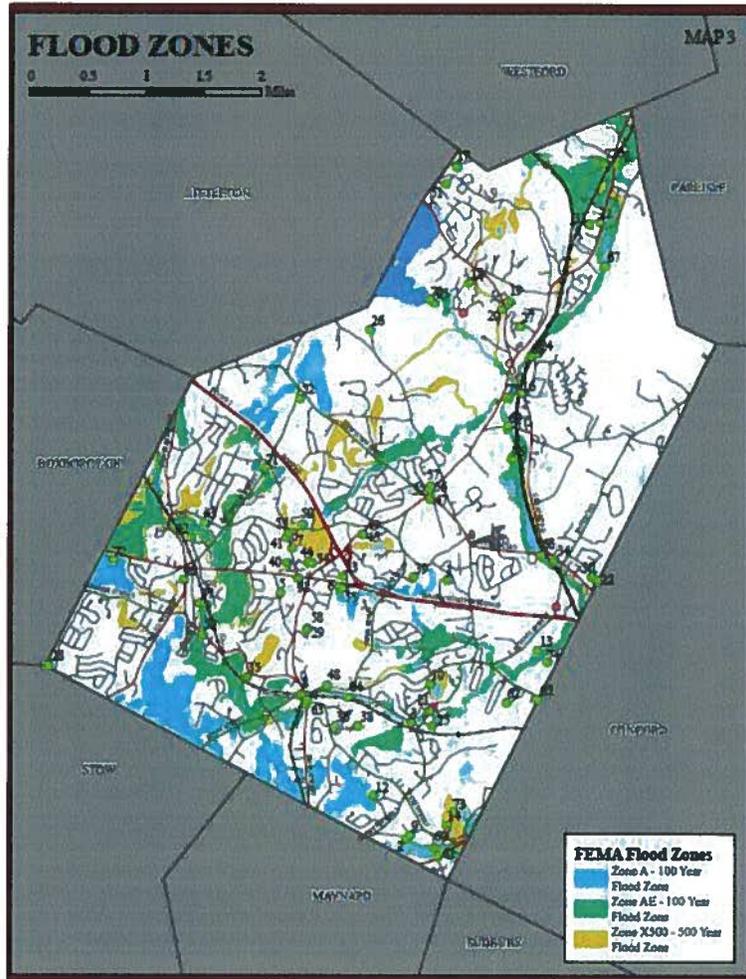


# TOWN OF ACTON HAZARD MITIGATION PLAN



Conditionally Approved by MEMA  
May 7, 2010

# ACTON HAZARD MITIGATION PLAN

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## **ACKNOWLEDGEMENTS AND CREDITS**

This plan was prepared for the Town of Acton by the Metropolitan Area Planning Council (MAPC) under the direction of the Massachusetts Emergency Management Agency (MEMA) and the Massachusetts Department of Conservation and Recreation (DCR). The plan was funded by the Federal Emergency Management Agency's (FEMA) Pre-Disaster Mitigation (PDM) Grant Program.

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## ACTON HAZARD MITIGATION PLAN

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# ACTON HAZARD MITIGATION PLAN

## **I. INTRODUCTION**

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### **Planning Requirements under the Federal Disaster Mitigation Act**

The Federal Disaster Mitigation Act, passed in 2000, requires that after November 1 2004, all municipalities that wish to continue to be eligible to receive Federal Emergency Management Agency (FEMA) funding for hazard mitigation grants, must adopt a local multi-hazard mitigation plan. This planning requirement does not affect disaster assistance funding.

Massachusetts has taken a regional approach and has encouraged the regional planning agencies to apply for grants to prepare plans for groups of their member communities. The Metropolitan Area Planning Council (MAPC) received a grant from the Federal Emergency Management Agency (FEMA) under the Pre-Disaster Mitigation (PDM) Program, to assist the Town of Acton and other Metro North/West communities to develop their local Hazard Mitigation Plans. The local Hazard Mitigation Plans produced under this grant are designed to meet the requirements of the Disaster Mitigation Act for each community.

In order to address multijurisdictional and regional issues, the participating municipalities were afforded the opportunity to meet with their neighboring communities during plan development, and MAPC has also produced a regional document that summarizes the issues and recommendations for the Metro North/West communities.

### **What is Hazard Mitigation?**

Natural hazard mitigation planning is the process of figuring out how to reduce or eliminate the loss of life and property damage resulting from natural hazards such as floods, earthquakes and hurricanes. Hazard mitigation means to permanently reduce or alleviate the losses of life, injuries and property damage resulting from natural hazards through long-term strategies. These long-term strategies can include planning, policy changes, programs, projects and other activities.

# ACTON HAZARD MITIGATION PLAN

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# ACTON HAZARD MITIGATION PLAN

## II. COMMUNITY PROFILE

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### Overview

Acton is located in Middlesex County and is bordered by Maynard, Stow, Boxborough, Littleton, Westford, Carlisle, Concord and Sudbury. Major roadways in Acton include Routes 2, 2A, 27, 111 and 119. A small segment of Route 62 runs through the southern tip of the town. Acton is served by the Fitchburg line of the commuter rail. A station is located in South Acton.

The town is governed by a five-member Board of Selectman and a Town Manager. The town operates under the open town meeting format. The Town Manager, appointed by the Selectmen, carries out the day-to-day governing functions of the town.

The town retains a connection to its historic settlement patterns with three village centers and aspects of rural landscapes with historic farms. The three villages are West Acton, South Acton and Acton Center. Like most communities in the larger region, Acton is faced with balancing pressures of growth and the desire to maintain its historic character. New settlement patterns, in the form of strip shopping centers and subdivisions have emerged.

There are around 10,000 jobs in Acton. Commercial development is concentrated at the Nagog Office Park in North Acton.

According to the 2000 Census, just over 20,000 people live in Acton (see Table 1) and there are 7,680 housing units. Table 1 provides statistics on potentially vulnerable populations, including the elderly and those without a car, and vulnerable housing units such as those built prior to 1940.

**Table 1. Acton Characteristics from 2000 Census**

Population = 20,331

- 7.4% are under age 5
- 8.4% are over age 65
- 4.7% speak English less than “very well” (over age 5)
- 3.1% of households have no vehicle
- 8.6% have a disability (over age 5)
- 0.7% live in group quarters

Number of Housing Units = 7,680

- 23.9% are renter-occupied housing units
- 11.3% of housing units were built before 1940

Employment = 9,784

Source: 2000 Census, Department of Workforce Development

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Important characteristics to keep in mind include:

- Acton serves as a small regional hub that draws people from nearby communities due to the retail services and restaurants and the presence of two important pieces of infrastructure for commuters – Route 2 and the MBTA commuter rail.
- Acton’s small-town character and historic agricultural lands are still present, with a significant amount of open space preserved or in the process of acquisition.
- Acton is continuously growing and continues to face development, both residential and commercial.
- Acton relies solely on subsurface wells for drinking water and has a very active water department.

The Town of Acton maintains a website at <http://www.town.acton.ma.us/>

### **Existing Land Use**

The most prevalent land use in Acton is forest – forest land comprised 42% of the town’s acreage. Residential development is the next most prevalent land use, with low density development most common. Roughly 500 acres of town are still in agricultural use as cropland or pasture.

Table 2 provides a breakdown of the remaining acreage in Acton, based on 1999 aerial photography. Open Land includes areas with abandoned agriculture, power lines or areas devoid of vegetation. Urban Open Land includes undeveloped land and protected green space.

The state owns land in Acton that had been a part of the prison farm (specify prison) and leases the land to the town for recreational use.

# ACTON HAZARD MITIGATION PLAN

**Table 2. Existing Land Use, Acton, 1999**

Land Use	Acres	% of Town
Cropland	507	3.9
Pasture	22	0.2
Forest	5,531	42.7
Non-forested Wetlands	380	2.9
Mining	87	0.7
Open Land	208	1.6
Participatory Recreation	74	0.6
Spectator Recreation	0	0
Water Recreation	5	0.04
Multi-family Residential	266	2.1
High Density Residential (less than ¼ acre lots)	55	0.4
Medium Density Residential (¼ – ½ acre lots)	1,620	12.5
Low Density Residential (Larger than ½ acre lots)	2,860	22.1
Salt Water Wetlands	0	0
Commercial	331	2.6
Industrial	458	3.5
Urban Open	198	1.5
Transportation	97	0.8
Waste Disposal	3	0.03
Water	210	1.6
Woody Perennials	54	0.4
<i>Total</i>	<i>12,966</i>	

For more information on land use categories, see [www.mass.gov/mgis/lus.htm](http://www.mass.gov/mgis/lus.htm).

## **Existing Plans**

A number of plans were reviewed to garner issues related to natural hazards. These plans include:

### To Live in Acton, 2004

A consultant prepared this report for the town using state funding under Executive Order 418. The plan focused on housing and economic development, but also set forth goals for land use, natural resources, open space, services and facilities, and transportation and circulation. Relevant objectives include protecting the town's natural resources, strict enforcement of federal, state and local laws, and creating greenbelts along waterways. The plan also includes a build-out analysis, the results of which are discussed below, under "Future Development".

### East Acton Village Plan, 2004

The plan outlines objectives and actions related to maintaining and enhancing this area as a village including pedestrian and parking improvements, ensuring water resources are

## ACTON HAZARD MITIGATION PLAN

not impacted, and . Items relevant to natural hazard mitigation include reducing impervious surface through shared parking and efficient design of parking spaces, allowing a 25% increase in square footage when developers transfer development from the streamside of Great Road to the other side, and supporting the creation of a greenbelt along Nashoba Brook and Ice House Pond. The plan also notes that parts of East Acton Village have problems, especially in the spring, with water pooling.

### West Acton Village Plan, 1994

Goals contained in this plan include maintaining village character, improving pedestrian safety and circulation, improving traffic safety and circulation, supporting new development that enhances village vitality, encouraging small business development, promote diversity in housing, preserve and create more open space around Fort Pond Brook, and protect natural resources.

### South Acton Village Plan, 1995

Goals and objectives contained in this plan include providing more open space along Mill Pond and Fort Pond Brook, preserving historic buildings in the village, improving sidewalks, promoting housing diversity and small business development. The plan called for preserving the structural integrity of the Erickson's Dam in order to maintain Mill Pond, acquiring land to develop a greenbelt along Fort Pond Brook,

### Draft Open Space and Recreation Plan, 2002 – 2006.

The plan outlines three main goals: preserving Acton's character, protecting the environment, and improving recreational opportunities. A key objective most relevant to this Natural Hazard Mitigation Plan is to preserve open space along Fort Pond Brook, Nashoba Brook and the Assabet River.

The plan notes that one of the biggest challenges is having an adequate water supply. Important projects include bike paths, recreational needs. The plan also notes flooding problems due to Beaver activity, particularly along the town's border with Boxborough and the importance of preserving the large Heath Hen Meadow floodplain which extends into Stow and Boxborough.

### Storm Water Management Plan, Acton, MA, 2003

The plan outlines implementation and goals for public education and outreach, public participation, illicit discharge detection and elimination, construction site run-off control, post-construction run-off control, and pollution prevention and good housekeeping.

### Sudbury – Assabet – Concord River Watershed Action Plan, 2005

The plan addresses growth and development, water quality, water quantity, land protection / open space, habitat / biodiversity, outreach and education, and recreational opportunities. The watershed has a drainage area of 377 square miles; Acton lies completely within the watershed.

Relevant goals from the plan include the promotion of smart growth to minimize impacts from development, land protection, and public education. The plan also stresses the

## ACTON HAZARD MITIGATION PLAN

importance of the watershed communities and others working together to achieve the goals.

Specific actions include: encourage communities to adopt low impact development (LID) bylaws; encourage municipalities to work across boundaries; requiring developers to look at cumulative impacts; continue research studies on water balance; conserve water; increase funding for open space protection; identify priority lands for protection; and, encourage communities to adopt the CPA.

### Potential Future Land Use

In 2000, MAPC, under contract to the Executive Office of Environmental Affairs, prepared a buildout analysis for every community in the Boston region. A buildout analysis is a tool to help communities understand the potential impacts of future growth that might occur given the amount of developable land remaining and how that land is zoned.

The buildout is based on available land within each zoning district and it estimates the number of additional housing units and commercial development that could be accommodated. Generally, the projections account only for as-of-right development. The results of the 2000 Census were not released when MAPC performed the analyses.

**Table 3: Buildout Impacts in Acton, MAPC Analysis**

Developable Land Area (acres)	2,229
Additional Residents	2,528
Additional K-12 Students	542
Additional Residential Units	996
Additional Commercial/Industrial (sq. ft.)	928,453
Additional Roadway at Buildout (miles)	21

*To Live in Acton* also conducted a built-out analysis. The analysis calculated a “likely” build-out of 10,200 dwelling units and estimated that based on current growth rates, it would take 40 years to reach this figure. The analysis calculates a population of 24,500 by 2020 and 29,300 at build-out.

### Areas of Future Development

*To Live in Acton* provides information on where future growth is targeted:

- Village development in South Acton Village, West Acton Village, East Acton Village and in North Acton (along Route 27).

## ACTON HAZARD MITIGATION PLAN

- Industrial development in the far north part of town near Nagog Pond and along the southeast border with Concord. Preferably these would include technology companies, and even small and start-up R&D companies.
- Local-regional shopping services along Route 119/2A.
- Affordable housing is preferred near the villages, public transportation and commercial areas. Lower-density affordable housing should be located outside of these areas.
- In the village areas, small and micro-business is preferred.

While these statistics give an idea of how Acton could grow, MAPC consulted with town staff provide a more realistic picture of future development based on the town's recent comprehensive planning efforts and current trends and projects. The potential future development and redevelopment areas are shown on Map 2, "Potential Development" and are described below. The letters refer to those on Map 2.

### **96-Lot Subdivision (A)**

This proposed project consists of a future 96-lot single-family subdivision off of Carlisle Road.

### **Avalon Acton 40B - 300 units (B)**

Located in North Acton in the Nagog Woods area, this proposed affordable housing project consists of approximately 300 apartments in Acton, with approximately 80 more apartments located in Westford. Construction of 11 buildings of three stories each will be complete by fall of 2008. In addition to the apartments, 64 age-restricted town houses will be constructed on a separate adjacent parcel in Acton.

### **Industrial Area (C)**

This area, located in the north of Acton, is targeted as a future industrial growth area. (See "To Live in Acton" future growth target areas description above).

### **Acton North Village (D)**

Acton North Village is targeted as a future mixed-use growth area. (See "To Live in Acton" future growth target areas description above).

### **Golf Course (E)**

This site is a recently-constructed golf course.

### **Shopping Center Area (F)**

This shopping center area, located in the eastern part of Acton just north of East Acton Village, is targeted as a local and regional shopping future growth area. (See "To Live in Acton" future growth target areas description above).

### **East Acton Village (G)**

East Acton Village is targeted as a future mixed-use growth area. (See "To Live in Acton" future growth target areas description above).

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### **Industrial Area (H)**

This area, located in the southeast of Acton, is targeted as a future industrial growth area. (See “To Live in Acton” future growth target areas description above).

