

**The Town of Southamptton**

# **Natural Hazard Mitigation Plan Update**



**Adopted by the Southamptton Board of Selectmen on December 20, 2016**

**Prepared by:**

The Southamptton Natural Hazards Mitigation Planning Committee

with technical assistance from

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# 1. HAZARD MITIGATION

The Federal Emergency Management Agency (FEMA) and the Massachusetts Emergency Management Agency (MEMA) define Hazard Mitigation as any sustained action taken to reduce or eliminate long-term risk to people and property from natural hazards such as flooding, storms, high winds, hurricanes, wildfires, earthquakes, etc. Mitigation efforts undertaken by communities will help to minimize damages to buildings and infrastructure, such as water supplies, sewers, and utility transmission lines, as well as natural, cultural and historic resources.

Planning efforts, like the one undertaken by the Town of Southampton and the Pioneer Valley Planning Commission, make mitigation a proactive process. Pre-disaster planning emphasizes actions that can be taken before a natural disaster occurs. Future property damage and loss of life can be reduced or prevented by a mitigation program that addresses the unique geography, demography, economy, and land use of a community within the context of each of the specific potential natural hazards that may threaten a community.

Preparing, and updating every five years, a local natural hazard mitigation plan before a disaster occurs can save community money. Moreover, it facilitates post-disaster funding. Costly repairs or replacement of buildings and infrastructure, as well as the high cost of providing emergency services and rescue/recovery operations, can be avoided or significantly lessened if a community implements the mitigation measures detailed in the plan. FEMA requires that a community adopt a pre-disaster mitigation plan as a condition for mitigation funding. For example, the Hazard Mitigation Grant Program (HMGP), the Flood Mitigation Assistance Program (FMA), and the Pre-Disaster Mitigation Program are programs with this requirement.

## Planning Process

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The natural hazard mitigation planning process for the Town of Southampton included the following tasks:

- Reviewing and incorporating existing plans and other information including considering how development that has happened in last seven years since the previous Hazard Mitigation plan was approved by FEMA in 2008 might have affected the Town's vulnerability to Natural Hazards.
- Updating the documentation of natural hazards that may impact the community since the previous plan
- Conducting a Vulnerability/Risk Assessment to identify the infrastructure at the highest risk for being damaged by the identified natural hazards, particularly flooding.
- Identifying and assessing the policies, programs, and regulations currently being implemented to protect against future disaster damages.
- Identifying deficiencies in the current capabilities and strategies, and establishing goals for updating, revising and/or adopting new strategies.

- Adopting and implementing the final updated Natural Hazards Mitigation Plan.

The key product of this process is the development of an Action Plan with a Prioritized Implementation Schedule.

## **Hazard Mitigation Committee Meetings**

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Meetings of the Hazard Mitigation Committee, all of which took place at Town Hall were held on the dates listed below. Agendas for these meetings are included in Appendix D.

July 1, 2015

Meeting included hazard mitigation planning overview, identify and organizing of the planning team, identifying critical facilities, an initial discussion of hazard identification and risk assessment, and existing mitigation strategies undertaken by the town.

April 20, 2016

Committee revisited critical facilities, discussed history of natural hazard events, and discussed potential mitigation strategies to be implemented.

May 3, 2016

Committee provided preliminary update of status of action strategies from 2008 plan and affirmed hazard experience of Town since 2008 plan and completed Capability Assessment.

May 24, 2016

Local Emergency Planning Committee (LEPC) met and reviewed draft plan and took copy home for additional review and comments.

July 27, 2016

Committee finalized status update of planned/current mitigation strategies undertaken by the town and affirmed prioritized list of mitigation strategies. Committee affirmed revised vulnerability assessment, finalized map of location of critical facilities and natural hazards, and signed off on plan update.

Agendas and sign-in sheets for each meeting can be found in Appendix D. While not all members of the Hazard Mitigation Committee were able to attend each meeting, all members collaborated on the plan and were updated on progress by fellow Committee members after meetings occurred.

## **Participation by Stakeholders**

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A variety of stakeholders were provided with an opportunity to be involved in the development of the Southampton Hazard Mitigation Plan. The different categories of stakeholders that were involved, and the engagement activities that occurred, are described below.

## Local and regional agencies involved in hazard mitigation activities

The Pioneer Valley Planning Commission is a regional planning agency for 43 towns and cities in Massachusetts' Hampden and Hampshire Counties. PVPC regularly engages with the Town of Southampton as part of its regional planning efforts, which include the following:

- Developing the Pioneer Valley Regional Land Use Plan, Valley Vision 2, which advocates for sustainable land use throughout the region and consideration of the impact of flooding and other natural hazards on development.
- Developing the Pioneer Valley Climate Action and Clean Energy Plan, which assesses the impact that climate change will have on the region and recommends strategies for mitigation that can be implemented by local municipalities and businesses.
- Collaborating with state agencies, such as the Department of Conservation and Recreation, to maintain inventories of critical infrastructure throughout the region.

All of these PVPC initiatives considered the impact of natural hazards on the region and strategies for reducing their impact to people and property through hazard mitigation activities. The facilitation of the Southampton Hazard Mitigation Plan by PVPC ensured that the information from these plans and collaborations was incorporated into the Hazard Mitigation Planning process.

In addition, the Pioneer Valley Planning Commission is actively involved in the Western Region Homeland Security Advisory Council (WRHSAC). WRHSAC, which includes representatives from Western Massachusetts municipalities, Fire Departments, Public Works Departments, Police Departments, area hospitals and regional transit from throughout the four counties of western Massachusetts, is responsible for allocating emergency preparedness funding from the US Department of Homeland Security. The representatives of these disciplines who serve on the WRHSAC are charged with sharing the information discussed at meetings with their colleagues at their regular meetings. PVPC staff attend all WRHSAC meetings and all WRHSAC members are aware of the fact that Southampton was updating their Hazard Mitigation plan. Meetings of WRHSAC regularly involve discussion about how to improve emergency preparedness in western Massachusetts, and hazard mitigation activities are included in this discussion.

For the development of this Hazard Mitigation Plan Update, PVPC staff verbally informed WRHSAC members that they were working on the Southampton plan as the Council's Planning sub-committee was deliberating about how to disseminate information about their work to sub-regions of the Pioneer Valley.

In addition, PVPC staff regularly present to their Executive Committee and Commission (representatives from the 43 cities and towns that comprise the Pioneer Valley), when new projects are launched and when funding opportunities are available. As result, all the communities in the region were informed of Southampton's hazard mitigation plan development process and encouraged to comment.

PVPC staff included a summary article on the status of Hazard Mitigation planning in the region in the quarterly Regional Reporter that is mailed to area Chambers of Commerce, all member municipalities, area colleges and universities and other key stakeholders in the region. In this way, businesses,

educational institutions and other key stakeholders were educated about and informed of Southampton's hazard mitigation planning work.

### **Agencies that have the authority to regulate development**

Southampton is a relatively small community with limited professional staff. The entities that have the authority to regulate development include the Select Board, the Planning Board, the Conservation Commission, the Board of Health and the Highway Superintendent. The Select Board was represented on the hazard mitigation planning committee by the Town Administrator and Member Charlie Kanicki, and the Planning Board was consulted by members of the hazard mitigation plan committee. The Emergency Management Director, Fire Chief, and the Highway Superintendent served on the Committee and provided input into the plan update process.

The input provided by the local Hazard Mitigation committee members and the other municipal staff and volunteers from whom they solicited input included all the information necessary to update this plan that was not able to be researched by PVPC staff. This included but was not limited to: details for the local Capability Assessment, updates on specifics of the effects of natural hazards on the community since the 2008 plan was approved, details on changes in capabilities and any new development since the 2008 plan, status of recommended actions from the previous plan, and changes in local policies, procedures, rules and regulations.

In addition, the Pioneer Valley Planning Commission, as a regional planning authority, works with all agencies that regulate development in Southampton, including state agencies, such as the Department of Conservation and Recreation and MassDOT. This regular involvement ensured that during the update of the Southampton Hazard Mitigation Plan, the operational policies and any mitigation strategies or identified hazards from these entities were incorporated into the Hazard Mitigation Plan.

### **Participation by Public & Entities in Surrounding Communities**

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Two public planning sessions were held as part of the development of the Southampton plan – on July 7, 2015 and July 28, 2016. Both meetings occurred after the Hazard Mitigation Committee had provided input on hazards and mitigation strategies relevant to the community. Notice of both public meetings was posted at the Southampton Town Hall in compliance with the Commonwealth of Massachusetts' open meeting law and the meetings were advertised via a media releases issued by PVPC to area media outlets included in Appendix D.

On July 1, 2015 the Pioneer Valley Planning Commission sent a press release to all area media outlets announcing that the hazard mitigation planning process was underway and that the first public outreach meeting would be held on July 7, 2015. On July 18, 2016 PVPC sent out another press release stating that the second public outreach meeting would take place on July 28, 2016 and that a draft of the final plan had been placed on PVPC's website. The press release also indicated that hard copies of the plan were available at PVPC's offices and at Southampton Town Hall, and that all residents, businesses and other concerned parties of Southampton as well as residents, municipal officials, business owners and other stakeholders in surrounding communities were encouraged to comment on the plan by e-mailing or calling staff contacts at PVPC or the Town. No members of the public attended either public meeting.



The Pioneer Valley Planning Commission's regional scope ensured that residents and government officials throughout the Pioneer Valley saw the press release and request for comments. Neighboring communities were also provided with an opportunity to provide feedback through the Pioneer Valley Planning Commission. At the same time that PVPC was working with the Town of Southampton on their Hazard Mitigation plan update, PVPC staff were also working with the neighboring communities of Westhampton, Easthampton, Westfield, and Holyoke, among other communities. While there was no feedback offered by these surrounding communities to the Town of Southampton in their local hazard mitigation planning process, surrounding communities did have the opportunity to provide input.

A list of media organizations that were sent the two press releases is provided in Appendix D. The list of media included television stations, radio stations, and newspapers located in western Massachusetts, northern Connecticut, and southern Vermont.

Public participation will be a critical component of the Hazard Mitigation Plan maintenance process, as discussed in Chapter 6: Plan Review, Evaluation, Implementation, and Adoption.

## 2. LOCAL PROFILE

### Community Setting

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Southampton is located in Hampshire County in Western Massachusetts, just west of the Connecticut River Valley. Covering about 29 square miles, the Town lies 17 miles northwest of downtown Springfield. Southampton is bordered by the towns of Westhampton and Easthampton to the north; Holyoke to the east; Westfield to the south; and Montgomery and Huntington to the west. The landscape is comprised of expansive farmlands interspersed with forested hills and ranges, which are all bisected by the Manhan River.

Established in 1775 as a farming community, some farms, predominantly dairy, still exist today. The current economic base is also comprised of home-based cottage industries as well as some small business development, antique shops, and restaurants. Additionally, the Parson's Memorial Forest and the Manhan Meadow Sanctuary are located in Town.

More recently, Southampton has become an attractive community for residential development, not only because of its rural character, but also because of its central location to the cities of Northampton, Westfield, Holyoke, and Springfield. The Town's moderately sloping hills, soil conditions, and reliance on private septic systems and wells have limited some development.

### Infrastructure

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Southampton's infrastructure reflects its agricultural roots and its prime location in terms of access to the larger region, as well as its small population and rugged terrain.

#### ***Roads and Highways***

Southampton's town center is found where College Highway runs into Fomer Road and then travels north, branching off of Pomery Meadow Road. This is a stretch of Route 10 running north-south through Town, and these three roads are the key travel routes in Town. Other significant roads include Main Road, along the southern border with Westfield, and County Road, along the Town's eastern border.

#### ***Rail***

There are no active rail lines in Southampton. A former right of way is owned by the Pioneer Valley Railroad, but is not operable. The Town is actively engaged in the creation of a greenway along a stretch of abandoned and unused right of way.

#### ***Public Water and Sewer Service***

Southampton's water supply system relies on two sources and serves approximately 67% of town residents. Since 2002, the newly rebuilt Town Well located near the intersection of Glendale Road and College Highway, has been the town's primary source of water. The City of Holyoke's Manhan Reservoir, also located in Southampton, serves as a backup water supply. Southampton maintains two connections to Holyoke's 42" diameter transmission pipeline at Pequot Road. Water extracted from the reservoir is stored in a 700,000 gallon tank located on Little Mountain near Wolcott Road. Southampton owns and

operates two water treatment stations, one at each connection to Holyoke's water transmission line. These stations are only operated when the Glendale Road well cannot meet demand.

Southampton does not have a public sewer system nor a publicly-owned wastewater treatment plant. Town residents and businesses rely on individual septic systems. Soils in the vicinity of Pequot Pond as well as in the center of town are poorly suited for on-site sewage disposal and have a long history of failing septic systems.

## **Natural Resources**

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Historically, the working landscapes of Southampton have shaped the physical, economic, and cultural character of the community. The Town's forestlands and remaining farms continue to contribute to the economic and environmental well-being of the town.

### ***Water Resources***

There are several ponds and small lakes in Southampton including: Pequot Pond, Alder Pond, Tighe Carmody Reservoir, White Reservoir, and Lost Pond. Many other smaller bodies of water are scattered across the landscape of Southampton, primarily located along streams and in wooded areas. Most of the 425 acres of open water in Southampton are comprised of these small ponds and lakes. These water bodies offer valuable wildlife habitat, unique natural environments, and provide benefits to Southampton's human inhabitants in the form of prime recreational opportunities and water supply.

A small portion of town lies within the Westfield River Watershed (957 acres); however, the majority of the town (17,568 acres) drains to the Connecticut River via the Manhan River. Many small streams in Southampton feed these two river systems.

### ***Forests and Fields***

Forest cover is by far the most prominent land use in Southampton. Southampton's Existing Land Use Map shows the extensive range of these forestlands encompassing approximately 12,800 acres, which comprises 69% of the total land area in the Town.

Additionally, almost 13% of Southampton is cropland and pastureland, providing additional vegetation types and habitat opportunities. However, this is the most quickly decreasing type of land use.

## **Development**

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Southampton's historically rural character is still intact, but because of this and its central location, the Town has become an attractive community for residential development. Some farms, predominantly dairy, still exist today, and there are many small and home-based businesses. But the Town has more recently seen a trend of single-family homes on large lots, apartment complexes, and summer cottage conversions.

### **Zoning**

Furthermore, zoning and other land use regulations constitute Southampton's "blueprint" for its future. Land use patterns over time will continue to look more and more like the town's zoning map until the town is finally "built out"—that is, there is no more developable land left. Therefore, in looking forward

over time, it is critical that the town focus not on the current use and physical build-out today, but on the potential future uses and build-out that are allowed under the town's zoning map and zoning bylaws. Zoning is the primary land use tool that the town may use to manage development and direct growth to suitable and desired areas while also protecting critical resources and ensuring that development is in keeping with the town's character.

The Southampton Zoning Bylaw establishes six base zones, and two overlay zones:

- Three residential zones – Residential-Rural (RR), Residential-Neighborhood (RN), Residential-Village (RV);
- Two commercial zones – Commercial-Village (CV), Commercial-Highway (CH);
- One industrial zone – Industrial Park (IP);
- Two overlay zones – Floodplain(FP); and Water Supply Protection District.

Although appropriate zoning is all relevant to protecting the health and safety of the Town residents, two of Southampton's districts are specifically relevant to natural hazard mitigation. These are outlined here:

- Floodplain - The floodplain overlay applies to those areas within the boundary of the one-hundred-year flood that are considered hazardous according to FEMA. It prohibits any new development unless proved it will not cause any increase in flood levels, and limits some uses for preventing potential flood damage.
- Water Supply Protection - The purpose of this overlay district is to protect and preserve Southampton's groundwater resources from potentially damaging pollution or environmental degradation by regulating certain uses within the district. The regulations state specific prohibited and restricted uses, regulates drainage, and details special permit procedures.

The Zoning Bylaw also establishes a Site Plan/Special Permit Approval procedure for specific uses and structures within Southampton. This review allows the Special Permit Granting Authority the ability to review development to ensure that the basic safety and welfare of the people of Southampton are protected, and includes several specific evaluation criteria that are relevant to natural hazards.

### ***Current Development Trends***

Today, the vast majority of Southampton's 29 square miles is undeveloped land, totaling close to 13,350 acres. Agricultural land is the second most prolific land use, at approximately 2,440 acres, followed by residential land at approximately 2,000 acres. The rest of the land uses in Town are minimal by comparison. Land characterized as outdoor recreational land constitutes approximately 120 acres, and there are 73 acres of urban open/public land. Commercial and industrial use occupies just 83 acres and 24 acres, respectively.

The Town's moderately sloping hills, soil conditions, and reliance on private septic systems and wells have limited development potential. However, Southampton is currently zoned to encourage large areas of rural residential development on large lots (i.e. suburban sprawl). The majority of town (62%) is zoned Rural Residential. Since zoning can be considered a snapshot of a community's future, the town is currently planned to build out in a low density pattern of residential sprawl. This pattern has been realized in the last five years with an average of 22 new building permits pulled each year from 2011-

2015. Not all building permits pulled in a year result in built residences that same year. Other than residential building, there has been no major new development in Southampton since the previous Hazard Mitigation plan was completed, and none of the new building is happening in major hazard areas.

Year	# New Building Permits
2011	22
2012	26
2013	21
2014	29
2015	12

***Development in Hazard Areas***

Hazards identified in this plan are regional risks and, as such, all new development falls into the hazard area. The exception to this is flooding. According to the Community Information System (CIS) of FEMA, there were 3 residential structures and 2 other structures located within the Special Flood Hazard Area (SFHA) in Southampton as of January 2004, the most current records in the CIS for the Town of Southampton. As noted, all of Southampton is potentially vulnerable to natural hazards, but the Town has not identified any areas of particular concern with respect to the new residential development happening in the Town and the Town's natural hazard risk assessment.

**Compliance with National Flood Insurance Program**

Southampton is a participating member of the National Flood Insurance Program, and had the following NFIP policy and claim statistics as of October of 2014:

- Flood Insurance Maps (FIRMs) are used for flood insurance purposes and are on file with the Southampton Planning Board.
- FIRMs have been effective since July 2, 1981 with the current map in effect since July 16, 2013.
- Southampton has 8 in-force policies in effect for a total of \$1,437,700 worth of insurance.
- There have 8 total claims totaling \$124,607 in payments.
- As of 2015, there have been no Repetitive Loss Properties in Southampton.

The Town will maintain compliance with the NFIP throughout the next 5-year Hazard Mitigation Planning cycle by monitoring its Flood Plain Overlay District and ensuring that the district accurately reflects the 100-year flood plain and FEMA Flood Insurance Rate Map (FIRM).

### 3. HAZARD IDENTIFICATION & RISK ASSESSMENT

The following section includes a summary of disasters that have affected or could affect Southampton. Historical research, conversations with local officials and emergency management personnel, available hazard mapping and other weather-related databases were used to develop this list.

The Hazard Mitigation Committee referred to the 2013 Massachusetts Hazard Mitigation list of hazards as a starting point for determining the relevant hazards in Pelham. The table below illustrates a comparison between the relevant hazards in the state plan and in Pelham’s plan.

Comparison of Hazard identified in the 2013 Massachusetts Hazard Mitigation Plan and the Southampton Hazard Mitigation Plan	
2013 Massachusetts Hazard Mitigation Plan	Town of Southampton Relevance
Coastal Hazards	The Town of Southampton is not located on the coast and therefore not at risk of coastal hazards.
Dam Failure	Dam Failure is a risk to Southampton.
Drought (Severe Weather)	Drought is a risk to Southampton.
Earthquake	Earthquakes are a risk to Southampton.
Extreme Temperature (Severe Weather)	Extreme Temperature is not considered a risk to Southampton.
Flood (including Ice Jam)	Flooding is a risk to Southampton.
High Wind (Severe Weather)	High Wind is a risk to Southampton and is included in the Severe Thunderstorm/Wind/Tornado/Microburst category.
Hurricane/Tropical Storm	Hurricanes are a risk to Southampton.
Ice Storm (Severe Winter Weather)	Ice Storms are a risk to Southampton and included in the category Severe Snowstorms/Ice Storms.
Landslide	Landslides are not considered a risk to Southampton.
Major Urban Fires	Major Urban Fires are not considered a risk to Southampton. However, wildfires and brush fires are considered a risk.
Nor’easter	Nor’easters are a risk to Southampton and included in the category Severe Snowstorms/Ice Storms.
Snow & Blizzard (Severe Winter Weather)	Snow & Blizzards are a risk to Southampton and included in the category Severe Snowstorms/Ice Storms.
Thunderstorm (Severe Weather)	Thunderstorms are a risk to Southampton and included in the category Severe Thunderstorms/Wind/Tornadoes/Microbursts.
Tornado (Severe Weather)	Tornadoes are a risk to Southampton and included in the category Severe Thunderstorms/Wind/Tornadoes/Microburst.
Tsunami	The Town of Southampton is not located on the coast or near the coast for tsunami to be a risk.
Wildland Fire	Wildland Fire is considered a risk to the Town of Southampton.

