

Town of Marblehead Natural Hazards Mitigation Plan December 2004 - Update

Public Workshop
December 5, 2012
7:00 pm
Abbot Public Library



Why Hazard Mitigation Planning?

Disaster Mitigation Act of 2000, Interim Final Rule, 44 CFR Parts 201 and 206 states, "All communities must have an approved Multiple Hazards Mitigation Plan in order to qualify for future federal disaster mitigation grants".

Reduction or elimination of long-term risk to life, property, and the environment.



Marblehead Hazard Mitigation Plan Implementation/Monitoring Team

- Rebecca Curran, Town Planner
- Jeff Chelgren, Town Administrator
- Chuck Cerrutti, Emergency Management Director
- Jason Gilliland, Fire Chief
- Bob Picariello, Police Chief
- Chuck McCollum, Superintendent Water/Sewer Dept.
- Amy McHugh, Assistant Superintendent Water/Sewer Dept.
- Willy Lanphear, Town Engineer/Conservation Commission
- William Conly, Historic Commission
- Bob Ives, Building Commissioner
- Craig Pereira, Consultant – Horsley Witten Group



Mitigation Process

- **Assess Risks**
- Establish Goals
- Identify Projects/Actions
- Update/Maintain Plan



Assess Risks... Risk and Vulnerability Assessment

Natural Hazard:

"Any event or physical condition that has the potential to cause fatalities, injuries, property damage, infrastructure damage, and agricultural loss, damage to the environment, interruption of business, or other types of harm and/or loss".



Hazards Affecting Marblehead (2004 Plan)

- Flood-Related
 - Coastal Storms/Nor'easters/Thunderstorms/Winter Storms
 - Erosion
 - Hurricanes
 - Interior Flooding from Storm Run-off
- Wind-Related
 - Hurricanes
 - Coastal Storms/Winter Storms
- Fire-Related
 - Urban Fires
- Geologic
 - Earthquakes

* Hazards affecting Marblehead will be updated to include climate change and sea level rise



Hazards Affecting Marblehead (2004 Plan)

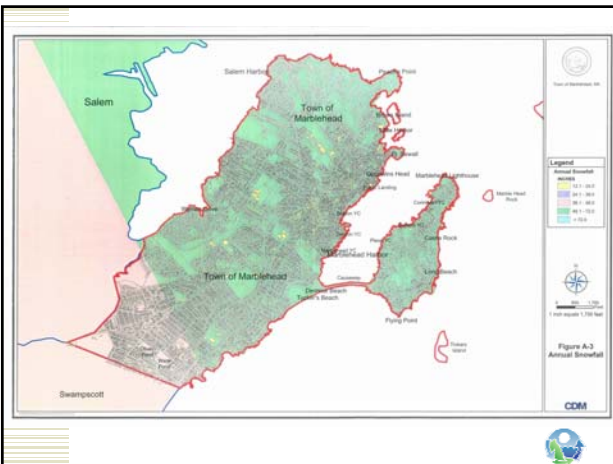
• Flooding

- Coastal Flood Hazards...where the 100-year flood zone encroaches inland from the ocean. The Flood Insurance Rate Map (FIRM) is the standard used to determine the vulnerability of structures to flood hazards. Marblehead experiences significant coastal flooding several times per year due to storm surges.
- Interior Flooding from Storm Run-off...Several interior locations experience flooding due to inadequate drainage during significant storm events.

• Winter Storms

- Marblehead receives between 36 inches to 72 inches of snow per year. Most dangerous hazard associated with winter storms for Marblehead, is the possibility of citizens being stranded on the Neck – due to closure of the Causeway.

* Geographic flood hazard areas will be updated with new FEMA FIRM mapping (effective July 1, 2012).



Hazards Affecting Marblehead (2004 Plan)