### **Alexan Concord 40B – 350 Units (I)**

This future development, proposed under MGL Chapter 40B, is located at 48 and 54 Old Powdermill Road in the far west corner of Concord, and directly borders the communities of Acton, Sudbury and Maynard. The existing site consists of three manufacturing buildings, with the majority of the site cleared and graded level. The proposed project includes 350 rental housing units, including 11 3-story garden-style apartment buildings, each with 28 units; 8 townhouses, each with 4 to 6 units; and a community clubhouse.

### **South Acton Village (J)**

South Acton Village is targeted as a future mixed-use growth area. (See “To Live in Acton” future growth target areas description above).

### **West Acton Village (K)**

West Acton Village is targeted as a future mixed-use growth area. (See “To Live in Acton” future growth target areas description above).

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## III. PUBLIC PARTICIPATION

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Public participation occurred primarily at two levels: the Metro Boston North/West Hazard Mitigation Community Planning Team (regional committee) and the Acton Multiple Hazard Community Planning Team (local committee). In addition, the town held one public meeting to present the plan and solicit input.

### **Acton's Participation in the Regional Committee**

In July 2006, MAPC notified the 28 communities of the first meeting of the Metro Boston North/West Regional Hazard Mitigation Community Planning Team (HMCPT) and requested that the Chief Elected Official designate at least two municipal employees and/or officials to represent the community. The following individuals represented Acton on the regional committee:

- Bruce Stamski, P.E., Town Engineer / Director of Public Works
- Dean Charter, Director of Municipal Properties

The Metro Boston North/West Regional Hazard Mitigation Community Planning Team met over the course of the project on the following dates:

- August 17, 2006
- March 22, 2007
- October 22, 2007

Agendas from these meetings are located in Appendix B.

### **The Local Multiple Hazard Community Planning Team**

In addition to the regional committee meetings, MAPC worked with the local community representatives to organize a local Multiple Hazard Community Planning Team (MHCPT) for Acton. This local team held its meetings on January 30, 2007 and October 22, 2007 to review existing mitigation measures, develop hazard mitigation goals, and discuss potential mitigation measures. Table 4 lists the attendees at each meeting of the team. The agendas for these meetings are included in Appendix B. In addition, MAPC collected information via one-on-one meetings, phone interviews, or email.

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**Table 4: Attendance at the Acton Local Multiple Hazard Community Planning Team Meetings**

January 30, 2007

Bruce Stamski, P.E., Town Engineer/Director of Public Works  
Tom Tidman, Director of Natural Resources  
Robert Craig, Fire Chief  
Dean Charter, Director of Municipal Properties and Tree Warden  
Doug Halley, Health Department  
Jim Deming, Acton Water District  
Frank Widmayer, Police

October 22, 2007

Bruce Stamski, P.E., Town Engineer/Director of Public Works  
Tom Tidman, Director of Natural Resources  
Dean Charter, Director of Municipal Properties and Tree Warden  
Doug Halley, Health Department  
Daniel Fleury, Engineering Assistant  
Gary Rhodes, Building  
Corey York, Engineer

## Public Meeting

The town held a public meeting on February 25, 2008 at the Acton Town Hall to introduce the plan to the public. Notice of the meeting was posted at Town Hall and was publicized as a regular Selectmen's meeting. MAPC presented an overview of the planning process and priority mitigation strategies to attendees. MAPC then edited the plan based on the comments at the meeting. The attendance list for the meeting is below.

**Table 5: Attendance at the February 25, 2008 Board of Selectmen's Meeting**

Dore' Hunter, Board of Selectmen  
Lauren Rosenzweig, Board of Selectmen  
Andrew Magee, Board of Selectmen  
Paulina Knibbe, Board of Selectmen  
Peter Berry, Board of Selectmen  
Steve Ledoux, Town Manager  
Christine Joyce, Recording Secretary  
Christine Wallace, Metropolitan Area Planning Council  
Martin Pillsbury, Metropolitan Area Planning Council  
Bruce Stamski, P.E., Town Engineer/Director of Public Works

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## IV. OVERVIEW OF HAZARDS AND VULNERABILITIES

This section provides a general overview of how a number of natural hazards impact Acton. The next section provides more detail about impacts at specific locations and existing mitigation efforts.

### Overview of Hazards and Impacts

The 2007 Massachusetts Hazard Mitigation Plan provides an overview of natural hazards in Massachusetts. It indicates that Massachusetts is subject to the following natural hazards (listed in order of frequency): floods, heavy rainstorms, nor'easters, coastal erosion, hurricanes, tornadoes, urban and wildfires, drought and earthquakes.

Table 6 summarizes the hazard risks for the state and notes where risks in Acton differ from the state assessment. The state analysis takes into account the frequency of the hazard, historical records and variations in land use. An explanation of the definitions used can be found at the end of the table. Table 7 lists those federal disaster and emergency declarations for Middlesex County.

**Table 6: Frequency and Severity of Natural Hazards in the State**

<b>Hazard</b>	<b>Frequency in State</b>	<b>Severity in State</b>	<b>Issues in Acton</b>
Flood	High	Serious to extensive	Same as state
Dam Failure	Low	Extensive	A number of dams in Acton; concerns about down stream impacts from dams
Hurricanes	Medium	Extensive to catastrophic	Not a major issue in Acton
Severe Storms (wind, hail, lightning)	Medium	Serious	Same as state
Tornados	Medium	Extensive to catastrophic	Same as state
Winter Storms	High	Serious	Same as state
Earthquakes	Low	Catastrophic	Same as state
Landslides	Low	Minor	Not a major issue in Acton
Brush Fires	Medium	Serious	Not a major issue in Acton
<b>Definitions Used in the Commonwealth of Massachusetts State Hazard Mitigation Plan</b>			
<u>Frequency</u>			
- Very Low Frequency: Events that occur less frequently than once in 1,000 years (less than 0.1% per year).			
- Low Frequency: Events that occur from once in 100 years to once in 1,000 years (0.1% to 1% per year).			
- Medium Frequency: Events that occur from once in 10 years to once in 100 years (1% to 10% per year).			
- High Frequency: Events that occur more frequently than once in 10 years (greater than 10% per year).			
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<u>Severity</u>
- Minor: Limited and scattered property damage; no damage to public infrastructure (roads, bridges, trains, airports, public parks, etc.); contained geographic area (i.e., 1 or 2 communities); essential services (utilities, hospitals, schools, etc.) not interrupted; no injuries or fatalities.
- Serious: Scattered major property damage (more than 50% destroyed); some minor infrastructure damage; wider geographic area (several communities); essential services are briefly interrupted; some injuries and/or fatalities.
- Extensive: Consistent major property damage; major damage to public infrastructure (up to several days for repairs); essential services are interrupted from several hours to several days; many injuries and fatalities.
- Catastrophic: Property and public infrastructure destroyed; essential services stopped, thousands of injuries and fatalities.

**Table 7: Disaster and Emergency Declarations for Middlesex County**

ID Number	Type	Date
1701	Severe Storms and Inland and Coastal Flooding	April 2007
1642	Severe storms, flooding	May 2006
1614	Severe storms, flooding	October 2005
3252	Hurricane (Katrina)	August 2005
3201	Snow	January 2005
1512	Flooding	April 2004
3191	Snowstorm	December 2003
3175	Snowstorm	February 2003
3165	Blizzard	March 2001
1364	Severe storms, flooding	March 2001
1224	Heavy rain, flooding	June 1998
1142	Severe storms, flooding	October 1996
1090	Blizzard	January 1996
3103	Blizzard	March 1993
920	Severe Coastal Storm	October 1991
914	Hurricane (Bob)	August 1991

Sources: [www.fema.gov](http://www.fema.gov) and *State Hazard Mitigation Plan*, MEMA and DCR, October 2007.

## **Flood-Related Hazards**

Flooding was the most prevalent natural hazard identified by local officials in Acton. Flooding can occur during hurricanes, nor'easters, severe rainstorms and thunderstorms.

There have been a number of major rain storms that have resulted in significant flooding in eastern Massachusetts over the last fifty years. Excluding hurricanes, significant rain storms include:

- August 1954
- March 1968
- January 1979
- April 1987
- October 1991 ("The Perfect Storm")

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- October 1996
- June 1998
- March 2001
- April 2004
- October 2005
- May 2006
- April 2007

According to the *1988 Flood Insurance Study for Acton*, past floods in town have occurred in 1927, 1938, 1955 and 1968. This study predated more recent floods of the late 1990's and the current decade.

Through October 2007, Acton property owners filed a total of 32 losses with the National Flood Insurance Program. Of these, 21 have been paid for a total of just over \$66,055. FEMA maintains a database on these flood insurance policies and claims, which can be found at [www.fema.gov/business/nfip/statistics/pcstat.shtm](http://www.fema.gov/business/nfip/statistics/pcstat.shtm). The following table provides further detail from the database:

**Table 8: Flood Insurance Policies and Claims in Acton (as of October 31, 2007)**

Flood insurance policies in force	91
Coverage amount of flood insurance policies	\$18,833,500
Premiums paid	\$66,055
Total losses (all losses submitted regardless of the status)	32
Closed losses (Losses that have been paid)	21
Open losses (Losses that have not been paid in full)	0
CWOP losses ( Losses that have been closed without payment)	11
Total payments (Total amount paid on losses)	\$58,761.80

### ***Repetitive Loss Properties***

As defined by the Community Rating System (CRS) of the National Flood Insurance Program (NFIP), a repetitive loss property is any property which the NFIP has paid two or more flood claims of \$1,000 or more in any given 10-year period since 1978. For more information on repetitive losses see <http://www.fema.gov/business/nfip/replps.shtm>

There are three (3) repetitive loss properties in Acton; all of these are single family residences located within the Assabet River watershed. These properties are shown on the maps in Appendix A. These repetitive loss properties had a total of seven (7) losses between 1982 and 2002, totaling \$20,441.

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## Wind-Related Hazards

Wind-related hazards include hurricanes and tornadoes as well as high winds during severe rainstorms and thunderstorms.

The region has been impacted by hurricanes throughout its history, starting with the Great Colonial Hurricane of 1635. The eye of one hurricane passed right through Boston in 1944. Between 1858 and 2000, Massachusetts has experienced approximately 32 tropical storms, nine Category 1 hurricanes, five Category 2 hurricanes and one Category 3 hurricane. This equates to a frequency of once every six years. Hurricanes that have occurred in the region include<sup>1</sup>:

- Great New England Hurricane\*      September 21, 1938
- Great Atlantic Hurricane\*      September 14-15, 1944
- Hurricane Doug      September 11-12, 1950
- Hurricane Carol\*      August 31, 1954
- Hurricane Edna\*      September 11, 1954
- Hurricane Hazel      October 15, 1954
- Hurricane Diane      August 17-19, 1955
- Hurricane Donna      September 12, 1960
- Hurricane Gloria      September 27, 1985
- Hurricane Bob      August 19, 1991

\*Category 3.

Not included in this list is the Portland Gale of November 26-28, 1898, which may well have been the most damaging coastal storm in Massachusetts history.

As shown in Map 5 in Appendix A, a tropical storm tracked through Acton in 1897 and a Category 1 hurricane tracked through in 1858. A hurricane or storm track is the line that delineates the path of the eye of a hurricane or tropical storm. However, the town does experience the impacts of the wind and rain of hurricanes and tropical storms regardless of whether the storm track passed through the town. The hazard mapping also indicates that the 100 year wind speed is 110 miles per hour. No tornadoes have been recorded in Acton.

Winds during other storms also can cause damage. Downed trees and limbs can be a problem due to weather conditions such as strong wind or heavy snow and ice. Tree limbs can down power and communication lines and impact major roadways.

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<sup>1</sup> Information on storms provided by Cambridge Emergency Management Department. It is assumed that these same storms affected eastern Massachusetts, including Acton.

# ACTON HAZARD MITIGATION PLAN

## Winter-Related Hazards

In Massachusetts, northeast coastal storms known as nor'easters, occur one to two times per year. Winter storms are a combination of hazards because they often involve wind, ice, flooding and snow fall. The average annual snowfall for most of the town is 48 – 72 inches.

The most significant winter storm in recent history was the “Blizzard of 1978,” which resulted in over 3 feet of snowfall and multiple day closures of roadways, businesses, and schools. Historically, severe winter storms have occurred in the following years:

Blizzard of 1978	February 1978
Blizzard	March 1993
Blizzard	January 1996
Severe Snow Storm	March 2001
Severe Snow Storm	December 2003
Severe Snow Storm	January 2005

As expected, a number of public safety issues can arise during snow storms. Impassible streets are a challenge for emergency vehicles and affect residents and employers. Snow-covered sidewalks force people to walk in streets, which are already less safe due to snow, slush, puddles and ice. Large piles of snow can also block sight lines for drivers, particularly at intersections. Not all residents are able to clear their properties, especially the elderly. And when that snow melts, flooding occurs. Refreezing of melting snow can cause dangerous roadway conditions.

## Fire-Related Hazards

Brush fires and drought fall under the category of fire-related natural hazards.

According to the State Plan, the most recent severe drought in the state occurred from 2001 to 2003 and other multi-year droughts occurred in 1879-83, 1908-12 , 1929-32, 1939-44, 1961-69, and 1980- 83.

Recent wild fires in the state, according to the state plan, affected 2,600 acres in 2002, and 1,600 acres in 2003. Approximately 90% of wild fires in the past 10 years were caused by humans and 10% by lightning. In addition to obvious threats to humans and property, because wildfires burn ground vegetation and ground cover, subsequent rains can worsen erosion.

According to local officials, natural fires in Acton are not a significant issue. The town sees several brush fires annually, but these fires do not usually cause property damage or injuries. It is important, however, to remember that fire can also be a result of other events such as from the aftermath of an earthquake.

# ACTON HAZARD MITIGATION PLAN

## **Geologic Hazards**

Geologic hazards include earthquakes, landslides, sinkholes, subsidence, and unstable soils such as fill, peat and clay.

### ***Earthquakes***

According to the State Hazard Mitigation Plan, New England experiences an average of five earthquakes per year. From 1627 to 1989, 316 earthquakes were recorded in Massachusetts. Most have originated from the La Malbaie fault in Quebec or from the Cape Anne fault located off the coast of Rockport. The region has experienced larger earthquakes, of magnitude 6.0 to 6.5 in 1727 and 1755. Other notable earthquakes occurred here in 1638 and 1663 (Tufts University).

As shown on Map 4 in Appendix A, one earthquake epicenter has been recorded in the northeast portion of Acton. Although new construction under the most recent building codes generally will be built to seismic standards, much of the development in the town pre-dates the most recent building code.

Earthquakes can result in many impacts beyond the obvious structural impacts. Buildings may suffer structural damage that is not readily apparent. Earthquakes can cause major damage to roadways, making emergency response difficult. Water lines and gas lines can break, causing flooding and fires. Equipment in buildings can be vulnerable. For example, a hospital may be structurally engineered to withstand an earthquake, but if the equipment inside the building is not properly secured, the operations at the hospital could be severely impacted during an earthquake. Earthquakes can also trigger landslides.

