

Broome Conceptual Plan



**NY RISING
COMMUNITY RECONSTRUCTION PROGRAM**

October 31, 2013

This document was developed by the Broome Planning Committee as part of the NY Rising Community Reconstruction (NYRCR) Program within the Governor's Office of Storm Recovery. The NYRCR Program is supported by NYS Homes and Community Renewal, NYS Department of State, and NYS Department of Transportation. Assistance was provided by the following consulting firms: Parsons Transportation Group of New York, Inc.; VHB Engineering, Surveying, and Landscape Architecture, PC; M.J. Engineering and Land Surveying, PC; Synthesis, LLP; and Arch Street Communications, Inc.

Broome NYRCR Steering Committee

Gail Domin, Co-Chair

Tim Grippen, Co-Chair

Vince Pasquale, Co-Chair

Committee Members and Elected Officials

Tarik Abdelazim

Robert Bennett

Patrick Brennan

Gary Campo

Greg Deemie

James Finch

Philip Grayson

Tom Delamarter

Alan Hertel

Dave Hubeny

Chip (Charles) McElwee

Elaine Miller

Erik Miller

Karry Mullins

Paul Nelson

Bob Pass

John Schaffer

Rev. Dr. Joe Sellepack

Rose Sotak

Dave Tanenhaus

Broome

CONCEPTUAL PLAN

October 31, 2013

FOREWORD

The New York Rising Community Reconstruction (NYRCR) program was established by Governor Andrew M. Cuomo to provide additional rebuilding and revitalization assistance to communities damaged by Superstorm Sandy, Hurricane Irene, and Tropical Storm Lee. This program empowers communities to prepare locally-driven recovery plans to identify innovative reconstruction projects and other needed actions to allow each community not only to survive, but also to thrive in an era when natural risks will become increasingly common.

The NYRCR program is managed by the Governor's Office of Storm Recovery in conjunction with New York State Homes and Community Renewal and the Department of State. The NYRCR program consists of both planning and implementation phases, to assist communities in making informed recovery decisions.

The development of this conceptual plan is the result of innumerable hours of effort from volunteer planning committee members, members of the public, municipal employees, elected officials, state employees, and planning consultants. Across the state, over 102 communities are working together to build back better and stronger.

This conceptual plan is a snapshot of the current thoughts of the community and planning committee. The plans will evolve as communities analyze the risk to their assets, their needs and opportunities, the potential costs and benefits of projects and actions, and their priorities. As projects are more fully defined, the potential impact on neighboring municipalities or the region as a whole may lead to further modifications.

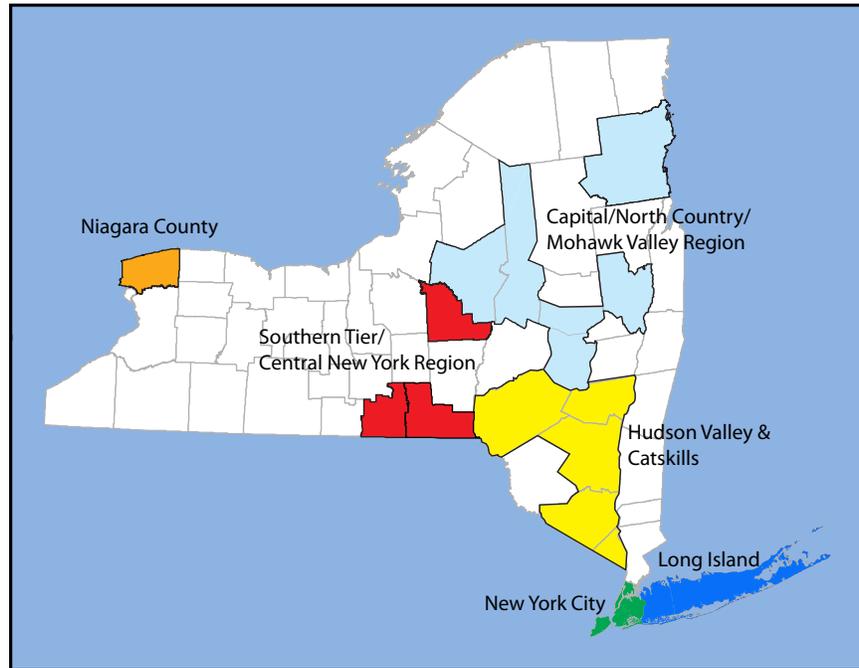
In the months ahead, communities will develop ways to implement additional strategies for economic revitalization, human services, housing, infrastructure, natural and cultural resources, and the community's capacity to implement changes.

Implementation of the proposed projects and actions found in this conceptual plan is subject to applicable federal, state, and local laws and regulations. Inclusion of a project or action in this conceptual plan does not guarantee that a particular project or action will be eligible for Community Development Block Grant – Disaster Recovery (CDBG-DR) funding. Proposed projects or actions may be eligible for other state or federal funding, or could be accomplished with municipal, nonprofit or private investment.

Each NYRCR Community will continue to engage the public as they develop a final plan for community reconstruction. Events will be held to receive feedback on the conceptual plan, to provide an understanding of risk to assets, and to gather additional ideas for strategies, projects and actions.

October 31, 2013

NEW YORK RISING COMMUNITIES



Find out more at:

StormRecovery.ny.gov/Community-Reconstruction-Program

TABLE OF CONTENTS

1. OVERVIEW

1.1 PURPOSE	1-1
1.2 PROCESS	1-1
1.3. GEOGRAPHIC SCOPE	1-4
1.4 COMMUNITY OVERVIEW	1-4
1.5 VISION.....	1-7
1.6 SUMMARY OF STORM DAMAGE.....	1-7
1.7 RELEVANT EXISTING PLANS AND STUDIES.....	1-9

2. ASSESSMENT OF RISK AND NEEDS

2.1 DESCRIPTION OF ASSETS.....	2-1
2.1.1 Description of Assets	2-1
2.1.2 Assessment of Risk to Assets.....	2-2
2.2. ASSESSMENT OF NEEDS AND OPPORTUNITIES	2-5

3. RECONSTRUCTION STRATEGIES AND IMPLEMENTATION ACTIONS

3.1 INTRODUCTION	3-1
3.1.1 Strategies	3-1
3.1.2 Management Measures	3-2
3.2 BROOME COMMUNITY RECONSTRUCTION STRATEGIES.....	3-2
3.2.1 Community Planning and Capacity Building.....	3-3
3.2.2 Economic Strategies.....	3-3
3.2.3 Health and Social Services Strategies.....	3-3
3.2.4 Housing Strategies	3-4
3.2.5 Infrastructure Strategies.....	3-4
3.2.6 Natural and Cultural Resource Strategies	3-4
3.3 POTENTIAL KEY PROJECTS	3-4
3.3.1 Community Planning and Capacity Building.....	3-5
3.3.2 Economic	3-5

