

Marshfield Multi Hazard Mitigation Plan Update

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Presentation Outline

1. Overview of Hazard Mitigation Plan Process

What is a Hazard Mitigation Plan and why should Marshfield have a current one?

2. Public Survey Results

3. Overview of MHMP Chapters

Chapter 3: Hazard Identification

Chapter 4: Vulnerability Assessment

Chapter 5: Mitigation Measures

Chapter 6: Plan Maintenance Process

4. Schedule

Marshfield Multi-Hazard Mitigation Plan



Prepared For:
Town of Marshfield
870 Moraine Street
Marshfield, MA 02050

Prepared By:
Woods Hole Group, Inc.
81 Technology Park Drive
East Falmouth, MA 02536

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Overview of Hazard Mitigation Plan Process

Natural hazard mitigation planning is the process of reducing or eliminating the loss of life and property damage resulting from natural hazards such as floods, earthquakes, and hurricanes through long-term strategies, including planning, policy changes, programs, projects, and other activities.



What is a Hazard Mitigation Plan?



Identify and
Describe Hazards

Identify Community
Assets and Critical
Facilities

Conduct
Vulnerability
Assessment

Develop
Mitigation Actions

Why Should Marshfield Have a Hazard Mitigation Plan?

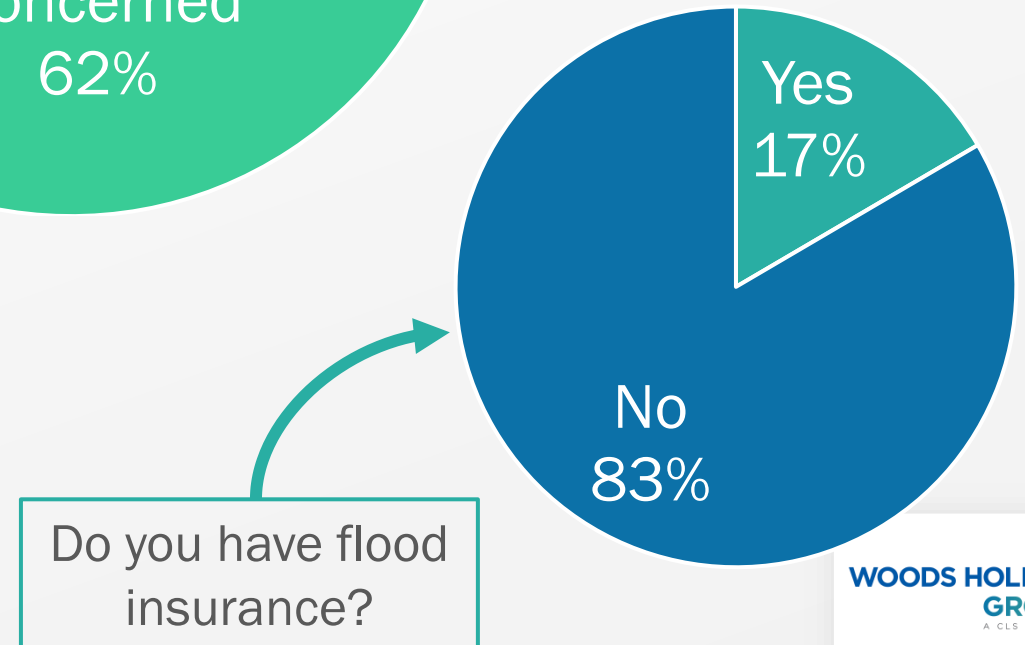
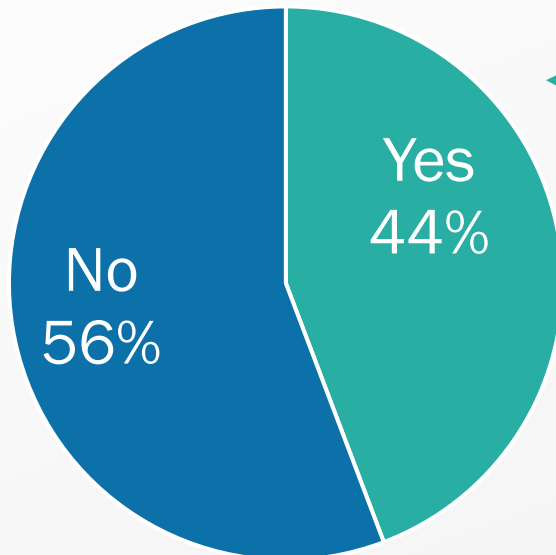
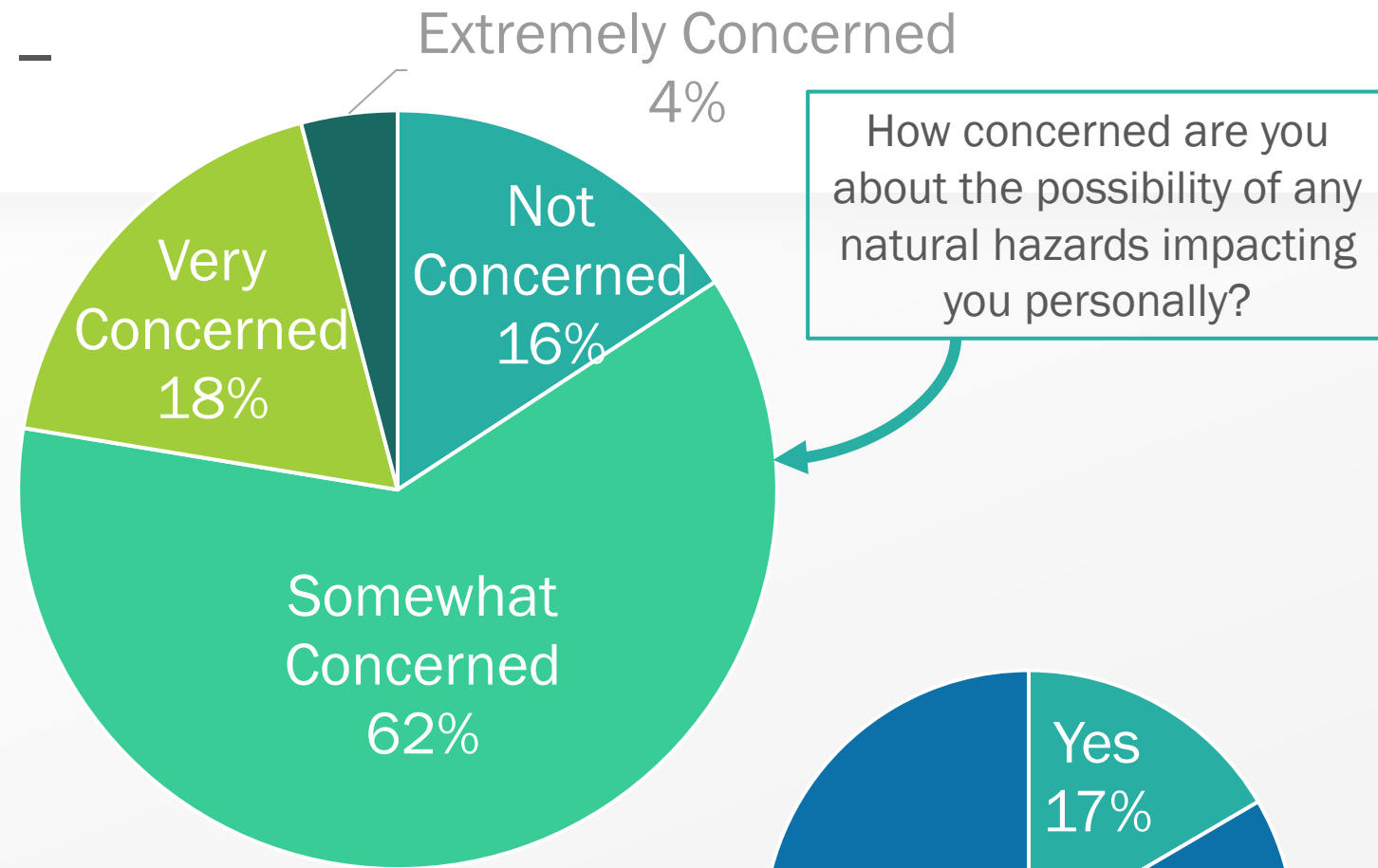


