2023 SEEKONK, MA HAZARD MITIGATION PLAN AND MUNICIPAL VULNERABILITY PREPAREDNESS SUMMARY OF FINDINGS

Seekonk, Massachusetts

Prepared for:

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December 8, 2023 – FEMA COMMENTS

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1.0 INTRODUCTION

In summer of 2019, the Town of Seekonk (the Town) received a Municipal Vulnerability Preparedness (MVP) Planning Grant from the Massachusetts Executive Office of Energy and Environmental Affairs (EEA) to evaluate natural hazards facing the Town, discuss municipal strengths and vulnerabilities, and identify opportunities to improve the Town's overall resiliency to climate change. These goals were accomplished by following the Community Resilience Building (CRB) framework, a public-input process developed by The Nature Conservancy, which leverages the local knowledge and experience of community members to develop a Town-specific list of priorities to respond to climate-related hazards.

The process of identifying natural hazards, documenting municipal strengths and vulnerabilities, and prioritizing actions to address those strengths and vulnerabilities are key pillars of local hazard mitigation planning. For this reason, the EEA offered the Town of Seekonk additional grant funds to prepare a local Hazard Mitigation Plan (HMP) in concert with the MVP process. In accordance with the Disaster Mitigation Act of 2000, a local HMP is required by the Federal Emergency Management Agency (FEMA) for municipalities to receive funding for non-emergency disaster assistance. Local HMPs are reviewed by the Massachusetts Emergency Management Agency (MEMA) followed by FEMA for approval, then adopted by local officials. Updates to local HMPs are required every 5 years

Hazard preparedness and associated mitigation allows communities to identify policies, activities, and tools to implement actions in advance of a hazard occurrence. Implementation of such actions has been documented to reduce losses to infrastructure and critical facilities; according to the National Institute of Building Sciences, investment in mitigation strategies can result in $4 to $11 saved for every $1 spent, depending on the strategy and sector[1]. Additional benefits of local hazard mitigation planning include an increased awareness of vulnerabilities, improved safety and welfare of communities and citizens, and community commitment to mitigation. In contrast, lack of hazard awareness and mitigation planning could lead to unnecessary loss of property and potential human casualties.

With this assistance from EEA, the Town evaluated natural hazard mitigation planning through the lens of climate change, generating this 2023 Hazard Mitigation Plan Update and Municipal Vulnerability Preparedness Summary of Findings (the MVP-HMP Hybrid). Upon completion of the CRB process, the Town became designated by EEA as an MVP Certified Community. This designation makes the Town eligible for grant funds to implement resiliency planning and improvement projects outlined herein.

[1] https://www.nibs.org/projects/natural-hazard-mitigation-saves-2019-report

2.0 OVERVIEW

2.1 Town Profile

The Town of Seekonk is a municipality in Bristol County, Massachusetts, containing approximately 18.4 square miles, or 11,776 acres, of land. Seekonk is uniquely positioned in that it borders urban and rural communities in both Massachusetts and Rhode Island. The Town is bounded to the west by the municipalities of East Providence, Pawtucket, and Barrington in Rhode Island, and to the north, south, and east by the municipalities of Rehoboth, Swansea, and Attleborough in Massachusetts.

2.1.1 Population, Housing, Land Use Characteristics

2.1.1.1 Population and Housing

According to the American Community Survey (ACS), the Town had an estimated population of 15,702 in 2018, which represented an increase of 13.1% since the 2010 U.S. Census. Approximately 16.8% of Seekonk residents are age 65 or older, and approximately 3.3% of residents live below the national poverty line.

Table 1: 2010 and 2020 Population Changes in Seekonk

Year	Total Populations	Percent Change
2010	13,722	-
2020	15,531	13.2%

Source: 2010 and 2020 U.S. Census

There are approximately 5,958 census-defined households in Seekonk, with an estimated density of 2.62 persons per household. The total number of housing units in Seekonk, based on the ACS, is approximately 6,209.[2] According to the ACS, the owner-occupied housing unit rate within the Town is approximately 85.5% as of 2021, approximately 23% above the state average[3].

Seekonk has its own school system which includes four active schools. According to the Massachusetts Department of Education, approximately 2,080 students were enrolled in the school through grade 12 for the FY2019- 2020 school year. The public-school system includes two elementary schools, one middle school, and one high school.

[2] Seekonk Housing Production Plan, 2010, https://www.seekonk-ma.gov/sites/seekonkma/files/uploads/seekonk_housing_production_plan_final_draft.pdf
[3] https://www.census.gov/quickfacts/fact/table/seekonktownbristolcountymassachusetts,MA/

2.1.1.2 Land Use Characteristics

Seekonk was a strong agrarian community in the century following its incorporation; as such, portions of the Town maintain this rural character. Other, more densely populated areas of Town represent large tracts of land that were subsequently subdivided, featuring both residential and commercial development. Figure 1 depicts the population density of census tracts.

The Seekonk Master Plan Baseline Report prepared in 2012 by Horsley Witten Group, Inc. provides a succinct description of the changes in development patterns within the Town. This baseline plan notes:

> The suburbanization that did take place in Seekonk happened in a polarized north-south fashion. Northern Seekonk residential development eventually grew in response to the Pawtucket urban core, while southern Seekonk was linked to East Providence and Providence. The remnants of this polarization are evidenced in the Town's land use pattern. An array of mature subdivisions occupies the northwest area of Town in proximity to Pawtucket and to East Providence. The separation between north and south is psychological as well as physical as the east-west running Route 44 serves as an informal boundary between "north" and "south" Seekonk. Commercial development has proliferated along this arterial road that is the main route from Providence to Taunton serving as a true commercial corridor for the region.[4]

The general trend toward urbanization/suburbanization of the region has implications for natural hazard planning. As more land is developed, additional impervious surface is created, potentially increasing the flood risk, and decreasing the area available for flood storage. As population and housing density increases, the potential for property damage and economic loss as a result of a natural disaster also increases.

2.1.2 Open Space/Conservation Land

Although there has been a significant increase in residential and commercial development, Seekonk maintains a rich amount of open space and protected land, including parcels subject to conservation restrictions. Open space preservation is an important hazard mitigation planning tool as such undeveloped land can provide key buffers to hazards like inland flooding.

[4] Seekonk Master Plan, Volume I Baseline Report, (2012)

Prominent areas of protected open space in the Town include the Runnins River trail network and the Gammino Pond area. Land within Seekonk that is protected by the Seekonk Land Conservation Trust (SLCT) includes the Cushing Conservation Area and the Edna Martin Wildlife Refuge. Seekonk Meadows Park is one of the most recent additions to public recreational spaces in the Town. Opening in 2012 after several years of planning, Seekonk Meadows Park is an eight-acre former landfill which surrounds the Seekonk Public Library[5].

2.1.3 Water Resources/Water Quality/Utilities

2.1.3.1 Water Resources

Seekonk has an extensive hydrological system that includes groundwater, as well as wetlands and surface waters such as rivers, streams, brooks, lakes, ponds, and reservoirs. Prominent waterbodies and waterways within the Town include Coles Brook, the Runnins River, Ten Mile River, and Burrs Pond, among others. Many of these surface water resources are directly associated with protected open space as defined above or are subject to further regulation under the Seekonk Wetlands Protection Bylaw and regulations thereunder.

[5] https://patch.com/massachusetts/attleboro/from-landfill-to-community-park

2.1.3.2 Water Quality/Utilities

The Town of Seekonk is serviced by a quasi-municipal organization known as the Seekonk Water District. Formally, the Seekonk Water District is an independent governmental entity chartered by the Massachusetts Legislature and is not a department of the Town of Seekonk. The Seekonk Water District was recognized by the Commonwealth of Massachusetts in 1946. Currently, the District provides municipal water for almost the entire developed area of the Town. Sanitary sewerage is served mainly by individual septic systems for residential, commercial, and industrial uses, as the Town does not have a municipal sewer system.

2.1.4 Regional Economy

Seekonk is located on the Rhode Island state border and enjoys interstate commerce with the border that it shares with the City of East Providence. Much of the commercial or mixed-use land within Seekonk is situated along either Route 44 or Route 6, roadways which provide direct access to East Providence or neighboring communities in Massachusetts. From surrounding communities, the Town itself can be accessed through Interstate I-195, as well as Route 6, Route 44, Route 152, and Route 114A. Due in part to the sprawl of residential development in the Town following the transition away from the predominant agricultural land uses in the 20th century, the town has an unemployment rate of 2.9%, 0.7% below the national average as of May 2022.

2.1.5 Historic and Cultural Resources

The earliest known human inhabitants of Seekonk were the Native American Wampanoag Tribe. Historians approximate that at least three Native American villages comprised the land that is now contained within the boundaries of modern-day Seekonk. Seekonk was first settled by Europeans in 1636 and was subsequently incorporated as a town in 1812 with ongoing disputes over town boundaries with the City of East Providence over the next century. In addition to inventoried and recorded historic structures and locales, Seekonk is rich with sites of historic events The Massachusetts Cultural Resource Information System (MACRIS) and National Register of Historic Places identify several important cultural and historic features within the Town. A sample of these features includes:

Table 2: Seekonk Cultural/Historic Resources

Cultural/Historic Resource	MACRIS/National Identifier
Carpenter Homestead	OMB No. 10024-0018
Grist Mill	SEE.D
Isaiah Smart House	SEE.127
Caratunk Wildlife Refuge	SEE.904
Calland Library	SEE.166
Seekonk Schoolhouse	SEE.179

Source: MACRIS

2.1.6 Demographic Data and Projections

In considering exposure to natural hazards it is important to assess population and development trends. As more land is developed, additional impervious surface is created, increasing the flood risk, and decreasing available flood storage area.

Population, household, and employment projections for each municipality in Massachusetts were updated in 2017 and 2018 by the Massachusetts Department of Transportation (MassDOT)[6]. Concerning vulnerable populations, the MassDOT and Census data indicates that by 2020, approximately 50.3% percent of the population in Seekonk is projected to be age 60 or older. Understanding the potential size and composition of vulnerable communities coincides with planning for natural hazards, and CRB workshop attendees prioritized actions that would protect vulnerable populations, including the senior community.

[6] https://www.mass.gov/lists/socio-economic-projections-for-2020-regional-transportation-plans#editable-excel-spreadsheets-

3.0 COMMUNITY RESILIENCE BUILDING WORKSHOP

3.1 Introduction to Local Planning Process and Public Participation

The Town commenced the local mitigation planning process by establishing a Core Team to steer the planning process. The Town partnered with MVP Certified Providers at Beals and Thomas, Inc. for assistance in facilitating the public participation and plan preparation elements of the scope. In preparation for completion of the CRB process and HMP update, the MVP Core Team held a kick-off meeting in Seekonk on December 12, 2019. This kick-off meeting discussed the fourteen natural hazards presented in the State Hazard Mitigation and Climate Adaptation Plan, past occurrences of those hazards in Seekonk, and the impact climate change may have on the recurrence and extent of those hazards.

The MVP Core Team corresponded by telephone and email over the course of the CRB and HMP update processes, to discuss the goals and outcomes of the project.

3.1.1 Core Team

The following individuals from the Town of Seekonk. comprised the MVP Core Team:

- Jennifer Miller, Seekonk Conservation Agent, Local MVP Contact, Seekonk Conservation Commission
- Neal Abelson, Building Inspector, Seekonk Building Department
- Bruce Alexander, Finance Director, Seekonk Finance Department
- John J. Aubin, III, Town Planner, Seekonk Planning Office
- David Cabral, Superintendent, Seekonk Department of Public Works
- Shawn E. Cadime, Seekonk Town Administrator, Seekonk Administration Department
- Brittney Faria, Director, Seekonk Department of Human Services and Council on Aging
- Peter Fuller, Director, Seekonk Public Library
- Sharonlynne Hall, Animal Control Officer, Seekonk Animal Control
- Jessica Horsman, Health Agent, Seekonk Board of Health
- Gerard LaFleur, Lieutenant, Seekonk Police Department
- Kate McPherson, Riverkeeper, Save The Bay
- Scott Olobri, Assistant Superintendent, Seekonk Department of Public Works
- John Pozzi, Director, Seekonk Parks and Recreation

In addition, the following facilitators from Beals and Thomas, Inc. participated in the local mitigation planning process:

- Eric J. Las, MVP Certified Provider
- Mary Kate Schneeweis, MVP Certified Provider and Lead Facilitator
- Nick Santangelo, Facilitator
- Andrew Gorman, Facilitator

3.2 Hazard Mitigation Goals

The Core Team affirmed the central objectives of the CRB Workshop as their hazard mitigation goals:

- Define top local natural and climate-related hazards of concern
- Identify existing and future strengths and vulnerabilities
- Develop prioritized actions for the community
- Identify immediate opportunities to collaboratively advance planning actions to increase resilience

3.3 Overview of CRB Workshop

The Town chose to conduct the CRB process over the course a single eight-hour workshop, hosted on January 29, 2020. The first half of the workshop focused on identifying the top hazards facing the Town, as well as related strengths and vulnerabilities. Facilitators presented demographic data specific to Seekonk from the United States Census Bureau, the American Community Survey, and UMass Boston. In addition, stakeholders were given a presentation and handout summarizing climate change data from the Massachusetts Climate Change Projections, published in December of 2017. As a large group, stakeholders discussed the primary hazards facing Seekonk, reaching agreement on the top hazards as outlined in Section 4.2 herein. Stakeholders then broke up into small groups of 7 to 8 individuals to discuss and identify features that could be considered strengths and/or vulnerabilities unique to the community through the lens of the identified hazards.

The second half of the workshop included an overview of nature-based solutions for stakeholders' consideration when identifying actions. Stakeholder groups developed actions intended to enhance the strengths and mitigate the vulnerabilities identified during the previous workshop. The small groups prioritized these actions and identified a timeframe for completion. Then, as a large group, stakeholders collectively discussed the high priority actions, and identified the top four priority actions for the Town, as outlined in Section 6.0.

Refer to Appendix B for presentations and handouts provided to workshop participants.

3.3.1 Workshop Attendees

The Town invited a total of 61 individuals to participate as stakeholders in the CRB process. These stakeholders included a variety of community members with an interest in resiliency efforts, including representatives of municipal and state government, local businesses, non-profit organizations, and other interest groups.

More specifically, representatives from neighboring communities, such as the Town of Attleboro, Massachusetts and the City of East Providence, Rhode Island, were invited in order to provide input on mutual resources and vulnerabilities. Furthermore, a representative of the Southeastern Regional Planning and Economic Development District (SRPEDD), the Regional Planning Agency, participated in the workshops and provided input on regional hazards shared with neighboring communities.

With respect to identifying underserved communities and socially vulnerable populations, the Town conducted research on Environmental Justice Block Groups located within Seekonk; none were identified as of the 2020 Census. Furthermore, based on a review of the Climate and Economic Justice Screening Tool published by the Council on Environmental Quality, there are no neighborhoods in the Town of Seekonk that meet the thresholds for environmental burden or at least one associated socioeconomic threshold. Climate vulnerable populations in the potential area of project impact include a high percentage of populations over the age of 65 (12% – 28%) relative to the state and national averages. The interests of these groups were considered by including the Director of the Council on Aging on the Core Team.

Finally, representatives of agencies in town with the authority to regulate development, such as the Building Department, Zoning Board of Appeals, and Planning Board, were also invited. Please refer to Table 3 for a list of invited stakeholders, with asterisks denoting those who attended the workshop(s).

Table 3: Final MVP Stakeholder List

Contact	Organization	Title	Attended
Neal Abelson	Seekonk Building Department	Building Inspector	*
Jason Adamonis	Seekonk Parks and Recreation	Chairperson	*
James Aguiar	Seekonk Building Department	Interim Building Inspector	
Bruce Alexander	Seekonk Finance Department	Finance Director	*
Nelson Almeida	Seekonk Board of Selectmen	Board Member	
John Alves	Seekonk Community Preservation Committee	Chairperson	
David Andrade	Seekonk Board of Selectmen	Board Member	
Irene Andrews	Seekonk Human Service Committee	Committee Member	
John J. Aubin, III	Seekonk Planning Office	Town Planner	*
Charles Beauchamp	Seekonk Energy Committee	Chairperson	
Gerald Bessette	Barrington Emergency Management	Chief of Fire Department	
Michael Bourque	Seekonk Fire Department	Captain	*
Robert Braunsdorf	Seekonk Energy Committee	Committee Member	
Rob Bernardo	Seekonk Water District	Superintendent	*
David Cabral	Seekonk Department of Public Works	Director	*
Shawn E. Cadime	Seekonk Administration Office	Town Administrator	*
Michael Campagnone	Seekonk Conservation Commission	Vice Chairperson	
Ashley Cartwright	Seekonk Human Services and Council on Aging	Assistant Director	*
William Clark	Seekonk Cultural Council	Chair	
Stephen Coutu	City of East Providence Department of Public Works	Director of Public Works	
Florice Craig	Seekonk Office of the Town Clerk	Town Clerk	*
David Darling	Darling Hotels Management	President and CEO	
Carol Ann Days	Seekonk Public Safety Communications	Assistant Town Administrator	*
Beverly Della Grotta	Seekonk Human Service Committee	Committee Member	
Paul Dumouchel	Attleboro Housing Authority	Executive Director	
Alex Dunwoodie	Seekonk Cultural Council	Council Member	
David Enos	Seekonk Police Department	Police Chief	
Brittney Faria	Seekonk Human Services and Council on Aging	Director	*

Contact	Organization	Title	Attended
Peter Fuller	Seekonk Public Library	Director	*
Theodora Gabriel	Seekonk Assessor's Office	Town Assessor	
Keith Gonsalves	Ten Mile River Watershed; RI Rivers Council	Principal Officer	*
Sharonlynne Hall	Seekonk Animal Control	Animal Control Officer	*
Michael Healy	Seekonk Fire Department	Fire Chief	
Peter Hoogerzeil	Seekonk Town Meeting	Town Moderator	
Jessica Horsman	Seekonk Health Department	Health Agent	*
Matthew Jardine	Seekonk Police Department	Captain	
David Janik	Massachusetts Office of Coastal Zone Management	South Coastal Regional Coordinator	
Victoria Kinniburgh	Seekonk Board of Health	Board Member	
James LaFlame	Seekonk Veterans Services	Veterans Service Officer	*
Gerard LaFleur	Seekonk Police Department	Lieutenant	*
Sandra Lowery	Seekonk Fire Department	Fire Chief	*
Kate McPherson	Save The Bay	Narragansett Bay Riverkeeper	*
Jennifer Miller (*now Adeline Bellesheim)*	Seekonk Conservation Office	Conservation Agent	*
Bill Napolitano	Southeast Regional Planning and Economic Development District	Planner	*
Scott Olobri	Seekonk Department of Public Works	Assistant Superintendent	*
John Pozzi	Seekonk Parks and Recreation	Director	*
James Roach	Seekonk Planning Board	Board Member	
Courtney Rocha	Municipal Vulnerability Preparedness	Coordinator, Southeast Region	*
Andrea Russo	Seekonk Animal Control	Animal Control Officer	
Gary S. Sagar	Seekonk Zoning Board of Appeals	Board Member	
Jonathan Schiller	Seekonk Board of Health	Board Member	
Justin Sullivan	Seekonk Board of Selectmen	Board Member	
David Sullivan, Jr.	Seekonk Planning Board	Chairperson	
James Troiano	Seekonk Parks and Recreation	Board Member	
James Tusino	Seekonk Community Preservation Committee	Committee Member	
David F. Viera	Seekonk Board of Selectmen	Committee Member	
Richard Wallace	Seekonk Conservation Commission	Chairperson	
Paul Waltz	Seekonk Energy Committee	Committee Member	
Tom Webb	Seekonk Land Conservation Trust	President	*
Kourtney Wunschel	Attleboro Wastewater and Treatment Facility, Attleboro Water Department	Superintendent	
Christopher Zorra	Seekonk Board of Selectmen	Board Member	

3.4 Overview of Public Listening Sessions

Two public listening sessions were held over the course of plan preparation. The first listening session, conducted during the drafting of the plan, provided an overview of the results of the CRB process, with a focus on the priority actions. At this meeting, members of the MVP Core Team provided an overview of the MVP and HMP update process, and presented the top actions identified at the CRB workshops. The meeting was televised, and a recording of the meeting was subsequently posted online. Written comments were received and incorporated into the final MVP-HMP Hybrid Report.

A second listening session was held on June 10, 2020 at a regular meeting of the Board of Selectmen. The meeting was televised, and a recording of the meeting was subsequently posted online. The Draft MVP Summary of Findings Report was then made available for public comment from June 15, 2020 through June 29, 2020. During this period, announcements requesting input on the report were posted on the Town's website and social media pages. Public comments received during both listening sessions were incorporated into the Draft HMP Update and the Final Summary of Findings Report submitted to MEMA as follows:

- Two comments, from both a representative of the Seekonk Energy Committee as well as a member of the public, noted that the priority action, "*Implement tree planting program*" could be complemented by an additional priority action that seeks to minimize removal of public shade trees and large-scale tree clearing. The Town acknowledges the role that trees play in carbon sequestration, as well as preventing erosion.
- A representative of the Seekonk Energy Committee forwarded information related to the Committee's investigation of the potential for solar projects in the Town of Seekonk: "*The Energy Committee has considered 3 types of solar projects 1. Solar Carports at the Town School and Public Safety Building Parking Lots 2. Solar panel field at the town landfill located behind the American Legion on Fall River Avenue. 3. Roof-top solar panels at the town schools.*" This information informed the priority action, "*Evaluate installation of solar on municipal buildings.*"

Refer to Appendix E for the agendas for the applicable meetings, the presentations given at the listening sessions, and written comments received during and after the listening sessions.

3.5 Other Local and Regional Planning Initiatives

In addition to the technical information and plans referenced for community context in Section 2.0, the following existing plans, studies, reports, and technical information were considered during the CRB workshop:

- The Town of Seekonk is currently working on an updated Open Space and Recreation Plan (OSRP). These efforts are being led by an ad-hoc committee of Town Staff and volunteers. The OSRP is an important community planning tool which will help prioritize key parcels for protection and/or acquisition and help to evaluate Seekonk's compliance with Americans with Disabilities Association (ADA) design standards.[7] Such needs are discussed in the environmental priority actions outlined in Section 6.0.
- The Municipal Capital Improvement Committee prepared a 2012 Capital Improvement Study, which inventoried twelve municipal buildings, and evaluated the types of improvements that will be necessary for these buildings Furthermore, the Committee maintains a Timeline and Procedure for Updating the Five-Year Capital Plan. The Town has several large-scale capital projects either currently underway, including construction of a new animal shelter and expansion of the Aitken Elementary School, or scheduled to begin in the next couple years, such as design, permitting, and construction of Phase II of the Health and Human Services building, a new Fire Station in the south end of town, and a new DPW facility. Such needs are discussed in the infrastructural priority actions outlined in Section 6.0.
- Seekonk adopted the Community Preservation Act (CPA) designation in 2009 with a 1.25% tax surcharge. The Seekonk Community Preservation Committee makes recommendations on CPA-eligible projects for consideration at Town Meeting. Such projects include open space protection, historic preservation, affordable housing, and outdoor recreation.
- Working in conjunction with SRPEDD, Seekonk completed a final draft of its Housing Production Plan (HPP) in 2010. The local HPP noted the need for additional opportunities for elderly housing, affordable housing for young professionals and/or young families, limited supply of general affordable housing, and general zoning constraints. Such needs are discussed in the societal priority actions outlined in Section 6.0.
- FEMA published a Flood Insurance Study for Bristol County, Massachusetts, dated July 6, 2021. The Town contains Zones A, AE, and X. The 1% and 0.2% Annual Chance Flood Zones are depicted on the enclosed base map in Appendix C and participatory mapping in Appendix D. Flooding from the Runnins River and the Tenmile River as a result of hurricanes, snow melt combined with spring rains, and summer thunderstorms in the Town are identified as a Principal Flood Problems. The Peak 1% Annual Chance Discharge associated with these rivers are155 – 535 cubic feet per second (cfs) and 2,550 cfs, respectively. Non-levee flood control measures identified by the study include natural swamps and wetlands.

[7] https://www.seekonk-ma.gov/sites/seekonkma/files/uploads/meeting_agenda.osrp_.2020.03.23.pdf

4.0 OVERVIEW OF CLIMATE-RELATED HAZARDS

For each known natural hazard identified, a local HMP documents past occurrences of hazards (if applicable), outlines the potential impacts these hazards may have, and identifies the geographic extent of vulnerability to those hazards. In preparation of the MVP-HMP Hybrid, the Town of Seekonk evaluated the fourteen natural hazards outlined in Massachusetts Integrated State Hazard Mitigation and Climate Adaptation Plan (SHMCAP) relative to those criteria. The SHMCAP complies with FEMA requirements that states maintain hazard mitigation plans to maintain eligibility for disaster recovery funding. In September 2018, Massachusetts became the first state to integrate climate adaptation into its state HMP. The SHMCAP identifies the risk various natural hazards pose to the following critical sectors: populations, government, the built environment, natural resources and the environment, and the economy.

Table 4: Federal Disaster Declarations for Bristol County (2010 - 2022)

Disaster Name	Date of Event	Disaster Number	Hazard Type
Severe Storm and Flooding	March 12 - April 26, 2010	DR-1895	Inland Flooding
Tropical Storm Irene	August 27 - 29, 2011	DR-4028, EM-3330	Hurricane/Tropical Storms
Hurricane Sandy	October 27 - November 8, 2012	DR-4097, EM-3350	Hurricane/Tropical Storms
Explosions (Boston Marathon Bombings)	April 15 - 22, 2013	EM-3362	Non-Natural
Severe Winter Storm, Snowstorm, and Flooding	February 8 - 9, 2013	DR-4110	Severe Winter Storms/Nor'easters, Inland Flooding
Severe Winter Storm, Snowstorm, and Flooding	January 26 - 28, 2015	DR-4214	Severe Winter Storms/Nor'easters, Inland Flooding
Severe Winter Storm and Flooding	March 2 - 3, 2018	DR-4372	Severe Winter Storms/Nor'easters, Inland Flooding, Coastal Flooding
COVID-19 Pandemic	January 20, 2020 - ongoing	DR-4496, EM-3438	Non-Natural
Severe Winter Storm and Snowstorm	January 28 - 29, 2022	DR-4651	Severe Winter Storms/Nor'easters,

Source: FEMA

Table 5: Governor's State of Emergency Declarations for Massachusetts (2011 - 2022)

Emergency Name	Declaration Period	Hazard Type
Winter Storm	January 12 - 13, 2011	Severe Winter Storms/Nor'easters
Tornadoes	June 1 - 19, 2011	Tornadoes
Hurricane Irene	August 26 - September 6, 2011	Hurricane/Tropical Storms
Nor'easter	October 29 - November 7, 2011	Severe Winter Storms/Nor'easters
Hurricane Sandy	October 27 - November 1, 2012	Hurricane/Tropical Storms
Winter Storm	February 8 - 13, 2013	Severe Winter Storms/Nor'easters, Inland Flooding
Winter Storm	January 26 - 28, 2015	Severe Winter Storms/Nor'easters, Inland Flooding
Winter Storm	February 9 - 25, 2015	Severe Winter Storms/Nor'easters
Coastal Storm	March 3 - 6, 2018	Severe Winter Storms/Nor'easters, Inland Flooding, Coastal Flooding
Merrimack Valley Gas Explosion	September 14 - October 4, 2018	Non-Natural
COVID-19 Pandemic	March 10, 2020 – June 15, 2021	Non-Natural

Source: MEMA

4.1 Introduction to Known Natural Hazards

4.1.1 Inland Flooding

Inland flooding is defined as of flood events which lack a coastal influence which may be the result of moderate precipitation over several days, intense precipitation over a short period, or melting snow, among other factors. Inland or riverine flooding may occur during storm events that cause non-tidal rivers and streams to overtop their banks and inundate adjacent areas. Intense precipitation also has the potential to overwhelm stormwater systems that are undersized, resulting in flooded roadways.

The geographic extent of potential riverine flooding can be estimated by Flood Insurance Rate Maps (FIRMs) prepared by FEMA. These maps depict the flood risk for the 1 percent annual chance flood event (colloquially, the 100-year flood) and the 0.2 percent annual chance flood event (colloquially, the 500-year flood). The extent of the 1 percent annual chance flood risk in the Town of Seekonk is depicted on Figures 2 and 3. Approximately 1,100 acres of the Town are mapped as at risk for the 1% annual chance flood event (colloquially, the 100-year flood zone) Additional risk products, such as flood depth grids, were not prepared for Seekonk's watersheds.

Of particular concern to stakeholders are the areas surrounding the Runnins River corridor. FEMA maps land surrounding this river as both the A and AE flood zones, representing the largest tract of contiguous mapped flood zone within the Town. Land uses within these flood zones range from residential and commercial development to vacant, forested land. The headwaters of the Runnins River emerge from a wetland system to the east of Prospect Street and to the South of Walnut Street. The extent of FEMA-mapped flood zone surrounding the Runnins River extends to its headwaters, bifurcated both undeveloped land and developed areas, including major roadways.

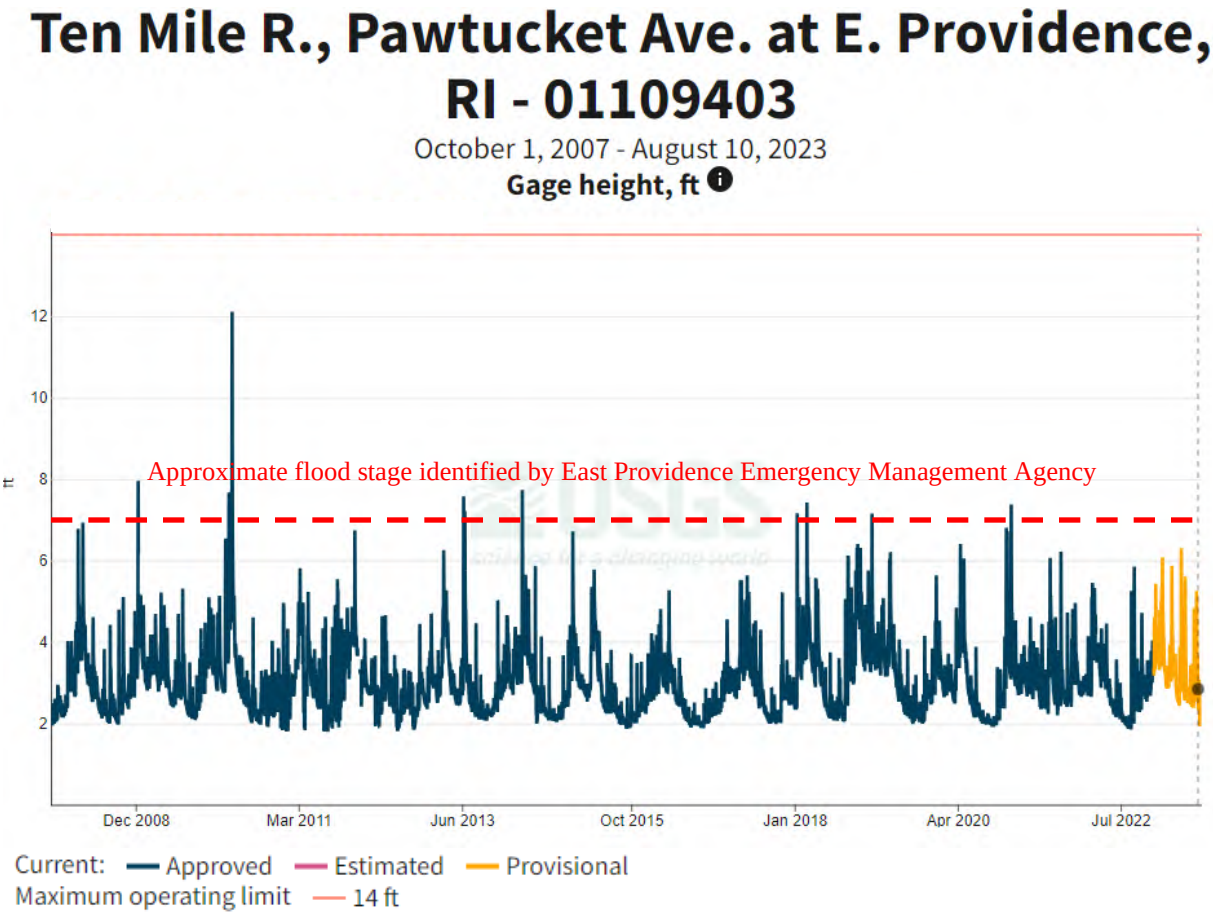
Historic occurrences of flooding can be determined by evaluating data collected by stream gages. According to the USGS, the standard parameter collected by stream gages is the gage height, which can be further defined as the height of the surface of the stream above the stream gage datum reference point:

> "Gage height is used in computer models and forecasts, including flood inundation maps and flood forecasts. Flood stage, officially defined by the National Weather Service, can be thought of as the stage (or gage height) at which overflow of the natural banks of a stream begins to cause damage in the local area from flooding. The National Weather Service uses gage height numbers to tell the public about different levels of flooding hazard. Therefore, gage height values are commonly understood by water managers, emergency responders, and public citizens."

Historic gage height values for the Ten Mile River are available at Pawtucket Avenue in East Providence, RI. The 53.1 square mile area that drains to this gage includes Seekonk. While specific flood stage elevations developed by the National Weather Service are not available for this gage, the East Providence Emergency Management Agency has prepared a document for the public summarizing flood conditions at specific gage heights and locations based on observations:

> "When the gage reading reaches 7.0 feet, the following can be expected:
>
> - The water level is near the lowest elevation along the roadway on Pawtucket Avenue at the south end of the short bridge.
> - Water is also threatening the playground and basketball courts at the Agawam Playground along Pawtucket Avenue near the river.
> - The river level is getting into yards and is close to some of the homes that are closest to the Ten Mile River north of Centre Street.
> - By the 8-foot level, the playground area is significantly affected and Pawtucket Avenue is flooding at this location, and the play areas have some shallow water on them."

Instances of the Ten Mile River gage height exceeding 7.0 feet are graphed below:



Source: USGS National Water Information System

The Town of Seekonk participates in the National Flood Insurance Program (NFIP). As required for participation in the program, the Town adopted a floodplain management ordinance that meets the NFIP criteria, as Section 6.2 of the Zoning By-Laws of the Town of Seekonk Massachusetts, reprinted April 2019. This ordinance adopts the applicable FIRMs as an overlay district, called Wetlands and Floodplain Protection District. The authority for administering this bylaw is delegated to the Building Official, defined as "*The official, designated by the Town to issue building permits under the State Building Code.*").

The Building Department will look at the position of a structure to insure in does not encroach on the flood plain when the engineered plot/site plan is provided before a building permit is issued. The building department does not physically visit the site before any construction takes place. The Conservation Department and Planning Department review all building permit applications against available FEMA mapping and the Floodplain Overlay District to prevent construction within flood hazard areas. After a flood event takes place, the Department of Public Works responds at the direction of the Town Administrator's office to prevent damage to human life, property, and roadways. In post disaster permitting, damage deemed over 50% of the value the structure would then be treated as new construction and would have to be brought up to current codes. They would need to follow all new permitting requirements in flood plain areas.

A total of 28 flood insurance policies are in force in the town, of which 19 are single-family residential, with 14 losses paid through the NFIP. Of those 28 policies, one is defined as a Repetitive Loss property, or a property where "*any insurable building for which two or more claims of more than $1,000 were paid by the NFIP within any rolling ten-year period, since 1978*.[8]" This repetitive flood loss property is defined as Other, Non-Residential in use.

Table 6: Repetitive Flood Loss Properties under the NFIP (as of December 2021)

Number of Repetitive Flood Loss Properties	Number of Losses	Building	Contents	Total Paid
1	3	$40,847.82	$12,177.44	**$53,025.26**

Source: Federal Emergency Management Agency Region 1

[8] https://www.fema.gov/txt/rebuild/repetitive_loss_faqs.txt

In order to estimate the potential losses resulting from inland flooding in Seekonk, B+T conducted a GIS analysis of structures located within the area currently designated by FEMA as having a 1% annual chance of flooding. B+T downloaded current floodplain data from FEMA, as well as building footprint and assessor's parcel data available from the Massachusetts Bureau of Geographic Information (MassGIS). The building footprints were digitized by MassGIS based on aerial imagery from 2011 and 2012, supplemented with Light Detection and Ranging (LiDAR) data collected from 2002 to 2011, and updated through 2016. B+T visually confirmed and updated these data using current aerial imagery. Structures located partially within the flood zone were not included in this analysis. A total of 21 structures were located entirely within the floodplain. Upon identification of these buildings, ArcMap software was used to intersect the buildings with local assessment data, which reported the value of the structures on the property. For parcels containing multiple buildings, property record cards were reviewed to approximate the value of only the buildings located entirely within the floodplain. The value of the building contents was estimated using methodology consistent with FEMA's HAZUS program More specifically, the contents of residential buildings was estimated at 50% of the building value, the contents of commercial buildings estimated at 100% of the building value, and the contents of industrial and government/institutional buildings was estimated at 125% of the building value. The results of this analysis are tabulated below.

Table 7: Estimated Value of Losses in the 100-Year Floodplain

	Residential	Commercial	Industrial	Governmental /Institutional	Total Value
Building Value	$949,700	$2,414,500	$20,600	$25,400	**$3,410,200**
Contents Value	$474,850	$2,414,500	$25,750	$25,400	**$2,940,500**
Total Estimated Losses	$1,424,550	$4,829,000	$46,350	$50,800	**$6,350,700**

Source: Local assessor records, FIRM maps

Note that inland flooding is not limited to defined flood zones and may result from failing or compromised infrastructure such as clogged catch basins, dam failure, and other anthropogenic features. Natural causes of flooding may include beaver dams or other disruptions to the flow or storage of water. CRB workshop attendees noted a direct correlation between precipitation events and the hazard of inland flooding. During heavy rain events, undersized culverts, clogged catch basins, and other stormwater infrastructure on both public and private land. As recently as 2019, Warren Avenue along the Seekonk and East Providence town/state line was temporarily closed for culvert repairs associated with the Runnins River, detouring interstate travel for a period of 30 days[9]. The contractors retained by the City of East Providence installed "two 3-foot-high by 7-foot-wide precast concrete box culverts to the east of the existing culvert" along the Runnins River to alleviate frequent flooding[10].

There are three dams regulated by the Massachusetts of Conservation and Recreation, Office of Dam Safety located within the Town of Seekonk. The hazard classification for each dam is provided in the table below. The hazard classification is based upon the potential for loss of life and damage to property that failure of that dam could cause downstream. Such failure may alter flow conditions such that the potential for flooding changes. For instance, in summer 2017, the wooden boards of the sluiceway adjacent to the Attleboro Dye Works dam structure failed, allowing the pond impoundment to drain completely and the river to flow in a more confined, natural riverbed through the lower elevation of the sluiceway. Additional hydraulic restrictions in the Town, such as the former bridge abutments on the Runnins River, may also inhibit flow and contribute to flooding.