The State Plan includes a map of Peak Ground Acceleration (PGA). The Plan explains that:

“PGA measures the strength of a potential earthquake in terms of the peak acceleration of ground movement. The potential damages due to an earthquake increase as the acceleration of ground movement increases. Peak ground acceleration is expressed as a percentage of a known acceleration, the acceleration of gravity...Therefore, the geographic areas with the highest PGA have the highest potential for damages during an earthquake.”

According to the State Plan, Acton is located in a section of the state with a PGA of 14 to 16 with a 2% probability of exceedance in 50 years; this is the third/fourth highest zone in the state.

# ACTON HAZARD MITIGATION PLAN

## ***Landslides***

Landslides can result from human activities that destabilize an area or can occur as a secondary impact from another natural hazard such as flooding. In addition to structural damage to buildings and the blockage of transportation corridors, landslides can lead to sedimentation of water bodies.

The entire town of Acton is classified as having a low risk for landslides. Local officials did not identify any significant issues related to landslides.

## **Overarching Impacts from Natural Hazards**

A number of impacts can occur from any of the above-mentioned natural hazards. Most common and most visible are electrical outages and closures of roadways. This can occur due to high winds that knock down wires and limbs, from heavy snow falls that take time to clear, or from a landslide that carries large boulders or soil onto a roadway. In addition to causing inconveniences, these impacts can result in economic losses to local businesses that cannot function without electricity, or their customers or employees cannot get to the business. Minimizing vulnerability to natural hazards can help to reduce these and other impacts to people's safety, health, and overall economic viability.

## **Critical Facilities Infrastructure in Hazard Areas**

Maps 1-7 in Appendix A and Table 9 list critical infrastructure in Acton. Critical infrastructure includes those facilities that perform an important function during a natural disaster such as shelters and emergency operation centers. Critical infrastructure also includes locations that house sensitive populations, such as schools or nursing homes. There are other critical facilities and infrastructure that may not be mapped because the information was not available. These may include utilities, communication facilities, or transportation corridors. The purpose of mapping the natural hazards and critical infrastructure is to present an overview of hazards in the community and how they relate to critical infrastructure, to better understand which facilities may be vulnerable to particular natural hazards. These facilities are shown on all of the maps in Appendix B, and are listed in Table 9, along with a breakdown of how they relate to selected hazards.

Much of the critical infrastructure in Acton is dispersed throughout the town, but there is also a cluster near the center of town. Four critical facilities are located in the 500-year FEMA floodplain (X500), and 11 facilities are located within the 100-year floodplain (AE). Three facilities are located within locally-identified areas of flooding.

The entire town has snow accumulation averages of 48-72 inches and therefore all critical facilities fall within this category. This also holds true for average wind speeds, which are uniform at 110 mph throughout the town.

## ACTON HAZARD MITIGATION PLAN

Critical sites the town staff has emphasized that are particularly important include:

- The Haartz Chemical Plant (CI # 59) is located near the high school, but is not in a vulnerable location with respect to natural hazards. This facility has tanker traffic containing chemicals, vapors and explosives. The facility is likely up to modern building codes. Haartz has its own emergency plan.
- BOC Gases (CI #62) located on Lawsbrook Road, takes in and redistributes pressurized gas. This area is not impacted by flooding, but high winds may be of concern. If the Weigh station does have an emergency plan, the owner should share it with the town. If they do not have one, then one should be developed.

## ACTON HAZARD MITIGATION PLAN

**Table 9: Relationship of Critical Facilities and Selected Hazard Types in Acton**

ID	Name	Type	FEMA Flood Zone	Locally-Identified Flood Area	Landslide Risk
1	Acton Department of Public Works Garage	Department of Public Works	No	No	Low
2	Acton Wastewater Treatment Plant	Wastewater Treatment Plant	No	No	Low
3	Pump Station 1	Wastewater Treatment Facility	No	No	Low
4	Pump Station 2	Wastewater Treatment Facility	AE	No	Low
5	Pump Station 3	Wastewater Treatment Facility	No	No	Low
6	Pump Station 4	Wastewater Treatment Facility	No	No	Low
7	Pump Station 5	Wastewater Treatment Facility	No	No	Low
8	Pump Station 6	Wastewater Treatment Facility	No	No	Low
9	Pump Station 7	Wastewater Treatment Facility	No	No	Low
10	Pump Station 8	Wastewater Treatment Facility	No	No	Low
11	Pump Station 9	Wastewater Treatment Facility	AE	No	Low
12	Pump Station 10	Wastewater Treatment Facility	No	No	Low
13	School Street Water Treatment Plant	Water Treatment Plant	No	No	Low
14	Assabet Water Treatment Plant	Water Treatment Plant	X500	No	Low
15	Hazelnut Street Ozonation Plant	Water Treatment Plant	No	No	Low
16	Concord Water Pumping Station	Water Pump Station	No	No	Low
17	North Acton Wastewater Treatment Plant	Wastewater Treatment Plant	No	No	Low

## ACTON HAZARD MITIGATION PLAN

<b>ID</b>	<b>Name</b>	<b>Type</b>	<b>FEMA Flood Zone</b>	<b>Locally-Identified Flood Area</b>	<b>Landslide Risk</b>
18	Acorn Park Wastewater Treatment Plant	Wastewater Treatment Plant	No	No	Low
19	Woodvale Wastewater Treatment Plant	Wastewater Treatment Plant	No	No	Low
20	Great Road Condos Wastewater Trmt. Plant	Wastewater Treatment Plant	X500	No	Low
21	Robbins Brook Wastewater Treatment Plant	Wastewater Treatment Plant	No	No	Low
22	Life Care Center Wastewater Trmt. Plant	Wastewater Treatment Plant	No	No	Low
23	Yankee Village Wastewater Trmt. Plant	Wastewater Treatment Plant	No	No	Low
24	Farmbrook Wastewater Treatment Plant	Wastewater Treatment Plant	No	No	Low
25	Brookside Apts. Wastewater Trmt. Plant	Wastewater Treatment Plant	No	No	Low
26	Nagog Hill Water Tower	Water Storage Tank	No	No	Low
27	Wampus Hill Water Tower	Water Storage Tank	No	No	Low
28	Flagg Hill Water Tower	Water Storage Tank	No	No	Low
29	Great Hill Water Tower	Water Storage Tank	No	No	Low
30	Life Care Center	Elderly Housing	No	No	Low
31	Robbins Brook Assisted Living Facility	Elderly Housing	No	No	Low
32	Acton Town Hall	Town Hall	No	No	Low
33	Baker-Whitney Oil Company	Hazardous Materials	No	No	Low
34	Bursaw Gas and Oil	Hazardous Materials	No	No	Low
35	Concord Oil	Hazardous Materials	No	No	Low
36	Acton Council on Aging	Elderly Housing	No	No	Low
37	Windsor Green Apartments	Elderly Housing	No	No	Low
38	Audubon Hill Condominiums	55+ Apartments Private	No	No	Low

## ACTON HAZARD MITIGATION PLAN

<b>ID</b>	<b>Name</b>	<b>Type</b>	<b>FEMA Flood Zone</b>	<b>Locally-Identified Flood Area</b>	<b>Landslide Risk</b>
39	Conant School	School	No	No	Low
40	RJ Grey Junior High School	School	No	No	Low
41	Acton-Boxborough Regional High School	School	No	No	Low
42	Gates School	School	No	No	Low
43	Douglas School	School	No	No	Low
44	Merriam School	School	No	No	Low
45	Acton Police Department	Police Department Headquarters	No	No	Low
46	West Acton Fire Station	Fire Station	No	No	Low
47	Center Acton Fire Station	Fire Station	No	No	Low
48	South Acton Fire Station	Fire Station	No	No	Low
49	Acton Public Safety Building	Fire Department Headquarters	No	No	Low
50	Infant Toddler Children's Center	Day Care	No	No	Low
51	Acton Barn Cooperative Nursery School	Day Care	No	No	Low
52	Montessori Country Day School	Day Care	No	No	Low
53	Children's World Learning Center	Day Care	No	No	Low
54	McCarthy-Towne	School	No	No	Low
55	The Victor School	School	No	No	Low
56	Community Notification Ctr.	Telecommunications	No	No	Low
57	IT Infrastructure	IT Network Center	No	No	Low
58	Cell Tower	Cell Tower	No	No	Low
59	Haartz Auto Fabric	Hazardous Materials	No	No	Low
60	RH Products	Hazardous Materials	No	No	Low
61	Assabet River Dam	Dam	AE	No	Low
62	BOC Gases	Hazardous Materials	No	No	Low
63	Erikson's Grain Mill Dam	Dam	AE	No	Low
64	River Street Dam	Dam	AE	No	Low
65	Keyspan/Tennessee Gas Regulator Station	Hazardous Materials	No	No	Low

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<b>ID</b>	<b>Name</b>	<b>Type</b>	<b>FEMA Flood Zone</b>	<b>Locally-Identified Flood Area</b>	<b>Landslide Risk</b>
66	Ice House Pond Dam	Dam	AE	No	Low
67	Robbins Mill Pond Dam	Dam	AE	No	Low
68	Pencil Factory Dam	Dam	AE	No	Low
69	Brook Street Dam	Dam	AE	No	Low
70	Nagog Pond Dam	Dam	No	No	Low
71	Grassy Pond Brook Dam	Dam	AE	No	Low
72	Whit-Clapp Wellfield	Dam	No	White-Clapp Wellfield (off of Route 111)	Low
73	Assabet Wellfield	Dam	X500	No	Low
74	School Street Wellfield	Dam	No	No	Low
75	Conant I Well	Dam	No	No	Low
76	Conant II Wellfield	Dam	No	No	Low
77	Kennedy Wellfield	Dam	AE	Kennedy Wellfield (off of Route 27)	Low
78	Marshall Well	Dam	X500	Kennedy Wellfield (off of Route 27)	Low

(See explanation of Table in text box on next page)

# ACTON HAZARD MITIGATION PLAN

## Explanation of Columns in Table 9

*Column 1: ID #:* ID number which appears on the maps. See Appendix A.

*Column 2: Site Name:* Name of the site. If no name appears in this column, this information was not provided to MAPC by the community.

*Column 3: Site Type:* Type of site.

*Column 4: FEMA Flood Zone:* Risk of flooding. No entry in this column means that the site is not within any of the mapped risk zones on the Flood Insurance Rate Maps (FIRM). If there is an entry in this column, it indicates the type of flood zone as follows:

**Zone A** - Zone A is the flood insurance rate zone that corresponds to the 100-year floodplains that are determined in the Flood Insurance Study (FIS) by approximate methods. Because detailed hydraulic analyses are not performed for such areas, no BFEs (base flood elevations) or depths are shown within this zone. Mandatory flood insurance purchase requirements apply.

**Zone AE and A1-A30** - Zones AE and A1-A30 are the flood insurance rate zones that correspond to the 100-year floodplains that are determined in the FIS by detailed methods. In most instances, BFEs derived from the detailed hydraulic analyses are shown at selected intervals within this zone. Mandatory flood insurance purchase requirements apply.

**Zones B, C, and X500** - Zones B, C, and X are the flood insurance rate zones that correspond to areas outside of the 100-year floodplains, areas of 100-year sheet flow flooding where average depths are less than 1 foot, areas of 100-year stream flooding where the contributing drainage area is less than 1 square mile, or areas protected from the 100-year flood by levees. No BFEs or depths are shown within this zone.

**Zone VE** - Zone VE is the flood insurance rate zone that corresponds to the 100-year coastal floodplains that have additional hazards associated with storm waves. BFEs derived from the detailed hydraulic analyses are shown at selected intervals within this zone. Mandatory flood insurance purchase requirements apply.

*Column 5: Locally-Identified Flood Area:* Whether the site is located within an area that was identified by town officials and staff as a localized area of flooding. These areas may or may correspond with FEMA flood zones.

*Column 6: Landslide Risk:* The degree of landslide risk for that site. This information came from NESEC. The landslide information shows areas with moderate susceptibility to landslides based on mapping of geological formations. This mapping is highly general in nature. For more information, refer to <http://pubs.usgs.gov/pp/p1183/pp1183.html>. If there is no entry, it indicates that the site is located in an area with little or no risk of landslides. The other two risk categories, low and moderate, indicate higher degrees of risk.

## **Potential Damages to Existing Development**

The purpose of the vulnerability assessment is to estimate the extent of potential damages from natural hazards of varying types and intensities. A vulnerability assessment and estimation of damages was performed for hurricanes, earthquakes and flooding. The methodology used for hurricanes and earthquakes was the HAZUS-MH software. The methodology for flooding was developed specifically to address the issue in many of the communities where flooding was not solely related to location within a floodplain.

## Introduction to HAZUS-MH

HAZUS-MH is a tool to help estimate potential damages from certain types of natural hazards. We used HAZUS to estimate losses from a hurricane and earthquake. We did not use HAZUS to estimate flooding damages, for reasons explained below. The

## ACTON HAZARD MITIGATION PLAN

following overview of the HAZUS-MH is taken from the FEMA website. For more information, go to <http://www.fema.gov/plan/prevent/hazus/>.

“HAZUS-MH is a nationally applicable standardized methodology and software program that contains models for estimating potential losses from earthquakes, floods, and hurricane winds. HAZUS-MH was developed by the Federal Emergency Management Agency (FEMA) under contract with the National Institute of Building Sciences (NIBS). Loss estimates produced by HAZUS-MH are based on current scientific and engineering knowledge of the effects of hurricane winds, floods and earthquakes. Estimating losses is essential to decision-making at all levels of government, providing a basis for developing and evaluating mitigation plans and policies as well as emergency preparedness, response and recovery planning.

HAZUS-MH uses state-of-the-art geographic information system (GIS) software to map and display and display hazard data and the results of damage and economic loss estimates for buildings and infrastructure. It also allows users to estimate the impacts of hurricane winds, floods and earthquakes on populations.”

There are three modules included with the HAZUS-MH software: hurricane wind, flooding, and earthquakes. There are also three levels at which HAZUS-MH can be run. Level 1 uses national baseline data and is the quickest way to begin the risk assessment process. The analysis that follows was completed using Level 1 data.

Level 1 relies upon default data on building types, utilities, transportation, etc. from national databases as well as census data. While the databases include a wealth of information on the communities that are a part of this study, it does not capture all relevant information. In fact, the HAZUS training manual notes that the default data is “subject to a great deal of uncertainty.”

However, for the purposes of this plan, the analysis is useful. This plan is attempting to only generally indicate the possible extent of damages due to certain types of natural disasters and allow for a comparison between different types of disasters. Therefore, this analysis should be considered a starting point to understanding potential damage from the hazard events. If interested, communities could build a more accurate database and further test disaster scenarios.

Table 10 displays damages from category 2 and 4 hurricanes. Table 11 displays damages if an historic earthquake were to occur today and if a stronger (7.0) earthquake were to occur.