## Natural Hazard Analysis Methodology

This chapter examines all hazards identified by the Massachusetts State Hazard Mitigation Plan except for those determined to not apply to the inland community of Southampton. The analysis is organized into the following sections: Hazard Description, Location, Extent, Previous Occurrences, Probability of Future Events, Impact, and Vulnerability. A description of each of these analysis categories is provided below.

### Hazard Description

The natural hazards identified for Southampton are: floods, severe snowstorms/ice storms, hurricanes, severe thunderstorms / wind / tornadoes, wildfire/brushfire, earthquakes, dam failure, and drought. Many of these hazards result in similar impacts to a community. For example, hurricanes, tornadoes and severe snowstorms may cause wind-related damage.

### Location

Location refers to the geographic areas within the planning area that are affected by the hazard. Some hazards affect the entire planning area universally, while others apply to a specific portion, such as a floodplain or area that is susceptible to wild fires. Classifications are based on the area that would potentially be affected by the hazard, on the following scale.

Location of Occurrence, Percentage of Town Impacted by Given Natural Hazard	
Location of Occurrence	Percentage of Town Impacted
Large	More than 50% of the town affected
Medium	10 to 50% of the town affected
Small	Less than 10% of the town affected

### Extent

Extent describes the strength or magnitude of a hazard. Where appropriate, extent is described using an established scientific scale or measurement system. Other descriptions of extent include water depth, wind speed, and duration.

### Previous Occurrences

Previous hazard events that have occurred are described. Depending on the nature of the hazard, events listed may have occurred on a local, state-wide, or regional level.

### Probability of Future Events

The likelihood of a future event for each natural hazard was classified according to the following scale:

Frequency of Occurrence and Annual Probability of Given Natural Hazard	
Frequency of Occurrence	Probability of Future Events
Very High	70-100% probability in the next year
High	40-70% probability in the next year
Moderate	10-40% probability in the next year
Low	1-10% probability in the next year
Very Low	Less than 1% probability in the next year

**Impact**

Impact refers to the effect that a hazard may have on the people and property in the community, based on the assessment of extent described above. Impacts are classified according to the following scale:

Impacts, Magnitude of Multiple Impacts of Given Natural Hazard	
Impacts	Magnitude of Multiple Impacts
Catastrophic	Multiple deaths and injuries possible. More than 50% of property in affected area damaged or destroyed. Complete shutdown of facilities for 30 days or more.
Critical	Multiple injuries possible. More than 25% of property in affected area damaged or destroyed. Complete shutdown of facilities for more than 1 week.
Limited	Minor injuries only. More than 10% of property in affected area damaged or destroyed. Complete shutdown of facilities for more than 1 day.
Minor	Very few injuries, if any. Only minor property damage and minimal disruption on quality of life. Temporary shutdown of facilities.

**Vulnerability**

Based on the above metrics, a hazard index rating was determined for each hazard. The hazard index ratings are based on a scale of 1 (highest risk) through 5 (lowest risk). The ranking is qualitative and is based, in part, on local knowledge of past experiences with each type of hazard. The size and impacts of a natural hazard can be unpredictable. However; many of the mitigation strategies currently in place and many of those proposed for implementation can be applied to the expected natural hazards, regardless of their unpredictability.



### Hazard Identification and Risk Analysis Worksheet for Southampton

Type of Hazard	Location of Occurrence	Probability of Future Events	Impact	Hazard Risk Index Vulnerability Rating
Flooding	Medium-High	High	Minor	4 – Low risk
Severe Snowstorms / Ice Storms	Large	Very High	Critical	3 - Medium risk
Severe Thunderstorms / Winds / Tornadoes	Large Tornado-small	Moderate to High Tornadoes: Very Low	Minor Tornado-catastrophic	3 – Medium risk Tornadoes: 4 – Low risk
Hurricanes	Large	Moderate	Critical	3- Medium risk
Wildfire / Brushfire	Medium	Low	Critical	3 – Medium risk
Earthquakes	Large	Very low	Critical	4 - Low risk
Dam Failure	Medium	Very low	Critical	5 - Very low risk
Drought	Large	Low	Minor	5 - Very low risk

# Floods

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## Hazard Description

There are three major types of storms that can generate flooding in Southampton:

- Continental storms are typically low-pressure systems that can be either slow or fast moving. These storms originate from the west and occur throughout the year.
- Coastal storms, also known as nor'easters, usually occur in late summer or early fall and originate from the south. The most severe coastal storms, hurricanes, occasionally reach Massachusetts and generate very large amounts of rainfall.
- Thunderstorms form on warm, humid summer days and cause locally significant rainfall, usually over the course of several hours. These storms can form quickly and are more difficult to predict than continental and coastal storms.

A floodplain is the relatively flat, lowland area adjacent to a river, lake or stream. Floodplains serve an important function, acting like large “sponges” to absorb and slowly release floodwaters back to surface waters and groundwater. Over time, sediments that are deposited in floodplains develop into fertile, productive farmland like that found in the Connecticut River valley. In the past, floodplain areas were also often seen as prime locations for development. Industries were located on the banks of rivers for access to hydropower. Residential and commercial development occurred in floodplains because of their scenic qualities and proximity to the water. Although periodic flooding of a floodplain area is a natural occurrence, past and current development and alteration of these areas will result in flooding that is a costly and frequent hazard.

## Location

The 100-year floodplain emanates from the Manahan River, Red Brook, and Moose Brook. Parts of the Manahan River empty into the 500-year floodplain, specifically where it is crossed by Gilbert Road. Riverdale Road, Fomer Road, Pomeroy Meadow Road, Cottage Avenue, Freyer Road, and Mountain Road are encompassed by the 100-year flood zone and have experienced historic flooding. Furthermore, Pequot Pond, Potash Brook, White Reservoir, Tighe-Carmody Reservoir, Blue Meadow Brook, Alder Meadow Brook, Red Brook, and Broad Brook place adjacent areas in the 100 year and 500 year floodplain.

The majority of the land within the floodplains is comprised of natural open-space, interrupted at points by these pieces of critical infrastructure. While there are residential and municipal units in these areas, they are scattered.

In the winter months, snow accumulation and ice may disrupt the flow of these waterways and result in minor flooding. Additionally, accelerated snow melt increases the risk of flooding in these areas, which are comprised of numerous dirt roads susceptible to damage. The location of occurrence is classified as “medium-high”

## Extent

The Hazard Mitigation Committee indicated that all locations of localized flooding can receive high water marks of up to several feet during sufficiently large rainstorms. Water levels in Southampton's rivers, streams and wetlands rise and fall seasonally and during high rainfall events. High water levels are typical in the spring, due to snowmelt and ground thaw. This is the when flood hazards are normally expected. Low water levels occur in summer due to high evaporation and plant uptake (transpiration). At any time, heavy rainfall may create conditions that raise water levels in rivers and streams above bank full stage, which then overflow adjacent lands.

Floods can be classified as one of two types: flash floods and general floods.

- **Flash floods** are the product of heavy, localized precipitation in a short time period over a given location. Flash flooding events typically occur within minutes or hours after a period of heavy precipitation, after a dam or levee failure, or from a sudden release of water from an ice jam. Most often, flash flooding is the result of a slow-moving thunderstorm or the heavy rains from a hurricane. In rural areas, flash flooding often occurs when small streams spill over their banks. However, in urbanized areas, flash flooding is often the result of clogged storm drains (leaves and other debris) and the higher amount of impervious surface area (roadways, parking lots, roof tops).
- **General floods** may last for several days or weeks and are caused by precipitation over a longer time period in a particular river basin. Excessive precipitation within a watershed of a stream or river can result in flooding particularly when development in the floodplain has obstructed the natural flow of the water and/or decreased the natural ability of the groundcover to absorb and retain surface water runoff (e.g., the loss of wetlands and the higher amounts of impervious surface area in urban areas).

The average annual precipitation for Southampton and surrounding areas in western Massachusetts is 46 inches.

## Previous Occurrences

The major floods recorded in Southampton have been the result of rainfall alone or rainfall combined with snowmelt.

During the Patriots Day flood in April 2007, the section of Pomeroy Meadow Road in the flood zone flooded in Easthampton necessitating the evacuation of several Easthampton residents. Because the properties were not accessible from the Easthampton side of the road, Southampton performed the evacuation. This road was rebuilt in 2015.

Flooding in 2013 over topped Gilbert Road and Riverdale Road at the Gilbert Road Bridge.

In addition to the floodplains mapped by FEMA for the 100-year and 500-year flood, Southampton often experiences minor flooding at isolated locations due to drainage problems, or problem culverts.

## Probability of Future Events

Based upon previous data, there is a “high” chance (between 40 percent and 70 percent in the next year) of flash flooding or general flooding occurring in Southampton. Flooding frequencies for the various floodplains in Southampton are defined by FEMA as the following:

- 10-year floodplain – 10 percent chance of flooding in any given year
- 25-year floodplain – 2.5 percent chance of flooding in any given year
- 100-year floodplain – 1 percent chance of flooding in any given year
- 500-year floodplain – 0.2 percent chance of flooding in any given year

Climate scientists predict that in the next few decades, climate change will increase the frequency and intensity of all storms that can cause flooding. Currently, floods are the most costly natural hazard in the United States, and climate change will only increase this damage. More information about the effect of Climate Change can be found in the Pioneer Valley Planning Commission’s Climate Action Plan, available at [www.sustainableknowledgecorridor.org](http://www.sustainableknowledgecorridor.org).

## Impact

The Town of Southampton faces a “minor” impact in a flood scenario, with 10% or less of the total town’s area affected. There are approximately 765 acres of land within the FEMA mapped 100-year floodplain and 333 acres of land within the 500-year floodplain within the Town of Southampton.

According to the Community Information System (CIS) of FEMA, there were 3 residential structures and 2 other structures located within the Special Flood Hazard Area (SFHA) in Southampton as of January 2004, the most current records in the CIS for the Town of Southampton. The Town is currently comprised of approximately 2,402 housing units with a median home value of \$291,600 (American Community Survey, 2010-2014). Up to \$890,700 worth of damage could occur; this is a rough estimate that likely reflects a worst-case scenario. Computing a more detailed damage assessment based on assessor’s records is a labor-intensive task which is outside of the scope of this project. Furthermore, the impact of a flood would result in additional costs, to repair utilities and infrastructure, which are not calculated.

Specific vulnerability assessments were estimated for sites within the SFHA which have been susceptible to 100-year floods in the past are described below. At this time the Town of Southampton has no repetitive loss properties as defined by FEMA’s NFIP.

## Vulnerability

Based on the available data and our analysis, Southampton is rated ‘4-Low Risk’ for flooding.

The following areas and critical facilities are vulnerable during a period of flooding:

### 100-Year Floodplain

- Riverdale Road- three residences are flooded regularly and evacuated 3 to 4 times per year culminating with the closure of the road. The electric service connection is located in the

basement of each of these residences and creates a risk of electrocution to residents and rescue workers during flood events.

- Fomer Road- the western end of the road is in the 100-year flood zone. Dirt segments of this road tend to wash out and flood during significant storm events. Problem areas include cut out ditches and cross pipes along this road. The Highway and Water Department are located on Fomer Road near the intersection with Route 10.
- Pomeroy Meadow Road- this road connects to Easthampton through the 100-year flood zone for the Manhan River.
- Maple Street, Moose Brook Road and Brickyard Extension
- East Street- A tributary to Moose Brook flows parallel to East Street
- Town Hall- The electrical and heating systems for the building are located in the basement, which flood.
- Police Station- can get minor flooding during high groundwater periods. Garage doors are set at a grade for basement-level entry. The electrical and heating systems, as well as the jails, are located in the basement
- Fire Department- experiences a wet floor on the first floor during high groundwater periods.
- Cottage Ave, Freyer and Mountain Roads- historic flooding has resulted in road washouts on these dirt roads. The City of Westfield operates a sewer pumping station on Cottage Avenue at the town line.

#### 500-Year Floodplain

Gilbert Road- crosses the Manhan River in the 100- and 500-year flood zones. All of Gilbert Road experiences flooding during storm events greater than 1". Flooding at the crossing of the Manhan River means that there is approximately 1 ½ hours before flooding occurs downstream at Riverdale Road. The City of Holyoke's water pump station for their transmission line from the Tighe-Carmody (Manhan) Reservoir is located on Gilbert Road just outside of the 500-year flood zone

## Severe Snow/Ice Storm

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### Hazard Description

Snow is characterized as frozen precipitation in the form of six-sided ice crystal. In order for snow to occur, temperatures in the atmosphere (from ground level to cloud level) must be at or below freezing. The strongest form of a severe snow storm is a blizzard. Blizzards are characterized by frequent wind gusts above 35 miles per hour, limited to no visibility due to falling snow and extreme cold that lasts longer than three hours.

Ice storms are liquid rain that falls and freezes upon contact with cold objects. There must be an ice build-up of greater than ¼ inch for it to be considered an ice storm. When more than a ½ inch of ice build-up is forecasted a winter storm warning can be triggered.

Severe winter storms can pose a significant risk to property and human life. The rain, freezing rain, ice, snow, cold temperatures and wind associated with these storms can cause the following hazards:

- Disrupted power and phone service
- Unsafe roadways and increased traffic accidents
- Infrastructure and other property are also at risk from severe winter storms and the associated flooding that can occur following heavy snow melt.
- Tree damage and fallen branches that cause utility line damage and roadway blockages
- Damage to telecommunications structures
- Reduced ability of emergency officials to respond promptly to medical emergencies or fires.

### Location

The entire Town of Southampton is susceptible to severe snowstorms. Because these storms occur regionally, they impact the entire town. Based on this assessment, the location of occurrence from snow storms and ice storms in Southampton is “large.”

The following areas have been identified by the Hazard Mitigation Committee as areas where ice may build up on the roads during winter ice storm events:

- Top of Center Street
- Intersection of Middle Street and Whiteloaf Road.

The following areas have been identified by the Hazard Mitigation Committee as areas where snow drifts form during winter storm events:

- Many of the farms and open meadows and fields throughout town cause snow drifts in travel lanes that become hazards. These roads include County, Glendale, Pomeroy Meadow and Russellville Roads; Line and Pleasant Streets; and, Route 10 by the F&G Club.

Additionally, higher elevations tend to be more susceptible to ice damage to trees causing power outages. Roads of greatest concern include Fomer and Russellville Roads. The Town is working with Eversource Electric Company to remove trees near utility lines and identify lines to be buried to prevent storm induced power outages.

## Extent

The Northeast Snowfall Impact Scale (NESIS) developed by Paul Kocin of The Weather Channel and Louis Uccellini of the National Weather Service (Kocin and Uccellini, 2004) characterizes and ranks high-impact Northeast snowstorms. These storms have large areas of 10-inch snowfall accumulations and greater. NESIS has five categories: Extreme, Crippling, Major, Significant, and Notable. The index differs from other meteorological indices in that it uses population information in addition to meteorological measurements. Thus NESIS gives an indication of a storm's societal impacts.

NESIS scores are a function of the area affected by the snowstorm, the amount of snow, and the number of people living in the path of the storm. The aerial distribution of snowfall and population information are combined in an equation that calculates a NESIS score which varies from around one for smaller storms to over ten for extreme storms. The raw score is then converted into one of the five NESIS categories. The largest NESIS values result from storms producing heavy snowfall over large areas that include major metropolitan centers.

Northeast Snowfall Impact Scale Categories		
Category	NESIS Value	Description
1	1—2.499	Notable
2	2.5—3.99	Significant
3	4—5.99	Major
4	6—9.99	Crippling
5	10.0+	Extreme

Source: <http://www.ncdc.noaa.gov/snow-and-ice/rsi/nesis>

## Previous Occurrences

Southampton generally experiences at least one or two severe winter storms each year with varying degrees of severity. Severe winter storms typically occur during January and February; however, they can occur from late September through late May.

Southampton's recent history has not recorded any loss of life due to the extreme winter weather, but there are usually several incidents of property damage or personal injury each winter. In addition, during heavy snow years, accumulations can reach several feet deep. Southampton's rugged topography creates some steep grades, sometimes making plowing difficult and causing snow and ice hazards.

Based on data available from the National Oceanic and Atmospheric Administration, there are 47 winter storms since 1958 that have registered on the NESIS scale. Of these, approximately 26 storms resulted in snow falls in the Pioneer Valley of at least 10 inches. These storms are listed in the table on the next page, in order of their NESIS severity.

Winter Storms Producing Over 10 inches of Snow in the Pioneer Valley, 1958-2013			
Date	NESIS Value	NASIS Category	NESIS Classification
3/12/1993	13.2	5	Extreme
3/2/1960	8.77	4	Crippling
2/15/2003	7.5	4	Crippling
2/2/1961	7.06	4	Crippling
1/21/2005	6.8	4	Crippling
1/19/1978	6.53	4	Crippling
12/25/1969	6.29	4	Crippling
2/10/1983	6.25	4	Crippling
2/14/1958	6.25	4	Crippling
2/5/1978	5.78	3	Major
2/23/2010	5.46	3	Major
2/8/1994	5.39	3	Major
1/9/2011	5.31	3	Major
2/18/1972	4.77	3	Major
12/11/1960	4.53	3	Major
2/7/2013	4.35	3	Major
2/22/1969	4.29	3	Major
1/18/1961	4.04	3	Major
2/8/1969	3.51	2	Significant
2/5/1967	3.5	2	Significant
4/6/1982	3.35	2	Significant
3/4/2013	3.05	2	Significant
3/15/2007	2.54	2	Significant
3/31/1997	2.29	1	Notable
2/2/1995	1.43	1	Notable
1/25/1987	1.19	1	Notable

Source: <http://www.ncdc.noaa.gov/snow-and-ice/rsi/nesis>

### Probability

Based upon the availability of records for Hampshire County, the likelihood that a severe snow storm will affect Southampton is very high (between 70 and 100 percent in the next year).

Research on climate change indicates that there is great potential for stronger, more frequent storms as the global temperature increases. More information about the effect of Climate Change can be found in the Pioneer Valley Planning Commission's Climate Action Plan, available at [www.sustainableknowledgecorridor.org](http://www.sustainableknowledgecorridor.org).



The Massachusetts State Climate Change Adaptation Report has additional information about the impact of climate change and can be accessed at [www.mass.gov/eea/air-water-climate-change/climate-change/climate-change-adaptation-report.html](http://www.mass.gov/eea/air-water-climate-change/climate-change/climate-change-adaptation-report.html).

### **Impact**

The Town faces a “critical” impact, or 25 percent or more of total property damaged, from snowstorms. To estimate the potential impact, the total value of all property in Southampton, \$663,467,433 (SFY 17) is used.

It is estimated that 25% of Southampton’s structures would be 20% damaged during a severe storm, resulting in \$33,173,372 worth of damage. The cost of repairing roads, bridges, utilities and contents of structures is not included in this estimate.

### **Vulnerability**

Based on the analysis above, Southampton ranks a “3-Medium Risk” in the hazard index for snow and ice storms.

The entire town is vulnerable to the impacts of severe snow and ice. The Hazard Mitigation Committee did not feel that any critical facilities would be significantly impact. The town’s energy and communication infrastructure could be compromised due to snow or ice. Past storms have caused power outages across the state. Additionally ice build-up on roads can make winter travel challenging. Evacuation routes in town including, Fomer Road, Russellville Road, Pomeroy Meadow Road, County Road and College Highway, could all be impacted by snow and ice limiting their ability to function as evacuation routes if need be.

# Hurricanes

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## Hazard Description

Hurricanes are classified as cyclones and defined as any closed circulation developing around a low-pressure center in which the winds rotate counter-clockwise in the Northern Hemisphere (or clockwise in the Southern Hemisphere) and whose diameter averages 10 to 30 miles across. The primary damaging forces associated with these storms are high-level sustained winds and heavy precipitation. Hurricanes are violent rainstorms with strong winds that can reach speeds of up to 200 miles per hour and which generate large amounts of precipitation. Hurricanes generally occur between June and November and can result in flooding and wind damage to structures and above-ground utilities.

## Location

Because of the hazard’s regional nature, all of Southampton is at risk from hurricanes, meaning the location of occurrence is “large.” The tops of ridges are more susceptible to wind damage.

## Extent

As an incipient hurricane develops, barometric pressure (measured in millibars or inches) at its center falls and winds increase. If the atmospheric and oceanic conditions are favorable, it can intensify into a tropical depression. When maximum sustained winds reach or exceed 39 miles per hour, the system is designated a tropical storm, given a name, and is closely monitored by the National Hurricane Center in Miami, Florida. When sustained winds reach or exceed 74 miles per hour the storm is deemed a hurricane. Hurricane intensity is further classified by the Saffir-Simpson Hurricane Wind Scale, which rates hurricane wind intensity on a scale of 1 to 5, with 5 being the most intense.

Saffir-Simpson Hurricane Wind Scale	
Category	Maximum Sustained Wind Speed (MPH)
1	74–95
2	96–110
3	111–129
4	130–156
5	157 +

Source: National Hurricane Center, 2012

## Previous Occurrences

Hurricanes that have affected the Pioneer Valley are shown in the following table.

