
**Town of Shandaken - Flood Mitigation Plan**



Town of Shandaken Flood Mitigation Plan

PUBLIC MEETING | MAY 23, 2013

Presented by Tetra Tech, Inc.

**Town of Shandaken - Flood Mitigation Plan**

Our Topics Tonight

- **The Problem**
- **Why do a Flood Mitigation Plan?**
- **The Objectives**
- **Shandaken Vulnerability Assessment**
- **Mitigation Strategy**



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History of Flooding

- Riverine and Flash Flooding
- 18 Presidentially Declared Flood Disasters since 1950.
- Massive Damages to homes and infrastructure
- Evacuations

Rank	Date	
1		
		59,600
4		55,200
5		55,000
		54,000
		53,600
		51,700
9		46,900
10		38,500
11		



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WHAT IS HAZARD MITIGATION

"Mitigation" -

*Sustained action taken to
reduce or eliminate
long-term risk to life and property
from a hazard event*

Or -

*Any action taken to
reduce future disaster losses*





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Why??

- **Blueprint for Flood Reduction**
- **Proactive vs. Reactive (Save \$4 for every \$1 in Mitigation)**
- **Can act as a keyway to funding**
- **The NFIP Community Rating System**
- **Support other planning mechanisms**
 - Watershed Plans
 - Land Use Plans
 - Codes and Ordinances



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Mission Statement

The mission of the Town of Shandaken Flood Mitigation Plan is to develop and promote appropriate Town policy and practices to protect the residents, private property, public essential facilities and the environment from probable flood hazards.



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Overall Goal

The overall goal of the Plan is to improve the Town's capability to prepare for, respond to, recover from, mitigate against and reduce vulnerability to flooding.

The plan identifies and encourages partnerships for coordinated implementation, funding, public awareness and the development of strategies for carefully planned mitigation efforts designed to protect the health, safety, quality of life, environment and economy of the Town of Shandaken.



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Plan Goals

- Goal 1. Protect Life and Property
- Goal 2. Increase Public Awareness and Preparedness
- Goal 3. Enhance Disaster Preparedness, Response and Recovery
- Goal 4. Protect the Environment and Natural Resources
- Goal 5. Promote Mitigation Efforts through Existing Programs and Partnerships



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PLAN PROCESS STEPS

- Organize Resources
 - Assess the Risk
 - Review and Update the Mitigation Plan
 - Develop Procedures for Plan Implementation, Monitoring and Update
 - Adopt the Plan
- }
- Engage "Stakeholders"
 - Federal, State, Regional and Local Agencies
 - Business and Civic Groups
 - The Public



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Other Planning Tasks

- Public Participation
 - Notices on planning effort
 - FMP Webpage detailing effort, providing downloadable drafts of the plan, and providing a way for public input (local contact information and email link)
 - Public presentations and meetings
 - Public access to draft and final plan documents
 - Questionnaire (on-line and/or hard copy)
- Documentation of the Planning Process
- Plan implementation and maintenance procedures



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Plan Benefit - Community Rating System

- Participation and ranking in CRS will improve ability to lower flood damages (higher regulatory standards, enforcement of regulations, increased knowledge of floodplain issues)
- CRS ranking will reduce NFIP Flood Insurance Premiums