## ACTON HAZARD MITIGATION PLAN

### Estimated Damages from Hurricanes

According to the State Hazard Mitigation Plan, between 1858 and 2004, there were 10 hurricanes: 50% were Category 1, 20% were Category 2 and 30% were Category 3. For the purposes of this plan a Category 2 and a Category 4 storms were chosen to illustrate damages. While the region has not experienced a Category 4 hurricane, modeling one helps to illustrate a “worst case scenario.” This can help planners and emergency personnel evaluate the impacts of storms that might be more likely in the future, as we enter into a period of more intense and frequent storms.

**Table 10: Estimated Damage in Acton from a Category 2 or 4 Hurricane**

	Cat. 2	Cat 4*
<b>Building Characteristics</b>		
Estimated total buildings	6,032	
Estimated total building replacement value (Year 2002 \$)	\$1,565,409,000	
<b>General Building Damage</b>		
# of buildings sustaining minor damage	1,895	365
# of buildings sustaining moderate damage	609	1,120
# of buildings sustaining severe damage	71	1,733
# of buildings destroyed	49	2,775
<b>Population Needs</b>		
% of hospital beds available on day of event	n/a	n/a
# of households displaced	155	6,101
# of people seeking public shelter	30	1,151
<b>Debris</b>		
Building debris generated (tons)	10,209	160,072
Tree debris generated (tons)	155,378	312,582
# of truckloads to clear building debris	408	6,403
<b>Value of Damages</b>		
Total property damage	\$87,692,630	\$1,520,064,740
Total business interruption loss	\$10,158,090	\$206,401,780

\*No category 4 or 5 hurricanes have been recorded in New England. However, a Category 4 hurricane was included to help the communities understand the impacts of a hurricane beyond what has historically occurred in New England.

## ACTON HAZARD MITIGATION PLAN

### Estimated Damages from Earthquakes

The HAZUS earthquake module allows users to define different types of earthquakes and to input various parameters. The module is more useful where there is a great deal of data available on earthquakes. In New England, defining the parameters of a potential earthquake is much more difficult because there is little historical data. The earthquake module does offer the user the opportunity to select a number of historical earthquakes that occurred in Massachusetts. For the purposes of this plan, two earthquakes were selected: a 1963 earthquake with a magnitude of 5.0 and an earthquake with a magnitude of 7.0.

**Table 11: Estimated Damage in Acton from a Magnitude 5.0 and 7.0 Earthquake**

	Magnitude 5.0	Magnitude 7.0
<b>Building Characteristics</b>		
Estimated total number of buildings		6,032
Estimated total building replacement value (Year 2002 \$)		\$1,565,409,000
<b>Building Damages</b>		
# of buildings sustaining slight damage	4	1,228
# of buildings sustaining moderate damage	1	404
# of buildings sustaining extensive damage	0	66
# of buildings completely damaged	0	10
<b>Population Needs</b>		
# of households displaced	0	103
# of people seeking public shelter	0	19
<b>Debris</b>		
Building debris generated (tons)	0	26,000
# of truckloads to clear building debris	0	1,040
<b>Value of Damages</b>		
Total property damage	\$270,000	\$62,290,000
Total losses due to business interruption	\$20,000	\$12,630,000

## ACTON HAZARD MITIGATION PLAN

### Estimated Damages from Flooding

MAPC did not use HAZUS-MH to estimate flood damages in Acton. In addition to technical difficulties with the software, the riverine module is not a reliable indicator of flooding in areas where inadequate drainage systems, beaver activity, and increased impervious surfaces contribute to flooding even in areas outside of mapped flood zones. In lieu of using HAZUS, MAPC developed a methodology to give a rough approximation of flood damages.

Approximately 292 acres of Acton’s total land area of 12,987 acres have been identified by local officials as areas of flooding. This amounts to 2.25% of the land area. The number of structures in each flood area was estimated by applying the percentage of the total land area to the total number of structures (6,032) in Acton, which is the same number of structures used by HAZUS for the hurricane and earthquake calculations. HAZUS uses an average value of \$259,500 per structure for the building replacement value in this community. The calculations were done for a low estimate of 10% building damages and a high estimate of 50% as suggested in the FEMA September 2002 publication, “State and Local Mitigation Planning how-to guides” (Page 4-13). The range of estimates for flood damages is \$3,659,232 - \$18,296,160. These calculations are approximate only and are meant to show an order of magnitude of damage. These calculations are not based solely on location within the floodplain or a particular type of storm (i.e. 100 year flood).

**Table 12: Estimated Damages from Flooding in Acton**

ID	Flood Hazard Area	Approx Area (Acres)	% of Total Land Area In Acton	# of Struct.	Replacement Value	Low Estimate of Damages	High Estimate of Damages
1	Kennedy Wellfield (off of Route 27)	76.19	0.587%	36	\$9,342,720	\$934,272	\$4,671,360
2	50-54 Great Road	13.49	0.104%	7	\$1,816,640	\$181,664	\$908,320
3	Stow Street/Martin Street	54.82	0.422%	26	\$6,747,520	\$674,752	\$3,373,760
4	Flint Road	35.63	0.274%	17	\$4,411,840	\$441,184	\$2,205,920
5	White-Clapp Wellfield (off of Route 111)	56.98	0.439%	27	\$7,007,040	\$700,704	\$3,503,520
6	Idylwilde Farms	30.22	0.233%	15	\$3,892,800	\$389,280	\$1,946,400
7	Condos in Boxborough	21.82	0.168%	11	\$2,854,720	\$285,472	\$1,427,360
8	Nashoba River	2.55	0.020%	2	\$519,040	\$51,904	\$259,520
	<b>Total</b>	<b>291.71</b>	<b>2.25%</b>	<b>141</b>	<b>\$36,592,320</b>	<b>\$3,659,232</b>	<b>\$18,296,160</b>

## ACTON HAZARD MITIGATION PLAN

### Potential Impacts to Future Development

The Town of Acton has identified a number of parcels where development has been proposed, is underway or is expected to occur in the future. Table 13 indicates where areas of likely future development may be located within or partially within a natural hazard area.

**Table 13: Relationship of Potential Development in Hazard Areas in Acton**

Parcel	Land Slide Risk	Flood Zone
96 Lot Subdivision	Low	1.34% in X500 0.28% in AE
The Avalon Acton 40B (300 Units)	Low	0.07% in X500
Industrial Area	Low	No
Acton North Village	Low	3.10% in X500
Shopping Center Area	Low	1.99% in X500 0.57% in AE
Golf Course	Low	3.61% in X500 6.30% in AE
East Acton Village	Low	No
Industrial Area	Low	No
Alexan Concord 40B (350 Units)	Low	No
South Acton Village	Low	15.33% in AE
West Acton Village	Low	No

# ACTON HAZARD MITIGATION PLAN

## V. HAZARDS AND EXISTING MITIGATION MEASURES

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This section provides more detail on how certain natural hazards affect specific parts of Acton. Existing mitigation measures are discussed under each hazard heading and existing mitigation measures for all natural hazards are compiled in Table 14.

### **Flood-Related Hazards**

#### **Overview of Town-Wide Flooding**

Acton is located entirely within the SuAsCo watershed (Sudbury – Assabet – Concord) and all of Acton’s water drains to the Assabet River. Major brooks include Fort Pond Brook and Nashoba Brook and there are a number of tributaries. Because of Acton’s topography many of the brooks flow very slowly and many historic farming drainage ditches have filled. These and other circumstances can result in flooding. Major water bodies include Nagog Pond (a water supply reservoir for Concord), Grassy Pond and Ice House Pond.

Map 3 shows that there are extensive areas of 100 year flood plain throughout the town, but particularly along Fort Pond Brook and Nashoba Brook, along the town’s boundary with Boxborough and in the very northern tip of town. Flooding in Acton is occasional, usually within or near floodplain areas. Damage may consist of flooding of basements or yards. According to a 1988 Flood Insurance Study by FEMA, there are some single-family houses and businesses located in flood plains. Today, an increasing amount of impervious surface from new development contributes to flooding issues, but since the 1970’s and the issuance of flood plain regulations, no new construction has occurred in flood plains. Flooding issues tend to be related to rising water rather than velocity.

In many areas of town, flooding occurs due to extensive beaver activity. Virtually every brook in town has had some degree of beaver activity in the past few years, however much of the beaver trapping does tend to occur along Nashoba Brook. Beaver mitigation is an important step in controlling flooding in Acton, and there is a need to strike balance of allowing beavers to exist and reducing flooding.

Roadways in Acton tend to flood every other year, but this does not lead to many major hazards since usually the roads remain passable. Older pipes in town can pose problems if they are undersized or in poor condition, but the town has an ongoing maintenance program to upgrade drainage infrastructure. Flooding is exacerbated when freezing temperatures are followed by rain, causing catch basin blockage. Since most of the flooding in town tends to occur in the flood plains and not as a result of inadequate drainage infrastructure, structural solutions to flooding have not been the main focus.

With regards to private drainage facilities, one challenge the town faces is with maintenance. It often difficult to enforce maintenance and inspections of private facilities. This issue will become even more important as the town sees more development.

## ACTON HAZARD MITIGATION PLAN

### ***Existing Mitigation for Flood-Related Hazards and Compliance with the National Flood Insurance Program***

Acton employs a number of practices to help minimize potential flooding and impacts from flooding, and to maintain existing drainage infrastructure. Existing town-wide mitigation measures include:

- a) *Participation in the National Flood Insurance Program (NFIP)* – FEMA maintains a database on flood insurance policies and claims. This database can be found on the FEMA website at [www.fema.gov/business/nfip/statistics/pcstat.shtm](http://www.fema.gov/business/nfip/statistics/pcstat.shtm)
- b) *On-going Drainage Improvement Program* – The Department of Public Works (DPW) routinely maintains and replaces old and failing pipes and drainage infrastructure (such as disintegrating aluminum pipes up to 70 years old). This program is part of DPW's operating budget.
- c) *Wetlands Protection Bylaw and Regulations* – The town has a wetlands protection bylaw to protect resource areas in and around wetlands, including land subject to flooding. The Bylaw also has requirements for setbacks ranging from 0-100 feet depending upon the activity. The wetland regulations provide more detail with regards to submittal requirements and performance standards. The Conservation Commission reviews development plans with potential impacts to water resources.
- d) *The Massachusetts Stormwater Policy* – This Policy is applied to developments within the jurisdiction of the Conservation Commission.
- e) *Floodplain Overlay District* – The town has a floodplain overlay district (Zoning Section 4.1) that restricts certain activities and requires a special permit for activities located within a flood zone. Floodplain regulations have been effective at preventing new construction in the flood plains.
- f) *Subdivision Development Drainage Design Controls* – The subdivision regulations require that the proposed drainage system is approved in writing by the appropriate town entity (Section 5.3.17) and the stormwater calculations must be provided by a licensed engineer (Section 5.3.18). The applicant must include provisions for handling drainage that flows off-site (5.3.20). Finally, an Erosion and Sediment Control plan is required (5.3.22). The Board of Health must review and approve or disapprove subdivision plans (5.5). Section 8.2 provides drainage/stormwater standards for subdivisions. The subdivision regulations encourage a preliminary submission to discuss development issues up-front with the Planning Board prior to a significant investment in design efforts. Runoff from subdivision developments may not increase in proposed conditions more than in existing conditions for the 10-year storm, and drainage facilities must be designed for the 10-year storm. The Subdivision Regulations also require the preparation of Development Impact Reports. Applicants must provide information on impacted resources, such as flood plains.

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- g) *Site Plan Development Drainage Design Controls* - For uses requiring site plans special permits, the peak rate of storm water runoff from the development site shall not exceed the rate existing prior to the new construction based on a 10-year design storm. Commercial and industrial developments must treat first inch of rainfall onto impervious surfaces.
- h) *Reviews and Inspections of New Developments* - Town staff provides drainage reviews and the Engineering Department inspects streets and drainage once construction is completed of a site.
- i) *Cluster Developments* – The town residential zoning provides provisions for cluster developments (open space developments in Zoning section 4.2) for all residential zones.
- j) *Groundwater Protection Overlay District* - The town has a Groundwater Protection District (Zoning section 37) with stringent development controls, including recharge requirements, open space requirements, and maximum allowable impervious areas based upon proximity to the public wells. These regulations are designed to protect the town’s sole drinking water supply.
- k) *Land acquisition efforts: Community Preservation Act* - The town adopted the Community Preservation Act with a 1.5% surcharge in 2002. The town has not yet used CPA funds for land acquisition, but likely will be soon. Land acquisition has not been a line item in the town’s budget, but the town has bonded for purchases.
- l) *Land acquisition efforts: Priority list of parcels by Open Space Committee* – Town will be updating its Open Space Plan and the Conservation Commission has an Open Space Committee that is working on a list of priority parcels. They have not targeted properties solely based on flood protection purposes, but flood storage may be one of several important environmental features on a piece of conserved land.
- m) *Public Education* – The town continues to implement its NPDES Phase II stormwater program which includes public education programs. Elements of the public education program include: partnering with SuAsCo for media toolkits, stormwater business flyers, educational signs adjacent to a constructed wetland, teacher lesson plans, traveling stormwater display at town buildings, and storm drain stenciling. In addition, the Acton Stream Team raises community awareness regarding issues facing water resources in the town.
- n) *Pilot Project with MIT students on reducing runoff* – MIT graduate students developed a low-impact design (LID) for reducing runoff effects at Jones Field consisting of a rain garden. The town expects to focus on municipally-owned land and have a few pilot projects at other locations.
- o) *Beaver Mitigation* – The town hires a trapper to mitigate beaver activity as necessary. A permit to do so is required by state law through the local Board of Health per state law. The mitigation includes removal of the dam and

## ACTON HAZARD MITIGATION PLAN

beaver and possibly installation of pipes to when property owners call to complain about flooding. The town usually uses its own staff and equipment to address the issue, and the cost can reach \$1,000 for each incident. To trap a beaver, the town is usually charged around \$150 to \$200 per animal.

- p) *Drainage System Maintenance* - The town strives to clean all catch basins annually. They no longer use sand, which has made a tremendous impact by allowing less frequent cleaning of the basins. The Health Department and DPW track catch basin and outfall cleanings. Maintenance of the storm drain system is scheduled based on known problem areas. The town has mapped its drainage system on paper maps and hopes to eventually set up in GIS if the town obtains GIS. The town owns two street sweepers.

### **Site-Specific Flooding**

The following sites were identified by Town staff as areas more prone to flooding. The numbers in parentheses refer to the Areas of Concern on Map 8 in Appendix A.

#### ***Water Department Well (Kennedy Wellfield off of Route 27) (1)***

This town-owned and operated water well located off of Route 27 in the northeast part of Acton is vulnerable to flooding due to beaver dams on Butter Brook. If the water table is high enough, surface water will intrude into the well and potentially impact water quality.

#### ***Great Road (2)***

Some properties at Great Road near Wetherbee Street flood occasionally. The parking lot and driveway of a private recreation club can be cut off; a house upstream has flooded as well as a parking lot at an apartment building next to gas station floods. No special action has been taken by Town. A house upstream does flood and the owner thinks the bridge at the club may be restricting flow. In addition, parts of the East Acton village may have pooling water, but this could be due to the associated with Nashoba Brook.

