

The Town of Southampton

Local Natural Hazards Mitigation Plan

Adopted by the Southampton Board of Selectmen on 

Prepared by:

The Southampton Natural Hazards Mitigation Planning Committee

and

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Table of Contents

1: INTRODUCTION.....	1
Hazard Mitigation	1
Planning Process.....	1
2: LOCAL PROFILE	3
Community Setting	3
Infrastructure	3
Natural Resources	4
Development.....	5
3: Profiling HAZARDS.....	7
Profiling the Natural Hazards	7
Natural Hazard Identification and Vulnerability Assessment	8
4: CRITICAL FACILITIES.....	22
Critical Facilities within Hazard Areas	22
Category 1 – Emergency Response Services.....	22
Category 2 – Non Emergency Response Facilities	24
Category 3 – Facilities/Populations to Protect	24
Category 4 – Potential Resources.....	25
5: MITIGATION STRATEGIES	28
General Mitigation Measures	28
Flooding	29
Severe Snow/Ice Storm	31
Hurricanes/Severe Wind	33
Tornadoes/Microbursts	33
Wildfire/Brushfire	34
Earthquake.....	35
Dam Failure	36
Drought.....	37
Hazardous Materials	38
6: PRIORITIZED IMPLEMENTATION SCHEDULE	40
7: PLAN ADOPTION & IMPLEMENTATION.....	45
APPENDICES.....	48
Appendix A – Technical Resources	48
Appendix B – List of Acronyms.....	51
Appendix C – Natural Hazard Profiling Methodology	52
Appendix D – Past & Potential Hazards/Critical Facilities Map	54
Appendix E – Documentation of the Planning Process.....	55

1: INTRODUCTION

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 a local natural hazard mitigation plan before a disaster occurs can save the community money and facilitate 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

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

- Identifying the natural hazards that may impact the community.
- 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 a community is currently implementing to protect against future disaster damages.
- Identifying deficiencies in the current strategies and establishing goals for updating, revising or adopting new strategies.
- Adopting and implementing the final Local Natural Hazards Mitigation Plan.

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

Public Committee Meetings

December 7, 2007, 9:00 – 10:30 AM: Informational and organizational meeting with Project Committee, held at Southampton Highway Department.

January 30, 2008, 9:00-11:00 AM: Working committee meeting held at Southampton Highway Department.

March 13, 2008, 10:30-12:00 AM: Working committee meeting held at Southampton Highway Department.

A mailing was made to each committee member prior to each meeting that contained an agenda and information to be reviewed for the meeting if appropriate.

On June 30, 2008 the Pioneer Valley Planning Commission sent a press release (see Appendices) to all area media outlets to inform the public that a draft of Southampton's Hazard Mitigation Plan was available for a 30-day public comment period. The plan could be found on PVPC's website and hard copies were available at PVPC's office and Southampton Town Hall. Residents businesses and other concerned parties of Southampton and adjacent communities were encouraged to comment on the plan. Citizens from adjacent communities were also encouraged to comment on Southampton's plan and on the plans of four other communities (Cummington, Palmer, Westfield and Westhampton) that were also posted for that same period.

Public Meetings with the Board of Selectmen

November, 2005: The Board of Selectmen agreed to begin the process of developing a Local Hazard Mitigation Plan. Meeting held at Southampton Town Offices.

 , 2009: The Board of Selectmen adopted the Local Natural Hazard Mitigation Plan. Meeting held at Southampton Town Offices.

2: LOCAL PROFILE

Community Setting

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. Southampton celebrates this rural, small town character. Since 1897, Southampton has been known for “Old Home Days,” a yearly gathering of the Sons and Daughters of Southampton celebrated with a parade and Homecoming Dinner. 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

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, but the Town has explored the option of purchasing abandoned right-of-way land for recreational uses.

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 back up 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

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

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.

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.

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.

3: PROFILING HAZARDS

Profiling the Natural Hazards

Historical research, conversations with local officials and emergency management personnel, available hazard mapping and other weather-related databases were used to identify and profile the natural hazards which are most likely to have an impact on Southampton.

Each of these hazards was assessed by the Committee for location of occurrence, extent, previous occurrences, and probability of future events. (See Appendix C for sources, methodology.) This resulted in a ranking of hazard, by risk, see Table 3.1. More detailed descriptions of each of the points of analysis are included in the Identification and Vulnerability Assessment (below).

Table 3.1: Hazard Profiling and Risk Index Worksheet

Type of Hazard	Location	Extent	Previous Occurrences	Probability of Future Events	Hazard Risk Index Rating
Flooding (100-year)	Large	Limited	Yes	Low	2
Flooding (localized)	Medium	Minor	Yes(extensive)	Very High	1
Severe Snow/Ice Storms	Large	Limited	Yes	Very High	1
Hurricanes/Severe Wind	Large	Minor	Yes (minimal)	Very Low	4
Tornado/Microburst	Small	Critical	Yes	Very Low	4
Wildfire/Brushfire	Small	Minor	Yes (minimal)	Very High	3
Earthquake	Large	Catastrophic	No	Very Low	4
Dam Failure	Small	Minor	No	Very Low	5
Drought	Small	Minor	No	Very Low	5
Man-Made Hazard: Hazardous Materials	Large	Limited	No	Very Low	3

Natural Hazard Identification and Vulnerability Assessment

The following is a description of natural and manmade disasters, and the areas affected by them, that have or could affect the Town of Southampton. The *Past and Potential Hazards/Critical Facilities Map* (Appendix D) reflects the contents of this analysis.

Vulnerability Assessment Methodology

In order to determine estimated losses due to natural hazards in Southampton, each hazard area was analyzed with results shown below. The data below was calculated using FEMA's *Understanding Your Risks: Identifying Hazards and Estimating Losses*, August 2001.

Total value of all structures in Southampton (2006): \$557,780,666

Median value of a home in Southampton (2006): \$263,000

Average household size: 2.4 persons

Human losses are not calculated during this exercise, but could be expected to occur depending on the type and severity of the hazard. Most of these figures exclude both the land value and contents of the structure. The damage calculations are rough estimate and likely reflect worst-case scenarios. Computing more detailed damage assessment based on assessor's records is a labor-intensive task and beyond the scope of this project.

Flooding

The average annual precipitation for Southampton and surrounding areas in northwestern Massachusetts is 46 inches. There are three major types of storms that bring precipitation to Southampton. Continental storms that originate from the west continually move across the region. These storms are typically low-pressure systems that may be slow-moving frontal systems or more intense, fast-moving storms. Precipitation from coastal storms, also known as nor'easters, that travel into New England from the south constitute the second major storm type. In the late summer or early fall, the most severe type of these coastal storms, hurricanes, may reach Massachusetts and result in significant amounts of rainfall. The third type of storm is the result of local convective action. Thunderstorms that form on warm, humid summer days can cause locally significant rainfall.