1. Help Marshfield prevent property damage and loss of life associated with natural hazards and expedite disaster recovery.
2. Prioritizes spending by instituting mitigation measures to make to community more resilient.
3. Makes Marshfield Eligible for FEMA funding
 - Building Resilient Infrastructure and Communities (BRIC) Grants
 - Flood Mitigation Assistance Program
 - Hazard Mitigation Grant Program

Public Survey Results – 330 Responses

Residents trust hearing from:

- Marshfield's Emergency Operations Center (EOC)
- Police and Fire Departments to provide them with information on how to prepare for natural hazards.





Overview of Marshfield's Hazard Mitigation Plan

Chapter 1: Introduction

Chapter 2: Local Profile

**Chapter 3: Hazard
Identification**

Chapter 4: Vulnerability
Assessment

Chapter 5: Mitigation
Measures

Chapter 6: Plan
Maintenance Process



Chapter 3: Hazard Identification

- Location(s) Impacted
- Strength/Magnitude
- Previous Occurrences
- Probability of Future Events
- Potential Impacts

Flooding
(Coastal &
Inland)

Coastal
Erosion

Hurricane/
Tropical
Storm

Severe Winter
Weather

Wildfire

Tornado

Drought

Extreme
Temperature

Earthquake

Invasive
Species

Other Severe
Weather

Landslide

Tsunami

Dam/Culvert
Failure

Chapter 3: Hazard Identification – Relative Risk of Hazards

	Likelihood				Severity				Area		Estimated Cumulative Risk
	Unlikely	Possible	Likely	Highly Likely	Minor	Serious	Extensive	Catastrophic	Isolated	Town Wide	
Score	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	
Severe Winter Weather				X		X	P			X	16
Extreme Temperature				X		X				X	16
Flooding (Inland & Coastal)				X			X		X		12
Other Severe Weather				X			X	P	X	P	12
Coastal Erosion				X		X	P		X		8
Earthquake		X				X		P		X	8
Hurricane & Tropical Storm			X			X	P		X	P	6
Drought		X			X					X	4
Dam/Culvert Failure		X				X			X		4
Wildfire		X				X	P		X		4
Invasive Species									X	P	4
Tornado		X			X				X		2
Landslide	X				X	P			X		1
Tsunami	X				X			P	X		1

- X indicates the believed value, while P indicates an extreme potential.
- This value is based on the formula:

Likelihood*Severity*Area.

- The Likelihood of the hazard is based on a scale of 1 to 4, with 1 being unlikely and 4 being highly likely.
- The Severity of the hazard was based on a scale from 1 to 4, with 1 being minor and 4 being catastrophic.
- Area was given a value of 1 for isolated and 2 for town-wide. The “P”s were not incorporated into the Estimated Cumulative Risk value.



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Chapter 4: Vulnerability Assessment of Critical Facilities