#### ***Stow Street/Martin Street (3)***

Properties at Stow Street and Martin Street flood once every 3 to 4 years. Beaver dams have been found near this location. Impacts include flooded basements and roads. The road is closed when it floods, but there is an easy detour around it. Emergency management assists residents with pumping out basements.

#### ***Flint Road (4)***

Homes in the Flint Road area south of Mass. Ave. have seen flooding once every few years due to beaver activity.

#### ***Existing Mitigation for Flint Road***

The town has removed beaver dams at the end of Flint Road.

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### ***Water Department Well (Whit-Clapp Wellfield off of Route 111) (5)***

This town-owned and operated water well located off of Route 111 in the southwest part of Acton is vulnerable to flooding due to beaver dams near Inch Brook and Guggins Brook. If the water table is high enough, surface water will intrude into well and potentially impact water quality.

### ***Idylwilde Farms (6)***

The Idylwilde Farm area is near flood plain, and as a result agricultural fields have experienced flooding. The houses are uphill so they have not been impacted by flooding here.

#### *Existing Mitigation*

The landowners here have trapped a beaver at their own expense.

### ***Condominiums in Boxborough (7)***

Flooding at a condominium complex in Boxborough has been caused by beaver activity in Acton. The flooding also impacted the functionality of the condo's septic system.

#### *Existing Mitigation*

Acton installed a pipe in the beaver dam to improve flow, however, a long-term solution is needed.

### ***Nashoba Brook – River Flooding (8)***

Flooding has occurred on a stretch from Route 2A to Concord Road along Nashoba Brook, often due to beaver activity, but also due to floodplain. The flooding affects properties, but not houses. A good portion of the land along this brook is town-owned.

#### *Existing Mitigation for Nashoba Brook*

Beavers have been removed from this area.

## **Dams**

According to data provided by the Town and the Massachusetts Department of Conservation and Recreation, there are several dams in Acton. Some have studies underway, some are in need of a study and/or repairs, and some no longer serve a purpose. Several measures are in place to mitigate against damages from dam breaches as described below:

#### *Existing Town-Wide Mitigation for Dam Hazards*

- a) *DCR dam safety regulations* – All dams are subject to the Division of Conservation and Recreation's dam safety regulations. Dams are required to be inspected regularly with reports filed to the DCR Office of Dam Safety.

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- b) *Permits required for construction* – State law requires a permit for the construction of any dam.
- c) *The Comprehensive Emergency Management Plan* – The CEMP addresses dam safety.
- d) *Dam Studies* – A SuAsCo dam study is underway for dams on the Assabet River. The Assabet River Dam has an emergency action plan and restoration of the dam is currently underway (see detailed description below).

In general throughout the town, there is a need for a town-wide assessment of all the dams to ensure which ones should be restored and which ones should be removed. Descriptions of each dam are provided below. The numbers in parentheses refer to the Areas of Concern on Map 8 in Appendix A.

### ***Robbins Mill Pond Dam (9)***

The Robbins Mill Pond Dam impounds the Nashoba Brook at Wheeler Lane in the Nashoba Brook Conservation Area. The town rebuilt this dam in 1990 by replacing an earthen dam with a new dam in 1990. The dam is getting weaker as water leaks through, but it is not a high risk.

### ***Pencil Factory Dam (10)***

This dam is located on the Nashoba Brook.

### ***Brook Street Dam (11)***

This is a small stone dam located on Nashoba Brook.

### ***Ice House Pond Dam (12)***

Also called the Allen Dam, this is a privately-owned stone dam on Nashoba Brook at Ice House Pond. The dam was rebuilt by the town in 1995 and now allows periodic drawdowns. If the dam were to breach, downstream impacts would be of concern.

### ***Erickson's Grain Mill Dam (13)***

This dam, located on Fort Pond Brook, is privately owned, but is important for maintaining the water body as a scenic and recreational resource. It is made of stone masonry and is in poor condition. There are concerns about the downstream impacts if this dam is breached. A development is occurring nearby and the commuter rail is also nearby. An assessment of potential downstream impacts would be warranted for this site.

### ***River Street Dam (14)***

This dam is located at River Street on Fort Pond Brook. This dam does back up in the spring and floods. As with Erickson's Grain Mill Dam, there are concerns about the downstream impacts if this dam is breached. A development is occurring nearby and the commuter rail is also nearby. A large amount of water would be stored behind the dam during a large storm. An assessment of potential downstream impacts would be warranted for this site.

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### ***Assabet River Dam (15)***

This dam (also known as the Powder Mill Dam, or Old High Street Dam) is located on the Assabet River at Old High Street. It is privately-owned by the Acton Hydro Company. It has a hydro-electric component, is a wood crib dam, has a manual intake and sluice gates, and is partially dismantled. There are concerns about downstream impacts if the dam is breached. Downstream are a number of commercial uses, including at least two sites that may contain hazardous materials.

### ***Existing Mitigation for the Assabet River Dam***

- a) Work is underway to repair the dam.
- b) An Emergency Action Plan was prepared for the dam in 2004 that includes list of downstream properties to be evacuated.
- c) Routine measures include daily inspections by the owner, monitoring weather conditions, monitoring flow rates via upstream USGS gaging station, staffed 24-hours during extreme flood conditions, and an annual detailed inspection by the owner.

### ***Nagog Pond Dam (16)***

This dam is located on Nagog Brook at Nagog Pond. Nagog Pond is owned by the Town of Concord for water supply. The dam appears to be in good condition and has not caused any concerns.

### ***Grassy Pond Brook Dam (17)***

This dam is cement with a 24-foot opening on a brook segment between Freedom Farm Road and Arlington Street.

## **Wind-Related Hazards**

As shown on Map 5 in Appendix A, a tropical storm tracked through Acton in 1897 and a Category 1 hurricane tracked through in 1858. The hazard mapping also indicates that the 100 year wind speed is 110 miles per hour. No tornadoes have been recorded in Acton. Potential impacts from wind damages and wildfires can occur in any part of the town. The town has not identified any areas that are at particularly higher risk from wind damages than others.

Tree damage during high winds has the potential to be a hazard in Acton. Trees can knock out power lines and block major roadways, which hinders emergency response.

High winds are not a frequent issue in Acton and power outages are infrequent, but the town does see microbursts in the summer that can cause problems. Trees on private land tend to cause more problems than trees in the Right-of-Way. The town does have a tree maintenance program, but if the trees are not within the Right-of-Way, there is little staff or personnel to assist. The tree program in general is lacking sufficient funding to keep up with its 2-3 year back log. New subdivisions that open up mature forest stands, especially white pine stands, tend to result in damaged, more vulnerable trees 5 to 10 years after construction.

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Approximately 30 to 40% of septic systems in town rely on power, so prolonged outages could have health impacts. Fortunately Acton has not really seen prolonged power outages in a number of years. However, many of the generators used in town and for town buildings rely on natural gas. If the natural gas lines are impacted, the generators will not function.

Another significant issue with regards to power outages is the condition of the town's communications equipment. They have lost the repeater on Great Hill (affected by wind, rain and snow around 4 times per year). When this occurs, they need to rely on their emergency communication system which has reduced capacity.

The town of Acton makes every effort to mitigate against damage due to high winds. Some of the specific actions are provided below.

### *Existing Mitigation for Wind-Related Hazards (Town-wide)*

- a) *Tree Trimming and Removal by the Town* - The town has a Tree Warden that oversees trimming and tree removal on public properties, and contractors are hired to help with maintenance. The tree warden does try to identify hazardous trees on private property and will contact the landowner. Approximately 6 times per year the town will remove private trees, but it is up to the landowner to remove the debris. When a new subdivision is created, the Subdivision Rules and Regulations require that all vegetation be removed from the entire width of the Right of Way, and that new trees be planted as replacements at the edge of the Right of Way. This work is done by the developer, not the Town. Once the street has been accepted, the trees growing within the Right of Way are protected under MGL Chapter 87. Full clearing of the Right of Way is required since the construction impacts of building the roadway condemn the existing trees to failure and death.
- b) *Tree Trimming and Removal by NSTAR* - In recent years, NSTAR has adopted a policy of inspection and trimming on circuit by circuit basis (there are about a half dozen circuits servicing Acton). Thus, in any given cycle, it is possible that only some portions of town will be inspected and trimmed. Additionally, trimming is usually focused only on primary circuits, so certain small sections of neighborhoods that are serviced only by secondary power might receive no trimming. Removal of problem trees by NSTAR has been occasional at best, therefore causing concern in the town that timely removal of problem trees endangering the wires will not be performed on a consistent and comprehensive basis.
- c) The town has emergency generators for the public safety building, fire stations, public works facility, town hall, sewer treatment plant, schools, Water Department, and also has portable generators. However, some of the generators used in town and for town buildings rely on natural gas. If the natural gas lines are impacted, the generators will not function. A detailed list

## ACTON HAZARD MITIGATION PLAN

under “Multi-Hazard Mitigation” shows the status of the town’s existing generator inventory:

- d) The town buildings are robust with hurricane-resistant glass. The Police Station is new and up to the most recent building codes. However, the state building code does not address tornadoes.

### **Winter-Related Hazards**

Map 6 in Appendix A indicates that the average annual average snowfall in Acton is between 48.1 inches to 72 inches. The Town provides standard snow plowing operations, and clearing snow has not posed any real challenges. Heavy, wet snow can damage trees and bring down limbs. Some of the roads in town are steep and pose a minor challenge for snow clearing, but in general the snow operations run smoothly.

The town of Acton currently employs a number of measures to mitigate for winter storm events. These are described below.

#### *Existing Town-Wide Mitigation for Winter-Related Hazards*

- a) The town provides standard snow plowing operations, and uses outside contractors as necessary. They have moved away from using sand, which helps reduce catch basin clogging.
- b) MassHighway clears Routes 2, 2A, and 111.
- c) Both the town and NSTAR provide tree trimming and removal in order to prevent limbs from coming down during heavy and wet snow events. (See more detailed description above under the Wind section)
- d) In the event of power outages due to downed limbs or ice, the town does have numerous backup generators for town buildings (See more detailed description below under the multi-hazard section)

### **Fire-Related Hazards**

The state is divided into 6 drought regions (see state plan). Acton is located in the Northeast Drought Region. The state has rated communities according to fire risk based on past occurrences, and Acton is rated as a low risk.

According to local officials, natural fires in Acton are not a significant issue. The town sees several brush fires annually, but these fires do not usually cause property damage or injuries. It is important, however, to remember that fire can also be a result of other events such as from the aftermath of an earthquake.

# ACTON HAZARD MITIGATION PLAN

## *Existing Town-Wide Mitigation for Fire-Related Hazards*

- a) The town allows controlled open burning in accordance with state regulations, but a permit is required from the Fire Chief for each day of intended burning.
- b) The Fire department reviews all subdivision and site plans for compliance with site access, water supply needs, and all other applicable regulations.

## **Geologic Hazards**

### **Earthquakes**

Most municipal officials acknowledged that earthquakes were the hazard for which their community was least prepared. One earthquake epicenter in the northeast portion of the town has been within Acton. If an earthquake hits, the entire region, not just the town, would face significant challenges. Earthquakes often trigger fires. The water distribution system may be disrupted, thus posing a risk for public health and fighting the fires.

Although new construction under the most recent building codes generally will be built to seismic standards, much of the development in the town predates the most recent building code. A major vulnerability is that all 3 fire stations are unreinforced masonry construction, built 40 years ago, and could not likely withstand a major earthquake. The Public Works building is also unreinforced masonry built in the 1960s. The Police Station however is brand new and up to the most recent earthquake standards.

95% of the town is served by fire hydrants. If the water system goes down, it would be difficult to find water for fire fighting. There are some fire ponds in Acton, but not likely enough if a major earthquake hits.

Many of the town buildings and services (such as water) have generators, but some are powered by natural gas. If power is lost, the natural gas lines may not be able to withstand a major earthquake and therefore the generators would be inoperable. Two of the fire stations have generators that rely on natural gas.

If a major earthquake were to hit, the commuter rail and major roadways and bridges would be affected. As it is, many of the bridges are in dire need of repair.

## *Existing Town-Wide Mitigation for Earthquake Hazards*

- a) The Police Station is new, steel-framed, and up to earthquake standards
- b) The town does have an evacuation plan as specified in its Comprehensive Emergency Management Plan (CEMP).
- c) A tanker task force is available through State Fire mobilization. FEMA has 8-12 tankers that can be deployed anywhere in the US within 72 hours.

## ACTON HAZARD MITIGATION PLAN

- d) The El Paso gas company provides educational information and training on hazard mitigation for its Tennessee Gas Pipeline located in several communities, including Acton.

### **Landslides**

According to the Master Plan, most of Acton is characterized by gently rolling hills and the only slopes over 15% are located south of Routes 2 and 111. Map 4 indicates that all of Acton has a low susceptibility to land slides. This seems consistent with local opinions that landslides or areas of erosion are not a major threat or occurrence in Acton. Most of the steep areas in town have already been developed. There are localized issues during construction, but those areas are stabilized once construction is completed.

#### *Existing Town-Wide Mitigation for Landslide Hazards*

- a) Town design standards in the subdivision and site plan regulations address erosion and sediment controls for temporary and permanent slopes.
- b) The edge of Brook Street (Conant Property) was recently stabilized to prevent erosion.
- c) A berm was recently installed at 2 Broadview Road to prevent erosion.
- d) Work was completed at the intersection of Homestead Street and Arlington Street to prevent erosion.
- e) The town recently installed a new box culvert at School Street and Lawsbrook Road that helps to slow down water flow and prevent erosion.

### **Existing Multi-Hazard Mitigation Measures**

The Town of Acton has several mitigation measures in place that address more than one hazard. The following describes these measures:

#### *Existing Town-Wide Mitigation for Multiple Hazards*

- a) *Multi-Department Review of Developments* – Multiple departments, such as Planning, Zoning, Health, Public Works, Engineering, Fire, Police, and Conservation, review all subdivision and site plans prior to approval.
- b) *Comprehensive Emergency Management Plan (CEMP)* – Every community in Massachusetts is required to have a Comprehensive Emergency Management Plan. These plans address mitigation, preparedness, response and recovery from a variety of natural and man-made emergencies. These plans contain important information regarding flooding, dam failures and winter storms. Therefore, the CEMP is a mitigation measure that is relevant to many of the hazards discussed in this plan. The CEMP is available online through secure access for town personnel.