Floods can be classified as either flash floods, which are the product of heavy, localized precipitation in a short time period over a given location or general floods, which are caused by precipitation over a longer time period in a particular river basin. There are several local factors that determine the severity of a flooding event, including: stream and river basin topography, precipitation and weather patterns, recent soil moisture

conditions, amount of impervious surface area, and the degree of vegetative clearing. Furthermore, flooding can be influenced by larger, global climate events. Global warming and climate change have the potential to shift current rainfall and storm patterns. Increased precipitation is a realistic result of global warming, and could potentially increase the frequency and intensity of flooding in the region. Currently, floods occur and are one of the most frequent and costly natural hazards in the United States.

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).

In contrast, general flooding events may last for several days. 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).

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. In addition to damage of buildings directly in the floodplain, development can result in a loss of natural flood storage capacity and can increase the water levels in water bodies. Flood levels may then increase, causing damage to structures not normally in the flood path.

The Floodplain Map for the Town of Southamptton shows the 100-year and 500-year flood zones identified by FEMA flood maps. The 100-year flood zone is the area that will be covered by water as a result of a flood that has a one percent chance of occurring in any given year. Likewise, the 500-year flood has a 0.2 percent chance of occurring in any given year. In Southamptton, there are several floodplain areas (100-year flood zone) – primarily along the eastern edge of town from the Pomeroy Meadows area in the north down to the Moose and Triple Brook corridors in the south and, along the White and Tighe-Carmody (Manhan) Reservoirs corridor on the west side of town. Broad Brook and the north end of Pequot Pond are also mapped for 100-year flood zones. There are some smaller 500-year floodplains mapped as well, in several low-lying areas

throughout Southamptton including Blue Meadow Brook, Red Brook, Alder Pond and Alder Meadow Brook, Triple Brook, and Potash Brook in the Town Center. These are all included on the Past and Potential Hazards/Critical Facilities Map (see Appendix D).

The major floods recorded in Western Massachusetts during the 20th century have been the result of rainfall alone or rainfall combined with snowmelt. Southamptton has experienced many flooding events over the last decade. Generally, these small floods have had minor impacts, temporarily impacting roads and residents' yards.

As described above, flooding can happen on a range of scales. For the purposes of this analysis, the hazard has been broken into two separate types – **Flooding (100-year)** and **Flooding (localized)**. Risk and vulnerability assessment for these separate types of flooding are analyzed below.

Flooding (100-year base flood): High Risk

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 Southamptton. 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 Southamptton as of January 2004, the most current records in the CIS for the Town of Southamptton. Therefore, a vulnerability assessment for a 100-year flood equals approximately \$789,000 of damage to residential structures, with approximately 7 people impacted.

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 Southamptton has no repetitive loss properties as defined by FEMA's NFIP.

Gilbert Road

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 is generally worse in the winter when the river will breach its bank causing the road to close. In the summer, the river will approach within 1" of the bridge's road surface elevation but will rarely top it. The Highway Department considers Gilbert Road to be the "canary in the coal mine" – flooding at the Gilbert Road crossing of the Manhan River means that there is approximately 1 ½ hours before flooding occurs downstream at Riverdale Road.

There is one critical facility in the neighborhood. 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. The pump station and its back up power are elevated and not affected by the flooding.

Riverdale Road

Three residences are flooded regularly and evacuated 3 to 4 times per year and, road closed. Electric service connection is located in the basement of each of these residences and creates a risk of electrocution to rescue workers during flood events. There is a need to elevate the electric service to the first floor in each of these properties.

- No critical facilities in neighborhood;
- Approximately 3 residential structures in this area that have been affected or could be affected by a flood incident;
- Vulnerability assessment: \$789,000 (assuming 100% damage to 100% of the structures);
- Cost for repairing or replacing any power lines, telephone lines, and contents of structures are not included.

Fomer Road

Red Brook crosses Fomer Road at the western end of the road 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, swales and crosspipes along this road. One Critical Facility exists on 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. During the Patriots Day flood in April 2007, the section of the 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. Pomeroy Meadow Road in Easthampton is scheduled to be rebuilt in 2008.

Maple Street, Moose Brook Road and Brickyard Extension

Stream crossings on each of these dirt roads in the 100-year flood zone can result in flooding and road washout. Problem areas include cut out ditches, swales and crosspipes. There are no critical facilities on these roads.

Flooding (localized) – Medium Risk

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.

There are several problem culverts or other localized flooding areas are all over Town, and have been mapped on the Past and Potential Hazards/Critical Facilities Map (Appendix D). Most of the flood hazard areas listed here were identified due to known past occurrence in the respective area. There are many areas with no record of previous flood incidents that could be affected in the future by heavy rain and runoff.

Additionally, the vast majority of culverts throughout town tend to be impacted by beavers, so localized flooding can potentially occur at any culvert crossing.

To determine the vulnerability of the Town to localized flood events, the property within identified areas was visually analyzed using aerial photography (Pictometry), which allowed structures to be identified and tallied. Specific vulnerability assessments were estimated for sites which have been susceptible to localized flooding in the past, and are described below.

East Street

A tributary to Moose Brook flows parallel to East Street behind Town Hall and the Police Station. The basement of town hall, where the Police Station is located, can get minor flooding during high groundwater periods. The garage doors to the station are set at grade for a basement level entry. Emergency response vehicles park behind the building where icy conditions can occur as water drains across the parking lot toward Conant Pond. The electrical and heating systems as well as the jails are located in the basement of the building.

The Fire Department is located further down East Street and experiences a wet floor in the basement during high groundwater periods.

Cottage Ave, Freyer and Mountain Roads

Each of these dirt roads experiences some flooding and road washout during heavy storm events. Problem areas include cut out ditches, swales and crosspipes. The City of Westfield operates a sewer pump station at the end of Cottage Ave on the Westfield side of the town line. There are no critical facilities for the Town of Southampton on these roads.

Severe Snow/Ice Storm – High Risk

Severe winter storms can pose a significant risk to property and human life because the rain, freezing rain, ice, snow, cold temperatures and wind associated with these storms can disrupt utility service, phone service, and make roadways extremely hazardous. Severe winter storms can also be deceptive killers. The types of deaths that can occur as a result of a severe winter storm include: traffic accidents on icy or snow-covered roads, heart attacks while shoveling snow, and hypothermia from prolonged exposure to cold temperatures. Infrastructure and other property are also at risk from severe winter storms and the associated flooding that can occur following heavy snow melt. Power and telephone lines, trees, and telecommunications structures can be damaged by ice, wind, snow, and falling trees and tree limbs. Icy road conditions or roads blocked by fallen trees may make it difficult to respond promptly to medical emergencies or fires. Prolonged, extremely cold temperatures can also cause inadequately insulated potable water lines and fire sprinkler pipes to rupture and disrupt the delivery of drinking water and cause extensive property damage.