3.3.3 Health and Social Services3-5

3.3.4 Housing.....3-5

3.3.5 Infrastructure3-6

3.3.6 Natural and Cultural Resources.....3-6

3.4 RELATIONSHIP TO REGIONAL PLANS3-6

3.5 COMMUNITY ENGAGEMENT3-6

3.6 IMPLEMENTATION OF LOCAL ACTIONS3-8

LIST OF FIGURES

1.1 Geographic Area.....1-5

2.1 Assets and Risk.....2-3

LIST OF TABLES

2.1 Quantity of Assets Potentially at Risk2-1

1 Overview

1.1 PURPOSE

The New York Rising Community Reconstruction (NYRCR) program – launched earlier this year by Governor Cuomo and funded by the federal recovery dollars – is designed to empower communities that suffered significant damage in recent storms to create and implement locally-oriented strategies to rebuild and better prepare for future extreme weather.

Representing 102 communities across the state, NYRCR program steering committees are comprised of community leaders, experts, and officials who incorporate their community's unique needs into their redevelopment strategies. Communities have eight months to prepare and submit their plans. The communities will be eligible to share in more than \$500 million of funding made available through the federal supplemental appropriation the Governor worked with Congress to obtain earlier this year. The State will also award at least \$250 million of the State's FEMA-funded Hazard Mitigation Grant Program (HMGP) to New York Rising Communities to implement eligible projects contained in their recovery plans.

1.2 PROCESS

The “Broome Community” comprises six riverine municipalities located in Broome County: the City of Binghamton, Town of Conklin, Town of Vestal, Town of Union, Village of Endicott, and Village of Johnson City. When Superstorm Sandy struck on October 29, 2012, these communities were already a year into their recovery planning in response to flooding caused by Hurricane Irene and Tropical Storm Lee in 2011. Under the NYRCR program, these municipalities will work collectively to cover the planning process and required elements of the NYRCR Plan.



Governor Andrew Cuomo speaking at the NY Rising Storm Recovery Conference.



The NY Rising Community Reconstruction Program offers professional planning support and project implementation funding to targeted communities.

The process highlights the following areas of interest a NYRCR Plan must address:

- Economic development;
- Health and social services;
- Housing;
- Infrastructure systems;
- Natural and cultural systems;
- Socially vulnerable populations; and
- Other assets of community importance.

Tasks that the Broome Community will complete to prepare its NYRCR Plan include:

- **Vulnerable Populations.** Evaluate those who are often underserved and displaced in storm recovery. Vulnerable populations include people with disabilities, low and very low-income people, the elderly, young children, the homeless, and people at risk of becoming homeless. The NYRCR Plan will enable planners to target outreach to these people and work with their advocates to develop a plan that is responsive to their needs.
- **Review Final Risk Assessment Maps.** The planning team will prepare maps representing the 100- and 500-year flood plains and present them to the NYRCR Steering Committee and the public. If comparable asset inventories are available in the Broome County Hazard Mitigation Plan or as “Floodprone Buildings Databases” prepared by the U.S. Army Corps of Engineers, these materials will be reviewed and incorporated as appropriate. The risk assessment maps will serve as a tool to discuss the geographic study area.
- **Geographic Scope.** The planning team will work with the NYRCR Steering Committee Co-chairs and New York State Department of State (NYSDOS) to define the geographic study area, using the municipal boundaries as the starting point. Maps based on the study area will be produced to highlight the initial list of assets within the 100- and 500-year flood plains.

- **Public Engagement Strategy and Approach to Community Meetings.** The planning team will work with the NYRCR Steering Committee Co-chairs and NYSDOS to establish the approach and schedule for public meetings. Public meetings will be advertised in advance and the State’s NY Rising website will be used to post meeting announcements and public documents. A number of the tasks involving public engagement have been completed, including the review of assets and risk and the development of the vision statement.
- **Vision Statement.** A vision statement has been prepared in coordination with the NYRCR Steering Committee and the public that addresses key issues, including capitalizing on assets, rebuilding in a resilient manner, and reducing future risk.
- **Community Asset Inventory.** Digital data sets provided by the State and Broome County will be used to identify assets that are located within high risk areas (100-year floodplain) and moderate risk areas (500-year floodplains). Each asset’s information and attributes will be recorded in the asset inventory spreadsheet prepared by the New York State Department of State (NYSDOS).
- **Risk Assessment Framework.** The risk assessment will build on existing data to determine each asset’s risk score based on three factors: hazard, vulnerability, and exposure using the riverine risk assessment spreadsheet tool prepared by the NYSDOS. A map will be prepared to illustrate the location of assets in high and moderate risk areas.
- **Needs and Opportunities Assessment.** The needs and opportunities assessment will be based on existing data. The assessment will be focused on six FEMA recovery support functions: community planning and capacity building, economic development, health and social services, housing, infrastructure, and natural and cultural resources.
- **Identification of Reconstruction Strategies.** The planning team will support the NYRCR Steering Committee as it identifies and develops strategies, projects, programs, and actions and classifies them according to the six FEMA recovery support functions.
- **Regional Planning Strategy.** A strategy will be developed to coordinate the efforts emerging from the proposed Southern Tier Regional Resiliency Summit. It will address the shared needs of the Susquehanna River communities and be integrated into the NYRCR Plan by reference.

- **Implementation Schedule and Matrix.** A summary of implementation steps, schedule, and relative priorities will be prepared.

1.3. GEOGRAPHIC SCOPE

The NYRCR Plan's geographic study area includes the boundaries of the six jurisdictions that comprise the Broome Community: the city of Binghamton, the towns of Vestal, Union and Conklin and the villages of Johnson City and Endicott (see Figure 1.1). Some of the property within this geographic scope was not affected by flooding from Hurricane Irene and Tropical Storm Lee; however, these areas may be used for redevelopment and relocation of facilities out of high or moderately hazardous zones.