## ACTON HAZARD MITIGATION PLAN

- c) *Enforcement of the State Building Code* – The Massachusetts State Building Code contains many detailed regulations regarding wind loads, earthquake resistant design, flood-proofing and snow loads.
- d) Acton has a *Local Emergency Management Planning Committee (LEPC)*
- e) Acton is also part of the CrossRoads Regional Emergency Management Planning Committee (REPC) that consists of the towns of Acton, Lincoln, Weston, Wayland, Sudbury and Concord.
- f) The town has emergency generators for the public safety building, fire stations, public works facility, town hall, sewer treatment plant, schools, Water Department, and also has portable generators. However, some of the generators used in town and for town buildings rely on natural gas. If the natural gas lines are impacted, the generators will not function. The list below shows the status of the town's existing generator inventory:
  - Town Hall: Diesel standby generator powers 85% of functions
  - Memorial Library: Diesel standby generator powers emergency circuits and town-wide computer hub
  - Public Safety Facility: Diesel standby generator powers 100% of facility
  - West Fire Station: Diesel standby generator powers 100% of facility
  - Center Fire Station: Natural Gas standby generator powers critical functions
  - South Fire Station: Natural Gas standby generator powers critical functions
  - Public Works: Natural Gas standby generator powers 95% of facility
  - Sewer Plant: Diesel standby generator powers 100% of facility
  - River St. Pump Station: Diesel standby generator powers 100% of facility
  - Mass. Ave Pump Station: Diesel standby generator powers 100% of facility
  - The Senior Center and the Emergency Management garage both have Gen-Trans panels and can easily accept power from portable generators. There are several trailer mounted portable generators available to power these buildings or the outlying sewer pump stations, or act as back-ups in case of failure of the primary generators.
  - Highway, Municipal Properties and Emergency Management have a number of small gasoline-powered generators.
- g) The town has reverse 911 and public announcements in the event of an emergency.
- h) The emergency communications system has limited capacity, and communications systems in town are highly dependent on cell phones (cell tower is located on Great Hill). The town looks to have a program to have proper communications facilities and fiber optics.

# ACTON HAZARD MITIGATION PLAN

## Compilation of Existing Mitigation

The following table summarizes the many existing natural hazard mitigation measures already in place in Acton. Because of the number of entities, public and private, involved in natural hazard mitigation, it is likely that this list is a starting point for a more comprehensive inventory of all measures. Please note that the numbers shown in parentheses correspond to the Hazard Areas of Concern included on the maps in Appendix A.

**Table 14: Existing Natural Hazard Mitigation Measures in Acton**

Hazard	Area	Mitigation Measure
<b>Flood-Related</b>	Town-Wide	A) The town participates in the NFIP and has adopted the effective FIRM maps. The town actively enforces the floodplain regulations. B) On-going Drainage Improvement Program C) Wetlands Protection Bylaw and Regulations D) Massachusetts Stormwater Policy E) Floodplain Overlay District F) Subdivision Development Drainage Design Controls G) Site Plan Development Drainage Design Controls H) Reviews and Inspections of New Developments I) Cluster Developments J) Groundwater Protection Overlay District K) Land Acquisition Efforts: Community Preservation Act L) Land Acquisition: Priority List of Parcels M) Public Education N) Beaver Mitigation O) Drainage System Maintenance
	Flint Road (4)	The town has removed beaver dams at the end of Flint Road which helps alleviate flooding of homes in this area.
	Idylwilde Farms (6)	The landowners have trapped a beaver at their own expense to help alleviate flooding.
	Condominiums in Boxborough (7)	Acton installed a pipe in the beaver dam to improve flow, however, a long-term solution is needed.
	Nashoba Brook-River Flooding (8)	Beavers have been removed from this area to alleviate flooding.
<b>Dams</b>	Town-Wide	A) DCR Dam Safety Regulations B) Construction permits required C) Comprehensive Emergency Management Plan D) Studies for dams on the Assabet River underway
	Assabet River Dam (15)	A) Work underway to repair the dam B) Emergency Action Plan prepared C) Daily inspections and monitoring

## ACTON HAZARD MITIGATION PLAN

**Table 14: Existing Natural Hazard Mitigation Measures in Acton**

<b>Hazard</b>	<b>Area</b>	<b>Mitigation Measure</b>
<b>Wind-Related</b>	Town-Wide	<ul style="list-style-type: none"> <li>A) Tree Maintenance Program by the Town</li> <li>B) Tree Maintenance Program by NSTAR</li> <li>C) Emergency generators available for municipal buildings (some are natural gas only)</li> <li>D) Police station up to most recent building codes</li> </ul>
<b>Winter-Related</b>	Town-Wide	<ul style="list-style-type: none"> <li>A) Standard snow operations, reduced sand usage</li> <li>B) MassHighway clears the state roads 2, 2A, and 111</li> <li>C) Tree maintenance by town and by NSTAR</li> <li>D) Emergency generators available for municipal facilities (many are natural gas only)</li> </ul>
<b>Fire-Related</b>	Town-Wide	<ul style="list-style-type: none"> <li>A) Open burning permits required</li> <li>B) Fire Department reviews all development plans</li> </ul>
<b>Geologic - Earthquake</b>	Town-Wide	<ul style="list-style-type: none"> <li>A) Police station is steel-framed and up to most recent building codes</li> <li>B) Evacuation plan outlined in CEMP</li> <li>C) Tanker task force available through state fire mobilization</li> <li>D) El Paso gas company provides training and education on hazard mitigation for its Tennessee Gas pipeline</li> </ul>
<b>Geologic - Landslides</b>	Town-Wide	<ul style="list-style-type: none"> <li>A) Slope stabilization requirements in subdivision and site plan regulations</li> <li>B) Edge of Brook Street recently stabilized</li> <li>C) Berm installed at 2 Broadview Road to prevent erosion</li> <li>D) Work completed at Homestead and Arlington streets to prevent erosion</li> <li>E) New box culvert installed by the Town at School and Lawsbrook Road to slow water and prevent erosion</li> </ul>
<b>Multi-Hazard</b>	Town-Wide	<ul style="list-style-type: none"> <li>A) Multi-department review of developments</li> <li>B) Comprehensive Emergency Management Plan (CEMP)</li> <li>C) Enforcement of State Building Code</li> <li>D) Local Emergency Management Planning Committee (LEPC)</li> <li>E) Regional Emergency Management Planning Committee (REPC)</li> <li>E) Emergency generators available for municipal facilities (some are natural gas only)</li> <li>F) Reverse 911 and public announcements in the event of an emergency</li> <li>G) Emergency communications system, but highly dependent on cell phone service</li> </ul>

# ACTON HAZARD MITIGATION PLAN

## **VI. HAZARD MITIGATION GOALS AND OBJECTIVES**

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The Acton Local Multiple Hazard Community Planning Team endorsed the following eight hazard mitigation goals at its October 22, 2007 team meeting:

1. Prevent and reduce the loss of life, injury, public health impacts and property damages resulting from all major natural hazards.
2. Identify and seek funding for measures to mitigate or eliminate each known significant flood hazard area.
3. Integrate hazard mitigation planning as an integral factor in all relevant municipal departments, committees and boards.
4. Prevent and reduce the damage to public infrastructure resulting from all hazards.
5. Encourage the business community, major institutions and non-profits to work with the Town to develop, review and implement the hazard mitigation plan.
6. Work with surrounding communities, state, regional and federal agencies to ensure regional cooperation and solutions for hazards affecting multiple communities.
7. Ensure that future development meets federal, state and local standards for preventing and reducing the impacts of natural hazards.
8. Take maximum advantage of resources from FEMA and MEMA to educate Town staff and the public about hazard mitigation.

## ACTON HAZARD MITIGATION PLAN

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# ACTON HAZARD MITIGATION PLAN

## VII. POTENTIAL MITIGATION MEASURES

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### **What is Hazard Mitigation?**

Hazard mitigation means to permanently reduce or alleviate the losses of life, injuries and property damage resulting from natural and human-made hazards through long-term strategies. These long-term strategies include planning, policy changes, programs, projects and other activities. FEMA currently has three mitigation grant programs: the Hazards Mitigation Grant Program (HMGP), the Pre-Disaster Mitigation program (PDM), and the Flood Mitigation Assistance (FMA) program. See <http://www.fema.gov/government/grant/government.shtm> for more information.

### **Identification and Evaluation of Potential Mitigation Measures**

During the local hazard mitigation team meetings, officials in Acton determined possible mitigation measures for the various natural hazards that have impacted or could impact the town. In addition, MAPC solicited suggestions for mitigation measures when it collected hazard information from town officials and from other town plans and studies. MAPC compiled all suggested strategies into a matrix.

MAPC staff attended the FEMA Benefit-Cost Analysis Training Course on October 31-November 1, 2005 and on November 15, 2007. Information from this training was shared with local officials in order to help them understand the role of a benefit/cost analysis in developing and evaluating potential mitigation projects.

Local officials then prioritized the measures using the matrix. Prior to choosing priorities, participants reviewed the project Goals and STAPLEE evaluation considerations, such as:

- The number of homes and businesses affected by the hazard
- Whether or not road closures occurred and what impact closures had on delivery of emergency services and the local economy
- Whether any environmental constraints existed
- Is there political support and public support to implement the mitigation measures?
- Can the town provide the necessary maintenance when the mitigation measure is completed?
- Does the cost seem reasonable when considering the size of the problem and likely benefits from mitigation?

The breakdown of high and medium priority measures, along measures to ensure ongoing compliance with NFIP, is provided in the section below and summarized in Table 15.

# ACTON HAZARD MITIGATION PLAN

## **High Priority Mitigation Measures**

### **A) Long-Term Management Plan To Control Beaver Activity**

Generally every brook in town has had some degree of beaver activity in the past few years. Development of a long-term management plan for beaver mitigation and for areas impacted by beaver dams is a high priority.

### **B) Assessment of River Street Dam**

This dam is located at River Street on Fort Pond Brook. This dam does back up in the spring and floods and there are concerns about the downstream impacts if this dam is breached. A development is occurring nearby and the commuter rail is also nearby. A large amount of water would be stored behind the dam during a large storm. An assessment of this dam is needed, such as an investigation of removal of the dam to reduce the risk of having an impoundment of water here, and an assessment of current risks to downstream development, future downstream development and the commuter rail.

### **C) Overall Town-Wide Dam Study**

Due to the numerous amounts of dams in Acton, a town-wide evaluation of which dams should be restored and which ones should be removed will help prevent future impacts to property and human safety.

### **D) Acquire Generators that Run on Fuels other than Natural Gas**

The town has emergency generators for the public safety building, fire stations, public works facility, town hall, sewer treatment plant, schools, Water Department, and also has portable generators. However, some of the generators used in town and for town buildings rely on natural gas (a detailed list under “Multi-Hazard Mitigation” shows the status of the town’s existing generator inventory). If the natural gas lines are impacted, such as during an earthquake, the generators will not function. Two of the fire stations have generators that rely on natural gas. The town needs to invest in additional generators that do not run on natural gas in order to ensure continual emergency service during a hazard event. In addition, homeowners should be encouraged to buy generators for their septic systems (if they require power).

### **E) Program To Upgrade Communications**

The communications systems in the town need upgrades to ensure reliable and efficient service. This could include switching to a fiber optic system or radio system. Currently the communications equipment is affected by rain, wind and snow approximately 4 times per year, which requires a dependence on reduced capacity backup systems and cell phones.

### **F) Upgrades to Fire Stations**

The Fire Stations in Acton are unreinforced older structures that are at risk in the event of a major earthquake. The town is in the process of considering a new fire

## ACTON HAZARD MITIGATION PLAN

station, but if this does not occur, an assessment should be made to look into options for securing the stations from damage during a major earthquake.

### G) Tree Maintenance Program Funding

The town needs additional funding to identify hazardous trees in the ROW and adjacent to the ROW, and funds to remove hazardous trees. Ideally a comprehensive survey should be conducted every 4 to 5 years. Perhaps the town could set up funding for partial reimbursements for taking down hazardous trees on private properties.

### **Measures to Assure Compliance with the National Flood Insurance Program**

### H) Post-Construction Stormwater Bylaw Revisions to Include a Maintenance and Inspection Program For Private Drainage Facilities

The bylaw should require aggressive and legally-binding operation and maintenance plans and reporting, with enforcement mechanisms, for private drainage facilities. In addition, further resources need to be put into town staffing to have a more robust maintenance and inspection program.

### I) Land Acquisition / Protection of Open Space

Although Acton does not see significant flooding in the town compared to more urbanized towns, protection of open space in the wake of development is important in order to ensure future development does not increase flooding. The town should continue its efforts for open space purchases and negotiate conservation restrictions and easements

### **Medium Priority Mitigation Measures**

### J) Assessment of Erickson's Grain Mill Dam

This dam, located on Fort Pond Brook, is privately owned, but important for maintaining the water body as a scenic and recreational resource. It is made of stone masonry and is in poor condition. An assessment of this dam is needed, such as an investigation of current risks to downstream development, future downstream development and the commuter rail.

### K) Ongoing Culvert and Drainage Upgrades

The town should continue to monitor and alleviate localized flooding problems with culvert or pipe upgrades, as it has done successfully in the past.

### L) More Frequent Maintenance of Town-Owned Drainage Facilities

Additional funding for more frequent maintenance of town-owned drainage facilities would be helpful (removal of sediment, etc.). The town should develop a map and schedule for catch basin cleaning.

## ACTON HAZARD MITIGATION PLAN

### M) Acquire GIS and Create an Inventory of Drainage Infrastructure

The town should acquire GIS and create an inventory of drainage infrastructure.

### **Other Potential Mitigation Measures**

A number of additional mitigation measures arose during the course of the project. These additional measures were either considered to be a low priority, a better alternative was deemed a medium or high priority, or they were not considered feasible. However, it is worth recording them in the plan, because they could be revisited in the future. They include:

### N) Long-Term Solution to Stop Boxborough Condominiums From Flooding

A long-term solution is needed to stop flooding at the condominium complex in Boxborough that floods as a result of beaver activity in Acton.

### O) Expand MIT Low-Impact Pilot Project

MIT graduate students developed a low-impact design (LID) for reducing runoff effects at Jones Field consisting of a rain garden. The town should continue the pilot projects and secure funding to construct the LID techniques.

### P) Assessment of Options for Fire Water Service if an Earthquake

95% of the town is served by fire hydrants. If the water system goes down, such as a result of a major earthquake, it would be difficult to find water for fire fighting. There are some fire ponds in Acton, but not likely enough if a major earthquake hit. An assessment of options for water service in the event of an earthquake should be completed.

# ACTON HAZARD MITIGATION PLAN

## Potential Mitigation Summary Table

The following columns are included in the summary table:

Description of the Mitigation Measure – Brief description of each mitigation measure.

Priority – The designation of high, medium or other priority was determined by the Local Multiple Hazard Community Planning Team meeting. . In determining project priorities, the local team considered potential benefits and project costs. The designations could change as conditions in the community change. In some cases only the high and medium priority measures are provided in the table.

Lead Implementation – MAPC designated implementation responsibility based on general knowledge of the community. It is likely that most mitigation measures will require that several departments work together and assigning staff is the sole responsibility of the governing body of each community. In some cases, a non-local entity would ideally be the lead implementer.

Time Frame – The time frame was based on a combination of the priority for that measure, the complexity of the measure and whether or not the measure is conceptual, in design, or already designed and awaiting funding. The identification of a likely time frame is not meant to constrain a community from taking advantage of funding opportunities as they arise. “Short-term” is an item that generally would not take more than a year or two to complete, and could conceivably occur within the 5 years of this plan. “Long-term” is a project that will could take more than one to two years to complete, and may not be completed within the five years of this plan.

