that could be used by school districts as well as governmental and non-governmental organizations to develop school curricula, employee trainings, and public workshops.

- FEMA Independent Study Program (ISP) offers free, self-paced online courses for those in emergency management and related disciplines, and for the public.

  https://training.fema.gov/is/

- EPA's Green Infrastructure website offers online resources about types of materials, benefits, and implementation of green infrastructure. Examples provided.

  https://www.epa.gov/green-infrastructure

- EPA's Water/Wastewater Utility All-Hazards training is designated for water and wastewater employees responsible for emergency response and recovery activities.

  https://www.epa.gov/waterresiliencetraining/waterwastewater-utility-all-hazards-bootcamp-training

- American Planning Association, in partnership with the Association of State Floodplain Managers, offers webinars on best practices in floodplain management.

  https://www.planning.org/nationalcenters/hazards/planninginformationexchange/

APPENDIX 5: PROVISIONS FOR PLAN MAINTENANCE

Designation of County Hazard Mitigation Coordinator

The Herkimer County Comprehensive Emergency Management Plan (CEMP), updated, April 2015, designates the Director of the Herkimer County Office of Emergency Services (HCOES) as the County Hazard Mitigation Coordinator. CEMP Section II, Risk Reduction, describes the position responsibilities. The following is an excerpt from the CEMP:

A. **Designation of the Herkimer County Hazard Mitigation Coordinator**

1. The Director of the Herkimer County Office of Emergency Services (HCOES) has been designated by the Herkimer County Legislature as the Hazard Mitigation Coordinator.
2. The County Hazard Mitigation Coordinator is responsible for coordinating County efforts in reducing hazards in Herkimer County.
3. All County agencies will participate in risk-reduction activities with the County Hazard Mitigation Coordinator.
4. The Hazard Mitigation Coordinator will participate as a member of the County Comprehensive Emergency Planning Committee.

B. **Identification and Analysis of Potential Hazards**

1. The County Comprehensive Emergency Planning Committee will be comprised of:

- HCOES Director (Hazard Mitigation Coordinator)
- Herkimer County Fire Coordinator
- Herkimer County Public Health Director
- Herkimer County Soil and Water
- Herkimer County Sheriff
- Herkimer County Highway Department
- Herkimer County Sewer District
- Herkimer County EMS Coordinator
- American Red Cross – Mohawk Valley and Utica Chapters
- Herkimer County Amateur Radio Emergency Service/RACES
- New York State Police
- New York State DOH
- Herkimer County Coroner
- Local Fire Representation (HCFCA)
- Local Police Representation (HCPCA)

2. The County Comprehensive Emergency Planning Committee will:
   a) Identify potential hazards in the County;
   b) Determine the impact of each hazards on people and property; and
   c) Delineate the geographic areas affected by potential hazards, plot them on maps, and designate them as hazard areas.
3. Significant potential hazards to be identified and analyzed include natural, technological, and human-caused hazards.

4. To comply with (2) and (3) above, hazards posing a threat were identified and analyzed by the Emergency Planning Committee using the ***HIRA-NY*** program provided by the NYS Department of Homeland Security and Emergency Management Office (DHSES). A Vulnerability Assessment was also completed with County Departments and entities of the State, ARES, Niagara Mohawk, the American Red Cross, and other agencies.
5. This hazard analysis:
    a) provides a method for analyzing and ranking the hazards, including identification of geographic areas and populations at risk to specific hazards; and sets planning priorities for high-ranking hazards,
    b) was conducted in accordance with, and guidance from DHSES, and
    c) is to be reviewed and updated as needed, not to exceed every three years.
6. The rating and ranking results of the hazard analysis are found in Attachment 1 at the back conclusion of this section.
7. The complete Hazard Analysis results, including computerized maps identifying the location of hazard areas, are in the Herkimer County Office of Emergency Services.

C. **Risk Reduction Policies, Programs and Reports**

1. County agencies are authorized to:
    a) Promote risk-reduction policies, programs, and activities in their area of responsibility.
    b) Examples include:
        - Encourage municipalities to adopt comprehensive community development plans, zoning ordinances, subdivision regulations, and building codes that consider significant hazards in the county,
        - Promote compliance with and enforcement of existing laws, regulations, and codes that are related to hazard risks, e. g., building and fire codes, flood plain regulations,
        - Encourage and assist water and wastewater treatment plants to replace chlorine use with a safer disinfectant,
        - Encourage and foster stream channel maintenance programs, and
        - Encourage state and local DOT's to address dangerous conditions on roads used by hazardous materials carriers.
2. The Herkimer County Comprehensive Planning Board oversees land management of county-owned land, and review of countywide land use management, including:
        - Authorizing County land use management programs,

- Advising and assisting local governments in the county in developing and adopting comprehensive master plans for community development, zoning ordinances, subdivision regulations and building codes,
- Assisting and advising the Local Planning Boards in the review process of local zoning and subdivision actions,
- Participation in SEQRA review of proposed projects in the County.