New England generally experiences at least one or two severe winter storms each year with varying degrees of severity. Research on climate change indicates that there is great potential for stronger, more frequent storms as the global temperature increases. Severe winter storms typically occur during January and February; however, they can occur from late September through late April.

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. 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 Western Mass Electric Company to remove trees near utility lines and identify lines to be buried to prevent storm induced power outages.

Hurricanes/Severe Wind – Medium-High Risk

Hurricanes are violent rainstorms with strong winds that can reach speeds of up to 200 miles per hour, and 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. Severe wind can also occur in the absence of a hurricane, especially impacting mountain tops. Global warming will increase the threat of hurricanes and severe wind as oceans and the atmosphere warms. Climate change research indicates that storms like hurricanes will become more intense and more frequent in the future.

In Massachusetts, sixteen hurricanes have had landfall since 1851, two of which impacted Western Massachusetts. These include Hurricane Carol in 1954 and Hurricane Gloria in 1985. Hurricanes are usually ranked category 1-5, using the Saffir-Simpson Scale, with category 5 hurricanes being the most severe. Both Hurricane Carol and Gloria were category 1-2 storms, meaning winds ranged from 74-110 mph with the potential for some roofing or window damage to buildings, damage to unanchored mobile homes, trees, or poor construction, and/or some minor flooding.

Southampton's location in Western Massachusetts reduces the risk of hurricanes, although it can experience some high wind events. During hurricanes or severe wind events, the Town has experienced small blocks of downed timber and uprooting of trees onto structures.

- Estimated wind damage: 5% of the structures with 10% damage, \$2,788,903;
- Estimated flood damage: 10% of the structures with 20% damage, \$11,155,613;

- Vulnerability assessment for a hurricane event (both wind and flood damages): \$13,944,517;
- Cost of repairing or replacing the roads, bridges, utilities, and contents of structures is not included.

Locations which have been susceptible to wind or hurricane damage are described below:

Tornadoes/Microbursts – Low Risk

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 Hampshire County.

Of additional concern are microbursts, which often do tornado-like damage and can be mistaken for tornadoes. In contrast to the upward rush of air in a tornado, air blasts rapidly downward from thunderstorms to create microbursts. Microbursts and tornadoes are expected to become more frequent and more violent as the earth's atmosphere warms, due to predictions of climate change from global warming.

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. More specific damage estimates are not available; and,
- 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 cleanup.

In Western Massachusetts, the majority of sighted tornadoes have occurred in a swath east of Southamptton, known as "tornado alley." Thirteen incidents of tornado activity (all F2¹ or less) occurred in Hampshire County between 1959 and 2005.

¹ F2 refers to the commonly used Fujita Tornado Damage Scale which ranks tornados F0-F5 depending on estimated wind speeds and damages, with F5 the most severe.

Because tornadoes and microbursts rarely occur in this part of the country, assessing damages is difficult. Furthermore, buildings have not been built to Zone 2, Design Wind Speed Codes. The entire Town of Southampton is vulnerable.

- Tornadoes/microburst hazard estimates 20% damage to 10% of structures in Town;
- Vulnerability assessment estimates in damages; \$11,155,613;
- Estimated cost does not include building contents, land values or damages to utilities.

Wildfires/Brushfire – Medium Risk

According to FEMA, there are three different classes of wildland fires: surface fires, ground fires and crown fires. The most common type of wildland fire is a surface fire that burns slowly along the floor of a forest, killing or damaging trees. A ground fire burns on or below the forest floor and is 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. While wildfires or brushfires have not been a significant problem in Southampton, there is always a possibility that changing land use patterns and weather conditions will increase a community's vulnerability. For example, drought conditions can make forests and other open, vegetated areas more vulnerable to ignition. Once the fire starts, it will burn hotter and be harder to extinguish. Soils and root systems starved for moisture are also vulnerable to fire. Residential growth in rural, forested areas increases the total area that is vulnerable to fire and places homes and neighborhoods closer to areas where wildfires are more likely to occur. Global climate changes may also influence precipitation patterns, making the region more susceptible to drought and therefore, wildfires.

Hampshire County has approximately 252,000 acres of forested land, which accounts for 72% of total land area. Forest fires are therefore a potentially significant issue. In Southampton, approximately 69% of the town's total land area is in forest, or about 12,800 acres, and is therefore at risk of fire.

Illegal brushfires are somewhat common in Southampton, but the vast majority are small and quickly contained. According to the Southampton Fire Department, there were 69 fires in 2006. This number includes unauthorized burns (or brushfires) as the fire department does not quantify fires by category but rather records them as a total. The number of fires has increased significantly in the past few years with only 11 fires in 2004 and 33 in 2005.

However, moderate risk exists for potential wildfire incidents, especially near some of the town's forested, agricultural, and recreational lands. Forested and agricultural areas with high fuel content have more potential to burn. In addition, it is often very difficult to access some of the locations to extinguish the brushfire.

- Up to 4 structures could be impacted by a wildfire in one of the Town's agricultural areas;

- Assuming 100% damage to 100% of the structures, not including costs repairing or replacing any power lines, telephone lines, and contents of structures;
- Vulnerability assessment estimates approximately \$1,052,000 in damages for a wildfire.

Earthquakes – Low Risk

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. 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. 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.

Table 3.2: New England Earthquakes (1924-2002)² magnitude 4.2 or higher		
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

² Northeast States Emergency Consortium Web site: www.nesec.org/hazards/earthquakes.cfm

Table 3.3: New England States Record of Earthquakes²		
State	Years of Record	Number of Earthquakes
Connecticut	1568 - 1989	137
Maine	1766 - 1989	391
Massachusetts	1627 - 1989	316
New Hampshire	1728 - 1989	270
Rhode Island	1766 - 1989	32
Vermont	1843 - 1989	69
New York	1737 - 1985	24
Total Earthquakes in New England (1568-1989)		1,239

Massachusetts introduced earthquake design requirements into their building code in 1975. 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 1975 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.

- Because many of the buildings were built before 1975, there is potential for serious damage in downtown Southamton;
- Structures are mostly wood frame construction, so loss estimates predict 20% of town assessed value, not including Costs of repairing or replacing roads, bridges, power lines, telephone lines, or the contents of the structures;
- Vulnerability assessment estimates approximately \$111,556,133.

Dam Failure – Low Risk

Although dams and their associated impoundments provide many benefits to a community, such as water supply, recreation, hydroelectric power generation, and flood control, 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. 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.