Estimated Cost – The cost data are estimates that represent a point in time and would need to be adjusted for inflation and for any changes or refinements in the design of a particular mitigation measure. Cost information is approximate only and is either provided by the community or from MAPC staff experience.

Potential Funding Sources – This column attempts to identify possible sources of funding for a specific measure. This information is preliminary and varies depending on a number of factors such as whether a mitigation measure has been studied, evaluated or designed or is still in the conceptual stages. Each grant program and agency has specific eligibility requirements that would need to be taken into consideration. In most instances, the measure will require a number of different funding sources. Identification of a potential funding source in this table does not guarantee that a project will be eligible for or selected for funding. Upon adoption of this plan, the local committee responsible for its implementation should begin to explore the funding sources in more detail.

The best way to determine eligibility for a particular funding source is to review the project with the funding agency. The following websites provide an overview of programs and funding sources.

## ACTON HAZARD MITIGATION PLAN

Army Corps of Engineers (ACOE) – The website for the North Atlantic district office is <http://www.nae.usace.army.mil/>. The ACOE provides assistance for a number of types of projects including shoreline/streambank protection, flood damage reduction, flood plain management services and planning services.

FEMA – As noted earlier, see <http://www.fema.gov/government/grant/government.shtm> for more information.

Massachusetts Emergency Management Agency (MEMA) – The grants page <http://www.mass.gov/dem/programs/mitigate/grants.htm> has a useful table that compares eligible projects for the Hazard Mitigation Grant Program and the Flood Mitigation Assistance Program.

United States Department of Agriculture – The USDA has programs by which communities can get grants for fire fighting needs. See the link below for examples. <http://www.rurdev.usda.gov/rd/newsroom/2002/cfg.html>

## ACTON HAZARD MITIGATION PLAN

**Table 15: Potential Mitigation Measures in Acton**

Mitigation Measure	Priority	Lead Implementation	Time Frame	Estimated Cost Range	Potential Funding Sources
<b><i>High Priority Mitigation Measures</i></b>					
<b>Long-Term Management Plan to Control Beaver Activity</b>	High	Health, Highway	Long-Term	Varies from Town Staff time to involving state legislation	Town, State
<b>Assessment of River Street Dam</b>	High	Engineering	Short-Term	Town Staff time or \$5,000-\$15,000 for a consultant	Town, FEMA, ACOE
<b>verall Town-Wide Dam Study</b>	High	Engineering	Short-term	Town Staff time or \$10,000-\$25,000 for a consultant	Town, FEMA, ACOE
<b>quire Generators that Run on Fuels other than Natural Gas</b>	High	Fire Department	Long-Term	\$25,000 - \$75,000 per generator	Town, Public Safety Grants
A. Program to Upgrade Communications	High	Fire Department / Police Department	Long-Term	Varies from \$100,000 - \$500,000	Town, Public Safety Grants
B. Upgrades to Fire Stations	High	Fire Department	Long-Term	Varies from \$100,000 - \$500,000	Town, Public Safety Grants
C. Tree Maintenance Program Funding	High	Highway	Ongoing	Varies up to \$100,000 / year	Town
<b><i>Measures to Ensure Compliance with NFIP</i></b>					
<b>Post-Construction Stormwater Bylaw Revisions</b>	High	Planning / Conservation / Engineering	Short-term	Town Staff time or \$5,000-\$15,000 for a consultant	Town, MET grants, EOEAA Smart Growth Grants

# ACTON HAZARD MITIGATION PLAN

**Table 15: Potential Mitigation Measures in Acton**

Mitigation Measure	Priority	Lead Implementation	Time Frame	Estimated Cost Range	Potential Funding Sources
D. Land Acquisition / Protection of Open Space	Medium	Conservation	Ongoing and Long-term	Varies significantly from town staff time to \$1 million or more to purchase land	Town, CPA funds, gifts
<b><i>Medium Priority Mitigation Measures</i></b>					
E. Assessment of Erickson's Grain Mill Dam	Medium	Engineering	Ongoing	Town Staff time or \$5,000-\$15,000 for a consultant	Town, FEMA, ACOE
F. Ongoing Culvert and Drainage Upgrades	Medium	Engineering / Highway	Ongoing	Town Staff time and material costs vary	Town, FEMA, ACOE
<b>More Frequent Maintenance of Town-Owned Drainage Facilities</b>	Medium	Highway	Ongoing	Town Staff time	Town
G. Acquire GIS and Create an Inventory of Drainage Infrastructure	Medium	Engineering	Short-Term	\$5,000-\$25,000	Town

<b>Abbreviations Summary</b>	
<b>FEMA Mitigation Grants:</b>	
FMA	Flood Mitigation Assistance Program
HMGP	Hazard Mitigation Grant Program
PDM	Pre-Disaster Mitigation Program
RFC	Repetitive Flood Claims
SRL	Severe Repetitive Loss
<b>Other Potential Funding Sources:</b>	
ACOE	Army Corps of Engineers
CMRP	Commonwealth of Massachusetts Riverways Program
DCR	Department of Conservation and Recreation
DEP	Massachusetts Department of Environmental Protection (SRF) Clean Water State Revolving Fund (NPS) Nonpoint Source Grant Program
DHS	Department of Homeland Security/Emergency Operations
EEA	Massachusetts Executive Office of Energy and Environmental Affairs
EOT	Executive Office of Transportation
MET	Massachusetts Environmental Trust
MHD	Massachusetts Highway Department
USDA	United States Department of Agriculture

# ACTON HAZARD MITIGATION PLAN

## **VIII. REGIONAL AND INTER-COMMUNITY CONSIDERATIONS**

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Some hazard mitigation issues are strictly local. The problem originates primarily within the municipality and can be solved at the municipal level. Other issues are inter-community and require cooperation between two or more municipalities. There is a third level of mitigation which is regional and may involve a state, regional or federal agency or three or more municipalities.

### **Regional Partners**

In many communities, mitigating natural hazards is more than a local issue. The facilities that serve these communities are complex systems owned and operated by a wide array of agencies, government, and private entities. In Acton, this includes but is not limited to the Town of Acton, Massachusetts Highway Department (MassHighway), the Massachusetts Bay Transportation Authority (MBTA), and the Department of Fisheries and Wildlife. The planning, construction, operations and maintenance of these facilities are integral to the hazard mitigation efforts of communities. These agencies must be considered the communities' regional partners in hazard mitigation. These agencies also operate under the same constraints as communities do, including budgetary and staffing constraints and numerous competing priorities. In the sections that follow, the plan includes recommendations for activities to be undertaken by these other agencies. Implementation of these recommendations will require that all parties work together to develop solutions.

### **Regional Facilities within Acton**

Major facilities owned, operated and maintained by federal, state, regional or private entities in Acton include Routes 2, 27, 2A, 111, 119, 62 (MassHighway) and the MBTA Fitchburg line Commuter Rail and a station with service to Boston (MBTA). According to the town's Open Space Plan, the state owns roughly 200 acres of land in Acton. Land includes the Department of Corrections Farm (land that was part of the prison farm – it is leased to the town for recreational fields), a State Police horse barn and fields, land taken to build Route 2 that lies outside of the right-of-way and land owned by the Department of Fisheries and Wildlife.

### **Inter-Community Considerations**

As Acton is undergoing significant development, so are adjacent communities. For example, a 40B housing development is in the works across Acton's eastern border in Concord. In order to avoid impacts from any residential and commercial development, communication between Acton and the surrounding communities, including input in the review processes, is vital.

## ACTON HAZARD MITIGATION PLAN

Another regional development issue includes the neighboring Stowe airfield. Heath Hen Meadow is adjacent to the airfield and is a major flood plain shared by Acton, Boxborough and Stow. This is a swampy area with feeders to Fort Pond Brook. The portion in Acton is conservation land. If the airfield were ever expanded, impacts to the natural area and its ability to act as flood storage would be of concern.

In addition, according to Acton's Open Space Plan, a regional approach to open space preservation should be taken in order to create linkages and ensure that open space of regional significance is identified and protected.

Another regional issue of significance is the widespread effects of beaver dams in the area. Much of the localized flooding that occurs is due to beaver activity. The towns will mitigate the problem temporarily by hiring trappers, removing dams, or installing pipes, but a long-term comprehensive approach should be considered.

# ACTON HAZARD MITIGATION PLAN

## IX. PLAN ADOPTION AND MAINTENANCE

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### **Plan Adoption**

The Acton Hazard Mitigation Plan was adopted by the Board of Selectmen on [ADD DATE]. See Appendix D for documentation. The plan was approved by FEMA on [ADD DATE] for a five-year period that will expire on [ADD DATE].

### **Plan Maintenance**

MAPC worked with the Acton Hazard Mitigation Planning Team to prepare this plan. This group will continue to meet on an as-needed basis to function as the Local Hazard Mitigation Implementation Group, with one town official designated as the coordinator. Additional members could be added to the local implementation group from businesses, non-profits and institutions.

### **Implementation Schedule**

Bi-Annual Survey on Progress– The coordinator of the Hazard Mitigation Implementation Team will prepare and distribute a biannual survey in years two and four of the plan. The survey will be distributed to all of the local implementation group members and other interested local stakeholders. The survey will poll the members on any changes or revisions to the plan that may be needed, progress and accomplishments for implementation, and any new hazards or problem areas that have been identified.

This information will be used to prepare a report or addendum to the local hazard mitigation plan. The Hazard Mitigation Implementation Team will have primary responsibility for tracking progress and updating the plan.

Develop a Year Four Update – During the fourth year after initial plan adoption, the coordinator of the Hazard Mitigation Implementation Team will convene the team to begin to prepare for an update of the plan, which will be required by the end of year five in order to maintain approved plan status with FEMA. The team will use the information from the year four biannual review to identify the needs and priorities for the plan update.

Prepare and Adopt an Updated Local Hazard Mitigation Plan – FEMA’s approval of this plan is valid for five years, by which time an updated plan must be approved by FEMA in order to maintain the town’s approved plan status and its eligibility for FEMA mitigation grants. Because of the time required to secure a planning grant, prepare an updated plan, and complete the approval and adoption of an updated plan, the local Hazard Mitigation Planning Team should begin the process by the end of Year 3. This will help the town avoid a lapse in its approved plan status and grant eligibility when the current plan expires.

## ACTON HAZARD MITIGATION PLAN

At this point, the Hazard Mitigation Implementation Team may decide to undertake the update themselves, contract with the Metropolitan Area Planning Council to update the plan or to hire another consultant. However the Hazard Mitigation Implementation Team decides to update the plan, the group will need to review the current FEMA hazard mitigation plan guidelines for any changes. The update of the Acton Hazard Mitigation Plan will be forwarded to MEMA and DCR for review and to FEMA for approval.

### **Integration of the Plans with Other Planning Initiatives**

Upon approval of the Acton Hazard Mitigation Plan by FEMA, the Local Hazard Mitigation Implementation Team will provide all interested parties and implementing departments with a copy of the plan and will initiate a discussion regarding how the plan can be integrated into that department's ongoing work. At a minimum, the plan will be reviewed and discussed with the following departments:

- Fire / Emergency Management
- Police
- Public Works / Highway
- Engineering
- Planning and Community Development
- Conservation
- Parks and Recreation
- Health
- Building

Other groups that local team may coordinate with include large institutions (hospitals, colleges), chambers of commerce, land conservation organizations and watershed groups. The plan will also be posted on the community's website with the caveat that the local team coordinator will review the plan for sensitive information that would be inappropriate for public posting (such as critical facilities). The posting of the plan on a web site will include a mechanism for citizen feedback such as an e-mail address to send comments.

In addition, the plan will be shared with state agencies such as MEMA, DCR, and DOT and regional agencies such as the MBTA.

# ACTON HAZARD MITIGATION PLAN

## X. RESOURCES

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# ACTON HAZARD MITIGATION PLAN

## APPENDIX A: NATURAL HAZARDS MAPS

The MAPC GIS (Geographic Information Systems) Lab produced a series of maps for each community. Some of the data came from the Northeast States Emergency Consortium (NESEC). More information on NESEC can be found at <http://www.serve.com/NESEC/>. Due to the various sources for the data and varying levels of accuracy, the identification of an area as being in one of the hazard categories must be considered as a general classification that should always be supplemented with more local knowledge. The documentation for some of the hazard maps was incomplete as well.

The map series consists of four panels with two maps each plus one map taken from the State Hazard Mitigation Plan.

Map 1.	Population Density
Map 2.	Potential Development
Map 3.	Flood Zones
Map 4.	Earthquakes and Landslides
Map 5.	Hurricanes and Tornadoes
Map 6.	Average Snowfall
Map 7.	Composite Natural Hazards
Map 8.	Hazard Areas

**Map 1: Population Density** – This map uses the US Census block data for 2000 and shows population density as the number of people per acre in seven categories with 60 or more people per acre representing the highest density areas.

**Map 2: Potential Development** – This map shows potential future developments, and critical infrastructure sites. MAPC consulted with town staff to determine areas that were likely to be developed or redeveloped in the future.

**Map 3: Flood Zones** – The map of flood zones used the FEMA Q3 Flood Zones as its source. For more information, refer to [http://www.fema.gov/fhm/fq\\_q3.shtm](http://www.fema.gov/fhm/fq_q3.shtm). The definitions of the flood zones are described in more detail at [http://www.fema.gov/fhm/fq\\_term.shtm](http://www.fema.gov/fhm/fq_term.shtm). The flood zone map for each community also shows repetitive loss sites, critical infrastructure and municipally owned and protected open space. As defined by the Community Rating System (CRS) of the National Flood Insurance Program (NFIP), a repetitive loss property is any property, which the NFIP has paid two or more flood claims of \$1,000 or more in any given 10-year period since 1978. For more information on repetitive losses see <http://www.fema.gov/nfip/replps.shtm>.

## ACTON HAZARD MITIGATION PLAN

**Map 4: Earthquakes and Landslides** – This information came from NESEC. For most communities, there was no data for earthquakes because only the epicenters of an earthquake are mapped.

The landslide information shows areas with either a low susceptibility or a moderate susceptibility to landslides based on mapping of geological formations. This mapping is highly general in nature. For more information on how landslide susceptibility was mapped, refer to <http://pubs.usgs.gov/pp/p1183/pp1183.html>.

**Map 5: Hurricanes and Tornadoes** – This map shows a number of different items. The map includes the storm tracks for both hurricanes and tropical storms. This information must be viewed in context. A storm track only shows where the eye of the storm passed through. In most cases, the effects of the wind and rain from these storms were felt in other communities even if the track was not within that community. This map also shows the location of tornadoes with a classification as to the level of damages. What appears on the map varies by community since not all communities experience the same wind-related events. These maps also show the 100 year wind speed.

**Map 6: Average Snowfall** – This map shows the average snowfall, repetitive loss structures and open space. It also shows storm tracks for nor'easters, if any storms tracked through the community.