• Erosion

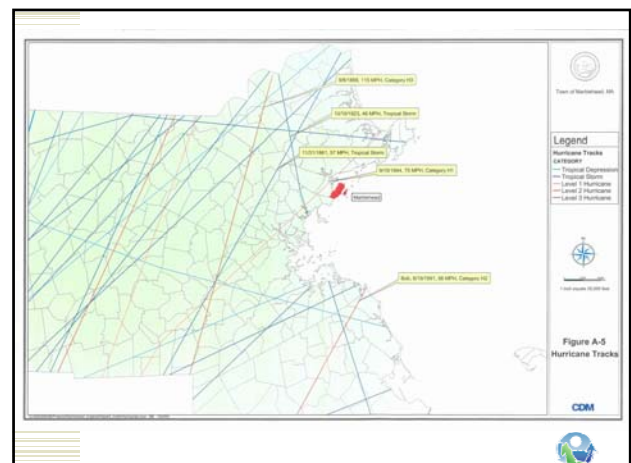
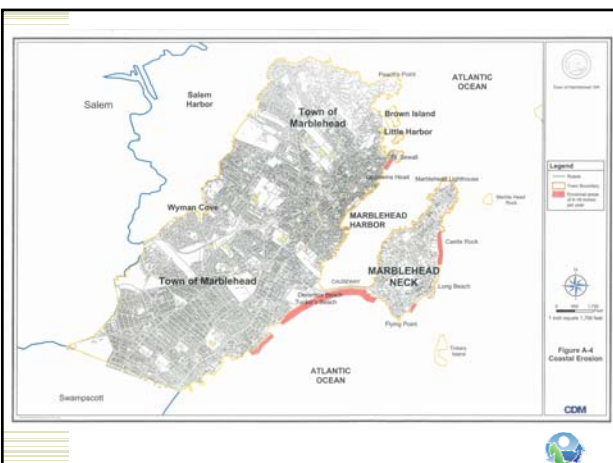
- Erosion is another hazard that occurs during large coastal events and through nature's natural processes. There are segments of coastline along the Neck and Marblehead's mainland that undergo between 6 inches and 18 inches of erosion per year.

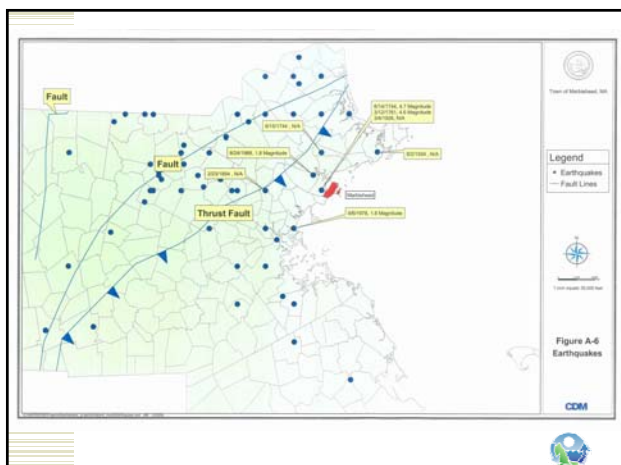
• Hurricanes

- Hurricanes are multi-hazard storms that can potentially wreak havoc on a coastal community. Marblehead has not experienced the brunt of a hurricane since Hurricane Bob in August, 1991, but has experienced high winds and heavy rains associated with past hurricanes.

• Earthquakes

- New England is not considered to be a hot spot for earthquakes, however, Marblehead is located in one of the highest risk zones in Massachusetts, and do occur from time to time.





Hazard Index (2004 Plan)

The Hazard Mitigation Plan Implementation/Monitoring Team evaluated each of the hazards affecting Marblehead in order to establish the following **Hazard Index**:

➤ Coastal flooding from coastal storms/nor'easters	10
➤ Interior flooding from storm run-off	9
➤ Wind-related hazards from coastal/winter storms	8/7
➤ Erosion	6
➤ Thunderstorms	6
➤ Hurricanes	6
➤ Urban Fires	6

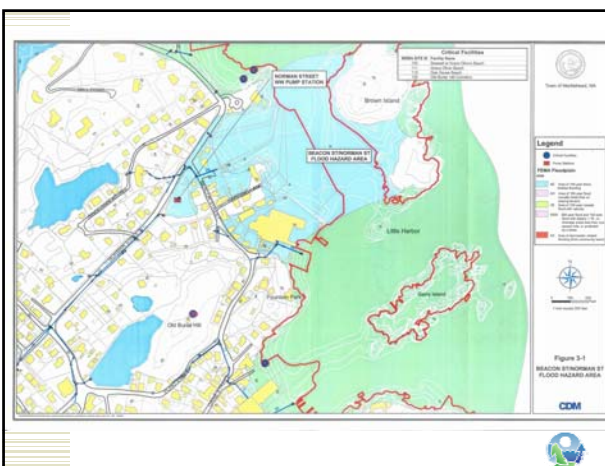
Horsley Witten Group

High Hazard Areas (2004 Plan)