Many dams in Massachusetts were built in the 19th century without the benefit of modern engineering design and construction oversight. Dams can fail because of structural problems due to age and/or lack of proper maintenance. Dam failure can

also be the result of structural damage caused by an earthquake or flooding brought on by severe storm events. Most earthen dam failures occur when floodwaters above overtop and erode the material components of the dam.

The Massachusetts Department of Conservation and Recreation (MA DCR) was the agency responsible for regulating dams in the state (M.G.L. Chapter 253, Section 44 and the implementing regulations 302 CMR 10.00). Until 2002, DCR was also responsible for conducting dam inspections but then state law was changed to place the responsibility and cost for inspections on the owners of the dams. This means that individual dam owners are now responsible for conducting inspections.

The state has three hazard classifications for dams:

- High Hazard: Dams located where failure or improper operation will likely 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.

The inspection schedule for dams is as follows:

- Low Hazard dams – 10 years
- Significant Hazard dams – 5 years
- High Hazard dams – 2 years

The time intervals represent the maximum time between inspections. More frequent inspections may be performed at the discretion of the state. Dams and reservoirs licensed and subject to inspection by the Federal Energy Regulatory Commission (FERC) are excluded from the provisions of the state regulations provided that all FERC-approved periodic inspection reports are provided to the DCR. All other dams are subject to the regulations unless exempted in writing by DCR.

According to DCR sources, as well as local knowledge, there are currently six (6) dams³ in Southamptton. The follow table identifies the dams within the town as well as whether they are classified as low, significant, or high hazard.

³ It is difficult to track down accurate records of dams, as ownership and exact location is not clear. Furthermore, many very old dams listed in DCR records are not in existence anymore, according to local knowledge. This list is compiled from a combination of sources, and then verified by the Committee.

Table 3.4: Dams in Southampton						
Dam	State ID	Purpose	Owner	Hazard Risk	Phase I Inspection Condition	Regulatory Inspection Date
Tighe Carmody Reservoir (Manhan Dam)	MA00499	Water Supply	City of Holyoke	High	Fair	9/18/06
White Reservoir Dam	MA00606	None	City of Holyoke	Significant	Poor	12/4/03
Alder Pond Dam	MA00498	Recreation	Myron H. Searle	Low	No Information	No Information
Lyman Mill Pond Dam	MA00500	Recreation	Glenn West	Low	No Information	No Information
Cedarhurst Swimming Pool Dam	MA01982	Recreation	Janet Brown	Low	No Information	No Information
New Intake Dam	MA02349	Water Supply	City of Holyoke	Low	No Information	No Information

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 Bond⁴. 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. 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

⁴ Tighe Carmody Reservoir Dam Emergency Action Plan, Tighe and Bond, September 2006.

- 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 Southamptton. Assuming 100% damage to 100% of the structures, not including costs repairing or replacing any power lines, telephone lines, and contents of structures, the vulnerability assessment estimates approximately \$48,129,000 in damages for such an event. Significant additional damages would be incurred in Westfield and Easthampton as well.

Drought – Low Risk

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.

In Massachusetts, six major droughts have occurred statewide since 1930. 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.

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 drought. Even so, there have been several years of drought-like conditions in Western Massachusetts: 1940-1952, 1980-1983, and 1995-2001. Furthermore, 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. Additionally, even minor droughts will increase the risk of wildfire, especially in areas of high recreational use.

Southampton has had limited experience with severe drought conditions. The town has not experienced a threat to its water supply, and doesn't anticipate any severe water shortages throughout town. However, it is always prudent to identify tertiary supplies and emergency service connections. The Town of Southampton is interested in establishing an emergency connection between at the City of Westfield's main on Old Stage Road at the Southampton town line. This would be a manual piped connection

for emergency purposes. A second connection could be made between Wiser Drive in Westfield and Kucher Drive in Southampton.

Man-Made Hazards – Hazardous Materials – Medium Risk

Hazardous materials are chemical substances, which if released or misused can pose a threat to the environment or health. These chemicals come in the form of explosives, flammable and combustible substances, poisons, and radioactive materials. Hazardous materials in various forms can cause death, serious injury, long-lasting health effects, and damage to buildings, homes, and other property. Many products containing hazardous chemicals are used and stored in homes and businesses routinely. These products are also shipped daily on the nation's highways, railroads, waterways, and pipelines.

The Toxics Release Inventory (TRI), a publicly available EPA database that contains information on specific toxic chemical releases and other waste management activities reported annually by certain covered industry groups as well as federal facilities. According to TRI, there are no industries currently releasing hazardous materials within Southampton's town limits. However, the Southampton Highway Department is considered a Tier II Hazardous Materials storage facility, and is included on the Past & Potential Hazards/Critical Facilities Map (Appendix D).

In addition, varying quantities of hazardous materials are manufactured, used, or stored at an estimated 4.5 million facilities in the United States--from major industrial plants to local dry cleaning establishments or gardening supply stores. These hazardous materials are transported regularly over our highways and by rail and if released can spread quickly to any community. Incidents can occur at any time without warning. Human error is the probable cause of most transportation incidents and associated consequences involving the release of hazardous materials.

Southampton relies on Springfield's HazMat team for responding to incidents involving hazardous materials through a mutual aid agreement. There is no history of any major accidents involving some sort of oil or chemical spill, but transportation of chemicals and bio-hazardous materials by vehicle transport on Route 10 is a concern. Small areas of hazardous materials storage increase the potential for future incidents.

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

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 D) identifies these facilities.

Category 1 – Emergency Response Services

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: Southampton Town Hall, 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 *Shelters also have backup generators
*William E. Norris School, 34 Pomeroy Meadow Road
*Larabee School, Route 10, College Highway
*Southampton Town Hall, 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 proposed for College Highway (Middle)
Cell tower proposed for 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

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

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 – Larabee School, College Highway and East Street

- 4) Schools
 - William E Norris, 34 Pomeroy Meadow Road
 - Larabee School
 - Pied Piper Nursery School, Rte 10, College Highway
 - Red Rock Nursery School, Rte 10, College Highway
- 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)

Category 4 – Potential Resources

Contains facilities that provide potential resources for services or supplies.

- 1) Food/Water
 - Big Y, College Highway
 - Pure Food, College Highway
- 2) Hospitals/Medical Supplies
 - Rite Aid, College Highway
 - Big Y, College Highway
- 3) Gas
 - None with cooperative agreement with town
- 4) Building Materials Suppliers
 - Fluery's Lumber, Easthampton
- 5) Heavy & Small Equipment Suppliers
 - C.N. Woods, Whately
 - Schmidt Equipment, Springfield
- 6) Gravel Pits
 - Moose Brook Road at Transfer Station
 - Lane Trap Rock, Westfield

Table 4.1: Critical Facilities and Evacuation Routes Potentially Affected by Hazard Areas

Hazard Type	Hazard Area	Critical Facilities Affected	Evacuation Routes Affected
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/Severe Wind	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

(Past & Potential Hazards/Critical Facilities Map Located In Appendix D)

5: MITIGATION 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.