Table 8: Hazard Classification of Seekonk Dams

Dam Name	Impoundment and Waterway Name	Hazard Class**	Ownership
Attleboro Dye Works Dam	Ten Mile River Pond	Low Hazard	Town
Old Grist Mill Pond Dam	Old Grist Mill Pond (Runnins River)	High Hazard	Private
Burrs Pond Dam	Burrs Pond (Runnins River)	Low Hazard	Town

Source: Massachusetts Department of Conservation and Recreation, Office of Dam Safety, Town of Seekonk

[9] Runnins River Detour Plan, Reporter Today, June 27, 2019 Retrieved from: http://reportertoday.com/stories/city-to-commence-runnins-river-culvert-project-roadway-to-close-for-30-days,27394

[10] County Street in Seekonk near state line is closed for road work, The Sun Chronicle. July 22, 2019. Retrieved from: https://www.thesunchronicle.com/news/local_news/county-street-in-seekonk-near-state-line-is-closed-for/article_9a25389f-8e83-5a17-a2be-01d4d319c318.html

Participants of the CRB workshop expressed particular concern related to inland flooding in light of climate change projections that there will be an annual increase of 1 to 3 days in with greater than one inch of precipitation by 2050s for the Narragansett Bay & Mt. Hope Bay Basin[11].

4.1.2 Coastal Flooding

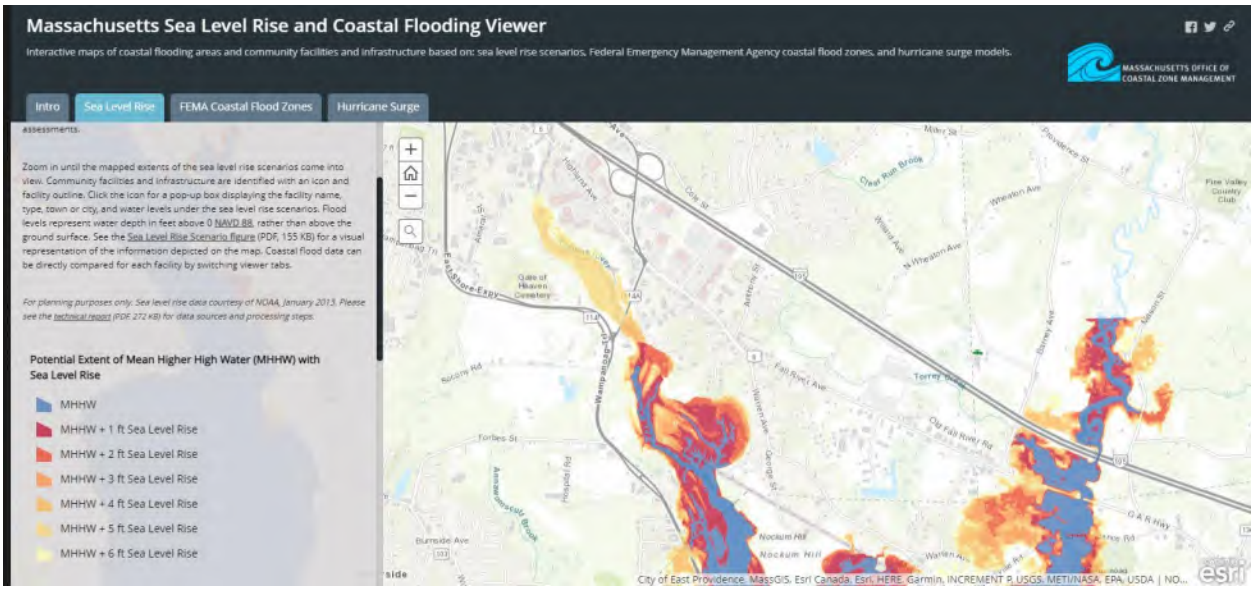
Coastal flooding, unlike inland flooding, results from a coastal influence and may occur in areas such as bays, estuaries, coastal rivers, and salt marshes, among others. The impact and extent of coastal flooding may be exacerbated by tidal influence, storm surge, or a combination.

The geographic extent of coastal flooding can also be estimated by FIRMs and the associated Flood Insurance Study. FIRMs depict Zones V and VE, also known as coastal velocity zones, which corresponds to the 1% annual chance coastal floodplains that have additional hazards associated with storm waves. There are no flood hazard areas mapped as Zone V or VE in the Town of Seekonk.

Coastal flooding was noted by participants of the CRB workshop as a hazard that may directly impact adjacent coastal communities (e.g., portions of East Providence) and indirectly impact Seekonk. Although not directly contiguous with the Town, stakeholders acknowledge that coastal flooding may impact resources within Seekonk, particularly within the AE Flood Zone to the west of Marnoch Drive and along the Swansea town line near the start of the Palmer River.

The Massachusetts Sea Level Rise and Coastal Flooding Viewer developed by the Massachusetts Office of Coastal Zone Management (CZM) StormSmart Coasts Program maps portions of South Seekonk adjacent to the Runnins River as being potentially vulnerable to flooding in various sea level rise scenarios. The areas to the northwest of Route 114A, while only anticipated to be impacted in four feet of sea level rise or greater, lie within areas close to residential and commercial development.

[11] Massachusetts Climate Change Projections



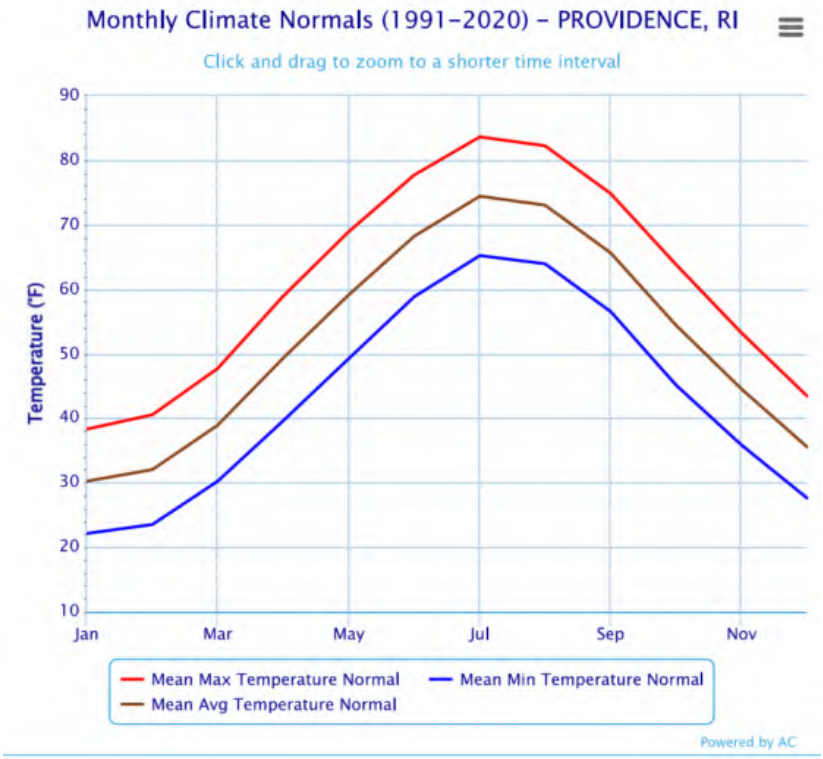
Source: MA CZM StormSmart, Color Gradient Approximating Potential Intensity of Coastal Storm Impacts.

4.1.3 Average and Extreme Temperatures

Heat was identified by stakeholders as having a disproportionate impact to vulnerable populations, such as the elderly who make up 22% of Seekonk's residents. to heat-related illnesses. CRB workshop attendees anticipate an increased demand in utilizing municipal buildings as cooling stations, including the senior center. Subsequent secondary impacts of extreme heat anticipated in Seekonk include a greater demand on the electrical grid from reliance on conventional air conditioners. Extreme temperatures may result in stress on plant and animal species and ecosystems, with either extreme high or extreme cold temperatures having an impact on crop yield. Over extended periods of time, extreme temperatures may result in the migration of ecosystems or the extinction of individual species.

Extreme cold temperatures may also have impacts on the Town's infrastructure from freezing and thawing, including long-term damage to roadways and subsurface pipes. Bursting of frozen water pipes may cause significant damage to buildings and infrastructure Such cold temperatures may have an impact on the health and wellbeing of vulnerable residents, particularly those unable to afford the costs of heating.

The geographic extent of average and extreme temperatures is generally the same throughout the Town of Seekonk, although impervious and developed areas may result in localized areas of high temperature relative to the surrounding air, known as the heat island effect.



Source: NOWData – NOAA Online Weather Data

According to NOAA data collected in Providence, an average of 12 days per year exceeded a maximum temperature of 90 degrees from 2000 through 2021, with a maximum of 26 days in 2002. An average of 109 days per year have a minimum temperature below 32 degrees from 2000 through 2021, with a minimum of 93 days in 2020.

Table 9: Regional Record Temperatures

	Temperature	Date
Record high temperature	104°F	August 1975
Record low temperature	-17°F	February 1934

Source: National Weather Service, NOWData - NOAA Online Weather Data, Providence Area, RI

As noted in the SHMCAP, average temperatures in Massachusetts are likely to increase significantly over the next century as a result of climate change. Annually, the Narragansett Bay & Mt. Hope Bay Basin is projected to experience 7 to 29 more days with temperatures above 90°F by 2050s. Furthermore, winters are projected to have 7 to 20 fewer days with temperatures below 32°F by 2050s. Accordingly, future probability of the occurrence of extreme high temperatures are expected to increase, while future probability of extreme low.

4.1.4 Drought

Droughts are defined as periods of prolonged lack of precipitation. Risks posed by drought may overlap by those posed by heat, but also include the potential for decreased availability of water supply as groundwater-fed sources evaporate. Drought may also result in an increased risk of wildfires as a result of dry trees and brush in open space areas, as well as a decrease in agricultural production. While locations such as open space, water supply areas, and agricultural land are more vulnerable to drought, the geographic extent of this hazard is generally the same throughout the Town of Seekonk.

The Massachusetts Drought Management Plan dated September 2019[12], evaluates drought based on six indices, including precipitation, streamflow, groundwater, lakes and impoundments, fire danger, and evapotranspiration.

Table 10: Drought Classification Levels

Drought Level	2001-2019 Classification	2019 Classification	Index Percentile Ranges
Level 0	Normal	Normal	>30
Level 1	Advisory	Mild Drought	≤30 and >20
Level 2	Watch	Significant Drought	≤20 and >10
Level 3	Warning	Critical Drought	≤10 and >2
Level 4	Emergency	Emergency Drought	≤2

Source: Department of Conservation and Recreation

Seekonk is located in the Southeast Massachusetts Drought Region. A history of recorded droughts in the Southeast Region since 2001 is included below.

[12] https://www.mass.gov/doc/massachusetts-drought-management-plan/download

Table 11: History of Drought Declarations in the Southeast Region, 2001 - 2022

Begin Date	End Date	Drought Level
12/28/2001 - 1/31/2003		
December 2001	February 2002	Advisory
March 2002	May 2002	Watch
June 2002	July 2002	Advisory
August 2002	September 2002	Watch
October 2002	November 2002	Advisory
December 2002		Normal
10/1/2007 - 3/18/2008		
October 2007	March 2008	Advisory
10/1/2014 - 11/30/2014		
October 2014	November 2014	Advisory
7/1/2016 - 4/30/2017		
June 2016		Advisory
July 2016		Watch
August 2016	January 2017	Warning
February 2017		Watch
March 2017		Advisory
4/1/2022 - Present		
April 2022	June 2022	Mild
June	Ongoing	Significant

Source: Department of Conservation and Recreation

Climate change projections for the Narragansett Bay & Mt. Hope Bay Basin project a summer increase in consecutive dry days, with up to 2 additional days with less than 1 mm of precipitation. While greater evapotranspiration rates are expected to result from increased annual temperatures, the increased precipitation is expected to occur in large events that do not consistently recharge groundwater or surface water sources. Accordingly, the probability of future occurrence of droughts are anticipated to increase.

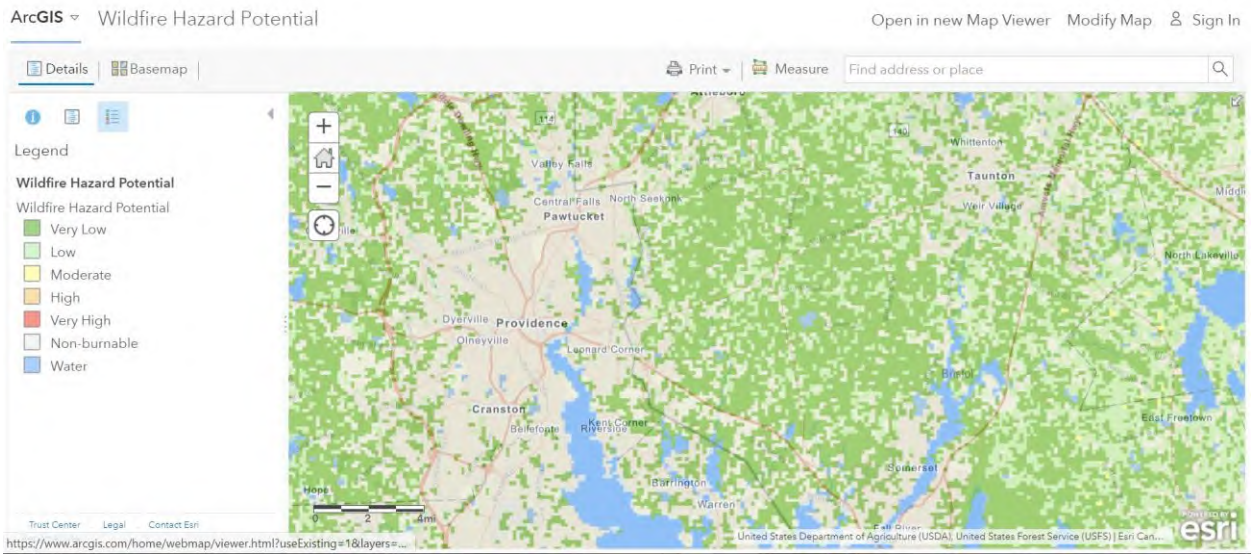
4.1.5 Coastal Erosion

Coastal erosion includes the deterioration or breakdown of shoreline systems as a result of the movement of sand, human alteration, sea level fluctuations, wind, and other forces. Coastal erosion is a noted hazard for communities with a coastal influence abutting South Seekonk. However, coastal erosion is not anticipated to be a direct hazard to the Town. While not a direct hazard to the Town, stakeholders acknowledge that coastal resiliency, or lack thereof, could result in an overall impact in inter-municipal resources.

4.1.6 Wildfire

A wildfire is a fire that is generated within wooded areas, grasslands, or other undeveloped land. Wildfires in Massachusetts are generally the result of natural occurrences, human activity, or prescribed burns.

Based on the Wildfire Hazard Potential[13] (WHP) GIS raster data developed by the U.S. Forest Service's (USFS) Fire Modeling Institute, the Town of Seekonk ranges from low to very low risk for wildfires based on national averages (i.e., compared to all states in the conterminous US). This GIS model was prepared by the USFS to help inform assessments of wildfire risk or prioritization of fuels management needs across large landscapes throughout the US.



Source: U.S. Forest Service's (USFS) Fire Modeling Institute Wildfire Hazard Potential

However, in the context of state data sets, the SHMCAP notes that Seekonk ranges from low to high levels of risk when compared to other areas of Massachusetts. The areas which are subject to the highest risk for wildfire are the large tracts of forested land throughout the Town. Dead trees, leaf litter, and other combustible material associated with forested areas pose risks for the generation of wildfire. Unfragmented or contiguous tracts of undeveloped land function as vectors for wildfire generation and travel. Many of these forested areas are either town-owned or are under the stewardship of a land trust.

[13] https://www.arcgis.com/home/webmap/viewer.html?useExisting=1&layers=fc0ccb504be142b59eb16a7ef44669a3

The 2018 SHMCAP defines a "wildfire behavior triangle", noting that:

> The "wildfire behavior triangle" reflects how three primary factors influence wildfire behavior: fuel, topography, and weather. Each point of the triangle represents one of the three factors, and arrows along the sides represent the interplay between the factors. For example, drier and warmer weather with low relative humidity combined with dense fuel loads and steeper slopes can result in dangerous to extreme fire behavior.

Potential impacts from wildfire may include injury, loss of life, property damage, and damage to various vegetated areas. Secondary impacts, including disruption to electrical infrastructure and communication systems, may result from wildfires when such hazards cross the wildland-urban interface—what the SHMCAP notes as the "line, area, or zone where structures and other human development meet or intermingle with undeveloped wildland or vegetative fuels".

According to the Seekonk Fire Department, the Town has annually experienced the following number of brush fires from 2010-2021:

Table 12: Records of Brush Fires

Year	Number of Brush Fires
2010	7
2011	3
2012	10
2013	8
2014	17
2015	18
2016	16
2017	6
2018	3
2019	5
2020	20
2021	20

Source: Seekonk Fire Department

As discussed elsewhere herein, average temperatures in Massachusetts are likely to increase significantly over the next century as a result of climate change. Annually, the Narragansett Bay & Mt. Hope Bay Basin is projected to experience 7 to 29 more days with temperatures above 90°F by 2050s. This increase in average temperature is expected to result in a greater extent of dead vegetation and combustible leaf litter, increasing the future probability of wildfire occurrence.

4.1.7 Landslides

Landslides include various natural land-moving occurrences, including rockfalls, slope failures, and debris flows. According to the SHMCAP, landslides in Massachusetts are most commonly "…*caused by a combination of unfavorable geologic conditions (silty clay or clay layers contained in glaciomarine, glaciolacustrine, or thick till deposits), steep slopes, and/or excessive wetness leading to excess pore pressures in the subsurface.*" Landslide intensity can be measured into four categories by the estimated volume of material and the expected speed of the flow as follows:

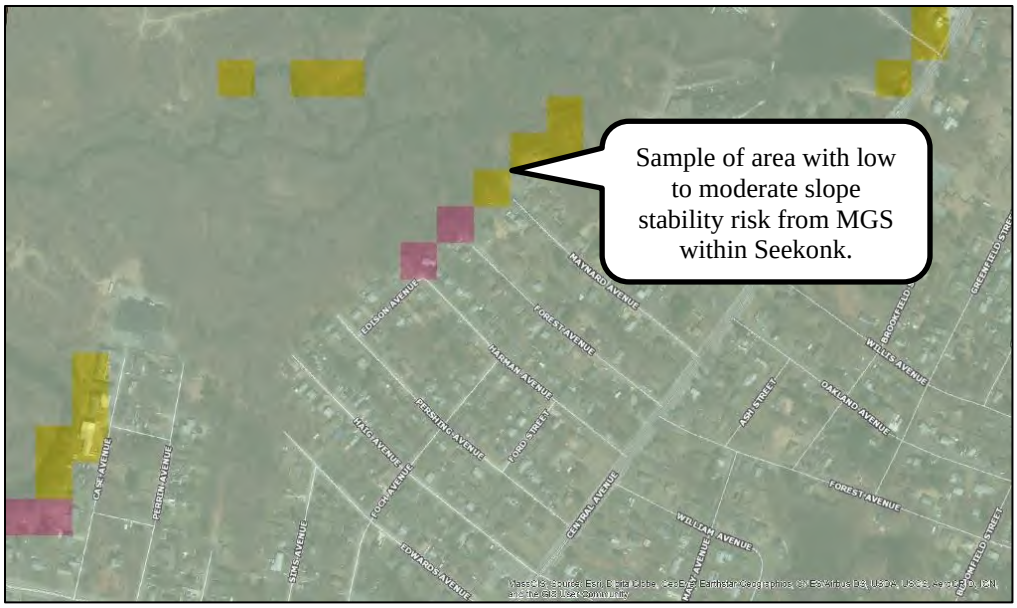
Table 13: Landslide Volume and Velocity

Estimated Volume (m^3)	Fast Moving (Rock Fall)	Rapid Moving (Debris Flow)	Slow Moving (Slide)
<0.001	Slight intensity	--	--
<0.5	Medium intensity	--	--
>0.5	High intensity	--	--
<500	High intensity	Slight intensity	--
500-10,000	High intensity	Medium intensity	Slight intensity
10,000 – 50,000	Very high intensity	High intensity	Medium intensity
>500,000	--	Very high intensity	High intensity
>>500,000	--	--	Very high intensity

Source: Cardinali et al, 2002

Potential direct impacts of landslides include loss of life and damage or destruction of buildings, natural resources, and infrastructure as a result of the speed and volume of debris. Debris may be transported into wetlands and water bodies, resulting in degradation of water quality. Furthermore, the movement of debris may strip the landscape of trees and other stabilizing vegetation. Indirect losses additionally include interruption of services for a broader area as a result of infrastructure failure, such as road closures or downed electrical lines.

According to the Massachusetts Geologic Survey's (MGS) Slope Stability Map (2013), most of the land within the Town is considered low risk for landslides with few areas mapped as moderate to high risk. Below represents a sample GIS image of a portion of Seekonk which is more vulnerable to landslides as mapped by the MGS. Such sensitive areas include land to the northwest of residential development along the secondary streets off of Central Avenue. The Landslide Classified Stability Index for the entire Town of Seekonk is depicted on Figure 3. Beyond localized instances of slope instability, no documented occurrences of landslides have occurred in the Town.



Source: MGS Slope Stability Shapefile, Southeast MA Tile.

As a result of increased annual temperatures, the vegetative communities that stabilize soil on steep slopes may begin to die back, exposing soil to denudation. Furthermore, the probability of extreme precipitation events is expected to increase, resulting in the saturation of soil that may contribute to landslides. Accordingly, the probability of occurrence of landslides is anticipated to increase, although overall risk in Seekonk may remain limited to those identified areas with steep slopes.

4.1.8 Tsunami

As defined by the SHMCAP, a tsunami generally consists of an onshore surge of water or a string of waves initiated by seismic activity.

A tsunami intensity scale published by the International Tsunami Information Centre classifies the extent of damage from tsunamis on a) humans, b) nature and objects, and c) buildings and construction based on the corresponding seismic rating.

Table 14: Tsunami Intensity Scale

Intensity	Description	Extent of Damage
I	Not felt	a) Not felt even under the most favorable circumstances. b) No effect. c) No damage.
II	Scarcely felt	a) Felt by few people on board in small vessels. Not observed in the coast. b) No effect. c) No damage.
III	Weak	a) Felt by most people on board in small vessels. Observed by few people in the coast. b) No effect. c) No damage.
IV	Largely observed	a) Felt by all on board in small vessels and by few people on board in large vessels. Observed by most people in the coast. b) Few small vessels move slightly onshore. c) No damage.
V	Strong	a) Felt by all on board in large vessels and observed by all in the coast. Few people are frightened and run to higher ground. b) Many small vessels move strongly onshore, few of them crash each other or overturn. Traces of sand layer are left behind in grounds of favorable conditions. Limited flooding of cultivated land. c) Limited flooding of outdoors facilities (e.g. gardens) of near-shore structures.
VI	Slightly damaging	a) Many people are frightened and run to higher ground. b) Most small vessels move violently onshore, or crash strongly each other, or overturn. c) Damage and flooding in a few wooden structures. Most masonry buildings withstand.
VII	Damaging	a) Most people are frightened and try to run in higher ground. b) Many small vessels damaged. Few large vessels oscillate violently. Objects of variable size and stability overturn and drift. Sand layer and accumulations of pebbles are left behind. Few aquaculture rafts washed away. c) Many wooden structures damaged, few are demolished or washed away. Damage of grade 1 and flooding in a few masonry buildings.
VIII	Heavily damaging	a) All people escape to higher ground, a few are washed away. b) Most of the small vessels are damaged, many are washed away. Few large vessels are moved ashore or crashed each other. Big objects are drifted away. Erosion and littering in the beach. Extensive flooding. Slight damage in tsunami control forest, stop drifts. Many aquaculture rafts washed away, few partially damaged. c) Most wooden structures are washed away or demolished. Damage of grade 2 in a few masonry buildings. Most RC buildings sustain damage, in a few damage of grade 1 and flooding is observed.
IX	Destructive.	a) Many people are washed away. b) Most small vessels are destroyed or washed away. Many

Intensity	Description	Extent of Damage
		large vessels are moved violently ashore, few are destroyed. Extensive erosion and littering of the beach. Local ground subsidence. Partial destruction in tsunami control forest, stop drifts. Most aquaculture rafts washed away, many partially damaged. c) Damage of grade 3 in many masonry buildings, few RC buildings suffer damage grade 2.
X	Very destructive	a) General panic. Most people are washed away. b) Most large vessels are moved violently ashore, many are destroyed or collided with buildings. Small boulders from the sea bottom are moved inland. Cars overturned and drifted. Oil spill, fires start. Extensive ground subsidence. c) Damage of grade 4 in many masonry buildings, few RC buildings suffer damage grade 3. Artificial embankments collapse, port water breaks damaged.
XI	Devastating	b) Lifelines interrupted. Extensive fires. Water backwash drifts cars and other objects in the sea. Big boulders from the sea bottom are moved inland. c) Damage of grade 5 in many masonry buildings. Few RC buildings suffer damage grade 4, many suffer damage grade 3.
XII	Completely devastating	Practically all masonry buildings demolished. Most RC buildings suffer at least damage grade 3.
Classification of damage to buildings Grade 1: Slight damage Grade 2: Moderate damage Grade 3: Heavy damage Grade 4: Destruction Grade 5: Total damage		

Source: North-Eastern Atlantic, Mediterranean and connected seas Tsunami Information Centre, UNESCO

No records of prior occurrences of tsunamis are available for the Town of Seekonk. Due to the lack of coastal influence for much of Seekonk, the Town is not at a high risk for tsunamis when compared to neighboring towns in Massachusetts and Rhode Island. Tsunami events may have an adverse impact in waterbodies or waterways within Seekonk which abut the neighboring coastal communities.

Probability of future occurrence of tsunamis is not anticipated to increase above existing conditions, due to the geologic setting of the Town of Seekonk, as well as the lack of coastal influence.

4.1.9 Invasive Species

Invasive species are non-native flora and fauna which have the potential to degrade ecosystems and adversely impact human well-being. For example, some aquatic plants such as the non-native water chestnut (*Trapa natans*) will outcompete native plants and can potentially foster the eutrophication of waterbodies. Such algal growth can subsequently pose a risk to human health.

In their 2005 report entitled The Evaluation of Non-Native Plant Species for Invasiveness in Massachusetts, the Massachusetts Invasive Plant Advisory Group (MIPAG) developed a list of criteria "…to objectively evaluate and categorize plant species suspected of being, or with the potential to become, invasive in Massachusetts." Such criteria are summarized below:

Table 15: Invasive Plant Species Criteria

	Criteria that must be met
Base criteria	1-4
Invasive	1-9
Likely Invasive	1-5, at least one of 6-9, at least one of 10-12
Potentially Invasive	1-4, (not 5), 13-15

1. Be nonindigenous to Massachusetts.
2. Have the biologic potential for rapid and widespread dispersion and establishment in minimally managed habitats.
3. Have the biologic potential for dispersing over spatial gaps away from site of introduction.
4. Have the biologic potential for existing in high numbers away from intensively managed artificial habitats.
5. Be naturalized in Massachusetts (persists without cultivation in Massachusetts)
6. Be widespread in Massachusetts, or at least common in a region or habitat type(s) in the state.
7. Have many occurrences of numerous individuals in Massachusetts that have high numbers of individuals forming dense stands in minimally managed habitats
8. Be able to out-compete other species in the same natural plant community.
9. Have the potential for rapid growth, high seed or propagule production and dissemination, and establishment in natural plant communities.
10. Have at least one occurrence in Massachusetts that has high numbers of individuals forming dense stands in minimally managed habitats
11. Have the potential, based on its biology and its colonization history in the northeast or elsewhere, to become invasive in Massachusetts.
12. Be acknowledged to be invasive in nearby states but its status in Massachusetts is unknown or unclear. This may result from lack of field experience with the species or from difficulty in species determination or taxonomy.
13. The species, if it becomes naturalized in Massachusetts, based on its biology and biological potential, would pose an imminent threat to the biodiversity of Massachusetts and
14. Its naturalization in Massachusetts is anticipated, and
15. The species has a documented history of invasiveness in other areas of the Northeast.

Source: The Evaluation of Non-Native Plant Species for Invasiveness in Massachusetts, MIPAG

The Town of Seekonk hosts many plant species noted in the Massachusetts Invasive Plant Advisory Group. Such species include purple loosestrife (*Lythrum salicaria*), sycamore maple (*Acer pseudoplatanus*), Water chestnut (*Trapa natans*), tree-of-heaven (*Ailanthus altissima*), and Asiatic bittersweet (*Celastrus orbiculatus*), among other species. Non-plant invasive species throughout the town include the Gypsy moth (*Lymantria dispar dispa*), the Hemlock wooly adelgid (*Adelges tsugae*), and the emerald ash borer (*Agrilus planipennis*), among others.

Recent examples of rampant invasive species in Seekonk include the gypsy moth caterpillar (*Lymantria dispar dispa*) defoliation events in recent decades. In 2011, Seekonk was one of four communities to participate in a study examining the impacts of this species on forested communities[14]. Common hazards associated with these defoliation activities include dead or dying trees which may pose risk to electrical utilities in the form of overhead wires or will provide a disproportionate amount of fuel for wildfires when compared to pre-infestation forest conditions.

Vulnerability to invasive species may be higher within open space and forested areas, as well as open water, but the potential for occurrence is generally throughout the Town.

4.1.10 Hurricanes/Tropical Storms

Hurricanes and tropical storms are natural hazards which form in specific oceanic conditions requiring certain wind speeds, temperatures, and other climatic factors. The Town observes the impacts of hurricanes and tropical storms in the form of downed trees, hazardous travel conditions, and impact to the electrical grid.

[14] https://www.sciencedaily.com/releases/2011/09/110907163917.htm

Table 16: Saffir-Simpson Hurricane Wind Scale

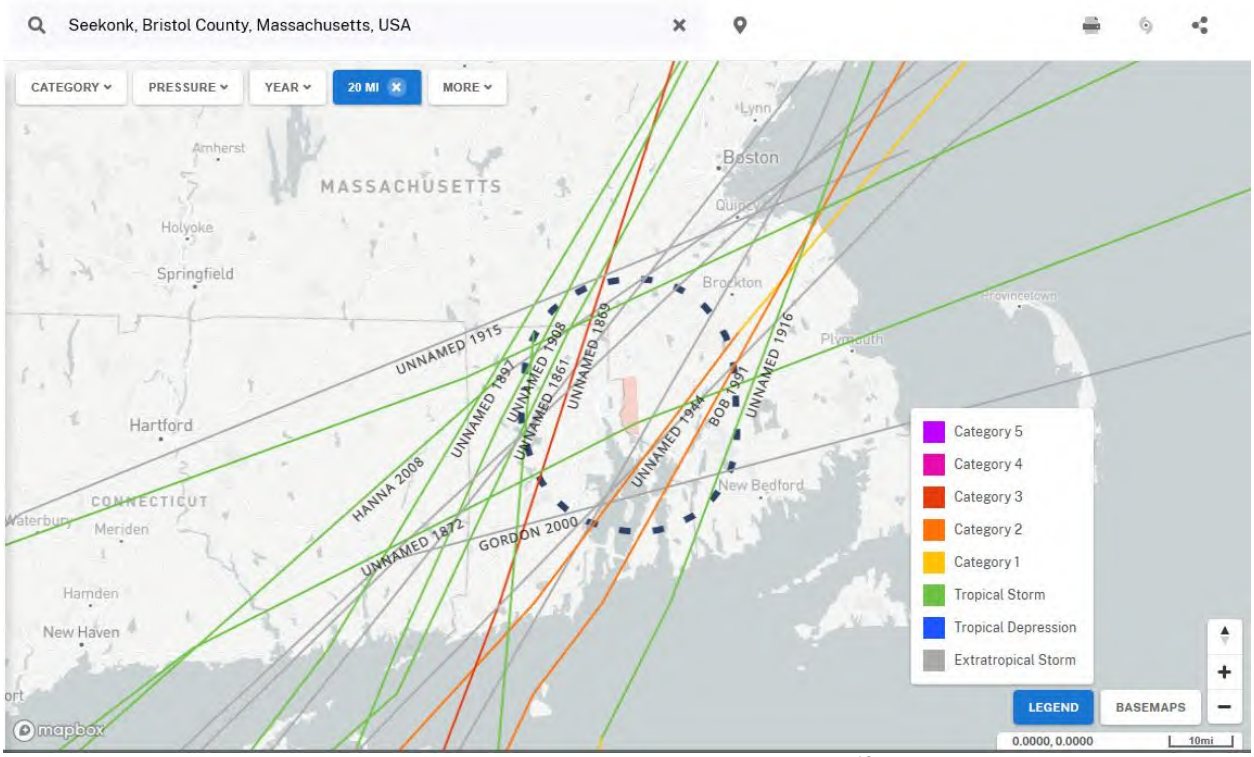
Category	Sustained Winds	Types of Damage Due to Hurricane Winds
1	74-95 mph 64-82 kt 119-153 km/h	Very dangerous winds will produce some damage: Well-constructed frame homes could have damage to roof, shingles, vinyl siding and gutters. Large branches of trees will snap and shallowly rooted trees may be toppled. Extensive damage to power lines and poles likely will result in power outages that could last a few to several days.
2	96-110 mph 83-95 kt 154-177 km/h	Extremely dangerous winds will cause extensive damage: Well-constructed frame homes could sustain major roof and siding damage. Many shallowly rooted trees will be snapped or uprooted and block numerous roads. Near-total power loss is expected with outages that could last from several days to weeks.
3 (major)	111-129 mph 96-112 kt 178-208 km/h	Devastating damage will occur: Well-built framed homes may incur major damage or removal of roof decking and gable ends. Many trees will be snapped or uprooted, blocking numerous roads. Electricity and water will be unavailable for several days to weeks after the storm passes.
4 (major)	130-156 mph 113-136 kt 209-251 km/h	Catastrophic damage will occur: Well-built framed homes can sustain severe damage with loss of most of the roof structure and/or some exterior walls. Most trees will be snapped or uprooted and power poles downed. Fallen trees and power poles will isolate residential areas. Power outages will last weeks to possibly months. Most of the area will be uninhabitable for weeks or months.
5 (major)	157 mph or higher 137 kt or higher 252 km/h or higher	Catastrophic damage will occur: A high percentage of framed homes will be destroyed, with total roof failure and wall collapse. Fallen trees and power poles will isolate residential areas. Power outages will last for weeks to possibly months. Most of the area will be uninhabitable for weeks or months.

Source: National Hurricane Center and Central Pacific Hurricane Center

Many of the recent tropical storms and hurricanes to pass through Seekonk in the last decade have resulted in the loss of power for many residents, businesses, and municipal buildings. For example, during one point during the events of Tropical Storm Irene, 100% of the Town was without power for a period of time[15].

The potential area of impact of hurricanes is uniform across the Town of Seekonk. The last hurricane track to pass directly through Seekonk was an unnamed 1872 storm, which was graded as a tropical storm at the time. Seventeen hurricanes, seven of which were tropical storms, and six of which were extratropical have had their centers pass within ten miles of Seekonk. However, the regional impacts of hurricanes may be felt much more widely; most recently federal disasters were declared for Bristol County for Tropical Storm Irene and Hurricane Sandy.

[15]https://www.thesunchronicle.com/news/local_news/what-if-the-worst-happened-here-preparations-and-forecasting-for-hurricanes-have-changed-since-1938/article_bd5487d2-d43e-5ed6-a86d-1fb4d5017a4d.html



Source: NOAA Historical Hurricane Tracks[16]

According to the SHMCAP, studies suggests that hurricane wind speed has increased since 1981 as a result of climate change, and that the warming of sea surface temperatures are projected to increase the rate of rainfall. Trends regarding the effects of climate change on the frequency of hurricane genesis are less clear, although Seekonk can expect to see an increase in the frequency of more intense hurricanes.

4.1.11 Severe Winter Storms/Nor'easters

Severe winter storms and nor'easters include intense weather events ranging from heavy snowfall to sustained blizzards. Noted impacts from severe storms and extreme winter weather, such as high winds or ice and snow, were considered separately. These hazards pose concerns related to access during storm events, both for emergency responders and evacuees, as well as the interruption of utility services (e.g. downed overhead wires). Vulnerabilities with major access routes were noted by CRB workshop attendees as there are limited roadways passing through Seekonk's midpoint to provide uninhibited travel between both the north and south halves of the Town. The potential area of impact of severe winter storms and nor'easters is uniform across the Town of Seekonk.

[16]NOAA, National Centers for Environmental Information, Historical Hurricane Tracks, 2020

NOAA National Centers for Environmental Information has developed a Regional Snowfall Index for significant storms that impact the northeastern region of the United States. The RSI ranks storms into five categories based on the spatial extent of the storm, the amount of snowfall, and the juxtaposition of these elements with population as outlined below.