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The Planning Committee

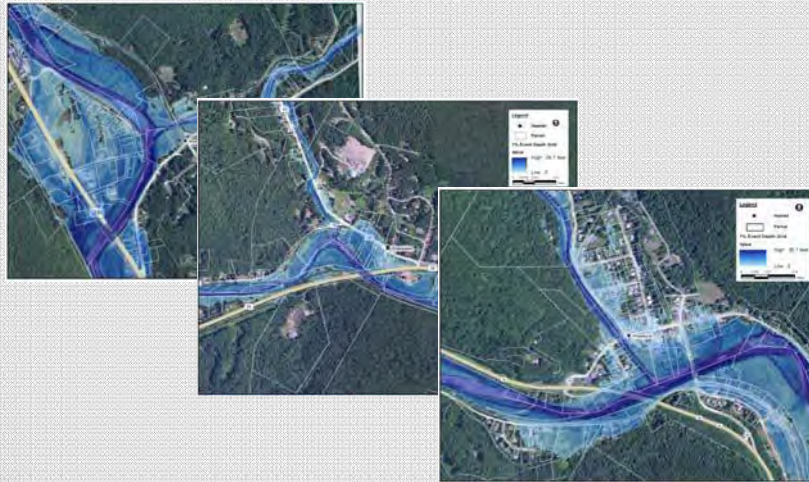
- The Office of the Supervisor of the Town of Shandaken is managing this effort.
- It is supported by the **Shandaken Area Flood Assessment and Remediation Initiative (SAFARI)**. Members of the committee include representatives from
 - Town of Shandaken
 - Cornell Cooperative Extension of Ulster County
 - RCAP Solutions
 - Ulster County Emergency Management
 - NYSDOT
 - NYCDEP
 - NYSDEC
 - USDA NRCS
 - Ulster County Soil and Water Conservation District
 - Landowners
 - S.O.S (Save our Shandaken) Representative



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The Flood Hazard Risk Assessment



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What is Risk?

Risk is defined as a function of:

- Hazard
 - Source of potential danger or adverse condition
- Exposure
 - Manmade or natural features that are exposed to the hazard
- Vulnerability, and
 - Damage susceptibility of the exposed features
- Capability
 - Regulatory Capability
 - Technical Capability
 - Financial Capability





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Assess the Risk - Inventory of Assets

What is at risk? People, Property, Economy, Environment

- Population
- Building Stock (Residential, Commercial, Industrial, Educational, etc.)
- Critical Facilities (essential facilities, utilities, transportation features, high-potential loss facilities and user-defined facilities)
 - Police, Fire, Emergency Services
 - Medical Care Facilities
 - Schools and Care Facilities
 - Sheltering Facilities
 - Infrastructure (Transportation Systems, Utilities)
 - High-Potential Loss Facilities (Dams)



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Risk Assessment Methodology

- Assess hazard
 - Past events
 - Areas most affected
 - Frequency
 - Severity
 - Warning time for response
- Determine Exposure
- Assess Vulnerability, incl. Loss Estimation



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What is HAZUS?

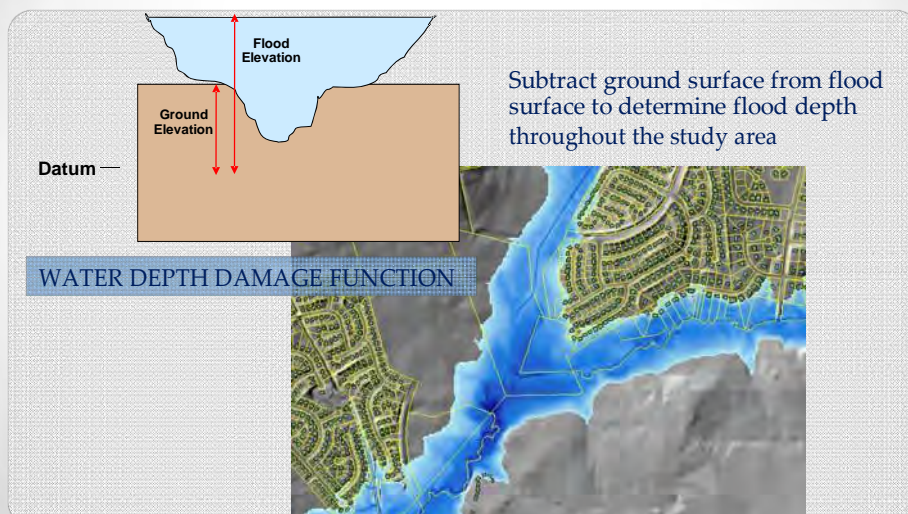
- HAZUS-MH is a powerful risk assessment methodology for analyzing potential losses from floods, hurricane winds and earthquakes.
- Current scientific and engineering knowledge is coupled with the latest geographic information systems (GIS) technology to produce estimates of hazard-related damage before, or after, a disaster occurs.