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.

For the extent of this analysis, the Committee reviewed the following Town documents:

- Zoning By-Laws
- Subdivision Rules and Regulations
- Southampton Community Development Plan
- CEM Plan
- Other relevant By-Laws as identified (Fire Department Burn Permit Procedures, Building Code, etc.)

This section of the plan serves to identify current mitigation strategies and recommend future mitigation strategies. This is done both generally, and by hazard type.

General Mitigation Measures

Several of the recommended mitigation measures have multiple benefits because, if implemented, they will mitigate or prevent damages from more than one type of natural hazard. These do not fall under one hazard type, but could be put into place for facilitation of better natural hazard protection generally.

Some of these general hazard-related strategies and measures do not fall specifically under the category of "mitigation," but are instead tools for

What's the CEM Plan?

An important existing general preparedness and response tool is Southampton's Comprehensive Emergency Management Plan (CEM Plan). Although the CEM Plan is focused on the procedural response to an emergency, it organizes information, includes supply and information inventories, and outlines detailed steps for increasing preparedness.

preparedness. The Hazard Mitigation Planning Committee recognizes that these are also important recommendations for the Town, and has included them here:

- Establish system to inventory supplies at existing shelters and develop a needs list and storage requirements.
- 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. The Southampton School Department does have a call notification system for emergencies.
- 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
- Perform public outreach on the proper evacuation procedures to follow during a natural disaster.

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.

Current Mitigation Measures

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 zoning by-law, subdivision regulations, as well as a recently adopted stormwater management by-law. Relevant goals are included in the adopted Open Space and Recreation Plan. Infrastructure like dams and culverts are in place to manage the flow of water. These current mitigation strategies are outlined in the following table.

Table 5-1: Existing Flood Hazard Mitigation Measures

Existing Strategy		Description	Effectiveness	Potential Changes
Flood Control Structures		Six dams.	Effective	Ensure dam owners realize their responsibility to inspect the dams.
Zoning Bylaws	Floodplain District	Overlay district to protect areas delineated as part of the 100-year floodplain by regulating uses and special permit requirements.	Effective for preventing incompatible development within the flood prone areas.	Restrict residential development in Floodplain District.

	Water Supply Protection District	District to protect groundwater resources by regulating certain uses, drainage, and other requirements within recharge area of aquifer.	Effective for preventing groundwater contamination and managing infiltration.	
	Cluster Development	Provides regulations for cluster subdivision development by special permit. Allows protection of contiguous open space.	Somewhat effective for minimizing impervious surface, allowing for more groundwater infiltration.	
	Earth Removal	Rigorous requirements for site plan and special permit approval for large-scale earth removal, restricting location and regulating drainage, restoring vegetation, etc.	Effective for preventing water pollution and sedimentation.	
	Special Permit	Some uses require special permit approval, including cluster development and earth removal.	Somewhat effective for preventing incompatible development.	Create more performance-based evaluations.
Subdivision Regulations	Preliminary and Definitive Plans	Natural features, waterways, rock outcrops, large trees, drainage patterns, proposed septic or sewer and water supply must all be shown.	Somewhat effective for managing run-off and preventing contamination.	
	Suitability of Land	Land evaluated (after submittal of definitive plan) for suitability, with attention to wetlands protection.	Effective for enforcing state legislation (Wetlands Protection Act)	
	Standard Design and Construction: Utility Installation	Requirements for drainage, with emphasis on utilizing natural drainage patterns.	Somewhat effective for preventing localized flooding.	Utilize more BMPs to handle site's drainage.
Southampton Community Development Plan	The Open Space Element inventories natural features and promotes natural resource preservation in the town, including areas in the floodplain; such as wetlands, groundwater recharge areas, farms and open space, rivers, streams and brooks. The Plan identifies key goals and strategies to protect open space.	Effective in identifying sensitive resource areas, including floodplains. Encourages forest, farmland protection, help conserve the town's flood storage capacity.	Implement relevant goals and policies in Plans.	
National Flood Insurance Program Participation	As of 2006, there were 5 homeowners with flood insurance policies.	Somewhat effective, provided that the town remains enrolled in the National Flood Insurance Program.	The town should evaluate whether to become a part of FEMA's Community Rating System.	

Future Mitigation Measures

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:

- Consider raising utilities in the Town Hal and Police station above the BFE (base flood elevation).
- Ensure dam owners realize their responsibility to inspect the dams regularly.
- Revise Subdivision Regulations Design Standards to include more BMPs for drainage.
- Implement the goals and strategies of the Southampton Community Development Plan dealing with protection of floodplain, forests, and farmland.
- Educate citizens living in the floodplain about the NFIP.
- Evaluate whether to become a part of FEMA's Community Rating System.

What is the NFIP's Community Rating System?

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), 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.

Severe Snow/Ice Storm

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.

Current Mitigation Measures

The Town's current mitigation tools and strategies focus on preparedness, with many regulations and standards established based on safety during storm events. These current mitigation strategies are outlined in the following table.

Note: 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 5-1 in the previous section can also be considered as mitigation measures for severe snow/ice storms.

Table 5-2: Existing Severe Snow/Ice Storm Hazard Mitigation Measures

Existing Strategy		Description	Effectiveness	Potential Changes
Zoning By-Law	Wireless Communications Facility	Structures are required to be as minimally invasive as possible to the environment, are limited to 100-feet above existing terrain, and must be located 1.5X their height from adjacent structures.	Very effective for preventing damage in the case of a severe storm.	
Subdivision Regulations	Standards of Design and Construction	Utilities must be placed underground at time of construction	Effective for preventing power loss.	
		Street grade regulations (maximum ranges from 6% to 10% depending on street category); minimum sight distances at intersections; guardrails can be required.	Effective.	
State Building Code		The Town of Southampton has adopted the Massachusetts State Building Code.	Effective.	
Backup Electric Power		Shelters have backup power, three mobile generators; Town Hall; Fire Station; and, water pump stations.	Very effective in case of power loss.	

Future Mitigation Measures

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:

- 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).
- Participate in the creation of a Regional Debris Management Plan.

What is a Regional Debris Management Plan?

Natural disasters can precipitate a variety of debris, including trees, construction and demolition materials and personal property. After a natural disaster, potential threats to the health, safety and welfare of impacted citizens can be minimized through the implementation of a debris management plan. Such a plan can be critical to recovery efforts after a disaster, including facilitating the receipt of FEMA funds for debris clearance, removal and disposal.

Hurricanes/Severe Wind

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). 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. Therefore, all of the flood protection mitigation measures described in Table 5-1 can also be considered hurricane mitigation measures.