3. In all the above activities, the County Comprehensive Planning Board will consider the significant hazards in Herkimer County.
4. The Herkimer County Comprehensive Emergency Planning Committee will conduct risk reduction workshops for municipalities to encourage their involvement in the county risk reduction program as needed.
5. The Herkimer County Comprehensive Emergency Planning Committee will meet bi-annually to identify specific hazard reduction actions that could be taken for those hazards determined by the hazard analysis to be most significant.
6. For each hazard reduction action identified, the Planning Team will include:
   a) A description of the action,
   b) A statement on the technical feasibility of the action,
   c) The estimated cost of the action,
   d) The expected benefits of the action and their estimated monetary value,
   e) An estimate of the level of community support for the action.
7. This information will be consolidated into a Risk Reduction Report.
8. The Risk Reduction Report will prioritize and recommend mitigation actions.
9. The Risk Reduction report will be presented to the County Office of Emergency Services for review, revision, and approval or disapproval, bi-annually.
10. The Risk Reduction Report will be presented to the Chief Administrative Officer, and the County Legislature (via the Chairman) for consideration and funding.

Mitigation Action Progress Report Form

As a tool for monitoring plan progress, the following form will be used to collect current information about to mitigation actions included in the current plan.

Mitigation Action Progress Report Form

Progress Report Period	**From Date:**	**To Date:**
Action/Project Title		
Responsible Agency		
Contact Name		
Contact Phone/Email		
Project Status	□ Project Completed □ Project canceled □ Project on schedule □ Anticipated completion date _____ □Project delayed Explain: _____	

Summary of Project Progress for this Report Period

1. What project accomplishments occurred during this reporting period?

2. What obstacles, problems, or delays did the project encounter?

3. If uncompleted, is the project still relevant? Should the project be changed or revised?

4. Other comments:

APPENDIX 6: PLAN ADOPTION DOCUMENTATION

APPENDIX 6-A: Sample Adoption Resolution

NOTE: After this HMP was adopted by each jurisdiction, scanned versions of adoption resolutions were incorporated in this Appendix. The sample Adoption Resolution shown here was provided as a template.

Herkimer County Multi-Jurisdictional Hazard Mitigation Plan Adoption
SAMPLE RESOLUTION

Resolution # ____
Adopting the Herkimer County
Multi-Jurisdictional Hazard Mitigation Plan - 2017

Whereas, *(name of county or municipality) recognizes the threat that natural hazards pose to people and property within our community: and*
Whereas, *undertaking hazard mitigation actions will reduce the potential for harm to people and property from future hazard occurrences; and*
Whereas, *an adopted Local Hazard Mitigation Plan is required as a condition of future funding for mitigation projects under multiple FEMA pre- and post-disaster mitigation grant programs; and*
Whereas, *(name of county or municipality) resides within the Planning Area, and fully participated in the mitigation planning process to prepare this Local Hazard Mitigation Plan; and*
Whereas, *the New York State Division of Homeland Security and Emergency Services and Federal Emergency Management Agency, Region II, officials have reviewed the Herkimer County Multi-Jurisdictional Hazard Mitigation Plan and approved it contingent upon this official adoption of the participating governing body; and*
Now, therefore, be it resolved, *that the (name of county or municipality) hereby adopts the Herkimer County Multi-Jurisdictional Hazard Mitigation Plan, 2017 as an official plan; and*
Be it further resolved, *Herkimer County Office of Emergency Services will submit this Adoption Resolution to the New York State Division of Homeland Security and Emergency Services and the Federal Emergency Management Agency, Region II, officials to enable the Plan's final approval.*

Passed: ___(date)___
_____
Certifying Official (printed)
_____
Certifying Official (signature)

APPENDIX 6-B: Adoption Resolutions – All Jurisdictions

The Herkimer County Multi-Jurisdictional Plan initially was submitted to NYS DHSES and FEMA for review and approval in April 2017. This submission was necessary so communities with FEMA-funded mitigation projects in progress could meet the local plan requirement. These communities had previously been given a 12-month exemption for extraordinary circumstances, giving them one year to complete the plan. In later months, the plan was revised to include additional jurisdictional annexes, creating a later timetable for adoption by other communities.

Resolutions from adopting communities were incorporated here as they were received by FEMA and NYS DHSES.