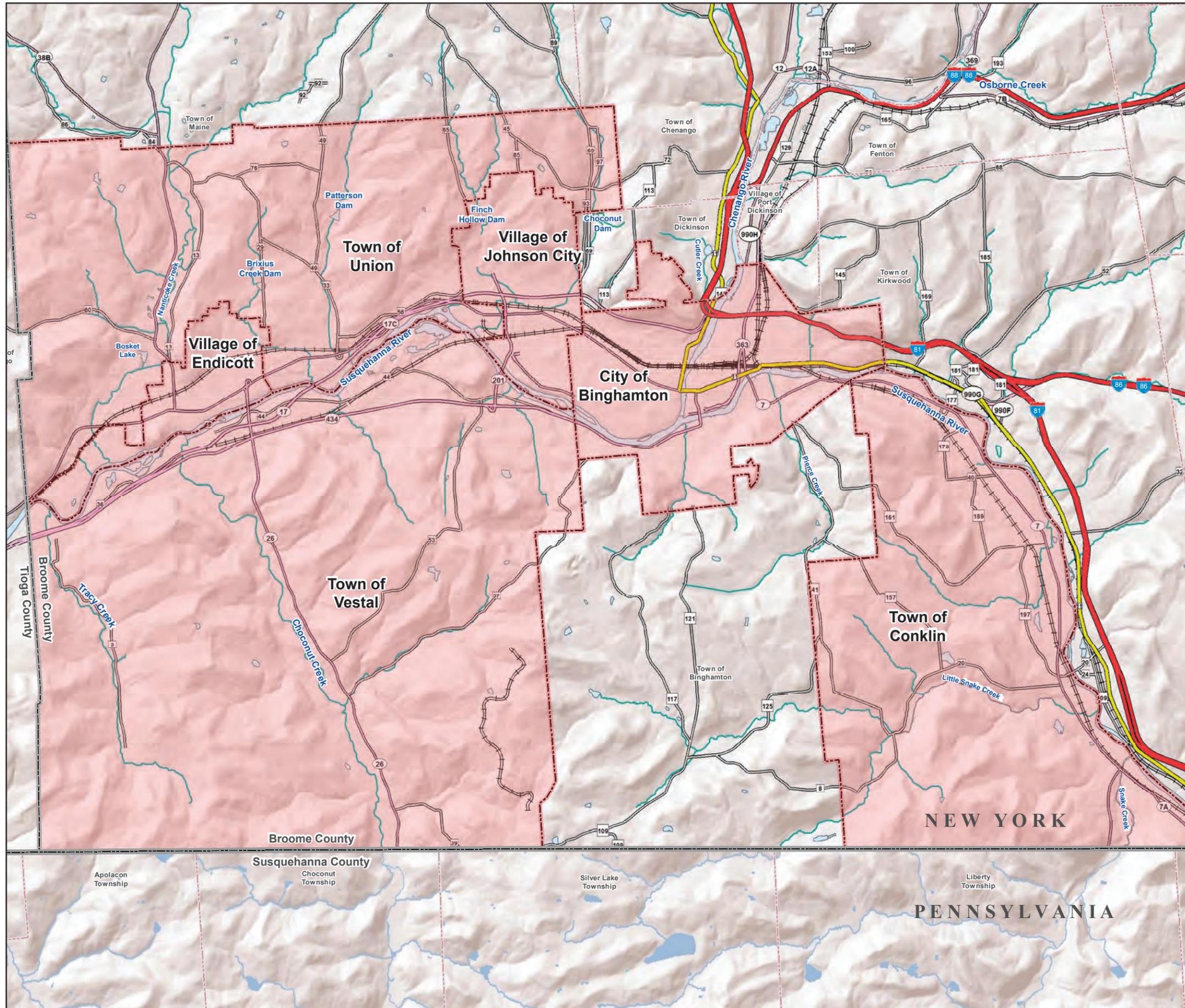
1.4 COMMUNITY OVERVIEW

Broome County is located in south central New York State, along the Pennsylvania border. The communities that are the subject of this plan are all located along or proximate to the Susquehanna River. The City of Binghamton, the County seat and its major urban area, is located at the confluence of the Susquehanna and Chenango rivers. The other communities are characterized by a mix of urban and suburban development patterns. Transportation corridors in Broome County generally follow the river valleys.

Broome County's 2010 population was 200,600 persons, essentially unchanged from 2000. The six communities covered in this plan had a total population in 2010 of 137,206 persons. The Town of Union and the City of Binghamton had populations in 2010 of 56,346 and 47,376 persons, respectively.

From 1950 to 2010, Broome County experienced significant suburbanization. Binghamton experienced substantial population loss as people moved to Vestal, Chenango, and other nearby areas. From 2000 to 2010, Vestal grew by 5.6 percent. At the other end of the spectrum, the Town of Conklin lost 8.4 percent of its population, partly due to implementation of the FEMA buyout programs in the aftermath of the 2006 floods.

In the County as a whole, there has been a shift in land use from agriculture to residential and vacant. According to the 2013 Broome County Hazard Mitigation Plan, approximately 12,800 acres of agricultural land, or about 15 percent of the County's total, was lost between 2006 and 2012. Currently, residential uses make up 45 percent of the County's total land area and vacant properties are 35 percent. Together, commercial and industrial uses occupy only 2 percent of the County's total land area.



Key Map

Legend

NYRCR Plan Study Area

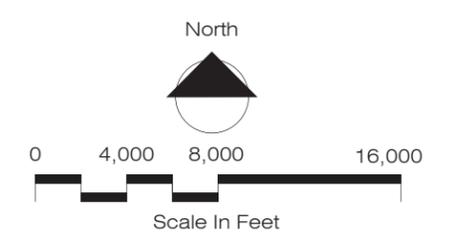


Figure 1.1
Geographic Area

1.5 VISION

To help inspire and guide the planning process, the Broome NYRCR Steering Committee developed a community vision statement at the outset of the project. The preliminary vision statement was presented for review at the first public meeting. Based on feedback received from committee members and the public, the preliminary vision statement was further refined. In its final form, the Broome Community's vision statement expresses a resilient, vibrant, and safe future for the communities along the Susquehanna River.

Broome NYRCR Plan Vision Statement

The diverse, urban, suburban, and rural communities of Broome County are working together, regionally, to ensure an economically vibrant, safe future for all residents. The communities recognize the economic, environmental, and social value and challenges associated with the region's rivers and tributaries. By promoting sound growth, mitigating future damage and transforming these communities through a comprehensive and sustainable approach, the region will reach its full potential for resiliency.

1.6 SUMMARY OF STORM DAMAGE

From its origin at Otsego Lake in Cooperstown, New York, the Susquehanna River flows for over 440 miles, making it the longest river on the American east coast, the 16th longest in the United States, and the longest river in the country that is not commercially navigable. With an average daily volume of 22 billion gallons of water, the Susquehanna is the largest contributor of fresh water to the Chesapeake Bay. The river drains 27,500 square miles, including nearly half of the land area of Pennsylvania. In New York, it is the outlet for most of the rivers and streams in the Southern Tier where its watershed extends 4,500 square miles. The Susquehanna River Basin Commission calls the Susquehanna "one of the most flood-prone watersheds in the nation."