Category	ID	Name	FEMA Flood Zone	Min Hurricane Category That Will Affect Facility	Storm Surge Inundation Risk 2030	Storm Surge Inundation Risk 2050	Storm Surge Inundation Risk 2070
Wastewater/ Water Infrastructure	78	Central Street Wastewater Pump Station	AE	2	12%	65%	75%
	79	Solid Waste Transfer Station					
	80	Wastewater Treatment Plant	AE	3	2%	2%	42%
	81	Marshfield High School Wastewater Treatment Facility					
	82	Homestead Ave. Wastewater Pump Station		3	14%	15%	21%
	83	Plymouth Ave. Wastewater Pump Station	AE	1	9%	53%	75%
	84	Macker Terrace Wastewater Pump Station	AE	1	9%	53%	75%
	85	Anderson Dr. Wastewater Pump Station	AE	2	65%	75%	75%
	86	Carolina Hill Water Tank					
	87	Furnace Brook Water Pumping Station No. 4					
	88	Mt. Skirgo Rd. Water Pump					
	89	South River Pumping Station					
	90	Avon St. Wastewater Pump Station	AE	2	12%	75%	75%
	91	Webster St. Pumping Station No. 1					
	92	Church St. Water Pumping Station					
	93	Webster St. Pumping Station No. 2		3			4%

Chapter 4: Vulnerability Assessment of Parcels & Buildings

VE FEMA Flood Zone

Land Use	Number of Parcels			Value of Buildings			Value of Total Property		
	Total	Total in Hazard	% in Hazard	Total Value	Total Value in Hazard	% Value in Hazard	Total Value	Total Value in Hazard	% Value in Hazard
Residential - Single Family	9,378	305	3%	\$2,462,858,350	\$70,295,100	3%	\$4,935,214,965	\$212,734,700	4%
Residential - Multi-Family	83	2	2%	\$166,521,000	\$1,582,900	1%	\$213,178,500	\$1,950,400	1%
Temporary Lodging	1	0	0%	\$597,900	\$0	0%	\$902,100	\$0	0%
Commercial - Retail/Offices/ Services	195	1	1%	\$100,789,507	\$0	0%	\$197,621,107	\$259,900	0%
Commercial - Manufacturing/ Distribution	46	0	0%	\$27,831,400	\$0	0%	\$54,824,400	\$0	0%
Public Services	117	0	0%	\$204,347,708	\$0	0%	\$276,934,708	\$0	0%
Agricultural	6	0	0%	\$223,700	\$0	0%	\$1,549,439	\$0	0%
Open Space	944	21	2%	\$3,462,200	\$358,500	10%	\$137,403,070	\$8,360,900	6%
Recreation	9	0	0%	\$4,101,000	\$0	0%	\$18,064,046	\$0	0%
Vacant	935	17	2%	\$17,884,900	\$113,200	1%	\$92,893,336	\$1,532,700	2%
Total	11,714	346	3%	\$2,988,617,665	\$72,349,700	2%	\$5,928,585,671	\$224,838,600	4%



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Maintenance Process



Chapter 5: Mitigation Measures

- 26 Mitigation Actions Total
- 8 High Priority Actions

1. Reduce and minimize the impacts to critical municipal facilities (6)
2. Improve resiliency to existing infrastructure and enhance public safety (4)
3. Access for emergency responders during and after natural hazard events (3)
4. Update existing policies (3)
5. Ensure regional cooperation (2)
6. Encourage future development that minimizes risks (1)
7. Identify public education opportunities (3)
8. Seek the funding to reduce vulnerability to natural hazards (4)

Chapter 5: Mitigation Measures – Example

Goal 1: Investigate, design, and implement projects that will reduce and minimize the risks and impacts from natural hazards to critical municipal facilities and resources.

Mitigation Action 1a:

Ensure that all town-owned buildings that can provide emergency support services are equipped with generators for use as cooling/heating station during hazard events, power outages, etc.

HAZARD ADDRESSED	Severe Winter Weather, Hurricane & Tropical Storms, Flooding, Extreme Temperature, Other Severe Weather
CRS CATEGORY	Emergency Services
PURPOSE	This measure will ensure adequate access to sufficient heating and/or cooling systems in Town and will better enable residents to access services during a hazard event.
RESPONSIBILITY	Town Administrator, EOC, Planning Department
ESTIMATED COST	High
POTENTIAL FUNDING SOURCES	Town Operating Budget, FEMA Building Resilient Infrastructure and Communities (BRIC) Grant
PRIORITY	High

Chapter 5: Mitigation Measures

Goal 1: Investigate, design, and implement projects that will reduce and minimize the risks and impacts from natural hazards to critical municipal facilities and resources.