Major Hurricanes in the Pioneer Valley		
Hurricane/Storm Name	Year	Saffir/Simpson Category (when reached MA)
Great Hurricane of 1938	1938	3
Great Atlantic Hurricane	1944	1
Carol	1954	3
Edna	1954	1
Diane	1955	Tropical Storm
Donna	1960	Unclear, 1 or 2
Groundhog Day Gale	1976	Not Applicable
Gloria	1985	1
Bob	1991	2
Floyd	1999	Tropical Storm
Irene	2011	Tropical Storm
Sandy	2012	Super Storm

Hurricane Able tracked through Southampton in 1952, but did cause any significant damage to the town.

### Probability of Future Events

Southampton’s location in western Massachusetts reduces the risk of extremely high winds that are associated with hurricanes, although it can experience some high wind events. Based upon past occurrences, it is reasonable to say that there is a “moderate” probability of hurricanes in Southampton, or between a 10 and 40 percent chance, in any given year.

### Impact

A description of the damages that could occur due to a hurricane is described by the Saffir-Simpson scale, as shown in the following chart.

Hurricane Damage Classifications			
Storm Category	Damage Level	Description of Damages	Wind Speed (MPH)
1	MINIMAL	No real damage to building structures. Damage primarily to unanchored mobile homes, shrubbery, and trees. Also, some coastal flooding and minor pier damage. An example of a Category 1 hurricane is Hurricane Dolly (2008).	74-95
	Very dangerous winds will produce some damage		
2	MODERATE	Some roofing material, door, and window damage. Considerable damage to vegetation, mobile homes, etc. Flooding damages piers and small craft in unprotected moorings may break their moorings. An example of a Category 2 hurricane is Hurricane Francis in 2004.	96-110
	Extremely dangerous winds will cause extensive damage		
3	EXTENSIVE	Some structural damage to small residences and utility buildings, with a minor amount of curtain wall failures. Mobile homes are destroyed. Flooding near the coast destroys smaller structures, with larger structures damaged by floating debris. Terrain may be flooded well inland. An example of a Category 3 hurricane is Hurricane Ivan (2004).	111-129
	Devastating damage will occur		
4	EXTREME	More extensive curtain wall failures with some complete roof structure failure on small residences. Major erosion of beach areas. Terrain may be flooded well inland. An example of a Category 4 hurricane is Hurricane Charley (2004).	130-156
	Catastrophic damage will occur		
5	CATASTROPHIC	Complete roof failure on many residences and industrial buildings. Some complete building failures with small utility buildings blown over or away. Flooding causes major damage to lower floors of all structures near the shoreline. Massive evacuation of residential areas may be required. An example of a Category 5 hurricane is Hurricane Andrew (1992).	157+
	Catastrophic damage will occur		

The Town faces a “limited” impact from hurricanes, with 10 percent or more of Southampton affected.

To approximate the potential impact to property and people that could be affected by this hazard, the total value of all property in town, \$663,467,433 is used.

Wind damage of 5 percent to 10 percent of structures damaged would result in an estimated \$3,317,337 of damage. Estimated flood damage to 10 percent of the structures with 20 percent damage to each structure would result in \$13,269,349 of damage. The cost of repairing or replacing the roads, bridges, utilities, and contents of structures is not included in this estimate.

- Estimated wind damage: 5% of the structures with 10% damage, \$3,317,337;
- Estimated flood damage: 10% of the structures with 20% damage, \$13,269,349;
- Vulnerability assessment for a hurricane event (both wind and flood damages): \$16,586,686
- Cost of repairing or replacing the roads, bridges, utilities, and contents of structures is not included.

### **Vulnerability**

Based on the analysis, Southampton possesses a rating of “3-Medium Risk” for hurricanes on the hazard index.

The entire town would be vulnerable to the impact of a hurricane. Areas prone to flooding are particularly vulnerable to hurricanes. Additionally, high winds could impact that town’s communication and energy infrastructure. The Hazard Mitigation Committee felt that all critical facilities and evacuations routes could be vulnerable to the impacts of a hurricane.

## Severe Thunderstorms/Wind/Tornados/Microburst

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### Hazard Description

A thunderstorm is a storm with lightning and thunder produced by a cumulonimbus cloud, usually producing gusty winds, heavy rain, and occasional hail. Effective January 5, 2010, the NWS modified the hail size criterion to classify a thunderstorm as 'severe' when it produces damaging wind gusts in excess of 58 mph (50 knots), hail that is 1 inch in diameter or larger (quarter size), or a tornado (NWS, 2013).

Wind is air in motion relative to surface of the earth. For non-tropical events over land, the NWS issues a Wind Advisory (sustained winds of 31 to 39 mph for at least 1 hour or any gusts 46 to 57 mph) or a High Wind Warning (sustained winds 40+ mph or any gusts 58+ mph). For non-tropical events over water, the NWS issues a small craft advisory (sustained winds 25-33 knots), a gale warning (sustained winds 34-47 knots), a storm warning (sustained winds 48 to 63 knots), or a hurricane force wind warning (sustained winds 64+ knots). For tropical systems, the NWS issues a tropical storm warning for any areas (inland or coastal) that are expecting sustained winds from 39 to 73 mph. A hurricane warning is issued for any areas (inland or coastal) that are expecting sustained winds of 74 mph. Effects from high winds can include downed trees and/or power lines and damage to roofs, windows, etc. High winds can cause scattered power outages. High winds are also a hazard for the boating, shipping, and aviation industry sectors.

Tornadoes are swirling columns of air that typically form in the spring and summer during severe thunderstorm events. In a relatively short period of time and with little or no advance warning, a tornado can attain rotational wind speeds in excess of 250 miles per hour and can cause severe devastation along a path that ranges from a few dozen yards to over a mile in width. The path of a tornado may be hard to predict because they can stall or change direction abruptly. Within Massachusetts, tornadoes have occurred most frequently in Worcester County and in communities west of Worcester, including towns in eastern Hampshire County. High wind speeds, hail, and debris generated by tornadoes can result in loss of life, downed trees and power lines, and damage to structures and other personal property (cars, etc.).

Microbursts are sudden down bursts of air that that funnel air directly down until it hits the ground and disperses outwards. Microbursts most commonly occur during strong thunderstorms. The scale and suddenness of microbursts make them difficult to predict with certainty, but it is possible to forecast the conditions that make microbursts much more likely. The high winds associated with microbursts can knock over full grown trees, damage buildings and are especially problematic for aircrafts.

### Location

As per the Massachusetts Hazard Mitigation Plan, the entire town of Southampton is at risk of high winds, severe thunderstorms, and tornadoes. The plan also identifies Southampton and the surrounding communities as having a high frequency of tornados occurrence within Massachusetts. However, the actual location of occurrence of a thunderstorms, severe wind, tornado, or microburst is "small," with less than 10 percent of the town affected.

## Extent

An average thunderstorm is 15 miles across and lasts 30 minutes; severe thunderstorms can be much larger and longer. Southern New England typically experiences 10 to 15 days per year with severe thunderstorms. Thunderstorms can cause hail, wind, and flooding.

Microbursts are typically less than three miles across. They can last anywhere from a few seconds to several minutes. Microbursts cause damaging winds up to 170 miles per hour in strength and can be accompanied by precipitation.

Tornadoes are measured using the enhanced F-Scale, shown with the following categories and corresponding descriptions of damage:

Enhanced Fujita Scale Levels and Descriptions of Damage			
EF-Scale Number	Intensity Phrase	3-Second Gust (MPH)	Type of Damage Done
EF0	Gale	65–85	Some damage to chimneys; breaks branches off trees; pushes over shallow-rooted trees; damages to sign boards.
EF1	Moderate	86–110	The lower limit is the beginning of hurricane wind speed; peels surface off roofs; mobile homes pushed off foundations or overturned; moving autos pushed off the roads; attached garages may be destroyed.
EF2	Significant	111–135	Considerable damage. Roofs torn off frame houses; mobile homes demolished; boxcars pushed over; large trees snapped or uprooted; light object missiles generated.
EF3	Severe	136–165	Roof and some walls torn off well-constructed houses; trains overturned; most trees in forest uprooted.
EF4	Devastating	166–200	Well-constructed houses leveled; structures with weak foundations blown off some distance; cars thrown and large missiles generated.

## Previous Occurrences

There have been three tornado/high wind events since the 1970s based on the recollection of the project advisory committee. These include:

- A tornado on Gilbert Road in the early 1970s, damage assessments unavailable;
- A microburst in the early 1990s causing damage on Pleasant Street and College Highway. Approximately 15-20 large pine trees came down on Pleasant Street during this event and other tree damage occurred on College Highway.
- A wind shear came through in April, 2007 on Glendale, Cold Spring and White Loaf Roads causing mostly tree damage estimated around \$20,000 on residential property and required roughly \$10,000 of town funds for road

## Probability of Future Events

One measure of tornado activity is the tornado index value. It is calculated based on historical tornado events data using USA.com algorithms. It is an indicator of the tornado level in a region. A higher tornado index value means a higher chance of tornado events. Data was used for Hampshire County to determine the Tornado Index Value as shown in the table below.

Tornado Index for Hampshire County	
Hampshire County	138.23
Massachusetts	87.60
United States	136.45

Source: USA.com, <http://www.usa.com/Hampshire-county-ma-natural-disasters-extremes.htm>

Based upon the available historical record, as well as Southamptons location in a high-density cluster of state-wide tornado activity, it is reasonable to estimate that there is a "low" probability of tornado occurrence (1 to 10 percent chance in any given year) in the town.

As per the Massachusetts Hazard Mitigation Plan, there are approximately 10 to 30 days of thunderstorm activity in the state each year. Thus, there is a "moderate" probability (10 percent to 40 percent chance in any given year) of a severe thunderstorm or winds affecting the town.

## Impact

Overall, the Town faces a "minor" impact from severe thunderstorms and winds with 10 percent or more of the town affected and a "catastrophic" impact from tornadoes and microbursts with more than 50% of property damaged.

The potential for locally catastrophic damage is a factor in any severe weather event. In Southamptons, a tornado that hit residential areas would leave much more damage than a tornado with a travel path that ran along the towns forested areas, where little settlement has occurred. Most buildings in town have not been built to Zone 1, Design Wind Speed Codes. The first edition of the Massachusetts State Building Code went into effect on January 1, 1975, with much of the towns housing built before this date.

To approximate the potential impact to property and people that could be affected by severe weather, tornado, or wind, the total value of all property in town, \$663,467,433 is used.

For a tornado, an estimated 100 percent of damage would occur to 1 percent of structures, resulting in a total of \$6,634,674 worth of damage. The cost of repairing or replacing the roads, bridges, utilities, and contents of structures is not included in this estimate. For a severe thunderstorm or wind, an estimated 20 percent of damage would occur to 10 percent of structures, resulting in a total of \$13,269,349 worth of damage.



## **Vulnerability**

Based on the above assessment, Southampton has a hazard index rating of “3 - medium risk” from severe thunderstorms and winds, and a “4 – low risk” from tornadoes.

The entire town would be vulnerable to the destruction cause by severe thunderstorms, wind, tornadoes, and microbursts. The vulnerabilities associated with flooding could be prevalent if substantial rainfall were to accompany severe thunderstorms. Additionally, high winds could impact the town’s communication and energy infrastructure and older buildings.

## Wildfires/Brushfire

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### Hazard Description

Wild-land fires are typically larger fires, involving full-sized trees as well as meadows and scrublands. Brushfires are uncontrolled fires that occur in meadows and scrublands, but do not involve full-sized trees. Both wild-land fires and brushfires can consume homes, other buildings and/or agricultural resources. Typical causes of brushfires and wildfires are lightning strikes, human carelessness, and arson.

FEMA has classifications for 3 different classes of wild-land fires:

- Surface fires are the most common type of wild-land fire and burn slowly along the floor of a forest, killing or damaging trees.
- Ground fires burn on or below the forest floor and are usually started by lightning
- Crown fires move quickly by jumping along the tops of trees. A crown fire may spread rapidly, especially under windy conditions.

The wildfire season in Massachusetts usually begins in late March and typically culminates in early June, corresponding with the driest live fuel moisture periods of the year. April is historically the month in which wildfire danger is the highest. However, wildfires can occur every month of the year. Drought, snow pack, and local weather conditions can expand the length of the fire season. The early and late shoulders of the fire season usually are associated with human-caused fires.

### Location

Hampden and Hampshire County have approximately 469,587 acres of forested land, which accounts for 62 percent of total land area. In Southampton, 69% of the land, 12,800 acres, is forested and therefore at risk of fire. A large wildfire could damage almost all of the town's land mass in a short period of time. However, Massachusetts receives more than 40 inches of rain per year and much of the landscape is fragmented, and together these two traits make wildfires uncommon in Massachusetts. Nevertheless, in drought conditions, a brushfire or wildfire would be a matter of concern. There is forest very near all areas of Southampton, making the entire Town susceptible to wildfire and brushfire, and meaning the location of occurrence from this hazard is "large," or affecting more than 50 percent of the town.

### Extent

Wildfires can cause widespread damage to the areas that they affect. They can spread very rapidly, depending on local wind speeds and be very difficult to get under control. Fires can last for several hours up to several days. There are approximately 12,800 acres of forested land, comprising 69% of the town's total land mass.

### Previous Occurrences

In 2006, Southampton's Fire Department reported 69 fires, including unauthorized burns which they responded to. This figure is elevated from previous years; 35 fires were reported in 2005 and 11 fires were reported in 2004. Despite the majority of these fires being controlled, the increasing prevalence of unauthorized burns presents the town with heightened risk.

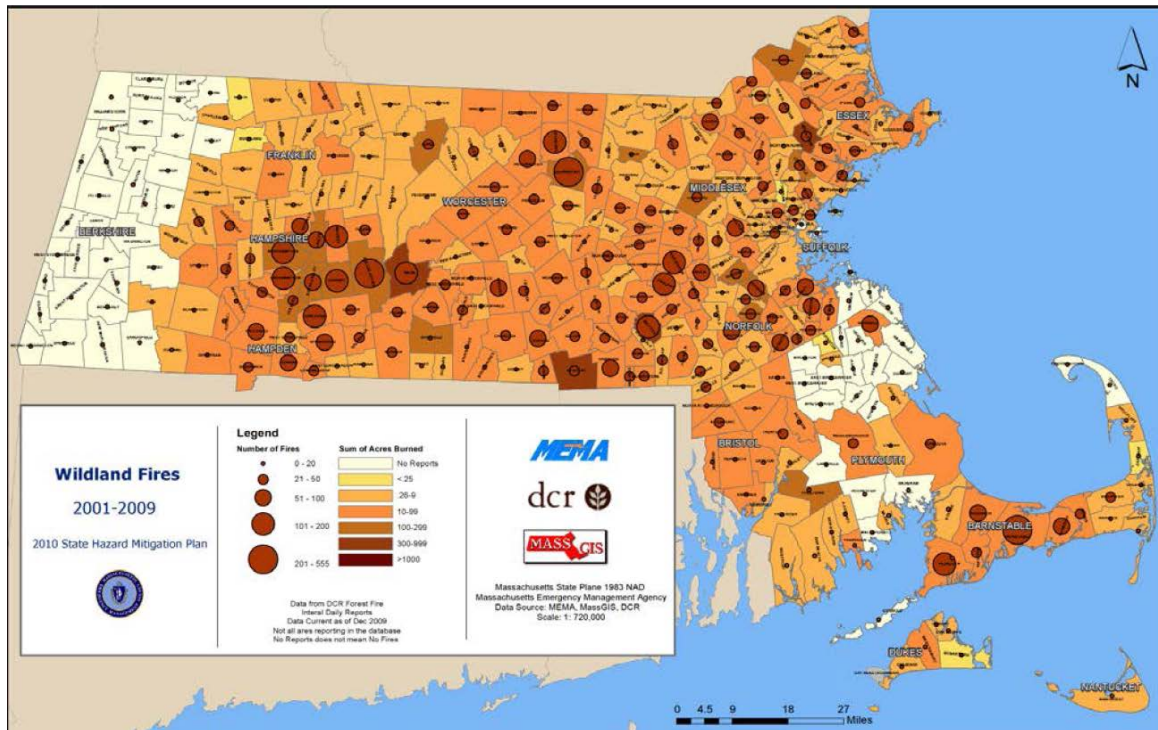
During the past 100 years, there have not been many wildfires occurring in the Pioneer Valley. However, several have occurred during the past 20 years, as shown in the list below:

- 1995 – Russell, 500 acres burned on Mt. Tekoa
- 2000 – South Hadley, 310 acres burned over 14 days in the Lithia Springs Watershed
- 2001 – Ware, 400 acres burned
- 2010 – Russell, 320 acres burned on Mt. Tekoa
- 2012 – Eastern Hampden County, dry conditions and wind gusts created a brush fire in Brimfield, and burned 50 acres

Total Fire Incidents in Southamptton	
2009	11
2010	11
2011	7
2012	15
2013	6

Source: Massachusetts Fire Incidence Reporting Systems, County Profiles, 2013 Fire Data Analysis

### Wildland Fires in Massachusetts, 2001-2009



Source: Massachusetts Hazard Mitigation Plan

## **Probability of Future Events**

In accordance with the Massachusetts Hazard Mitigation Plan, the Town Hazard Mitigation Committee found it is difficult to predict the likelihood of wildfires in a probabilistic manner because the number of variables involved. However, given the proximity of previous wildfires, and their proximity to the Town, the likelihood of a future wildfire is determined to be low.

Climate scenarios project summer temperature increases between 2°C and 5°C and precipitation decreases of up to 15 percent. Such conditions would exacerbate summer drought and further promote high-elevation wildfires, releasing stores of carbon and further contributing to the buildup of greenhouse gases. Forest response to increased atmospheric carbon dioxide—the so-called “fertilization effect”—could also contribute to more tree growth and thus more fuel for fires, but the effects of carbon dioxide on mature forests are still largely unknown.

## **Impact**

Wildfires can result in widespread damage to the natural environment, the built environment and can cause injuries and death. The Town faces a “critical” impact from wildfires, with over 25 percent of property in affected area damaged or destroyed.

To approximate the potential impact to property and people that could be affected by this hazard, the total value of all property in town, \$663,467,433 is used. An estimated 100 percent of damage would occur to 25 percent of structures, resulting in a total of \$ 165,866,858 worth of damage. The cost of repairing or replacing the roads, bridges, utilities, and contents of structures is not included in this estimate.

## **Vulnerability**

Based on the above assessment, Southampton has a hazard risk index of “3 – medium” from wildfires.

The western portion of town is most vulnerable to wildfires. This area of town has protected watershed land for the Tighe Carmody and White Reservoirs. Critical facilities most likely to be impacted by a wildfire include a water pump station on Dilbert Road, the Town Hall, the Police Station, the Fire Station, the Larabee School, and a town well on Glendale Road. Damage to these structures could severely impede the town’s ability to operate or respond to events. Route 10, College Highway and Russellville Road, three major evacuation routes, could also be impacted depending on where the burn were to occur.

# Earthquakes

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## Hazard Description

An earthquake is a sudden, rapid shaking of the ground that is caused by the breaking and shifting of rock beneath the Earth's surface. Earthquakes can occur suddenly, without warning, at any time of the year. New England experiences an average of 30 to 40 earthquakes each year although most are not noticed by people.<sup>1</sup> Ground shaking from earthquakes can rupture gas mains and disrupt other utility service, damage buildings, bridges and roads, and trigger other hazardous events such as avalanches, flash floods (dam failure) and fires. Un-reinforced masonry buildings, buildings with foundations that rest on filled land or unconsolidated, unstable soil, and mobile homes not tied to their foundations are at risk during an earthquake.<sup>2</sup>

## Location

Because of the regional nature of the hazard, the entire town is equally susceptible to earthquakes and the location of occurrence is "large," with over 50 percent of land affected.

## Extent

The magnitude of an earthquake is measured using the Richter Scale, which measures the energy of an earthquake by determining the size of the greatest vibrations recorded on the seismogram. On this scale, one step up in magnitude (from 5.0 to 6.0, for example) increases the energy more than 30 times. The intensity of an earthquake is measured using the Modified Mercalli Scale. This scale quantifies the effects of an earthquake on the Earth's surface, humans, objects of nature, and man-made structures on a scale of I through XII, with I denoting a weak earthquake and XII denoting a earthquake that causes almost complete destruction.

Richter Scale Magnitudes and Effects	
Magnitude	Effects
< 3.5	Generally not felt, but recorded.
3.5 - 5.4	Often felt, but rarely causes damage.
5.4 - 6.0	At most slight damage to well-designed buildings. Can cause major damage to poorly constructed buildings over small regions.
6.1 - 6.9	Can be destructive in areas up to about 100 kilometers across where people live.
7.0 - 7.9	Major earthquake. Can cause serious damage over larger areas.
8 or >	Great earthquake. Can cause serious damage in areas several hundred kilometers across.

<sup>1</sup> Northeast States Emergency Consortium Web site: [www.nesec.org/hazards/earthquakes.cfm](http://www.nesec.org/hazards/earthquakes.cfm).

<sup>2</sup> Federal Emergency Management Agency Web site: [www.fema.gov/hazards/earthquakes/quake.shtm](http://www.fema.gov/hazards/earthquakes/quake.shtm).