Table 17: Regional Snowfall Index Values

Category	RSI Value	Description
1	1–3	Notable
2	3–6	Significant
3	6–10	Major
4	10–18	Crippling
5	18.0+	Extreme

Source: NOAA National Centers for Environmental Information

A list of snowstorms ranked under the RSI between 2000 and 2022 is outlined below:

Table 18: Regional Snowfall Index and Societal Impacts for the Northeast, 2000-2022

Start Date	End Date	Category	RSI	Area of Snow	Population
2022-01-32	2022-02-05	1	1.762	143,515	23,896,334
2022-01-28	2022-01-30	1	2.295	172,874	60,682,352
2022-01-13	2022-01-18	1	1.802	175,276	60,532,653
2021-02-16	2021-02-20	1	1.146	156,422	60,387,216
2021-01-30	2021-02-03	3	6.188	177,515	60,990,940
2020-12-14	2020-12-18	2	5.583	163,139	60,504,917
2019-11-29	2019-12-03	1	2.386	159,295	52,787,511
2019-01-18	2019-01-21	1	2.831	172,076	59,153,084
2018-11-14	2018-11-16	1	2.016	173,883	60,958,725
2018-03-20	2018-03-22	1	1.598	104,912	54,227,211
2018-03-11	2018-03-15	2	4.335	171,105	57,502,057
2018-03-05	2018-03-08	1	2.096	175,853	60,907,768
2018-03-01	2018-03-03	1	2.185	151,415	52,939,672
2018-01-03	2018-01-05	1	2.548	172,240	60,240,318
2017-03-12	2017-03-15	4	10.658	176,160	60,603,632
2017-02-09	2017-02-10	1	2.154	175,084	60,655,477
2016-11-17	2016-11-22	1	2.154	150,944	48,054,817
2016-01-22	2016-01-24	4	17.758	92,140	52,963,122
2015-02-14	2015-02-16	1	1.14	176,958	60,987,376
2015-02-08	2015-02-10	1	1.897	136,000	44,457,219
2015-01-29	2015-02-03	1	2.606	175,690	60,670,793
2015-01-25	2015-01-28	3	6.158	177,785	60,992,661
2014-12-09	2014-12-14	1	1.881	162,706	51,280,184

Start Date	End Date	Category	RSI	Area of Snow	Population
2014-11-26	2014-11-28	1	1.756	173,671	60,326,804
2014-02-11	2014-02-14	2	4.398	176,679	59,114,214
2014-01-20	2014-01-22	1	1.294	169,039	59,023,320
2013-12-30	2014-01-03	1	2.766	170,587	59,042,162
2013-12-13	2013-12-16	1	2.678	174,507	58,818,190
2013-03-17	2013-03-20	1	1.621	173,441	58,544,700
2013-03-03	2013-03-09	1	1.308	157,056	58,614,413
2013-02-08	2013-02-10	3	9.212	172,576	58,579,289
2012-12-28	2012-12-31	1	1.095	173,479	58,679,218
2012-12-24	2012-12-28	1	2.004	174,200	58,845,960
2011-10-25	2011-10-31	1	1.849	157,709	55,844,726
2011-02-24	2011-02-27	1	1.736	155,855	43,474,028
2011-02-01	2011-02-04	1	1.779	170,298	56,938,590
2011-01-26	2011-01-27	1	2.643	174,690	58,910,064
2011-01-09	2011-01-13	2	3.377	174,940	58,907,580
2010-12-24	2010-12-28	2	3.238	174,950	58,912,655
2010-02-21	2010-03-01	4	17.827	174,950	58,912,816
2010-02-12	2010-02-19	1	1.085	174,690	58,873,066
2010-02-08	2010-02-11	2	3.061	146,360	58,156,565
2010-02-04	2010-02-08	3	9.062	90,382	50,257,627
2009-12-28	2010-01-04	2	3.735	174,383	58,858,437
2009-12-18	2009-12-21	1	2.836	130,657	56,388,060
2009-12-07	2009-12-11	1	1.702	169,750	57,511,523
2009-02-26	2009-03-03	1	1.474	171,125	58,315,320
2009-02-22	2009-02-24	1	1.429	169,443	56,989,600
2008-12-21	2008-12-23	1	2.96	174,921	58,910,684
2008-12-18	2008-12-22	1	2.645	174,930	58,911,304
2007-12-14	2007-12-17	1	1.726	166,377	54,824,473
2007-11-30	2007-12-04	1	1.294	169,895	57,377,950
2007-04-03	2007-04-06	1	1.08	161,476	47,541,472
2007-03-16	2007-03-18	2	3.151	173,883	58,758,178
2007-02-11	2007-02-16	3	6.891	174,949	58,912,781
2006-02-10	2006-02-14	2	4.946	174,950	58,912,730
2005-02-28	2005-03-02	2	3.005	174,949	58,912,741
2005-01-22	2005-01-24	2	3.772	172,989	58,891,510
2003-12-04	2003-12-08	3	9.398	174,950	58,912,724
2003-02-14	2003-02-18	4	14.671	163,081	58,771,975
2003-01-01	2003-01-04	1	2.444	167,617	57,344,653
2002-12-23	2002-12-26	2	3.631	170,318	58,592,271

Start Date	End Date	Category	RSI	Area of Snow	Population
2000-12-28	2001-01-01	2	3.228	168,395	54,141,847
2000-02-16	2000-02-20	1	1.309	172,979	58,891,980
2000-01-24	2000-02-01	1	1.366	174,036	58,757,576
2000-01-24	2000-01-27	1	2.483	174,940	58,910,447

Source: NOAA National Centers for Environmental Information

With respect to future probability of severe winter storms and nor'easters, warming annual temperatures are anticipated to result in increased evapotranspiration rates and therefore increased extreme precipitation events. However, it is likely that winter storms will occur more frequently in the coldest winter months, when atmospheric temperatures are still low enough to result in snowfall rather than rain. The severity of these winter storms is also anticipated to increase.

4.1.12 Tornadoes

Tornadoes are violent atmospheric storms with a rotating column of air that extends from the base of a cumulonimbus cloud to the ground. They may result from thunderstorms, which are discussed more fully in Section 4.1.13. The extent of impacts from tornadoes can be measured based on intensity of damage through the Fujita scale, which provides corresponding wind speed estimates based on typical damage. The Enhanced Fujita scale, which was adopted on February 1, 2007 provides a range of 3-second gust wind speeds based on the National Weather Service's assessment of damage to 28 indicators, including a variety of buildings, infrastructure, and natural features

Table 19: Fujita Tornado Damage Scale

Fujita Scale		Enhanced Fujita Scale		Typical Damage
Scale	Wind Estimate (MPH)	Scale	3-Second Gust (MPH)	
F0	< 73	**EF0**	65-85	Light damage. Some damage to chimneys; branches broken off trees; shallow-rooted trees pushed over; sign boards damaged.
F1	73-112	**EF1**	86-110	Moderate damage. Peels surface off roofs; mobile homes pushed off foundations or overturned; moving autos blown off roads.
F2	113-157	**EF2**	111-135	Considerable damage. Roofs torn off frame houses; mobile homes demolished; boxcars overturned; large trees snapped or uprooted; light-object missiles generated; cars lifted off ground.
F3	158-206	**EF3**	136-165	Severe damage. Roofs and some walls torn off well-constructed houses; trains overturned; most trees in forest uprooted; heavy cars lifted off the ground and thrown.
F4	207-260	**EF4**	166-200	Devastating damage. Well-constructed houses leveled; structures with weak foundations blown away some distance; cars thrown and large missiles generated.
F5	261-318	**EF5**	Over 200	Incredible damage. Strong frame houses leveled off foundations and swept away; automobile-sized missiles fly through the air in excess of 100 meters (109 yds); trees debarked; incredible phenomena will occur.

Source: adapted from National Weather Service

There have been seven documented tornadoes within Bristol County, with the highest intensity a 2 on the Fujita Scale.

Table 20: Bristol County Tornadoes

Date	F-Scale	Injuries	Deaths
August 9, 1968	1	4	0
August 9, 1968	1	0	0
August 2, 1970	1	0	0
August 28, 1970	2	0	0
September 14, 1972	0	0	0
August 6, 1997	0	0	0
July 23, 2008	0	0	0

Source: NOAA National Centers for Environmental Information

The Town of Seekonk is at relatively low risk for tornadic activity. However, due to the infrequency of tornadoes in the Commonwealth of Massachusetts, the SHMCAP notes that communities are often unprepared for the impacts of these extreme storm events. Municipal- and privately-owned land are vulnerable to tornados as they may damage buildings, infrastructure, cause injury, leave behind downed trees, and other hazards. However, the potential area of impact of tornadoes is uniform across the Town of Seekonk.

4.1.13 Other Severe Weather

Other severe weather events posing hazards to the Town include intense precipitation events, heavy winds/wind advisories, and thunderstorms. The extent, impacts, previous occurrences, and probability of future occurrences of extreme precipitation are more specifically discussed in Section 4.1.1: Inland Flooding.

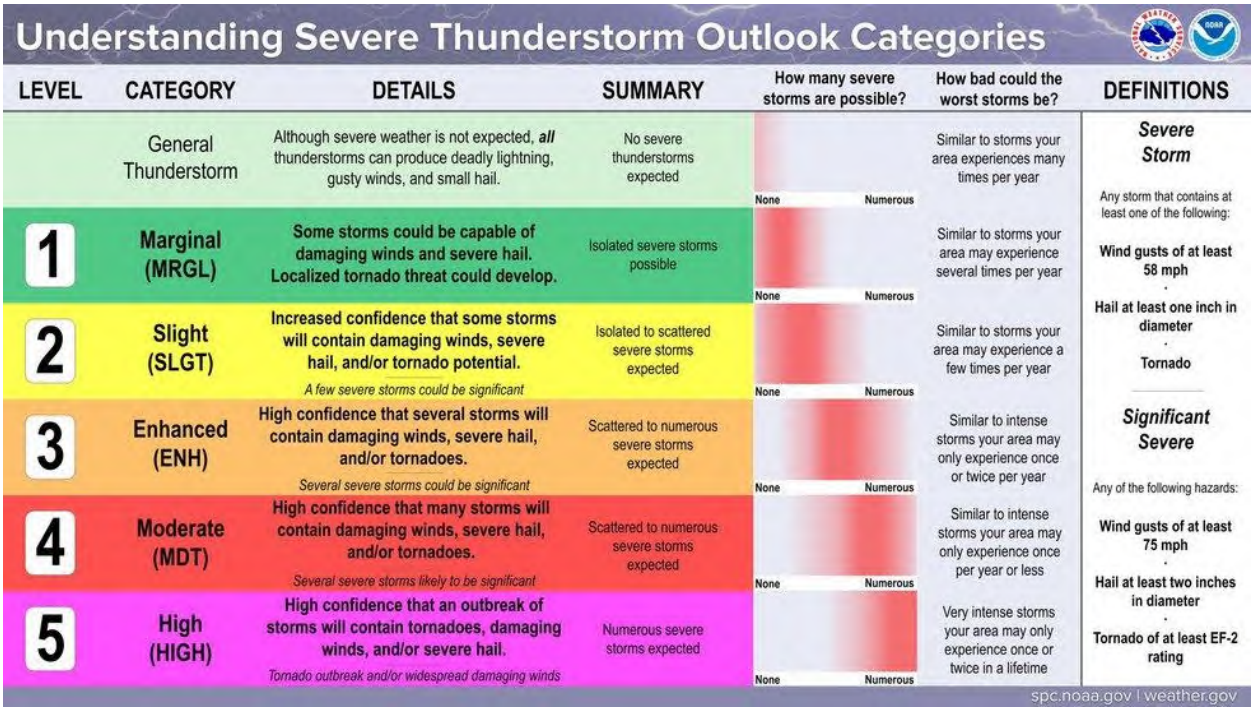
4.1.13.1 Thunderstorms

Thunderstorms occur as a result of an updraft of warm air into the atmosphere. These updrafts may occur as a result of topography, or as a result of warm and cold or wet and dry weather systems colliding. Such updrafts carry water vapor into the cool upper atmosphere, where it condenses into a cloud. The resulting water droplets or shards of ice contain electrical charge, which may also result in lightning when sufficient charge accumulates within the cloud. The discharge of electrical charge as lightning also creates an audible shock wave in the form of thunder. In addition to thunder and lightning, thunderstorms may also produce strong winds, significant downpour, hail, or tornadoes.

The National Weather Service defines a severe thunderstorm as any storm that produces one or more of the following elements:

- A tornado.
- Damaging winds or speeds of 58 mph (50 knots) or greater.
- Hail 1 inch in diameter or larger.

NOAA's Storm Prediction Center develops daily outlooks for severe weather, including thunderstorms, across the continental United States. Risk from severe thunderstorms are divided into five categories as outlined below:



Source: NOAA Storm Prediction Center

Numerous thunderstorms have occurred in Bristol County, some of which have caused injury or extensive property damage as described below:

Table 21: Bristol County Thunderstorm Events, 2010-2020

Date	Time	Type	Magnitude	Measurement Type	Injuries	Property Damage
6/1/2010	1445	Thunderstorm Wind	50 mph	estimated gust	0	$10,000
6/5/2010	715	Thunderstorm Wind	50 mph	estimated gust	0	$10,000
6/20/2010	1410	Hail	0.75 in	hail diameter	0	$0
6/28/2010	1700	Thunderstorm Wind	50 mph	estimated gust	0	$1,000
7/19/2010	1110	Lightning			1	$0
7/23/2010	1930	Thunderstorm Wind	50 mph	estimated gust	0	$5,000
9/8/2010	930	Lightning			0	$10,000
2/18/2011	2000	Hail	0.88 in	hail diameter	0	$0
2/18/2011	2000	Hail	0.75 in	hail diameter	0	$0
5/7/2011	1558	Hail	0.75 in	hail diameter	0	$0
6/8/2011	2155	Thunderstorm Wind	50 mph	estimated gust	0	$3,000
6/8/2011	2143	Hail	0.75 in	hail diameter	0	$0
6/8/2011	2147	Hail	0.75 in	hail diameter	0	$0
6/9/2011	125	Thunderstorm Wind	50 mph	estimated gust	0	$3,000

Date	Time	Type	Magnitude	Measurement Type	Injuries	Property Damage
6/9/2011	1705	Thunderstorm Wind	50 mph	estimated gust	0	$3,000
7/8/2011	840	Thunderstorm Wind	50 mph	estimated gust	0	$5,000
5/16/2012	230	Lightning			0	$3,000
7/18/2012	1458	Thunderstorm Wind	50 mph	estimated gust	0	$10,000
7/18/2012	1500	Thunderstorm Wind	50 mph	estimated gust	0	$10,000
7/18/2012	1520	Thunderstorm Wind	50 mph	estimated gust	0	$15,000
7/18/2012	1537	Thunderstorm Wind	50 mph	estimated gust	0	$5,000
7/18/2012	1537	Thunderstorm Wind	50 mph	estimated gust	0	$10,000
7/18/2012	1430	Hail	1 in	hail diameter	0	$0
7/18/2012	1440	Hail	2 in	hail diameter	0	$0
7/18/2012	1440	Hail	1 in	hail diameter	0	$0
7/18/2012	1445	Hail	0.88	hail diameter	0	$0
7/18/2012	1457	Hail	1.75	hail diameter	0	$0
7/18/2012	1458	Hail	1 in	hail diameter	0	$0
7/18/2012	1500	Hail	1 in	hail diameter	0	$0
7/18/2012	1500	Hail	1 in	hail diameter	0	$0
7/18/2012	1508	Hail	0.75 in	hail diameter	0	$0
7/18/2012	1510	Hail	1 in	hail diameter	0	$0
7/18/2012	1515	Hail	0.88 in	hail diameter	0	$0
7/18/2012	1530	Hail	2 in	hail diameter	0	$0
7/18/2012	1544	Hail	1.75 in	hail diameter	0	$0
7/24/2012	1615	Hail	0.75 in	hail diameter	0	$0
8/10/2012	1655	Thunderstorm Wind	70 mph	estimated gust	0	$10,000
8/10/2012	1721	Thunderstorm Wind	40 mph	estimated gust	0	$1,000
8/10/2012	1729	Thunderstorm Wind	50 mph	estimated gust	0	$3,000
5/21/2013	1526	Lightning			0	$5,000
6/29/2013	430	Thunderstorm Wind	40 mph	estimated gust	0	$200
7/20/2013	1452	Lightning			0	$1,000
7/20/2013	1515	Lightning			0	$5,000
7/20/2013	1525	Lightning			0	$5,000
7/20/2013	2030	Thunderstorm Wind	50 mph	estimated gust	0	$500
9/3/2013	1528	Thunderstorm Wind	50 mph	estimated gust	0	$3,000
6/18/2014	300	Lightning			0	$5,000
7/15/2014	2300	Lightning			0	$2,000
7/15/2014	2317	Lightning			0	$10,000
7/16/2014	717	Lightning			0	$5,000
8/7/2014	1440	Hail	0.75 in	hail diameter	0	$0

Date	Time	Type	Magnitude	Measurement Type	Injuries	Property Damage
6/23/2015	1650	Thunderstorm Wind	50 mph	estimated gust	0	$1,000
6/23/2015	1700	Thunderstorm Wind	50 mph	estimated gust	0	$5,000
8/4/2015	555	Thunderstorm Wind	50 mph	estimated gust	0	$5,000
8/4/2015	555	Thunderstorm Wind	50 mph	estimated gust	0	$5,000
8/4/2015	602	Thunderstorm Wind	50 mph	estimated gust	0	$5,000
8/4/2015	604	Thunderstorm Wind	50 mph	estimated gust	0	$5,000
8/4/2015	605	Thunderstorm Wind	50 mph	estimated gust	0	$8,000
8/4/2015	605	Thunderstorm Wind	50 mph	estimated gust	0	$5,000
8/4/2015	606	Thunderstorm Wind	50 mph	estimated gust	0	$5,000
8/4/2015	619	Thunderstorm Wind	50 mph	estimated gust	0	$15,000
8/4/2015	621	Thunderstorm Wind	50 mph	estimated gust	0	$5,000
8/4/2015	555	Hail	0.88in	hail diameter	0	$0
2/25/2016	234	Thunderstorm Wind	45 mph	estimated gust	0	$5,000
2/25/2016	237	Thunderstorm Wind	50 mph	estimated gust	0	$15,000
2/25/2016	244	Thunderstorm Wind	50 mph	estimated gust	0	$15,000
2/25/2016	301	Thunderstorm Wind	45 mph	estimated gust	0	$5,000
2/25/2016	307	Thunderstorm Wind	40 mph	estimated gust	0	$5,000
2/25/2016	358	Thunderstorm Wind	50 mph	estimated gust	0	$5,000
2/25/2016	400	Thunderstorm Wind	50 mph	estimated gust	0	$1,000
2/25/2016	400	Thunderstorm Wind	50 mph	estimated gust	0	$20,000
2/25/2016	500	Thunderstorm Wind	40 mph	estimated gust	0	$5,000
6/21/2016	438	Lightning			0	$15,000
6/21/2016	438	Thunderstorm Wind	40 mph	estimated gust	0	$1,000
6/21/2016	436	Hail	1 in	hail diameter	0	$0
7/17/2016	1516	Lightning			0	$5,000
7/17/2016	1420	Thunderstorm Wind	50 mph	estimated gust	0	$10,000
7/22/2016	2316	Lightning			0	$200,000
7/22/2016	1950	Thunderstorm Wind	50 mph	estimated gust	0	$20,000
7/22/2016	2000	Thunderstorm Wind	50 mph	estimated gust	0	$15,000
7/22/2016	2005	Thunderstorm Wind	50 mph	estimated gust	0	$10,000
7/22/2016	2010	Thunderstorm Wind	50 mph	estimated gust	0	$5,000
7/22/2016	2316	Thunderstorm Wind	50 mph	estimated gust	0	$20,000
7/23/2016	1855	Thunderstorm Wind	40 mph	estimated gust	0	$5,000
7/23/2016	1900	Thunderstorm Wind	40 mph	estimated gust	0	$30,000
7/23/2016	1900	Thunderstorm Wind	40 mph	estimated gust	0	$5,000
7/23/2016	1900	Thunderstorm Wind	40 mph	estimated gust	0	$15,000
7/23/2016	1931	Thunderstorm Wind	40 mph	estimated gust	0	$5,000

Date	Time	Type	Magnitude	Measurement Type	Injuries	Property Damage
7/23/2016	1935	Thunderstorm Wind	50 mph	estimated gust	0	$35,000
7/23/2016	1935	Thunderstorm Wind	50 mph	estimated gust	0	$5,000
8/6/2016	1740	Thunderstorm Wind	50 mph	estimated gust	0	$3,000
8/6/2016	1740	Thunderstorm Wind	50 mph	estimated gust	0	$5,000
8/12/2016	1715	Lightning			0	$5,000
4/6/2017	1748	Lightning			0	$1,000
6/9/2017	1434	Thunderstorm Wind	45 mph	estimated gust	0	$1,500
7/12/2017	1307	Thunderstorm Wind	50 mph	estimated gust	0	$1,000
7/12/2017	1450	Thunderstorm Wind	50 mph	estimated gust	0	$15,000
7/12/2017	1504	Thunderstorm Wind	50 mph	estimated gust	0	$1,500
7/12/2017	1508	Thunderstorm Wind	50 mph	estimated gust	0	$7,000
7/12/2017	1505	Hail	0.75 in	hail diameter	0	$0
7/12/2017	1515	Hail	0.75 in	hail diameter	0	$0
9/6/2017	1000	Thunderstorm Wind	50 mph	estimated gust	0	$8,000
1/23/2018	1500	Thunderstorm Wind	52 mph	estimated gust	0	$1,000
8/9/2018	706	Lightning			0	$5,000
9/18/2018	1302	Thunderstorm Wind	50 mph	estimated gust	0	$1,000
4/15/2019	637	Thunderstorm Wind	45 mph	estimated gust	0	$1,000
6/29/2019	1505	Hail	1.5 in	hail diameter	0	$0
7/22/2019	2037	Lightning			0	$2,000
8/4/2019	1550	Thunderstorm Wind	50 mph	estimated gust	0	$1,500
8/4/2019	1600	Thunderstorm Wind	50 mph	estimated gust	0	$2,000
8/4/2019	1608	Thunderstorm Wind	50 mph	estimated gust	0	$1,000
8/4/2019	1618	Thunderstorm Wind	50 mph	estimated gust	0	$500
8/4/2019	1715	Thunderstorm Wind	50 mph	estimated gust	0	$1,000
8/8/2019	25	Thunderstorm Wind	50 mph	estimated gust	0	$500
8/19/2019	1543	Thunderstorm Wind	50 mph	estimated gust	0	$800
8/19/2019	1604	Thunderstorm Wind	50 mph	estimated gust	0	$500

Source: NOAA National Centers for Environmental Information

Impacts of thunderstorms include those associated with inland flooding from extreme precipitation, as well as tornadoes. Hail associated with thunderstorms may result in impact damage to vehicles and structures. Direct lightning strikes may cause direct or indirect damage to electrical systems, and although unlikely, may cause loss of life. Lightning strikes in rural areas may also create sparks that can cause wildfire.

Increased global temperatures are expected to increase the evapotranspiration rate, which results in a higher content of water vapor in the atmosphere. This increased water vapor is expected to result in a higher likelihood of severe thunderstorms. One climate model, developed by researchers at Purdue University, some climate models suggest that the northeast united states may experience a 100% increase in the likelihood of severe thunderstorm conditions by the end of the 21st century.

4.1.13.1 Heavy Winds

Heavy wind events may occur independently from hurricanes (discussed in Section 4.1.10) tornadoes (discussed in Section 4.1.12), or thunderstorms (discussed in Section 4.1.13.1). The extent of impacts from these stand-alone wind events may be measured on the Beaufort Wind Scale, which was developed to provide a standardized metric for observed conditions at sea and on land, and was later correlated with approximate wind speeds:

Table 22: Beaufort Wind Scale

Force	Speed (mph)	Speed (knots)	Description	Specifications
				(for use at sea)
				(for use on land)
0	0-1	0-1	Calm	Sea like a mirror.
				Calm; smoke rises vertically.
1	1-3	1-3	Light Air	Ripples with the appearance of scales are formed, but without foam crests.
				Direction of wind shown by smoke drift, but not by wind vanes.
2	4-7	4-6	Light Breeze	Small wavelets, still short, but more pronounced. Crests have a glassy appearance and do not break.
				Wind felt on face; leaves rustle; ordinary vanes moved by wind.
3	8-12	7-10	Gentle Breeze	Large wavelets. Crests begin to break. Foam of glassy appearance. Perhaps scattered white horses.
				Leaves and small twigs in constant motion; wind extends light flag.
4	13-18	11-16	Moderate Breeze	Small waves, becoming larger; fairly frequent white horses.
				Raises dust and loose paper; small branches are moved.
5	19-24	17-21	Fresh Breeze	Moderate waves, taking a more pronounced long form; many white horses are formed.
				Small trees in leaf begin to sway; crested wavelets form on inland waters.
6	25-31	22-27	Strong Breeze	Large waves begin to form; the white foam crests are more extensive everywhere.
				Large branches in motion; whistling heard in telegraph wires; umbrellas used with difficulty.
7	32-38	28-33	Near Gale	Sea heaps up and white foam from breaking waves begins to be blown in streaks along the direction of the wind.
				Whole trees in motion; inconvenience felt when walking against the wind.
8	39-46	34-40	Gale	Moderately high waves of greater length; edges of crests begin to break into spindrift. The foam is blown in well-marked streaks along the direction of the wind.
				Breaks twigs off trees; generally impedes progress.

9	47-54	41-47	Severe Gale	High waves. Dense streaks of foam along the direction of the wind. Crests of waves begin to topple, tumble and roll over. Spray may affect visibility
				Slight structural damage occurs (chimney-pots and slates removed)
10	55-63	48-55	Storm	Very high waves with long overhanging crests. The resulting foam, in great patches, is blown in dense white streaks along the direction of the wind. On the whole the surface of the sea takes on a white appearance. The tumbling of the sea becomes heavy and shock-like. Visibility affected.
				Seldom experienced inland; trees uprooted; considerable structural damage occurs.
11	64-72	56-63	Violent Storm	Exceptionally high waves (small and medium-size ships might be for a time lost to view behind the waves). The sea is completely covered with long white patches of foam lying along the direction of the wind. Everywhere the edges of the wave crests are blown into froth. Visibility affected.
				Very rarely experienced; accompanied by wide-spread damage.
12	72-83	64-71	Hurricane	The air is filled with foam and spray. Sea completely white with driving spray; visibility very seriously affected.

Source: National Weather Service

Numerous high wind events have occurred in Bristol County, some of which have caused extensive property damage as described below:

Table 23: Bristol County High Wind Events, 2010-2020

Date	Time	Type	Magnitude (mph)	Measurement Type	Property Damage
3/13/2010	2337	High Wind	50	estimated gust	$40,000
4/29/2010	1241	Strong Wind	45	measured gust	$10,000
4/29/2010	1555	Strong Wind	40	estimated gust	$12,000
2/25/2011	1151	High Wind	51	measured gust	$15,000
3/7/2011	200	Strong Wind	45	estimated gust	$40,000
3/8/2012	1444	High Wind	50	estimated gust	$50,000
4/23/2012	6	High Wind	35	estimated sustained	$0
9/18/2012	2232	Strong Wind	40	estimated gust	$5,000
9/18/2012	2235	Strong Wind	40	measured gust	$5,000
10/29/2012	1252	High Wind	50	estimated gust	$524,000
10/29/2012	832	High Wind	54	estimated gust	$515,000
11/7/2012	1405	High Wind	56	estimated gust	$15,000
12/21/2012	1006	High Wind	50	estimated gust	$25,000
12/27/2012	245	High Wind	53	estimated gust	$5,000
1/20/2013	1114	Strong Wind	40	estimated gust	$5,000
1/31/2013	151	High Wind	50	estimated gust	$100,000
1/31/2013	23	High Wind	50	estimated gust	$110,000
3/7/2013	106	Strong Wind	41	estimated gust	$15,000

Date	Time	Type	Magnitude (mph)	Measurement Type	Property Damage
6/7/2013	2030	Strong Wind	45	estimated gust	$5,000
6/7/2013	2100	Strong Wind	45	estimated gust	$5,000
11/1/2013	818	Strong Wind	46	estimated gust	$30,000
11/24/2013	1540	High Wind	50	estimated gust	$45,000
11/27/2013	711	High Wind	50	estimated gust	$20,000
11/27/2013	758	High Wind	53	estimated gust	$5,000
12/15/2013	355	Strong Wind	40	estimated gust	$5,000
1/11/2014	1605	Strong Wind	43	estimated gust	$5,000
3/26/2014	941	Strong Wind	40	measured gust	$5,000
4/15/2014	1236	Strong Wind	37	measured gust	$10,000
10/22/2014	1615	High Wind	50	estimated gust	$30,000
10/22/2014	2011	High Wind	35	measured sustained	$5,000
11/2/2014	837	Strong Wind	45	estimated gust	$45,000
1/5/2015	1446	Strong Wind	40	estimated gust	$12,500
1/27/2015	320	High Wind	56	measured gust	$15,000
3/17/2015	1627	Strong Wind	45	estimated gust	$20,000
3/17/2015	1712	High Wind	50	estimated gust	$20,000
4/4/2015	1255	Strong Wind	29	measured sustained	$5,000
4/4/2015	1310	Strong Wind	48	estimated gust	$5,000
6/28/2015	426	High Wind	50	estimated gust	$35,000
6/28/2015	904	Strong Wind	45	estimated gust	$15,000
9/30/2015	729	Strong Wind	40	estimated gust	$15,000
9/30/2015	905	Strong Wind	40	estimated gust	$500
9/30/2015	1040	Strong Wind	40	estimated gust	$5,000
10/29/2015	143	Strong Wind	44	measured gust	$20,000
10/29/2015	317	Strong Wind	30	estimated gust	$500
1/10/2016	1124	Strong Wind	40	estimated gust	$20,000
1/10/2016	1320	Strong Wind	40	estimated gust	$1,000
1/13/2016	1410	Strong Wind	40	estimated gust	$5,000
1/23/2016	933	High Wind	36	measured sustained	$0
2/16/2016	1708	High Wind	56	measured gust	$45,000
2/24/2016	2255	High Wind	50	estimated gust	$15,000
2/25/2016	133	High Wind	50	estimated gust	$5,000
3/17/2016	1717	Strong Wind	40	estimated gust	$10,000
3/31/2016	1110	High Wind	50	estimated gust	$30,000
9/5/2016	1055	Strong Wind	40	estimated gust	$52,000
10/9/2016	2000	Strong Wind	40	estimated gust	$500

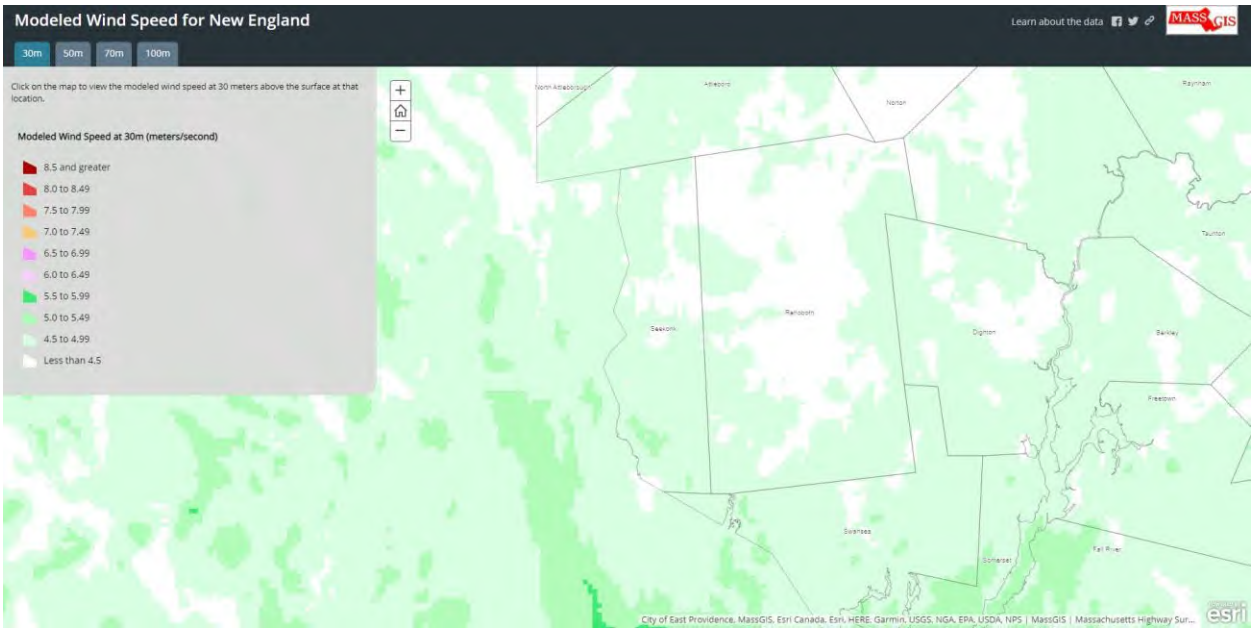
Date	Time	Type	Magnitude (mph)	Measurement Type	Property Damage
10/22/2016	1018	Strong Wind	44	measured gust	$500
12/15/2016	1200	Strong Wind	49	measured gust	$1,000
12/15/2016	1200	Strong Wind	39	measured gust	$3,000
12/15/2016	2200	High Wind	50	estimated gust	$1,000
12/18/2016	1000	Strong Wind	40	measured gust	$1,600
12/18/2016	1200	Strong Wind	41	estimated gust	$700
12/27/2016	200	Strong Wind	42	estimated gust	$2,200
12/27/2016	300	Strong Wind	42	measured gust	$2,200
1/23/2017	2200	Strong Wind	38	estimated gust	$2,500
3/2/2017	500	Strong Wind	43	estimated gust	$1,000
3/2/2017	500	Strong Wind	46	estimated gust	$1,000
3/14/2017	1239	High Wind	62	measured gust	$0
3/22/2017	500	Strong Wind	41	estimated gust	$1,000
4/6/2017	2009	Strong Wind	40	estimated gust	$1,000
4/6/2017	1949	Strong Wind	40	estimated gust	$500
10/24/2017	1135	High Wind	50	estimated gust	$10,000
10/24/2017	1041	Strong Wind	40	estimated gust	$5,000
10/29/2017	2040	High Wind	66	measured gust	$15,000
10/29/2017	2100	High Wind	58	measured gust	$25,000
11/19/2017	1130	Strong Wind	35	estimated gust	$2,000
12/5/2017	2130	Strong Wind	42	estimated gust	$2,000
12/5/2017	2140	Strong Wind	48	estimated gust	$2,000
12/25/2017	900	High Wind	56	estimated gust	$25,000
12/25/2017	905	Strong Wind	40	estimated gust	$1,000
1/12/2018	1500	High Wind	51	estimated gust	$5,500
1/12/2018	1450	Strong Wind	40	estimated gust	$2,000
3/2/2018	0	High Wind	50	estimated gust	$15,000
3/2/2018	0	High Wind	59	estimated gust	$60,000
3/7/2018	1700	Strong Wind	40	estimated gust	$2,000
4/16/2018	804	Strong Wind	40	estimated gust	$2,000
5/4/2018	2130	Strong Wind	40	estimated gust	$2,000
10/15/2018	1900	Strong Wind	40	measured gust	$7,000
10/15/2018	2300	Strong Wind	40	estimated gust	$1,000
10/17/2018	1638	Strong Wind	40	estimated gust	$12,000
10/27/2018	1025	Strong Wind	39	estimated gust	$2,500
10/27/2018	1024	Strong Wind	41	measured gust	$1,300
11/3/2018	1300	High Wind	50	estimated gust	$2,500

Date	Time	Type	Magnitude (mph)	Measurement Type	Property Damage
11/3/2018	1324	High Wind	51	measured gust	$1,500
11/16/2018	200	Strong Wind	43	estimated gust	$300
12/18/2018	418	Strong Wind	40	estimated gust	$2,000
12/18/2018	553	Strong Wind	40	estimated gust	$1,000
12/21/2018	920	High Wind	50	estimated gust	$8,500
1/1/2019	1215	Strong Wind	40	estimated gust	$1,500
1/24/2019	500	High Wind	56	estimated gust	$1,000
1/24/2019	700	Strong Wind	42	estimated gust	$2,000
1/30/2019	1839	High Wind	50	measured sustained	1000
2/25/2019	800	Strong Wind	40	estimated gust	$13,000
2/25/2019	900	High Wind	53	estimated gust	$20,000
4/15/2019	619	Strong Wind	42	estimated gust	$1,000
4/15/2019	624	Strong Wind	40	estimated gust	$500
4/15/2019	630	Strong Wind	42	estimated gust	$500
10/10/2019	615	Strong Wind	45	estimated gust	$500
10/10/2019	615	Strong Wind	45	estimated gust	$500
10/10/2019	1403	Strong Wind	45	estimated gust	$500
10/10/2019	1403	Strong Wind	45	estimated gust	$500
10/10/2019	1640	Strong Wind	45	estimated gust	$200
10/10/2019	1652	Strong Wind	45	estimated gust	$500
10/11/2019	240	Strong Wind	45	estimated gust	$1000
10/11/2019	315	Strong Wind	45	estimated gust	$500
10/11/2019	935	Strong Wind	45	estimated gust	$1,500
10/16/2019	2201	High Wind	35	measured sustained	$0
10/16/2019	2209	High Wind	56	measured gust	$0
10/16/2019	2216	High Wind	39	measured sustained	$0
10/16/2019	2217	Strong Wind	45	estimated gust	$800
10/16/2019	2221	Strong Wind	45	estimated gust	$800
10/16/2019	2224	Strong Wind	45	estimated gust	$500
10/16/2019	2230	Strong Wind	45	estimated gust	$500
10/16/2019	2238	Strong Wind	45	estimated gust	$200
10/16/2019	2243	Strong Wind	45	estimated gust	$500
10/16/2019	2245	Strong Wind	45	estimated gust	$500
10/16/2019	2246	Strong Wind	45	estimated gust	$500
10/16/2019	2254	Strong Wind	45	estimated gust	$500
10/16/2019	2300	Strong Wind	45	estimated gust	$100
10/16/2019	2345	Strong Wind	45	estimated gust	$500

Date	Time	Type	Magnitude (mph)	Measurement Type	Property Damage
10/16/2019	2345	High Wind	41	measured sustained	$0
10/17/2019	11	Strong Wind	45	estimated gust	$500
10/17/2019	11	Strong Wind	45	estimated gust	$500
10/17/2019	41	High Wind	73	measured gust	$0
10/17/2019	45	High Wind	69	measured gust	$0
10/17/2019	45	High Wind	47	measured sustained	$0
10/17/2019	48	High Wind	76	measured gust	$0
10/17/2019	55	Strong Wind	45	estimated gust	$800
10/17/2019	100	High Wind	44	measured sustained	$0
10/17/2019	106	Strong Wind	45	estimated gust	$500
10/17/2019	115	High Wind	37	measured sustained	$0
10/17/2019	130	Strong Wind	45	estimated gust	$500
10/17/2019	701	High Wind	36	measured sustained	$0
10/17/2019	801	High Wind	36	measured sustained	$0
10/17/2019	831	High Wind	36	measured sustained	$0
10/17/2019	1030	High Wind	38	measured sustained	$0
10/17/2019	1046	High Wind	38	measured sustained	$0
10/17/2019	1146	High Wind	39	measured sustained	$0
10/17/2019	1246	High Wind	38	measured sustained	$0
10/31/2019	2143	High Wind	50	estimated gust	$2,500
11/1/2019	200	High Wind	50	estimated gust	$2,000
11/2/2019	335	High Wind	57	measured gust	$1,000
1/12/2020	647	Strong Wind	43	estimated gust	$500
1/12/2020	649	Strong Wind	43	estimated gust	$500
1/12/2020	649	Strong Wind	43	estimated gust	$500
1/16/2020	1219	Strong Wind	43	estimated gust	$300
1/16/2020	0	Strong Wind	43	estimated gust	$300
2/7/2020	1209	High Wind	63	measured gust	$20,000
2/7/2020	1244	High Wind	48	estimated gust	$16,000
2/27/2020	1350	Strong Wind	43	estimated gust	$500

Source: NOAA National Centers for Environmental Information

The entire Town of Seekonk is vulnerable to high winds, although the southwestern portion of the town nearer to the coastline has a higher mean sustained wind speeds calculated at 30 meters above the surface as depicted below.



Source: MassGIS Data: Modeled Wind Speed Grids

As discussed in other sections herein, climate change is anticipated to result in an increase in the probability and/or intensity of weather systems that result in heavy winds, such as tornadoes, hurricanes, severe winter storms, and thunderstorms. Accordingly, the probability of future high wind events is also expected to increase.

4.1.14 Earthquakes

Often occurring along subsurface fault boundaries, earthquakes are movements of the earth's surface that can pose a risk to human health, man-made structures, and various infrastructure. As noted in the SHMCAP, earthquakes in New England are considered 'intraplate' earthquakes as they occur deep within the North American Plate. The ground-shaking components of earthquakes may cause structural damage to buildings and infrastructure.