The high winds that oftentimes accompany hurricanes can also damage buildings and infrastructure. But regulations can be put into place to help minimize the extent of wind damages.

The Town's current mitigation strategies to deal with severe wind are equally applicable to wind events such as tornadoes and microbursts. Therefore, the analysis of severe wind strategies is coupled with this hazard.

Tornadoes/Microbursts

The location and extent of potential damaging impacts of a tornado are completely unpredictable. Most damage from tornadoes or microbursts comes 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. In addition, current land development regulations can also help prevent wind damages.

The following table outlines the Town's existing mitigation strategies that help prevent wind damages, whether from hurricanes, tornadoes, microbursts, or any other event.

**Table 5-3: Existing Severe Wind Hazard Mitigation Measures
(Including Hurricane, Tornado, Microburst Hazards)**

Existing Strategy		Description	Effectiveness	Potential Changes
Zoning By-law	Use Regulations	Restricts mobile/manufactured homes to temporary short term use	Somewhat effective for preventing damage to susceptible structures	
	Wireless Communications Facility	Structures are required to be as minimally invasive as possible to the environment, are limited to 100-feet above existing terrain, and must be located 1.5X their height from adjacent structures.	Very effective for preventing damage in the case of a severe storm.	
Subdiv Regs	Standards of Design and Construction	Utilities must be placed underground	Effective for preventing power loss.	
State Building Code		The Town has adopted the MA State Building Code.	Effective.	

Future Mitigation Measures

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:

- Work with Western Mass Electric Company to create annual list of hazard trees for removal.
- Participate in the creation of a Regional Debris Management Plan.

Wildfire/Brushfire

Although somewhat common, the vast majority of brushfires in Southampton are small and quickly contained. However, as with any illegal fire or brushfire, there is always the risk that a small brushfire could grow into a larger, more dangerous wildfire, especially if conditions are right. Therefore, it is important to take steps to prevent wildfires and brushfires from turning into natural disasters.

Current Mitigation Measures

The following table identifies what the Town is currently doing to manage brushfires and makes some suggested potential changes and recommendations for decreasing the Town's likelihood of being heavily impacted by a wildfire or brushfire.

Table 5-4: Existing Wildfire/Brushfire Hazard Mitigation Measures

Existing Strategy		Description	Effectiveness	Potential Changes
Subdivision	Definitive Plan	The Fire Chief is involved in the review of the definitive subdivision plan.	Effective.	
Burn Permits		Residents must obtain burn permits, and personnel provide information on safe burn practices.	Somewhat effective.	Consider increasing enforcement of burning regulations, perhaps invoke penalties for offenders.
Public Education/ Outreach		The Fire Department has an ongoing educational program in the schools.	Effective.	None.

Future Mitigation Measures

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

Although there are five mapped seismological faults in Massachusetts, there is no discernable 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. 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.

Current Mitigation Measures

The Town's most relevant existing mitigation measures are described in the following table.

Table 5-5: Existing Earthquake Hazard Mitigation Measures				
Existing Strategy		Description	Effectiveness	Potential Changes
Zoning By-law	Wireless Communications Facility	Structures are required to be as minimally invasive as possible to the environment, are limited to 100-feet above existing terrain, and must be located 1.5X their height from adjacent structures.	Very effective for preventing damage in the case of an earthquake.	
State Building Code		The Town of Southampton has adopted the State Building Code.	Effective for new buildings only.	Evaluate older structures categorized as critical facilities to determine if they are earthquake resistant.

Future Mitigation Measures

Potential changes to the Town's current strategies have been identified in the above table, and these are compiled below:

- Evaluate critical facilities to determine if they are earthquake resistant.
- Participate in the creation of a Regional Debris Management Plan.

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 no where to flow.

Current Mitigation Measures

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.

Table 5-6: Existing Dam Failure Hazard Mitigation Measures			
Existing Strategy	Description	Effectiveness	Potential Changes
New Dam Construction Permits	State law requires a permit for the construction of any dam.	Effective. Ensures dams are adequately designed.	None.

Dam Inspections	DCR has an inspection schedule that is based on the hazard rating of the dam (low, medium, high hazard).	Low. The responsibility for this is now on dam owners, who may not have sufficient funding to comply.	Identify sources of funding for dam safety inspections.
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Future Mitigation Measures

Recent changes in legislation have shifted some of the responsibility of dam safety onto dam owners. The Town recognizes the need to adjust to this change. 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:

- Identify sources of funding for dam safety inspections.

Drought

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

Current Mitigation Measures

Southampton has several water protection regulations in place, as evidenced in the section on flooding. Additional regulations and mitigation options, specific to drought mitigation, are included here.

Table 5-7: Existing Drought Hazard Mitigation Measures

Existing Strategy		Description	Effectiveness	Potential Changes
Zoning By-law	Water Supply Protection District	District to protect groundwater resources by regulating certain uses, drainage, and other requirements within recharge area of aquifer.	Very effective for preventing groundwater contamination and increasing infiltration.	

	Cluster Development	Provides regulations for cluster subdivision development by special permit. Allows protection of contiguous open space.	Somewhat effective for minimizing impervious surface, allowing for more groundwater infiltration.	
	Earth Removal	Rigorous requirements for site plan and special permit approval for large-scale earth removal, restricting location and regulating drainage, restoring vegetation, etc.	Effective for preventing water pollution and sedimentation.	
Subdivision Regulations	Preliminary and Definitive Plans	Proposed septic or sewer and water supply must all be shown.	Somewhat effective for managing run-off and preventing contamination.	
	Standard Design and Construction: Utility Installation	Requirements for drainage, with emphasis on utilizing natural drainage patterns.	Somewhat effective for preventing localized flooding.	Include more requirements to utilize BMPs to handle site's drainage.
Southampton Community Development Plan		Analyzes water supply and quality town-wide.	Effective analysis guiding recommendations.	Implement relevant recommendations.

Future Mitigation Measures

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:

- For subdivision approval, include more requirements to utilize BMPs to handle site's drainage.
- Implement water supply and water quality recommendations in the Southampton Community Development Plan.
- Consider creating Water Conservation Guidelines, as education to Town residents.

Hazardous Materials

Hazardous materials are in existence throughout Town, and are constantly being moved on Southampton's roads and highways. However, there is no way to anticipate where and when a hazardous materials spill or explosion could take place. Therefore, it makes is somewhat difficult to determine mitigation strategies, but Southampton has some regulations currently in place to mitigate the impacts of a hazardous materials disaster.