Modified Mercalli Intensity Scale for and Effects			
Scale	Intensity	Description Of Effects	Corresponding Richter Scale Magnitude
I	Instrumental	Detected only on seismographs.	
II	Feeble	Some people feel it.	< 4.2
III	Slight	Felt by people resting; like a truck rumbling by.	
IV	Moderate	Felt by people walking.	
V	Slightly Strong	Sleepers awake; church bells ring.	< 4.8
VI	Strong	Trees sway; suspended objects swing, objects fall off shelves.	< 5.4
VII	Very Strong	Mild alarm; walls crack; plaster falls.	< 6.1
VIII	Destructive	Moving cars uncontrollable; masonry fractures, poorly constructed buildings damaged.	
IX	Ruinous	Some houses collapse; ground cracks; pipes break open.	< 6.9
X	Disastrous	Ground cracks profusely; many buildings destroyed; liquefaction and landslides widespread.	< 7.3
XI	Very Disastrous	Most buildings and bridges collapse; roads, railways, pipes and cables destroyed; general triggering of other hazards.	< 8.1
XII	Catastrophic	Total destruction; trees fall; ground rises and falls in waves.	> 8.1

Source: US Federal Emergency Management Agency

## Previous Occurrences

The most recent earthquakes to affect Southampton are shown in the table below. There is no record of any damage to the Town of Southampton as a result of these earthquakes.

Largest Earthquakes Affecting the Region, 1924 – 2014		
Location	Date	Magnitude
Ossipee, NH	December 20, 1940	5.5
Ossipee, NH	December 24, 1940	5.5
Dover-Foxcroft, ME	December 28, 1947	4.5
Kingston, RI	June 10, 1951	4.6
Portland, ME	April 26, 1957	4.7
Middlebury, VT	April 10, 1962	4.2
Near NH Quebec Border, NH	June 15, 1973	4.8
West of Laconia, NH	Jan. 19, 1982	4.5
Plattsburg, NY	April 20, 2002	5.1
Bar Harbor, NH	October 3, 2006	4.2
Hollis Center, ME	October 16, 2012	4.6

Source: Northeast States Emergency Consortium website, [www.nesec.org/hazards/earthquakes.cfm](http://www.nesec.org/hazards/earthquakes.cfm)

New England States Record of Historic Earthquakes		
State	Years of Record	Number Of Earthquakes
Connecticut	1668 - 2007	137
Maine	1766 - 2007	544
Massachusetts	1668 - 2007	355
New Hampshire	1638 - 2007	360
Rhode Island	1776 - 2007	38
Vermont	1843 - 2007	73
New York	1840 - 2007	755
<i>Total Number of Earthquakes within the New England states between 1638 and 1989 is 2262.</i>		

Source: Northeast States Emergency Consortium website, [www.nesec.org/hazards/earthquakes.cfm](http://www.nesec.org/hazards/earthquakes.cfm)

## Probability of Future Events

One measure of earthquake activity is the Earthquake Index Value. It is calculated based on historical earthquake events data using USA.com algorithms. It is an indicator of the earthquake activity level in a region. A higher earthquake index value means a higher chance of earthquake events. Data was used for Hampshire County to determine the Earthquake Index Value as shown in the table below.

Earthquake Index for Hampshire County	
Hampshire County	0.17
Massachusetts	0.70
United States	1.81

Based upon existing records, there is a "very low" frequency of earthquakes in Southamptton, with less than a 1 percent chance of an earthquake occurring in any given year.

**Impact**

Most earthquake-related property damage and deaths are caused by failure and collapse of structures due to ground shaking. The level of damage depends upon the extent and duration of the shaking. Other damaging earthquake effects include landslides, the down-slope movement of soil and rock, and liquefaction.

Massachusetts introduced earthquake design requirements into their building code in 1975 and improved building code for seismic reasons in the 1980s. However, these specifications apply only to new buildings or to extensively-modified existing buildings. Buildings, bridges, water supply lines, electrical power lines and facilities built before the 1980s may not have been designed to withstand the forces of an earthquake. The seismic standards have also been upgraded with the 1997 revision of the State Building Code.

The town faces a "critical" impact from earthquakes, with more than 25 percent of Southamptton affected. To approximate the potential impact to property and people that could be affected by this hazard, the total value of all property in town, \$ 663,467,433 is used.

An estimated 100 percent of damage would occur to 25 percent of structures, resulting in a total of \$165,866,858 worth of damage. The cost of repairing or replacing the roads, bridges, utilities, and contents of structures is not included in this estimate.

**Vulnerability**

Based on the above analysis, Southamptton has a hazard index rating of "4 – low risk" from earthquakes.

Older buildings are particularly vulnerable to earthquakes because their construction pre-dates building codes that included strong seismic considerations. The Hazard Mitigation Committee currently lacks the information on how severe damage to critical facilities could be if an earthquake were to happen. They believe that all facilities will be impacted on some scale.



## Dam Failure

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### Hazard Description

Dams and their associated impoundments provide many benefits to a community, such as water supply, recreation, hydroelectric power generation, and flood control. However, they also pose a potential risk to lives and property. Dam failure is not a common occurrence, but dams do represent a potentially disastrous hazard. When a dam fails, the potential energy of the stored water behind the dam is released rapidly. Most dam failures occur when floodwaters above overtop and erode the material components of the dam. Often dam breaches lead to catastrophic consequences as the water rushes in a torrent downstream flooding an area engineers refer to as an “inundation area.” The number of casualties and the amount of property damage will depend upon the timing of the warning provided to downstream residents, the number of people living or working in the inundation area, and the number of structures in the inundation area.

Many dams in Massachusetts were built during the 19<sup>th</sup> Century without the benefit of modern engineering design and construction oversight. Dams of this age can fail because of structural problems due to age and/or lack of proper maintenance, as well as from structural damage caused by an earthquake or flooding.

The Massachusetts Department of Conservation and Recreation Office of Dam Safety is the agency responsible for regulating dams in the state (M.G.L. Chapter 253, Section 44 and the implementing regulations 302 CMR 10.00). To be regulated, these dams are in excess of 6 feet in height (regardless of storage capacity) and have more than 15 acre feet of storage capacity (regardless of height). Dam safety regulations enacted in 2005 transferred significant responsibilities for dams from the State of Massachusetts to dam owners, including the responsibility to conduct dam inspections.

### Location

According to the Office of Dam Safety and confirmed by the Hazard Mitigation Committee, Southamptton has six (6) dams within its boundaries. The location of occurrence for a dam failure has been determined to be “medium,” with between 10 and 50 percent of the land area affected.

Dams in Southamptton		
Dam	Owner	Hazard Risk
Tighe Carmondy Reservoir (Manhan Dam)	City of Holyoke	High
White Reservoir Dam	City of Holyoke	Significant
Alder Pond Dam	Myron H. Searle	Low
Lyman Mill Pond Dam	Glenn West	Low
Cedarhurst Swimming Pool Dam	Janet Brown	Low
New Intake Dam	City of Holyoke	Low

### Extent

Often dam breaches lead to catastrophic consequences as the water ultimately rushes in a torrent downstream flooding an area engineers refer to as an “inundation area.” The number of casualties and the amount of property damage will depend upon the timing of the warning provided to downstream

residents, the number of people living or working in the inundation area, and the number of structures in the inundation area.

Dams in Massachusetts are assessed according to their risk to life and property. The state has three hazard classifications for dams:

- *High Hazard:* Dams located where failure or improper operation is likely to cause loss of life and serious damage to homes, industrial or commercial facilities, important public utilities, main highways, or railroads.
- *Significant Hazard:* Dams located where failure or improper operation may cause loss of life and damage to homes, industrial or commercial facilities, secondary highways or railroads or cause interruption of use or service of relatively important facilities.
- *Low Hazard:* Dams located where failure or improper operation may cause minimal property damage to others. Loss of life is not expected.

### **Previous Occurrences**

To date, there have been no dam failures Southampton.

### **Probability of Future Events**

The age and deferred maintenance of Southampton's dams increases, the likelihood of a dam failure. Currently, the frequency of dam failures is very low with a less than 1 percent chance of a dam failing in any given year.

As described in the Massachusetts Hazard Mitigation Plan, dams are designed partly based on assumptions about a river's flow behavior, expressed as hydrographs. Changes in weather patterns can have significant effects on the hydrograph used for the design of a dam. If the hydrograph changes, it is conceivable that the dam can lose some or its entire designed margin of safety, also known as freeboard. If freeboard is reduced, dam operators may be forced to release increased volumes earlier in a storm cycle in order to maintain the required margins of safety. Such early releases of increased volumes can increase flood potential downstream. Throughout the west, communities downstream of dams are already seeing increases in stream flows from earlier releases from dams. Dams are constructed with safety features known as "spillways." Spillways are put in place on dams as a safety measure in the event of the reservoir filling too quickly. Spillway overflow events, often referred to as "design failures," result in increased discharges downstream and increased flooding potential. Although climate change will not increase the probability of catastrophic dam failure, it may increase the probability of design failures.

### **Impact**

A vulnerability assessment was done for the inundation area below the one high risk, Manhan Dam, and the one significant risk, White Reservoir Dam based on the Tighe-Carmody Reservoir Dam Emergency Action Plan by Tighe and Bond<sup>3</sup>. A major flood caused by a sudden breach of the Tighe-Carmody Reservoir Dam is estimated to inundate numerous homes and roadways in Southampton, Easthampton and Westfield. The inundation area as determined by Tighe and Bond is provided on the attached map.

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<sup>3</sup> *Tighe Carmody Reservoir Dam Emergency Action Plan*, Tighe and Bond, September 2006.  
Town of Southampton Natural Hazard Mitigation Plan Update

The following streets and number of residences and businesses are in the inundation zone in Southampton:

- Brickyard Road - 52 residences
- Brickyard Road Extension – 3 residences
- Buchanan Circle – 7 residences
- College Highway – 17 residences; 3 businesses
- Coolidge Drive – 2 residences
- East Street – 11 residences
- Fomer Road – 1 residence
- Garfield Circle – 4 residences
- Gilbert Road – 6 residences
- Gunn Road – 16 residences
- Madison Avenue – 3 residences
- Manhan Road – 14 residences
- Moosebrook Road – 3 residences
- Pleasant Street – 18 residences; 1 business
- Pomeroy Meadow Road – 2 residences
- Riverdale Drive Extension – 1 residence
- Riverdale Drive – 3 residences
- Strong Road – 8 residences
- Wyben Road – 5 residences

Therefore, up to 183 structures could be impacted by a failure of the Tighe-Carmody Dam in Southampton. It is assumed that 100% damage would occur to 100% of the structures within this inundation zone. Using the median home value, \$291,600 in the calculation, the losses incurred are estimated at \$53,362,800. Expenses relating to transmission lines, utilities, and infrastructure repairs are not factored into this estimate.

### **Vulnerability**

Based on this analysis, Southampton faces a “5-Very Low” risk of dam failure on the hazard index.

The areas of town most vulnerable to dam failures are the lands below the Manham and White Reservoir Dams. A breach of either of these dams could impact residents, critical facilities and evacuations routes in Southampton and area of the neighboring City of Westfield. The Hazard Mitigation Committee believe the following critical facilities could be the most vulnerable: the water pump station at Gilbert Road, Town Hall, the Police Station, the Fire Station, the Larabee School, and a town well on Glendale Road. Route 10, College Highway and Ruselville Road are designated evacuation routes that could be impacted. Damage or destruction to these facilities or evacuation routes could significant impede the town’s ability to operate.

# Drought

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## Hazard Description

Drought is a normal, recurrent feature of climate. It occurs almost everywhere, although its features vary from region to region. In the most general sense, drought originates from a deficiency of precipitation over an extended period of time, resulting in a water shortage for some activity, group, or environmental sector. Reduced crop, rangeland, and forest productivity; increased fire hazard; reduced water levels; increased livestock and wildlife mortality rates; and damage to wildlife and fish habitat are a few examples of the direct impacts of drought. Of course, these impacts can have far-reaching effects throughout the region and even the country.

## Location

Because of this hazard's regional nature, a drought would impact the entire town.

## Extent

The severity of a drought would determine the scale of the event and would vary among town residents depending on whether the residents' water supply is derived from a private well or the public water system.

The U.S. Drought Monitor also records information on historical drought occurrence. Unfortunately, data could only be found at the state level. The U.S. Drought Monitor categorizes drought on a D0-D4 scale as shown below.

U.S. Drought Monitor		
Classification	Category	Description
D0	Abnormally Dry	Going into drought: short-term dryness slowing planting, growth of crops or pastures. Coming out of drought: some lingering water deficits; pastures or crops not fully recovered
D1	Moderate Drought	Some damage to crops, pastures; streams, reservoirs, or wells low, some water shortages developing or imminent; voluntary water-use restrictions requested
D2	Severe Drought	Crop or pasture losses likely; water shortages common; water restrictions imposed
D3	Extreme Drought	Major crop/pasture losses; widespread water shortages or restrictions
D4	Exceptional Drought	Exceptional and widespread crop/pasture losses; shortages of water in reservoirs, streams, and wells creating water emergencies

Source: US Drought Monitor, <http://droughtmonitor.unl.edu/classify.htm>

## Previous Occurrences

In Massachusetts, six major droughts have occurred statewide since 1930.<sup>4</sup> They range in severity and length, from three to eight years. In many of these droughts, water-supply systems were found to be inadequate. Water was piped in to urban areas, and water-supply systems were modified to permit withdrawals at lower water levels. The following table indicates previous occurrences of drought since 2000, based on the US Drought Monitor:

Annual Drought Status	
Year	Maximum Severity
2000	No drought
2001	D2 conditions in 21% of the state
2002	D2 conditions in 99% of the state
2003	No drought
2004	D0 conditions in 44% of the state
2005	D1 conditions in 7% of the state
2006	D0 conditions in 98% of the state
2007	D1 conditions in 71% of the state
2008	D0 conditions in 57% of the state
2009	D0 conditions in 44% of the state
2010	D1 conditions in 27% of the state
2011	D0 conditions in 0.01% of the state
2012	D2 conditions in 51% of the state
2013	D1 conditions in 60% of the state
2014	D1 conditions in 54% of the state
2015	D1 conditions in 100% of the state

Source: US Drought Monitor

Southampton has not been impacted by any previous droughts in the state.

## Probability of Future Events

In Southampton, as in the rest of the state, drought occurs at a rate of between 1 percent and 10 percent in a single given year.

Based on past events and current criteria outlined in the Massachusetts Drought Management Plan, it appears that western Massachusetts may be more vulnerable than eastern Massachusetts to severe drought conditions. However, many factors, such as water supply sources, population, economic factors (i.e., agriculture based economy), and infrastructure, may affect the severity and length of a drought event.

When evaluating the region's risk for drought on a national level, utilizing a measure called the Palmer Drought Severity Index, Massachusetts is historically in the lowest percentile for severity and risk of

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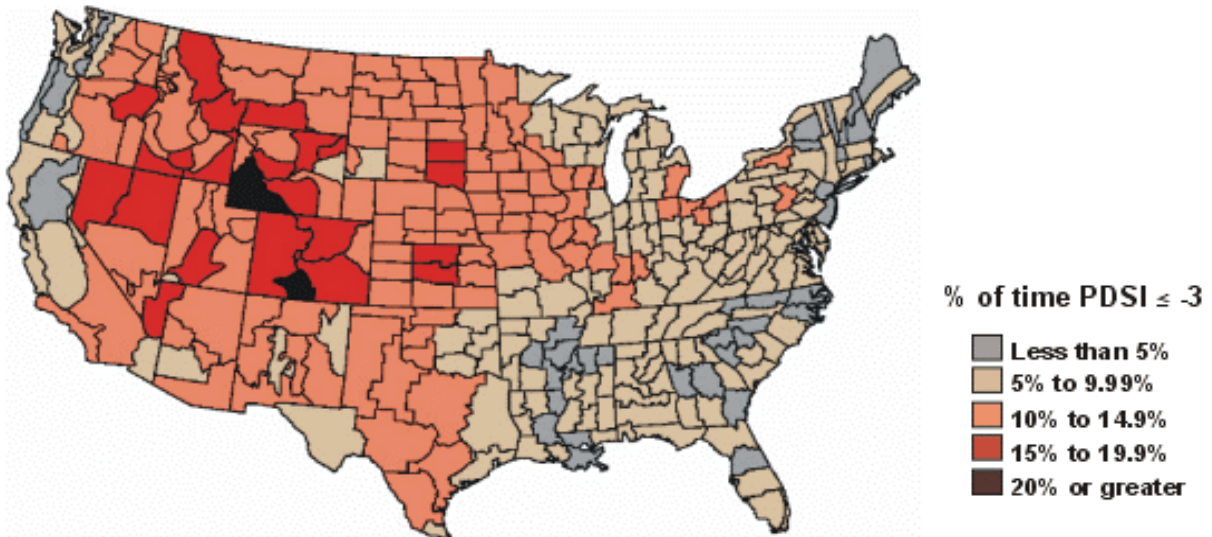
<sup>4</sup> US Geological Survey Water-Supply Paper 2375. "National Water Summary 1989 – Floods and Droughts: Massachusetts." Prepared by S. William Wandle, Jr., US Geological Survey.

drought.<sup>5</sup> However, global warming and climate change may have an effect on drought risk in the region. With the projected temperature increases, some scientists think that the global hydrological cycle will also intensify. This would cause, among other effects, the potential for more severe, longer-lasting droughts.

## Palmer Drought Severity Index

1895–1995

Percent of time in severe and extreme drought



### Impact

Due to the water richness of Western Massachusetts, Southampton is unlikely to be adversely affected by anything other than a major, extended drought. The impacts of drought are categorized by the U.S. Drought Monitor to include:

- Slowing or loss of crops and pastures
- Water shortages or restrictions
- Low water levels in streams, reservoirs, and wells

As a result, the impact of a drought would be “minor” with only minimal property damage or disruption on quality of life.

### Vulnerability

Based on the above assessment, Southampton faces a low risk of drought.

While a drought would require water saving measures to be implemented, there would be no foreseeable damage to structures or loss of life resulting from the hazard.

<sup>5</sup> National Drought Mitigation Center – <http://drought.unl.edu>

## Other Hazards

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In addition to the hazards identified above, the Hazard Mitigation Team reviewed the full list of hazards listed in the Massachusetts Hazard Mitigation Plan. Due to the location and context of the Town, coastal erosion, landslides, and tsunamis, were determined to not be a threat.

Extreme temperatures, while identified in the state Hazard Mitigation Plan, was determined by the Southampton Hazard Mitigation Committee to not currently be a primary hazard to people, property, or critical infrastructure in Southampton. While extreme temperatures can result in increased risk of wildfire, this effect is addressed as part of the “Wildfire/Brushfire” hazard assessment. As described in the hazard assessment of climate change, extreme temperatures are likely to have a larger effect on the Town in the future. The Hazard Mitigation Committee will continue to assess the impact of extreme temperature and update the Hazard Mitigation Plan accordingly.

## 4. CRITICAL FACILITIES

A Critical Facility is defined as a building, structure, or location which:

- is vital to the hazard response effort.
- maintains an existing level of protection from hazards for the community.
- would create a secondary disaster if a hazard were to impact it.

### **Critical Facilities within Hazard Areas**

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Hazards identified in this plan are regional risks and, as such, all critical facilities fall into the hazard area. The exception to this is flooding. There are several critical facilities that fall within the 100-year floodplain as shown in the table at the end of this section.

The Critical Facilities List for the Town of Southampton has been identified utilizing a Critical Facilities List provided by the State Hazard Mitigation Officer. Southampton's Hazard Mitigation Committee has broken up this list of facilities into four categories:

- The first category contains facilities needed for Emergency Response in the event of a disaster.
- The second category contains Non-Emergency Response Facilities that have been identified by the Committee as non-essential. These are not required in an emergency response event, but are considered essential for the everyday operation of Southampton.
- The third category contains Facilities/Populations that the Committee wishes to protect in the event of a disaster.
- The fourth category contains Potential Resources, which can provide services or supplies in the event of a disaster.

The critical facilities and evacuation routes potentially affected by hazard areas are identified in Table 4-1, following this list. The Past and Potential Hazards/Critical Facilities Map (Appendix C) identifies these facilities.

### **Category 1 – Emergency Response Services**

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The Town has identified the Emergency Response Facilities and Services as the highest priority in regards to protection from natural and man-made hazards.