Flood related hazards (coastal due to storm surge and inland due to stormwater collection deficiencies) are the major issues of natural hazard risk to the Town of Marblehead, resulting in the identification of the following coastal-hazard area profiles:

- Beacon Street/Norman Street
- Front Street/Doaks Lane
- Devereux Beach/Tucker's Beach
- Front Street/Ferry Lane
- Boston Yacht Club
- The Causeway
- Foster Street/Sean Way
- Sargent Road/Ocean Avenue

Horsley Witten Group



High Hazard Areas (2004 Plan)

Second only to coastal flooding, interior flooding caused by deficiencies in the Town's storm water collection system resulted in the development and approval (June 2012) of the *Pleasant Street Drainage Project* to remedy some of the remaining interior flooding issues associated with multiple residential and commercial structures, public utilities, and municipally-owned properties.

Other previously identified interior flooding issues have been reduced or eliminated through the installation of larger drain pipes, and new outfalls, cleaning of existing drain lines, replacement of defective pipes, adding additional inlet capacity and redirecting flow to other areas and/or outfalls.

Horsley Witten Group



Assess Risks... Risk and Vulnerability Assessment Identification of Assets

- **Economic Assets**
 - Businesses/major employers
 - Tourist destinations
- **Social Assets**
 - Vulnerable populations
 - Cultural locations
- **Natural Resources**
 - Lifeline and utility systems
 - Wetlands
 - Conservation and recreation lands



Assess Risks... Risk and Vulnerability Assessment Identification of Assets

- **Essential Buildings and Critical Facilities**
 - Municipal buildings
 - Hazardous facilities
 - Roadways

One hundred and twenty seven (127) critical facilities have been identified by the Massachusetts Emergency Management Agency (MEMA, 2004) and Town officials, with only a portion located in high hazard areas.



Assess Risks... Risk and Vulnerability Assessment Identification of Assets

There are an estimated (2004) 280 residents living in 70 properties within the main coastal flood hazard area in Marblehead, and approximately 23 commercial properties and 10 wastewater pump stations located within these flood hazard profile areas. A detailed listing of the structures considered vulnerable to coastal flooding is estimated at \$112.5 million.

FEMA reports a total of 18 structures that have had at least two flood insurance claims (Repetitive Loss Structures).

* Approximate loss estimates will be updated with new FEMA FIRM mapping (effective July 1, 2012).



Mitigation Process

- Assess Risks
- Establish Goals
- Identify Projects/Actions
- Update/Maintain Plan



Establish Goals... Mitigation Strategy

Review Existing Hazard Mitigation Activities:

- Marblehead Emergency Response Team
- Comprehensive Emergency Operations Plan
- Wetland By-Law
- Massachusetts State Building Codes
- Marblehead Harbor By-Law



Establish Goals... Mitigation Goal

"Reduce the loss of or damage to life, property, infrastructure, and natural, cultural, and economic resources from natural disasters"



Establish Goals... Mitigation Measures

- Planning and Prevention
- Property Protection
- Natural Resource Protection
- Structural Projects
- Emergency Services, and
- Public Education and Awareness

* Proposed approach to reconfigure the format/layout of the updated plan.

Horsley Witten Group



Mitigation Process

- Assess Risks
- Establish Goals
- **Identify Projects/Actions**
- Update/Maintain Plan

Horsley Witten Group



Identify Projects/Actions... Identification of Mitigation Actions

Mitigation actions to be developed based on review of the Town's identified risks and vulnerabilities to natural hazards.

Each action incorporates a brief description of the intended action, who the responsible parties are, a proposed time frame for completion and potential funding sources.

Horsley Witten Group



Identify Projects/Actions... Prioritization of Actions

- Social
- Technical
- Administrative
- Political
- Legal
- Economic
- Environmental

Horsley Witten Group



Identify Projects/Actions... Action Plan (example)

EMERGENCY SERVICES

Essential Public Services

Action 12 – Purchase a 150 KW emergency power source for the Department of Public Works. Public Works has no back up power to keep up with necessary services in the event of a power outage. The community's Emergency Operations Center is located in this facility.

- Action Type - Emergency Services
- Priority - High
- Lead - Municipal EMA
- Supporting - DPW
- Financing Options - MEMA, FEMA, Town Capital Budget
- Cost - \$50,000
- Time Frame - Short Term
- Benefit - Public safety is enhanced

Horsley Witten Group



Identify Projects/Actions... Implementation

- Town Capability
- Plan Adoption/Incorporation into Existing Plans

Horsley Witten Group



Mitigation Process

- Assess Risks
- Establish Goals
- Identify Projects/Actions
- **Update/Maintain Plan**



Update/Maintain Plan...