Until Tropical Storm Lee in 2011, the Mid-Atlantic United States flood of 2006, which broke long-standing records in several locations by as much as 4 feet, was the benchmark for flooding in the Susquehanna Basin. Tropical Storm Lee is now established as the worst flood of record for the Southern Tier of New York and portions of northeast Pennsylvania. Twelve river forecast point records were broken. In 2012, Hurricane Sandy was predicted to bring high winds, heavy rain and flooding to the upstate area; however, it lost strength before reaching New York and dropped only moderate rainfall in the upper Susquehanna basin.

Given their location along the Susquehanna, the Broome communities have historically been subject to flooding. In response to substantial flooding in the early part of the 20th century, flood control plans and structures were implemented throughout the region in order to protect what had become an established urban center. Despite these protective measures, portions of the community continued to experience flood losses over the ensuing decades. According to the Broome County Hazard Mitigation Plan, the County experienced 132 floods from 1950 to 2012. During the period from 1970 to 2011, the County was included in 11 FEMA disaster declarations for

severe storm events, some of which were also identified as floods. The most recent floods and their effects are summarized below.

■ **Hurricane Irene (August 27-28, 2011).**

Hurricane Irene produced approximately 6 to 8 inches of rain locally, plus heavy winds that knocked down numerous trees and power lines. In some locations, power was out for a week. The heavy rain caused flooding in Conklin along Pierce Creek Road. The Town of Vestal experienced major flash flooding along Choconut Creek and numerous road closings due to water over bridges.



Flooding in Johnson City devastated a major outdoor and sporting goods retailer.

- **Tropical Storm Lee (September 7-8, 2011).** Approximately 6 to 12 inches of rain from Tropical Stream Lee led to massive flooding on small streams, creeks, and the Susquehanna River and its larger tributaries. In Broome County, the river crested 1 to 4 feet higher than the previous record and overtopped many of the levees and floodwalls along the Susquehanna in Binghamton, Vestal, and Union for the first time. The overtopping inundated areas that had not experienced major flooding and affected critical utility infrastructure (e.g., stormwater drains and water and sewer pumps). Many roads, bridges, and homes that had not been affected by previous storms were severely damaged.

In the Westover area of the Town of Union, rising river water went over the top of the levee, which sits approximately 8 feet above the river, flooding a shopping center. Water also overtopped the levee towards the surrounding residential neighborhood causing significant damage.

BAE System's 27-acre facility on Main Street in Johnson City, which employed 1,400 people, was declared a total loss.

The high volume of water in the Susquehanna River caused its major tributaries to back up which in turn caused extensive damage to Johnson City's commercial district, the Town of Vestal's municipal offices, and the City of Binghamton's downtown commercial



Extensive neighborhood flooding caused by Tropical Storm Lee.

area. Not only were Binghamton businesses severely affected, both the fire and police headquarters were rendered unusable. Compounding the impact, 300 households from a large low- and moderate-income residential housing development along Exchange Street in Binghamton had to be relocated for an extended period of time. Flood water also overtopped one of Binghamton's levees, resulting in the destruction of MacArthur School. Overall, it was estimated that Broome County sustained approximately \$502.8 million in property damage from Tropical Storm Lee.

1.7 RELEVANT EXISTING PLANS AND STUDIES

For the most part, the six municipalities that make up the Broome Community each have their own planning functions and produce their own plans and technical studies. These documents include reports produced in conjunction with Binghamton's ongoing comprehensive plan update and other plans and studies related directly to flooding issues. In addition, Broome County has prepared various plans that take a regional approach, including its 2013 Hazard Mitigation Plan. Plans and studies that are relevant to this NYRCR Plan are described briefly below.

- **Broome County Hazard Mitigation Plan.** In 2013, Broome County worked jointly and cooperatively with its towns and villages to prepare a FEMA-approved, multi-jurisdictional Hazard Mitigation Plan. The plan, which was a comprehensive integration of separate county and municipal studies, focused primarily on severe storms, flooding and severe winter storms. The plan's vision statement noted that through its partnerships and careful planning, Broome County will identify and reduce its vulnerability to natural hazards in order to protect the general health, safety, welfare, quality of life, environment, and economy of the residents, businesses, institutions, and communities. The plan is designed to improve response to and recovery from disasters, and prioritize projects and resources. It is also meant to be a guide and resource when communities seek federal and other funds for necessary improvements.
- **Blueprint Binghamton.** Binghamton is updating its comprehensive plan through a citizen-driven process called "Blueprint Binghamton: Forward Together." Begun in 2012, the update covers all aspects of the city, including land use, neighborhoods, infrastructure, economy, transportation, quality of life, and environment. To date, the planning process has generated an overall vision, documented existing conditions, and sketched out preliminary ideas for each of the plan's elements. Of relevance to the NYRCR Plan are objectives to "reduce flooding and protect Binghamton's neighborhoods," and "improve stormwater management and river water quality."

- **Broome County Comprehensive Plan.** During its comprehensive plan update, Broome County developed a shared vision and built consensus for public investment and regulatory policies. The comprehensive plan will be used to protect resources, give validity to local land use decisions, guide infrastructure investments, support grant writing, and foster economic development.
- **Town of Union Long Term Community Recovery Strategy.** The Town of Union is currently preparing a Long Term Community Recovery (LTCR) Plan that will form the basis for identifying federal, state, local, nonprofit, and private sector resources for the redevelopment and recovery. The plan will focus on housing to meet the needs of residents displaced by flooding; economic revitalization; infrastructure repair, redevelopment, and relocation; and environmental restoration and enhancement.
- **Vestal Comprehensive Plan.** The implementation chapter of Vestal’s comprehensive plan contains a series of land use, zoning, and related recommendations. The plan included creation of a stream protection overlay district, the purpose of which was to protect private property from flooding and erosion, and to maintain the ecological integrity of creeks and the Susquehanna River.
- **Binghamton Local Waterfront Revitalization Program.** Given the City’s significant riverfront presence, Binghamton undertook the preparation of a Local Waterfront Revitalization Program (LWRP) that was adopted in 2005. Unlike, the comprehensive plan, the LWRP only covers those portions of the city most closely associated with the Susquehanna and Chenango rivers. The LWRP identifies specific scenic resources, such as the view to the Chenango River from Cheri Lindsey Park (looking west), the view of the Chenango River from the end of Route 17 Front Street exit, and the view of the Chenango River from the Clinton Street Bridge (looking north and south). The LWRP identifies approximately 38 storm sewer outfalls ranging in size from 15 to 84 inches in diameter along the Susquehanna and Chenango River waterfronts. The LWRP’s Study Area Concept Plan includes recommendations for enhanced waterfront access and mixed use development in selected locations, such as Binghamton Plaza, that would take advantage of its waterfront location.
- **Four Rivers: An Intermunicipal Waterfront Public Access Plan for Broome County.** The purpose of this 2011 plan is to guide future development activity along Broome County’s riverfronts: the Susquehanna, Tioughnioga, Chenango, Otselic and Delaware. It proposes an integrated system of water-related facilities, programs, and amenities to help communities provide access to the area’s natural, cultural, and recreational resources. The plan will also be used by the New York State Department of State Division of Coastal Resources to prioritize projects for funding.