- 1) Emergency Operations Center
  - Primary: Police Department, 8 East Street
  - Secondary: DPW/highway Department Headquarters, 8 Fomer Road
- 2) Fire Station



Southampton Fire Department – College Highway

- 3) Police Station  
Southampton Town Police Department – 8 East Street
- 4) Highway Department  
Highway Department – 8 Fomer Road
- 5) Water  
Primary: Town Well at Glendale Road and College Highway  
Secondary: Manhan (Tighe Carmondy) Reservoir, Manhan Road
- 6) Emergency Fuel Stations  
Highway Department – 8 Fomer Road
- 7) Emergency Electrical Power Facility  
Town Hall - emergency generator to serve EOC and Police Department  
3 portable generators
- 8) Emergency Shelters  
There is no designated shelter in Town. For overnight sheltering, the Town sends residents to the regional shelter at Smith Vocational school in Northampton. \*The building listed below may be used for warming/cooling centers and for residents to charge phones etc. in the event of power outages as they all have backup generators  
\*William E. Norris School, 34 Pomeroy Meadow Road  
\* Southampton Town Hall, Route 10, College Highway  
\* Police and Fire Departments, 8 East Street  
\*First Congregational Church, 126 College Highway
- 9) Water Sources  
Two pump stations: Gilbert Road and Pequot Road
- 10) Transfer Station  
Moose Brook Road and Strong Road
- 11) Helicopter Landing Sites  
Conant Park
- 12) Communications  
College Highway North – cell tower  
College Highway South – cell tower  
Cell tower College Highway (Middle)  
Cell tower Westfield Road (Route 202) in Holyoke
- 13) Primary Evacuation Routes  
Brickyard Road  
Cold Spring Road  
College Highway

County Road  
East Street  
Fomer Road  
Middle Road  
Pleasant Street  
Pomeroy Meadow Road  
Strong Road  
Russellville Road

- 14) Bridges/Culverts Located on Evacuation Routes
- College Highway at Manhan River
  - East Street at Manhan River
  - Fomer Road at Alder Meadow Brook and Manhan River
  - Pomeroy Meadow Road at North Branch Manhan River
  - Russellville Road at Alder Meadow Brook

## **Category 2 – Non Emergency Response Facilities**

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The town has identified these facilities as non-emergency facilities; however, they are considered essential for the everyday operation of Southampton.

1. Problem Culverts

Brickyard Extension  
Cottage Ave  
Crooked Ledge Road  
Fomer Road  
Freyer Road  
Gilbert Road  
Maple Street  
Moose Brook Road  
Pomeroy Meadow Road  
Riverdale Road

2. Water Supply

Storage Tank (700,000 gallons), Little Mountain near Wolcott Road

## **Category 3 – Facilities/Populations to Protect**

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The third category contains people and facilities that need to be protected in the event of a disaster.

1) Special Needs Population

Southampton Meadows, 168 College Highway  
Hillside Meadows, 39 Hillside Ave

2) Elderly Housing/Assisted Living

See above

- 3) Public Buildings/Areas  
Senior Center – Town Hall, College Highway and East Street
- 4) Schools  
William E Norris, 34 Pomeroy Meadow Road
- 5) Churches  
First Congregational Church, College Highway
- 6) Historic Buildings/Sites  
Larabee School, College Highway and East Street
- 7) Apartment Complexes  
Greenbriar Estates, College Highway
- 8) Employment Centers  
Red Rock Shops, College Highway (retail plaza), Cooley Dickinson Hospital Rehab offices, Big Y, Tractor Supply, Rite Aid, UPS/FedEx

#### **Category 4 – Potential Resources**

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Contains facilities that provide potential resources for services or supplies.

- 1) Food/Water  
Big Y, College Highway, Pure Food, College Highway, Mini Mart-College Highway, Cumberland Farms-College Highway
- 2) Hospitals/Medical Supplies  
Rite Aid, College Highway  
Big Y, College Highway  
Southampton Rehab Clinic (Cooley-Dickinson Hospital), College Highway
- 3) Gas  
None with cooperative agreement with town
- 4) Building Materials Suppliers  
Fluery's Lumber, Easthampton, Home Depot-West Springfield and Westfield

**Critical Facilities and Evacuation Routes Potentially Affected by Hazard Areas**

<b>Hazard Type</b>	<b>Hazard Area</b>	<b>Critical Facilities Affected</b>	<b>Evacuation Routes Affected</b>
Flooding (100-year)	Gilbert Road	Southampton water main pump station	None
	Riverdale Road	none	none
	Pomeroy Meadow Road	none	Pomeroy Meadow Road
	Fomer Road	none	Fomer Road
	Maple Street	none	none
	Moose Brook Road	none	none
	Brickyard Extension	none	Brickyard Road
Flooding (localized)	Cottage Ave	none	none
	Crooked Ledge Road	none	none
	Mountain Road	none	none
	East Street	Town Hall/Police Station-electrical and heating systems as well as jails located in basement that floods	
Severe Snow/Ice Storm	Glendale Road	none	None
	Fomer Road	none	Fomer Road
	Russellville Road	none	Russellville Road
	Pomeroy Meadow Road	none	Pomeroy Meadow Road
	Line Street	none	none
	County Road North and South	none	County Road
	Pleasant Street	none	none
	Rte 10, College Highway by F&G Club	none	College Highway
Hurricane	Entire town equally susceptible	All	All
Severe Thunderstorm/Wind/ Tornado/ Microburst	Entire town equally susceptible	All	All
Wildfire/Brushfire	Tighe Carmody and White Reservoirs watershed	Holyoke water main	Fomer Road
Earthquake	Entire town equally susceptible	All	All

Dam Failure	Below Manhan and White Reservoir Dams	Water pump station, Gilbert Road; Town Hall and Police Station, Larabee School, Fire Station Town well at Glendale Road	Rte 10, College Highway, Russellville Road
Drought	Entire town equally susceptible	All	All
Hazardous Materials	Southampton Highway Department	Highway Department	Fomer Road

## 5. MITIGATION CAPABILITIES/STRATEGIES

One of the steps of this Natural Hazard Mitigation Plan is to evaluate all of the town’s existing policies and practices related to natural hazards and identify potential gaps in protection. Once these gaps in protection are identified, future mitigation strategies can be crafted and recommended. This is done by evaluating existing and future measures in comparison to the Town’s goal statement for natural hazard mitigation. The Southampton Hazard Mitigation committee used the FEMA Capability Assessment tool to asses existing capabilities. This assessment is included in the Appendix to this plan.

Southampton has most of the not cost or low cost hazard mitigation capabilities in place. Land use zoning, subdivision regulations and an array of specific policies and regulations that include hazard mitigation best practices, such as limitations on development in floodplains, stormwater management, tree maintenance, etc. Southampton also has appropriate staff dedicated to hazard mitigation-related work for a community its size, including members of the Select Board who served on the local Hazard Mitigation committee, an Emergency Management Director, a Highway Superintendent, a Building Inspector, and a Tree Warden, and Southampton has plans in place, including a Master Plan, a Capitol Improvements planning process, an Open Space and Recreation Plan, and a Comprehensive Emergency Management Plan.

The Town also has very committed and dedicated volunteers who serve on Boards and Committees and in Volunteer positions. The Town collaborated closely with surrounding communities and is party to Mutual Aid agreements through the MEMA. Southampton is also an active community of the Pioneer Valley Planning Commission (PVPC) and can take advantage of no cost local technical assistance as needed provided by the professional planning staff at the PVPC.

Southampton’s most obvious hazard mitigation need is for federal funds to implement prioritized actions. While Southampton is a well-managed fiscally sound Town, it is not a wealth community and with state constraints on municipalities raising their own funds, Southampton has very limited financial resources to invest in costly hazard mitigation measures. Southampton is, however, committed to locally matching all HMGP grants received.

After reviewing existing policies and the hazard identification and assessment, the Town Hazard Mitigation Committee developed a set of hazard mitigation strategies it would like to implement.

**Goal Statement**

To minimize the loss of life, damage to property, and the disruption of governmental services and general business activities due to natural disasters. To provide adequate shelter, water, food and basic first aid to displaced residents in the event of a natural disaster and to provide adequate notification and information regarding evacuation procedures, etc., to residents in the event of a natural disaster.

## **Overview of Mitigation Strategies by Hazard**

An overview of the general concepts underlying mitigation strategies for each of the hazards identified in this plan is as follows:

### **Flooding**

The key factors in flooding are the water capacity of water bodies and waterways, the regulation of waterways by flood control structures, and the preservation of flood storage areas and wetlands. As more land is developed, more flood storage is demanded of the town's water bodies and waterways. The Town currently addresses this problem with a variety of mitigation tools and strategies. Flood-related regulations and strategies are included in the Town's general bylaws, zoning by-law, and subdivision regulations. Infrastructure like dams and culverts are in place to manage the flow of water.

### **Severe Snowstorms / Ice Storms**

Winter storms can be especially challenging for emergency management personnel. The Massachusetts Emergency Management Agency (MEMA) serves as the primary coordinating entity in the statewide management of all types of winter storms and monitors the National Weather Service (NWS) alerting systems during periods when winter storms are expected. Even though the storm has usually been forecast, there is no certain way for predicting its length, size or severity. Therefore, mitigation strategies must focus on preparedness prior to a severe snow/ice storm.

The Town's current mitigation tools and strategies focus on preparedness, with many regulations and standards established based on safety during storm events. To the extent that some of the damages from a winter storm can be caused by flooding, flood protection mitigation measures also assist with severe snowstorms and ice storms.

### **Hurricanes**

Hurricanes provide the most lead warning time of all identified hazards, because of the relative ease in predicting the storm's track and potential landfall. MEMA assumes "standby status" when a hurricane's location is 35 degrees North Latitude (Cape Hatteras) and "alert status" when the storm reaches 40 degrees North Latitude (Long Island). Even with significant warning, hurricanes can do significant damage – both due to flooding and severe wind.

The flooding associated with hurricanes can be a major source of damage to buildings, infrastructure and a potential threat to human lives. Flood protection measures can thus also be considered hurricane mitigation measures. The high winds that often accompany hurricanes can also damage buildings and infrastructure, similar to tornadoes and other strong wind events.

### **Severe Thunderstorms / Winds / Tornadoes**

Most damage from tornadoes and severe thunderstorms come from high winds that can fell trees and electrical wires, generate hurtling debris and, possibly, hail. According to the Institute for Business and Home Safety, the wind speeds in most tornadoes are at or below design speeds that are used in current building codes, making strict adherence to building codes a primary mitigation strategy. In addition, current land development regulations, such as restrictions on the height of telecommunications towers, can also help prevent wind damages.

## **Wildfires / Brushfires**

Wildfire and brushfire mitigation strategies involve educating people about how to prevent fires from starting, as well as controlling burns within the town.

## **Earthquakes**

Although there are five mapped seismological faults in Massachusetts, there is no discernible pattern of previous earthquakes along these faults nor is there a reliable way to predict future earthquakes along these faults or in any other areas of the state. Consequently, earthquakes are arguably the most difficult natural hazard for which to plan.

Most buildings and structures in the state were constructed without specific earthquake resistant design features. In addition, earthquakes precipitate several potential devastating secondary effects such as building collapse, utility pipeline rupture, water contamination, and extended power outages. Therefore, many of the mitigation efforts for other natural hazards identified in this plan may be applicable during the Town's recovery from an earthquake.

## **Dam Failure**

Dam failure is a highly infrequent occurrence, but a severe incident could prove catastrophic. In addition, dam failure most often coincides with flooding, so its impacts can be multiplied, as the additional water has nowhere to flow. The only mitigation measures currently in place are the state regulations governing the construction, inspection, and maintenance of dams. This is managed through the Office of Dam Safety at the Department of Conservation and Recreation.

## **Drought**

Although Massachusetts does not face extreme droughts like many other places in the country, it is susceptible to dry spells and drought. Drought can most likely be effectively mitigated in regions like the Pioneer Valley if measures are put into place, such as ensuring that groundwater is recharged.



## Existing Capabilities

The Town of Southampton currently has a variety of mitigation capabilities in place. These capabilities/strategies are listed in the following pages and have been evaluated in the “Effectiveness” column.

Existing Mitigation Capabilities				
Capability	Action Type	Description	Hazards Mitigated	Effectiveness
Flood Control Structures	Capital Construction	There are seven dams in Southampton	Flooding	Effective
Aquifer Protection District Overlay	Zoning bylaws	Areas delineated as primary recharge areas for groundwater aquifers, and watershed areas for reservoirs are protected by strict use regulations	Flooding	Effective
Floodplain District Overlay	Zoning bylaws	Areas delineated as part of the 100-year floodplain are protected by strict use regulations	Flooding	Effective
Wetlands Regulations	Zoning bylaws	Proposed development where wetlands are located must meet minimum upland acreage, erosion control, and storm water management requirements	Flooding	Effective
Submission Requirements	Subdivision regulations	Subdivisions must meet requirements of Wetlands Protection Act as well as Floodplain Overlay District  Subdivisions within the Floodplain District are governed by additional regulations	Flooding	Effective
Design Standards	Subdivision regulations	Requirements for sufficient drainage and protection of natural features	Flooding	Effective
River and Stream Protection	Subdivision regulations	Required enforcement of standards established by the Wetlands Protection Act.	Flooding	Effective

Existing Mitigation Capabilities				
Capability	Action Type	Description	Hazards Mitigated	Effectiveness
Southampton Master Plan and Open Space and Recreation Plan	Planning document	Identifies potential issues for Southampton's water supply needs in the future  Inventories natural features and promotes natural resource preservation in the Town, including areas in the floodplain; such as wetlands aquifer recharge areas, farms and open space, rivers, streams and brooks.	Floods Severe Thunderstorm Hurricanes Tornadoes Wildfire / Brushfire Earthquakes Dam Failure	Effective
Participation in the National Flood Insurance Program	Operational Strategy	As of 2014, there were 5 homeowners with flood insurance policies	Flooding	Effective
Design Standards for Roads	Subdivision regulations	Standards include street grade regulations (six to ten percent maximum)	Severe Snowstorms/ Ice Storms	Effective
State Building Code	State regulation	The Town of Southampton has adopted the Massachusetts State Building Code which promotes construction of buildings that can withstand hazards to a certain degree	Floods Severe Snowstorms / Ice Storms Severe Thunderstorm Hurricanes Tornadoes Wildfire / Brushfire Earthquakes Dam Failure	Effective
Height Restrictions	Zoning bylaws	The Town restricts height of development based on the use and zoning district	Flooding Severe Thunderstorm Hurricanes Tornadoes	Effective

Existing Mitigation Capabilities				
Capability	Action Type	Description	Hazards Mitigated	Effectiveness
Utilities	Operational Strategy	Working with Western Massachusetts Electric Company and other utility providers to place utility lines underground	Severe Snowstorms / Ice Storms Severe Thunderstorms Hurricanes Tornadoes	Effective
Shelters	Operational strategy	There are 2 shelters identified in the Southampton CEM Plan	Floods Severe Snowstorms / Ice Storms Severe Thunderstorm Hurricanes Tornadoes Wildfire / Brushfire Earthquakes Dam Failure Drought	Effective
Burn Permits	Regulation	Residents can obtain burn permits from the Southampton Fire Department which provides information on safe burn practices	Wildfire / Brushfire	Effective
Subdivision Review Fire Safety	Subdivision regulations	The Fire Department is involved in the review of subdivision plans	Wildfire / Brushfire	Effective
Public Education / Outreach	Operational strategy	The Fire Department has an ongoing educational program in the schools	Wildfire / Brushfire	Effective
New Dam Construction Permits	Regulation	State law requires a permit for the construction of any dam	Flooding Dam Failure	Effective

Existing Mitigation Capabilities				
Capability	Action Type	Description	Hazards Mitigated	Effectiveness
Dam Inspections	Operational strategy	DCR has an inspection schedule that is based on the hazard rating of the dam (low, medium, high hazard)	Flooding Dam Failure	Effective
Evacuation Plans	Operational strategy	Comprehensive evacuation plans are required for High Hazard Dams and ensure the safety of citizens in the event of a dam failure	Flooding Dam Failure	Effective

## **Flooding**

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The key factors in flooding are the water capacity of water bodies and waterways, the regulation of waterways by flood control structures, and the preservation of flood storage areas and wetlands. As more land is developed, more flood storage is demanded of the town's water bodies and waterways.

### ***Management Plans***

The Comprehensive Emergency Management Plan for Southampton lists the following measures related to flood planning:

- Identify areas in the community that are vulnerable and prone to flooding in order to define methods of risk minimization. Review National Flood Insurance Maps.
- Disseminate emergency information and instructions concerning flood preparedness and safety to the public
- Ensure community leaders continue Southampton's participation in the National Flood Insurance Program.
- Monitor town for strict adherence to land use and building codes, such as the Wetlands Protection Act, to discourage new construction in flood-prone areas.
- Ensure that flood control works are in good operating condition at all times.
- Preserve natural water storage areas
- Maintains plans for managing all emergency response activities, including addressing potentially hazardous dams, in the case of a scenario that may result in flooding.

### **Evacuation Options**

The majority of the land subject to the 100-year and 500-year floodplain is located along the full extent of the Manahan River and its tributaries, Pameroy Brook, and Pequot Pond. Additional locations are Potash Brook, White Reservoir, Tighe-Carmody Reservoir, Blue Meadow Brook, Alder Meadow Brook, Red Brook at the intersection of Fomer Road and Russelville Road, and Broad Brook. Emergency management personnel should assess existing floodplain and dam failure data to determine a geographically appropriate evacuation route. Southampton possesses bridges situated near or in the 100-year flood plain, which could complicate evacuation efforts. Some roads that residents would most likely take to reach safety travel through flood-affected areas.

### ***Land Use Regulations that Mitigate Impacts from Flooding***

The Town of Southampton has adopted several land use regulations that serve to limit or regulate development in floodplains, to manage storm water runoff, and to protect groundwater and wetland resources, which provide essential flood storage capacity. The zoning ordinances of the town contain several proactive measures taken to mitigate the implications of flooding.

**Flood Plain Overlay District:** Prohibits new construction and substantial modifications of existing structures within the 100-year floodplain, including the excavation of parcels or any substantial alterations of existing topsoil and vegetation. The district encircles 100-year flood plains in Southampton, according to the Southampton Flood Rate Maps.

Permitted cluster development in residential districts maintains at least 20% open space with vegetation, which absorbs and filters runoff before it penetrates the groundwater. Grades/slopes cannot exceed 10%, limiting the rate of storm water runoff.

Planned industrial development must offset impervious surfaces with at least 10% open space, grades/slopes less than 10%, and 20' vegetated buffers to absorb and filter runoff.

Site Plan Review process for planned multi-unit development requires the replacement of excavated topsoil (at least 4"), and the delineation of adjacent topography and natural water formations.

The Water Supply Protection District preserves the town's natural hydrology while preventing disruptions to and contaminations of sources of water, which act as natural flood-control infrastructure.

Erosion and Sediment Control Bylaw and Performance Standards minimizes the volume, rate, and direction of runoff by ensuring all development installs functioning stormwater management systems, refrains from disrupting an area's natural topography, and limits erosion by replacing sedimentation that may have been excavated during construction.

### ***Subdivision Regulations***

The Town of Southampton maintains subdivision regulations which remediate the environmental impacts of development. As previously referenced, developers are required to preserve open space, existing grades, and topography. Additionally, storm water management performance standards are set forth by the town. Additionally, all development is required, under the Land Restoration Ordinance, to submit a Land Restoration Plan for the redevelopment or future development for a site that underwent substantial excavation, either during its past use or during construction.

### ***River and Stream Protection***

The Town of Southampton adheres to the standards set forth by the Wetlands Protection Act, incorporating the legislation into its existing zoning ordinances in order to protect bodies of water and wetlands. The town also maintains a Water Supply Protection District and erosion and sediment control ordinances, which are referenced in the previous paragraph. Additionally, the town's zoning bylaws limit the use of septic tanks, leach fields, and the storage of hazardous materials in environmentally-sensitive areas that may harm the water supply and wetlands.

### ***National Flood Insurance Program***

Southampton is a participating member of the National Flood Insurance Program, and had the following NFIP policy and claim statistics as of October of 2014:

- Flood Insurance Maps (FIRMs) are used for flood insurance purposes and are on file with the Southampton Planning Board.
- FIRMs have been effective since July 2, 1981 with the current map in effect since July 16, 2013.
- Southampton has 8 in-force policies in effect for a total of \$1,437,700 worth of insurance.
- There have 8 total claims totaling \$124,607 in payments.
- As of 2013, there have been no Repetitive Loss Properties in Southampton.
- The Town will maintain compliance with the NFIP throughout the next 5-year Hazard Mitigation Planning cycle by monitoring its Flood Plain Overlay District and ensuring that the district accurately reflects the 100-year flood plain and FEMA Flood Insurance Rate Map (FIRM).

## Severe Snow/Ice Storm

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Winter storms can be especially challenging for emergency management personnel even though the storm has been forecast. The Massachusetts Emergency Management Agency (MEMA) serves as the primary coordinating entity in the statewide management of all types of winter storms and monitors National Weather Service (NWS) alerting systems when winter storms are expected.<sup>6</sup>

### Management Plans

The CEM Plan for Southampton lists the following generic mitigation measures for severe winter storms:

- Develop and disseminate emergency public information concerning winter storms, especially material which instructs individuals and families how to stock their homes, prepare their vehicles, and take care of themselves during a severe winter storm.
- Local governments should assume that winter will occur annually and budget fiscal resources with snow management in mind
- Maintain plans for managing all winter storm emergency response activities.

To the extent that some of the damages from a winter storm can be caused by flooding, all of the flood protection mitigation measures described in Table 4-1 can also be considered as mitigation measures for severe snowstorms/ice storms.

The CEM Plan for Southampton lists the following generic preparedness and response measures for severe winter storms:

- Ensure that warning/notification, and communications systems are in readiness.
- Ensure that appropriate equipment and supplies, (especially snow removal equipment), are in place and in good working order.
- Review mutual aid agreements.
- Designate suitable shelters throughout the community and make their locations known to the public.
- Implement public information procedures during storm 'warning' stage.
- Prepare for possible evacuation and sheltering of some populations impacted by the storm (especially the elderly and special needs).