	Participating Jurisdiction	Date of Adoption
1.	Herkimer County	January 24, 2018
2.	Dolgeville, Village of	October 16, 2017
3.	Fairfield, Town of	August 15, 2017
4.	Frankfort, Town of	October 19, 2017
5.	Frankfort, Village of	October 5, 2017
6.	German Flatts, Town of	April 19, 2017
7.	Herkimer, Town of	October 16, 2017
8.	Herkimer, Village of	April 17, 2017
9.	Ilion, Village of	May 24, 2017
10.	Little Falls, City of	January 2, 2018
11.	Little Falls, Town of	October 17, 2017
12.	Manheim, Town of	October 10, 2017
13.	Mohawk, Village of	April 24, 2017

The following pages include signed and adopted resolutions from participating jurisdictions.

HERKIMER COUNTY LEGISLATURE

No. 33

REPORT AND RESOLUTION APPROVING 2017 HERKIMER COUNTY HAZARD MITIGATION PLAN

Sponsored by: Committee on Public Safety/Emergency Management

WHEREAS, by letter dated December 29, 2017, Matthew Palumbo, Director of Emergency Services/E911 has advised the 2017 Hazard Mitigation plan has been reviewed and approved by FEMA; and

WHEREAS, letter further states the following municipalities participated and are eligible for mitigation funding:

Village of Dolgeville, Town of Fairfield, Town of Frankfort, Village of Frankfort, Town of German Flatts, Town of Herkimer, Village of Herkimer, Village of Ilion, Town of Litchfield, Town of Little Falls, City of Little Falls, Town of Manheim, Village of Mohawk, Town of Norway, Town of Ohio, Town of Russia, Town of Salisbury, Town of Webb, Town of Winfield; and

WHEREAS, Resolutions adopting the Plan have been done by the following municipalities:

City of Little Falls, Town of Fairfield, Town of Frankfort, Town of German Flatts, Town of Herkimer, Town of Litchfield, Town of Little Falls, Town of Manheim, Village of Dolgeville, Village of Frankfort, Village of Herkimer, Village of Ilion, Village of Mohawk; and

WHEREAS, the Director of Emergency Management has advised that he has reviewed the plan and requests acceptance of the 2017 Hazard Mitigation Plan; now, therefore be it

RESOLVED, that the 2017 Herkimer County Hazard Mitigation Plan is hereby adopted by the Herkimer County Legislature; and, be it further

RESOLVED, that certified copies of this Resolution be forwarded to the Herkimer County Treasurer, Auditor, Budget Officer and Director of Emergency Services.

Dated: January 24, 2018.

STATE OF NEW YORK)
COUNTY OF Herkimer County) SS.
LEGISLATURE CHAMBERS)

I, SALLY I. DEMING, Clerk of the Legislature of Herkimer County, do hereby certify that I have compared the foregoing copy of Resolution No. 33 with the original duly adopted by the Herkimer County Legislature at a regular session held on the 24th day of January, 2018, and that the same is a true copy of said original and of the whole thereof.

IN WITNESS WHEROF, I have hereunto subscribed my name and affixed the official seal of said Legislature on this 25th day of January, 2018

L.S. *Sally Deming*, Clerk

VILLAGE OF DOLGEVILLE

INCORPORATED 1891

BRUCE T. LYON, *MAYOR*

TAMMY L CHMIELEWSKI
Village Clerk
MICHELE WEAKLEY
Village Treasurer
NORMAN MASTROMORO
Attorney

41 North Main Street
Dolgeville, NY 13329
Telephone: (315) 429-3112 Fax – 429-3113
Village Website – villageofdolgeville.org
E-Mail – clerk@villageofdolgeville.org
TDD: (315) 477-6447

Board of Trustees
WILLIAM REYNOLDS
Deputy Mayor
BROCK HERRINGSHAW
ROBERT G. MAXWELL
MARY E. PUZNOWSKI

HERKIMER COUNTY MULTI-JURISDICTIONAL
HAZARD MITIGATION PLAN ADOPTION

Resolution # 114 - 2017

The following resolution offered by Trustee Maxwell sec. Trustee Reynolds. Ayes all.