- **Susquehanna-Chemung Action Plan.** This plan for the Susquehanna and Chemung River basins was a water quality management planning project of Southern Tier Central (STC) and Southern Tier East (STE) Regional Planning and Development Boards. The plan used an ecosystem-based management approach to conserving and protecting water resources that integrated human needs, economic issues, and environmental concerns to improve the way that natural and human systems work together. Although the project focuses on regional water resources, it includes goals and analysis related to flooding.
- **Southern Tier Regional Economic Development Council Strategic Plan.** The strategic plan is a comprehensive blueprint for economic growth that focuses on five significant themes designed to spur job growth in the Southern Tier. The plan analyzes the region's core strengths and opportunities to leverage its assets and identifies tactics to deal effectively with the barriers to change. The plan's strategies are designed to increase employment, facilitate the growth and expansion of industry and business, improve the quality of life of all residents, grow the tax base, further promote and develop the region, and position the Southern Tier as a great place to live, work, and increase economic growth.
- **Cleaner Greener Southern Tier Regional Sustainability Plan.** The Plan's implementation strategy discusses 65 actions that together have the potential to reduce regional greenhouse gas (GHG) emissions by over 32 percent within 20 years.
- **Binghamton Energy and Climate Action Plan.** Outlines strategies for cutting energy costs, promoting energy independence and reducing greenhouse gas emissions within Binghamton.

2

Assessment of Risk and Need

2.1 DESCRIPTION OF ASSETS

2.1.1 Description of Assets

One of the essential tasks of the NYRCR program is to inventory critical and significant assets within the 100-year and 500-year flood plains. These assets will then be evaluated to understand regional risks and vulnerabilities and help identify possible priority projects that can protect them.

Based on the preliminary inventory, more than 600 of Broome's assets are located in either the 100-year flood plain (i.e., high risk area) or 500-year flood plain (i.e., moderate risk area). As shown on Figure 2.1 and in Table 2.1, these assets can be placed in one of six categories: economic, health and social services, housing, infrastructure, natural and cultural resources, or socially vulnerable populations.

Asset Class	Quantity
Economic	98
Health and social services	55
Housing	32
Infrastructure	225
Natural and cultural resources	194
Socially vulnerable populations	13

The purpose of the asset inventory is to identify a comprehensive collection of assets with high community values that can be advanced through the risk evaluation process. The first step in developing the asset inventory was to acquire existing digital data sets from multiple municipal, state, and federal agencies. These data sets were cross-referenced and supplemented with aerial imagery and address locators, and collated into a preliminary asset inventory listing.

The preliminary asset inventory was presented to both the NYRCR Steering Committee and the public to gain their input concerning its completeness and each assets' community value. This public and committee input is crucial to ensure the risk assessment process is focused on the assets that are important to the community. The NYRCR Steering Committee is currently working with the communities to edit the preliminary asset inventory.

The NYRCR Plan will also assess the risk to critical and significant systems, such as the water distribution and wastewater treatment systems or road networks that extend beyond municipal

boundaries. These systems are being identified and documented for further consideration by the NYRCR Steering Committee.

2.1.2 Assessment of Risk to Assets

Once the asset identification is complete and a community value has been assigned, high value assets will be analyzed using the riverine risk assessment spreadsheet tool developed by the NYSDOS. The risk assessment tool considers three aspects of risk:

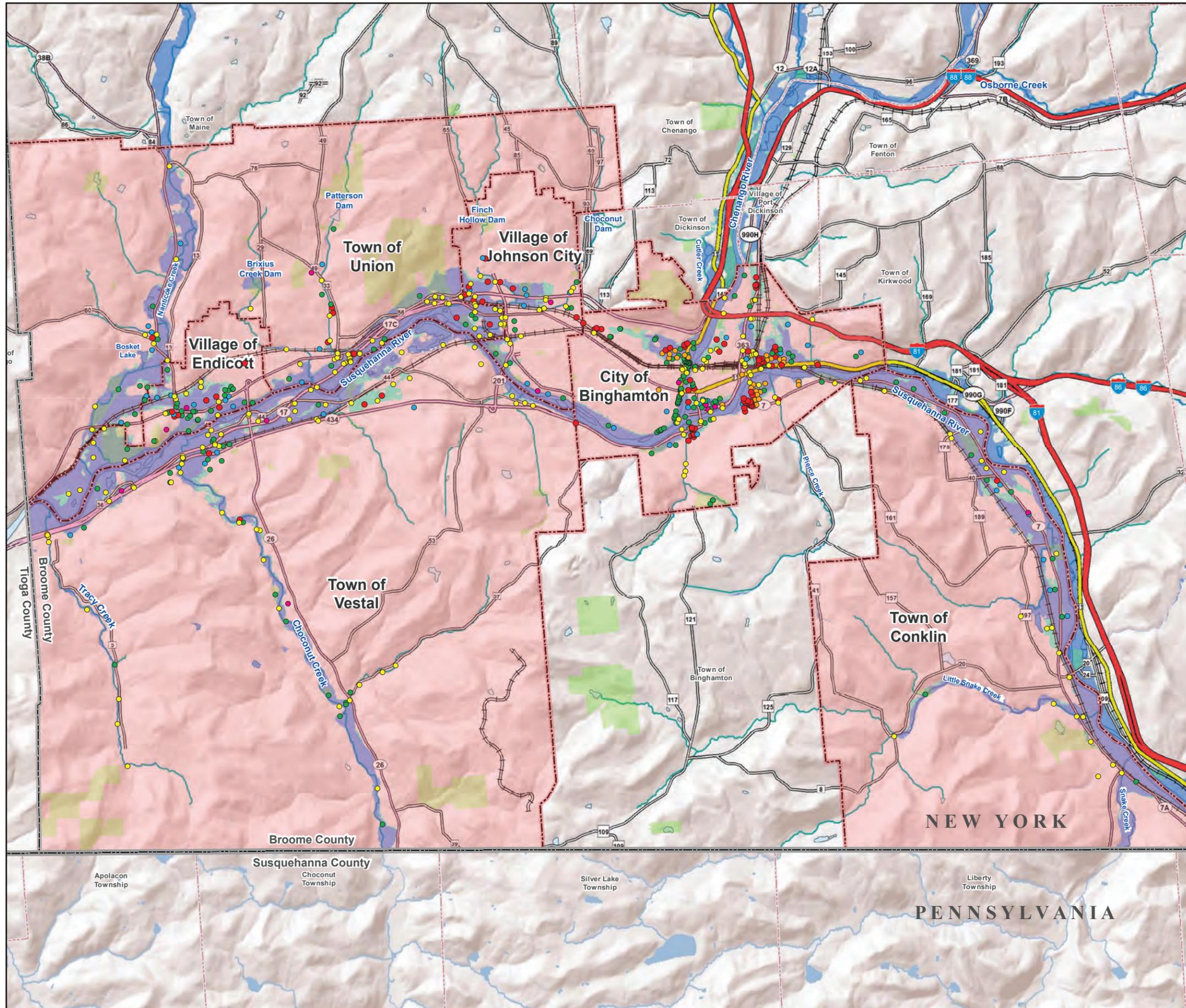
- **Hazard.** The likelihood and magnitude of future storm events;
- **Exposure.** The moderating effect of topographic and other features; and
- **Vulnerability.** The ability of the asset to resist damage from a storm.