### Restrictions on Development

There are no restrictions on development that are directly related to severe winter storms. The Town of Southampton Subdivision Rules and Regulations set grade limits on streets as part of its Section 4000 Required Improvements, and restrictions on utility placement (Section III. Procedure for the Submission and Approval of Plans, Sub-Section V, Design Standards), which, although not specified as weather hazard mitigation, can serve to minimize accident potential and power loss from severe winter storms.

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<sup>6</sup> Comprehensive Emergency Management Plan for the Town of Southampton, 2001.

## Other Mitigation Measures

The Southampton Elementary School, which is designated as an emergency cooling/warming center, has a backup power generator to cope with power outages.

## State Building Code

For new or recently built structures, the primary protection against snow-related damage is construction according to the State Building Code, which addresses designing buildings to withstand snow loads. The Town of Southampton has measures in place for building inspections.

## Hurricanes/Severe Wind

### Hurricanes

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Of all the natural disasters that could potentially impact Southampton, hurricanes provide the most lead warning time because of the relative ease in predicting the storm's track and potential landfall. MEMA assumes "standby status" when a hurricane's location is 35 degrees North Latitude (Cape Hatteras) and "alert status" when the storm reaches 40 degrees north Latitude (Long Island).<sup>7</sup> The flooding associated with hurricanes can be a major source of damage to buildings, infrastructure and a potential threat to human lives. Therefore, all of the flood protection mitigation measures described can also be considered hurricane mitigation measures. High winds that oftentimes accompany hurricanes can also damage buildings and infrastructure. Southampton has a 500-year wind probability rating of 120 m.p.h. The climatic record for Massachusetts indicates that Southampton has never been the direct recipient of a hurricane-force event, but that a tropical storm has passed through Belchertown to the east and Palmer to the south; and that three hurricanes (two Category 2 and one Category 1) have hit Hampshire and Hampden Counties.

### Management Plans

The CEM Plan for Southampton includes the following generic mitigation measures for hurricane planning and response:

- Develop and disseminate emergency public information and instructions concerning hurricane preparedness and safety.
- Community leaders should ensure that Southampton is enrolled in the National Flood Insurance Program.
- Develop and enforce local building codes to enhance structural resistance to high winds and flooding. Build new construction in areas that are not vulnerable to direct hurricane effects.
- Maintain plans for managing all hurricane emergency response activities.

The CEM Plan for Southampton includes the following generic preparedness and response measures for hurricanes:

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<sup>7</sup> Comprehensive Emergency Management Plan for the Town of Leverett, August 1999.



- Ensure that warning/notification systems and equipment is ready for use at the ‘hurricane warning’ stage.
- Review mutual aid agreements.
- Designate suitable wind and flood resistant shelters in the community and make their locations known to the public.
- Prepare for coordination of evacuation from potentially impacted areas including alternate transportation systems and locations of special needs facilities.
- Activate warning/notification systems to inform public of protective measures to be taken including evacuation where appropriate.
- Conduct evacuation of affected populations.
- Open and staff shelters and reception centers.
- Dispatch search and rescue teams.
- Dispatch emergency medical teams.
- Activate mutual aid activities.
- Take measures to guard against further danger from downed trees and utility lines, debris, etc.

### **Evacuation Options**

According to the Southampton CEM plan, local officials have stated that the regional shelter at Smith Vocational High School in Northampton is the appropriate shelter for residents in the case of a hurricane.

### **Restrictions on Development**

The only restrictions on development that are wind-related are the provisions in the zoning bylaw related to telecommunications facilities.

### **Mobile Homes**

According to the Town of Southampton Zoning Bylaws, 4.22, Mobile homes are prohibited in all districts unless located in a mobile home park; and According to Section 4.430, *“A mobile home may be placed on the site of a residence which has been rendered uninhabitable by accident provided it is used for a period not to exceed 12 months as the primary residence of the owners of the residence which has been rendered uninhabitable.”*

### **State Building Code**

For new or recently built structures, the primary protection against wind-related damage is construction that adheres to the State Building Code, which, when followed, results in buildings that withstand high winds. The Town of Southampton provides building inspection services.

## Tornadoes

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Worcester County and areas just to its west, including portions of Hampshire County, have been dubbed the “tornado alley” of the state because the majority of significant tornadoes in Massachusetts’s weather history have occurred in that region.<sup>8</sup> According to the Institute for Business and Home Safety, the wind speeds in most tornadoes are at or below design speeds that are used in current building codes.<sup>9</sup> Like earthquakes, the location and extent of potential damaging impacts of a tornado are completely unpredictable. Most damage from tornadoes comes from high winds that can fell trees and electrical wires, generate hurtling debris and, possibly, hail. Southampton falls within the high density cone of probability for Massachusetts.

### Management Plans

The CEM Plan for Southampton includes the following generic mitigation measures for tornado planning and response:

- Develop and disseminate emergency public information and instructions concerning tornado safety, especially guidance regarding in-home protection and evacuation procedures, and locations of public shelters.
- Strict adherence should be paid to building code regulations for all new construction.
- Maintain plans for managing tornado response activities. Refer to the non-institutionalized, special needs and transportation resources listed in the Resource Manual.

The CEM Plan for Southampton includes the following generic preparedness and response measures for tornadoes:

- Designate appropriate shelter space in the community that could potentially withstand tornado impact.
- Periodically test and exercise tornado response plans.
- Put Emergency Management on standby at tornado ‘watch’ stage
- At tornado ‘warning’ stage, broadcast public warning/notification safety instructions and status reports.
- Conduct evacuation, reception, and sheltering services to victims.
- Dispatch search and rescue teams.
- Dispatch emergency medical teams.
- Activate mutual aid agreements.
- Take measures to guard against further injury from such dangers as ruptured gas lines, downed trees and utility lines, debris, etc.
- Acquire needed emergency food, water, fuel, and medical supplies.
- Take measures relating to the identification and disposition of remains of the deceased.

### Evacuation Plans

According to the Southampton CEM plan, local officials have stated that the regional shelter at Smith Vocational High School in Northampton is the appropriate shelter for residents in the case of a tornado.

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21 National Weather Service Storm Prediction Center

<sup>9</sup> [www.ibhs.org](http://www.ibhs.org).

## **Wildfire/Brushfire**

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Hampshire and Hampden Counties have approximately 469,587 acres of forested land, which accounts for 62 percent of total land area. Forest fires are therefore a potentially significant issue. In Southampton approximately 62 percent of the town's total land area is in forest, or about 15,789 acres, and is therefore at risk of fire.

### **Regulatory Measures**

#### **Burn Permits**

The Southampton Fire Department is the sole agency responsible for issuing burn permits in Southampton.

#### **Mobile Home Site Plan Review**

The Southampton Fire Department reviews site plans for Mobile Home site plans to guarantee adequate provision of water and fire fighting capacity.

#### **Subdivision Review**

Once a subdivision has been approved, no lot shall be built upon without adequate provision of on-site water and fire fighting supplies. Furthermore, the Board of Health may require on-site provision of water and fire fighting supplies to the extent required by the Fire Chief.

#### **Public Education/Outreach**

The Southampton Fire Department has an outreach program in place that allows the Southampton Fire Department to partner with the senior center to inspect and replace smoke detectors. Furthermore, the Southampton Fire Department has an active Triad program.

#### **Restrictions on Development**

All industrial development (as per Section 5.6) must have fire-fighting and fire-suppression located on-premise when the use has storage facilities for inflammable and explosive materials. Several potential changes to the Town's current strategies have been identified in the above table, and these, as well as recommendations for other future mitigation strategies, are compiled below:

- Increase education and enforcement of burn permits; including pre-season review of regulations in public outreach campaign and/or invoking penalties for offenders.
- Utilize Building Inspector in outreach during issuance of Certificate of Occupancy
- Establish new fire station closer to watershed land
- Establish fire breaks around property

## Earthquake

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Based upon historical evidence, one earthquake was recorded in Southampton in 1941 and that is the only time an earthquake has struck the town in recent history. To the south, Palmer recorded an earthquake in 1854 and, on the other side of the known fault line, several towns along the Connecticut River Valley floor have recorded earthquakes.

Although there are five mapped seismological faults in Massachusetts and none in Southampton (a known fault line does pass through the abutting town of Belchertown), there is no discernible pattern of previous earthquakes along these faults nor is there a reliable way to predict future earthquakes along these faults or in any other areas of the state. Consequently, earthquakes are arguably the most difficult natural hazard to plan for. Most buildings and structures in the state were constructed without specific earthquake resistant design features.

Earthquakes can involve several potentially devastating secondary effects including:

- The collapse of buildings, bridges, roads, dams, and other vital structures;
- Rupture of utility pipelines;
- Flooding caused by dam failure;
- Landslides;
- Major transportation accidents, (railroad, chain highway crashes, aircraft, and marine);
- Extended power outage;
- Fire and/or explosion;
- HAZMAT accident; and,
- Water contamination.

### Management Plans

The Southampton CEM Plan lists the following generic mitigation measures for earthquakes:

- Community leaders in cooperation with Emergency Management Personnel should obtain local geological information and identify and assess structures and land areas that are especially vulnerable to earthquake impact and define methods to minimize the risk.
- Strict adherence should be paid to land use and earthquake resistant building codes for all new construction.
- Periodic evaluation, repair, and/or improvement should be made to older public structures.
- Emergency earthquake public information and instructions should be developed and disseminated.
- Earthquake drills should be held in schools, businesses, special care facilities, and other public gathering places.

The Southampton CEM Plan lists the following generic preparedness and response measures for earthquakes:

- Earthquake response plans should be maintained and ready for immediate use.
- All equipment, supplies and facilities that would be needed for management of an earthquake occurrence should be maintained for readiness.

- Emergency Management personnel should receive periodic training in earthquake response.
- If the designated Emergency Operations Center (EOC) is in a building that would probably not withstand earthquake impact, another building should be chosen for an earthquake EOC.
- Mass Care shelters for earthquake victims should be pre-designated in structures that would be most likely to withstand earthquake impact.
- EOC will be activated and response will immediately be engaged to address any and all earthquake effects listed.
- Emergency warning/notification information and instructions will be broadcast to the public.
- Search and rescue teams will be dispatched.
- Emergency medical teams will be dispatched.
- Firefighters will address fires/explosions, and HAZMAT incidents.
- Law enforcement personnel will coordinate evacuation and traffic control.
- Reception centers and shelters will be opened and staffed.
- Animal control measures will be taken.
- Law enforcement personnel will protect critical facilities and conduct surveillance against criminal activities.
- Immediate life-threatening hazards will be addressed such as broken gas lines, downed utility wires, and fire control resources.
- Emergency food, water, and fuel will be acquired.
- Activate mutual aid.
- Measures will be taken relating to identification and disposition of remains of deceased by the Chief Medical Examiner.

### **Evacuation Options**

According to the Southamptton CEM plan, local officials have stated that the regional shelter at Smith Vocational High School in Northampton is the appropriate shelter for residents.

### **State Building Code**

State and local building inspectors are guided by regulations put forth in the Massachusetts State Building Code. The first edition of the Massachusetts State Building Code went into effect on January 1, 1975 and included specific earthquake resistant design standards. These seismic requirements for new construction have been revised and updated over the years and are part of the current, 6<sup>th</sup> Edition of the Massachusetts State Building Code. Given that most structures in Massachusetts were built before 1975, of many buildings and structures do not have specific earthquake resistant design features. According to the 2000 U.S. Census, 59 percent of the housing in Southamptton was built before 1970. In addition, built areas underlain by artificial fill, sandy or clay soils are particularly vulnerable to damage during an earthquake.

### **Restrictions on Development**

There are no seismic-related restrictions on development.

## Dam Failure

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The only mitigation measures in place are the state regulations that control the construction and inspection of dams.

The Southampton CEM plan states that there are three categories of dam failure or overflow and that action should be taken according to hazard rating:

### *Type 1: Slowly developing condition*

- Activate EOC
- Activate all communication networks
  - Establish communications with Command Post
  - On a 24-hour basis.
- Release public information
- Notify
  - MEMA Region Headquarters
  - American Red Cross
  - Downstream communities
- Review Plans for evacuation and sheltering
  - Evacuation
    - Routes
    - Notification
  - Sheltering
    - Availability and capacity
    - Food, supplies and equipment
    - Shelter owners and managers
    - Other communities (if out of town sheltering is required)
- Require “Stand By” status of designated emergency response forces.

### *Type 2: Rapidly developing condition*

- Establish a 24-hour communications from dam site to EOC.
- Assemble, brief and assign specific responsibilities to emergency response forces.
- Release public information.
- Obtain and prepare required vehicles/equipment for movement.
- Prepare to issue warning.

### *Type 3: Practically instantaneous failure*

- Issue warning
- Commence immediate evacuation.
- Commit required resources to support evacuation.
- Activate shelters or coordinate activation of shelters located outside the community.
- Notify:
  - MEMA Region Headquarters
  - Red Cross
- Initiate other measures as required to protect lives and property.

## **Management Plans and Regulatory Measures**

The Southampton CEM Plan contains the following generic mitigation measures for dam failure:

- Develop and conduct public education programs concerning dam hazards.
- Maintain up-to-date plans to deal with threat and actual occurrence of dam over-spill or failure.
- Emergency Management and other local government agencies should familiarize themselves with technical data and other information pertinent to the dams, which impact Southampton. This should include determining the probable extent and seriousness of the effect to downstream areas.
- Dams should be inspected periodically and monitored regularly.
- Repairs should be attended to promptly.
- As much as is possible burdens on faulty dams should be lessened through stream re-channeling.
- Identify dam owners.
- Determine minimum notification time for downstream areas.

The Southampton CEM Plan contains the following generic preparedness and response measures for dam failure:

- Pre-place adequate warning/notification systems in areas potentially vulnerable to dam failure impact.
- Pre-place procedures for monitoring dam site conditions at first sign of any irregularity that could precipitate dam failure.
- Identify special needs populations, evacuations routes, and shelters for dam failure response.
- Have sandbags, sand, and other items to reinforce dam structure or flood proof flood prone areas.
- Disseminate warning/notification of imminent or occurring dam failure.
- Coordinate evacuation and sheltering of affected populations.
- Dispatch search and rescue teams.
- Coordinate evacuation and sheltering of affected populations.
- Activate mutual aid if needed.
- Acquire additional needed supplies not already in place, such as earth moving machinery.
- Establish incident command post as close to affected area as safely possible.
- Provide security for evacuated public and private property.

## **Evacuation Options**

The Southampton CEM Plan identifies the Tighe Carmody Reservoir (Manhan Dam) and the White Reservoir Dam as two local High and Significant Hazard dams with the greatest potential impact on persons and property in town. College Highway is not projected to be inundated, so it would remain a primary evacuation route.

## **Permits Required for New Dam Construction**

Massachusetts State Law (M.G.L. Chapter 253 Section 45) regulates the construction of new dams. A permit must be obtained from the Department of Conservation and Recreation (DCR)

before construction can begin. One of the permit requirements is that all local approvals or permits must be obtained.

### **Dam Inspections**

The DCR requires that dams rated as Low Hazards are inspected every ten (10) years; that dams rated as Medium/Significant Hazards are inspected every five (5) years; and that dams rated as High Hazards be inspected every two (2) years. As of 2005, it is the responsibility of the dam owner to make sure he or she is in compliance with DCR's rules and regulations for inspecting their property. For this reason, the town must work with landowners and DCR to ensure that inspections are occurring in a timely, efficient and safe manner.

### **Zoning**

There is no mention made regarding the construction of new dams in the Town of Southampton zoning or subdivision regulations.

### **Restrictions on Development**

There are no town restrictions on dam locations. The DCR issues permits for new dams and does have the authority to deny a permit if it is determined that the design and/or location of the dam is not acceptable.



## Deleted or Completed Mitigation Strategies

Several mitigation strategies listed in the 2008 version of the Southampton Hazard Mitigation Plan have been removed or completed in the time since this 5-year update. Deleted and completed strategies, and their status, are indicated in the table below. Highlighted strategies are moving forward into the update of this plan.

2008 Mitigation Strategies- Status						
Priority	Mitigation Action	Responsible Department/Board	Proposed Completion Date	Funding Source/ Estimated Cost	Incorporation into Existing Plans	2016 Status
1	Relocate utility boxes for residences prone to flooding out of basement to reduce potential for electrocution of emergency response personnel.	EMC	2010	unknown	No	Delete. No longer a concern.
2	Drainage improvements to localized flood areas	Highway Department	2009-2013	Town funds Chapter 90 Funds Hazard Mitigation Grant	No	Delete. Not a problem.
3	Perform feasibility study to relocate Fire Department and Police Station into a Public Safety Complex	EMC, Fire and Police Departments, Selectboard	2013	Town funds	Community Development Plan	Done.
4	Examine current notification system including feasibility of new siren warning system, internet radio system, or Reverse 911. Develop a preliminary project proposal and cost estimate.	Police and Fire Departments	2008-2009	FEMA Fire Service Grant NIMS funds Homeland Security Grant	No	Done. Code Red implemented.
5	Collect, periodically update, and disseminate information on emergency information, what to include in a 'home survival kit,' how to prepare homes and other structures to withstand flooding and high winds, and the proper evacuation procedures to follow during	EMC	2008-2013	Town Funds	No	Done. Information posted on town website and through the Council on Aging

	a natural disaster.					
6	Educate citizens living in the floodplain about the NFIP.	EMC	2013	Town Funds	No	Delete
7	Evaluate whether to become a part of FEMA's Community Rating System.	EMC Selectboard	2009	Town Funds	No	Done. Town has determined that it does not make sense at the moment.
8	Work with Western Mass Electric Company to create annual list of hazard trees for removal.	Highway Department Tree Warden	2008	Town Funds	No	Complete.
9	Ensure dam owners realize their responsibility to inspect the dams regularly	EMC	2013	Town Funds	No	Done.
10	Revise Subdivision Regulations Design Standards to include more BMPs for drainage.	Planning Board	2010	Town Funds	No	Done. Revision now require over 40,000 BMPs for drainage
11	Implement the goals and strategies of the Southamptton Community Development Plan dealing with protection of floodplain, forests, and farmland.	Conservation Commission Planning Board Highway Department EMC	2013	Town Funds Self Help Grant	Community Development Plan	Ongoing. Recently received a PARC grant to purchase Wolf Hill Sanctuary as Conservation Land.
12	Establish system to inventory supplies at existing shelters and develop a needs list and storage requirements. Establish arrangements with local or neighboring vendors for supplying shelters with food and first aid supplies in the event of a natural disaster.	EMC	2009	Town Funds	No	Not complete. No longer relevant. Residents go to Regional Shelter in Northampton
13	Evaluate critical facilities to determine if they are earthquake resistant.	Building Inspector EMC	2009	Town Funds	No	Not complete

14	Increase education and enforcement of burn permits; including pre-season review of regulations in public outreach campaign and/or invoking penalties for offenders.	Fire Department	2009	Town Funds	No	Complete. Burn permits were re-done.
15	For subdivision approval, include more requirements to utilize BMPs to handle site's drainage.	Planning Board Highway Department	2010	Town Funds	No	Ongoing
16	Increase site visits by Fire Department for potential Tier Classification on sites storing hazardous materials.	Fire Department	2009	Town Funds	No	Ongoing Tier 2 sites annual reviews.
17	Work with Western Mass Electric Company to facilitate the underground placement of new utility lines in general and existing utility lines in locations where repetitive outages occur (as applicable).	Highway Department	2009-2013	Town Funds	No	Yes. Underground power lines required in new subdivisions.
18	Identify sources of funding for dam safety inspections.	EMC Highway Department	2010	Unknown	No	Done. State is responsible.
19	Participate in the creation of a Regional Debris Management Plan.	EMC Highway Department Selectboard	2013	Town Funds	No	If funding is available, town would participate.
20	Implement water supply and water quality recommendations in the Southampton Community Development Plan.	Water Department	2010	Unknown	Open Space and Recreation Plan	Yes-DPW
21	Consider creating Water Conservation Guidelines, as education to Town residents.	Water Department	2010	Town Funds	No	Yes. Volunteer water ban.

## Previously Identified and New Strategies

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Through this planning process, the Town of Southampton Hazard Mitigation Committee has worked to analyze actions and/or projects that the Town considered to reduce the impacts of the hazards identified in the risk assessment, and identified the actions and/or projects that the jurisdiction intends to implement. Several of the action items previously identified in the 2008 Hazard Mitigation Plan are currently continuing, either because they require more time to secure funding or their construction process is ongoing. In addition, the Hazard Mitigation Workgroup identified several new strategies that are also being pursued. These new strategies are based on experience with currently implemented strategies, as well as the hazard identification and risk assessment in this plan. The strategies identified in this plan are believed by the local Hazard Mitigation Committee to be the ones need in Southampton to address the vulnerabilities identified in this plan.

The prioritization process used in this plan update is different from the prioritization process used previously and produces a different hierarchy of projects.

### Prioritization Methodology

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The Southampton Hazard Mitigation Planning Workgroup reviewed and prioritized a list of previously identified and new mitigation strategies using the following criteria:

**Application to multiple hazards** – Strategies are given a higher priority if they assist in the mitigation of several natural hazards.

**Time required for completion** – Projects that are faster to implement, either due to the nature of the permitting process or other regulatory procedures, or because of the time it takes to secure funding, are given higher priority.