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Flood Model Overview

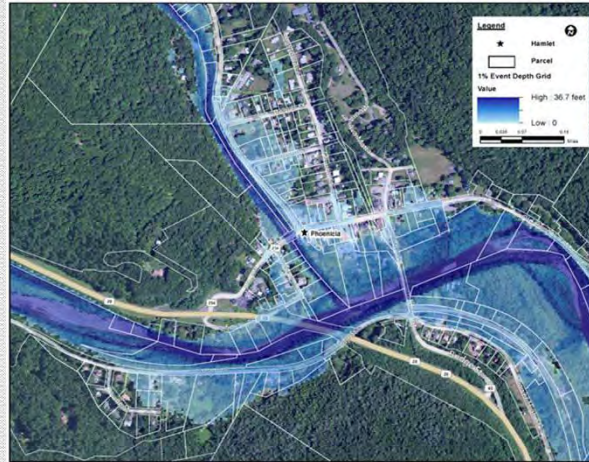




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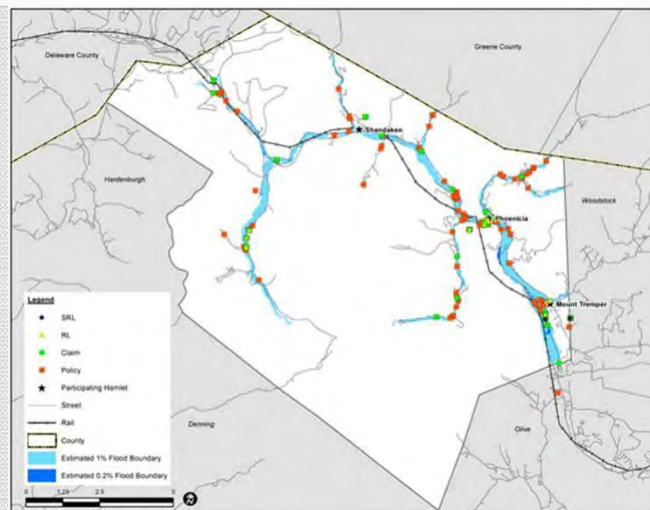
Flood Depth Grid-Phoenicia (for planning purposes only)



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Repetitive Loss Properties





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Town NFIP Policies and Claims (post-Irene)

- % Buildings in 1% Flood Boundary: (16.1%)
- Number of Buildings in 0.2% Flood Boundary: 471 (21.6%)
- Number of Policies: 204
- Number of Claims (losses): 214
- Number of Repetitive Loss Properties: 22
- Number of Severe Repetitive Loss Properties: 2
- Number of Policies in 1% Flood Boundary: 123
- Number of Policies in 0.2% Flood Boundary: 128
- Number of Policies outside the 0.2% Flood Boundary: 76



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% Buildings in 1% Flood Boundary

Hamlet	%
Big Indian	10.2
Chichester	7.0
Mt. Tremper	26.9
Phoenicia	23.8
Pine Hill	3.0
Shandaken	12.5



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Estimated Population Vulnerable to the 1% and 0.2% Flood Events

Mt Tremper	478	41	8.6	98	20.5
Phoenicia	1,021	140	13.7	163	16.0
Pine Hill	242	4	1.7	4	1.7
Shandaken	542	62	11.4	73	13.5
Town of Shandaken	3,085	324	10.5	415	13.5

Source: Census, 2010

Note: Census Block 361119553001065, located entirely in the Town of Shandaken, has two zip codes: Phoenicia and Boiceville. For the purposes of this analysis, the entire block is considered within the Phoenicia zip code.



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Area Located in the 1-Percent and 0.2-Percent Annual Chance Flood Boundaries

Big Indian	42.7	0.72	1.7	0.84	2.0
Chichester	4.9	0.18	3.7	0.23	4.7
Mt Tremper	4.2	0.94	22.4	1.02	24.3
Phoenicia	51.3	1.41	2.7	1.64	3.2
Pine Hill	2	0.03	1.5	0.04	2.0
Shandaken	13.8	0.48	3.5	0.58	4.2
	118.9	3.76	3.2	4.35	3.7

Source: Tetra Tech, 2012

Note: sq.mi. = Square miles; % = Percent



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Estimated General Building Stock Replacement Value (Structure and Contents) Located in the 1% Annual Chance Flood Boundary

