






## Town of Shandaken - Flood Mitigation Plan



### 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
  - NYS DOT
  - NYCDEP
  - NYDEC
  - USDA NRCS
  - Ulster County Soil and Water Conservation District
  - Landowners
  - S.O.S (Save our Shandaken) Representative



## Town of Shandaken - Flood Mitigation Plan



### DELIVERABLES

- Flood Mitigation Plan
- Flood Warning and Response Plan
- CRS Application Support





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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 and Demographics – Has this changed since 2009?
- 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
  - Hospitals and Medical Care Facilities
  - Schools and Care Facilities
  - Sheltering Facilities
  - Infrastructure (Transportation Systems, Utilities)
  - High-Potential Loss Facilities (Dams, Military Installations, Haz-Mat)



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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







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### RISK ASSESSMENT METHODOLOGY

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





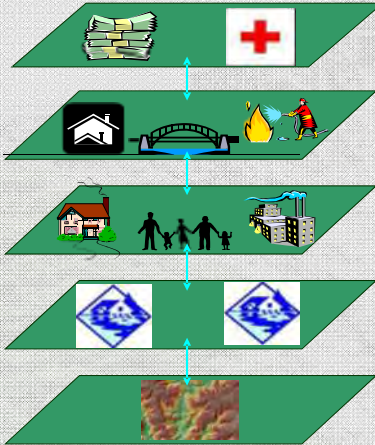


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### INTRODUCTION TO GIS & HAZUS MH

Hazus is an ARC GIS Extension



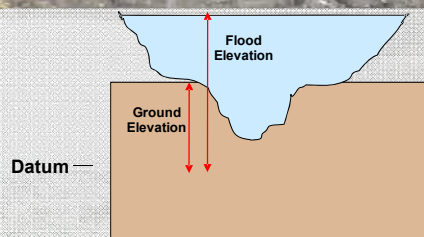
1. Define terrain
2. Define Hazard. Flood surface
3. Define and Overlay Inventory
4. Determine Damage
5. Estimate Losses



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### FLOOD MODEL OVERVIEW



Subtract ground surface from flood surface to determine flood depth throughout the study area

WATER DEPTH DAMAGE FUNCTION



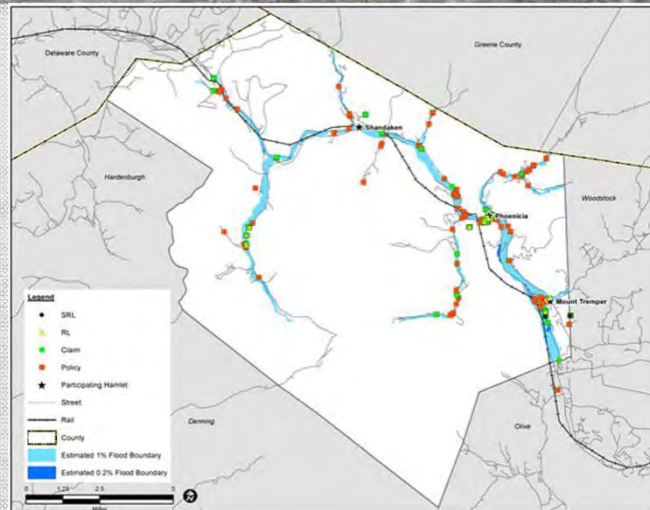




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### REPETITIVE LOSS PROPERTIES



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### TOWN NFIP POLICIES AND CLAIMS (PRE-IRENE)

- Number of Building: 2,381
- Number of Buildings in 1% Flood Boundary: 320 (13.4% of total)
- Number of Buildings in 0.2% Flood Boundary: 471 (19.8% of total)
- Number of Policies: 181
- Number of Claims (losses): 127
- **Number of Repetitive Loss Properties: 12**
- Number of Severe Repetitive Loss Properties: 1
- Number of Policies in 1% Flood Boundary: 96
- Number of Policies in 0.2% Flood Boundary: 104
- Number of Policies outside the 0.2% Flood Boundary: 77