**Estimated benefit** – Strategies which would provide the highest degree of reduction in loss of property and life are given a higher priority. This estimate is based on the Hazard Identification and Analysis Chapter, particularly with regard to how much of each hazard’s impact would be mitigated.

**Cost effectiveness** – in order to maximize the effect of mitigation efforts using limited funds, priority is given to low-cost strategies. For example, regular tree maintenance is a relatively low-cost operational strategy that can significantly reduce the length of time of power outages during a winter storm. Strategies that have identified potential funding streams, such as the Hazard Mitigation Grant Program, are also given higher priority.

**Eligibility Under Hazard Mitigation Grant Program** – The Hazard Mitigation Grant Program (HMGP) provides grants to states and local governments to implement long-term hazard mitigation measures after a major disaster declaration. The purpose of the HMGP is to reduce the loss of life and property due to natural disasters and to enable mitigation measures to be implemented during the immediate recovery from a disaster. Funding is made available through FEMA by the Massachusetts Emergency Management Agency. Municipalities apply for grants to fund specific mitigation projects under MEMA requirements.

The following categories are used to define the priority of each mitigation strategy:

**Low** – Strategies that would not have a significant benefit to property or people, address only one or two hazards, or would require funding and time resources that are impractical

**Medium** – Strategies that would have some benefit to people and property and are somewhat cost effective at reducing damage to property and people

**High** – Strategies that provide mitigation of several hazards and have a large benefit that warrants their cost and time to complete

**Very High** – extremely beneficial projects that will greatly contribute to mitigation of multiple hazards and the protection of people and property. These projects are also given a numeric ranking within the category.

## **Cost Estimates**

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Each of the following implementation strategies is provided with a cost estimate. Projects that already have secured funding are noted as such. Where precise financial estimates are not currently available, categories were used with the following assigned dollar ranges:

- **Low** – cost less than \$50,000
- **Medium** – cost between \$50,000 – \$100,000
- **High** – cost over \$100,000

Cost estimates take into account the following resources:

- Town staff time for grant application and administration (at a rate of \$80 per hour)
- Consultant design and construction cost (based on estimates for projects obtained from town and general knowledge of previous work in town)
- Town staff time for construction, maintenance, and operation activities (at a rate of \$25 per hour)

## **Project Timeline**

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Each strategy is provided with an estimated length of time it will take for implementation. Where funding has been secured for the project, a specific future date is provided for when completion will occur. However, some projects do not currently have funding and thus it is difficult to know exactly when they will be completed. For these projects, an estimate is provided for the amount of time it will take to complete the project once funding becomes available.

Action Status	Action Type	Description	Hazards Mitigated	Agency	Priority	Cost	Funding Source	Timeframe
Carried over from previous plan, with revision	Land purchase, possible regulatory change	Implement the strategies of the Southampton Community Development Plan dealing with protection of floodplain, forests, and farmland, specifically using the CPA to purchase land currently serving hazard mitigation purposes. Will require a community process to review and prioritize parcels for protection.	Flooding and flood-related hazards, hurricanes, severe wind and storms, tornadoes, wildfire	Conservation Commission Planning Board DPW Town Mgr	med	med	Town Funds Self Help Grant	Start prioritization process in Jan 2017-June 2017, then work to secure funds and after securing funding, anticipate July 2018-June 2019 for purchase if lands are available.
Carried over from previous plan	Regulation change	For subdivision approval, include more requirements to utilize BMPs to handle site's drainage.	All	Planning Board Highway Department	med	low	Town Funds DLTA, UPWP	Jan 2018-Dec 2019
Carried over from previous plan	Implementation	Increase site visits by Fire Department for potential Tier 2 Hazardous Materials sites storing hazardous materials.	Fire	Fire Department	med	low	Town Funds	July 2017-June 2018
New	Capital	Purchase Portable generator	All	EMD	med	low	HMGP or Town funds	As funds are available will take 6 weeks for procurement July 2017-August 2017
New	Capital	Update town buildings (town hall, school, DPW) to work with generator	All	EMD, Town Mgr, Bldg Inspector	low	low	Town funds	As funds are available for generator, concurrent with procurement process Aug 2017-Oct 2017

Ongoing	Planning	If funding is provided by EOPS and DHS, participate in a Regional Debris Management Plan	All	EMD, Town Mgr, DPW	low	med	Homeland Security	Jan 2020-2021
New	Regulation, practice	Research and pending research results, prepare a new policy or regulation that will discourage flat roofs	Severe winter weather, snow and ice	Building Inspector, Town govt, DPW	low	low	Town funds DLTA for PVPC staff support as needed	Jan 2018-Dec 2018
New	Retrofit	Research and if funds allow and it is warranted, retrofit public buildings to withstand snow loads and prevent roof collapse	Severe winter weather, snow and ice	Building Inspector, Town govt, DPW	low	med	Town funds and possibly HMGP	Start research in Jan 2017-June 2017, secure funds as needed and start retrofit, as needed, Jan 2018-Dec 2018.
New	Regulation	Mitigate future losses by regulating development in wildfire hazard areas through land use planning including using zoning and/or a special wildfire overlay district to designate high-risk areas and specify the conditions for the use and development of specific areas.	wildfire	Fire Chief, Town Mgr, Planning Board, DPW	low	low	Town funds and if outside assistance needed, state DLTA funds for PVPC staff time	July 2018-June 2019 Zoning changes require 2/3 vote at Town Meeting and Town prefers to hold zoning votes at Annual TM which is in May

## 6. PLAN REVIEW, EVALUATION, IMPLEMENTATION, AND ADOPTION

### Plan Adoption

Upon completion of the draft Hazard Mitigation Plan, a public meeting was held by the Town staff and the Pioneer Valley Planning Commission on July 28, 2016 to present and request comments from town officials and residents. No one attended this meeting. The Hazard Mitigation Plan was then submitted to the Massachusetts Emergency Management Agency (MEMA) and the Federal Emergency Management Agency for their review. Upon receiving conditional approval of the plan by FEMA, the plan was presented to the Town's Select Board and adopted.

### Plan Implementation

The implementation of this plan began upon its formal adoption by the Town Select Board and approval by MEMA and FEMA. Those Town departments and boards responsible for ensuring the development of policies, bylaw revisions, and programs as described in this plan will be notified of their responsibilities immediately following approval. The Town's Hazard Mitigation Committee will oversee the implementation of the plan.

### Incorporation with Other Planning Documents

Existing plans, studies, reports and municipal documents were incorporated throughout the planning process. This included a review and incorporation of significant information from the following key documents:

- ***Southampton Comprehensive Emergency Management Plan*** (particularly the Critical Infrastructure Section) – the Critical Infrastructure section was used to identify those infrastructure components in Southampton that have been identified as crucial to the function of the Town.
- ***Southampton Zoning and Subdivision Bylaw*** - The Town's Zoning was used to gather identify those actions that the Town is already taking that are reducing the potential impacts of a natural hazard (i.e. floodplain regulations) to avoid duplicating existing successful efforts.
- ***Massachusetts' State Hazard Mitigation Plan*** - This plan was used to insure that the Town's Hazard Mitigation Plan is consistent with the State's Plan.

The Hazard Mitigation Plan will also be incorporated into updates of the Town's Comprehensive Emergency Management Plan.

After this plan has been approved by both FEMA and the local government, links to the plan will be emailed to all Town staff, boards, and committees, with a reminder to review the plan periodically and work to incorporate its contents, especially the action plan, into other planning processes and documents. In addition, during annual monitoring meetings for the Hazard Mitigation Plan implementation process, the Hazard Mitigation Committee will review whether any of these plans are in the process of being updated. If so, the Hazard Mitigation Committee will remind people working on



these plans, policies, etc. of the Hazard Mitigation plan, and urge them to incorporate the Hazard Mitigation plan into their efforts.

The Hazard Mitigation Committee will also review current Town programs and policies to ensure that they are consistent with the mitigation strategies described in this plan.

While it is the understanding of the Southampton Hazard Mitigation committee that the previous Hazard Mitigation plan has been integrated into other planning mechanisms in the Town, the Hazard Mitigation committee did not track this work. The committee is committed to doing so going forward.

### **Plan Monitoring and Evaluation**

***Monitoring** is tracking the implementation of the plan over time. **Evaluating** is assessing the effectiveness of the plan at achieving its purpose and goals. **Updating** means reviewing and revising the plan at least once every five years.*

The Town's Emergency Management Director will call meetings of all responsible parties to review plan progress as needed, based on occurrence of hazard events. The public will be notified of these meetings in advance through a posting of the agenda at Town Hall. Responsible parties identified for specific mitigation actions will be asked to submit their reports in advance of the meeting. Meetings will entail the following actions:

- Review of previous hazard events to discuss and evaluate major issues, effectiveness of current mitigation, and possible mitigation for future events.
- Assess how the mitigation strategies of the plan can be integrated with other Town plans and operational procedures, including the Zoning Bylaw and Emergency Management Plan.
- Review and evaluate progress toward implementation of the current mitigation plan based on reports from responsible parties.
- Update and Amend current plan to improve mitigation practices.

Following these discussions, it is anticipated that the committee may decide to reassign the roles and responsibilities for implementing mitigation strategies to different town departments and/or revise the goals and objectives contained in the plan. All changes to the plan will be tracked by saving the plan with new dates when updated or amended. The committee will review and update the Hazard Mitigation Plan every five years.

The following questions will serve as the criteria that is used to evaluate the plan:

#### *Plan Mission and Goal*

- Is the Plan's stated goal and mission still accurate and up to date, reflecting any changes to local hazard mitigation activities?
- Are there any changes or improvements that can be made to the goal and mission?

#### *Hazard Identification and Risk Assessment*

- Have there been any new occurrences of hazard events since the plan was last reviewed? If so, these hazards should be incorporated into the Hazard Identification and Risk Assessment.

- Have any new occurrences of hazards varied from previous occurrences in terms of their extent or impact? If so, the stated impact, extent, probability of future occurrence, or overall assessment of risk and vulnerability should be edited to reflect these changes.
- Is there any new data available from local, state, or Federal sources about the impact of previous hazard events, or any new data for the probability of future occurrences? If so, this information should be incorporated into the plan.

#### *Existing Mitigation Strategies*

- Are the current strategies effectively mitigating the effect of any recent hazard events?
- Has there been any damage to property since the plan was last reviewed?
- How could the existing mitigation strategies be improved upon to reduce the impact from recent occurrences of hazards? If there are improvements, these should be incorporated into the plan.

#### *Proposed Mitigation Strategies*

- What progress has been accomplished for each of the previously identified proposed mitigation strategies?
- How have any recently completed mitigation strategies affected the Town's vulnerability and impact from hazards that have occurred since the strategy was completed?
- Should the criteria for prioritizing the proposed mitigation strategies be altered in any way?
- Should the priority given to individual mitigation strategies be changed, based on any recent changes to financial and staffing resources, or recent hazard events?

#### *Review of the Plan and Integration with Other Planning Documents*

- Is the current process for reviewing the Hazard Mitigation Plan effective? Could it be improved?
- Are there any Town plans in the process of being updated that should have the content of this Hazard Mitigation Plan incorporated into them?
- How can the current Hazard Mitigation Plan be better integrated with other Town planning tools and operational procedures, including the zoning bylaw, the Comprehensive Emergency Management Plan, and the Capital Improvement Plan?

Public participation will be a critical component of the Hazard Mitigation Plan maintenance process. The Hazard Mitigation Committee will hold all meetings in accordance with Massachusetts open meeting laws and the public invited to attend. The public will be notified of any changes to the Plan via the meeting notices board at Town Hall, and copies of the revised Plan will be made available to the public at Town Hall.

CERTIFICATE OF ADOPTION  
TOWN OF SOUTHAMPTON, MASSACHUSETTS  
BOARD OF SELECTMEN  
A RESOLUTION ADOPTING THE SOUTHAMPTON  
NATURAL HAZARD MITIGATION PLAN

WHEREAS, the Town of Southampton established a Committee to update the Southampton Natural Hazard Mitigation plan; and

WHEREAS, several public planning meetings were held between July 2015 and July 2016 regarding the update and review of the Southampton Natural Hazard Mitigation Plan Update; and

WHEREAS, the Southampton Natural Hazard Mitigation Plan Update contains several potential future projects to mitigate natural hazard damage in the Town of Southampton, and

WHEREAS, a duly-noticed public hearing was held by the Southampton Board of Selectmen on Dec 20, 2016 to formally approve and adopt the Southampton Natural Hazard Mitigation Plan Update.

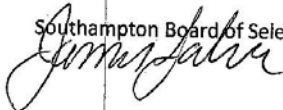
NOW, THEREFORE BE IT RESOLVED that the Southampton Board of Selectmen adopts the Southampton Natural Hazard Mitigation Plan Update.

ADOPTED AND SIGNED this Dec 20, 2016.

, Chair  
Southampton Board of Selectmen

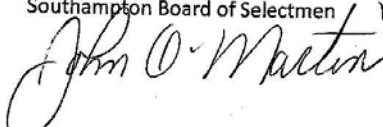


Southampton Board of Selectmen

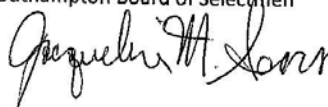


Southampton Board of Selectmen

Southampton Board of Selectmen



Southampton Board of Selectmen



# 7. APPENDICES

## Appendix A – Technical Resources

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### 1) Agencies

Massachusetts Emergency Management Agency (MEMA).....	508/820-2000
Hazard Mitigation Section .....	617/626-1356
Federal Emergency Management Agency (FEMA) .....	617/223-4175
MA Regional Planning Commissions:	
Berkshire Regional Planning Commission (BRPC).....	413/442-1521
Cape Cod Commission (CCC).....	508/362-3828
Central Massachusetts Regional Planning Commission (CMRPC).....	508/693-3453
Franklin Regional Council of Governments (FRCOG).....	413/774-3167
Martha’s Vineyard Commission (MVC).....	508/693-3453
Merrimack Valley Planning Commission (MVPC).....	978/374-0519
Metropolitan Area Planning Council (MAPC).....	617/451-2770
Montachusett Regional Planning Commission (MRPC).....	978/345-7376
Nantucket Planning and Economic Development Commission (NP&EDC).....	508/228-7236
Northern Middlesex Council of Governments (NMCOG).....	978/454-8021
Old Colony Planning Council (OCPC).....	508/583-1833
Pioneer Valley Planning Commission (PVPC).....	413/781-6045
Southeastern Regional Planning and Economic Development District (SRPEDD).....	508/823-1803
MA Board of Building Regulations & Standards (BBRS).....	617/227-1754
MA Coastal Zone Management (CZM).....	617/626-1200
DCR Water Supply Protection.....	617/626-1379
DCR Waterways.....	617/626-1371
DCR Office of Dam Safety.....	508/792-7716
DFW Riverways.....	617/626-1540
MA Dept. of Housing & Community Development.....	617/573-1100
Woods Hole Oceanographic Institute.....	508/457-2180
UMass-Amherst Cooperative Extension.....	413/545-4800
National Fire Protection Association (NFPA).....	617/770-3000
New England Disaster Recovery Information X-Change (NEDRIX – an association of private companies & industries involved in disaster recovery planning).....	781/485-0279
MA Board of Library Commissioners.....	617/725-1860
MA Highway Dept, District 2.....	413/582-0599
MA Division of Marine Fisheries.....	617/626-1520
MA Division of Capital & Asset Management (DCAM).....	617/727-4050
University of Massachusetts/Amherst.....	413/545-0111
Natural Resources Conservation Services (NRCS).....	413/253-4350
MA Historical Commission.....	617/727-8470
U.S. Army Corps of Engineers.....	978/318-8502
Northeast States Emergency Consortium, Inc. (NESEC).....	781/224-9876
National Oceanic and Atmospheric Administration: National Weather Service; Taunton, MA.....	508/824-5116
US Department of the Interior: US Fish and Wildlife Service .....	413/253-8200
US Geological Survey .....	508/490-5000

## 2) Mitigation Funding Resources

404 Hazard Mitigation Grant Program (HMGP) .....	Massachusetts Emergency Management Agency
406 Public Assistance and Hazard Mitigation .....	Massachusetts Emergency Management Agency
Community Development Block Grant (CDBG).....	DHCD, also refer to RPC
Dam Safety Program.....	MA Division of Conservation and Recreation
Disaster Preparedness Improvement Grant (DPIG) .....	Massachusetts Emergency Management Agency
Emergency Generators Program by NESEC† .....	Massachusetts Emergency Management Agency
Emergency Watershed Protection (EWP) Program.....	USDA, Natural Resources Conservation
Service Flood Mitigation Assistance Program (FMAP) .....	Massachusetts Emergency Management Agency
Flood Plain Management Services (FPMS).....	US Army Corps of Engineers
Mitigation Assistance Planning (MAP).....	Massachusetts Emergency Management Agency
Mutual Aid for Public Works.....	Western Massachusetts Regional Homeland Security Advisory Council
National Flood Insurance Program (NFIP) † .....	Massachusetts Emergency Management Agency
Power of Prevention Grant by NESEC† .....	Massachusetts Emergency Management Agency
Roadway Repair & Maintenance Program(s).....	Massachusetts Highway Department
Section 14 Emergency Stream Bank Erosion & Shoreline Protection .....	US Army Corps of Engineers
Section 103 Beach Erosion.....	US Army Corps of Engineers
Section 205 Flood Damage Reduction.....	US Army Corps of Engineers
Section 208 Snagging and Clearing .....	US Army Corps of Engineers
Shoreline Protection Program.....	MA Department of Conservation and Recreation
Various Forest and Lands Program(s).....	MA Department of Environmental Protection
Wetlands Programs .....	MA Department of Environmental Protection

‡NESEC – Northeast States Emergency Consortium, Inc. is a 501(c)(3), not-for-profit natural disaster, multi-hazard mitigation and emergency management organization located in Wakefield, Massachusetts. Please, contact NESEC for more information.

† Note regarding National Flood Insurance Program (NFIP) and Community Rating System (CRS): The National Flood Insurance Program has developed suggested floodplain management activities for those communities who wish to more thoroughly manage or reduce the impact of flooding in their jurisdiction. Through use of a rating system (CRS rating), a community's floodplain management efforts can be evaluated for effectiveness. The rating, which indicates an above average floodplain management effort, is then factored into the premium cost for flood insurance policies sold in the community. The higher the rating achieved in that community, the greater the reduction in flood insurance premium costs for local property owners. MEMA can provide additional information regarding participation in the NFIP-CRS Program.