- Maintain periodically, recommended annually
- Update every 5 years per DMA 2000



2004 Plan Report Card

Priority Measures

Enroll in the Community Rating System (CRS)

Fulfill the requirements of the National Flood Insurance Program (NFIP) to join CRS. In addition to assistance in developing future mitigation activities, this could allow the Town and residents to qualify for discounts on flood insurance rate premiums...**Not Completed – Carry Forward**

Official Town of Marblehead Website

Develop an official town website (www.marblehead.org), and increase public outreach with links to mitigation activities, evacuation procedures as described in the Comprehensive Emergency Management Plan, links to FEMA 100-year floodplain maps, and other natural-disaster related links, such as hurricane preparedness...**Completed – Expand and Carry Forward**



2004 Plan Report Card

Priority Measures

Construct a New Seawall at the Causeway

Rebuild the seawall on the southern side of the Causeway that is directly exposed to the ocean. The new seawall will be constructed with a concave face to the ocean to direct ocean waves away from the roadway and prevent the over-wash of cobbles onto the traveled way...**Completed**

Install Warning Lights at the Causeway

Install warning lights and/or signs on the Causeway to alert citizens of an impending storm, the need for evacuation of the Neck, or the closing of the Causeway...**Not Completed – Carry Forward**

Install Watertight Hatches at Wastewater Pump Stations

Plan, engineer and construct new watertight entrance hatches at each of nine underground wastewater pump stations that are located within the 100-year flood plain...**Completed**



2004 Plan Report Card

Secondary Measures

Advise Homeowners in the Floodplain

Insert a small pamphlet in the tax bills of citizens whose homes lie within the 100-year floodplain and advise them to visit the official town website to learn more about the risks and hazards they face, as well as mitigation actions they can perform. Also inform them of their right to receive a discount on their flood insurance premiums based on the Town's score in the Community Rating System...**Completed – Carry Forward**

Provide Backup Generator

Purchase and install a backup electrical generator at the Middle School of Village Street...**Not Completed – Carry Forward**



2004 Plan Report Card

Secondary Measures

Pet Shelters

Locate and establish pet shelters to house displaced pets during disaster ... **Not Completed – Requires Discussion Prior to Carrying Forward**

Investigate Breakwater

Re-evaluate the potential for construction of a breakwater to be located in Marblehead Harbor from near the Marblehead Lighthouse on the Neck heading westward towards the mainland. Re-address the planning level costs estimated in a similar evaluation performed by the Army Corps of Engineers in the 1960's and 1970's. The breakwater is intended to break the waves from the open ocean that enter Marblehead Harbor. This is intended to protect the eastern shore of the mainland and western shore of the Neck around Marblehead Harbor. It is anticipated that the breakwater could protect 55-percent (10 out of 18) of the Town's repetitive flood loss structures that are located around the Marblehead Harbor area...**Not Completed – Carry Forward**



2004 Plan Report Card

Secondary Measures

Develop a Storm Water Master Plan

Develop and implement a town-wide Storm Water Master Plan including a storm water collection system evaluation to solve interior flood related problems. Plan and engineer the storm water collection system improvements and see the projects through the construction process. Currently there is a 5-year rolling plan effect...**Completed – Due for release in early winter**

Investigate Shoreline Protection Measures at Devereux Beach

Evaluate the effectiveness of various shoreline protection measures including but not limited to extending the existing seawall at the south western edge of the Causeway with a new 'knee wall' to the existing natural barrier located along Devereux Beach. Issue is to be studied to determine the best approach to mitigate flooding in this area...**Completed**

Horsley Witten Group



2004 Plan Report Card

Secondary Measures

Install Sand Fences

Install sand fences in areas where coastal erosion exceeds 6-inches annually...**Completed**

Complete the Community Hurricane Preparedness Course

Have the Marblehead Emergency Response Team and other associated personnel complete the web-based version of FEMA's Community Hurricane Preparedness course...**Completed – Carry Forward for new municipal employees**

Horsley Witten Group



Contact Us...

If you have general questions and/or comments about the Hazard Mitigation Plan Update, please contact:

Rebecca Curran – Town Planner
Abbot Hall
188 Washington Street
Marblehead, MA 01945
curranr@marblehead.org
Phone: (781) 631-0000

Thank You!