Table 5-8: Existing Hazardous Materials Hazard Mitigation Measures

Existing Strategy		Description	Effectiveness	Potential Changes
Site Inspections by Fire Department for conformance with State Hazardous Material Registration Requirements for Tier Classified Sites		Fire Department seeks enforcement of Tier Classification for on-site storage of hazardous materials	Effective	Increase site visits
Zoning By-law	Water Supply Protection District	No hazardous materials permitted within areas delineated as recharge areas for groundwater aquifers.	Very effective for preventing groundwater contamination.	
Annual Household Hazardous Waste Day		Southampton participates in a regional collection day	Effective	Advertise more

Future Mitigation Measures

Potential changes to the Town's current strategies have been identified in the above table, and these are compiled below:

- Increase site visits by Fire Department for potential Tier Classification on sites storing hazardous materials.

6: PRIORITIZED IMPLEMENTATION SCHEDULE

Summary of Critical Evaluation

The Southampton Hazard Mitigation Planning Committee reviewed each of the recommendation future mitigation measures identified, and used the following factors to prioritize mitigation projects:

- Ability to reduce loss of life
- Ability to reduce disaster damage
- Social acceptability
- Ability to complete or be combined w/other actions
- Technical feasibility / potential success
- Impact on the environment
- Administrative workability
- Ability to meet regulations
- Political acceptability
- Ability to save or protect historic structures
- Legal implementation
- Ability to meet other community objectives
- Economic impact
- The duration of its implementation period
- Environmental compatibility

Project Prioritization

The Southampton Hazard Mitigation Planning Committee created the following prioritized schedule for implementation of prioritized items. The table lists items in order of priority.

Note: As additional information becomes available regarding project leadership, timeline, funding sources, and/or cost estimates, the Plan will be reviewed and amended accordingly.

Table 6.1: Prioritized Implementation Schedule – Action Plan

Priority	Mitigation Action	Responsible Department/Board	Proposed Completion Date	Funding Source/ Estimated Cost	Incorporation into Existing Plans
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
2	Drainage improvements to localized flood areas	Highway Department	2009-2013	Town funds Chapter 90 Funds Hazard Mitigation Grant	No
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
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
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 a natural disaster.	EMC	2008-2013	Town Funds	No

6	Educate citizens living in the floodplain about the NFIP.	EMC	2013	Town Funds	No
7	Evaluate whether to become a part of FEMA's Community Rating System.	EMC Selectboard	2009	Town Funds	No
8	Work with Western Mass Electric Company to create annual list of hazard trees for removal.	Highway Department Tree Warden	2008	Town Funds	No
9	Ensure dam owners realize their responsibility to inspect the dams regularly	EMC	2013	Town Funds	No
10	Revise Subdivision Regulations Design Standards to include more BMPs for drainage.	Planning Board	2010	Town Funds	No
11	Implement the goals and strategies of the Southampton 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
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

13	Evaluate critical facilities to determine if they are earthquake resistant.	Building Inspector EMC	2009	Town Funds	No
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
15	For subdivision approval, include more requirements to utilize BMPs to handle site's drainage.	Planning Board Highway Department	2010	Town Funds	No
16	Increase site visits by Fire Department for potential Tier Classification on sites storing hazardous materials.	Fire Department	2009	Town Funds	No
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
18	Identify sources of funding for dam safety inspections.	EMC Highway Department	2010	Unknown	No
19	Participate in the creation of a Regional Debris Management Plan.	EMC Highway Department Selectboard	2013	Town Funds	No

20	Implement water supply and water quality recommendations in the Southampton Community Development Plan.	Water Department	2010	Unknown	Open Space and Recreation Plan
21	Consider creating Water Conservation Guidelines, as education to Town residents.	Water Department	2010	Town Funds	No

7: PLAN ADOPTION & IMPLEMENTATION

Plan Adoption

Upon completion, copies of the Draft Local Hazards Mitigation Plan for the Town of Southampton were distributed to the town boards for their review and comment. A public meeting was held by the Southampton Board of Selectmen to present the draft copy of the Southampton Local Natural Hazards Mitigation Plan to town officials and residents and to request comments from this committee and the general public. The Natural Hazards Mitigation Plan was formally approved by the Board of Selectmen and forwarded to the Massachusetts Emergency Management Agency (MEMA) and the Federal Emergency Management Agency (FEMA) for their approval.

Plan Implementation

The implementation of the Southampton Local Natural Hazards Mitigation Plan will begin following its formal adoption by the Southampton Board of Selectmen and approval by MEMA and FEMA. Specific town departments and boards will be responsible for ensuring the development of policies, bylaw revisions, and programs as described in Sections 5 and 6 of this plan. The Southampton Natural Hazards Planning Committee will oversee the implementation of the plan.

Plan Monitoring and Evaluation

The measure of success of the Southampton Local Natural Hazards Mitigation Plan will be the number of identified mitigation strategies implemented. In order for the town to become more disaster resilient and better equipped to respond to natural disasters, there must be a coordinated effort between elected officials, appointed bodies, town employees, regional and state agencies involved in disaster mitigation, and the general public.

The Southampton Natural Hazards Planning Committee will meet on an annual basis or as needed (i.e., following a natural disaster) to monitor the progress of implementation, evaluate the success or failure of implemented recommendations, and brainstorm for strategies to remove obstacles to implementation. 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. At a minimum, the committee will review and update the plan every five years, beginning in the fall of 2013. The meetings of the committee will be organized and facilitated by the Emergency Management Director or the Southampton Board of Selectmen.

Outreach to the public, surrounding communities, agencies, businesses, academia, non-profits, or other interested parties outside of the town of Southampton will be done in advance of each annual meeting in order to solicit their participation in assessment of the plan. 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/boards and/or revise the goals and objectives contained in the plan. At a minimum, the committee will review and update the plan every five years, beginning in the fall of 2013. The meetings of the committee will be organized and facilitated by the Emergency Management Director or the Southampton Select Board.

Incorporation of Plan Requirements into other Planning Mechanisms/ Documents

At times when the Town of Southampton is considering creation of or changes to local planning documents or procedures including, but not limited to comprehensive plans, capital improvement plans, zoning and building codes site reviews and permitting processes the information and recommendations contained in this plan will be reviewed by the people and committees involved in those processes and, when appropriate, will incorporate those recommendations into the new planning procedures.

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 prepare the Southampton Hazard Mitigation plan; and

WHEREAS, several public planning meetings were held between January and May 2007 regarding the development and review of the Southampton Hazard Mitigation Plan; and

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

WHEREAS, a duly-noticed public hearing was held by the Southampton Board of Selectmen on _____, 2008 to formally approve and adopt the Southampton Hazard Mitigation Plan.

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

ADOPTED AND SIGNED this _____, 2008.