The risk assessment tool will produce numerical scores with higher scores identifying those critical or highly valued assets that are vulnerable to riverine flooding and that may require additional protection, relocation, or other actions. Conducting the risk evaluation process will help the NYRCR Steering Committee understand regional vulnerabilities, opportunities, and possible priority projects that can assist to protect its critical assets.

Although the risk assessment process has not been completed, the February 2013 update to Broome County's Hazard Mitigation Plan was reviewed because it contains estimates of the effects that could result from floods and other disasters. These estimates were prepared using FEMA's HAZUS program, a nationally applicable standardized methodology that contains models for estimating potential losses from earthquakes, floods, and hurricanes.

Based on the HAZUS models, the Hazard Mitigation Plan estimated that within the six municipalities, approximately 39,601 residents are located within the current 1 percent (100-year) flood hazard zone, and 45,356 residents are within the 0.2 percent (500-year) zone. In addition, it was estimated that approximately 16,067 persons from the Broome Community would be displaced by a 1 percent storm and that 14,123 persons would seek short-term shelter. Approximately 21,766 persons would be displaced by a 0.2 percent storm and 19,453 persons will require short-term shelter.

The six municipalities have a total area of approximately 124.7 square miles. Of this total, 13.47 square miles, or 10.8 percent, are located in the 100-year flood plain and 15.81 square miles, or 12.7 percent, are located in the 500-year flood plain. At the municipal level, the Village of Endicott is most constrained by flood hazard, with 40.9 percent of its 3.4 square mile area located within the 100-year flood plain. The Town of Vestal has the greatest land area within the 100-year flood plain, at 3.59 square miles.



Key Map

Legend

- Economic
- Health and Social Services
- Housing
- Infrastructure
- Natural and Cultural Resources
- Socially Vulnerable Populations
- High Risk (100-Year Flood Plain)
- Moderate Risk (500-Year Flood Plain)
- NYRCR Plan Study Area

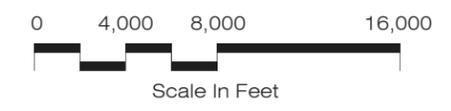


Figure 2.1
Assets and Risk

The estimated HAZUS general building stock replacement value for structures and contents was approximately \$3.84 billion for the 100-year flood and approximately \$5.22 billion for the 500-year flood. The hazard mitigation plan identified 257 properties in the Broome Community as “Repetitive Loss” properties, meaning those that have received two or more claim payments of more than \$1,000 from the National Flood Insurance Program within any rolling 10-year period. These properties are not eligible for future FEMA assistance unless they are elevated above the base flood elevation. In addition, another 54 properties were identified as “Severe Repetitive Loss” properties, indicating there had been at least four claim payments over \$5,000 each.

2.2. ASSESSMENT OF NEEDS AND OPPORTUNITIES

The risk assessment is scheduled to be completed by mid-November after additional input from the Broome communities. The final risk assessment matrix and narrative summary will then be vetted and approved by the NYRCR Steering Committee at its November meeting. A summary of the primary needs and opportunities facing the community will be prepared using the inventory list, the results of the risk assessment, and the combined input from the NYRCR Steering Committee, community officials, and the public.

The NYRCR Steering Committee members’ experience responding to recent storms has enabled them to preliminarily identify critical needs related to improving the region’s resiliency and ability to prepare for storm events, respond during the events, and return to normal function as quickly as possible afterwards. Underpinning the needs and opportunities is a basic understanding that given their location and development history as riverine settlements, and the practical limitations of engineered protection, periodic flooding of portions of the Broome Community will continue to be a fact of life. The question then becomes how to best prepare and adjust to minimize related damage and disruption and become a more resilient community.

The Broome Community’s preliminary needs and opportunities are summarized in the following bullets:

- **Communication Needs.** The Broome Community learned after the 2006 flood that improving communication of timely and easily understood information before, during, and after storms would allow residents to make appropriate preparations and speed the efficient return of residents from shelters to their homes. The Community also learned that communication should include improved links to shelters and the media, and education for property owners regarding flood risks, resilient construction techniques, and procedures for handling buildings that have been inundated. Continuing to improve communication systems and procedures will enhance the recovery support function of community planning and capacity building.

- **Shelter Capacity and Service Provision.** During previous storms, the Event Center at Binghamton University was pressed into service, sheltering over 2,500 residents in both general and special needs populations for long durations. However, this situation created operational difficulties, exceeded the building's code capacity, and significantly strained University and local government resources. Developing additional physical sheltering space and supporting services and resources will be necessary to ensure life safety during future storms. It will also enhance the recovery support function of economic development.
- **Stream and Stormwater Management.** In addition to the Susquehanna River and Chenango River, the Broome Community is home to numerous smaller streams and tributaries that drain into the rivers. During storms, these watercourses are subject to flash flooding that has led to inundation of commercial and residential property, severe erosion, and blockage at discharge points. This compounds the damage from the flooding of the Susquehanna River. In many cases, storm drainage infrastructure systems were installed long ago and pipe size and capacity in certain locations are insufficient to accommodate extreme storm level flows. Improved stream and stormwater management will enhance the infrastructure recovery support function.
- **Resilient Construction Practices.** Recognizing that flooding will continue to be a feature of life, it will be important for the Broome Community to adopt more resilient construction practices that limit the amount and duration of displacement. For example, mechanical equipment that typically is located in basements should be relocated above the base flood elevation. If building support and basic utility functions are not destroyed, then cleanup and reoccupancy becomes more manageable, significantly reducing the time that residents need to be relocated from their homes. For new construction, considerations may include elevating building pads to provide additional freeboard. Resilient construction techniques will enhance several recovery support functions, including economic development, housing, and infrastructure.
- **Economic Development and Tax Base Considerations.** The Broome Community's jurisdictions have moved aggressively to eliminate housing in vulnerable areas through the buyout programs associated with the most recent storms. While helping to reduce risk, the loss of residents and associated economic activity and property tax revenue has created fiscal challenges for these communities. Facilitating development in less vulnerable locations to compensate for these losses will be critical to ensure that the communities can remain economically and fiscally secure. In addition to facilitating new growth, there also is a need to provide support to exist-

ing establishments, particularly small businesses, to speed clean-up and return to normal operation after storms.