Zip Code	Total Buildings (All Occupancy Classes)			
	1% Event	% Total	0.2% Event	% Total
Big Indian	\$15,385,739	10.2	\$19,436,674	12.9
Chichester	\$5,096,270	7.0	\$9,516,681	13.1
Mt Tremper	\$24,432,339	26.9	\$29,039,894	32.0
Phoenicia	\$69,055,747	23.8	\$94,006,610	32.4
Pine Hill	\$2,887,916	3.0	\$3,808,642	3.9
Shandaken	\$14,339,876	12.5	\$20,532,504	17.8
Town of Shandaken	\$131,197,887	16.1	\$176,341,005	21.6



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Capability Assessments

What resources do we have at our disposal to Mitigate Risk?

"Proposed mitigation actions will be evaluated against the backdrop of what is feasible in terms of your government's legal, administrative, fiscal and technical capacities" (FEMA 386-3)

Serve to identify legal authority and administrative, technical and fiscal capabilities in the state, county and jurisdictions that will facilitate or hinder hazard mitigation goals and objectives.



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Risk Reduction

To reduce Risk:

- Manipulate the Hazard:
 - structural flood control
- Reduce Exposure:
 - property acquisition
- Reduce Vulnerability:
 - Retrofitting
- Increase capability:
 - \$, preparation, technical assistance, planning and regulation



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Identification and Analysis of Mitigation Actions

- Mitigation actions need to be realistic, achievable and action-oriented.
- Will include both regional actions, as well as jurisdiction-specific.
- Will address both public and private property.
- For each proposed mitigation strategy, the following will be identified:
 - Implementation timeline
 - Estimated cost
 - Estimated benefits (avoided losses)
 - Potential funding sources
 - Lead agency or department
 - Supporting agencies



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Mitigation Actions? Like What?

- **Prevention.** Measures such as planning and zoning, open space preservation, land development regulations, building codes, storm water management.
- **Property Protection.** Measures such as acquisition, relocation, storm shutters, rebuilding, barriers, floodproofing, insurance, and structural retrofits for high winds.
- **Public Education and Awareness.** Measures such as outreach projects, real estate disclosure, hazard information centers, technical assistance.
- **Natural Resource Protection.** Measures such as erosion and sediment control, stream corridor protection, vegetative management, and wetlands preservation.
- **Emergency Services.** Measures such as hazard threat recognition, hazard warning systems, emergency response, protection of critical facilities, and health and safety maintenance.
- **Structural Projects.** Measures such as dams, levees, seawalls, bulkheads, retaining walls, channel modifications, storm sewers, and retrofitted buildings and elevated roadways.



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Mitigation Alternatives

- Use information obtained from the public involvement strategy;
- Use information provided in the risk and vulnerability assessment;
- Seek mitigation actions consistent with the goals and objectives of this local Plan;
- Identify mitigation actions that are within the capabilities of the Town.



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Mitigation Initiatives

- 86 Initiatives included in the plan
Including:
- Expansion and improvement of Flood Warning System - locations, automation, precipitation monitoring
- Development of new codes and standards to reduce flood risk
- Develop new codes and standards for bridges and culverts to reduce flood risk
- Create an inventory of culverts and prioritize replacement
- Evaluate options to alleviate aggregation of sediment at the Bridge Street bridge in Phoenicia. Options to include economic impact of loss of bridge to local economy.



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Mitigation Initiatives

- Join CRS
- Undertake a repetitive loss analysis
- Provide increased public outreach and education of available flood mitigation programs and alternatives
- Adopt Flood Warning and Response Plan
- Support Property acquisition or elevation of structures for interested parties.



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Plan Implementation

- Your mitigation strategy section provides a “blueprint” to follow for progressively reducing your community’s natural hazard risk.
- It includes two types of initiatives/projects – those that your community can “self fund”, and those that will require outside (e.g. grant) funding.
- Mitigation grant opportunities open regularly:
- The annual HMA grant window opens in June of each year.
- HMGP funding comes in the wake of Declared Disasters in the State.
- Emergency Watershed Protection grants
- Watershed grants
- Homeland Security/Emergency Management grants



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