There are several scales for measuring the intensity and extent of earthquakes. According to the USGS Earthquake Glossary, Peak Ground Acceleration (PGA) represents "…*the largest increase in velocity recorded by a particular station during an earthquake*." PGA can be measured as a percentage of the acceleration due to gravity.

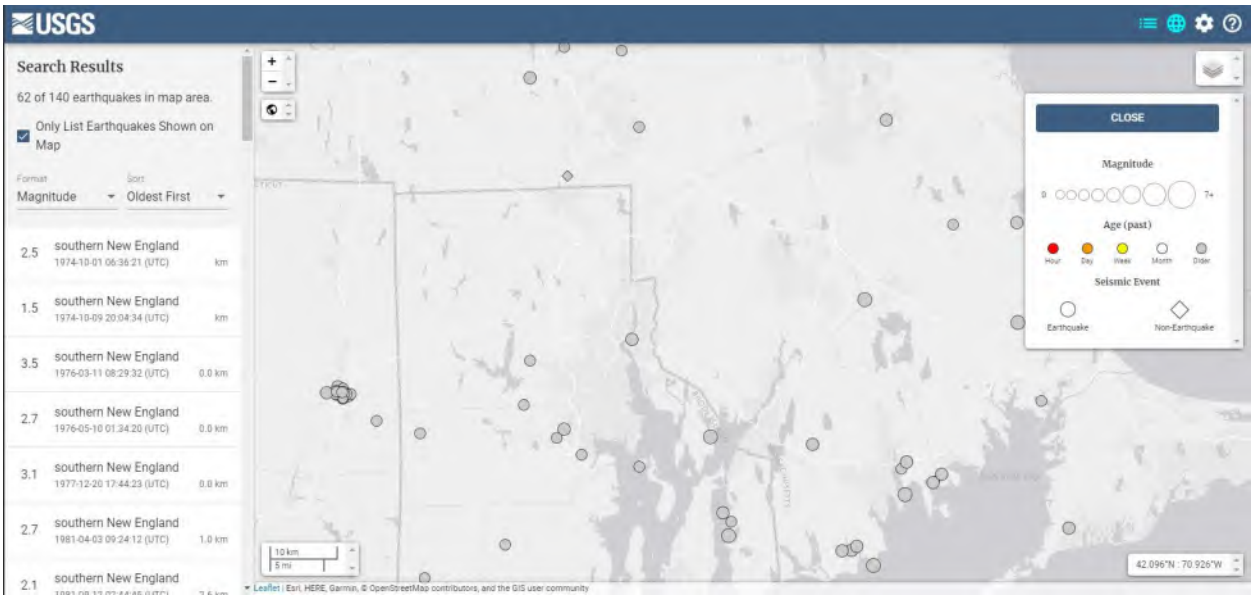
Table 21: Modified Mercalli Intensity and Equivalent Peak Ground Acceleration and Richter Scale Magnitude

Mercalli Intensity	Equivalent Richter Scale Magnitude	Description	Abbreviated Modified Mercalli Intensity Scale Description	Acceleration (percent g) (PGA)
I		Detected only on seismographs.	Not felt except by a very few under especially favorable conditions	< .17
II	< 4.2	Some people feel it.	Felt only by a few persons at rest, especially on upper floors of buildings	.17 – 1.4
III		Felt by people resting; like a truck rumbling by.	Felt quite noticeably by persons indoors, especially on upper floors of buildings. Many people do not recognize it as an earthquake. Standing motor cars may rock slightly. Vibrations similar to the passing of a truck. Duration estimated.	.17 – 1.4
IV		Felt by people walking.	Felt indoors by many, outdoors by few during the day. At night, some awakened. Dishes, windows, doors disturbed; walls make cracking sound. Sensation like heavy truck striking building. Standing motor cars rocked noticeably.	1.4 – 3.9
V	< 4.8	Sleepers awake; church bells ring	Felt by nearly everyone; many awakened. Some dishes, windows broken. Unstable objects overturned. Pendulum clocks may stop.	3.9 – 9.2
VI	< 5.4	Trees sway; suspended objects swing; objects fall off shelves.	Felt by all, many frightened. Some heavy furniture moved; a few instances of fallen plaster. Damage slight.	9.2 – 18
VII	< 6.1	Mild alarm; walls crack; plaster falls	Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable damage in poorly built or badly designed structures; some chimneys broken.	18 – 34
VIII		Moving cars are uncontrollable; masonry fractures, poorly constructed buildings damaged.	Damage slight in specially designed structures; considerable damage in ordinary substantial buildings with partial collapse. Damage great in poorly built structures. Fall of chimneys, factory stacks, columns, monuments, walls. Heavy furniture overturned.	34 – 65
IX	< 6.9	Some houses collapse; ground cracks; pipes break open.	Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb. Damage great in substantial buildings, with partial collapse. Buildings shifted off foundations.	65-124
X	< 7.3	Ground cracks profusely; many buildings destroyed; liquefaction and landslides are widespread.	Some well-built wooden structures destroyed; most masonry and frame structures destroyed with foundations. Rails bent.	>124
XI	< 8.1	Most buildings and	Few, if any, (masonry) structures remain	>124

Mercalli Intensity	Equivalent Richter Scale Magnitude	Description	Abbreviated Modified Mercalli Intensity Scale Description	Acceleration (percent g) (PGA)
		bridges collapse; roads, railways, pipes and cables are destroyed; general triggering of other hazards occurs.	standing. Bridges destroyed. Rails bent greatly.	
XII	> 8.1	Total destruction; trees fall; ground rises and falls in waves.	Damage total. Lines of sight and level are distorted. Objects thrown into the air.	>124

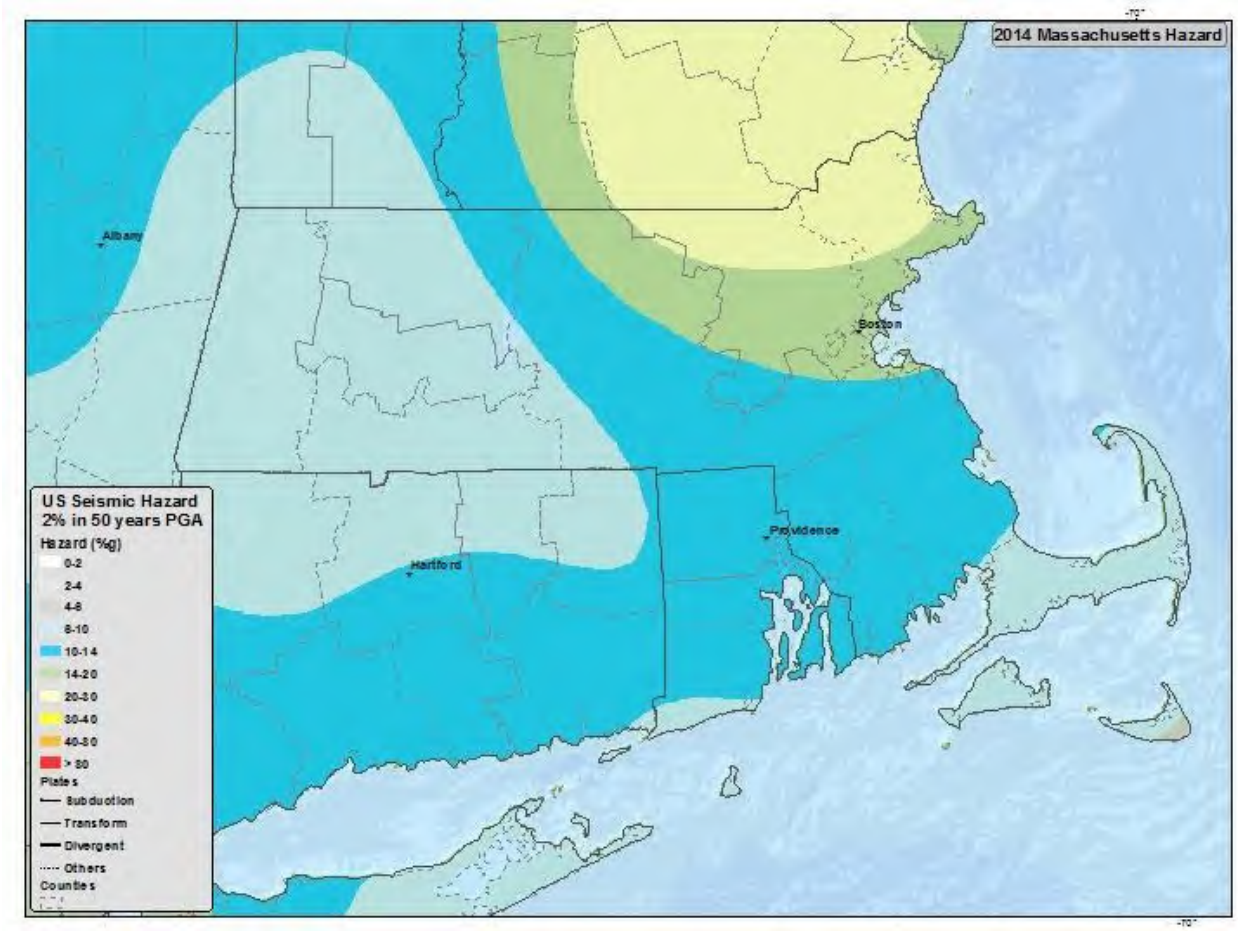
Source: State Hazard Mitigation and Climate Adaptation Plan

According to the USGS, approximately 62 earthquakes have been recorded in the vicinity of Seekonk since 1900. The nearest earthquake epicenter was a magnitude 2.3 earthquake in East Providence, Rhode Island, which occurred on July 22, 2015.



Source: USGS

The potential area of impact of earthquakes is uniform across the Town of Seekonk. According to the 2014 Seismic Hazard Map of Massachusetts prepared by United States Geological Survey map, Seekonk is located in a section of the state with a PGA. of 10 to 14 percent of the acceleration due to gravity with a 2% probability of exceedance in 50 years, the second lowest zone in the state. Put another way, an earthquake with a magnitude greater than 5.4 has a two percent probability of occurring within a 50-year period in the vicinity of the Town of Seekonk.



Source: State Hazard Mitigation and Climate Adaptation Plan

4.2 Top Natural Hazards Identified by Stakeholders

After discussion, workshop participants identified the top climate-related hazards facing the Town of Seekonk as the following:

- Inland Flooding
- Extreme Winter Weather
- Severe Storms
- Heat/Drought
- Invasive Species

4.3 Critical Facilities and Specific Areas of Concern

Refer to Figure 3 for a map of critical facilities relative to hazards with specific areas of impact. Critical facilities within the Town of Seekonk include the following:

Table 22: Critical Facilities

Name	Address	Facility Type
Public Water Supply		Water Supply Well
Public Water Supply		Water Supply Well
Our Lady of Mount Carmel	984 Taunton Avenue	Place of Worship
Our Lady Queen of Martyrs	5 North Street	Place of Worship
Motoring Technical Training Institute	1241 Fall River Avenue	School
George R Martin School	445 Cole Street	School
Mildred Aitken School	165 Newman Avenue	School
Dr. Kevin M Hurley Middle School	650 Newman Avenue	School
Seekonk High School	261 Arcade Avenue	School
Seekonk Police Department	500 Taunton Avenue	Municipal Facility
Seekonk Fire Department	30 Pine Street	Municipal Facility
Seekonk Fire Department	Newman Avenue	Municipal Facility
Seekonk Town Hall	100 Peck Street	Municipal Facility
Attleboro Dye Works Dam	Off Pond Street	Dam
Old Grist Mill Pond Dam		Dam
Burr's Pond Dam	Leonard Street	Dam
Pond Street Bridge	Pond Street	Bridge
Tall Pines Lane Culvert	Tall Pines Lane	Culvert
Route 152 Culvert	Route 152	Culvert
Arcade Avenue Culvert	Arcade Avenue	Culvert
Route 44 Bridge	Taunton Avenue	Bridge
Route 144A Bridge	Fall River Avenue	Bridge
Route 144A Bridge	Fall River Avenue	Bridge
Route 6 Bridge	Highland Avenue	Bridge
Route 195 Bridge	Anthony Street	Bridge
Former Bridge Abutments	Leavitt and Mink Streets	Restriction

In identifying features for consideration of action items, stakeholders further identified the following areas of concern. For clarity, the features identified on the risk matrix have been noted in underlined text. Items that were noted by participants as both strength and vulnerabilities combined have been included in this list.

Refer to Appendix B for the base map provided to workshop participants, and Appendix C for the participatory mapping completed during the workshop.

4.3.1 Geographic

- CRB workshop attendees noted the physical implications of the north-south polarization of town. During periods of traffic congestions or when natural hazards, stakeholders are concerned that down trees and flooding may separate vulnerable populations sequestered in either portion of Town.

4.3.2 Infrastructural

- Various infrastructure, including bridges, culverts, and dams were noted by stakeholders as strengths where recently upgraded and improved, but vulnerabilities where aging. Action items formulated on these topics ranged from upgrading general infrastructure resiliency to future storm events to evaluating site-specific needs for various facilities and features.
- Stakeholders identified utilities as both strengths and vulnerabilities for the Town. Features under the umbrella of utilities in the discussion included electricity generation (e.g., exploring rooftop solar) and transport as well as communication systems, including telephone and internet access.
- Transportation was noted by stakeholders as both a strength and vulnerability for the Town. Aspects of transportation evaluated included preventative maintenance of roadways (identifying hazard trees, plowing, culvert repairs, etc.). The lack of transportation opportunities into vulnerable population centers was also noted.
- Water infrastructure, including the existing municipal well fields and distribution infrastructure, were examined by Stakeholders as both a strength and vulnerabilities. Stakeholders specifically considered feasibility studies to provide better protection of municipal wellfields to flood events. Also discussed by Stakeholders was the possibility of exploring inter-municipal water distribution agreements with neighboring towns, regardless of state affiliation.
- Stakeholders identified stormwater management systems as an infrastructural vulnerability. Action items listed relative to these vulnerabilities included both water quality assessment of pre- and post-storm events, and ongoing maintenance of storm drains and basins.
- Septic systems and waste management was recognized by Stakeholders as one of the Town's vulnerabilities to the identified natural hazards. Stakeholders identified activities to promote resiliency of such systems, including assessing existing septic systems within flood zones and evaluating the potential for a municipal waste management system.
- Workshop stakeholders noted public safety as both a vulnerability and a strength of the Town. Participants discussed investigating resilient design alternatives for the south-end fire state and conduct a study of coverage of public safety radio network, among others.
- Emergency management was noted as both a strength and vulnerability for

Seekonk. Stakeholders identified action items including evaluating municipal buildings for shelter and generator capacity, maintain and upgrade the existing emergency response plan, and assess existing evacuation routes.

- Lastly, Stakeholders identified the athletic fields as a vulnerability for Seekonk. Specifically, potential action items were discussed, including improving stormwater management at sports fields for flood control and to develop a plan for severe storm damage outside of the DPW general maintenance scope.

4.3.3 Societal

- Stakeholders identified both senior and disabled populations as vulnerabilities for the Town. Several action items were discussed by the groups for this vulnerability, including, evaluating centralized locations for affordable senior housing on municipal and other land as well as performing an ADA audit of public buildings. Please refer to the Risk Matrix for a comprehensive list of high-priority action items for senior and disabled populations.
- Homeless and transient communities were identified by stakeholder groups as societal vulnerabilities. Stakeholders recommended actions including determining population size, general locations, potential needs to better inform emergency response programs.
- Non-resident populations, such as those who work but do not reside in Seekonk were noted as a vulnerable facet of the Town, due to the limited area. Stakeholders noted actions such as evaluating the capacity of existing shelters to accommodate excess population working in and traveling through the Town.
- Stakeholders identified the non-English speaking community as a vulnerability and considered the possibility of assessing multi-lingual forms of emergency notifications.
- Commerce and agriculture were discussed by Stakeholder groups as vulnerabilities to natural disasters. Stakeholders discussed the possibility of developing a plan for businesses to better operate during emergency situations, among other items.
- Stakeholders considered the form of government a potential vulnerability and recommended explore alternative forms of government that improve representation.
- Another societal vulnerability noted by Stakeholders included domestic and farm animals with an emphasis on developing plan for pet/domestic animal care during evacuation and shelter situations.
- Stakeholders also identified public housing as another vulnerability with opportunities to increase access to cooling stations.

4.3.4 Environmental

- Stakeholder groups recognized surface water quality as a priority for the Town, including the need to assess potential areas for retrofitting stormwater management systems to increase water quality treatment and improve infiltration. Groups also considered developing and maintaining stormwater regulations.
- Conserved land was identified as both a strength and a vulnerability with discussions to potentially acquire additional open space parcels, particularly those connecting Town-owned open space.
- Stakeholders identified aquifers and the public water supply as strengths and vulnerabilities. Recommendations were made to assess the yield of water supply wells relative to projected development trends and other items such as the evaluation additional land acquisition in vicinity of public water supply.
- Invasive/Pest Management was noted as vulnerability with recommendations from Stakeholders to include open space in town wide invasive species/pest management plan and to educate public on prevention of invasive species spread
- Stakeholders also reviewed issues relative to high groundwater, with considerations to perform analyses (or hire consultant to do so) regarding groundwater elevation analysis and plan for future impacts (and effects on development).
- Habitat connectivity was also reviewed as both a vulnerability and a strength with considerations for assessing opportunities for critter crossings and to identify and acquire open parcels connecting town-owned open space.

5.0 CURRENT STRENGTHS AND ASSETS

The following departments in the Town of Seekonk maintain existing policies, programs and resources related to hazard mitigation and preparedness. Potential expansions and improvements to these existing policies and programs are discussed further in Section 6.0.

Department, Board, or Committee	Role	Existing Policies, Programs, and Resources
Administration	Responsible to the Board of Selectmen for the proper discharge of all duties of the office and for the proper administration of all town affairs placed under his/her charge by or under the charter, the Board of Selectmen, By-Law or the vote of town meeting.	Implementation of town policies established by the Board of Selectmen
Building Inspector	Examine plans, issue permits and perform inspections that will comply with the laws of both the Town of Seekonk and the Commonwealth of Massachusetts to ensure a safe public and private environment for the residents and individuals who work here and those who use our community and its services.	State Building Code and the Specialized Codes contained therein, Commonwealth of MA Electrical Code, Commonwealth of MA Fuel, Gas, and Plumbing Codes, Town Zoning By-Laws, and applicable sections of the Town By-Laws
Conservation Commission	Protect Seekonk's wetland and water resources to prevent pollution, improve flood control, and protect drinking water, wildlife, and fisheries, as well as to preserve land for open space and passive recreation. Acquire and manage open space and to encourage and monitor conservation and agricultural preservation restrictions	Massachusetts Wetlands Protection Act, establishing jurisdiction over wetland resources in Seekonk and all land 100 feet adjacent to the wetlands and 200 feet of perennial streams, Maintain and implement Open Space and Recreation Plan
Fire Department	Protect life and property by providing the best emergency services possible, which lends itself to a safe environment for those who live in, work in, or visit the Town of Seekonk	Maintain well educated and properly trained firefighting personnel with up to date equipment.
Health Department	Protect the public health safety and the environment for the residents of Seekonk.	310 CMR 15.00: Septic Systems ("Title 5") Maintain lists of registered Engineers and sanitarians, septic installers, and Title V inspectors
Human Services & Council on Aging	Assist in the well-being of Seekonk's older population and residents of any age who are in need of social services due to economic hardship, health issues, family circumstances, or personal loss.	Provide community service, and health clinics, as well as assistance to qualified residents in need of food, clothing, housing, health care, transportation, legal or tax services directly or by introducing them to a network of federal, state, and local support services.

Department, Board, or Committee	Role	Existing Policies, Programs, and Resources
Parks & Recreation	Provide recreation opportunities for the Town of Seekonk residents through creation and maintenance of high-quality programs, facilities, and community special events.	diverse services and programs that promote citizen involvement and strong sense of community
Planning Board	Review plans submitted by applicants who want to develop their land as residential, commercial, or other uses. Guide any proposed zoning changes through a detailed procedure outlined in the Massachusetts General Laws. Town Meeting, and the Attorney General's office then approves any changes for the town.	Massachusetts General Laws, the Seekonk Subdivision Rules and Regulations and the Seekonk Zoning By-Laws Review and development of the Town's Master Plan or Comprehensive Plan to address future land use, economic development, sustainability, open space and recreation, housing, public facilities and services, and transportation.
Police Department	Provide community leadership and a safe living and working environment through the preservation of peace and public order, extending to all citizens' fairness and respect	Maintain well educated and properly trained police personnel with up to date equipment.
Public Safety Communications	Dispatching police officers, fire apparatus and emergency medical services for the Town of Seekonk utilizing the most modern technology to enhance the processing of vital information.	Combined Dispatch Center comprised of 9 dispatchers that operate the Communications center 7 days a week, 24 hours a day, 365 days of the year
Public Works		Illicit Connections and Discharges to the Storm Drain System
Seekonk Water District	Independent governmental entity chartered by the Massachusetts Legislature, not a department of the Town of Seekonk.	Ensure safe and reliable water supply through constant water testing and maintenance of state-of-the-art treatment plant

Adapted from Town of Seekonk website: https://www.seekonk-ma.gov/departments

In identifying features for consideration of action items, stakeholders identified the following strengths and assets in the Town of Seekonk. For clarity, the features identified on the risk matrix have been noted in underlined text. Items identified by Stakeholders as both strengths and vulnerabilities simultaneously have been listed in Section 4.3.

5.1 Infrastructural

- Infrastructural strengths identified by Stakeholders included town buildings, the extent of buildings with existing generators, and other municipal structures. Noted ways to enhance these strengths include upgrade/update heating systems in older buildings and assess overall resiliency of buildings to storm events.

5.2 Societal

- Children and youth services were identified as a Town strength by Stakeholders.
- Communication was noted as a strength, particularly the existing emergency response plan which has room for enhancement.
- Seekonk also maintains strong mutual aid agreements and a public safety department as noted by stakeholders.
- Geographically, the major population centers of Seekonk are located outside of flood zones.
- Stakeholders also note Seekonk's strength in utilizing weather forecasting to facilitate emergency response time and the ability to prioritize areas for winter plowing.

5.3 Environmental

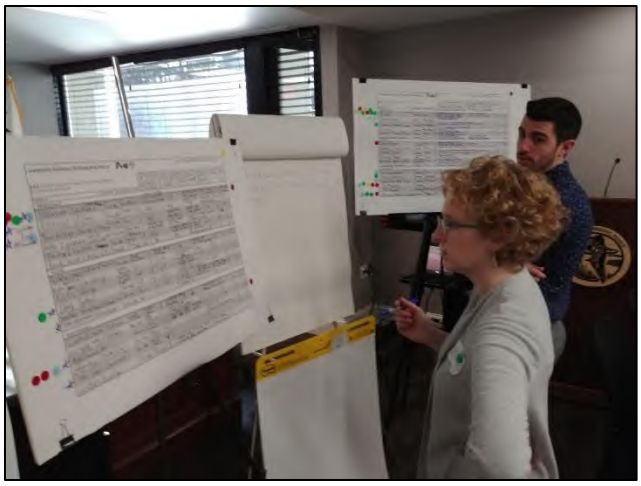
- Stakeholders identified multiple aspects of municipal government that were defined as strengths, including the Open Space and Recreation Plan, the Conservation Department, and Parks and Recreation.
- Seekonk maintains town-owned open space, which provides opportunities for passive recreation.
- Stakeholders also note the lack of coastal influence as a strength of the town in that the municipality does not share the same risks as neighboring coastal communities.
- Much of the Town's low-lying areas, flood zones, and wetlands are situated within town-owned open space.
- Lastly, stakeholder groups also note plant diversity and the various vegetative communities throughout Town as a distinct environmental strength.

6.0 TOP RECOMMENDATIONS TO IMPROVE RESILIENCE

As described in Section 3.0, the priority actions were established through a consensus-building process that incorporated input from various boards, districts, and departments.

The Core Team conducted a Benefit-Cost Review of the actions identified by stakeholders based on the principles outlined in Using Benefit-Cost Review in Mitigation Planning prepared by FEMA. The Core Team utilized Method A: Simple Listing Technique.

Priorities were expressed as "High", "Medium", or "Lower" in accordance with the CRB process. In developing priorities, stakeholders considered the following as recommended by the CRB Workshop Guide:



MVP Group Facilitators examining prioritized action items during CRB workshop

- Funding availability and terms
- Agreement on outstanding impacts from recent hazard events
- Necessity for advancing longer-term outcomes
- Contribution towards meeting existing local and regional planning objectives

Timeframe for implementation was generally established in small groups by workshop participants, and refined by the Core Team. .

Costs were generally estimated based on Core Team knowledge of similar project prices in the following categories:

- Very high (over $1 million)
- High ($500,000 - $1 million)
- Medium ($100,000 - $500,000)
- Low ($50,000 - $100,000)
- Very low (under $50,000)

6.1 Top Priority Actions

Upon completion of the list of actions, stakeholders were given three votes to identify their highest priority actions and were allowed to vote for the same action more than once. Based on the tallied votes, stakeholders discussed and reached agreement on the top five priority actions for the Town. Following discussions as a large group at the conclusion of this workshop, stakeholders identified the following actions as the highest priorities to improve the Town's resilience to climate change:

1. Assess the condition/sizing of existing culverts, dams, and bridges, incorporating need to accommodate climate projections for stormwater

2. Assess the extent of elderly and disabled populations and the ability of emergency shelters to accommodate their needs

3. Identify roads susceptible to flooding and continue/improve existing maintenance programs (e.g. tree trimming)

4. Prepare an invasive species and pest management plan and educate the public

6.2 High Priority Actions

Action Description	Lead Department	Priority Level	Cost	Possible Funding Sources	Hazards Being Addressed	Implementation Schedule
Infrastructural						
Conduct assessment of the condition and capacity of existing bridge, culverts, and dam infrastructure, focusing on culverts and stormwater facilities in older neighborhoods	Department of Public Works, Conservation Commission	High	Medium	MVP Action Grant	Inland Flooding, Severe Winter Storms/Nor'easters, Other Severe Weather	FY24-FY29, currently underway
Continue annual maintenance of existing bridge, culverts, and dams and upgrade infrastructure	Department of Public Works	High	Low	Culvert Replacement Municipal Assistance Grant Program	Inland Flooding, Severe Winter Storms/Nor'easters, Other Severe Weather	FY24-FY29, currently underway
Work on an active/annual maintenance plan for bridges, culverts, and dams	Department of Public Works	High	Low	DCR Dam and Seawall Repair or Removal Program Grants	Inland Flooding, Severe Winter Storms/Nor'easters, Other Severe Weather	FY24-FY29, currently underway
Continue management of stormwater infrastructure, including culvert cleaning.	Department of Public Works	High	Low	Stormwater Utility	Inland Flooding, Severe Winter Storms/Nor'easters, Other Severe Weather	FY24-FY29, currently underway
Conduct engineering and construction of the Pond Street Bridge improvements	Department of Public Works, Conservation Commission	High	Medium	Town Meeting Appropriation	Inland Flooding, Severe Winter Storms/Nor'easters, Other Severe Weather	Design and engineering FY24-FY26 Construction FY27-29
Advance design and engineering of selected Attleboro Dye Works and Burr's Pond dams improvements	Department of Public Works, Conservation Commission	High	Medium	MVP Action Grant	Inland Flooding, Severe Winter Storms/Nor'easters, Other Severe Weather	FY24-FY26
Assess vulnerabilities to single-phase electric power system from pole age and trees with a certified arborist, and conduct selective tree cutting to remove hazard trees from roadways	Department of Public Works, in coordination with utility companies	High	Low	DPW Annua Vegetation Management Budget	Severe Winter Storms/ Nor'easters, Tornadoes, Other Severe Weather	FY24-FY29
Purchase portable generators for emergency use by vulnerable residents	Health and Human Services	High	Medium	Town Meeting Appropriation	All Hazards	FY24-FY25
Plan for selective tree removal and identify specific hazards that would disrupt traffic between the north and south portions of town.	Department of Public Works	High	Low	DPW Annua Vegetation Management Budget	Severe Winter Storms/ Nor'easters, Tornadoes, Other Severe Weather	FY23-FY29
Encourage citizens to use alternative forms of transportation during road flood events	Public Safety	High	Low	Staff/Operations	Inland Flooding	FY25-FY29
Evaluate plowing contracts relative to nearby municipalities to improve snow clearing during storm events	Department of Public Works, in coordination with surrounding towns	High	Low	Staff/Operations	Severe Winter Storms/Nor'easters	FY22
Upgrade/update heating systems and HVAC in older buildings and assess overall resiliency of buildings to storm events	Municipal Capital Improvement Committee	High	Very High	Town Meeting Appropriation	Inland Flooding, Average and Extreme Temperatures, Severe Winter Storms/ Nor'easters, Other Severe Weather	FY24-FY29
Consider resilient design alternatives for construction of south-end fire station	Fire Department	High	Very High	Town Meeting Appropriation	All Hazards	FY22
Set up pest management contract for radio cabinet to maintain communication channels during emergencies	Safety Communications	High	Medium	Emergency Management Performance Grant	All Hazards	FY21-FY25

Action Description	Lead Department	Priority Level	Cost	Possible Funding Sources	Hazards Being Addressed	Implementation Schedule
Societal						
Evaluate centralized locations for affordable senior housing on municipal/other land	Planning, Human Services & Council on Aging	High	Medium	EEA Planning Assistance Grants	Inland Flooding, Average and Extreme Temperatures, Severe Winter Storms/ Nor'easters, Other Severe Weather	FY23-FY29
Improve town's ability to accommodate and transport individuals with special service needs during hazard occurrence	Human Services & Council on Aging	High	High	Staff/Operations	Inland Flooding, Average and Extreme Temperatures, Severe Winter Storms/ Nor'easters, Other Severe Weather	FY23-FY29
Acquire handicap-accessible vehicles to assist with transportation	Human Services & Council on Aging	High	Medium	Town Meeting Appropriation	Inland Flooding, Average and Extreme Temperatures, Severe Winter Storms/ Nor'easters, Other Severe Weather	FY25-FY29
Perform an ADA audit of public buildings	Human Services & Council on Aging, Town Administrator's Office	High	Low	MA Office on Disability Grant	All Hazards	FY21-FY22
Maintain or expand existing mutual aid agreements	Board of Selectmen	High	Low	Town Meeting Appropriation	All Hazards	FY23-FY29
Environmental						
Assess potential areas for retrofitting stormwater management systems to increase water quality treatment and improve infiltration	Department of Public Works	High	Medium	MVP Action Grant	Inland Flooding, Drought, Severe Winter Storms/ Nor'easters, Other Severe Weather	FY24-FY29, currently underway
Develop and maintain stormwater regulations	Planning Board, Board of Health, Conservation Commission, Planning	High	Medium	ARPA	Inland Flooding, Drought, Severe Winter Storms/ Nor'easters, Other Severe Weather	Current update FY22, underway
Improve monitoring of existing stormwater management systems	Department of Public Works	High	Medium	Staff/Operations	Inland Flooding, Drought, Severe Winter Storms/ Nor'easters, Other Severe Weather	FY24-FY29, currently underway
Continue to work with state and federal partners for remediation/redevelopment of Attleboro Dye Works site	Conservation Commission, Planning Board,	High	High	Brownfields Site-Specific Assessment Grant (EPA & MassDevelopment)	Inland Flooding, Other Severe Weather	FY24-FY25 remediation FY 25-29 redevelopment
Inventory possible sources of contamination with community-wide assessment, especially vulnerable populations	Planning, Conservation Commission, SRPEDD	High	Medium	EPA Clean Water Act Grant via SRPEDD	Inland Flooding, Landslides, Other Severe Weather	FY23
Work with MDAR to improve quality of runoff with pesticides and implement through the MS4 program	Department of Public Works	High	Medium	Massachusetts Department of Agricultural Resources (MDAR) Agricultural Climate Resiliency and Efficiencies (ACRE) Grant	Inland Flooding, Other Severe Weather	FY23-FY25
Prioritize completion of OSRP and evaluate related projects for funding opportunities	Open Space & Recreation Plan Working Group	High	Low	Staff/Operations	Inland Flooding, Average and Extreme Temperatures,	OSRP Completion FY 24

Action Description	Lead Department	Priority Level	Cost	Possible Funding Sources	Hazards Being Addressed	Implementation Schedule
					Drought, Wildfire, Invasive Species, Other Severe Weather	FY24-FY29 for funding opportunities
Identify and acquire open parcels connecting Town Owned open space	Conservation Commission, Planning	High	High	Community Preservation Act Funds, MVP Action Grant	All Hazards	FY23-FY29
Prepare site-specific resource management plans with public access components	Conservation Commission	High	Low	Community Preservation Act funds, Capital	Inland Flooding, Average and Extreme Temperatures, Drought, Wildfire, Other Severe Weather	FY24-FY29
Incorporate potential for hazard occurrence into design of trail facilities and other passive recreation opportunities	Conservation Commission	High	Medium	Massachusetts Land and Water Conservation Fund Grant Program	Inland Flooding, Average and Extreme Temperatures, Drought, Wildfire, Invasive Species, Other Severe Weather	FY23-FY29
Upgrade septic system requirements to treat higher levels of pollution	Board of Health	High	Medium	MVP Action Grant	Inland Flooding, Severe Winter Storms/ Nor'easters, Other Severe Weather	FY25-FY29
Continue to monitor water quality for private water supplies in critical areas	Board of Health	High	Medium	MassDEP Water Utility Resilience Program	Inland Flooding, Severe Winter Storms/ Nor'easters, Other Severe Weather	FY23-FY29
Incorporate radio cabinet maintenance into town-wide invasive species/pest management plan	Board of Health, Public Safety Communications	High	Low	Staff/Operations	Invasive Species	FY23-FY29
Educate public on prevention of invasive species spread	Conservation Commission	High	Low	Staff/Operations	Invasive Species	FY23-FY29
Evaluate nature-based solutions for pest management (e.g. bat houses)	Conservation Commission	High	Low	MVP Action Grant	Invasive Species	FY23-FY29
Provide education to the public regarding the risk of standing water	Board of Health	High	Low	Staff/Operations	Inland Flooding, Severe Winter Storms/ Nor'easters, Other Severe Weather	FY23-FY29
Perform analysis (or hire consultant to do so) to perform a groundwater elevation analysis and plan for future impacts (and effects on development)	Planning Board	High	Medium	MassDEP Statewide Water Management Act (WMA) Grant Program	Inland Flooding, Average and Extreme Temperatures, Drought, Severe Winter Storms/ Nor'easters, Other Severe Weather	FY23-FY25

6.3 Medium Priority Actions

Action Description	Lead Department	Priority Level	Cost	Possible Funding Sources	Hazards Being Addressed	Implementation Schedule
Infrastructural						
Investigate severe weather planning and preparation. Look for advanced methods of snow storage and removal	Department of Public Works	Medium	Low	Staff/Operations	Hurricanes/Tropical Storms, Severe Winter Storms/ Nor'easters, Other Severe Weather	FY23-FY29
Continue to coordinate with National Grid and Eversource regarding locating and protecting existing overhead wires and underground electric utilities	Department of Public Works, in coordination with utility companies	Medium	Very High	Staff/Operations	Inland Flooding, Severe Winter Storms/ Nor'easters, Tornadoes, Other Severe Weather	FY24-FY29
Include low-lying, flood-prone roadways in bridge/dam/culvert evaluation	Department of Public Works, Conservation Commission	Medium	Medium	MVP Action Grant	Inland Flooding, Severe Winter Storms/Nor'easters, Other Severe Weather	FY24-FY29
Work with Seekonk Water District on partnerships to promote use of municipal water supply for new development	Seekonk Water District	Medium	Low	MassDEP Water Utility Resilience Program	Average and Extreme Temperatures, Drought	FY23-FY29
Work with Seekonk Water District to investigate additional potable water sources	Seekonk Water District	Medium	Medium	Drinking Water Supply Protection Grant Program	Inland Flooding, Average and Extreme Temperatures, Drought	FY23-FY29
Maintain program for assessment, maintenance, and prioritization for replacement and upgrades to stormwater management system	Department of Public Works	Medium	Medium	Culvert Replacement Municipal Assistance Grant Program	Inland Flooding, Other Severe Weather	FY23-FY29
Perform water quality assessment of pre- and post- storm events and assist in daylighting streams	Department of Public Works	Medium	Medium	Stormwater Utility	Inland Flooding, Other Severe Weather	FY23-FY29
Assess existing septic systems in flood zones	Board of Health	Medium	Medium	Staff/Operations	Inland Flooding	FY25-FY29
Discuss expansion and evaluate the costs of existing sewer systems	Planning, Board of Selectmen	Medium	Very High	Housing Choice and MassWorks Grants	Inland Flooding	FY22
Continue to monitor and enforce Title V requirements	Board of Health	Medium	Medium	Staff/Operations	Inland Flooding	FY23-FY29
Investigate and/or revise emergency response plan (currently outdated) and make this plan available to other town departments and stakeholders.	Fire Department, Police Department, Public Safety Communications	Medium	Low	Staff/Operations	All Hazards	FY21-FY25/ FY23-FY29
Assess existing evacuation routes	Fire Department, Police Department	Medium	Low	Staff/Operations	Inland Flooding, Wildfire, Hurricanes/Tropical Storms, Severe Winter Storms/ Nor'easters, Other Severe Weather	FY21-FY25/ FY23-FY29
Formalize Emergency Notification System	Fire Department, Police Department	Medium	Medium	Emergency Management Performance Grant	All Hazards	FY22
Evaluate installation of solar on municipal buildings	Capital Improvement Committee	Medium/Lower	High	Department of Energy Resources (DOER) Green Communities Grants	Inland Flooding, Severe Winter Storms/ Nor'easters, Other Severe Weather	FY25-FY29
Improve stormwater management at sports fields to improve flood control	Department of Public Works, Parks and Recreation	Medium/Lower	Medium	Staff/Operations or Town Meeting Appropriation	Inland Flooding, Severe Winter Storms/ Nor'easters, Other Severe Weather	FY25-FY29
Develop pest and nuisance management plan for fields	Parks and Recreation	Medium/Lower	Low	Annual Budget	Invasive Species	FY23-FY29