WHEREAS, the Village of Dolgeville recognized the threat that natural hazards pose to people and property within our community; and

WHEREAS, undertaking hazard mitigation actions will reduce the potential for harm to people and property from future hazard occurrences; and

WHEREAS, an adopted Local Hazard Mitigation Plan is required as a condition of future funding for mitigation projects under multiple FEMA pre- and post-disaster mitigation grant programs;

WHEREAS, the Village of Dolgeville resides within the Planning Area, and fully participated in the mitigation planning process to prepare this Local Hazard Mitigation Plan; and

WHEREAS, the New York State Division of Homeland Security and Emergency Services and Federal Emergency Management Agency, Region II, officials have reviewed the Herkimer County Multi-Jurisdictional Hazard Mitigation Plan and approved it contingent upon this official adoption of the participating governing body; and

NOW, THEREFORE, BE IT RESOLVED, Herkimer County Office of Emergency Services will submit this Adoption Resolution to the New York State Division of Homeland Security and Emergency Services and the Federal Emergency Management Agency, Region II, officials to enable the Plans final approval.

AYES: Trustees Herringshaw, Maxwell, Reynolds
ABSENT: Trustee Puznowski
NAYS: None
ADOPTED – October 16, 2017

Bruce T. Lyon
Certifying Official (Print)

Bruce T. Lyon
Certifying Official (Signature)

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Attachment 6-F: Mitigation Plan Adoption Resolution

(Name of Jurisdiction) Town of Fairfield

(Governing Body) Town of Fairfield Town Board

(Address) 449 Kelly Road, Little Falls, NY 13365

RESOLUTION 62-17

WHEREAS, the Town of Fairfield participated in the planning process to develop the 2017 Herkimer County Multi-Jurisdictional Hazard Mitigation Plan (the Plan) with other members of the Herkimer County Hazard Mitigation Planning Group (HMPG); and

WHEREAS, during the same process, the Village Board of Trustees and senior staff also participated in developing the Town of Fairfield Jurisdictional Annex to the Plan; and

WHEREAS, the Town of Fairfield Jurisdictional Annex and the Plan were prepared in accordance with the Disaster Mitigation Act of 2000; and

WHEREAS, the Town of Fairfield is a local unit of government that afforded its citizens an opportunity to comment and provide input in the Plan and the actions in the Plan by posting a copy in the office of the Town Clerk, where it will be available for review.

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

NOW, THEREFORE, BE IT RESOLVED by the Town Board that the Town of Fairfield adopts the 2017 Herkimer County Multi-Jurisdictional Hazard Mitigation Plan and Town of Fairfield Jurisdictional Annex as this community's Natural Hazard Mitigation Plan, and resolves to execute the actions in the Plan and the Annex.

ADOPTED this 15th day of August, 2017 at the meeting of the Town Board.

Henry A. Crofoot

(Henry A. Crofoot, Supervisor)

Mary A. Dineen

(Mary A. Dineen, Town Clerk)

Resolution No. 167/2017

TOWN OF FRANKFORT

HERKIMER COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN

Special Meeting of the Town Board of the Town of Frankfort, County of Herkimer, State of New York, held at the Frankfort Town Hall, 201 Third Ave, Frankfort, New York, on the 19th day of October, 2017 at 6:00 P.M.

Present: Deputy Supervisor Wallace, Council Members Abbatecola, Tamburro and Wallace.
Upon motion by Deputy Supervisor Wallace, seconded by Council Members Abbatecola and Testa, the following Resolution was introduced.

WHEREAS, the Town of Frankfort participated in the planning process to develop the 2017 Herkimer County Multi-Jurisdictional Hazard Mitigation Plan (the Plan) with other members of the Herkimer County Hazard Mitigation Planning Group (HMPG); and

WHEREAS, during the same process, the Village Board of Trustees and senior staff also participated in developing the Town of Frankfort Jurisdictional Annex to the Plan; and

WHEREAS, the Town of Frankfort Jurisdictional Annex and the Plan were prepared in accordance with the Disaster Mitigation Act of 2000; and

WHEREAS, the Town of Frankfort is a local unit of government that will afford its citizens an opportunity to comment and provide input in the Plan and the actions in the Plan by posting on its web site a link to the draft plan and annex during the public comment period and agree to consider all public input; and

WHEREAS, the Town Board has reviewed the Plan and Jurisdictional Annex and affirms that both will be updated no less than every five years.

NOW, THEREFORE, BE IT RESOLVED by the Town Board that the Town of Frankfort adopts the 2017 Herkimer County Multi-Jurisdictional Hazard Mitigation Plan and Town of Frankfort Jurisdictional Annex as this community's Natural Hazard Mitigation Plan, and resolves to execute the actions in the Plan and the Annex.

The foregoing resolution was duly put to vote on roll call which resulted as follows:
4 Ayes
0 Nays

The Resolution was thereupon declared duly adopted by the Town Board of the Town of Frankfort on October 19, 2017.

CERTIFICATION

I hereby certify that this is a true copy of the Resolution No. 167 of 2017, of the Town of Frankfort lawfully adopted on the date and at the place stated therein.