Michael Phelan, Chair
Southampton Board of Selectmen

Douglas Blanchard
Southampton Board of Selectmen

Jess Dods
Southampton Board of Selectmen

Dave McDougall
Southampton Board of Selectmen

Ann Roy
Southampton Board of Selectmen

ATTEST

APPENDICES

Appendix A – Technical Resources

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; Tauton, 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 ProtectionUS 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 ClearingUS 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 ProgramsMA 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	http://www.colorado.edu/litbase/hazards/	Searchable database of references and links to many disaster-related websites.
Atlantic Hurricane Tracking Data by Year	http://wxe.eas.purdue.edu/hurricane	Hurricane track maps for each year, 1886 – 1996
National Emergency Management Association	http://nemaweb.org	Association of state emergency management directors; list of mitigation projects.
NASA – Goddard Space Flight Center “Disaster Finder:	http://www.gsfc.nasa.gov/ndrd/disaster/	Searchable database of sites that encompass a wide

		range of natural disasters.
NASA Natural Disaster Reference Database	http://ftpwww.gsfc.nasa.gov/ndrd/main/html	Searchable database of worldwide natural disasters.
U.S. State & Local Gateway	http://www.statelocal.gov/	General information through the federal-state partnership.
National Weather Service	http://nws.noaa.gov/	Central page for National Weather Warnings, updated every 60 seconds.
USGS Real Time Hydrologic Data	http://h20.usgs.gov/public/realtime.html	Provisional hydrological data
Dartmouth Flood Observatory	http://www.dartmouth.edu/artsci/geog/floods/	Observations of flooding situations.
FEMA, National Flood Insurance Program, Community Status Book	http://www.fema.gov/fema/csb.html	Searchable site for access of Community Status Books
Florida State University Atlantic Hurricane Site	http://www.met.fsu.edu/explores/tropical.html	Tracking and NWS warnings for Atlantic Hurricanes and other links
The Tornado Project Online	http://www.tornadoject.com/	Information on tornadoes, including details of recent impacts.
National Severe Storms Laboratory	http://www.nssl.uoknor.edu/	Information about and tracking of severe storms.
Independent Insurance Agents of America IIAA Natural Disaster Risk Map	http://www.iaa.iix.com/ndcmap.html	A multi-disaster risk map.
Earth Satellite Corporation	http://www.earthsat.com/	Flood risk maps searchable by state.
USDA Forest Service Web	http://www.fs.fed.us/land	Information on forest fires and land management.

Appendix B – List of Acronyms

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 – Natural Hazard Profiling Methodology⁵

In order to adeptly profile each of the hazards, a Hazard Identification and Analysis Matrix was prepared to organize the information that was gathered for this project.

The matrix is organized into the following sections: Type of Hazard, Location of Occurrence, Extent of Impacts, Previous Occurrences, Probability of Future Occurrence, and Hazard Index. The Hazard Index was completed to rank the hazards according to the frequency of occurrence and the amount of potential damage likely to occur. The Hazard Index forms the basis for concentrating the future mitigation efforts outlined in this plan. A description of each of the matrix categories is provided below. The completed Matrix is shown as Table 3.1.

Location of Occurrence

The classifications are based on the area of the Town of Southampton that would potentially be affected by the hazard. The following scale was used:

Table C.1: Location of Occurrence, Percentage of Town Impacted of 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 of Impacts

The extent of direct impacts an affected area could potentially suffer were classified according to the following scale:

Table C.2: Extent of Impacts, Magnitude of Multiple Impacts of Given Natural Hazard	
Extent of 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.

⁵ Source: information adapted from Town of Holden Beach, NC Community-Based Hazard Mitigation Plan, July 15, 2003, and Hyde County, NC Multi-Hazard Mitigation Plan, Sept 2002; and the Massachusetts Emergency Management Agency (MEMA).

Minor	Very few injuries, if any. Only minor property damage and minimal disruption on quality of life. Temporary shutdown of facilities.
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Previous Occurrences

Whether or not previous hazard events had occurred is also included, with detailed descriptions of specific previous occurrences within the hazard identification and vulnerability assessments, if necessary.

Probability of Future Occurrence

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

Table C.3: Frequency of Occurrence and Annual Probability of Given Natural Hazard	
Frequency of Occurrence	Probability of Future Event
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

Hazard Index

The hazard index ratings were determined after assessing the frequency, location and impact classifications 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.

The Hazard Ratings are labeled as follows:

- 1 – High Risk
- 2 – Medium-High Risk
- 3 – Medium Risk
- 4 – Medium Low Risk
- 5 – Low Risk

Appendix D – Past & Potential Hazards/Critical Facilities Map

Attached

Appendix E – Documentation of the Planning Process

**Southampton Hazard Mitigation Planning Committee
Meeting #1**

**Friday, December 7, 2007
9:00 AM
Southampton Highway Department**

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

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

**Wednesday, January 30, 2008
9:00 AM
Southampton Highway Department**

AGENDA

- 1. Review List of Critical Facilities**
- 2. Review Critical Facilities and Evacuation Routes Potentially Affected By Hazard Areas**
- 3. 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.
- 4. Review Vulnerability Assessment Methodology and Potential Loss Estimates**

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

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

**Thursday, March 13, 2008
10:30 AM
Southampton Highway Department**

AGENDA

- 1. Review Revised Map of Critical Facilities**
- 2. Establishes Goals and Objectives**
- 3. Develop Action Plan of Hazard Mitigation Strategies**

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

PRESS RELEASE

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

FOR IMMEDIATE RELEASE

June 30, 2008

Pre-Disaster Mitigation Plans Public Comment Period

The Pioneer Valley Planning Commission, in conjunction with local Hazard Mitigation Planning Committees, has produced drafts of Pre-disaster Mitigation Plans for the communities of Cummington, Palmer, Southampton, Westfield and Westhampton. Residents, business owners and other concerned parties of the named municipalities as well as of adjacent communities are encouraged to comment on each and all of the plans. The plans are currently able to be viewed on the Pioneer Valley Planning Commission website (under Projects and Plans) and the websites of the municipalities, where possible. Paper copies of the plans may be obtained at the Pioneer Valley Planning Commission offices at 26 Central Street, West Springfield or at the individual City/Town Halls. The plans will be available for the next 30 days.

Over the upcoming months pre-disaster mitigation plans will be developed for Amherst, Belchertown, Brimfield, Chicopee, Goshen, Granby, Huntington, Springfield, West Springfield, Williamsburg, and Worthington and will also be available for public comment as they are developed.

This planning effort is being undertaken to help communities assess the risks they face 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.

In 2006-2007, PVPC facilitated development of plans for 16 communities in Hampshire and Hampden counties. Following completion of this second round of 16 hazard mitigation plans, PVPC will be developing a regional Hazard Mitigation plan. Communities with approved plans are eligible for Hazard Mitigation Grant Program funding from the Massachusetts Emergency Management Agency.

These pre-disaster mitigation plans are being developed with assistance from the Pioneer Valley Planning Commission with funding provided by the Massachusetts Emergency Management Agency. For additional information, please contact Catherine Miller at (413) 781-6045 or cmiller@pvpc.org.