Action Description	Lead Department	Priority Level	Cost	Possible Funding Sources	Hazards Being Addressed	Implementation Schedule
Develop plan for severe storm damage to fields outside of DPW general maintenance scope	Parks and Recreation	Medium/Lower	Low	Annual Budget	Inland Flooding, Hurricanes/Tropical Storms. Severe Winter Storms/ Nor'easters, Other Severe Weather	FY25-FY29
Societal						
Update/finish cooling stations for public use during drought or extreme heat.	Capital Improvement Committee	Medium/High	High	Emergency Management Performance Grant	Average and Extreme Temperatures, Drought	FY23-FY29
Increase emergency resources for elderly population.	Human Services & Council on Aging	Medium	High	Community Compact Best Practices Program	Inland Flooding, Average and Extreme Temperatures, Drought, Severe Winter Storms/ Nor'easters, Other Severe Weather	FY25-FY29
Determine population size, general locations, and potential needs of vulnerable populations to better inform emergency response programs	Human Services & Council on Aging	Medium	Medium	Staff/Operations	All Hazards	FY22-FY25
Develop public outreach resources for community during emergencies	Fire Department, Police Department	Medium	Low	Staff/Operations	All Hazards	FY22-FY25
Host forum to discuss community and municipal interests and involvement of children/youth	School Council	Medium	Low	Staff/Operations	All Hazards	FY21-FY25
Develop an education program to distribute to schools and camps regarding natural hazards	School Council, Fire Department	Medium	Low	Staff/Operations	All Hazards	FY22-FY25
Take advantage of existing outreach opportunities (e.g. Census) to improve dissemination of information to vulnerable populations	Human Services & Council on Aging	Medium	Low	Staff/Operations	All Hazards	FY21-FY25
Improve communication during emergencies by providing in multiple languages	Public Safety Communications	Medium	Medium	Staff/Operations	All Hazards	FY22-FY25
Incentivize employment of multi-lingual emergency responders	Fire Department, Police Department	Medium	Medium	Staff/Operations	All Hazards	FY22-FY25
Evaluate/develop plan for pet/domestic animal care during evacuation/shelter	Animal Control, Board of Health	Medium	Low	Staff/Operations	All Hazards	FY25-FY29
Provide additional means of transportation for residents (including busing and other public transit).	Capital Improvement Committee in association with GATRA	Medium	High	Community Transit Grant Program	Inland Flooding, Wildfire, Hurricanes/Tropical Storms, Severe Winter Storms/ Nor'easters, Other Severe Weather	FY25-FY29
Expand public transportation opportunities into vulnerable population areas (e.g. central Seekonk) to improve emergency evacuation and travel during hazard occurrences	Planning	Medium	High	MassDOT Community Transit Grant Program	Inland Flooding, Wildfire, Hurricanes/Tropical Storms, Severe Winter Storms/ Nor'easters, Other Severe Weather	FY25-FY29
Environmental						
Encourage rainwater collection/reuse for residential and commercial irrigation	Board of Health	Medium	Low	Staff/Operations	Inland Flooding, Average and Extreme Temperatures, Drought, Wildfire, Hurricanes/ Tropical	FY25-FY29

Action Description	Lead Department	Priority Level	Cost	Possible Funding Sources	Hazards Being Addressed	Implementation Schedule
					Storms, Severe Winter Storms/ Nor'easters	
Evaluate additional land acquisition in vicinity of public water supply	Conservation Commission, Seekonk Water District	Medium	Medium	Drinking Water Supply Protection Grant Program	All Hazards	FY23-FY26
Implement tree planting program	Planning Board, Conservation Commission, Department of Public Works	Medium	Low	Urban and Community Forestry Challenge Grants	Inland Flooding, Average and Extreme Temperatures, Drought, Landslides, Invasive Species, Other Severe Weather	FY23-FY29for subdivisions, FY25-FY29
Assess yield of water supply wells relative to projected development trends	Board of Health, Seekonk Water District	Medium	Medium	MassDEP Statewide Water Management Act (WMA) Grant Program	All Hazards	FY25-FY29

6.4 Lower Priority Actions

Action Description	Lead Department	Priority Level	Cost	Possible Funding Sources	Hazards Being Addressed	Implementation Schedule
Infrastructural						
Work with Seekonk Water District to perform a feasibility study to improve flood resilience of well fields.	Board of Health, Seekonk Water District	Lower	Low	MassDEP Water Utility Resilience Program	Inland Flooding	FY25-FY29
Work with Seekonk Water District to determine if new generators in the well fields would mitigate power loss during storm events and continue to provide access to water.	Board of Health, Seekonk Water District	Lower	Low	MassDEP Water Utility Resilience Program	Severe Winter Storms/ Nor'easters, Other Severe Weather	FY25-FY29
Work with Seekonk Water District to assess the age of the water distribution system to identify improvement/replacement	Board of Health, Seekonk Water District	Lower	Medium	MassDEP Water Utility Resilience Program	Inland Flooding, Severe Winter Storms/ Nor'easters, Other Severe Weather	FY25-FY29
Work with Seekonk Water District to explore deeper well siting	Board of Health, Seekonk Water District	Lower	Medium	Drinking Water Supply Protection Grant Program	Average and Extreme Temperatures, Drought	FY25-FY29
Access and implement additional wildlife crossings/corridors	Conservation Commission	Lower	Medium	Culvert Replacement Municipal Assistance Grant Program	Inland Flooding, Severe Winter Storms/ Nor'easters, Other Severe Weather, Heat/Drought	FY25-FY29
Societal						
Evaluate capacity of existing shelters to accommodate excess population working in and traveling through town in association with ERP update	Fire Department, Police Department	Lower	Medium	Staff/Operations	All Hazards	FY23-FY29
Develop plan for road closures to respond to hazards	Department of Public Works	Lower	Low	Staff/Operations	Inland Flooding, Wildfire, Hurricanes/Tropical Storms, Severe Winter Storms/ Nor'easters, Other Severe Weather	FY23-FY29
Establish outreach commissions to improve communication with vulnerable populations	Human Services & Council on Aging	Lower	Low	Staff/Operations	All Hazards	FY25-FY29
Develop public outreach materials regarding distribution/retail sales of non-native/invasive species	Conservation Commission	Lower	Low	Staff/Operations	Invasive Species	FY25-FY29
Explore alternative forms of government that improve representation	Town Administrator	Lower		Staff/Operations	All Hazards	FY23-FY29
Work with private property owners and HOAs to increase storage capacity of stormwater structures where possible.	Department of Public Works	Lower	Medium	Stormwater Utility	Inland Flooding, Average and Extreme Temperatures, Drought, Wildfire, Hurricanes/ Tropical Storms, Severe Winter Storms/ Nor'easters	FY23-FY29
Examine existing subdivision regulations and construction details to assist public safety and DPW ease of access and maintenance.	Planning Board, Department of Public Works, Public Safety	Lower	Low	Staff/Operations	Inland Flooding, Wildfire, Hurricanes/Tropical Storms, Severe Winter Storms/ Nor'easters, Other Severe Weather	FY23-FY29
Environmental						

Action Description	Lead Department	Priority Level	Cost	Possible Funding Sources	Hazards Being Addressed	Implementation Schedule
Work with Seekonk Water District to perform feasibility study to raise public well grades (thus placing them out of the floodplain)	Seekonk Water District	Lower	Medium	Drinking Water Supply Protection Grant Program	Inland Flooding	FY25-FY29
Explore alternate power sources such as solar development with local generator supplying.	Board of Selectmen, in coordination with surrounding towns	Lower	High	Department of Energy Resources (DOER) Green Communities Grants	Inland Flooding, Average and Extreme Temperatures, Hurricanes/ Tropical Storms, Severe Winter Storms/ Nor'easters Other Severe Weather	FY25-FY2
Work with Seekonk Water District to examine effectiveness of water use restrictions and enforce these rules where necessary.	Seekonk Water District	Lower	Low	Staff/Operations	Average and Extreme Temperatures, Drought	FY25-FY29
Investigate opportunities to preserve additional areas of flood zone (beyond those which are already designated for open space).	Community Preservation Committee, Planning, Conservation Commission	Lower	Medium	MVP Action Grant	Inland Flooding	FY23-FY29
Continue to administer wetlands protection regulations through permitting	Conservation Commission	Lower	Medium	Staff/Operations	Inland Flooding, Average and Extreme Temperatures, Drought, Wildfire, Invasive Species, Hurricanes/ Tropical Storms, Severe Winter Storms/ Nor'easters	FY23-FY29
Prepare invasive and pest-management plans for Town conservation properties	Board of Health, Conservation Commission	Lower	Low	Community Preservation Act funds, Capital	Invasive Species	FY27-FY29
Coordinate with surrounding towns and state to develop a regional deer management program	Conservation Commission	High	Medium	Staff/Operations	Landslides, Invasive Species	FY27-FY29

7.0 PLAN ADOPTION AND MAINTENANCE

Local HMPs are reviewed by MEMA and FEMA for compliance with applicable state and local hazard mitigation plans and regulations. Upon receipt of an Approval Pending Adoption designation from FEMA, the plan must be adopted by local officials. A draft resolution of the Board of Selectmen to vote to adopt the final plan is included in Appendix G.

Updates to local HMPs are required every 5 years. The Town of Seekonk, led by its Conservation Agent, will monitor and update this plan in coordination with the annual updates required by Seekonk's designation as an MVP Certified Community.

The Core Team will reconvene at least annually to review and update the following information, as required by the MVP Yearly Progress Report Template:

- List of MVP Core Team members, noting any new members.
- List of top priority actions, in order of priority, identified through the MVP planning process.
- Description of the process and any revisions or updates made to the original MVP Report
- Discussion of other work related to the MVP process or climate change resiliency in the municipality, and documentation of how the outcomes of the workshop were incorporated into other planning efforts
- Any grants applied for, or received, to implement actions from the MVP report.
- Other steps that taken towards implementing priority actions.
- Potential next steps to advance priority actions
- Difficulties or challenges identified through the MVP planning process or while seeking to implement priority actions and any steps identified to address these challenges.
- Data needs or information gaps

The MVP Yearly Progress Report, as well as agendas and minutes from meetings of the Core Team, will be made available to the public on the Town's website. The results of the MVP Yearly Progress Report will also be reported on at a meeting of the Board of Selectmen to keep the public informed of the plan progress.

The Town anticipates that additional public engagement will be undertaken on a project-specific basis during the five-year term of this HMP. Such engagement will be tailored to the scope and location of the project, and may include outreach methods such as posting project flyers in central locations, coordination through communications from the local schools, newsletters, or postings on the Town's website and various community social media groups.

Existing planning initiatives are addressed more fully in Section 3.5. The Core Team will disseminate copies of the approved HMP to relevant officials listed therein, including the Conservation Commission, Capital Improvement Committee, Community Preservation Committee, and Planning Board for review and incorporation into these initiatives as applicable.

The Core Team will commence a comprehensive update of this plan approximately twelve months prior to its anticipated expiration. This update is anticipated to include reevaluation of the extent and risk posed by hazards, documentation of completed mitigation actions, and re-prioritization and addition of new mitigation priorities. The final list of priority mitigation actions will be subject to a similar public input process as that outlined herein.

8.0 ACKNOWLEDGEMENTS

Completion of the CRB process and HMP update was made possible by an MVP Planning Grant from EEA. The Core Team would like to thank the Board of Selectmen, all of the stakeholders and participants of the CRB workshop, and those members of the public who offered comment for their support of the MVP Planning Grant application.

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Figures

Appendices

ATTLEBORO

CENTRAL FALLS

PAWTUCKET

PROVIDENCE

EAST PROVIDENCE

CRANSTON

REHOBOTH

WARREN

PINE STREET

WOODLAND AVENUE

ARCADE AVENUE

15

152

44

114A

6

195

Legend

State Boundary

Town of Seekonk

Surrounding Towns

Open Water

Major Routes, by Administrative Type

Interstate

U.S. Highway

State Route

Other Roads

USGS 1:25,000 Linear Features

Perennial Stream

Intermittent Stream

Census 2010 Population Density (people per square mile)

0 - 500

501 - 1,000

1,001 - 1,500

1,501 - 2,000

2,001 - 2,500

2,501 - 3,000

Population Density

0 1,375 2,750 5,500

FEET

ASSORTED SURFACE FEATURES AND REGULATORY LIMIT LINES PROVIDED BY THE BUREAU OF GEOGRAPHIC INFORMATION (MASSGIS), COMMONWEALTH OF MASSACHUSETTS, EXECUTIVE OFFICE OF TECHNOLOGY AND SECURITY SERVICES, AND THE RHODE ISLAND GEOGRAPHIC INFORMATION SYSTEM (RIGIS), STATE OF RHODE ISLAND.

ATTLEBORO

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ARCADE AVENUE

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44

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195

Legend

- State Boundary
- Town of Seekonk
- Surrounding Towns
- Open Water

Major Routes, by Administrative Type

- Interstate
- U.S. Highway
- State Route
- Other Roads

USGS 1:25,000 Linear Features

- Perennial Stream
- Intermittent Stream
- Present Day 100-Year Flood Zone
- Building Structures
- Seekonk Assessors Parcels

Structures in Flood Zone

0 1,375 2,750 5,500
FEET

ASSORTED SURFACE FEATURES AND REGULATORY LIMIT LINES PROVIDED BY THE BUREAU OF GEOGRAPHIC INFORMATION (MASSGIS), COMMONWEALTH OF MASSACHUSETTS, EXECUTIVE OFFICE OF TECHNOLOGY AND SECURITY SERVICES, AND THE RHODE ISLAND GEOGRAPHIC INFORMATION SYSTEM (RIGIS), STATE OF RHODE ISLAND.

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Legend

- State Boundary
- Town of Seekonk
- Surrounding Towns
- Open Water

Major Routes, by Administrative Type

- Interstate
- U.S. Highway
- State Route
- Other Roads

USGS 1:25,000 Linear Features

- Perennial Stream
- Intermittent Stream
- Present Day 100-Year Flood Zone

Landslide Classified Stability Index

- Unstable
- Moderately Unstable
- Low Stability
- Critical Facilities

Critical Facilities in Hazard Areas

0 1,375 2,750 5,500
FEET

ASSORTED SURFACE FEATURES AND REGULATORY LIMIT LINES PROVIDED BY THE BUREAU OF GEOGRAPHIC INFORMATION (MASSGIS), COMMONWEALTH OF MASSACHUSETTS, EXECUTIVE OFFICE OF TECHNOLOGY AND SECURITY SERVICES, AND THE RHODE ISLAND GEOGRAPHIC INFORMATION SYSTEM (RIGIS), STATE OF RHODE ISLAND.

Appendix A
Local Mitigation Plan Review Tool

Local Mitigation Plan Review Tool

Cover Page

The Local Mitigation Plan Review Tool (PRT) demonstrates how the local mitigation plan meets the regulation in 44 CFR § 201.6 and offers states and FEMA Mitigation Planners an opportunity to provide feedback to the local governments, including special districts.

1. The Multi-Jurisdictional Summary Sheet is a worksheet that is used to document how each jurisdiction met the requirements of the plan elements (Planning Process; Risk Assessment; Mitigation Strategy; Plan Maintenance; Plan Update; and Plan Adoption).
2. The Plan Review Checklist summarizes FEMA's evaluation of whether the plan has addressed all requirements.

For greater clarification of the elements in the Plan Review Checklist, please see Section 4 of this guide. Definitions of the terms and phrases used in the PRT can be found in Appendix E of this guide.

Plan Information	
Jurisdiction(s)	Town of Seekonk, MA
Title of Plan	2023 Seekonk, MA Hazard Mitigation Plan and Municipal Vulnerability Preparedness Summary of Finding
New Plan or Update	New Plan
Single- or Multi-Jurisdiction	Single-jurisdiction
Date of Plan	12/11/2023
Local Point of Contact	
Title	Adeline Bellesheim, Conservation Agent
Agency	Town of Seekonk
Address	100 Peck St. Seekonk, MA 02771
Phone Number	(508) 336-2944
Email	abellesheim@seekonk-ma.gov

Additional Point of Contact	
Title	Mary Kate Schneeweis, Senior Environmental Planning Specialist
Agency	Beals and Thomas, Inc.
Address	144 Turnpike Road, Southborough, MA 01772
Phone Number	(508) 366-0560 x4827
Email	mschneeweis@bealsandthomas.com

1st Review Information	
State Review	
State Reviewer(s) and Title	Jeffrey Zukowski, Hazard Mitigation Planner
State Review Date	12/8/2022
1st FEMA Review	
FEMA Reviewer(s) and Title	Claire Fetters, CERC Planner – 12/16/2022. Brigitte Ndikum-Nyada, Community Planner - 1/17 -1/18/23
Date Received in FEMA Region	12/8/2022
Plan Not Approved	1/18/2023
Plan Approvable Pending Adoption	Click or tap to enter a date.
Plan Approved	Click or tap to enter a date.

2nd Review Information	
State Review	
State Reviewer(s) and Title	Jeffrey Zukowski, Hazard Mitigation Planner
State Review Date	9/8/2023
2nd FEMA Review	
FEMA Reviewer(s) and Title	Brigitte Ndikum-Nyada, Community Planner; 9/26/23 – 10/13/23
Date Received in FEMA Region	9/8/2023
Plan Not Approved	10/13/2023
Plan Approvable Pending Adoption	Click or tap to enter a date.
Plan Approved	Click or tap to enter a date.

Jurisdictional Summary Sheet

In the boxes for each element, mark if the element is met (Y) or not met (N).

#	Jurisdiction Name	A. Planning Process	B. Risk Assessment	C. Mitigation Strategy	D. Plan Maintenance	E. Plan Update	F. Plan Adoption	G. State Requirements
1								
2								
3								
4								

Plan Review Checklist

The Plan Review Checklist is completed by FEMA. States and local governments are encouraged, but not required, to use the PRT as a checklist to ensure all requirements have been met prior to submitting the plan for review and approval. The purpose of the checklist is to identify the location of relevant or applicable content in the plan by element/sub-element and to determine if each requirement has been "met" or "not met." FEMA completes the "required revisions" summary at the bottom of each element to clearly explain the revisions that are required for plan approval. Required revisions must be explained for each plan sub-element that is "not met." Sub-elements in each summary should be referenced using the appropriate numbers (A1, B3, etc.), where applicable. Requirements for each element and sub-element are described in detail in Section 4: Local Plan Requirements of this guide.

Plan updates must include information from the current planning process.

If some elements of the plan do not require an update, due to minimal or no changes between updates, the plan must document the reasons for that.

Multi-jurisdictional elements must cover information unique to all participating jurisdictions.

Element A: Planning Process

Element A Requirements	Location in Plan (section and/or page number)	Met / Not Met
A1. Does the plan document the planning process, including how it was prepared and who was involved in the process for each jurisdiction? (Requirement 44 CFR § 201.6(c)(1))		
A1-a. Does the plan document how the plan was prepared, including the schedule or time frame and activities that made up the plan's development, as well as who was involved?	Section 3.0, Appendix B, Appendix E	Met
A1-b. Does the plan list the jurisdiction(s) participating in the plan that seek approval, and describe how they participated in the planning process?	Section 3.3 and 3.4	Met
A2. Does the plan document an opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, and agencies that have the authority to regulate development as well as businesses, academia, and other private and non-profit interests to be involved in the planning process? (Requirement 44 CFR § 201.6(b)(2))		
A2-a. Does the plan identify all stakeholders involved or given an opportunity to be involved in the planning process, and how each stakeholder was presented with this opportunity?	Section 3.3.1	Met

Element A Requirements	Location in Plan (section and/or page number)	Met / Not Met
A3. Does the plan document how the public was involved in the planning process during the drafting stage and prior to plan approval? (Requirement 44 CFR § 201.6(b)(1))		
A3-a. Does the plan document how the public was given the opportunity to be involved in the planning process and how their feedback was included in the plan?	Section 3.4	Not Met
A4. Does the plan describe the review and incorporation of existing plans, studies, reports, and technical information? (Requirement 44 CFR § 201.6(b)(3))		
A4-a. Does the plan document what existing plans, studies, reports and technical information were reviewed for the development of the plan, as well as how they were incorporated into the document?	Section 3.4, Section 9.0	Not Met

ELEMENT A REQUIRED REVISIONS

Required Revision:

- A3-a. (Requirement 44 CFR § 201.6(b)(1)). *The plan must document how the public had an opportunity to be involved in the current planning process, and what that participation entailed, including how underserved communities and vulnerable populations within the planning area were provided an opportunity to be involved.*

  It is not clear how Seekonk directly engaged with **underserved communities** and **socially vulnerable populations** during the planning process. Include a discussion of the town's efforts to include these groups within the planning area. For example, if the non-profit organizations and other interest groups mentioned on 9, acted as a liaison between the planning committee and the vulnerable populations, please state this in the plan.

  The plan does not identify the comments submitted by the public during the draft plan's comment period. It also does not say how they were incorporated into the plan. This can be included in short narratives. Then, discuss how the comments were incorporated into the plan prior to its completion, not just state that, "written comments were received and incorporated into the final MVP-HMP Hybrid Report."

- A4-a. (Requirement 44 CFR § 201.6(b)(3)) The plan must document what existing plans, studies, reports and technical information were reviewed and how they were incorporated, if appropriate, into the development/update of the plan. For jurisdictions with structures for which National Flood Insurance Program (NFIP) coverage is available, regulatory flood mapping products are required to be incorporated, if appropriate

  The plan does not incorporate the effective Flood Insurance Study (FIS) for Seekonk. Using the effective FEMA Flood Map Service Center | Welcome!, include applicable data and information in the plan. The effective FIS can also be found at FEMA Flood Map Service Center | Search All Products. Applicable data and information could include flooding sources, FEMA flood zone designations in the town, and discharge rates of flooding sources.

Element B: Risk Assessment

Element B Requirements	Location in Plan (section and/or page number)	Met / Not Met
B1. Does the plan include a description of the type, location, and extent of all natural hazards that can affect the jurisdiction? Does the plan also include information on previous occurrences of hazard events and on the probability of future hazard events? (Requirement 44 CFR § 201.6(c)(2)(i))		
B1-a. Does the plan describe all natural hazards that can affect the jurisdiction(s) in the planning area, and does it provide the rationale if omitting any natural hazards that are commonly recognized to affect the jurisdiction(s) in the planning area?	Section 4.0	Met
B1-b. Does the plan include information on the location of each identified hazard?	Section 4.0, Figure 2-3	Met
B1-c. Does the plan describe the extent for each identified hazard?	Section 4.0, Figure 2-3	Met
B1-d. Does the plan include the history of previous hazard events for each identified hazard?	Section 4.0	Met
B1-e. Does the plan include the probability of future events for each identified hazard? Does the plan describe the effects of future conditions, including climate change (e.g., long-term weather patterns, average temperature and sea levels), on the type, location and range of anticipated intensities of identified hazards?	Section 4.0	Met
B1-f. For participating jurisdictions in a multi-jurisdictional plan, does the plan describe any hazards that are unique to and/or vary from those affecting the overall planning area?	N/A – Single-jurisdiction Plan	Choose an item.
B2. Does the plan include a summary of the jurisdiction's vulnerability and the impacts on the community from the identified hazards? Does this summary also address NFIP-insured structures that have been repetitively damaged by floods? (Requirement 44 CFR § 201.6(c)(2)(ii))		
B2-a. Does the plan provide an overall summary of each jurisdiction's vulnerability to the identified hazards?	Section 4.0	Met
B2-b. For each participating jurisdiction, does the plan describe the potential impacts of each of the identified hazards on each participating jurisdiction?	Section 4.0	Met

Element B Requirements	Location in Plan (section and/or page number)	Met / Not Met
B2-c. Does the plan address NFIP-insured structures within each jurisdiction that have been repetitively damaged by floods?	Section 4.1.1	Met
ELEMENT B REQUIRED REVISIONS		
Required Revision: Click or tap here to enter text.		

Element C: Mitigation Strategy

Element C Requirements	Location in Plan (section and/or page number)	Met / Not Met
C1. Does the plan document each participant's existing authorities, policies, programs and resources and its ability to expand on and improve these existing policies and programs? (Requirement 44 CFR § 201.6(c)(3))		
C1-a. Does the plan describe how the existing capabilities of each participant are available to support the mitigation strategy? Does this include a discussion of the existing building codes and land use and development ordinances or regulations?	Section 5.0	Met
C1-b. Does the plan describe each participant's ability to expand and improve the identified capabilities to achieve mitigation?	Click or tap here to enter text.	Met
C2. Does the plan address each jurisdiction's participation in the NFIP and continued compliance with NFIP requirements, as appropriate? (Requirement 44 CFR § 201.6(c)(3)(ii))		
C2-a. Does the plan contain a narrative description or a table/list of their participation activities?	Section 4.1.1	**Not Met**
C3. Does the plan include goals to reduce/avoid long-term vulnerabilities to the identified hazards? (Requirement 44 CFR § 201.6(c)(3)(i))		
C3-a. Does the plan include goals to reduce the risk from the hazards identified in the plan?	Section 3.2	Met

Element C Requirements	Location in Plan (section and/or page number)	Met / Not Met
C4. Does the plan identify and analyze a comprehensive range of specific mitigation actions and projects for each jurisdiction being considered to reduce the effects of hazards, with emphasis on new and existing buildings and infrastructure? (Requirement 44 CFR § 201.6(c)(3)(ii))		
C4-a. Does the plan include an analysis of a comprehensive range of actions/projects that each jurisdiction considered to reduce the impacts of hazards identified in the risk assessment?	Section 6.2 - 6.4	Met
C4-b. Does the plan include one or more action(s) per jurisdiction for each of the hazards as identified within the plan's risk assessment?	Section 6.2 - 6.4	Met
C5. Does the plan contain an action plan that describes how the actions identified will be prioritized (including a cost-benefit review), implemented, and administered by each jurisdiction? (Requirement 44 CFR § 201.6(c)(3)(iv)); (Requirement §201.6(c)(3)(iii))		
C5-a. Does the plan describe the criteria used for prioritizing actions?	Section 6.0	Met
C5-b. Does the plan provide the position, office, department or agency responsible for implementing/administrating the identified mitigation actions, as well as potential funding sources and expected time frame?	Section 6.2 - 6.4	Met

ELEMENT C REQUIRED REVISIONS
Required Revision: C2-a. The plan does include the discussing that the Town of Seekonk adopted a floodplain management ordinance that meets the NFIP criteria. Per the new Local Mitigation Planning Policy Guide, effective April 19, 2023, the plan must contain a narrative description or a table/list of their participation activities. Here is the list: (1). Adoption of NFIP minimum floodplain management criteria via local regulation. (2). Adoption of the latest effective Flood Insurance Rate Map (FIRM), if applicable. (3). Implementation and enforcement of local floodplain management regulations to regulate and permit development in SFHAs. **(4).** Appointment of a designee or agency to implement the addressed commitments and requirements of the NFIP. **(5).** Description of how participants implement the substantial improvement/substantial damage provisions of their floodplain management regulations after an event**.** The Town must address **#4** and **#5** in above in **bold** to meet these requirements. Who within the town is in charge of enforcing the floodplain regulations in Seekonk (identify the designee or agency that is in charge of enforcing the commitments and requirements of the National Flood Insurance Program). The plan must discuss the town's process for carrying out the substantial improvement/substantial damage provisions of the floodplain regulations. Please update the plan to **discuss how the town carries out the substantial improvement/substantial damage provisions, along with the substantial damage claims included in the plan**.

Element D: Plan Maintenance

Element D Requirements	Location in Plan (section and/or page number)	Met / Not Met
D1. Is there discussion of how each community will continue public participation in the plan maintenance process? (Requirement 44 CFR § 201.6(c)(4)(iii))		
D1-a. Does the plan describe how communities will continue to seek future public participation after the plan has been approved?	Section 7.0	**Not Met**
D2. Is there a description of the method and schedule for keeping the plan current (monitoring, evaluating and updating the mitigation plan within a five-year cycle)? (Requirement 44 CFR § 201.6(c)(4)(i))		
D2-a. Does the plan describe the process that will be followed to track the progress/status of the mitigation actions identified within the Mitigation Strategy, along with when this process will occur and who will be responsible for the process?	Section 7.0	Met

Element D Requirements	Location in Plan (section and/or page number)	Met / Not Met
D2-b. Does the plan describe the process that will be followed to evaluate the plan for effectiveness? This process must identify the criteria that will be used to evaluate the information in the plan, along with when this process will occur and who will be responsible.	Section 7.0	Met
D2-c. Does the plan describe the process that will be followed to update the plan, along with when this process will occur and who will be responsible for the process?	Section 7.0	Met
D3. Does the plan describe a process by which each community will integrate the requirements of the mitigation plan into other planning mechanisms, such as comprehensive or capital improvement plans, when appropriate? (Requirement 44 CFR § 201.6(c)(4)(ii))		
D3-a. Does the plan describe the process the community will follow to integrate the ideas, information and strategy of the mitigation plan into other planning mechanisms?	Section 7.0	Met
D3-b. Does the plan identify the planning mechanisms for each plan participant into which the ideas, information and strategy from the mitigation plan may be integrated?	Section 5.0 and 7.0	Met
D3-c. For multi-jurisdictional plans, does the plan describe each participant's individual process for integrating information from the mitigation strategy into their identified planning mechanisms?	N/A – Single-jurisdiction Plan	Met

ELEMENT D REQUIRED REVISIONS

Required Revision:

D1. ***(formerly A5).*** The plan must describe how the participant(s) will continue to seek public participation after the plan has been approved and during the plan's implementation, monitoring, and evaluation.

The plan may contain a narrative description or an itemized list of steps, demonstrating the prescribed method that will be followed to obtain future public participation.

Special consideration should be given to identifying and using unique and meaningful ways to keep the public engaged in the process.

Examples include, but are not limited to periodic presentations on the plan's progress to elected officials, schools or other community groups; annual questionnaires or surveys; public meetings; postings on social media; and interactive websites.

Element E: Plan Update

Element E Requirements	Location in Plan (section and/or page number)	Met / Not Met
E1. Was the plan revised to reflect changes in development? (Requirement 44 CFR § 201.6(d)(3))		
E1-a. Does the plan describe the changes in development that have occurred in hazard-prone areas that have increased or decreased each community's vulnerability since the previous plan was approved?	N/A – New Plan	Choose an item.
E2. Was the plan revised to reflect changes in priorities and progress in local mitigation efforts? (Requirement 44 CFR § 201.6(d)(3))		
E2-a. Does the plan describe how it was revised due to changes in community priorities?	N/A – New Plan	Choose an item.
E2-b. Does the plan include a status update for all mitigation actions identified in the previous mitigation plan?	N/A – New Plan	Choose an item.
E2-c. Does the plan describe how jurisdictions integrated the mitigation plan, when appropriate, into other planning mechanisms?	N/A – New Plan	Choose an item.
ELEMENT E REQUIRED REVISIONS		
Required Revision: Click or tap here to enter text.		

Element F: Plan Adoption

Element F Requirements	Location in Plan (section and/or page number)	Met / Not Met
F1. For single-jurisdictional plans, has the governing body of the jurisdiction formally adopted the plan to be eligible for certain FEMA assistance? (Requirement 44 CFR § 201.6(c)(5))		
F1-a. Does the participant include documentation of adoption?	Appendix G, pg. 162	Choose an item.

Element F Requirements	Location in Plan (section and/or page number)	Met / Not Met
F2. For multi-jurisdictional plans, has the governing body of each jurisdiction officially adopted the plan to be eligible for certain FEMA assistance? (Requirement 44 CFR § 201.6(c)(5))		
F2-a. Did each participant adopt the plan and provide documentation of that adoption?	N/A – Single-jurisdiction Plan	Choose an item.
ELEMENT F REQUIRED REVISIONS		
Required Revision: Click or tap here to enter text.		

Element G: High Hazard Potential Dams (Optional)

HHPD Requirements	Location in Plan (section and/or page number)	Met / Not Met
HHPD1. Did the plan describe the incorporation of existing plans, studies, reports and technical information for HHPDs?		
HHPD1-a. Does the plan describe how the local government worked with local dam owners and/or the state dam safety agency?	Click or tap here to enter text.	Choose an item.
HHPD1-b. Does the plan incorporate information shared by the state and/or local dam owners?	Click or tap here to enter text.	Choose an item.
HHPD2. Did the plan address HHPDs in the risk assessment?		
HHPD2-a. Does the plan describe the risks and vulnerabilities to and from HHPDs?	Click or tap here to enter text.	Choose an item.
HHPD2-b. Does the plan document the limitations and describe how to address deficiencies?	Click or tap here to enter text.	Choose an item.
HHPD3. Did the plan include mitigation goals to reduce long-term vulnerabilities from HHPDs?		
HHPD3-a. Does the plan address how to reduce vulnerabilities to and from HHPDs as part of its own goals or with other long-term strategies?	Click or tap here to enter text.	Choose an item.

HHPD Requirements	Location in Plan (section and/or page number)	Met / Not Met
HHPD3-b. Does the plan link proposed actions to reducing long-term vulnerabilities that are consistent with its goals?	Click or tap here to enter text.	Choose an item.
HHPD4-a. Did the plan include actions that address HHPDs and prioritize mitigation actions to reduce vulnerabilities from HHPDs?		
HHPD4-a. Does the plan describe specific actions to address HHPDs?	Click or tap here to enter text.	Choose an item.
HHPD4-b. Does the plan describe the criteria used to prioritize actions related to HHPDs?	Click or tap here to enter text.	Choose an item.
HHPD4-c. Does the plan identify the position, office, department or agency responsible for implementing and administering the action to mitigate hazards to or from HHPDs?	Click or tap here to enter text.	Choose an item.
HHPD Required Revisions		
Required Revision**:** Click or tap here to enter text.		

Element H: Additional State Requirements (Optional)

Element H Requirements	Location in Plan (section and/or page number)	Met / Not Met
This space is for the State to include additional requirements.		
Click or tap here to enter text.	Click or tap here to enter text.	Choose an item.

Plan Assessment

These comments can be used to help guide your annual/regularly scheduled updates and the next plan update.

Element A. Planning Process

Strengths

- [insert comments]

Opportunities for Improvement

- [insert comments]

Element B. Risk Assessment

Strengths

- [insert comments]

Opportunities for Improvement

- [insert comments]

Element C. Mitigation Strategy

Strengths

- [insert comments]

Opportunities for Improvement

- [insert comments]

Element D. Plan Maintenance

Strengths

- [insert comments]

Opportunities for Improvement

- [insert comments]

Element E. Plan Update

Strengths

- [insert comments]

Opportunities for Improvement

- [insert comments]

Element G. HHPD Requirements (Optional)

Strengths

- [insert comments]

Opportunities for Improvement

- [insert comments]

Element H. Additional State Requirements (Optional)

Strengths

- [insert comments]

Opportunities for Improvement

- [insert comments]

SECTION 2:

PLAN ASSESSMENT

A. Plan Strengths and Opportunities for Improvement

This section provides a discussion of the strengths of the plan document and identifies areas where these could be improved beyond minimum requirements.

Recommended Corrections:

- Revise/correct the plan's title date and from cover date too. "2022 Seekonk, MA Hazard Mitigation Plan and Municipal Vulnerability Preparedness Summary of Finding."

Element A: Planning Process

Strengths:

- The planning process is well detailed. The inclusion of meeting materials will help guide future updates.
- A range of existing studies, reports, and plans were reviewed and incorporated. The result is a plan that is comprehensive and current.
- A diverse group of stakeholders were invited to participate and were involved in the planning process. This ensured a range of perspectives and comprehensive analysis.

Opportunities for Improvement:

- While there are *some* representatives whose title or role is identified in the one sign-in sheet in Appendix B, Table 3 has far more participants marked as attended than the sign-in sheet indicates. Collaborate all information and documents provided.
- It is important not to use a blanket narrative that says all public comments were incorporated into the plan. Identify how each comment was addressed prior to the plan's finalization.

Element B: Risk Assessment

Strengths:

- The plan does an excellent job of showing how the probability or severity of future hazard events may change due to changes in climate.
- Maps clearly show the areas and facilities that are most at risk.

Opportunities for Improvement:

- Use the same method of measuring probability of future occurrence for each hazard profiled in the plan. This shows continuity and relative comparison of risk.
- List dams in upstream communities that may pose a risk to neighborhoods and assets.

Element C: Mitigation Strategy

Strengths:

- The plan directly links its capability assessment to the mitigation strategy. It does this by using the same capability elements to group the plan's actions. This is a unique method to show how Seekonk will improve and expand on its existing capabilities. This will further hazard mitigation and increase resiliency within the town.
- Each mitigation action has an estimated cost range. Since many grant programs require a local match, this is a good way for the town to see how much financial support it will need. This is important for budgeting.

Opportunities for Improvement:

- Expand on how Seekonk will continue to administer and enforce the requirements of the NFIP program. Consider improving the current flood mitigation capabilities of the town. This could include requesting map updates and providing community assistance and monitoring activities.
- Ensure that the focus of the mitigation strategy is on mitigation, rather than preparedness. Mitigation actions address long-term risk. They are different from actions taken to prepare for or respond to hazard events. They reduce or eliminate need for preparedness or response resources in the future. If there are preparedness actions, say how those address specific vulnerabilities as well.
- Greater attention needs to be paid to this element in the next update: "***C1-a.*** *The plan must describe the jurisdiction's ability to expand on and improve its existing policies and programs. (**See** FEMA Local Mitigation Planning Handbook page 4-1 for Capability Assessment and the **worksheet** on pages 4-16 to 4-28.* Local Mitigation Planning Handbook (fema.gov)."
- There are four identified types of mitigation actions according to FEMA: local planning and regulations; structure and infrastructure projects; natural systems protection; and education and awareness programs. For more information on each type of action, please review Task 6.3.1 of the Local Mitigation Planning Handbook.
- Helpful information to expand the NFIP discussion (substantial damage/substantial improvement): Resources to explain and provide guidance for this HMP revisions. FACT SHEET: "Substantial Damage" – What Does it Mean? | FEMA.gov UNIT 8: (fema.gov) Answers to Questions About Substantially Improved/Substantially Damaged Buildings FEMA 213
- On page 59 of the plan, in providing the response to element C5-a. the descriptors of high, medium, and lower this was stated "in accordance with the CRB process." The CRB process was not defined/provided.

Element D: Plan Maintenance (Formerly Plan Review, Evaluation, and Implementation)

Element D reflects plan review, evaluation, and implementation in the 2011 PRT but reflects plan maintenance in the 2022 PRT.

- D2 **(formerly A6 *A6-a and A6-b*).** Both required elements appeared weak in the plan. Section 7 does call out how the plan will be updated and does a good job with the details. However, the bulleted list is not totally geared towards monitoring or evaluating of a HMP. The MVP Yearly Progress Report Template, but discuss updating the plan with respect to HMP requirements. Ensure next plan update provided the required discussion on evaluating, monitoring and update.

Element E: Plan Update: (formerly D1). Was the plan revised to reflect changes in development? (Requirement 44 CFR § 201.6(d)(3)) formerly, D3-a, B2-a, and C6-d). Was the plan revised to reflect changes in priorities and progress in local mitigation efforts? (Requirement 44 CFR § 201.6(d)(3))

Strengths:

- None.

Opportunities for Improvement (Looking ahead):

- For historic significant and continuity, it is important to include a discussion that the Town of Seekonk did participate in its first Hazard Mitigation Plan development as one of the communities in the 2010 Southeastern Regional Planning and Economic Development District (SRPEDD) multi-jurisdictional HMP, however, the Town of Seekonk did not adopt that plan.
- Consider including a discussion on how mitigation activities have increased the community's resilience and support other long-term community planning goals.
- Consider adding a section on planned and/or potential future development, if applicable.
- Describe general land use changes in neighboring jurisdictions, if applicable, that may affect the community's risk.
- Including a discussion of lessons learned about implementing mitigation actions would strengthen the plan, as would a short narrative on some "success stories" about their implementation.
- An approach to evaluating future conditions (i.e., expanding mitigation and making connection to equity, socio-economic, environmental, demographic, change in built environment etc.).
- In documenting the annual reviews and committee involvement, identify a lead person to take ownership of, and champion the Hazard Mitigation Plan. A Mitigation Champion for the Town will ensure the HMP is updated prior to its expiration date.