Dated: October 19, 2017

Georgina Bellino

Georgina Bellino, Town Clerk

(Seal)

Attachment 5-G: Draft Mitigation Plan Adoption Resolution

(Name of Jurisdiction) Village of Frankfort

(Governing Body) Village of Frankfort Board of Trustees

(Address) 110 Railroad St, Frankfort NY 13340

RESOLUTION #15 -2017

WHEREAS, the Village of Frankfort participated in the planning process to develop the 2017 Herkimer County Multi-Jurisdictional Hazard Mitigation Plan (the Plan) with other members of the Herkimer County Hazard Mitigation Planning Group (HMPG); and

WHEREAS, during the same process, the Village Board of Trustees and senior staff also participated in developing the Village of Frankfort Jurisdictional Annex to the Plan; and

WHEREAS, the Village of Frankfort Jurisdictional Annex and the Plan were prepared in accordance with the Disaster Mitigation Act of 2000; and

WHEREAS, the Village of Frankfort is a local unit of government that afforded its citizens an opportunity to comment and provide input in the Plan and the actions in the Plan by posting on its web site a link to the draft plan and annex during the public comment period and agreed to consider all public input; and

WHEREAS, the Board of Trustees has reviewed the Plan and Jurisdictional Annex and affirms that both will be updated no less than every five years;

NOW, THEREFORE, BE IT RESOLVED by the Board of Trustees that the Village of Frankfort adopts the 2017 Herkimer County Multi-Jurisdictional Hazard Mitigation Plan and Village of Frankfort Jurisdictional Annex as this community's Natural Hazard Mitigation Plan, and resolves to execute the actions in the Plan and the Annex.

ADOPTED this 5th Day of October 2017 at the meeting of the Board of Trustees.

(Richard D. Adams, Mayor)

(Karlee Tamburro, Village Clerk)

Frank P. Spetto
Supervisor

Dennis L. Mowers
Salvatore J. Geloso
Robert K. Watkins
Fay G. Davis
Town Council

Town of German Flatts

66 East Main Street • P.O. Box 57
Mohawk, New York 13407-1137
Phone: 315-866-1370 • Fax: 315-866-9640

Marie K. Hennings
Town Clerk

Cherri L. Hyer
Receiver of Taxes

Andrew J. Dutcher
Superintendent of Highways

Resolution # 17-03

Adoption of the Herkimer County Multi-Jurisdictional Hazard Mitigation Plan - 2017

Whereas, *the Town of German Flatts recognizes the threat that natural hazards pose to people and property within our community; and*

Whereas, *undertaking hazard mitigation actions will reduce the potential for harm to people and property from future hazard occurrences; and*

Whereas, *an adopted local hazard mitigation plan is required as a condition of future funding for mitigation projects under multiple FEMA pre-disaster and post-disaster mitigation grant programs; and*

Whereas, *the Town of German Flatts lies within Herkimer County, and fully participated in the mitigation planning process to prepare the Herkimer County Multi-Jurisdictional Hazard Mitigation Plan; and*

Whereas, *the New York State Division of Homeland Security and Emergency Services and Federal Emergency Management Agency, Region II, officials have reviewed the Herkimer County Multi-Jurisdictional Hazard Mitigation Plan and approved it contingent upon this official adoption of the participating governing body.*

Now, therefore, be it resolved, *that the Town of German Flatts hereby adopts the Herkimer County Multi-Jurisdictional Hazard Mitigation Plan, 2017 as an official plan; and*

Be it further resolved, *Herkimer County Office of Emergency Services will submit this Adoption Resolution to the New York State Division of Homeland Security and Emergency Services and the Federal Emergency Management Agency, Region II, officials to enable the Plan's final approval.*

Adopted on this 19th day of April, 2017

Marie K. Hennings

Marie K. Hennings
Town Clerk

RESOLUTION OF TOWN BOARD ADOPTING THE HERKIMER COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN OF 2017

Resolution No. 29 of 2017

At a meeting of the Town Board of the Town of Herkimer, held at the Town Hall, 114 North Prospect Street, in the Town of Herkimer, Herkimer County, New York on the 16th day of October, 2017:

Present: Dominic Frank, Supervisor
Randy Kast, Councilman
Daniel Stalteri, Councilman
Kathy Penree, Councilwoman

Absent: Vito Carbone, Councilman

Whereas, the Town of Herkimer recognizes the threat that natural hazards pose to people and property within our community: and

Whereas, undertaking hazard mitigation actions will reduce the potential for harm to people and property from future hazard occurrences; and