- a) Ensure that all town-owned buildings that can provide emergency support services are equipped with generators.
- b) Enhance the flood control capacity of Dyke Road.
- c) Create adaptation alternatives for low-lying roads and bridges.
- d) Reduce the vulnerability of the Wastewater Treatment Plant.
- e) Identify public water infrastructure that needs increased capacity.
- f) Implement stormwater best management practices (BMPs) to vulnerable roadways.



Chapter 5: Mitigation Measures

Goal 2: Develop and implement strategies for hazard prone areas of Town that improve resiliency to existing infrastructure and enhance public safety.

- a) **Prepare a Substantial Damage Management Plan.**
- b) Create a Master Stormwater Management Plan.
- c) Eliminate unnecessary dune paths to improve storm damage protection.
- d) **Develop resources for vulnerable of coastal business districts.**
- e) Provide education for building retrofits and access funding sources.



Chapter 5: Mitigation Measures

Goal 3: Reduce the loss of life, property, infrastructure, and environmental and cultural resources from natural disasters by maintaining accessibility for emergency responders during and after natural hazard events.

- a) Develop a flood warning and response plan.
- b) **Treat roads quickly and effectively to maintain safe access.**
- c) Regular tree trimming on municipal properties.



Chapter 5: Mitigation Measures

Goal 4: Review and update existing policies, programs, and regulations to further reduce or eliminate the impacts of natural hazards.

- a) Develop a priority ranking for projects/revisions/properties to reduce vulnerability.
- b) **Evaluate all zoning, bylaws, and codes as necessary to increase the resiliency to natural hazards.**
- c) **Verify repetitive loss properties. Inform existing Repetitive Loss property owners annually about financial assistance options.**



Chapter 5: Mitigation Measures

Goal 5: Engage with surrounding communities to ensure regional cooperation and solution for hazards affecting multiple communities

- a) Collaborate with the Towns of Situate and Duxbury on salt marsh evaluation, restoration and storm water systems that impact coastal wetlands.
- b) Develop evacuation routes to improve transportation needs prior to or during a natural hazard.



Chapter 5: Mitigation Measures

Goal 6: Encourage future development that minimizes risks to natural hazards, such as coastal and riverine flooding.

- a) Develop a framework that addresses buy outs and incentives for relocation from low-lying neighborhoods.



Chapter 5: Mitigation Measures

Goal 7: Identify public education opportunities and develop materials to inform residents about what to expect during natural disasters. Promote pre-disaster planning and provide education materials on appropriate mitigation actions to reduce vulnerability.

- a) Develop strategies and materials to increase community awareness and involvement.
- b) Work with local marinas and yacht clubs to prepare storm preparedness plan.
- c) **Maintain programing that promotes flood insurance.**



Chapter 5: Mitigation Measures

Goal 8: Identify and seek the funding necessary to study, design and construct projects that will reduce the Town's vulnerability to natural hazards.

- a) Develop, prioritize, and seek funding for a list of needed infrastructure improvement projects.
- b) **Integrate municipal mitigation and adaptation projects into the Town's operating and capital budgets.**
- c) Explore opportunities to conserve the Town's existing open space, and possibilities to expand Marshfield's existing open space.
- d) Investigate the repair and removal of damaged dams, culverts, tide gates, coastal flood control and protection structures.



Schedule

We Are
Here



Questions?

Marshfield Multi-Hazard Mitigation Plan DRAFT



Brant Rock – March 8, 2018
High Tide Post Winter Storm Riley

- Review and comment on the Draft Hazard Mitigation Plan document –
- Comment Period: March 3rd – 17th, 2023
 - Draft Plan found at <https://www.marshfield-ma.gov/>
 - For more information, contact Greg Guimond at (781) 834-5554 or at gguimond@townofmarshfield.org.

February 2023

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