### 3) Internet Resources

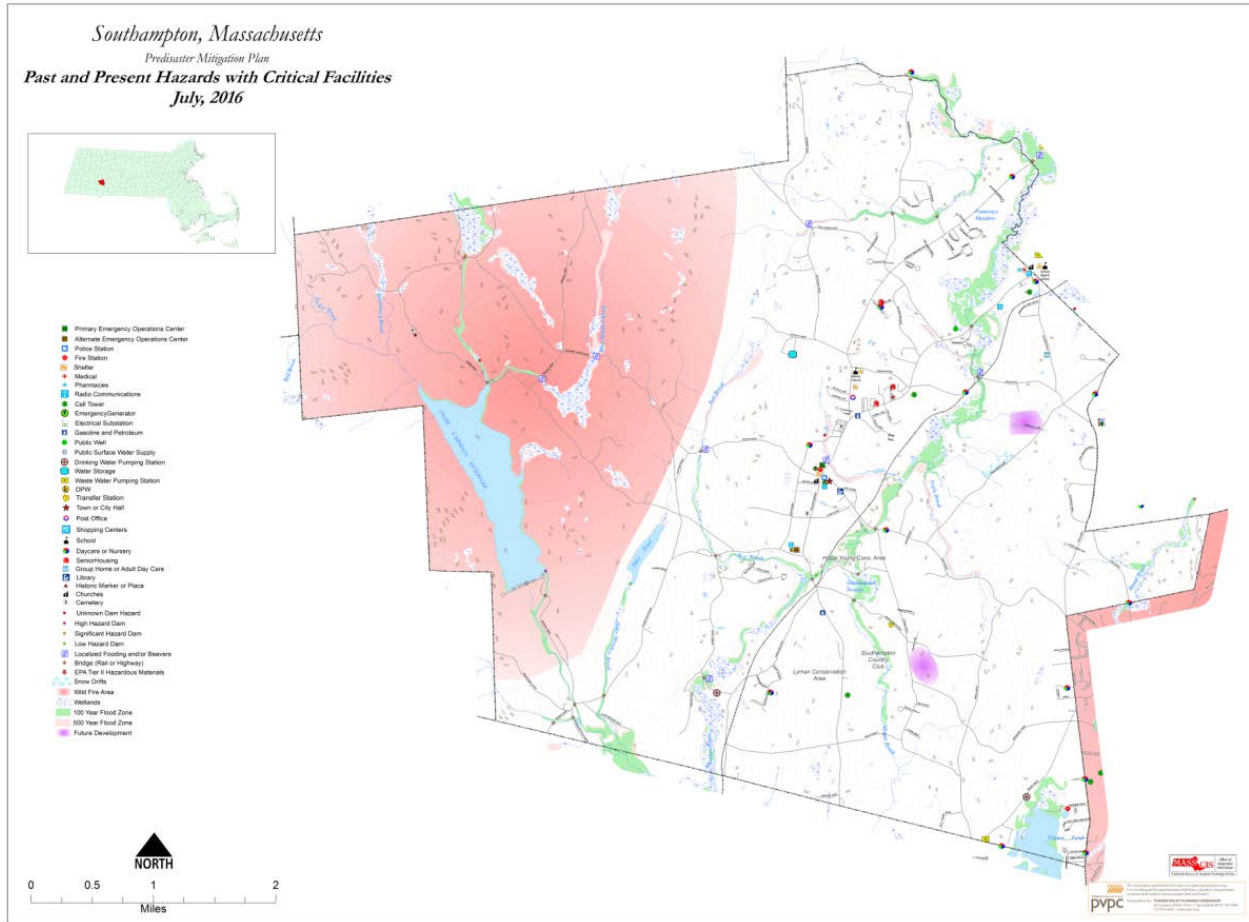
Sponsor	Internet Address	Summary of Contents
Natural Hazards Research Center, U. of Colorado	<a href="http://www.colorado.edu/litbase/hazards/">http://www.colorado.edu/litbase/hazards/</a>	Searchable database of references and links to many disaster-related websites.
Atlantic Hurricane Tracking Data by Year	<a href="http://wxp.eas.purdue.edu/hurricane">http://wxp.eas.purdue.edu/hurricane</a>	Hurricane track maps for each year, 1886 – 1996
National Emergency Management Association	<a href="http://nemaweb.org">http://nemaweb.org</a>	Association of state emergency management directors; list of mitigation projects.
NASA – Goddard Space Flight Center “Disaster Finder:	<a href="http://www.gsfc.nasa.gov/ndrd/disaster/">http://www.gsfc.nasa.gov/ndrd/disaster/</a>	Searchable database of sites that encompass a wide range of natural disasters.
NASA Natural Disaster Reference Database	<a href="http://ltpwww.gsfc.nasa.gov/ndrd/main/html">http://ltpwww.gsfc.nasa.gov/ndrd/main/html</a>	Searchable database of worldwide natural disasters.
U.S. State & Local Gateway	<a href="http://www.statelocal.gov/">http://www.statelocal.gov/</a>	General information through the federal-state partnership.
National Weather Service	<a href="http://nws.noaa.gov/">http://nws.noaa.gov/</a>	Central page for National Weather Warnings, updated every 60 seconds.
USGS Real Time Hydrologic Data	<a href="http://h20.usgs.gov/public/realtime.html">http://h20.usgs.gov/public/realtime.html</a>	Provisional hydrological data
Dartmouth Flood Observatory	<a href="http://www.dartmouth.edu/artsci/geog/floods/">http://www.dartmouth.edu/artsci/geog/floods/</a>	Observations of flooding situations.
FEMA, National Flood Insurance Program, Community Status Book	<a href="http://www.fema.gov/fema/csb.html">http://www.fema.gov/fema/csb.html</a>	Searchable site for access of Community Status Books
Florida State University Atlantic Hurricane Site	<a href="http://www.met.fsu.edu/explores/tropical.html">http://www.met.fsu.edu/explores/tropical.html</a>	Tracking and NWS warnings for Atlantic Hurricanes and other links
The Tornado Project Online	<a href="http://www.tornadoject.com/">http://www.tornadoject.com/</a>	Information on tornadoes, including details of recent impacts.
National Severe Storms Laboratory	<a href="http://www.nssl.uoknor.edu/">http://www.nssl.uoknor.edu/</a>	Information about and tracking of severe storms.
Independent Insurance Agents of America IIAA Natural Disaster Risk Map	<a href="http://www.iaa.ix.com/ndcmap.html">http://www.iaa.ix.com/ndcmap.html</a>	A multi-disaster risk map.
Earth Satellite Corporation	<a href="http://www.earthsat.com/">http://www.earthsat.com/</a>	Flood risk maps searchable by state.
USDA Forest Service Web	<a href="http://www.fs.fed.us/land">http://www.fs.fed.us/land</a>	Information on forest fires and land management.

## Appendix B – List of Acronyms

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FEMA	Federal Emergency Management Agency
MEMA	Massachusetts Emergency Management Agency
PVPC	Pioneer Valley Planning Commission
EPA	Environmental Protection Agency
DEP	Massachusetts' Department of Environmental Protection
NWS	National Weather Service
HMGP	Hazard Mitigation Grant Program
FMA	Flood Mitigation Assistance Program
SFHA	Special Flood Hazard Area
CIS	Community Information System
DCR	Massachusetts Department of Conservation and Recreation
FERC	Federal Energy Regulatory Commission
TRI	Toxics Release Inventory
FIRM	Flood Insurance Rate Map
NFIP	National Flood Insurance Program
CRS	Community Rating System
BOS	Board of Selectmen
BOH	Board of Health
LEPC	Local Emergency Planning Committee
EMD	Emergency Management Director
Con Com	Conservation Commission
EOC	Emergency Operations Center
CEM Plan	Comprehensive Emergency Management Plan
WMECO	Western Massachusetts Electric Company
HAZMAT	Hazardous Materials

# Appendix C – Past & Potential Hazards/Critical Facilities Map





## Appendix D– Documentation of the Planning Process

Media Organization	Address	Town	State	Zip Code
African American Point of View	688 Boston Road	Springfield	MA	01119
Agawam Advertiser News	23 Southwick Street	Feeding Hills	MA	01030
Amherst Bulletin	115 Conz Street	Northampton	MA	01060
Belchertown Sentinel	1 Main Street	Belchertown	MA	01007
Berkshire Eagle	75 South Church Street	Pittsfield	MA	01202
Brattleboro Reformer	62 Black Mountain Rd.	Brattleboro	VT	05301
CBS 3 Springfield	One Monarch Place	Springfield	MA	01144
Chicopee Register	380 Union Street	West Springfield	MA	01089
CommonWealth Magazine	18 Tremont Street	Boston	MA	02108
Country Journal	5 Main Street	Huntington	MA	01050
Daily Hampshire Gazette	115 Conz Street	Northampton	MA	01060
El Sol Latino	P.O. Box 572	Amherst	MA	01004
Going Green	PO Box 1367	Greenfield	MA	01302
Hilltown Families	P.O. Box 98	West Chesterfield	MA	01084
Holyoke Sun	138 College Street	South Hadley	MA	01075
Journal Register	24 Water Street	Palmer	MA	01069
La Voz Hispana	133 Maple Street #201	Springfield	MA	01105
Ludlow Register	24 Water Street	Palmer	MA	01069
Massachusetts Municipal Association	One Winthrop Street	Boston	MA	02110
Quaboag Current	80 Main Street	Ware	MA	01082
Recorder	14 Hope Street	Greenfield	MA	01302
Reminder	280 N. Main Street	East Longmeadow	MA	01028
Southwick Suffield News	23 Southwick Street	Feeding Hills	MA	01030
State House News Service	State House	Boston	MA	02133
Tantasqua Town Common	80 Main Street	Ware	MA	01082
The Longmeadow News	62 School Street	Westfield	MA	01085
The Republican	1860 Main Street	Springfield	MA	01102
The Westfield News	62 School Street	Westfield	MA	01085
Town Reminder	138 College Street	South Hadley	MA	01075
Urban Compass	83 Girard Avenue	Hartford	CT	06105
Valley Advocate	115 Conz Street	Northampton	MA	01061

Vocero Hispano	335 Chandler Street	Worcester	MA	01602
WAMC Northeast Public Radio	1215 Wilbraham Road	Springfield	MA	01119
Ware River News	80 Main Street	Ware	MA	01082
West Springfield Record	P.O. Box 357	West Springfield	MA	01098
WFCR-Public Radio	131 County Circle	Amherst	MA	01003
WGBY-Public TV	44 Hampden Street	Springfield	MA	01103
WGGB ABC40/FOX 6 News	1300 Liberty Street	Springfield	MA	01104
WHMP-FM	15 Hampton Avenue	Northampton	MA	01060
Wilbraham-Hampden Times	2341 Boston Road	Wilbraham	MA	01095
Worcester Telegram & Gazette	20 Franklin Street	Worcester	MA	01615
WRNX/WHYN/WPKR Radio	1331 Main Street	Springfield	MA	01103
WWLP-TV 22	PO Box 2210	Springfield	MA	01102

**Southampton Hazard Mitigation Planning Committee  
Meeting #1  
Wednesday, July 1, 2015 10:00 AM  
Southampton Town Hall**

**AGENDA**

**1) Introduction and Purpose of Committee**

**2) What is Hazard Mitigation Planning?**

**3) Organize Hazard Mitigation Team**

**4) Identify Critical Facilities (to be shown on Base map)**

- Identify Critical Facilities on Base Map. The following list contains items that should be clearly identified on the map, as they apply to your community:

- |                                |                                       |
|--------------------------------|---------------------------------------|
| - Emergency Operations Center  | - Nursing Homes                       |
| - Emergency Fuel Facilities    | - Elderly Housing                     |
| - Town/City Hall               | - Day-Care Facilities                 |
| - Police Station               | - Correctional Facilities             |
| - Fire Station                 | - Other Congregate Care Facilities    |
| - Public Works Garages         | - Shelters                            |
| - Water Treatment Facilities   | - Special Needs Populations           |
| - Sewage Treatment Plants      | - Hazardous Materials Facilities      |
| - Water Tower/Supply Pumps     | - Access Roads to Critical Facilities |
| - Power Plants                 | - Evacuation Routes                   |
| - Electrical Power Substations | - Unique or Historic Resources        |
| - Schools                      | - Commercial Economic Impact Areas    |
| - Major Highways and Roadways  | - Socio-Economic Impact Areas         |
| - Bridges                      | - Areas with Second Language Needs    |
| - Dams                         | - Hospitals                           |

**5) Hazards Analysis Methodology**

- Identify Past Hazard Occurrences, Location and Damage Assessments
- Hazard Identification and Analysis Worksheet

**6) Information needed for PDM Plan**

- Review list of questions

**7) Schedule and Agenda for Next Meetings**

Present: Heather Budrewicz-Town Administrator; Don Snyder-EMD, Randall Kemp -Highway Superintendent & Catherine Ratté-PVPC

**Southampton Hazard Mitigation Planning Committee  
Meeting #2**

**Wednesday, April 20, 2016  
10:00 AM  
Southampton Town Hall**

**AGENDA**

**1. Continue plan review and update starting on p. 20**

**Review List of Critical Facilities**

**Review Critical Facilities and Evacuation Routes Potentially Affected By Hazard Areas**

**Analyze Development Trends**

Review local zoning districts. Identify planned and proposed subdivisions and other common developments. Is planned development at risk by natural hazards? Are there mitigation measures that can be taken to prevent loss of life, property damage, and disruption of governmental services and general business activities.

**Review Vulnerability Assessment Methodology and Potential Loss Estimates**

**2. Update status of Hazard Mitigation Actions in 2008 plan**

**3. Start Capability Assessment**

**TOWN CLERK: Please Post this notice per M.G. L. Chapter 39, Section 23, A-C**

**Present: Don Snyder, EMD and Catherine Ratté, PVPC , on-call-Heather Budrewicz**

**Southampton Hazard Mitigation Planning Committee  
Meeting #3**

**Tuesday, May 03, 2016  
10:00 AM  
Southampton Town Hall**

**AGENDA**

- 1. Complete Capability Assessment (if needed)**
- 2. Review Map of Critical Facilities**
- 3. Establish Goals and Objectives**
- 4. Develop Action Plan of Hazard Mitigation Strategies**

**TOWN CLERK: Please Post this notice per M.G. L. Chapter 39, Section 23, A-C**

**Southampton Hazard Mitigation Planning Committee  
Meeting #4**

**Wednesday, May 4, 2016  
11:00 AM  
Southampton Town Hall**

**AGENDA**

- 1. Finalize Map of Critical Facilities**
- 2. Finalize Goals and Objectives**
- 3. Finalize Action Plan of Hazard Mitigation Strategies**
- 4. Plan for submission**

**TOWN CLERK: Please Post this notice per M.G. L. Chapter 39, Section 23, A-C**

**Southampton Hazard Mitigation Planning Committee  
Meeting #5**

**Thursday, July 28, 2016  
10:00 AM  
Southampton Town Hall**

**AGENDA**

- 1. Finalize Plan--focus on Action Strategy and missing data**
- 2. Other topics that arise**

**TOWN CLERK: Please Post this notice per M.G. L. Chapter 39, Section 23, A-C**

**PRESS RELEASE**

CONTACT: Catherine Ratte, Pioneer Valley Planning Commission, (413) 781-6045

FOR IMMEDIATE RELEASE

July 1, 2015

**Town of Southampton to Hold Public Engagement Event for Hazard Mitigation Plan**

Southampton residents, businesses, and surrounding community representatives are invited to provide comments on the update of the Town of Southampton Hazard Mitigation Plan on Tuesday, July 7 at 6:30 pm at Southampton Town Hall, 210 College Highway. The plan is being updated by the Town with assistance from the Pioneer Valley Planning Commission and is funded by the Federal Emergency Management Agency (FEMA) and the Massachusetts Emergency Management Agency (MEMA). All members of the public, business owners, and representatives from surrounding communities are welcome to attend the event.

The meeting will include an overview of the hazard mitigation planning process and a discussion of existing mitigation initiatives addressing natural hazards in Southampton. Municipal officials and PVPC staff will be available to answer questions and listen to comments on the draft plan.

This planning effort is being undertaken to help the Town of Southampton assess the risks faced from natural hazards, identify action steps that can be taken to prevent damage to property and loss of life, and prioritize funding for mitigation efforts. A mitigation action is any action taken to reduce or eliminate the long-term risk to human life and property from hazards.

For more information, please contact PVPC's Catherine Ratté at [cratte@pvpc.org](mailto:cratte@pvpc.org) or (413) 781-6045.

**PRESS RELEASE**

CONTACT: Catherine Ratte, Pioneer Valley Planning Commission, (413) 781-6045





#### MEDIA RELEASE

CONTACT: Catherine Ratte, PVPC Principal Planner, (413) 781-6045, [cratte@pvpc.org](mailto:cratte@pvpc.org)

FOR IMMEDIATE RELEASE  
July 18, 2016

#### **Town of Southampton to Hold Second Public Engagement Event for Hazard Mitigation Plan**

Southampton residents, businesses, surrounding community representatives, and all other interested persons and organizations are invited to provide comments on the update of the Town of Southampton Hazard Mitigation Plan on Tuesday, July 28 at 6:30 pm at Southampton Town Hall, 210 College Highway. The plan has been updated by the Town with assistance from the Pioneer Valley Planning Commission and is funded by the Federal Emergency Management Agency (FEMA) and the Massachusetts Emergency Management Agency (MEMA). All members of the public, business owners, and representatives from surrounding communities are welcome to attend the event.

The meeting will include an overview of the new strategies designed to mitigate the consequences of natural hazards on buildings and residents of the community. PVPC staff will be available to answer questions and listen to comments on the draft plan.

This planning effort has been undertaken to help the Town of Southampton assess the risks faced from natural hazards, identify action steps that can be taken to prevent damage to property and loss of life, and prioritize funding for mitigation efforts. A mitigation action is any action taken to reduce or eliminate the long-term risk to human life and property from hazards.

For more information, please contact PVPC's Catherine Ratté at [cratte@pvpc.org](mailto:cratte@pvpc.org) or (413) 781-6045.

# Appendix E– Capability Assessment

## Worksheet 4.1

## Capability Assessment Worksheet

### Jurisdiction: Southampton

Local mitigation capabilities are existing authorities, policies, programs, and resources that reduce hazard impacts or that could be used to implement hazard mitigation activities. Please complete the tables and questions in the worksheet as completely as possible. Complete one worksheet for each jurisdiction.

### Planning and Regulatory

Planning and regulatory capabilities are the plans, policies, codes, and ordinances that prevent and reduce the impacts of hazards. Please indicate which of the following your jurisdiction has in place.

Plans	Yes/No Yr	Does the plan address hazards? Does the plan identify projects to include in the mitigation strategy? Can the plan be used to implement mitigation actions?
Comprehensive/Master Plan	y	
Capital Improvements Plan	?	Annual committee, but no guaranteed funding
Economic Development Plan	N	
Local Emergency Operations Plan	y	CEMP-updated 5/2016
Continuity of Operations Plan	n	EMD intends to launch collaborative process to develop
Transportation Plan	n	RTP
Stormwater Management Plan	N	Regulations in place for subdivisions and large projects through Planning Board and Conservation Commission
Community Wildfire Protection Plan	Y	Tiered alarm response plan
Other special plans (e.g. brownfields, redevelopment, disaster recovery, coastal zone management, climate change adaptation)		

Building Code, Permitting, and Inspections	Y/N	Are codes adequately enforced?
Building Code	y\Y	Version/Year: IECC current per State requirement
Building Code Effectiveness Grading Schedule (BCEGS) Score	N	Score:
Fire Department ISO Rating	Y	Rating: 6/9
Site plan review requirements	y	Gas, PB

Land Use Planning & Ordinances	Y/N	Is the ordinance an effective measure for reducing
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		<b>hazard impacts? Is the ordinance adequately administered and enforced?</b>
Zoning Ordinance	y	Y, could benefit from review of application of waivers
Subdivision ordinance	Y	Y, y
Floodplain ordinance	N	
Natural hazard specific ordinance (stormwater, steep slope, wildfire)	N	
Flood insurance rate maps	Y	With the Conservation Commission
Acquisition of land use for open space and public recreation uses	y	Y, PARC grant for Wolf Hill sanctuary conservation
Other		

<b>How can these capabilities be expanded and improved to reduce risk?</b>
Training Boards on the importance of enforcing regulations

### Administrative & Technical

Identify whether your community has the following administrative and technical capabilities. These include staff and their skills and tools that can be used for mitigation planning and to implement specific mitigation actions. For smaller jurisdictions without local staff resources, if there are public resources at the next higher level of government that provide technical assistance, indicate so in your comments.

<b>Administration</b>	<b>Y/N</b>	<b>Describe capability Is coordination effective?</b>
Planning Board	y	Y
Mitigation Planning Committee	Y	Emergency Planning meets regularly. Will meet annually to review strategies
Maintenance programs to reduce risk (e.g. tree trimming, clearing drainage systems)	y	Y, tree trimming, drainage clearing
Mutual aid agreements	y	Police, Fire, State-DPW, BOH

<b>Staff</b>	<b>Y/N FT/PT</b>	<b>Is staffing adequate to enforce regulations? Is staff trained on hazards and mitigation? Is coordination between agencies and staff effective?</b>
Chief Building Official	y-ft	Y, y-fire
Floodplain Administrator	N	Conservation Commission
Emergency Manager	y	Volunteer and very limited budget-\$250, yes-well trained; working to improve coordination
Community Planner	y-PT	Use PVPC Planning Board Assistance (PBA) for part-time planning services
Civil Engineer	N	
GIS Coordinator	n	PVPC GIS service as needed
Other		NIMS trained

<b>Technical</b>	<b>Y/N</b>	<b>Describe capability</b>
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		<b>Has capability been used to assess/mitigate risk in the past?</b>
Warning systems/services (Reverse 911, outdoor warning signals)	y	CodeRed; ECAT (Easthampton Community Access TV)
Hazard data and information	Y	NIMS, ICS, staff trained in emergency response
Grant writing	n/y	Everyone writes grants and no one grant writer
Hazus analysis	N	
Other		

**How can these capabilities be expanded and improved to reduce risk?**

### Financial

Identify whether your jurisdiction has access to or is eligible to use the following funding resources for hazard mitigation.

<b>Funding Resource</b>	<b>Access Eligibility Y/N</b>	<b>Has the funding resource been used in the past and for what type of activities? Could the resource be used to fund future mitigation actions?</b>
Capital Improvements Project funding	y	Sometime-year to year. Free cash plan that allocates a % of free cash into a capitol improvements fund
Authority to levy taxes for specific purposes	y	N, n
Fees for water, sewer, gas or electric services	y	Water, ?
Impact fees for new development	N	
Storm water utility fee	n	Possibly with MS4
Incur debt through general obligation bonds and/or special tax bonds	y	N, y
Community development block grants	y	N?
Other federal funding programs	Y?	Fire equipment-FEMA?
State funding programs	y	Ch 90 roads, drainage, bigger projects on TIP, MEMA CodeRed
Other		

**How can these capabilities be expanded and improved to reduce risk?**

### Education & Outreach

Identify education and outreach programs and methods already in place that could be used to implement mitigation activities and communicate hazard-related information.

<b>Program/Organization</b>	<b>Y/N</b>	<b>Describe program/organization and how it relates to disaster resilience and mitigation</b>
Local citizens groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.	y	MRC, CERT
Ongoing public education or information program (e.g. responsible water use, fire safety, household preparedness, environmental education)	y	Fire safety with children and seniors; household preparedness
Natural disaster or safety related school programs	y	Fire safety, stormwater in schools (MS4)
StormReady certification	N	
Firewise Communities certification	N	
Public-private partnership initiatives addressing disaster-related issues	N	
Other	y	Hampshire Public Health Coalition-emergency preparedness coalition

<b>How can these capabilities be expanded and improved to reduce risk?</b>