Whereas, an adopted Local Hazard Mitigation Plan is required as a condition of future funding for mitigation projects under multiple FEMA pre- and post-disaster mitigation grant programs; and

Whereas, the Town of Herkimer resides within the Planning Area, and fully participated in the mitigation planning process to prepare this Local Hazard Mitigation Plan; and

Whereas, the New York State Division of Homeland Security and Emergency Services and Federal Emergency Management Agency, Region II, officials have reviewed the Herkimer County Multi-Jurisdictional Hazard Mitigation Plan and approved it contingent upon this official adoption of the participating governing body; and

NOW, on motion of Councilman Daniel Stalteri, seconded by Councilwoman Kathy Penree, and all members present voting there for;

LET IT BE ORDERED, RESOLVED AND DETERMINED that the Town of Herkimer hereby adopts the Herkimer County Multi-Jurisdictional Hazard Mitigation Plan, 2017 as an official plan; and

Be it further ORDERED, RESOLVED AND DETERMINED, that Herkimer County Office of Emergency Services will submit this Adoption Resolution to the New York State Division of Homeland Security and Emergency Services and the Federal Emergency Management Agency, Region II, officials to enable the Plan's final approval.

Roll Call:	Aye	No	Absent
Supervisor Frank	X		
Councilman Kast	X		
Councilman Stalteri	X		
Councilwoman Penree	X		
Councilman Carbone			X
Total:	4		1

CERTIFICATE OF RECORDING OFFICER

The undersigned hereby certifies that:

1. She is the duly qualified and acting Clerk of the Town of Herkimer and the custodian of the records of the Town of Herkimer, including the minutes of the proceedings of the Town Board; and is duly authorized to execute this certificate.

2. Attached hereto is a true and correct copy of a resolution duly adopted at a meeting of the Town Board held the 16th day of October, 2017 and entitled:

RESOLUTION OF TOWN BOARD ADOPTING THE HERKIMER COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN OF 2017

3. Said meeting was duly convened and held and said resolution was duly adopted in all respects in accordance with the law and the regulations of the Town. To the extent required by law or regulation, due and proper notice of said meeting was given. A legal quorum of the members of the Town Board was present throughout said meeting, and a legally sufficient number of members voted in the proper manner for the adoption of the resolution. All other requirements and proceedings under law, said regulations, or otherwise, incident to said meeting and the adoption of the resolution, including any publication, if required by law, have been duly fulfilled, carried out and otherwise observed.

4. The seal appearing below constitutes the official seal of the Town of Herkimer and was duly affixed by the undersigned at the time this certificate was signed.

IN WITNESS THEREOF, the undersigned as hereunto set her hand this 16th day of October, 2017.

Jennifer M. DeMetro, Town Clerk

(SEAL)

Resolution #16-61 **REGULAR MEETING APRIL 17, 2017**

Adopting the Herkimer County Multi-Jurisdictional Hazard Mitigation Plan – 2017

Whereas, the Village of Herkimer recognizes the threat that natural hazards pose to people and property within our community: and
Whereas, undertaking hazard mitigation actions will reduce the potential for harm to people and property from future hazard occurrences; and
Whereas, an adopted Local Hazard Mitigation Plan is required as a condition of future funding for mitigation projects under multiple FEMA pre-and post disaster mitigation grant programs; and
Whereas, the Village of Herkimer resides within the Planning Area, and fully participated in the mitigation planning process to prepare this Local Hazard Mitigation Plan; and
Whereas, the New York State Division of Homeland Security and Emergency Services and Federal Emergency Management Agency, Region II, officials have reviewed the Herkimer County Multi-Jurisdictional Hazard Mitigation Plan and approved it contingent upon this official adoption of the participating governing body; and
Now, therefore, be it resolved, that the Village of Herkimer hereby adopts the Herkimer County Multi-Jurisdictional Hazard Mitigation Plan, 2017 as an official plan; and
Be it further resolved, Herkimer County Office of Emergency Services will submit this Adoption Resolution to the New York State Division of Homeland Security and Emergency Services and the Federal Emergency Management Agency, Region II, officials to enable the Plan's final approval.

Passed: On a motion by Trustee Weisser second by Trustee Ball and carried.