Element G. HHPD Requirements (Optional)

Strengths

- [insert comments]

Opportunities for Improvement

- [insert comments]

Element H. Additional State Requirements (Optional)

Strengths

- [insert comments]

Opportunities for Improvement

- [insert comments]

Required revisions: The following requirements were flagged for revisions after the 1st FEMA's review using the 2011 Plan Review Tool: A1-c.; A2-b.; A5.a.; B1.b.; B2.a.; B2.b.; B3.a.; C4.a; C5.a; C5.c and sub-element C5.c. This information is provided to assist with the next required revisions and next plan update (2028).

Required Revision:

- **A1-b:** (**Formerly A1-c)** The plan must identify who participated, by agency and title. There are titles or roles missing for several of the town representatives who participated in the planning process. The plan must at least list the jurisdiction represented and the person's title or position.

- **A2-b.** The plan does not have titles or roles for the representatives of Ten Mile River Watershed/RI Rivers Council or Southeast Regional Planning and Economic Development District. The plan must list the agency or organization and the person's position. (met on page 10).

- **New unmet requirement using new PRT 2023 Policy: A4-a.** (Requirement 44 CFR § 201.6(b)(3)) The plan must document what existing plans, studies, reports and technical information were reviewed and how they were incorporated, if appropriate, into the development/update of the plan. For jurisdictions with structures for which National Flood Insurance Program (NFIP) coverage is available, regulatory flood mapping products are required to be incorporated, if appropriate

  The plan does not incorporate the effective Flood Insurance Study (FIS) for Seekonk. Using the effective FEMA Flood Map Service Center | Welcome!, include applicable data and information in the plan. The effective FIS can also be found at FEMA Flood Map Service Center | Search All Products. Applicable data and information could include flooding sources, FEMA flood zone designations in the town, and discharge rates of flooding sources.

Required Revision:

- **B1-b.** Section 4.1.13 says Seekonk is vulnerable to intense precipitation events, heavy winds, and thunderstorms. However, none of these are fully profiled within the plan. The plan must give the rationale for leaving out any natural hazards commonly known to affect the planning area.

- **B2-a.** The plan does not list **previous occurrence** events of flooding. The plan must include the history of previous hazard events for each identified hazard. If there have not been any flooding events within the town of Seekonk, the plan must state this.

- **B2-b.** The drought, wildfire, landslide, hurricane/tropical storms, and severe winter storms/nor'easters hazard profiles do not have the **probability of future occurrence**. The plan must list this for each identified hazard. Probability means the likelihood of the hazard occurring. It may be defined in terms of general descriptors, historical frequencies, statistical probabilities, and/or hazard probability maps.

- B3-a. The plan does not identify the impacts of average and extreme temperatures and landslides. For the town of Seekonk, the plan must describe the potential impacts of each of the identified hazards on the community.

Required Revision:

- C4-a. There are several actions in the plan that address Severe Storms. Severe Weather was not fully profiled in the risk assessment so remove the Severe Weather-related actions. The plan must include a mitigation strategy that analyzes actions and/or projects that the jurisdiction considered to reduce the impacts of hazards identified in the risk assessment.

- C5-a. It is not clear how the actions were prioritized. Section 6.0 states priorities were expressed through timeframe designations. The tables in the section have headers of "High Priority Actions," "Medium Priority Actions," and "Lower Priority Actions." However, the descriptors of high, medium, and lower are not defined in the plan. Additionally, within each table, there is a column of Priority Level, and each action has a priority of High, Medium, Low, or Lower. These are not defined in the plan. Clearly state how the actions were prioritized during the plan's development. Define all terms used for priority, and remove any contradictory prioritization methods. The plan must describe the criteria used for prioritizing the implementation of the actions.

- C5-c. There are actions in Section 6 that do not have a clear expected timeframe for completion. There are a couple actions that states it will be done in association with culvert upgrades and bridge crossings, and several listed with timeframe as "Annually." It does not say when that will be completed. Another action states its implementation schedule is complete. The plan must give the **expected timeframe** for completion for each action.

- C5-c. In the Lower Priority Actions table, there is an action that lists **"all"** as the lead department. The plan must list the position, office, department, or agency responsible for implementing and administering the action

Required Revision:

D1.: (formerly A5). Is) The plan must describe how the jurisdiction will continue to seek participation after the plan has been approved and during the plan's implementation, monitoring, and evaluation.

The plan may contain a narrative description or an itemized list of steps, demonstrating the prescribed method that will be followed to obtain future public participation. Special consideration should be given to identifying and using unique and meaningful ways to keep the public engaged in the process.

B. Resources for Implementing Your Approved Plan

Refer to the 2023 ResilientMass Plan | Mass.gov ResilientMass Action Tracker and State's Climate Action Page to learn about hazards relevant to Massachusetts and the State's efforts and action plan.

Technical Assistance:

FEMA

- Climate Resilience in Action | FEMA.gov: This page showcases efforts happening across the country, every day, to strengthen our communities. Together, we can build a climate resilient nation.
- FEMA Climate Change: Provides resources that address climate change.
- FEMA Hazard Mitigation Planning Online Webliography: This compilation of government and private online sites is a useful source of information for developing and implementing hazard mitigation programs and plans in New England.
- FEMA Library: FEMA publications can be downloaded from the library website. These resources may be especially useful in public information and outreach programs. Topics include building and construction techniques, NFIP policies, and integrating historic preservation and cultural resource protection with mitigation.
- FEMA RiskMAP: Technical assistance is available through RiskMAP to assist communities in identifying, selecting, and implementing activities to support mitigation planning and risk reduction. Attend RiskMAP discovery meetings that may be scheduled in the state, especially any in neighboring communities with shared watersheds boundaries.

Other Federal

- EPA Resilience and Adaptation in New England (RAINE): A collection of vulnerability, resilience and adaptation reports, plans, and webpages at the state, regional, and community levels. Communities can use the RAINE database to learn from nearby communities about building resiliency and adapting to climate change.
- EPA Soak Up the Rain: Soak Up the Rain is a public outreach campaign focused on stormwater quality and flooding. The website contains helpful resources for public outreach and easy implementation projects for individuals and communities.
- NOAA C-CAP Land Cover Atlas: This interactive mapping tool allows communities to see their land uses, how they have changed over time, and what impact those changes may be having on resilience.
- NOAA Sea Grant: Sea Grant's mission is to provide integrated research, communication, education, extension, and legal programs to coastal communities that lead to the responsible use of the nation's ocean, coastal and Great Lakes resources through informed personal, policy and management decisions. Examples of the resources available help communities plan, adapt, and recovery are the Community Resilience Map of Projects and the National Sea Grant Resilience Toolkit
- NOAA Sea Level Rise Viewer and Union for Concerned Scientists Inundation Mapper: These interactive mapping tools help coastal communities understand how their hazard risks may be changing. The "Preparing for Impacts" section of the inundation mapper addresses policy responses to protect communities.
- NOAA U.S. Climate Resilience Toolkit: This resource provides scientific tools, information, and expertise to help manage climate-related risks and improve resilience to extreme events. The "Steps to Resilience" tool may be especially helpful in mitigation planning and implementation.

State

- Massachusetts Emergency Management Agency: The Massachusetts State Hazard Mitigation Officer (SHMO) and State Mitigation Planner(s) can provide guidance regarding grants, technical assistance, available publications, and training opportunities.
- **Massachusetts Climate Change Assessment | Mass.gov** The MA Climate Change Assessment is a statewide analysis detailing how Massachusetts people, environments, and infrastructure may be affected by climate change and related hazards through the end of the century. This assessment will directly inform the first five-year update to the State Hazard Mitigation and Climate Adaptation Plan (SHMCAP) that will be released in Fall 2023.
- Massachusetts Departments of Conservation and Recreation and Environmental Protection can provide technical assistance and resources to communities seeking to implement their hazard mitigation plans.
- MA Mapping Portal: Interactive mapping tool with downloadable data

Not for Profit

- Kresge Foundation Online Library: Reports and documents on increasing urban resilience, among other topics.
- Naturally Resilient Communities: A collaboration of organizations put together this guide to nature-based solutions and case studies so that communities can learn which nature-based solutions can work for them.
- Rockefeller Foundation Resilient Cities: Helping cities, organizations, and communities better prepare for, respond to, and transform from disruption.

Funding Sources:

- Massachusetts Coastal Resilience Grant Program: Funding for coastal communities to address coastal flooding, erosion, and sea level rise.
- Massachusetts Municipal Vulnerability Preparedness program: Provides support for communities to plan for climate change and resilience and implement priority projects.
- Massachusetts Water Quality Grants: Clean water grants that can be used for river restoration or other kinds of hazard mitigation implementation projects.
- Federal Grants Resource Center and Grants.gov: Lists of grant opportunities from federal agencies (HUD, DOT/FHWA, EPA, etc.) to support rural development, sustainable communities and smart growth, climate change and adaptation, historic preservation, risk analyses, wildfire mitigation, conservation, Federal Highways pilot projects, etc.
- FEMA Hazard Mitigation Assistance (HMA): FEMA's Hazard Mitigation Assistance provides funding for projects under the Hazard Mitigation Grant Program (HMGP), Pre-Disaster Mitigation (PDM), and Flood Mitigation Assistance (FMA). States, federally recognized tribes, local governments, and some not-for-profit organizations are eligible applicants.
- GrantWatch: The website posts current foundation, local, state, and federal grants on one website, making it easy to consider a variety of sources for grants, guidance, and partnerships. Grants listed include The Partnership for Resilient Communities, the Institute for Sustainable Communities, the Rockefeller Foundation Resilience, The Nature Conservancy, The Kresge Climate-Resilient Initiative, the Threshold Foundation's Thriving Resilient Communities funding, the RAND Corporation, and ICLEI Local Governments for Sustainability.

USDA Natural Resource Conservation Service (NRCS) and Rural Development Grants: NRCS provides conservation technical assistance, financial assistance, and conservation innovation grants. USDA Rural

Appendix B
Workshop Materials

Sign-In Sheet from December 12, 2019 Kick-Off Meeting

Agenda for December 12, 2019 Kick-Off Meeting

Minutes from December 12, 2019 Kick-Off Meeting

Introductory Presentations for December 12, 2019 Kick-Off Meeting

Sign-In Sheet from January 29, 2020 CRB Workshop

Agenda for January 29, 2020 CRB Workshop

Introductory Presentation for January 29, 2020 Workshop

MVP PLANNING GRANT MEETING: ATTENDANCE SHEET

Meeting Date:	Thurs, 12/12/2019	**Meeting Time:**	1:00 pm
Facilitator:	Jennifer Miller, Conservation Agent	**Place/Room:**	BOS Room / Town Hall

Attendees	Title	Company
JMacomber	Health Agent	Town of Seekonk
Peter Fuller	Director	Seekonk Public Library
Bruce Alexander	Finance Director	Town of Seekonk
Scott Colosi	Ass. Supt. D.P.W.	Town of Seekonk
Brittney Faria	Human Services	Town of Seekonk
Gerard LaFleur	Police Dept Lt.	Town of Seekonk
Shawn Hall	Animal Control Officer	Town of Seekonk
John Ausin	Town Planner	Town of Seekonk
Neal H Abelson	Building Inspector	Town of Seekonk
Jennifer Miller	Conservation Agent	TOS
D. J. Gallo	DPW Superintendent	Town of Seekonk
Kate McPherson	Riverkeeper	Save the Bay
John Pozzi	Parks + Recreation	Town of Seekonk
Shawn Cadime	Town Adm	"

BEALS + THOMAS
CIVIL ENGINEERS | LANDSCAPE ARCHITECTS |
LAND SURVEYORS | PLANNERS | ENVIRONMENTAL SPECIALISTS

MEETING AGENDA

MEETING DATE: December 12, 2019

MEETING TIME: 1:00 PM

ISSUE DATE: December 11, 2019

REFERENCE: Municipal Vulnerability Preparedness and Hazard Mitigation Plan
Mandatory Core Team Kick-Off Meeting
Seekonk, Massachusetts
B+T Project No. 3153.00

PREPARED BY: Beals and Thomas, Inc.

COPIES TO: Seekonk MVP Core Team

PURPOSE: To provide an introduction and overview of the Municipal Vulnerability Preparedness (MVP) Program and Hazard Mitigation Plan (HMP) to the Seekonk Core Team and discuss action items and schedule.

AGENDA ITEMS:

1. Introduction and overview of the MVP Program
2. Community Resiliency Building Workshop(s)
    a. Identify potential stakeholders
3. Hazard Mitigation Plan
    a. Mitigation planning overview
    b. Discuss Massachusetts Integrated State Hazard Mitigation Plan and Climate Adaptation Plan, dated September 2018
    c. Overview of hazards – identify prior occurrences in Seekonk
4. Proposed schedule and next steps
    a. Develop list of critical facilities
    b. Discuss existing and required planning efforts
    c. Identify potential workshop date(s)

Enclosure: Municipal Vulnerability Preparedness (MVP) Program Overview (PDF)

MKS/EJL/315300AG001

Date 12/12/19 Page

☒ MEETING NOTES ☐ TELEPHONE REPORT ☐ MEMORANDUM ☐ TRIP LOG

Project # 3153.00
Location SEEKONK
Purpose MVP/HMP KO MEETING
Distribution
Present

WORKSHOP

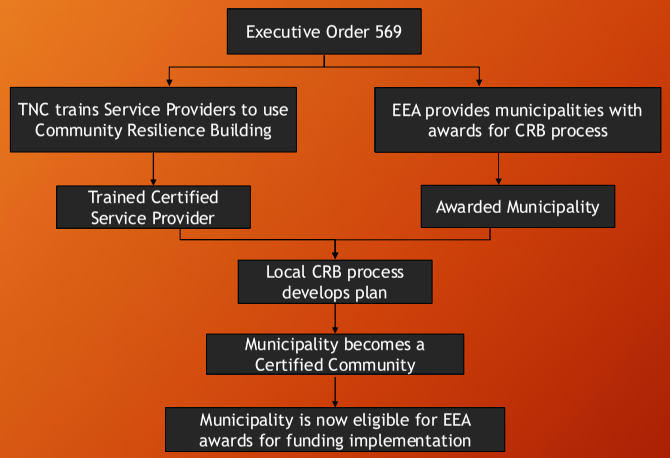
- 2010 FLOODING
  - HIGH GROUNDWATER
  - INSUFFICIENT
- 2012 BLIZZARD
- MACROBURST 2014
- EXTREME TEMPERATURES
- INVASIVE SPECIES

- TARGET END OF JANUARY
- MID WEEK
- FULL DAY WORKSHOP
- WED 29th JANUARY
- LIBRARY

SAVE THE BAY
SERPED
10 MILE RIVER WATERSHED COALITION
SEEKONK LAND TRUST
TOWN OF BARRINGTON – SHELTER SPACE IN SEEKONK
FEDEX, LOWES, HOME DEPOT
ATTLEBORO HOUSING AUTHORITY

- WATER DISTRICT
- ATTLEBORO WWTF
- DARLING HOTEL GROUP
- CITY OF EAST PROVIDENCE – WATER RESERVOIR
- MOBILE COMP

BEALS AND THOMAS, INC.
Reservoir Corporate Center • 144 Turnpike Road • Southborough, Massachusetts 01772-2104 • Tel: 508-366-0560 • Fax: 508-366-4391
32 Court Street • Plymouth, Massachusetts 02360 • Tel: 508-746-3288 • Fax: 508-746-6407



Municipal Vulnerability Preparedness (MVP) Program Overview

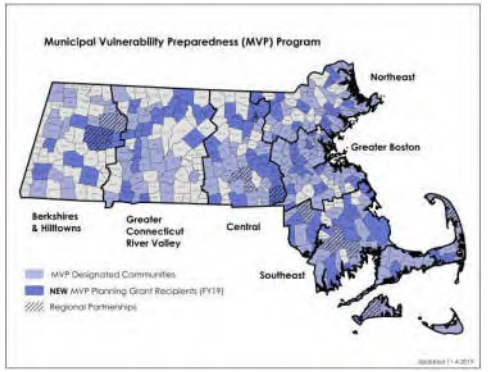
www.CommunityResilienceBuilding.org

Presented By: BEALS + THOMAS

Overview of the CRB Workshop

State's Vision for the MVP Program

1. Engage community
2. Identify climate change impacts and hazards
3. Complete assessment of vulnerabilities and strengths
4. Develop and prioritize actions
5. Take action!



Stakeholder guidance

- Local, regional, state, and federal groups interested in the following topics:
  - Public safety
  - Transportation
  - Utilities
  - Building and housing
  - Community and economic development
  - Education
  - Environment
  - Planning
  - Parks and recreation and cultural resources
  - Human and social services
  - Community leadership
  - Researchers and scientists

Workshop Objectives

- Define extreme weather and natural and climate-related hazards
- Identify existing and future vulnerabilities and strengths
- Develop and prioritize actions for the community and broader stakeholder networks
- Identify opportunities for the community to advance actions to reduce risks and build resilience

Municipal Hazard Mitigation Plan

- Required for municipalities to receive FEMA funding for emergency disaster assistance
- Updates required every 5 years
- Effective plan entitled Town of Bedford Mitigation Plan by the Metropolitan Area Planning Council in 2010
- Additional EEA funds for communities with expiring hazard mitigation plans who are undertaking MVP process
- Similar public input process to MVP program

Categories of Stakeholders

- People who live, work, play, or worship at or near a resource
- People interested in the resource, its users, its use, or its non-use
- People interested in the processes used to make decisions
- People who pay the bills
- People who represent citizens or are legally responsible for public resources

Past Occurrences of Hazards in Seekonk

Massachusetts Integrated State Hazard Mitigation Plan and Climate Adaptation Plan

- Published September 2018
  - Complies with federal requirements for state hazard mitigation plans to maintain eligibility for disaster recovery funding
  - First SHMP to integrate climate adaptation
- Identifies risk of various natural hazards to critical sectors
  - Populations
  - Government
  - Built environment
  - Natural resource and environment
  - Economy

Town of Seekonk MVP Designation Schedule

- Receipt of Planning Grant: Summer 2019
- Core Team Establishment of Approach: December 12, 2019
- Workshop: February 2020
- HMP Public Review: April 2020
- Public Listening Session: May 2020
- Final Report: June 2020

SHMCAP Natural Hazards

- Inland flooding
- Coastal flooding
- Average and extreme temperatures
- Drought
- Coastal Erosion
- Wildfire
- Landslides
- Tsunami
- Invasive species
- Hurricanes/tropical storms
- Severe winter storm/nor'easter
- Tornadoes
- Other severe weather
- Earthquakes

Next Steps

- Develop list of stakeholders to invite to CRB workshop(s)
- Develop list of critical facilities for inclusion in HMP
- Identify existing and upcoming planning efforts for review and incorporation into HMP
- Schedule CRB workshop(s)

MVP Stakeholder Sign-In Sheet		
Contact	**Organization**	**Signature**
Neal Abelson	Seekonk Building Department	
Jason Adamonis	Seekonk Parks and Recreation	
James Aguiar	Seekonk Building Department	
Bruce Alexander	Seekonk Finance Department	
Nelson Almeida	Seekonk Board of Selectmen	
John Alves	Seekonk Community Preservation Committee	
David Andrade	Seekonk Board of Selectmen	
Irene Andrews	Seekonk Human Service Committee	
John J. Aubin, III	Seekonk Planning Office	
Charles Beauchamp	Seekonk Energy Committee	
Chief Gerald Bessette	Barrington Emergency Management	
Michael Bourque	Seekonk Fire Department	
Robert Braunsdorf	Seekonk Energy Committee	
Rob Bernardo	Seekonk Water District	
David Cabral	Seekonk Department of Public Works	
Shawn E. Cadime	Seekonk Town Administrator	
Michael Campagnone	Seekonk Conservation Commission	
Ashley Cartwright	Seekonk Human Services and Council on Aging	
William Clark	Seekonk Cultural Council	
Stephen Coutu	City of East Providence Department of Public Works	
Florice Craig	Seekonk Town Clerk	
David Darling	Darling Hotels Management	
Carol Ann Days	Seekonk Public Safety Communications	
Beverly Della Grotta	Seekonk Human Service Committee	
Paul Dumouchel	Attleboro Housing Authority	
Alex Dunwoodie	Seekonk Cultural Council	
David Enos	Seekonk Police Department	
Brittney Faria	Seekonk Human Services and Council on Aging	
Peter Fuller	Seekonk Public Library	
Theodora Gabriel	Seekonk Town Assessor	
Keith Gonsalves	Ten Mile River Watershed; RI Rivers Council	
Sharonlynne Hall	Seekonk Animal Control	
Michael Healy	Seekonk Fire Department	
Peter Hoogerzeil	Seekonk Town Moderator	
Jessica Horsman	Seekonk Health Department	
Matthew Jardine	Seekonk Police Department	
David Janik	Massachusetts Office of Coastal Zone Management	
Victoria Kinniburgh	Seekonk Board of Health	
James LaFlame	Seekonk Veterans Services	
Gerard LaFleur	Seekonk Police Department	
Sandra Lowery	Seekonk Fire Department	
Kate McPherson	Save The Bay	
Jennifer Miller	Seekonk Conservation Office	

Bill Napolitano	Southeast Regional Planning and Economic Development District	Bill Napolitano
Scott Olobri	Seekonk Department of Public Works	Scott Olobri
John Pozzi	Seekonk Parks and Recreation	John P Pozzi
James Roach	Seekonk Planning Board	
Courtney Rocha	Municipal Vulnerability Preparedness Coordinator, Southeast Region	
Andrea Russo	Seekonk Animal Control	
Gary S. Sagar	Seekonk Zoning Board of Apeals	
Jonathan Schiller	Seekonk Board of Health	
Justin Sullivan	Seekonk Board of Selectmen	
David Sullivan, Jr.	Seekonk Planning Board	
James Troiano	Seekonk Parks and Recreation	
James Tusino	Seekonk Community Preservation Committee	
David F. Viera	Seekonk Board of Selectmen	
Richard Wallace	Seekonk Conservation Commission	
Paul Waltz	Seekonk Energy Committee	
Tom Webb	Seekonk Land Conservation Trust	T Webb
Kourtney Wunschel	Attleboro Wastewater and Treatment Facility	
Christopher Zorra	Seekonk Board of Selectmen	

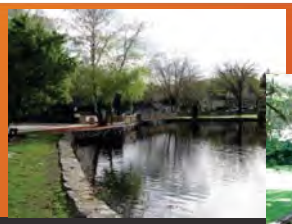
BEALS + THOMAS
CIVIL ENGINEERS | LANDSCAPE ARCHITECTS |
LAND SURVEYORS | PLANNERS | ENVIRONMENTAL SPECIALISTS

MEETING AGENDA

MEETING DATE:	January 29, 2020
MEETING TIME:	8:30 AM to 4:30 PM
MEETING LOCATION:	Board of Selectmen Room, Seekonk Town Hall 100 Peck Street, Seekonk, MA 02771
REFERENCE:	Municipal Vulnerability Preparedness Stakeholder Workshop Seekonk, Massachusetts B+T Project No. 3153.00
PREPARED BY:	Beals and Thomas, Inc.
COPIES TO:	Attendees

Time	Activity	
8:30 – 9:00 AM	Sign-in and Breakfast	
9:00 – 9:10 AM	Welcome, Workshop Overview, and Introductions	Jennifer Miller, Seekonk Conservation Agent
9:10 – 9:25 AM	MVP Program Overview	Beals and Thomas, Inc.
9:25 – 9:45 AM	Science and Resources	Beals and Thomas, Inc.
9:45 – 10:15 AM	Large Team Exercise: Top Hazards	Stakeholders and Facilitators
10:15 – 10:25 AM	Break	
10:25 – 12:15 PM	Small Team Exercises: Strengths and Vulnerabilities	Stakeholders and Facilitators
12:15 – 12:45 PM	**Break and Lunch**	
12:45 – 12:55 PM	Nature-Based Solutions Overview	Beals and Thomas, Inc.
12:55 – 2:45 PM	Small Team Exercises: Actions to Address Strengths and Vulnerabilities	Stakeholders and Facilitators
2:45 – 3:00 PM	Small Group Report Outs	Small Group Representatives
3:00 – 4:00 PM	Large Team Exercise: Prioritize Overall Actions	Stakeholders and Facilitators
4:00 – 4:15 PM	Wrap-Up and Next Steps	Beals and Thomas, Inc.

CEB/mks/315300AG002



Town of Seekonk Community Resilience Building Workshop

Presented By:

BEALS+THOMAS

Welcome and Introduction

- Jennifer Miller, Seekonk Conservation Agent

Team Members

Town of Seekonk Core Team
- Jennifer Miller, Seekonk Conservation Agent
- Jessica Horsman, Seekonk Health Agent
- Peter Fuller, Seekonk Public Library
- Bruce Alexander, Seekonk Finance Department
- Scott Olobri, Seekonk Department of Public Works
- Brittney Faria, Seekonk Human Services
- Gerard LaFleur, Seekonk Police Department
- Sharonlynne Hall, Seekonk Animal Control
- John J. Aubin, III, Seekonk Planning Office
- Neal Abelson, Seekonk Building Department
- David Cabral, Seekonk Department of Public Works
- Kate McPherson, Save The Bay
- John Pozzi, Seekonk Parks and Recreation
- Shawn E. Cadime, Seekonk Town Administrator

Beals and Thomas, Inc. (B+T) Facilitators
- Mary Kate Schneeweis
- Nick Santangelo
- Andrew Gorman

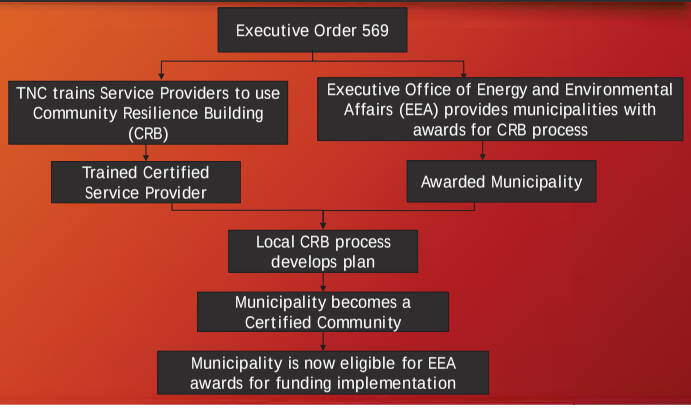
Roundtable Stakeholder Introductions

Municipal Vulnerability Preparedness (MVP) Program

The Nature Conservancy

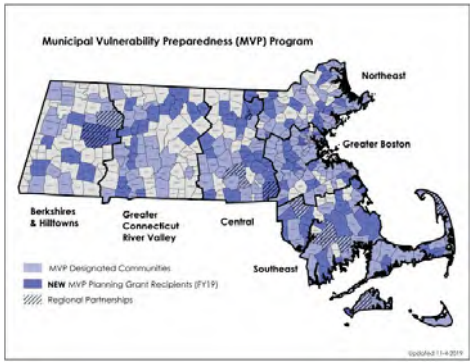
www.CommunityResilienceBuilding.org

MVP Overview



State's Vision for the MVP Program

1. Engage community
2. Identify climate change impacts and hazards
3. Complete assessment of vulnerabilities and strengths
4. Develop and prioritize actions
5. Take action!



Overview of the MVP Process

Workshop Objectives

- Define extreme weather and natural and climate-related hazards
- Identify existing and future vulnerabilities and strengths
- Develop and prioritize actions for the community and broader stakeholder networks
- Identify opportunities for the community to advance actions to reduce risks and build resilience.

Town of Seekonk MVP Designation Schedule

- Receipt of Planning Grant: Summer 2019
- Core Team Establishment of Approach: December 12, 2019
- Workshop: January 29, 2019
- MVP-Hazard Mitigation Plan Hybrid Public Review: April 2020
- Public Listening Session: May 2020
- Final Report: June 2020

Mitigation Planning Benefits

- A process for communities to identify policies, activities and tools to implement mitigation actions
  - Increases awareness of vulnerabilities
  - Promotes safety and welfare of communities and citizens
  - Cultivates community commitment to mitigation
- Lack of hazard awareness and mitigation plan could lead to unnecessary losses to infrastructure and critical facilities and potential human casualties

Massachusetts Integrated State Hazard Mitigation and Climate Adaptation Plan (SHMCAP)

- Published September 2018
  - Complies with federal requirements for state hazard mitigation plans to maintain eligibility for disaster recovery funding
  - First SHMP to integrate climate adaptation
- Identifies risk of various natural hazards to critical sectors
  - Populations
  - Government
  - Built environment
  - Natural resources and environment
  - Economy

Municipal Hazard Mitigation Plan

- Required for municipalities to receive Federal Emergency Management Agency (FEMA) funding for non-emergency disaster assistance
- Updates required every 5 years
- Additional EEA funds for communities with expired or expiring hazard mitigation plans who are undertaking MVP process – MVP-HMP Hybrid
- Similar public input process to MVP program
- Must address hazards outlined in SHMP

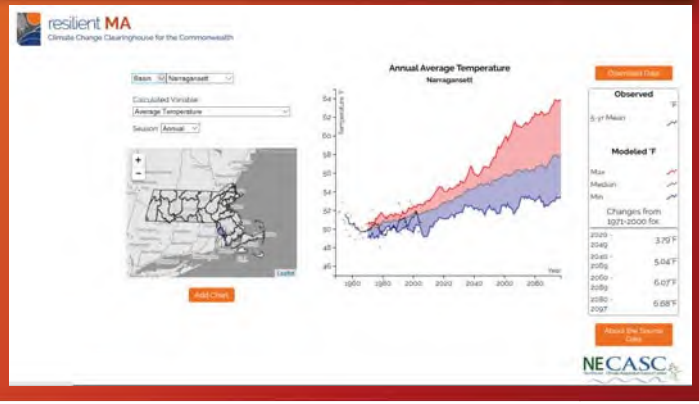
MVP Action Grants

- Town will be eligible upon designation as MVP community
- Project categories include:
  - Detailed vulnerability/risk assessments
  - Local bylaw and ordinance improvements
  - Engineering and construction retrofits
  - Ecological restoration projects
  - Nature-based solutions to reduce vulnerability

FY 2018-2019 Action Grant Examples

- Boston - Climate Ready Zoning and Design Guidelines
- Natick - Tree Planting Plan to Mitigate Heat Islands and Reduce Runoff
- Salem - Sanitary Sewer Trunk Line Relocation Assessment
- Montague - City Road Flooding Protection Project: Design and Permitting
- Northampton - Nature-Based Flood Protection to Reduce Vulnerabilities
- Weymouth - Fort Point Road Coastal Infrastructure Resilience Project

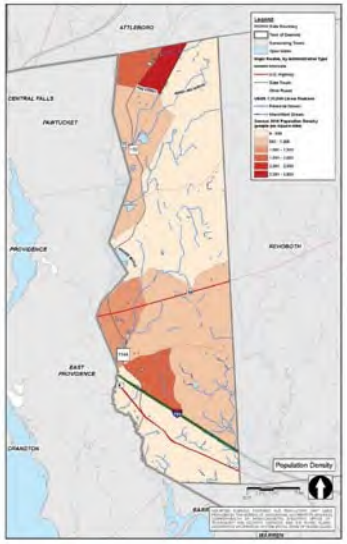
Science and Resources



Seekonk Demographics

- Total Population (2019): 15,702
- Potential Vulnerable Populations:
  - Age 60+: 2,955 (2010 census), 3,827 (2020 projected), 4,400 (2030 projected)
  - Persons with Disabilities: 6.5%
  - Speak language other than English at home: 10.2%
  - Below poverty line: 4.8%

Source: Center for Social & Demographic Research, Gerontology Institute, John W. McCormack Graduate School of Policy & Global Studies, UMass Boston; United States Census Bureau; American Community Survey



SHMCAP Natural Hazards – consideration in Seekonk

- Inland flooding
- Coastal flooding
- Average and extreme temperatures
- Drought
- Coastal Erosion
- Wildfire
- Landslides
- Tsunami
- Invasive species
- Hurricanes/tropical storms
- Severe winter storm/nor'easter
- Tornadoes
- Other severe weather
- Earthquakes

SHMCAP Natural Hazards – consideration in Seekonk

- **Inland flooding**
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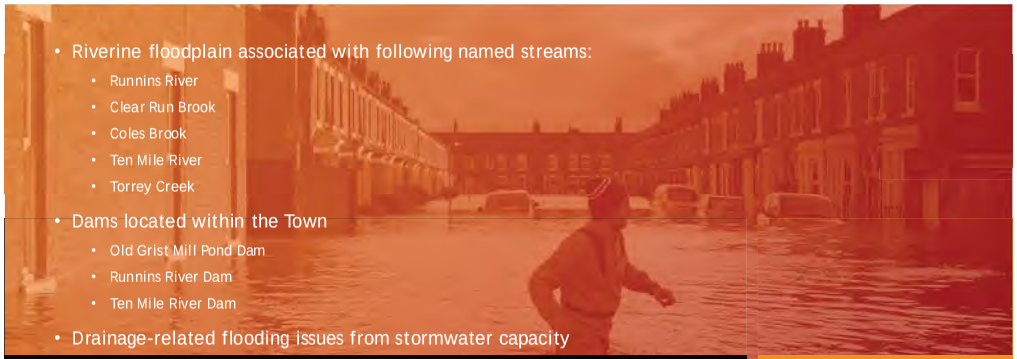


- Riverine floodplain associated with following named streams:
  - Runnins River
  - Clear Run Brook
  - Coles Brook
  - Ten Mile River
  - Torrey Creek
- Dams located within the Town
  - Old Grist Mill Pond Dam
  - Runnins River Dam
  - Ten Mile River Dam
- Drainage-related flooding issues from stormwater capacity

Inland Flooding

Severe Storms

- Winter Storms/Nor'easters
  - 2012 blizzard
  - Massachusetts Disaster Declarations within Bristol County for winter weather
    - Severe Winter Storm and Flooding (DR-4372): March 2018
    - Severe Winter Storm, Snowstorm, and Flooding (DR-4214): January 2015
    - Severe Winter Storm, Snowstorm, and Flooding (DR-4110): February 2013
- Severe storms/hurricanes
  - Hurricane Sandy, 2012

Source: FEMA

Extreme Temperatures

- Record high temperature: 104°F (August 1975)
- Record low temperature: -17°F (February 1934)

Source: National Weather Service, NOWData - NOAA Online Weather Data, Providence Area, RI

Invasive Species

- Plants
  - 68 species identified by Massachusetts Invasive Plant Advisory Group
    - Purple loosestrife (*Lythrum salicaria*)
    - Sycamore maple (*Acer pseudoplatanus*)
    - Tree-of-heaven (*Ailanthus altissima*)
    - Asiatic bittersweet (*Celastrus orbiculatus*)
- Terrestrial
  - Gypsy moth (*Lymantria dispar dispa*)
  - Hemlock wooly adelgid (*Adelges tsugae*)
  - Emerald ash borer (*Agrilus planipennis*)
- Aquatic
  - Water chestnut (*Trapa natans*)
  - Eurasian milfoil (*Myriophyllum Spicatum*)

Asiatic bittersweet (Celastrus orbiculatus) © B+T

Massachusetts Climate Change Projections (Narragansett Bay & Mt. Hope Bay Basin)

- Temperature
  - Increased average temperatures and number of days with maximum temperature above 90°F
    - Annually – 7 to 29 more days with temperatures above 90°F by 2050s
  - Decrease in number of days with minimum temperature below 32°F
    - Winter – 7 to 20 fewer days with temperatures below 32°F by 2050s
- Precipitation
  - Increase in number of days with greater than 1" precipitation and total precipitation
    - Annually – approximately 1 to 3 more days with precipitation greater than 1" by 2050s
- Drought
  - Increase in consecutive dry days
    - Summer – potential decrease of 1 day to increase of 2 days with less than 1 mm of precipitation

Workshop Exercises

Summary of Workshop Exercises

- Develop and prioritize list of **Hazards**
- Identify community **Strengths** and **Vulnerabilities**
  - Infrastructural
  - Societal
  - Environmental
- Determine and prioritize **Actions**
  - Identify the actions needed to reduce the vulnerability or reinforce the strength represented by each feature/asset.
  - Priority (high, medium, low)
  - Timeframe (ongoing, short-term, long-term)

Definitions

- **Hazard** – cause of negative impacts to community
- **Risk** – potential result from hazard
- **Vulnerability** – feature (societal, environmental, or infrastructural) that is susceptible to risk
- **Action** – addresses vulnerability

Hazards vs. Vulnerabilities

Hazards		Vulnerabilities
Flooding	→	Residences in flood zone
Drought	→	Water supply
Wind	→	Overhead power lines
Wildfire	→	Dry vegetation

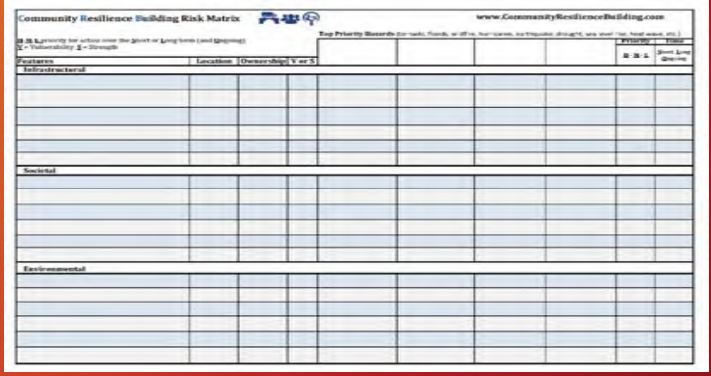
Large Group Exercise: Top Hazards

- Top hazards identified by Core Team
  - Severe winter storm/nor'easter
  - Invasive species
  - Average and extreme temperatures
  - Inland flooding
- Stakeholder input

10-Minute Break

- When you return, please sit at the table that corresponds to your nametag color

Small Group Exercises: Complete Risk Matrix


Community Resilience Building Risk Matrix

www.CommunityResilienceBuilding.com

Top Priority Hazards

Features	Location	Ownership? V or S							
Infrastructural									
Societal									
Environmental									

Risk Matrix Columns 1-4

- List top **hazards** for community in top row
- For each sector (infrastructural, societal, environmental)
  - Identify **vulnerabilities** and **strengths**
    - Determine location
      - List on Risk Matrix
      - Mark on Base Map
    - Identify ownership of issue or place.
    - Identify if feature/asset is a strength and/or vulnerability

Lunch Break

- Please help yourself to the lunch provided.