- **Critical Basic Infrastructure.** Maintaining basic infrastructure functions is vital to ensuring sanitation, safety, and habitability during and after storms. Many of the Broome communities have concluded there is a need to improve water and sewer facilities (e.g., flood-proofing well houses, back-up power supplies for pump stations) to ensure these critical facilities can operate during and after storms. They also noted that the water and sewer systems involve intermunicipal connections. As a result, these are regional systems, and their vulnerabilities can affect areas that are outside of the direct flood hazard zones. Stormwater pumps that were critically affected as a result of the recent storm events also need to be upgraded.

Going forward, the planning team will work with the NYSDOS Planner and NYRCR Steering Committee members to fully assess Broome Community's needs and opportunities in relation to FEMA's core recovery support functions: community planning and capacity building; economic development; health and social services; housing; infrastructure; and natural and cultural resources. These assessments will include a narrative component profiling the community's potential based on and incorporating past studies and best practices. Maximum use will be made of existing and available background analyses prepared in conjunction with city and town comprehensive plans, economic development plans, and other technical studies.

3

Reconstruction Strategies & Implementation Actions

3.1 INTRODUCTION

3.1.1 Strategies

Reconstruction strategies are the overarching means by which a community will achieve rebuilding, resilience, and economic growth. The strategies are based on an inventory of community assets, risk assessment, and evaluation of needs and opportunities. Each strategy is implemented through community projects, programs, and actions to restore and protect assets. Strategies are aligned with the six FEMA recovery support functions as follows:

- **Community Planning and Capacity Building.** Strategies that present ways to restore or enhance its ability to organize, plan, manage, and implement recovery.
- **Economic Strategies.** Strategies that present ways to return economic and business activities to a state of health, and to develop new economic opportunities.
- **Health and Social Services Strategies.** Strategies that address the restoration and improvement of essential health and social services, particularly those that serve vulnerable populations.
- **Housing Strategies.** Strategies that promote and address affordable housing, increase access of non-CDBG programs to public and private housing providers, and advocate disaster-resistant housing for all income groups.
- **Infrastructure Strategies.** Strategies that enhance restoration, reparation, and management of essential local government services.
- **Natural and Cultural Resource Strategies.** These strategies will address management of natural and cultural resources from a risk reduction and economic development perspective.

3.1.2 Management Measures

The programs, plans, and actions used to implement each strategy will be organized into six classes of management measures. The six classes of management measures include:

- **Class 1. Conserve, Restore, and Enhance Natural Protective Features.** Measures that use the landscape to promote safety and livability while reducing disaster recovery costs.
- **Class 2. Resilient Construction.** Measures designed to provide an adequate level of safety for structures. Measures may include elevating buildings, dry flood-proofing, constructing watertight structures, wet flood-proofing, relocating facilities, and incorporating levees and floodwalls into site design.
- **Class 3. Structural Defenses.** Measures that employ engineered or non-engineered construction techniques designed to resist flooding.
- **Class 4. Land Use Planning and Regulation.** Create new regulatory measures for municipal and site planning, zoning, and subdivision regulation to reduce impacts of storm events on existing and future infrastructure.
- **Class 5. Market-Based Methods.** Measures that reduce vulnerability by incorporating the cost of risk into the carrying cost of land.
- **Class 6. Increased Awareness and Information.** Measures that provide sound information on storms and erosion, environmental services, risk to development, and community costs designed to help decision makers in both the public and private sectors.

3.2 BROOME COMMUNITY RECONSTRUCTION STRATEGIES

The asset inventory and risk assessment will be refined based on input from the NYRCR Steering Committee, municipal officials, and the public. Although these analyses are not complete, experience from recent storms has already highlighted a number of critical issues – prior to, during, and after such events – within the Broome Community. These issues, in turn, pointed toward key strategies that need to be part of the overall NYRCR Plan to support the six FEMA recovery support functions.

3.2.1 Community Planning and Capacity Building

- Understanding that future flooding will occur, improve the systems and facilities in place to deal with and reduce the time associated with potential displacement and interruptions in communications and transportation access.
- Expand educational efforts so that people, businesses, and social service providers know what to expect and how to access assistance before the storm. This includes enhancing the existing 2-1-1 system.
- Provide real-time information to homeowners indicating when they can safely return to their properties and educate homeowners on how to deal safely with flooded properties.
- Enhance connections with nearby communities to foster regional cooperation in approaching flooding and related issues.

3.2.2 Economic Strategies

- Identifying protected upland sites that can support residential, business, health services, and educational institutions will be critical in ensuring that the Broome Community can accommodate growth and enhance economic vitality.
- Provide expanded utility infrastructure to areas where sustainable development is economically viable.
- Where appropriate, provide or expand existing floodwalls and levees to make available properties feasible for new development or redevelopment.

3.2.3 Health and Social Services Strategies

- Ensure the resiliency of sewer and water supply systems so that essential services and facilities are available during and after storms.
- Provide adequate emergency shelters north and south of the Susquehanna River to house displaced residents. This includes the opportunity to use the former General Services Administration depot site in nearby Fenton, NY.

3.2.4 Housing Strategies

- Retrofit selected low- and moderate-income housing complexes in flood hazard areas to reduce the relocation recovery time after significant storms.
- Relocate people from housing that is in locations where protection is not viable.
- Identify locations for replacement housing outside of hazard areas.

3.2.5 Infrastructure Strategies

- Reduce burdens on stormwater systems through reduction of infiltration and by separation of combined sewer systems.
- Identify locations to provide additional stormwater storage capacity to accommodate storm events.
- Ensure back-up power is available at vital facilities including pump stations.

3.2.6 Natural and Cultural Resource Strategies

- Address the stormwater runoff issues related to erosion and flash flooding of streams and creeks on a regional basis.
- Identify green infrastructure practices that could be implemented to reduce stormwater runoff. This should include promotion and demonstration of small-scale green infrastructure concepts (e.g., rain gardens) that can be implemented on an individual basis by homeowners.
- Identify opportunities to reclaim former residential or commercial lands vacated as a result of flooding for community recreation.