Anthony B. Brindisi
Mayor (printed)

Mayor (signature)

VILLAGE MAYOR
Terry A. Leonard

VILLAGE TRUSTEES
Joanne L. Moore, Deputy Mayor
Bridget McKinley
Fred E. Hartmann
Kalman A. Socolof

VILLAGE ADMINISTRATOR
James Kramas

Village of Ilion
49 Morgan Street
Ilion, NY 13357
Phone: 315-895-7449
TDD 711

VILLAGE TREASURER
MariJo Thompson

DEPUTY VILLAGE CLERK
Sue Hale

VILLAGE ATTORNEY
Mark R. Rose

Resolution # 2017 - 45

Adoption of the Herkimer County
Multi-Jurisdictional Hazard Mitigation Plan (2017)

Whereas, the Village of Ilion recognizes the threat that natural hazards pose to people and property within our community; and

Whereas, undertaking hazard mitigation actions will reduce the potential for harm to people and property from future hazard occurrences; and

Whereas, an adopted local hazard mitigation plan is required as a condition of future funding for mitigation projects under multiple FEMA pre-disaster and post-disaster mitigation grant programs; and

Whereas, the Village of Ilion lies within Herkimer County, and fully participated in the mitigation planning process to prepare the Herkimer County Multi-Jurisdictional Hazard Mitigation Plan; and

Whereas, the New York State Division of Homeland Security and Emergency Services and Federal Emergency Management Agency, Region II, officials have reviewed the Herkimer County Multi-Jurisdictional Hazard Mitigation Plan and approved it contingent upon this official adoption of the participating governing body.

Now, therefore, be it resolved, that the Village of Ilion hereby adopts the Herkimer County Multi-Jurisdictional Hazard Mitigation Plan, 2017 as an official plan; and

Be it further resolved, Herkimer County Office of Emergency Services will submit this Adoption Resolution to the New York State Division of Homeland Security and Emergency Services and the Federal Emergency Management Agency, Region II, officials to enable the Plan's final approval.

Motion: Trustee Kalman Socolof Second: Deputy Mayor Joanne Moore
Vote Totals:

Mayor Terry Leonard:	AYE
Deputy Mayor Joanne Moore:	AYE
Trustee Fred Hartmann:	AYE
Trustee Bridget McKinley:	AYE
Trustee Kalman Socolof:	AYE

5 AYES 0 NAYS 0 ABSTAIN 0 ABSENT

Adopted this 24th day of May, 2017

Sue Hale

Sue Hale, Deputy Village Clerk

AN EQUAL EMPLOYMENT OPPORTUNITY-AFFIRMATIVE ACTION EMPLOYER

Herkimer County Multi-Jurisdictional Hazard Mitigation Plan Adoption

Resolution # _10____

Adopting the Herkimer County

Multi-Jurisdictional Hazard Mitigation Plan - 2017

Whereas, *the City of Little Falls recognizes the threat that natural hazards pose to people and property within our community: and*

Whereas, *undertaking hazard mitigation actions will reduce the potential for harm to people and property from future hazard occurrences; and*

Whereas, *an adopted Local Hazard Mitigation Plan is required as a condition of future funding for mitigation projects under multiple FEMA pre- and post-disaster mitigation grant programs; and*

Whereas, *the City of Little Falls resides within the Planning Area, and fully participated in the mitigation planning process to prepare this Local Hazard Mitigation Plan; and*

Whereas, *the New York State Division of Homeland Security and Emergency Services and Federal Emergency Management Agency, Region II, officials have reviewed the Herkimer County Multi-Jurisdictional Hazard Mitigation Plan and approved it contingent upon this official adoption of the participating governing body; and*

Now, therefore, be it resolved, *that the City of Little Falls hereby adopts the Herkimer County Multi-Jurisdictional Hazard Mitigation Plan, 2017 as an official plan; and*

Be it further resolved, *Herkimer County Office of Emergency Services will submit this Adoption Resolution to the New York State Division of Homeland Security and Emergency Services and the Federal Emergency Management Agency, Region II, officials to enable the Plan's final approval.*

Passed: 01-02-2018

Kira M. Miller

Certifying Official (printed)

Kira M. Miller

Certifying Official (signature)

Motioned by: Welyczko Seconded by: Shaffer Roll call: Gressler,Shaffer, Dillon, Welyczko, Ruffing, Regan, Carter, Atutis

Chief Parese

Appendix 6 - 1

Herkimer County Multi-Jurisdictional Hazard Mitigation Plan Adoption

Resolution # 60

Adopting the Herkimer County

Multi-Jurisdictional Hazard Mitigation Plan - 2017

Whereas, *the Town of Little Falls recognizes the threat that natural hazards pose to people and property within our community: and*

Whereas, *undertaking hazard mitigation actions will reduce the potential for harm to people and property from future hazard occurrences; and*

Whereas, *an adopted Local Hazard Mitigation Plan is required as a condition of future funding for mitigation projects under multiple FEMA pre- and post-disaster mitigation grant programs; and*