Risk Matrix Columns 5-10

- Determine actions
  - Identify the actions needed to reduce the vulnerability or reinforce the strength represented by each feature/asset.
- Prioritize
  - Priority (High, Medium, Low)
  - Timeframe (ongoing, short-term, long-term)

If Possible: Use Nature Based Solutions

- Use or mimic natural systems to address hazards
  - Ecological Restoration
  - Green Infrastructure
  - Low-Impact Development (LID)

Image Source: *Nature-Based Solutions to address global societal changes*; Cohen, et al. 2016

Examples of Ecological Restoration

- Dam Removal

Examples of Green Infrastructure/LID

- Stormwater Management with Green Roofs


- Stormwater Management with Bioretention Areas and Rain Gardens


Small Group Report Out

- Small group spokesperson
  - 3-5 minute summary to present completed matrices
    - What Risks were identified?
    - What were the top priority Hazards identified?
    - Were there any other items of discussion worth noting?

Large Group Discussion

- Identify top 3-5 priority actions
- Further refine timeframe(s)

Next Steps

- Town and B+T to compile results of workshop into summary report and updated HMP
- Provide draft summary report/HMP for public review
- Hold listening session to present list of priority actions and how to implement
- Submit final summary report/HMP to EEA to receive MVP designation, and to MEMA and FEMA for review and comment
- Incorporate MEMA/FEMA comments on HMP
- Final HMP approval from Board of Selectmen

Appendix C
Base Map

Robert J Coelho Middle School
Dayspring Christian School
SEVENMILE RIVER
ATTLEBORO
TENMILE RIVER
Wamsutta Middle School
CUMBERLAND
BLACKSTONE
CENTRAL FALLS
CENTRAL AVENUE
PINE STREET
WOODLAND AVENUE
TEN MILE
15
152
PAWTUCKET
Dr. Kevin M Hurley Middle School
COLES BROOK
Mildred Aitken School
ARCADE AVENUE
Seekonk High School
RUNNINS RIVER
WOLF PLAIN
CARPENTER BROOK
Palmer River School
Dorothy L Beckwith School
REHOBOTH
EAST BRANCH (PA
PROVIDENCE
FULLERS BROOK
PALMER RIVER
BEAVERDAM BROOK
44
NARRAGANSETT BAY
EAST PROVIDENCE
114A
6
George R Martin School
CLEAR RUN BROOK
195
Motoring Technical Training Institute
TORREY CREEK
OAK SWAMP BROOK
ROCKY RUN
CRANSTON
SWANSEA
BARRINGTON
MT HOPE BAY

Legend

- Town of Seekonk
- Surrounding Towns
- Fire Stations
- Police Stations
- Town Halls
- Pre-Kindergarden to High Schools
- Colleges and Universities
- Hospitals
- Long-Term Care Residences
- Places of Worship
- Emergency Shelters
- Public Water Supply Wells

Dams

- High Hazard
- Significant Hazard
- Low Hazard
- N/A

Major Routes, by Administrative Type

- Interstate
- U.S. Highway
- State Route
- Other Roads
- MBTA Commuter Rail Stations
- MBTA Bus Routes
- Open Water

USGS 1:25,000 Linear Features

- Perennial Stream
- Intermittent Stream

FEMA Flood Zones

- Present Day 1% Annual Flood Zone
- Present Day 0.2% Annual Flood Zone
- Watershed Boundaries

0 550 1,100 2,200
FEET

ASSORTED SURFACE FEATURES AND REGULATORY LIMIT LINES PROVIDED BY THE BUREAU OF GEOGRAPHIC INFORMATION (MASSGIS), COMMONWEALTH OF MASSACHUSETTS, EXECUTIVE OFFICE OF TECHNOLOGY AND SECURITY SERVICES, AND THE RHODE ISLAND GEOGRAPHIC INFORMATION SYSTEM (RIGIS), STATE OF RHODE ISLAND.

Appendix D
Participatory Mapping

Robert J Coelho Middle School
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OAK SWAMP BROOK
ROCKY RUN

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Appendix E
Public Listening Session Information

Agenda for April 27, 2020 Public Listening Session #1

Presentation for Public Listening Session #1

Agenda for June 10, 2020 Public Listening Session #2

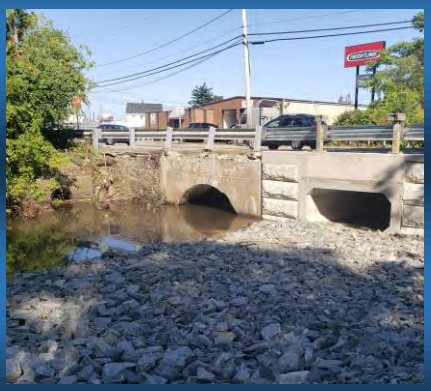
Presentation for Public Listening Session #2

Written Public Comments Received

1st Public Listening Session

Municipal Vulnerability Preparedness (MVP) Planning Grant

Monday, April 27th, 2020 (6:00pm-7:30pm)
Remote Session to be broadcast live on Seekonk TV-9



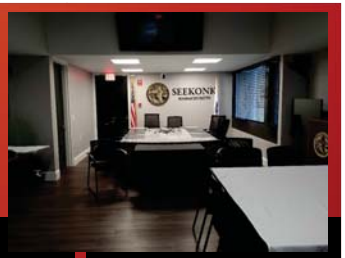
1. Introductions & Overview of MVP Program
2. Regional Natural Hazards & Climate Change Projections
3. Summary of Priority Actions (as identified by stakeholders)
    a. Highest Priority Actions
    b. Additional Infrastructural Actions
    c. Additional Societal Actions
    d. Additional Environmental Actions
4. Proposed schedule and next steps

Due to current restrictions on public gatherings, the public listening session will be broadcast live on Seekonk TV-9 from 6:00pm-7:30pm on Monday, April 27th. Previously identified stakeholders will be able to call in and give feedback during the presentation, however, public comment will be solicited as outlined below.

The listening session presentation materials are available on the Town's website, www.seekonk-ma.gov and public comment may be made in writing to Conservation Agent, Jennifer Miller via email at jmiller@seekonk-ma.gov through Monday, May 11th.

Please note, once comments have been reviewed and incorporated into the MVP and HMP documents, the draft plans will be reviewed and additional input solicited during a 2nd public listening session.





Presented By:

BEALS+THOMAS

Public Listening Session #1
April 27, 2020

- Jennifer Miller, Seekonk Conservation Agent

- Introduction and overview of the MVP Program
- Top natural hazards identified by stakeholders
  - Climate change projections
- Summary of priority actions
  - Top four priority actions
  - Additional infrastructural actions
  - Additional societal actions
  - Additional environmental actions
- Proposed schedule and next steps

The Nature Conservancy

www.CommunityResilienceBuilding.org

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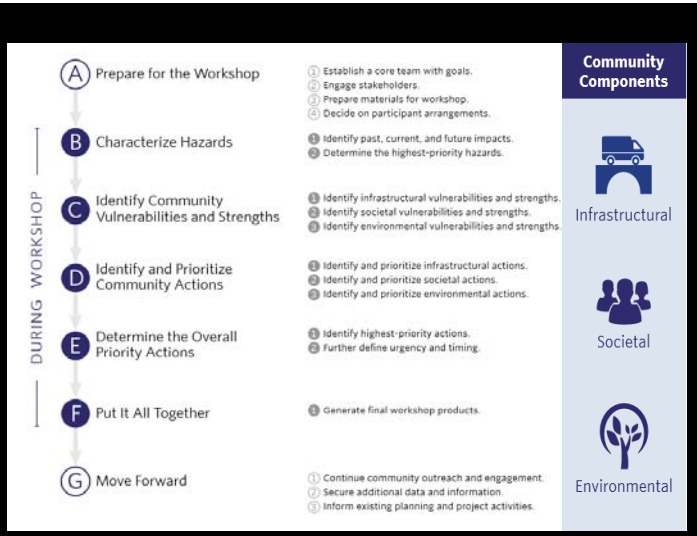

- Define extreme weather and natural and climate-related hazards
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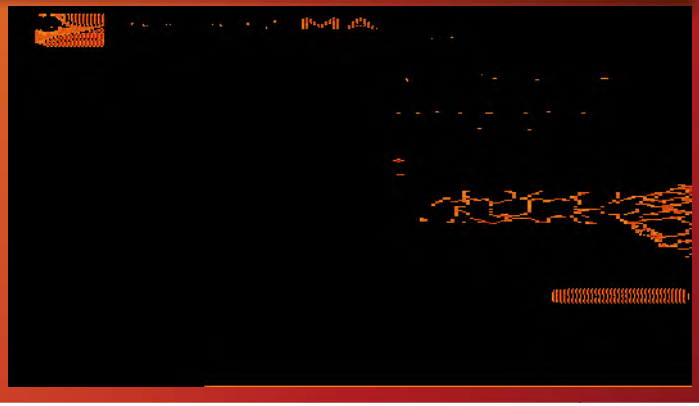
- Project categories include:
  - Detailed vulnerability/risk assessments
  - Local bylaw and ordinance improvements
  - Engineering and construction retrofits
  - Ecological restoration projects
  - Nature-based solutions to reduce vulnerability
- Next round of funding anticipated April 2020

- Chelmsford: Dunshire Drive Culvert Replacement & Deep Brook Stream Restoration: Phase I
- Harvard: Community Climate Action & Land Stewardship Plan
- Medford: Equity-Centered Process for Climate Action and Adaptation Planning
- Monson: Energy Resiliency for Town Hall-EOC-Police HQ Facility
- Worcester: Worcester Senior Center Parking Lot – Nature-Based Solutions



- Published September 2018
  - Complies with federal requirements for state hazard mitigation plans to maintain eligibility for disaster recovery funding
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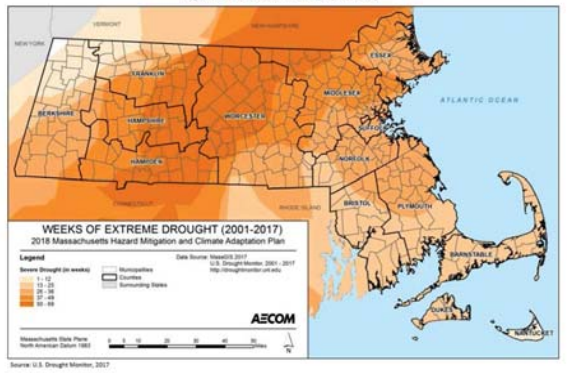
- Drought/Heat
- Inland Flooding
- Severe Storms
- Extreme Winter Weather
- Invasive Species

- September 2016 drought affected 52.13% of Massachusetts land.
  - Major crop/pasture loss
  - Widespread water shortages and restrictions
  - Increased risk of wildfire

Figure 4-8: Weeks of Severe Drought (2001-2017)



Source: U.S. Drought Monitor, 2017

Severe Storms

- Severe storms/hurricanes
  - Hurricane Sandy, 2012

Source: FEMA

- Riverine floodplain associated with following named streams:
  - Runnins River
  - Clear Run Brook
  - Coles Brook
  - Ten Mile River
  - Torrey Creek
- Dams located within the Town
  - Old Grist Mill Pond Dam
  - Runnins River Dam
  - Ten Mile River Dam
- Drainage-related flooding issues from stormwater capacity

Inland Flooding

Extreme Winter Weather

- Winter Storms/Nor'easters
  - 2012 blizzard
  - Massachusetts Disaster Declarations within Bristol County for winter weather
    - Severe Winter Storm and Flooding (DR-4372): March 2018
    - Severe Winter Storm, Snowstorm, and Flooding (DR-4214): January 2015
    - Severe Winter Storm, Snowstorm, and Flooding (DR-4110): February 2013

Invasive Species

- Plants
  - 68 species identified by Massachusetts Invasive Plant Advisory Group
    - Purple loosestrife (*Lythrum salicaria*)
    - Sycamore maple (*Acer pseudoplatanus*)
    - Tree-of-heaven (*Ailanthus altissima*)
    - Asiatic bittersweet (*Celastrus orbiculatus*)
- Terrestrial
  - Gypsy moth (*Lymantria dispar dispa*)
  - Hemlock wooly adelgid (*Adelges tsugae*)
  - Emerald ash borer (*Agrilus planipennis*)
- Aquatic
  - Water chestnut (*Trapa natans*)
  - Eurasian milfoil (*Myriophyllum spicatum*)

Asiatic bittersweet (Celastrus orbiculatus) © B+T

- Temperature
  - Increased average temperatures and number of days with maximum temperature above 90°F
    - Annually – 7 to 29 more days with temperatures above 90°F by 2050s
  - Decrease in number of days with minimum temperature below 32°F
    - Winter – 7 to 20 fewer days with temperatures below 32°F by 2050s
- Precipitation
  - Increase in number of days with greater than 1" precipitation and total precipitation
    - Annually – approximately 1 to 3 more days with precipitation greater than 1" by 2050s
- Drought
  - Increase in consecutive dry days
    - Summer – potential decrease of 1 day to increase of 2 days with less than 1 mm of precipitation

- Assess the condition/sizing of existing culverts, dams, and bridges, incorporating need to accommodate climate projections for stormwater
- Assess the extent of elderly and disabled populations and the ability of emergency shelters to accommodate their needs
- Identify roads susceptible to flooding and continue/improve existing maintenance programs (e.g. tree trimming)
- Prepare an invasive species and pest management plan and educate the public

- Input on **Top Priorities**

Catch basin mapped by Save the Bay in Seekonk. © Savethebay.org

- Conduct assessment of the condition and capacity of existing infrastructure, focusing on culverts and stormwater facilities in older neighborhoods
- Continue annual maintenance and upgrade infrastructure,
- Work on an active/annual maintenance plan
- Continue management of stormwater infrastructure, including culvert cleaning
- Generate an inter-municipal plan

- Conduct engineering and construction of the Pond Street Bridge improvements
- Evaluate and assess the Attleboro Dye Works and Burr's Pond dams to identify future improvements
- Assess vulnerabilities to single-phase electric power system from pole age and trees with a certified arborist, and conduct selective tree cutting to remove hazard trees from roadways
- Purchase portable generators for emergency use and increase generator capacity at emergency shelter sites
- Plan for selective tree removal and identify specific hazards that would disrupt traffic between the north and south portions of town.

- Encourage alternative transportation when roads are flooded
- Evaluate plowing contracts relative to nearby municipalities to improve snow clearing during storm events
- Maintain or expand a winter preparedness program and develop protocol for external sand/salt distribution
- Maintain/improve roadside/ROW mowing program
- Explore cooperative agreements with neighboring water supplies
- Upgrade/update heating systems in older buildings and assess overall resiliency of buildings to storm events.

- Consider resilient design alternatives for construction of south-end fire station
- Conduct study of coverage of public safety radio network
- Set up pest management contract for radio cabinet to maintain communication channels during emergencies
- Evaluate existing municipal buildings for additional shelter capacity and adequacy of amenities
- Update/finish cooling stations for public use during drought or extreme heat

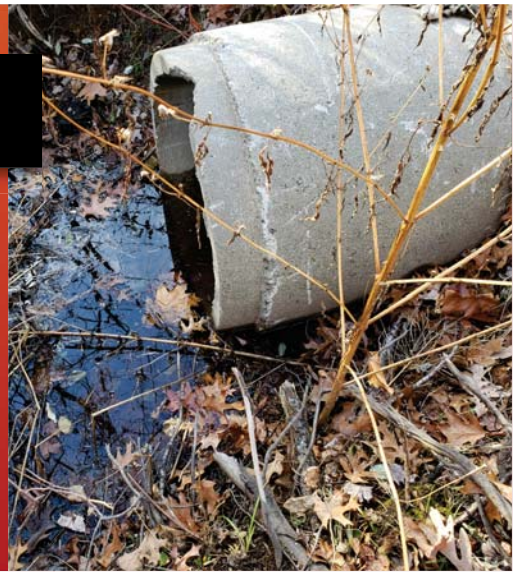
- Evaluate installation of solar on municipal buildings
- Continue to coordinate with National Grid regarding locating and protecting existing OHW and UE
- Continue roadside/ROW maintenance programs
- Include low-lying, flood-prone roadways in bridge/dam/culvert evaluation
- Expand public transportation opportunities into vulnerable population areas (e.g. central Seekonk) to improve emergency evacuation and travel during hazard occurrences

- Promote use of municipal water supply
- Investigate additional potable water sources
- Maintain program for assessment, maintenance, and prioritization for replacement and upgrades
- Perform water quality assessment of pre- and post-storm events and assist in daylighting streams
- Assess existing septic systems in flood zones
- Assess opportunities to connect commercial developments to existing sewers

- Evaluate the cost of a municipal sewer system
- Continue to monitor and enforce Title V requirements
- Maintain and upgrade existing Emergency Response Plan
- Assess existing evacuation routes
- Formalize Emergency Notification System
- Improve stormwater management at sports fields to improve flood control
- Develop pest and nuisance management plan for fields
- Develop plan for severe storm damage outside of DPW general maintenance scope

- Perform a feasibility study to improve flood resilience of well fields
- Determine if new generators in the well fields would mitigate power loss during storm events and continue to provide access to water
- Assess the age of the water distribution system to identify improvement/replacement
- Explore deeper well siting

- Input on **Infrastructural Actions**



Showcase Cinema, Seekonk Sign During 2020 Covid-19 Quarantine. © Caitlin Howle 2020

- Evaluate centralized locations for affordable senior housing on municipal or other land
- Improve town's ability to accommodate and transport individuals with special service needs during hazard occurrence
- Acquire handicap-accessible vehicles to assist with transportation
- Perform an ADA audit of public buildings
- Maintain or expand existing mutual aid agreements

- Increase access to cooling stations. Increase emergency resources for elderly population
- Determine vulnerable population size, general locations, potential needs to better inform emergency response programs
- Develop an education plan for communicating during emergencies
- Host forum to discuss community and municipal interests and involvement
- Develop an education program to distribute to schools and camps regarding natural hazards
- Investigate severe weather planning and preparation. Look for advanced methods of snow storage and removal for DPW.

- Take advantage of existing outreach opportunities (e.g. Census) to improve dissemination of information to vulnerable populations
- Improve communication during emergencies by providing in multiple languages
- Incentivize employment of multi-lingual emergency responders
- Investigate and/or revise emergency response plan (currently outdated) and make this plan available to other town departments and stakeholders.
- Evaluate/develop plan for pet/domestic animal care during evacuation/shelter
- Provide additional means of transportation for residents (including busing and other public transit).

- Evaluate capacity of existing shelters to accommodate excess population working in and traveling through town
- Develop plan for road closures to respond to hazards
- Determine population size, general locations, potential needs to better inform emergency response programs
- Access multi-lingual forms of emergency notifications
- Establish outreach commissions to improve communication with vulnerable populations
- Develop education plan regarding distribution/retail of non-native/invasive species

- Develop a plan for businesses to better operate during emergency situations
- Explore alternative forms of government that improve representation
- Maintain existing stormwater structures and increase storage capacity where possible.
- Examine feasibility of requiring wider roads for planning purposes (e.g., subdivision regs) and to assist plow drivers in snow events.

- Input on **Societal Actions**

- Access potential areas for retrofitting stormwater management systems to increase water quality treatment and improve infiltration
- Develop and maintain stormwater regulations
- Improve monitoring of existing stormwater management systems
- Continue to work with state and federal partners for remediation/redevelopment of Attleboro Dye Works site
- Inventory possible sources of contamination with community-wide assessment, especially regarding vulnerable populations

- Work with MDAR to improve quality of runoff with pesticides and implement through the MS4 program
- Upgrade septic system requirements to treat higher levels of pollution
- Continue to monitor water quality for private water supplies in critical areas
- Incorporate radio cabinet maintenance into town-wide invasive species/pest management plan
- Include open space in town-wide invasive species/pest management plan

- Evaluate nature-based solutions for pest management (e.g. bat houses)
- Provide education to the public regarding the dangers of standing water
- Develop a regional deer management program
- Perform analysis (or hire consultant to do so) to perform a groundwater elevation analysis and plan for future impacts (and effects on development)
- Prioritize completion of OSRP and evaluate related projects for funding opportunities

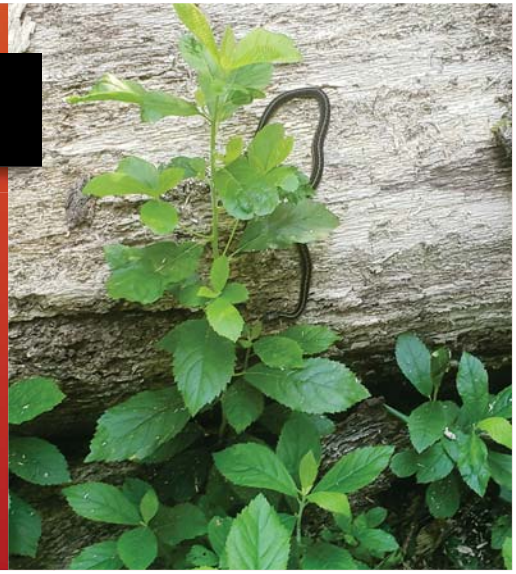
- Identify and acquire additional open space parcels, particularly those connecting Town-owned open space
- Prepare site-specific resource management plans with invasive and pest-management and public access components
- Acquire additional conservation land
- Incorporate potential for hazard occurrence into design of trail facilities and other passive recreation opportunities

- Assess yield of water supply wells relative to projected development trends
- Encourage rainwater collection/reuse for residential and commercial irrigation
- Evaluation additional land acquisition in vicinity of public water supply
- Implement tree planting program
- Encourage public to partake in Energy Savings Tree Program

- Perform feasibility study to raise well grades (thus placing them out of the floodplain)
- Explore alternate power sources, including tie-in with other towns and local generator supplying
- Examine effectiveness of water use restrictions and enforce these rules where necessary
- Investigate opportunities to preserve additional areas of flood zone (beyond those which are already designated for open space)
- Continue to plan maintenance that is location-specific and prioritize culverts and stormwater infrastructure within flood zones

- Continue to administer wetlands protection regulations through permitting (Conservation Commission)
- Assess and implement additional critter crossings
- Identify and acquire open parcels connecting Town Owned open space

- Input on **Environmental Actions**



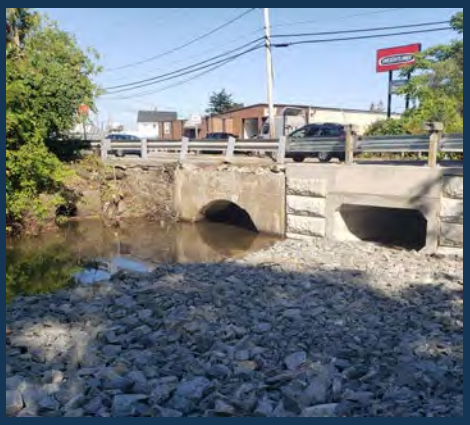
- Remote Session to be broadcast live on Seekonk TV-9
  - Presentation to be re-broadcast at later date
- Presentation materials to be made available at www.seekonk-ma.gov
- Submit written public comments to Conservation Agent, Jennifer Miller via email at jmiller@seekonk-ma.gov through **Monday, May 11th**
- Additional public input opportunities at Public Listening Session #2

- Hold listening session #2 to present final list of priority actions to Board of Selectmen: May 2020, TBD
- Provide draft summary report/HMP for public review
- Incorporate listening session results and comments into final summary report/HMP
- Identify potential Action Grant projects
- Submit final summary report/HMP to EEA to receive MVP designation, and to MEMA and FEMA for review and comment
- Incorporate MEMA/FEMA comments on HMP

2nd Public Listening Session

Municipal Vulnerability Preparedness (MVP) Planning Grant

Wednesday, June 10th, 2020
Remote Session to be broadcast live on Seekonk TV-9



The Town of Seekonk invites the public to provide input on the Community Resiliency Building process, guiding future resiliency planning and improvement projects. This process, made possible by a Municipal Vulnerability Preparedness (MVP) Planning Grant from the Executive Office of Energy and Environmental Affairs, leverages local knowledge and the experience of community stakeholders to develop an action plan and a Hazard Mitigation Plan (HMP).

Please note, due to current restrictions on public gatherings, the public listening session will be held during the BOS meeting as a public hearing agenda item and broadcast live on Seekonk TV-9 after 7:00pm on Wednesday, June 10th. During the 2nd Public Listening Session, we will outline the draft MVP/HMP document, with the opportunity for comments and questions to follow.

The presentation materials will be available prior to the meeting on the Town's website, www.seekonk-ma.gov and public comment may be made in writing to Conservation Agent, Jennifer Miller via email at jmiller@seekonk-ma.gov through Wednesday, June 24th.

**** AMENDED AGENDA ** (original agenda was posted June 5, 2020 at 11:16 am)**
BOARD OF SELECTMEN
WEDNESDAY, June 10, 2020 – 7:00 p.m.
Via Teleconference due to COVID-19

Per Governor Baker's Order suspending certain provisions of the Open Meeting Law, G.L. c. 30A, sec. 20 the public will not be allowed to physically access this Board of Selectmen meeting. However, public comments and questions may be submitted to the Board in advance of the meeting by completing the Google Form below prior to the meeting by Monday, June 8, 2020 by noon. Additionally, the meeting will be conducted through Zoom; public access information for participation during the Public Listening Session will be provided on the Town's website www.seekonk-ma.gov

https://docs.google.com/forms/d/1g4WZHCWGJbAJASPeyzNq75aQjMJj4usG4X_tQqhaQbM/edit

MGL C 30A § 20(f) REQUIRES ANY PERSON RECORDING MUST NOTIFY CHAIRMAN AT THE BEGINNING OF THE MEETING

CALL REGULAR MEETING TO ORDER

BOARD AND COMMITTEE OPENINGS UPDATE
Volunteers are needed on the: Capital Improvement Committee (1 BOS); Commission on Disability (5-13 BOS); Economic Development Committee (4 BOS); Energy Committee (1 BOS); Historical Commission (2 BOS); Recycling Committee (up to 3 BOS); Zoning Board of Appeals (2 alternates)

PRIORITY MATTERS
A. Consider the appointment of Eric Schoonmaker to the position of Patrol 3rd Class effective June 19, 2020

PUBLIC LISTENING SESSION
A. Second Public Listening Session for the Municipal Vulnerability Preparedness (MVP) Planning Grant

OLD BUSINESS
A. Continued discussion with Flying Goose regarding a marijuana manufacturing and transportation business to be located at 1853 Fall River Avenue

NEW BUSINESS
A. Consider the Bid Award for Department of Public Works 20-01 Cold Planing & Bituminous Concrete Overlay
B. Consider the Bid Award for Department of Public Works 20-02 Pavement Reclamation
C. Consider and sign the DiGiorgio Associates Inc. contract for Architectural Services for phase II of the 540 Arcade Avenue building
D. Consider establishing a process for approving requests to allow outdoor dining service for local restaurants
E. Assign Warrant Articles for Spring Town Meeting
F. Consider the approval of a Town Administrator evaluation tool
G. Consider approving the minutes from May 27, 2020

OTHER BUSINESS
A. Discuss other topics not reasonably anticipated by the Chairman 48 hours before the meeting

TOWN ADMINISTRATOR'S REPORT
A. Radio Project
B. DPW Facility
C. Senior Center Phase II/540 Arcade Avenue
D. Playground at Town Hall
E. Animal Shelter
F. South End Fire Station
G. Old Town Hall
H. Cable Contract
I. Policies and Procedures
J. ADW/Maple Avenue Project

COMMUNITY SPEAKS – A list of questions submitted to the Board that were not addressed during the meeting will be read by the Board and the Board will provide possible updates

EXECUTIVE SESSION

A. Negotiations with Dispatch AFSCME Council 93 per MGL c 30A § 21(a) (3) as having the discussion in open session would be detrimental to the litigation or bargaining position of the town

B. Negotiations with DPW AFSCME Council 93 per MGL c 30A § 21(a) (3) as having the discussion in open session would be detrimental to the litigation or bargaining position of the town

C. To conduct strategy sessions with respect to negotiations with the Finance Director, per MGL c 30A § 21(a) (2) as having the discussion in open session would be detrimental to the litigation or bargaining position of the town.

D. To conduct strategy sessions per MGL c 30A § 21(a) (3) with respect to collective bargaining and litigation if an open meeting may have a detrimental effect on the bargaining or litigating position of the Town and the Chair so declares - United Steelworkers Local 9517-Arbitration

E. To conduct strategy sessions with respect to negotiations with the Fire Chief per MGL c 30A § 21(a) (2) as having the discussion in open session would be detrimental to the litigation or bargaining position of the town.

F. Consider approval of Executive Session minutes of January 22, 2020

   i. To discuss the reputation, character, physical condition or mental health, rather than professional competence, of an individual, or discuss the discipline or dismissal of, or complaints or charges against, a public officer, employee, staff member or individual per MGL c 30A § 21(a) (1) as having the discussion in open session would be detrimental to the litigation or bargaining position of the town.

G. Consider the approval of Executive Session minutes of February 5, 2020.

   i. To discuss the reputation, character, physical condition or mental health, rather than professional competence, of an individual, or discuss the discipline or dismissal of, or complaints or charges against, a public officer, employee, staff member or individual per MGL c 30A § 21(a) (1) as having the discussion in open session would be detrimental to the litigation or bargaining position of the town.

   ii. To consider the purchase, exchange, lease or value of real property pursuant to MGL c 30A § 21(a) (6) as having the discussion in open session would be detrimental to the negotiating position of the town (320 Fall River Ave; Map 14/Lot 78, and 350 Fall River Ave; Map 14/Lot96,)

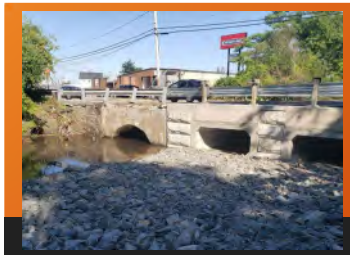
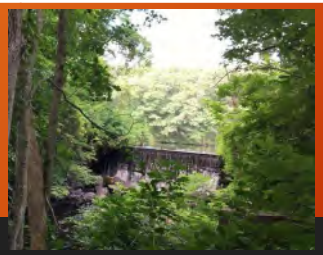
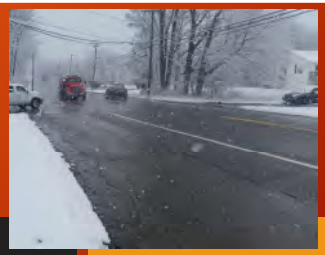
H. Consider the approval of Executive Session minutes of March 4, 2020

   i. To consider the purchase, exchange, lease or value of real property pursuant to MGL c 30A § 21(a) (6) as having the discussion in open session would be detrimental to the negotiating position of the town (Map 16/Lots 30 & 117)

******VOTES MAY BE TAKEN ON ANY OF THE ABOVE ITEMS******

ALL BOARD OF SELECTMEN MEETINGS ARE RECORDED VIA AUDIO AND VIDEO AND ARE BROADCAST LIVE ON SEEKONK CHANNEL 15

NEXT BOARD MEETING WEDNESDAY, June 24, 2020

Town of Seekonk Municipal Vulnerability Preparedness and Hazard Mitigation Plan

Presented By:

BEALS+THOMAS

Public Listening Session #2
Board of Selectmen Meeting
June 10, 2020

Welcome and Introduction

Jennifer Miller
Conservation Agent
Town of Seekonk

Mary Kate Schneeweis
Senior Environmental Specialist
Beals & Thomas

Municipal Vulnerability Preparedness (MVP) Program

The Nature Conservancy

www.CommunityResilienceBuilding.org

Municipal Hazard Mitigation Plan

- Completed using funds from MVP Planning Grant
- Required for municipalities to receive Federal Emergency Management Agency (FEMA) funding for non-emergency disaster assistance
- Updates required every 5 years
- Must address natural hazards outlined in the Massachusetts Integrated State Hazard Mitigation and Climate Adaptation Plan (SHMCAP)

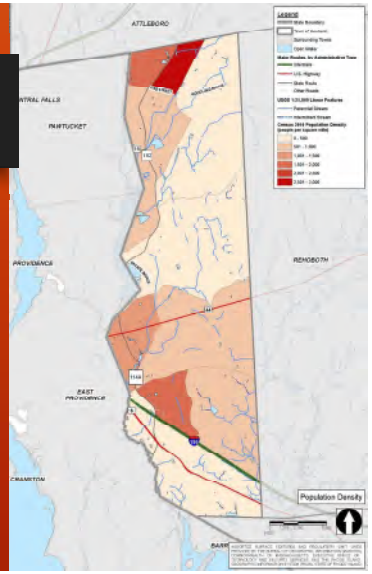
FEMA

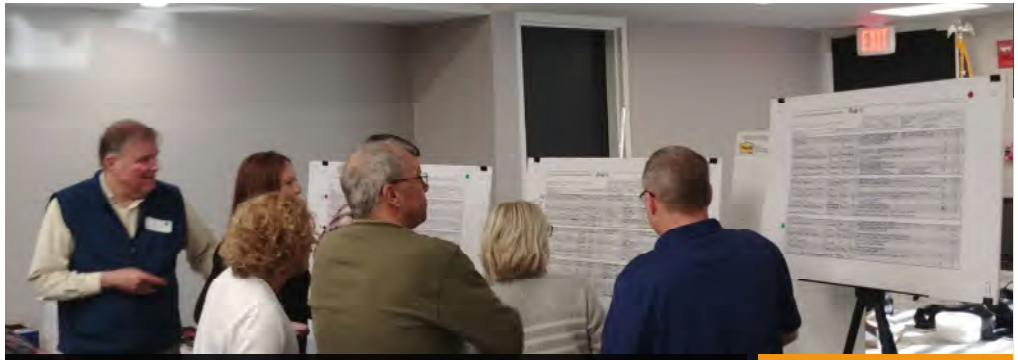
Draft Hazard Mitigation Plan Overview

- Section I: Overview
  - Town Profile
- Section II: Community Resilience Building Workshop
  - Intro to Local Planning Process and Public Participation
  - Overview of CRB Workshop
  - Other Local and Regional Planning Initiatives
- Section III: Top Hazards and Vulnerable Areas
  - Intro to Known Natural Hazards
  - Top Hazards Identified by Stakeholders
  - Critical Facilities and Specific Areas of Community Concern
    - Geographic
    - Infrastructural
    - Societal
    - Environmental
  - Specific Categories of Concerns and Challenges
    - Strengths
    - Vulnerabilities
- Section IV: Top Recommendations and Strategies to Improve Resilience
  - Priority Actions

Section I: Overview

- Population, Housing, Land Use Characteristics
- Open Space/Conservation Land
- Water Resources/Water Quality/Utilities
- Regional Economy
- Historic and Cultural Resources
- Demographic Data and Projections





Section II: Community Resilience Building Workshop

January Workshop Objectives

- Define extreme weather and natural and climate-related hazards
- Identify existing and future vulnerabilities and strengths
- Develop and prioritize actions for the community and broader stakeholder networks
- Identify opportunities for the community to advance actions to reduce risks and build resilience.

Overview of the MVP Process

DURING WORKSHOP

		Community Components
A Prepare for the Workshop	1 Establish a core team with goals. 2 Engage stakeholders. 3 Prepare materials for workshop. 4 Decide on participant arrangements.	
B Characterize Hazards	1 Identify past, current, and future impacts. 2 Determine the highest-priority hazards.	
C Identify Community Vulnerabilities and Strengths	1 Identify infrastructural vulnerabilities and strengths. 2 Identify societal vulnerabilities and strengths. 3 Identify environmental vulnerabilities and strengths.	Infrastructural
D Identify and Prioritize Community Actions	1 Identify and prioritize infrastructural actions. 2 Identify and prioritize societal actions. 3 Identify and prioritize environmental actions.	Societal
E Determine the Overall Priority Actions	1 Identify highest-priority actions. 2 Further define urgency and timing.	
F Put It All Together	1 Generate final workshop products.	Environmental
G Move Forward	1 Continue community outreach and engagement. 2 Secure additional data and information. 3 Inform existing planning and project activities.	

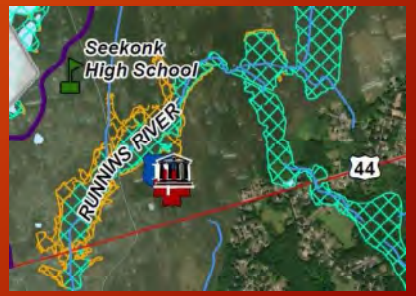
Section III: Top Hazards and Vulnerable Areas

SHMCAP Natural Hazards – considered in Seekonk

- Inland flooding
- Coastal flooding
- Average and extreme temperatures
- Drought
- Coastal Erosion
- Wildfire
- Landslides
- Tsunami
- Invasive species
- Hurricanes/tropical storms
- Severe winter storm/nor'easter
- Tornadoes
- Other severe weather
- Earthquakes

Hazard Occurrence and Impact

- Potential impact of hazard
  - e.g. Estimates of losses from flooding
- Local examples of each natural hazard (or potential of examples are not available/documented)
  - e.g. Flood-related disaster declarations
- Critical areas located within potential area of impact



Top Hazards Prioritized by the CRB Workshop

- Drought/Heat
- Inland Flooding
- Severe Storms
- Extreme Winter Weather
- Invasive Species

Section IV: Top Recommendations and Strategies to Improve Resilience

January Workshop: Top Priorities

- Assess the condition/sizing of existing culverts, dams, and bridges, incorporating need to accommodate climate projections for stormwater
- Assess the extent of elderly and disabled populations and the ability of emergency shelters to accommodate their needs
- Identify roads susceptible to flooding and continue/improve existing maintenance programs (e.g. tree trimming)
- Prepare an invasive species and pest management plan and educate the public

MVP Action Grants

- Available to complete projects identified as priority actions through the CRB process
  - Town eligible to apply upon completion of second listening session
- Project categories include:
  - Planning, Assessments, and Regulatory Updates
  - Nature-based Solutions for Ecological and Public Health
  - Resilient Redesigns and Retrofits for Critical Facilities and Infrastructure

Proposed FY 2021-2022 MVP Action Grant Applications

- Town-wide Assessment of Hydraulic Restrictions
- Town-wide Flood Modeling Study

Town-wide Assessment of Hydraulic Restrictions

- Assess three municipally-owned hydraulic restrictions on Ten Mile and Runnins Rivers
  - Attleboro Dye Works Dam
  - Burr's Pond Dam
  - Runnins River Former Bridge Abutments
- Develop solutions that consider climate change projections, including nature-based options such as dam removal
- Design and permit proposed solutions

Related MVP Priority Actions

- *Assess the condition/sizing of existing culverts, dams, and bridges, incorporating need to accommodate climate projections for stormwater (Top)*
- *Conduct engineering and construction of the Pond Street Bridge improvements (High)*
- *Evaluate and assess the Attleboro Dye Works and Burr's Pond dams to identify future improvements (High)*

Town-wide Assessment of Hydraulic Restrictions

- Assess three municipally-owned hydraulic restrictions on Ten Mile and Runnins Rivers
  - Attleboro Dye Works Dam
  - Burr's Pond Dam
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Related MVP Priority Actions

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- *Conduct engineering and construction of the Pond Street Bridge improvements (High)*
- *Evaluate and assess the Attleboro Dye Works and Burr's Pond dams to identify future improvements (High)*

Town of Seekonk Commitments

- Submission deadline June 18, 2020
- Request that Board of Selectmen vote to authorize Town Administrator to sign and submit applications and letter of support on their behalf
- Required 25% match in previously appropriated funding and in-kind services
  - $161K for Town-wide Assessment of Hydraulic Restrictions (includes construction costs to remove one of three structures)
  - $25K for Town-wide Flood Modeling Study
- Grant scope of work must be completed by June 30, 2022

Public Comment

- Presentation materials and draft HMP will be available at www.seekonk-ma.gov
- Submit written public comments to Conservation Agent, Jennifer Miller via email at jmiller@seekonk-ma.gov through **Thursday, June 25th**

Next Steps

- Submit MVP Action Grant applications
- Incorporate listening session results and public comments into final summary report/HMP
- Submit final summary report/HMP to EEA and MEMA
- Incorporate MEMA comments and submit updated draft to FEMA for review and comment
- Board of Selectmen to vote to adopt final plan upon FEMA approval

Questions/Discussion

Mary Kate Schneeweis

From: Jennifer Miller <jmiller@seekonk-ma.gov>
Sent: Wednesday, June 10, 2020 11:36 AM
To: Mary Kate Schneeweis
Subject: FW: MVP: Remote Public Listening Session w/ Live Broadcast via Seekonk TV-9
Attachments: IMG_0533.jpg; IMG_0535.jpg; IMG_0534.jpg

Public comment from 1st session…

From: Charles Beauchamp [mailto:charlesbeauchamp@msn.com]
Sent: Monday, May 11, 2020 8:27 AM
To: Jennifer Miller <jmiller@seekonk-ma.gov>; Willit Mason <wmason4445@gmaill.com>; John Alves <alvesmiller@comcast.net>; John Aubin <jaubin@seekonk-ma.gov>; Phoebe Dunn <phoebeleed@gmail.com>; David Sullivan Jr. (d.sullivan.jr@comcast.net) <d.sullivan.jr@comcast.net>
Subject: Re: MVP: Remote Public Listening Session w/ Live Broadcast via Seekonk TV-9

MVP comments

I want to thank you for Inviting me participate in the MVP listening session last week.