The preliminary strategies identified above will be supplemented as the asset risk assessment, NYRCR Steering Committee, and public engagement processes continue to unfold. The revised list of strategies will then be reviewed to identify additional commonalities across communities or cross-cutting themes that have regional implications or lessons for rebuilding.

3.3 POTENTIAL KEY PROJECTS

According to the NYRCR program's guidance, implementing a community's strategies may require a mix of projects and actions that are related to one or more of the management measures

described in Section 3.1.2. The applicability of each type of management measure can vary according to the risk to be mitigated, the implementing agencies, resources available, and project schedule.

The preliminary strategies identified by the NYRCR Steering Committee have led to various recommendations for specific projects and actions to reduce the frequency and severity of future storm events, prevent or limit property damage and personal injuries when they occur, and enhance resiliency when they are over.

3.3.1 Community Planning and Capacity Building

- Develop an on-line system to provide local residents, businesses, and others with real-time mapping and information about storm conditions, areas of inundation, status of roadways, etc.
- Upgrade the capabilities of the 2-1-1 call system to better handle inquiries during storm events.
- Provide emergency back-up generators in key locations to maintain critical communications and utility infrastructure.

3.3.2 Economic

- Provide the vehicle (e.g. local development corporation program) to provide funding for small businesses to enable them to reopen quickly following a disaster.
- Extend sewer mains in Conklin to facilitate new residential and business development.

3.3.3 Health and Social Services

- Create a post-disaster sanitation plan that identifies staging sites, equipment storage locations, landfill capacities, and staffing needs that is coordinated with other appropriate state agencies for the required permitting.

3.3.4 Housing

- Establish a system of shelters to accommodate persons displaced by storms, including staffing that may be necessary to handle socially vulnerable populations (e.g., elderly persons). The General Services Administration's Binghamton Depot in

nearby Fenton, New York has been identified as a location that could warehouse required materials and provide emergency shelter for displaced residents. The shelter system should include not only large-scale facilities, but also smaller, geographically dispersed locations closer to affected neighborhoods that provide residents and business owners easier access to return and begin cleanup of their properties.

- Relocate infrastructure from building basements to more protected locations, especially in buildings that house vulnerable populations.

3.3.5 Infrastructure

- Determine which roads are most likely to be affected by future flooding and have alternate access plans and evacuation routes in place.
- Develop plans for increasing stormwater retention at locations such as schools' athletic fields in Johnson City and Endicott, recognizing that this issue needs to be approached on a regional basis in order to be effective.
- Reduce burdens on the regional sewer systems through inflow and infiltration remediation and separation of combined stormwater-sewer systems.
- Install redundant power supply at vital facilities such as pump stations.

3.3.6 Natural and Cultural Resources

- Establish a regional river system initiative to build resilience. This project would involve modeling and analysis of the regional Susquehanna River watershed, piloting of demonstration projects, and ultimately creating regional stream management and stormwater retention programs.

3.4 RELATIONSHIP TO REGIONAL PLANS

The realization that reconstruction and resiliency require a regional approach was behind the decision of the six Broome municipalities to create a single NYRCR Plan. Assets, risks, and solutions are all being considered within a regional context. In addition, the Broome Community will participate in the Southern Tier Susquehanna River planning effort with the Tioga Community and Village of Sidney and plans to include a regional action plan in its final NYRCR Plan.

3.5 COMMUNITY ENGAGEMENT

Engagement of the public in developing a NYRCR Plan for the Broome Community is, by necessity, multi-faceted. Because one important goal of this planning process is to develop a

regional approach to the issue of resiliency, the public engagement process is based on melding the six municipalities into a coordinated group, working cooperatively to deal with hazard mitigation, economic development, and related issues. At the same time, it is necessary to recognize that the communities also have individual concerns that reflect their varied characters – urban, suburban, rural – their experiences during recent storms, and their individual governmental structures.

To accomplish both of these objectives, the NYRCR public engagement process has included the following:

- **Establishment of a NYRCR Steering Committee** that includes representatives of all of the Broome communities plus key social service providers and other civic leaders. By design, this committee brings to the planning process a wide range of views from areas and groups throughout Broome County. To date, the NYRCR Steering Committee has met three times; during these meetings they have discussed and agreed on a vision statement, reviewed and refined the inventory of vulnerable assets, shared potential project ideas being considered in each municipality, and considered ways in which inter-municipal cooperation and coordination could improve regional resiliency. The NYRCR Steering Committee will continue to meet on a regular basis to evaluate, vet and prioritize potential projects and actions. Four additional Steering Committee meetings are anticipated through the end of the planning process.

- **Public events** to which all local residents and interested parties are invited to attend and participate. The first of these events was held on October 15, 2013 at the centrally-located Broome County Library. The event was advertised to the community by means of flyers, media release, and digital e-vite to identified stakeholder and civic groups, ranging from municipal boards and business groups to schools and social service providers. At the event, the NYRCR Steering Committee worked with staff from the NYSDOS and the planning team to:

- inform the public about the NY Rising Community Reconstruction program, the Broome Community NYRCR Plan, and schedule;
- solicit their input concerning problems they faced during past flood



Public review of the Broome Community's asset inventory.

events and the assets they think are most important to protect;

- discuss with them the vision driving the development of the NYR-CR Plan; and
- brainstorm potential strategies or specific projects for enhancing regional resiliency. The public event



Identifying Broome Community's needs and opportunities.

used break-out sessions to encourage individual interactions among those present and resulted in the planning team obtaining extensive input that was used to draft this conceptual NYR-CR Plan and to establish the direction and focus for the rest of the NYR-CR planning process.

To further enhance the regional focus, a regional summit has been scheduled for November 18, 2013 that will include communities from Tioga County and Delaware County along with those from Broome. The focus of this event will be educating the public about the realities of changing weather patterns and their potential effects on the region. Experts from government, academia and the private sector will also discuss the viability of various approaches to flood control, helping to shape future efforts to devise realistic and effective NYR-CR plans in the region.

3.6 IMPLEMENTATION OF LOCAL ACTIONS

The development of an implementation structure is typically the last stage of a planning process, but is absolutely critical in establishing a path to advance the goals of the plan. The implementation structure will indicate the associated time frames, responsible entities, and, where applicable, the available resources or potential funding sources for each action identified during the strategy development phase. It is expected that the implementation structure will be provided in a table format in order to provide an at-a-glance overview of the plan's proposed actions and to enable convenient monitoring of progress towards the plan's goals. The overall implementation schedule will be finalized by the Committee after the development and prioritization of key strategies and associated projects and will be the subject of a Committee meeting held towards the end of the NYR-CR planning process. This meeting will be used to establish a framework for action, ensure buy-in from the Steering Committee members (who will likely be responsible for taking many of the actions), and generate momentum as the Broome communities move into the plan's implementation phase.