

Community Resilience Building Risk Matrix

Marblehead

June 2018



Municipal Vulnerability Preparedness (MVP)

www.CommunityResilienceBuilding.org

H-M-L priority for action over the **S**hort or **L**ong term (and **O**ngoing)
V = Vulnerability **S** = Strength

Top Priority Hazards

| Features | Location | Ownership | V / S | Top Priority Hazards | | | Priority | Time | |
|--|--|---------------|-------|--|---|--|----------------------|-----------|--------------------|
| | | | | Coastal Flooding - Sea Level Rise & Storm Surge | Inland Flooding - Intense Precipitation | High Wind | Coastal Erosion | H - M - L | Short Long Ongoing |
| Infrastructural | | | | | | | | | |
| Lead Mills: Electrical Feeder Line | | Town | V | Address immediate need to protect the two 23-kilovolt feeder lines underground in the Lead Mills rail trail. | | | H | S | |
| Sewer Infrastructure: Sewer Lines and Pump Stations | | Town | V | Evaluate current flooding and future risks at 13 sewer pump stations and then protect from flooding; Upgrade alarms to SCADA; Educate public on alarm and sump pumps; Replace sewer lines that are at risk of seawater flooding as indicated from current investigation. | | | H | S/S /O/ O | |
| Stormwater Infrastructure | | Town | V | Inventory stormwater infrastructure and ocean backflow; Begin resiliency improvements at flood priority areas; Conduct a study of imperviousness, evaluating options to reduce hardening, increase flood storage and/or incorporate green infrastructure; Continue public education. | | | H | S/O/O | |
| Marblehead Municipal Electric Light Department | 80 Commercial St. + 4 substations, power lines | Town | V/S | Develop a detailed plan for power distribution under emergency conditions; Investigate risk from harbor pipes to MMLD office building; Evaluate power substations near the water; Design deployment of town renewable energy sources; Consider alternative electrical power supply. | Conduct town-wide utility pole assessment and replace as needed. | Evaluate and repair visible seawall erosion at rear of building site adjacent to Hammond Park. | H | S/O/L | |
| The Causeway | | Town | V | Assess reasons for closures in order to reevaluate solutions, particularly where it currently breaches; Install warning lights and gates; Educate coastal residents and others about emergencies and risks; Make sure there are shelters on both sides of the Neck. | | | H | O | |
| Seawalls | | Town | V | Permit and reconstruct or repair public seawalls that are in immediate need from the winter 2018 storms. | | | H | S | |
| Marblehead Harbor: MMLD, harbormaster's, yacht clubs, boat yards, public docks, landings, seawalls, Front Street | | Private, Town | V | Develop a resilient, cohesive response to protect assets in Marblehead Harbor that addresses the mix of private and town properties, state and federal regulations; Restart conversation about constructing a breakwater to protect the harbor assets, which will require a cost/benefits analysis; Update the CZM private/public seawall inventory that includes climate change risk projections. | | | H | L/L/S | |
| Roads | | Town, State | V | Conduct flooded road analysis to determine short and long-term solutions; Work with neighboring towns to find solutions to flooding and resiliency. | Conduct appropriate tree maintenance near assets to protect power distribution and prevent road closures. | | H | O | |
| Communication Utilities | | Town | V | Improve communications redundancy for emergency services. | | | M | O | |
| Emergency Preparedness | | Town | S/V | Complete Emergency Preparedness Plan Update; Conduct public education in advance of a disaster: how to prepare, shut down power, evacuate. | | | M | S | |
| Chandler Hovey Park with Marblehead Light | | Town, Federal | S/V | | | Assure functionality | Monitor for erosion. | L | L |

| Societal | | | | | | | | |
|--|--|---------------------------------|----------|--|--|---|---|-----|
| Marblehead Harbor | | Town, Private | V | Evaluate adequacy of existing resources for boat removal during emergencies and determine possible new access points. | | | M | O |
| Historic District | | Town, Private | V | Educate and encourage retrofitting that include flood-wise actions (e.g. blow out panels, raising utilities). | | Maintain and repair Fort Sewall earthen fort using resilient solutions. | M | O |
| Reynolds Park | | Town | V/S | Assess feasibility of using as temporary underground stormwater storage. | | | H | S |
| Abbot Library | | Town | V/S | Implement flood proofing and flood storage to prevent the Library from future flooding. | | | M | O |
| Waterside Cemetery | | Town | S/V | | | Monitor shoreline for erosion. | L | L |
| Environmental | | | | | | | | |
| Marblehead Harbor and West Side of Salem Harbor | | Town/ Salem/ Private | V/S | Continue to protect the environmental quality of the harbors through sewer and stormwater improvements, boat pump outs, and residential and boater awareness. | | | H | O |
| Parks and Conservation Areas: V - Lead Mills, Fort Sewall, Chandler Hovey | | Town | V/S | Maintain condition; if resiliency actions are needed to protect infrastructural assets, conduct in the most practically sound environmental manner. | | | M | O |
| Town Trees | | Town | V/S | Conduct tree inventory/survey to evaluate needs with goal of maintaining a healthy tree canopy, while removing threats to utilities and roadways during high wind/ storm events / coastal erosion. | | | H | S/O |
| Barrier Beaches: Devereux, Riverhead, Preston | | Town | V/S | Monitor condition and maintain barrier beaches; Determine is something can be done with the water that overtops the barrier; Develop a post storm operations and management plan. | | | H | O/L |
| Beaches: Fort, Tucker, Gas House, Grace Oliver Salt Marshes: Goldthwait, Forest River Conservation Area | | Town/ Goldthwait Trustees | V V/S | Evaluate beach and salt marsh systems vulnerability to inform long-term policy, which includes understanding beach erosion and habitat retreat. | | | L | L |
| Brown and Gerry Islands | | Trustees of Reservation | V | Protect and maintain Brown and Gerry Islands, while understanding the natural changes that will occur due to sea level rise. | | | L | O/L |
| Rail Trail | | Town | V | Maintain access for non-vehicular transportation; Improve drainage, elevate areas that flood or construct alternative passage. | | | M | O/L |
| Coastal Marine Habitats: Eelgrass Beds, Shellfish | | Private/Town/ State | V | Stay informed of the climate change research on eelgrass and shellfish, and implement if possible. | | | L | L |