I got the sense that one primary objective of the MVP is to prepare for the vulnerabilities due to climate change. To that end I think we should put more effort into mitigating climate change versus reacting to it. That is, an ounce of prevention is worth a pound of cure.

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Respectfully submitted

Charles Beauchamp

From: Jennifer Miller <jmiller@seekonk-ma.gov>
Sent: Friday, April 24, 2020 2:46 PM
To: Neal Abelson <nabelson@seekonk-ma.gov>; 'adione@comcast.net' <adione@comcast.net>; 'jaguiar@townofdighton.com' <jaguiar@townofdighton.com>; Bruce Alexander <balexander@seekonk-ma.gov>; 'nelsonalmeida@comcast.net' <nelsonalmeida@comcast.net>; 'alvesmiller@comcast.net' <alvesmiller@comcast.net>; 'selectman.andrade@gmail.com' <selectman.andrade@gmail.com>; John Aubin <jaubin@seekonk-ma.gov>; 'charlesbeauchamp@msn.com' <charlesbeauchamp@msn.com>; 'gbessette@barrington.ri.gov' <gbessette@barrington.ri.gov>; 'mbourque@seekonkfd.com' <mbourque@seekonkfd.com>; 'bbraunsdorf@comcast.net' <bbraunsdorf@comcast.net>; 'robbernardo@seekonkwaterdistrict.com' <robbernardo@seekonkwaterdistrict.com>; Dave Cabral <dcabral@seekonk-ma.gov>; Shawn E. Cadime <scadime@seekonk-ma.gov>; 'mike.campagnone@foth.com' <mike.campagnone@foth.com>; Ashley Cartwright <acartwright@seekonk-ma.gov>; 'brotherb2@comcast.net' <brotherb2@comcast.net>; Florice Craig <fcraig@seekonk-ma.gov>; 'alexdunwoodie@comcast.net' <alexdunwoodie@comcast.net>; 'Deputy Chief Enos (Enod@seekonkpd.com)' <enod@seekonkpd.com>; Brittney Faria <bfaria@seekonk-ma.gov>; 'Peter Fuller' <pfuller@seekonkpl.org>; 'KTGgroup@aol.com' <KTGgroup@aol.com>; Sharonlynne Hall <shall@seekonk-ma.gov>; 'Healy, Michael' <chief@seekonkfd.com>; 'seekonkmoderator02771@gmail.com' <seekonkmoderator02771@gmail.com>; Jessica Horsman <jhorsman@seekonk-ma.gov>; 'jarm@seekonkpd.com' <jarm@seekonkpd.com>; 'vickikinniburgh@aol.com' <vickikinniburgh@aol.com>; James LaFlame <jlaflame@seekonk-ma.gov>; 'lafg@seekonkpd.com' <lafg@seekonkpd.com>; 'slowery@seekonkfd.com' <slowery@seekonkfd.com>; 'Kate McPherson' <kmcpherson@savebay.org>; 'Bill Napolitano' <bnap@srpedd.org>; Scott Olobri <solobri@seekonk-ma.gov>; John Pozzi <jpozzi@seekonk-ma.gov>; 'jamieroac@me.com' <jamieroac@me.com>; 'gary@krazespeedequipment.net' <gary@krazespeedequipment.net>; 'jonathan_schiller@brown.edu' <jonathan_schiller@brown.edu>; 'jdsullivan01@gmail.com' <jdsullivan01@gmail.com>; 'd.sullivan.jr@comcast.net' <d.sullivan.jr@comcast.net>; 'jtroiano@eccountingsolutions.com' <jtroiano@eccountingsolutions.com>; David Viera-Yahoo <dviera5@yahoo.com>; 'wallace815@comcast.net' <wallace815@comcast.net>; 'thompson_webb_iii@brown.edu' <thompson_webb_iii@brown.edu>; 'czorra@aol.com' <czorra@aol.com>; 'Mary Kate Schneeweis' <mschneeweis@bealsandthomas.com>; 'Eric Las' <elas@bealsandthomas.com>; 'Caroline Booth' <cbooth@bealsandthomas.com>; Kim Lallier <klallier@seekonk-ma.gov>; Testa, Christina P. <ctesta@seekonk-ma.gov>; Kristen L'Heureux <klheureux@seekonk-ma.gov>; 'Andrew Gorman' <agorman@bealsandthomas.com>; 'Nick Santangelo' <NSantangelo@bealsandthomas.com>; Carol A. Days <directordays@seekonkpd.com>; Cody Peixoto (contactus@tv9seekonk.com) <contactus@tv9seekonk.com>
Subject: MVP: Remote Public Listening Session w/ Live Broadcast via Seekonk TV-9

Good afternoon, MVP Stakeholders.

I hope this email finds all of you and your loved ones healthy and safe.

Please find attached the agenda and PowerPoint presentation for the upcoming MVP public listening session. Again, this will be 1 of 2 public listening sessions, with this one focusing on reviewing the priority hazards/vulnerabilities and then the 2nd session will review the draft MVP/HMP document. Due to the current circumstances, it will be a remote listening session with Mary Kate and me reviewing presentation materials and asking for you, the stakeholders, to attend remotely and give feedback as we review the priority hazards. The public will **NOT** be able to call in to the remote session, but can watch it live via TV-9 and submit comments in writing for 2 wks after the broadcast.

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Please let me know if you have any questions or concerns. If you would like to be removed from these stakeholder emails, please let me know.

Respectfully,
Mhq q lihu#P loohu
Conservation Agent
Town of Seekonk
100 Peck St
Seekonk, MA 02771
jmiller@seekonk-ma.gov
508.336.2944

Mary Kate Schneeweis

From: Jennifer Miller <jmiller@seekonk-ma.gov>
Sent: Wednesday, June 10, 2020 11:39 AM
To: Mary Kate Schneeweis
Subject: FW: MVP: Remote Public Listening Session w/ Live Broadcast via Seekonk TV-9

From 1st public listening session…

From: Lee Dunn [mailto:phoebeleed@gmail.com]
Sent: Monday, May 11, 2020 4:09 PM
To: Jennifer Miller <jmiller@seekonk-ma.gov>
Subject: Fwd: MVP: Remote Public Listening Session w/ Live Broadcast via Seekonk TV-9

---------- Forwarded message ---------
From: **Lee Dunn** <phoebeleed@gmail.com>
Date: Mon, May 11, 2020 at 9:33 AM
Subject: Re: MVP: Remote Public Listening Session w/ Live Broadcast via Seekonk TV-9
To: Charles Beauchamp <CharlesBeauchamp@msn.com>

Dear CB,

I have been mourning the grandfather tree at the corner of olney and cole as well. It created a welcome shady spot.

WHY? was it cut down?

phoebe

On Mon, May 11, 2020, 8:27 AM Charles Beauchamp <charlesbeauchamp@msn.com> wrote:

> MVP comments
> I want to thank you for Inviting me participate in the MVP listening session last week.
>
> I got the sense that one primary objective of the MVP is to prepare for the vulnerabilities due to climate change. To that end I think we should put more effort into mitigating climate change versus reacting to it. That is, an ounce of prevention is worth a pound of cure.
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Please let me know if you have any questions or concerns. If you would like to be removed from these stakeholder emails, please let me know.

Respectfully,

Mhq q lihu#P lochu

Conservation Agent

Town of Seekonk

100 Peck St

Seekonk, MA 02771

jmiller@seekonk-ma.gov

508.336.2944

Mary Kate Schneeweis

From: Jennifer Miller <jmiller@seekonk-ma.gov>
Sent: Wednesday, June 10, 2020 11:36 AM
To: Mary Kate Schneeweis
Subject: FW: Potential Town Solar Power Projects

Public comment for 2nd session…

From: Charles Beauchamp [mailto:CharlesBeauchamp@msn.com]
Sent: Tuesday, June 2, 2020 7:29 PM
To: Jennifer Miller <jmiller@seekonk-ma.gov>
Subject: Potential Town Solar Power Projects

Jennifer

Thanks for your call today. It was very informative.

FYI Below is the Energy Committee Report sent to the Town and presented to the BOS at their meeting on May 15, 2019 and the School Committe on June 20, 2019 The School Committee did get back to me an told me thery were too busy with the Aiken expansion to do this last year. Now I am sure they are very busy trying to figure out how to reopen the schools in the Fall. I plan to reengage with them in the Spring. I never heard anything for the Town Administration or BOS.

I suggest that this could be part of the MVP, however, it would not be in any grant applications because no funding is needed to do this.

So my questions to you:
Is it appropriate to add this to the MVP?
Would having items in the MVP that will be funded by other means make your grant applications stronger?

Thanks
Charlie

From: Charles Beauchamp
Sent: Monday, April 22, 2019 3:55 PM
To: David Andrade <port42780@gmail.com>; Shawn Cadime <scadime@seekonk-ma.gov>; Chris Testa <ctesta@seekonk-ma.gov>; Dave Cabral <dcabral@seekonk-ma.gov>; jaubin@seekonk-ma.gov <jaubin@seekonk-ma.gov>; bbraunsdorf@comcast.net <bbraunsdorf@comcast.net>; Paul Waltz <pwaltz@hotmail.com>; tomcrowley@comcast.net <tomcrowley@comcast.net>
Subject: Potential Town Solar Power Projects

All

The Energy Committee has been investigating the potential for Town of Seekonk solar power projects. We would like to come to the May 1 BOS meeting to discuss our findings.

The State Department of Energy Resources (DOER) has a new a SMART program that replaces the SREC program. The Town can qualify for incentives under this program. Also, the Federal Government gives 30% tax credits for solar energy development but since the Town does not pay taxes we cannot take advantage of this. However, there are numerous energy companies that will use the state and federal incentives to develop turnkey solar projects for the Town under a lease agreement.
The SMART program has base rate power blocks with a specific megawatt capacity limit for each incentive block. Projects are assigned to a block until the capacity limit is met. These have a declining rate structure, so, subsequent blocks pay less than the previous.
The SMART program has incentive adders for the location and offtake of the project. Each adder block also has capacity limits with a declining rate structure.

The Energy Committee has considered 3 types of solar projects

1. Solar Carports at the Town School and Public Safety Building Parking Lots
2. Solar panel field at the town landfill located behind the American Legion on Fall River Avenue.
3. Roof-top solar panels at the town schools.

The Energy Committee has communicated with several potential solar energy developers and has come to the following conclusions.

Companies would not likely do a lease agreement for the solar carports because the ROI is too low. This is because the cost of the carport installation is significantly more than rooftop or ground mounted panels. Companies may install carports for free but it is likely that the only benefit to Seekonk would be the community solar credits (approx. 10% less than retail rate) as well as some avoided snow removal cost.

The below table summarizes estimated lease agreements for the landfill ground mounted and school rooftop mounted panels. A model layout for solar panels at the landfill is attached.

Location	Landfill behind American Legion	High School Rooftop	Middle School Rooftop	Martin School Rooftop	Total
First Year Payment	$28,000	$15,000	$7,500	$7,200	$58,000
30 Year Payments	$1,000,000	$550,000	$280,000	$260,000	$2,100,000
DC Power Capacity	1960	690	310	290	3250
SMART Base Rate Block	8	8	8	8	
Location Adder	Landfill	Building Mount	Building Mount	Building Mount	
Location Block	1	1	1	1	

Offtake Adder	Community Solar	Community Solar	Community Solar	Community Solar	
Offtake Block	9	9	9	9	

The following notes apply to the table:

1. These estimates are non-binding but serve to identify the commercial components for lease negotiations. These commercial components are derived from assumed SMART base rate and adder blocks which are subject to change.
2. The typical term of the lease would be 20 years with options for two 5-year extension,
3. The Town can expect to receive quarterly payments.
4. Typically, there will be a fixed percentage for an annual payment escalator
5. The Town Utility is National Grid
6. The Aiken School was omitted due to a miscommunication but could have rooftop solar panels.
7. The Energy Committee has been assured that solar panels can be mounted at the landfill without disturbing the cap seal. Structural analysis will be done to assure that roofs can hold the panel load. Typically, no reinforcement is required.

We look forward to discussing this with the BOS

Respectfully submitted
Charles Beauchamp
Energy Committee Chair
401-864-5731

Appendix F
Completed Risk Matrices

Community Resilience Building Risk Matrix **Compiled Matrix** 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 (tornado, floods, wildfire, hurricanes, earthquake, drought, sea level rise, heat wave, etc.)

Features	Location	Ownership	V or S	Inland Flooding	Extreme Winter Weather	Severe Storms	Heat/Drought	Invasive Species	Priority H - M - L	Time S hort L ong O ngoing
Infrastructural										
Bridges/Culverts/Dams	Townwide	Varies	V/S	Conduct assessment of the condition and capacity of existing infrastructure, focusing on culverts and stormwater facilities in older neighborhoods					H	O/S
				Continue annual maintenance and upgrade infrastructure	Work on an active/annual maintenance plan	Continue managament of stormwater infrastructure, including culvert cleaning.			M/H	O
					Generate an inter-municipal plan					S
					Conduct engineering and construction of the Pond Street Bridge improvements				H	O
					Evaluate and assess the Attleboro Dye Works and Burr's Pond dams to identify future improvements					
Utilities (electric, communication)	Townwide	Varies (utility companies)	V/S	Assess vulnerabilities to single-phase electric power system from pole age and trees with a certified arborist, and conduct selective tree cutting to remove hazard trees from roadways					H	O
						Purchase portable generators for emergency use			M/H	O/S
				Evaluate installation of solar on municipal buildings					M/L	L
				Continue to coordinate with National Grid regarding locating and protecting existing OHW and UE						
				Continue roadside/ROW maintenance programs				Continue roadside/ROW maintenance programs	M	O
Transportation	Townwide	Varies (State (RI/MA), Town)	V/S	Include low-lying, flood-prone roadways in bridge/dam/culvert evaluation					M	L/O
				Expand public transportation opportunities into vulnerable population areas (e.g. central Seekonk) to improve emergenct evaltiation and travel during hazard occurances						
					Plan for selective tree removal and identify specific hazards that would disrupt traffic between the north and south portions of town.				H	O
				Encourage alternative transporation	Evaluate plowing contracts relative to nearby municipalities to improve snow clearing during storm events				H	L
					Maintain or expand a winter preparedness program and develop protocol for external sand/salt distribution			Maintain roadside/ROW mowing program	H	O
Water Infrastructure (wells and connection with Pawtucket)	Townwide	Private-Public Partnership	V/S	Perform a feasibility study to improve flood resilience of well fields.	Determine if new generators in the well fields would mitigate power loss during storm events and continue to provide access to water.		Explore deeper well siting		L	L
				Expore cooperative agreements with neighboring water supplies					H	O
				Assess the age of the water distribution system to identify improvement/replacement					L	L
Stormwater Management Systems	Townwide	Municipal / Private	V	Promote use of Municipal water supply			Investigate additional potable water sources		M	O
				Maintain program for assessment, maintenance, and prioritization for replacement and upgrades		Maintain program for assessment, maintenance, and prioritization for replacement and upgrades			M	O
				DPW to perform water quality assement of pre and post storm events and assist in daylighting streams		DPW to perform water quality assement of pre and post storm events and assist in daylighting streams				
Septic/Waste Management	Townwide	Private	V	Access existing septic systems in floodzonees					M	L/O
				Access opportunities to connect commerical developments to existing sewers						
				Evaluate the cost of a Municipal sewer system						
				Continue to monitor and enforce Title V requirements						
Town Buildings/Generators/Structures	Townwide	Town	S		Upgrade/update heating systems in older buildings and assess overall resiliency of buildings to storm events.		Update/finish cooling stations for public use during drought or extreme heat.		H	O
Public Safety	Specific	Town	V/S	Consider resilient design alternatives for construction of south-end fire station					H	L
				Conduct study of coverage of public safety radio network						
				Set up pest management contract for radio cabinet to maintain communication channels during emergencies						
Emergency Management (shelters, radio station, generators)	Specific	Town	V/S	Evaluate existing municipal buildings for additional shelter capacity and adequacy of amenities					H	O
				Provide additional generator capacity at emergency shelter sites						
				Maintain and upgrade existing Emergecny Response Plan					M	S/O
				Access existing evacuation routes						
				Formalize Emergency Notification System						
Athletic Facilities	Townwide	Town	V	Improve stormwater management at sports fields to improve flood control				Develop pest and nuisance managment plan for fields	M/L	L
				Develop plan for severe storm damage outside of DPW general maintenance scope						
Societal										
Senior/Disabled Populations	Townwide	Private	V	Evaluate centralized locations for affordable senior housing on municipal/other land					H	O
				Improve town's ability to accomodate and transport individuals with special service needs during hazard occurance						
				Acquire handicap-accessable vehicles to assist with transportation						
					Increase access to cooling stations. Increase emergency resources for elderly population.				M	L
Homeless/Transient Community	Townwide	Private	V						H	O/S
									M	O/S
				Determine population size, general locations, potential needs to better inform emergency response programs						
				Develop an education plan for communicating during emergencies						
Children/Youth	Townwide	Private	S	Determine population size, general locations, potential needs to better inform emergency response programs					M	S
				Develop an education plan for communicating during emergencies						
				Host forum to discuss community and municipal interests and involvement						
Non-Resident Population	Townwide	Private	V	Develop an education program to distribute to schools and camps regarding natural hazards					L	L
				Evaluate capacity of existing shelters to accommodate excess population working in and traveling through town						
				Develop plan for road closures to respond to hazards						
Non-English Speaking Community	North Seeknonk/Townwide/Specific	Private	V	Determine population size, general locations, potential needs to better inform emergency response programs					L	S
				Access multi-lingual forms of emergency notifications						
				Establish outreach commissions to improve communication with vulnerable populations					L	L
Commerce/Agriculture	Townwide/ Specific	Private	V/S					Develop education plan regarding distribution/retail of non-native/invasive species	L	L
				Develop a plan for businesses to better opperate during emergency situations						
Communication (Reverse 911, Collaboration, Cable TV)	Townwide	Town	S	Take advantageof existing outreach opportunities (e.g. Census) to improve dissemination of information to vulnerable populations					M	S
				Improve communication during emergiencies by provoding in multiple languages						
				Incentivise employment of multi-lingual emergency responders						
				Investigate and/or revise emergency response plan (currently outdated) and make this plan available to other town departments and stakeholders.					M	O/S
Mutual Aid/Public Safety	Townwide	Town	S	Maintain or expand existing mutual aid agreements					H	S
Form of Government	Townwide	Town	V	Explore alternative forms of government that improve representation					L	O
Domestic/Farm Animals	Townwide	Private	V	Evaluate/develop plan for pet/domestic animal care during evacuation/shelter					M	L
Public Housing	Localized to Specific Areas	Private	V			Increase access to cooling stations. Expand cooling stations to multiple buildings.			M	L
					Provide additional means of transportation for residents (including busing and other public transit).					
Major Population Centers (and the fact that they are located outside of the flood zone)	Townwide	Private	S	Maintain existing stormwater structures and increase storage capacity where possible.	Examine feasibility of requiring wider roads for planning purposes (e.g., subdivision regs) and to assist plow drivers in snow events.		Maintain existing stormwater structures and increase storage capacity where possible.		L	O
Weather Forecasting & Emergency Response Time	Townwide	Private	S		Investigate severe weather planning and preparation. Look for advanced methods of snow storage and removal for DPW.				M	O
Environmental										
Surface Water Quality	Townwide	Varies	V/S	Access potential areas for retrofitting stormwater management systems to increase water quality treetment and improve infiltration					H	O/S
				Develop and mainatin stormwater regulations						
				Impove monitoring of existing stormwter manageneent systems						
				ontinue to work with state and federal partners for remediation/redevelopment of Attleboro Dye Works site		Continue to work with state and federal partners for remediation/redevelopment of Attleboro Dye Works site				O
				ventory possible sources of contamination with community-wide assessment, especiall vulnerable populations		Inventory possible sources of contamination with community-wide assessment, especiall vulnerable populations				
				Work with MDAR to improve quality of runoff with pesticides and implement through the MS4 program		Work with MDAR to improve quality of runoff with pesticides and implement through the MS4 program				
OSRP/Conservation/Parks and Recreation	Townwide	Town	S	Prioritize completion of OSRP and evaluate related projects for funding opportunities				Prioritize completion of OSRP and evaluate related projects for funding opportunities	H	S
Conserved Land	Townwide	Varies	V/S	Identify and aquire additional open space parcels, particularly those connecting Town-owned open space					H	O
				are site-specific resource management plans with invasive and pest-management and public access components		Prepare site-specific resource management plans with invasive and pest-management and public access components				
Passive Recreation	Townwide	Varies	S	Acquire additional conservation land		Acquire additional conservation land			H	O
				orporate potential for hazard occurance into design of trail facilities and other passive recreation opportunities		Incorporate potential for hazard occurance into design of trail facilities and other passive recreation opportunities				
Aquifers/Public Water Supply	Specific	Water District	V/S	Assess yield of water supply wells relative to projected developent trends					M	L
				Encourage rainwater collection/reuse for residential and commercial irrigation						
				Evaluation additional land acquisition in vicinity of public water supply						
				Perform feasibility study to raise well grades (thus placing them out of the floodplain)	Explore alternate power sources, including tie-in with other towns and local generator supplying.		Examine effectiveness of water use restrictions and enforce these rules where necessary.		L	O/L
				Upgrade septic system requirements to treat higher levels of pollution					H	
				Continue to mornitor water quality for private water supplies in critical areas						
Invasive/Pest Management	Townwide	Varies	V					Incorporate radio cabinet maintenance into townwide invasive species/pest	H	O
								Include open space in townwide invasive species/pest management plan		
								Educate public on prevention of invasive species spread		
								Evaluatie nature-based solutions for pest management (e.g. bat houses)		
				Provide education to the public regarding the dangers of standing water						O/S
				Develop a regional deer management program						
Lack of Coastal Influence (fact that most of the town is 'inland)	Specific Locations	Public and Private	S	Investigate opportunities to preserve additional areas of flood zone (beyond those which are already designated for open space).	Continue to plan maintenance that is location-specific and prioritize culverts and stormwater infrastructure within flood zones				L	O
Low-lying areas, flood zones, and wetlands	Townwide	Public and Private	S	Continue to administer wetlands protection regulations through permitting (Conservation Commission)					L	O
High Groundwater	Townwide	Public and Private	S/V	Perform analysis (or hire consultant to do so) to perform a groundwater elevation analysis and plan for future impacts (and effects on development)					H	S/L/O
Habitat Connectivity	Townwide	Private/Publi	V/S	Access and implement additioanl critter crossings					L	O/L

Community Resilience Building Risk Matrix — **Green Group** — 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 (tornado, floods, wildfire, hurricanes, earthquake, drought, sea level rise, heat wave, etc.)

Features	Location	Ownership	V or S	Flooding	Winter Weather	Severe Storms	Invasive Species	Priority H - M - L	Time Short Long Ongoing
Infrastructural									
Bridges/Culverts/Dams	Townwide	Varies	V/S	Conduct assessment of the condition and capacity of existing infrastructure, focusing on culverts and stormwater facilities in older neighborhoods Conduct engineering and construction of the Pond Street Bridge improvements Evaluate and assess the Attleboro Dye Works and Burr's Pond dams to identify future improvements				H	O
Utilities (electric, communication, water)	Townwide	Varies (water district, utility companies)	V	Assess vulnerabilities to single-phase electric power system from pole age and trees with a certified arborist Assess the age of the water distribution system to identify improvement/replacement Expore cooperative agreements with neighboring water supplies				H	O
Transportation	Townwide	Varies (State (RI/MA), Town)	V/S	Evaluate installation of solar on municipal buildings Include low-lying, flood-prone roadways in bridge/dam/culvert evaluation Expand public transportation opportnities into vulnerable population areas (e.g. central Seekonk) to improve emergenct evatiation and travel during hazard occurances Encourage alternative transporation	Evaluate plowing contracts relative to nearby municipalities to improve snow clearing during storm events			M/L M H	L L L
Public Safety	Specific	Town	V/S	Consider resilient design alternatives for construction of south-end fire station Conduct study of coverage of public safety radio network Set up pest management contract for radio cabinet to maintain communication channels during emergencies				H	L
Emergency Management (shelters, radio station, generators)	Specific	Town	V/S	Evaluate existing municipal buildings for additional shelter capacity and adequacy of amenities Provide additional generator capacity at emergency shelter sites				H	O
Athletic Facilities	Townwide	Town	V	Improve stormwater management at sports fields to improve flood control Develop plan for severe storm damage outside of DPW general maintenance scope			Develop pest and nuisance managment plan for fields	M/L	L
Societal									
Senior/Disabled Populations	Townwide	Private	V	Evaluate centralized locations for affordable senior housing on municipal/other land Improve town's ability to acocmodate and transport individuals with special service needs during hazard occurance Acquire handicap-accessable vehicles to assist with transportation				H	O
Non-Resident Population	Townwide	Private	V	Evaluate capacity of existing shelters to accommodate excess population working in and traveling through town Develop plan for road closures to respond to hazards				L	L
Cultural Tradition	Townwide	Private	V	Establish outreach commissions to improve communication with vulnerable populations				L	L
Communication (Reverse 911, Collaboration, Cable TV)	Townwide	Town	S	Take advantageof existing outreach opportunities (e.g. Census) to improve dissemination of information to vulnerable populations Improve communication during emergiencies by providing in multiple languages Incentivise employment of multi-lingual emergency responders				M	S
Mutual Aid/Public Safety	Townwide	Town	S	Maintain or expand existing mutual aid agreements				H	S
Form of Government	Townwide	Town	V	Explore alternative forms of government that improve representation				L	O
Domestic/Farm Animals	Townwide	Private	V	Evaluate/develop plan for pet/domestic animal care during evacuation/shelter				M	L
Environmental									
Sources of Contamination (industrial, agricultural, wastewater treatment facility)	Townwide	Varies	V	Continue to work with state and federal partners for remediation/redevelopment of Attleboro Dye Works site Inventory possible sources of contamination with community-wide assessment, especiall vulnerable populations Work with MDAR to improve quality of runoff with pesticides and implement through the MS4 program		Continue to work with state and federal partners for remediation/redevelopment of Attleboro Dye Works site Inventory possible sources of contamination with community-wide assessment, especiall vulnerable populations Work with MDAR to improve quality of runoff with pesticides and implement through the MS4 program		H	O
OSRP/Conservation/Parks and Recreation	Townwide	Town	S	Prioritize completion of OSRP and evaluate related projects for funding opportunities		Prioritize completion of OSRP and evaluate related projects for funding opportunities		H	S
Conserved Land	Townwide	Varies	V/S	Acquire additional conservation land repare site-specific resource management plans with invasive and pest-management and public access components		Acquire additional conservation land Prepare site-specific resource management plans with invasive and pest-management and public access components		H	O
Passive Recreation	Townwide	Varies	S	Acquire additional conservation land ncorporate potential for hazard occurance into design of trail facilities and other passive recreation opportunities		Acquire additional conservation land Incorporate potential for hazard occurance into design of trail facilities and other passive recreation opportunities		H	O
Public Water Supply	Specific	Water District	V/S	Assess yield of water supply wells relative to projected developent trends Encourage rainwater collection/reuse for residential and commercial irrigation Evaluation additional land acquisition in vicinity of public water supply				M	L
Invasive/Pest Management	Townwide	Varues	V			Incorporate radio cabinet maintenance into townwide invasive species/pe		H	O
							Include open space in townwide invasive species/pest management plan		
							Educate public on prevention of invasive species spread		
							Evaluatie nature-based solutions for pest management (e.g. bat houses)		

Community Resilience Building Risk Matrix

Yellow Group

www.CommunityResilienceBuilding.org

Top Priority Hazards (tornado, floods, wildfire, hurricanes, earthquake, drought, sea level rise, heat wave, etc.)

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

Features	Location	Ownership	V or S	Inland Flooding	Drought/Heat	Extreme Winter Weather	Severe Storms	Priority H - M - L	Time S Long O
Infrastructural									
Stormwater Infrastructure, Including Dams, Bridges, and Groundwater Studies.	Townwide	Town/State	V/S	Continue annual maintenance and upgrade infrastructure		Work on an active/annual maintenance plan Generate an inter-municipal plan	Continue managament of stormwater infrastructure, including culvert cleaning.	M-H	S (Inentory) O (Maint.)
Electrical Utilities	Townwide	Private	V/S			Selective tree cutting to remove hazard trees from roadways.	Purchase portable generators for emergency use	M-H	S/O
Town Buildings/Generators/Structures	Townwide	Town	S		Update/finish cooling stations for public use during drought or extreme heat.	Upgrade/update heating systems in older buildings and assess overall resiliency of buildings to storm events.		H	O
Water Infrastructure (wells and connection with Pawtucket)	Townwide	Private-Public Partnership	S	Perform a feasibility study to improve flood resilience of well fields.	Explore deeper well siting	Determine if new generators in the well fields would mitigate power loss during storm events and continue to provide access to water.		L	L
Technology and Equipment	Townwide	Municipal	S		Investigate additional potable water sources	Continue advancing the capacity of town's snow and ice operation		M	O
Road Access (lack of major artery roads from north to south)	Townwide	Town/State	V		Plan for selective tree removal and identify specific hazards that would disrupt traffic between the north and south portions of town.			M	O
Societal									
Major Population Centers (and the fact that they are located outside of the flood zone)	Townwide	Private	S	Maintain existing stormwater structures and increase storage capacity where possible.		Examine feasibility of requiring wider roads for planning purposes (e.g., subdivision regs) and to assist plow drivers in snow events.		L	O
Water Restrictions/Rule Making	System/Town-Specific	Private	S		Examine effectiveness of water use restrictions and enforce these rules where necessary.			L	O
Public Housing	Localized to Specific Areas	Private	V		Increase access to cooling stations. Expand cooling stations to multiple buildings. Provide additional means of transportation for residents (including busing and other public transit).			M	L
Elderly Population	Townwide	Private	V		Increase access to cooling stations. Increase emergency resources for elderly population.			M	L
Weather Forecasting & Emergency Response Time	Townwide	Private	S			Investigate severe weather planning and preperation. Look for advanced methods of snow storage and removal for DPW.		M	O
Inter-departmental Communication	Townwide	Private	S	Investigate and/or revise emergency response plan (currently outdated) and make this plan available to other town departments and stakeholders.				M	O
Environmental									
Lack of Coastal Influence (fact that most of the town is 'inland)	Specific Locations	Public and Private	S	Investigate opportunities to preserve additional areas of flood zone (beyond those which are already designated for open space).		Continue to plan maintenance that is location-specific and prioritize culverts and stormwater infrastructure within flood zones		L	O
Low-lying areas, flood zones, and wetlands	Townwide	Public and Private	S	Continue to administer wetlands protection regulations through permitting (Conservation Commission)				L	O
High Groundwater	Townwide	Public and Private	S/V	Perform analysis (or hire consultant to do so) to perform a groundwater elevation analysis and plan for future impacts (and effects on development)				H	S/L/O
Geography	Townwide	Public and Private	S/V			Perform forest and tree maintenance, including hazard tree removal.		M	O
Tree Cover (speficically tree cover along roads)	Townwide	Public and Private	V			Perform selective tree removal to prevent hazards to traffic and public safety.		M	O
Water Supply	Townwide	Quasi-municipal	S	Perform feasibility study to raise well grades (thus placing them out of the floodplain)	Continue water restrictions and enforce said rules when necessary	Explore alternate power sources, including tie-in with other towns and local generator supplying.		L	L

Community Resilience Building Risk Matrix **Red Group** www.CommunityResilienceBuilding.org

Top Priority Hazards (tornado, floods, wildfire, hurricanes, earthquake, drought, sea level rise, heat wave, etc.)

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

Features	Location	Ownership	V or S	Inland Flooding	Severe Storms	Extreme Winter Weather	Invasive Species	Priority H - M - L	Time S Short L Long O Ongoing
Infrastructural									
Roads	Townwide	Municipal	V/S	Identify roads susceptible to flooding	Maintain tree trimming program	Maintain winter preparedness program Develop a protocal for sand/salt to distribute externally	Maintain roadside/ROW mowing program	H	O
Dams/Culverts	Specific	Public/Private	V	Access conditions of dams and culverts and develop a program for routine/periodic maintenance				H	O
Stromwater Management Systems	Townwide	Municipal/Private	V	Maintain program for assessment, maintenance, and prioritization for replacement and upgrades DPW to perform water quality assement of pre and post storm events and assist in daylighting streams				M	O
Utilities	Townwide	Municipal/Private	V/S	Continue to coordinate with National Grid regarding locating and protecting existing OHW and UE				M	O
Emergency Response Program	Townwide	Municipal	V/S	Promote use of Municipal water supply	Continue roadside/ROW maintenance programs			M	S
Septic/Waste Management	Townwide	Private	V	Maintain and upgrade existing Emergecny Response Plan Access existing evacuation routes Formalize Emergency Notification System				M	S
				Access existing septic systems in floodzonees Access opportunities to connect commerical developments to existing sewers Evaluate the cost of a Municipal sewer system Continue to monitor and enforce Title V requirements				M	L/O
Societal									
Elderly Population	Townwide	Private	V	Determine population size, general locations, potential needs to better inform emergency response programs Develop an education plan for communicating during emergencies				M	O/S
Homeless/Transient Community	Townwide	Private	V	Determine population size, general locations, potential needs to better inform emergency response programs Develop an education plan for communicating during emergencies				M	O/S
Children/Youth	Townwide	Private	S	Host forum to discuss community and municipal interests and involvement Develop an education program to distribute to schools and camps regarding natural hazards				M	S
Dissabled Persons	Townwide/ Specific	Private	V	Determine population size, general locations, potential needs to better inform emergency response programs Perform an ADA audit of public buildings				H	O/S
Non-English Speaking Community	North Seeknonk/To	Private	V	Determine population size, general locations, potential needs to better inform emergency response programs Access multi-lingual forms of emergency notifications				L	S
Commerse/Farmers	Townwide/ Specific	Private	V/S	Develop a plan for businesses to better opperate during emergency situations			Develop education plan regarding distribution/retail of non-native/invasive species	L	L
Environmental									
Surface Water Quality	Townwide	Private/Public	V/S	Access potential areas for retrofitting stormwater management systems to increase water quality treetment and improve infiltration Develop and mainatin stormwater regulations Impove monitoring of existing stormwter management systems				H	O/S
Habitat Connectivity	Townwide	Private/Public	V/S	Access and implement additioanl critter crossings Identify and aquire open parcels connecting Town Owned open space				L	O/L
Aquifer/Public Water Supply	Townwide	Public	V	Upgrade septic system requirements to treat higher levels of pollution Continue to mornitor water quality for private water supplies in critical areas				H	O/L
Tics/Mosquitos	Townwide	N/A	V	Provide education to the public regarding the dangers of standing water Develop a regonal deer managemet program				H	O/S
Plant Diversity	Townwide	Municipal	S	Implement tree planting program Encourage public to partake in Energy Savings Tree Program				M	L
Openspace/Recreation/Conservation	Townwide	Private/Public	V/S	Identify and aquire open parcels connecting Town Owned open space				H	O

Appendix G
Draft Certificate of Adoption

Seekonk, Massachusetts

RESOLUTION NO. _

A RESOLUTION OF THE TOWN OF SEEKONK, MA ADOPTING THE 2023 SEEKONK, MA HAZARD MITIGATION PLAN AND MUNICIPAL VULNERABILITY PREPAREDNESS SUMMARY OF FINDINGS

WHEREAS the Town of Seekonk, Board of Selectman recognizes the threat that natural hazards pose to people and property within Seekonk; and

WHEREAS the Town of Seekonk has prepared a multi-hazard mitigation plan, hereby known as the 2023 Seekonk, MA Hazard Mitigation Plan and Municipal Vulnerability Preparedness Summary of Findings in accordance with the Disaster Mitigation Act of 2000; and

WHEREAS the 2023 Seekonk, MA Hazard Mitigation Plan and Municipal Vulnerability Preparedness Summary of Findings dated _____ identifies mitigation goals and actions to reduce or eliminate long- term risk to people and property in Seekonk from the impacts of future hazards and disasters; and

WHEREAS adoption by the Town of Seekonk Board of Selectman demonstrates their commitment to the hazard mitigation and achieving the goals outlined in the 2023 Seekonk, MA Hazard Mitigation Plan and Municipal Vulnerability Preparedness Summary of Findings dated _____.

NOW THEREFORE, BE IT RESOLVED BY THE SEEKONK, MASSACHUSETTS THAT:

Section 1. In accordance with _____, the Town of Seekonk, Board of Selectman adopts the 2023 Seekonk, MA Hazard Mitigation Plan and Municipal Vulnerability Preparedness Summary of Findings dated _____.

ADOPTED by a vote of_____in favor and__against, and__abstaining, this_____day of

_____,_____.

By:_____ (print name)
ATTEST:

By:_____ (print name)
APPROVED AS TO FORM:

By:_____ (print name)