Whereas, *the Town of Little Falls resides within the Planning Area, and fully participated in the mitigation planning process to prepare this Local Hazard Mitigation Plan; and*

Whereas, *the New York State Division of Homeland Security and Emergency Services and Federal Emergency Management Agency, Region II, officials have reviewed the Herkimer County Multi-Jurisdictional Hazard Mitigation Plan and approved it contingent upon this official adoption of the participating governing body; and*

Now, therefore, be it resolved, *that the Town of Little Falls hereby adopts the Herkimer County Multi-Jurisdictional Hazard Mitigation Plan, 2017 as an official plan; and*

Be it further resolved, *Herkimer County Office of Emergency Services will submit this Adoption Resolution to the New York State Division of Homeland Security and Emergency Services and the Federal Emergency Management Agency, Region II, officials to enable the Plan's final approval.*

Passed: 10/17/2017

Brian T. Marhaver, Supervisor

Certifying Official (printed)

Certifying Official (signature)

Resolution # 22

Adopting the Herkimer County

Multi-Jurisdictional Hazard Mitigation Plan - 2017

Motioned by Frederick Doerrer, seconded by Peter Jaikin

***Whereas**, the Town of Manheim recognizes the threat that natural hazards pose to people and property within our community: and*

***Whereas**, undertaking hazard mitigation actions will reduce the potential for harm to people and property from future hazard occurrences; and*

***Whereas**, an adopted Local Hazard Mitigation Plan is required as a condition of future funding for mitigation projects under multiple FEMA pre- and post-disaster mitigation grant programs; and*

***Whereas**, the Town of Manheim resides within the Planning Area, and fully participated in the mitigation planning process to prepare this Local Hazard Mitigation Plan; and*

***Whereas**, the New York State Division of Homeland Security and Emergency Services and Federal Emergency Management Agency, Region II, officials have reviewed the Herkimer County Multi-Jurisdictional Hazard Mitigation Plan and approved it contingent upon this official adoption of the participating governing body; and*

***Now, therefore, be it resolved**, that the Town of Manheim hereby adopts the Herkimer County Multi-Jurisdictional Hazard Mitigation Plan, 2017 as an official plan; and*

***Be it further resolved**, Herkimer County Office of Emergency Services will submit this Adoption Resolution to the New York State Division of Homeland Security and Emergency Services and the Federal Emergency Management Agency, Region II, officials to enable the Plan's final approval.*

Ayes: Supervisor John Haughton, Councilmen Frederick Doerrer, Peter Jaikin, Kevin Snell

Rodney Swartz

Nays: 0

Passed: October 10, 2017

Marie Gressler, Town Clerk

Certifying Official (printed)

Marie Gressler

Certifying Official (signature)

Mayor James M. Baron
Clerk-Treasurer Judy L. Bray
Village Attorney Karl E. Manne

Trustees: George W. Cryer
Matthew T. Watkins
Carmen D. Tubia
Kathleen C. Eisenhut

In The Heart Of The Mohawk Valley

VILLAGE OF MOHAWK

Established 1844

28 Columbia Street
Phone: 315-866-4312 • Mohawk, New York 13407 • Fax: 315-866-0616

Resolution # 04017

Adoption of the Herkimer County
Multi-Jurisdictional Hazard Mitigation Plan - 2017

***Whereas**, the Village of Mohawk recognizes the threat that natural hazards pose to people and property within our community; and*

***Whereas**, undertaking hazard mitigation actions will reduce the potential for harm to people and property from future hazard occurrences; and*

***Whereas**, an adopted local hazard mitigation plan is required as a condition of future funding for mitigation projects under multiple FEMA pre-disaster and post-disaster mitigation grant programs; and*

***Whereas**, the Village of Mohawk lies within Herkimer County, and fully participated in the mitigation planning process to prepare the Herkimer County Multi-Jurisdictional Hazard Mitigation Plan; and*

***Whereas**, the New York State Division of Homeland Security and Emergency Services and Federal Emergency Management Agency, Region II, officials have reviewed the Herkimer County Multi-Jurisdictional Hazard Mitigation Plan and approved it contingent upon this official adoption of the participating governing body.*

***Now, therefore, be it resolved**, that the Village of Mohawk hereby adopts the Herkimer County Multi-Jurisdictional Hazard Mitigation Plan, 2017 as an official plan; and*

***Be it further resolved**, Herkimer County Office of Emergency Services will submit this Adoption Resolution to the New York State Division of Homeland Security and Emergency Services and the Federal Emergency Management Agency, Region II, officials to enable the Plan's final approval.*

Adopted on this 24th day of April, 2017

Judy L. Bray

Judy Bray
Village Clerk