**Map 7: Composite Natural Hazards** - This map shows four categories of composite natural hazards for areas of existing development. The hazards included in this map are 100 year wind speeds of 110 mph or higher, low and moderate landslide risk, FEMA Q3 flood zones (100 year and 500 year) and hurricane surge inundation areas. Areas with only one hazard were considered to be low hazard areas. Moderate areas have two of the hazards present. High hazard areas have three hazards present and severe hazard areas have four hazards present.

**Map 8: Hazard Areas** – For each community, locally identified hazard areas are overlaid on an aerial photograph dated April 2005. The critical infrastructure sites and repetitive loss sites are also shown. The source of the aerial photograph is Mass GIS.

# ACTON HAZARD MITIGATION PLAN

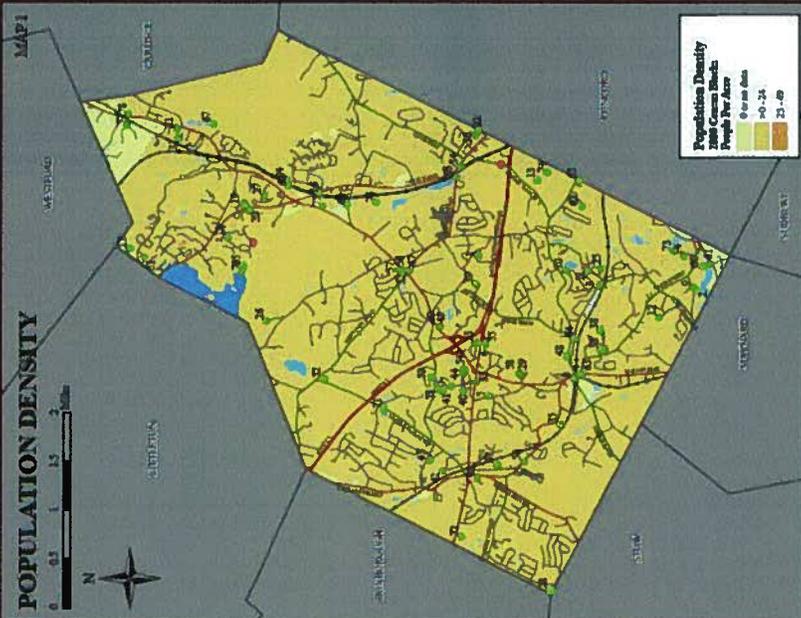
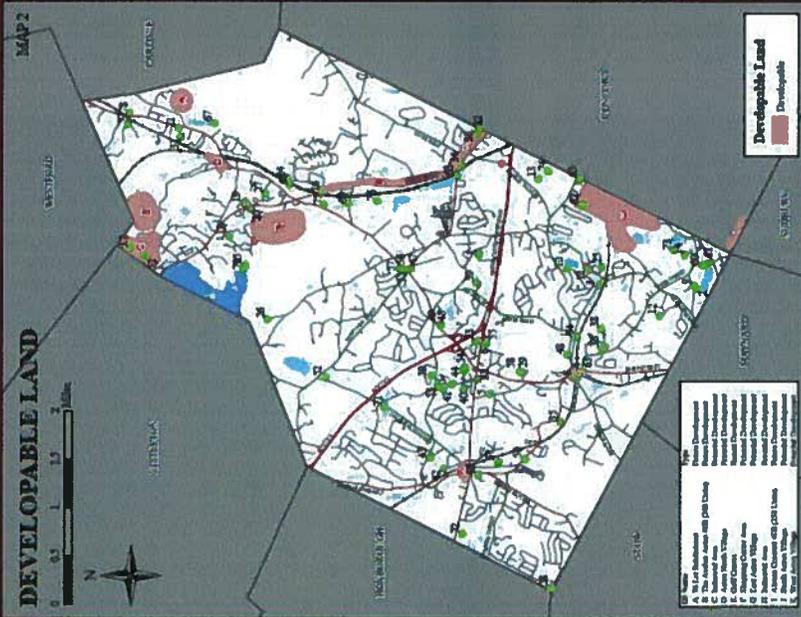


FEMA Pre-Disaster Mitigation Planning Grant

ACTON, MA

NATURAL HAZARDS MAP

Population Density and Developable Land



**Sites**

- Critical Infrastructure Sites
- Repetitive Loss Sites
- Hydro
- Wetlands
- Reservoir

**Roads / Transportation**

- Local
- Collector
- Arterial
- Interstate
- Trans

The information depicted on this map is for planning purposes only. It is not intended for legal boundary definition, regulatory compliance, or other legal purposes. The information was prepared by the Massachusetts Department of Conservation and Recreation, 2000 State Street, Boston, MA 02111 (617) 624-2379.

Map 1: Population Density (2000 Census Tracts)  
 Map 2: Developable Land (2000 Census Tracts)  
 Information for the Acton Hazard Mitigation Plan (2007)  
 Prepared by the Massachusetts Department of Conservation and Recreation (MDCR)  
 2007 State Street, Boston, MA 02111 (617) 624-2379

## CRITICAL INFRASTRUCTURE SITES

Site ID	Site Name	Site Type	Coordinates (Approx.)
1	Acton High School	Education	42° 28' N, 71° 15' W
2	Acton Middle School	Education	42° 28' N, 71° 15' W
3	Acton Elementary School	Education	42° 28' N, 71° 15' W
4	Acton Senior Center	Community	42° 28' N, 71° 15' W
5	Acton Town Office	Government	42° 28' N, 71° 15' W
6	Acton Fire Station	Fire Department	42° 28' N, 71° 15' W
7	Acton Police Station	Police	42° 28' N, 71° 15' W
8	Acton Water Treatment Plant	Water Treatment	42° 28' N, 71° 15' W
9	Acton Sewer Treatment Plant	Sewer Treatment	42° 28' N, 71° 15' W
10	Acton Gas Station	Gas Station	42° 28' N, 71° 15' W
11	Acton Gas Station	Gas Station	42° 28' N, 71° 15' W
12	Acton Gas Station	Gas Station	42° 28' N, 71° 15' W
13	Acton Gas Station	Gas Station	42° 28' N, 71° 15' W
14	Acton Gas Station	Gas Station	42° 28' N, 71° 15' W
15	Acton Gas Station	Gas Station	42° 28' N, 71° 15' W
16	Acton Gas Station	Gas Station	42° 28' N, 71° 15' W
17	Acton Gas Station	Gas Station	42° 28' N, 71° 15' W
18	Acton Gas Station	Gas Station	42° 28' N, 71° 15' W
19	Acton Gas Station	Gas Station	42° 28' N, 71° 15' W
20	Acton Gas Station	Gas Station	42° 28' N, 71° 15' W



# ACTON HAZARD MITIGATION PLAN

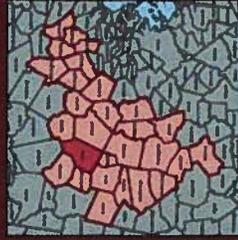


FEMA Pre-Disaster Mitigation Planning Grant

ACTON, MA

NATURAL HAZARDS MAP

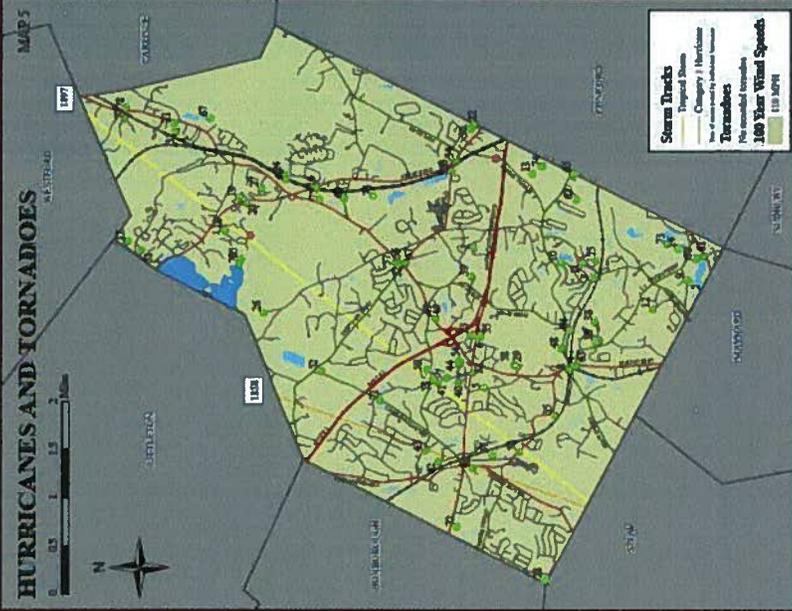
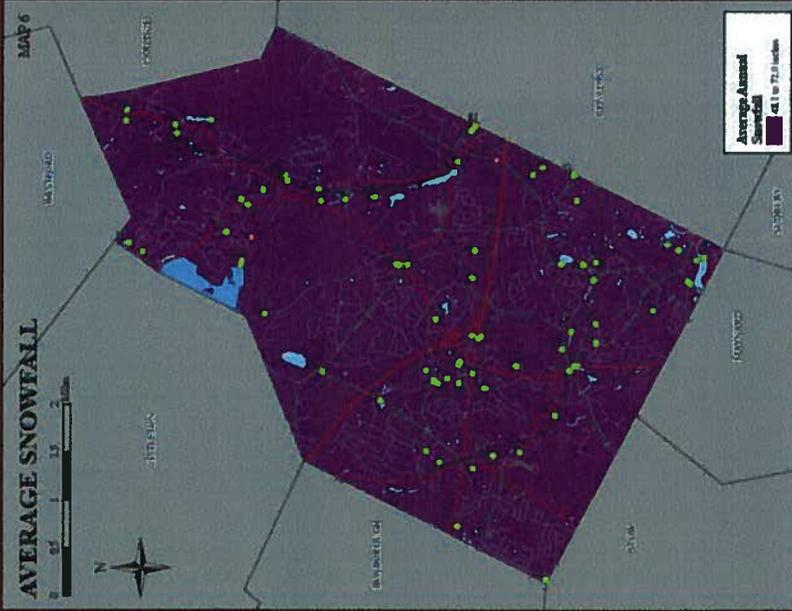
Hurricanes / Tornadoes and Average Snowfall Multi-Hazards View



- Sites**  
 Critical Infrastructure Sites  
 Regulatory Loss Sites  
 Elyades  
 Water Bodies  
 Reservoir
- Branch / Transportation**  
 Local  
 Collector  
 Arterial  
 Interstate  
 Train

This information is provided to the public for informational purposes only. It is not intended to be used for liability purposes, regulatory requirements, or project-based analysis.

Prepared by the Massachusetts State Planning Council GIS Lab  
 Douglas Stone, Director, GIS | 508 | 725 | 6217  
 State Planning Council (SPC)  
 100 State Street, 10th Floor, Boston, MA 02109  
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 100 State Street, 10th Floor, Boston, MA 02109  
 State Planning Council (SPC)  
 100 State Street, 10th Floor, Boston, MA 02109



**CRITICAL INFRASTRUCTURE SITES**

Site ID	Site Name	Category
1	Acton High School	Public School
2	Acton Middle School	Public School
3	Acton Elementary School	Public School
4	Acton Senior Center	Senior Center
5	Acton Fire Station	Fire Station
6	Acton Police Station	Police Station
7	Acton Town Office	Town Office
8	Acton Water Treatment Plant	Water Treatment Plant
9	Acton Sewer Treatment Plant	Sewer Treatment Plant
10	Acton Gas Station	Gas Station
11	Acton Post Office	Post Office
12	Acton Library	Library
13	Acton Community Center	Community Center
14	Acton Church	Church
15	Acton Cemetery	Cemetery
16	Acton Cemetery	Cemetery
17	Acton Cemetery	Cemetery
18	Acton Cemetery	Cemetery
19	Acton Cemetery	Cemetery
20	Acton Cemetery	Cemetery

**CRITICAL INFRASTRUCTURE SITES**

Site ID	Site Name	Category
21	Acton Cemetery	Cemetery
22	Acton Cemetery	Cemetery
23	Acton Cemetery	Cemetery
24	Acton Cemetery	Cemetery
25	Acton Cemetery	Cemetery
26	Acton Cemetery	Cemetery
27	Acton Cemetery	Cemetery
28	Acton Cemetery	Cemetery
29	Acton Cemetery	Cemetery
30	Acton Cemetery	Cemetery
31	Acton Cemetery	Cemetery
32	Acton Cemetery	Cemetery
33	Acton Cemetery	Cemetery
34	Acton Cemetery	Cemetery
35	Acton Cemetery	Cemetery
36	Acton Cemetery	Cemetery
37	Acton Cemetery	Cemetery
38	Acton Cemetery	Cemetery
39	Acton Cemetery	Cemetery
40	Acton Cemetery	Cemetery

**CRITICAL INFRASTRUCTURE SITES**

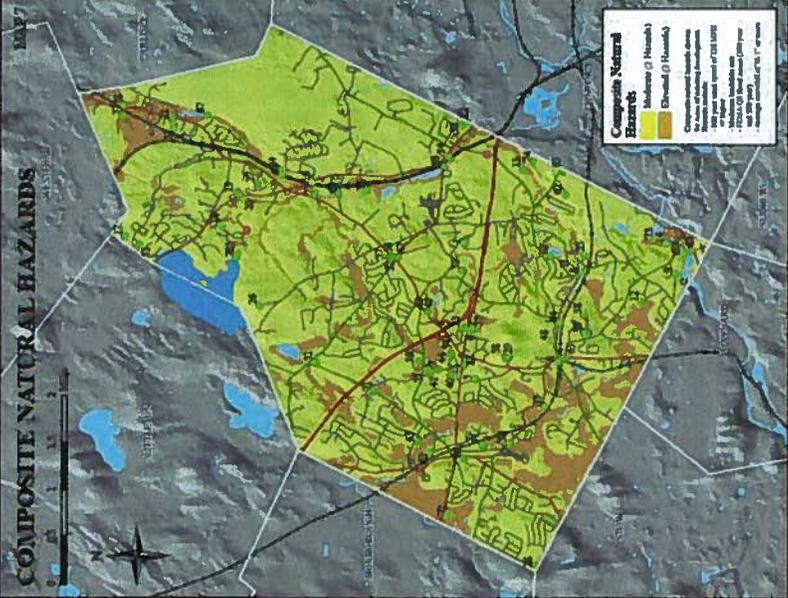
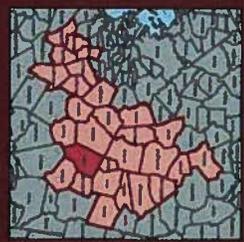
Site ID	Site Name	Category
41	Acton Cemetery	Cemetery
42	Acton Cemetery	Cemetery
43	Acton Cemetery	Cemetery
44	Acton Cemetery	Cemetery
45	Acton Cemetery	Cemetery
46	Acton Cemetery	Cemetery
47	Acton Cemetery	Cemetery
48	Acton Cemetery	Cemetery
49	Acton Cemetery	Cemetery
50	Acton Cemetery	Cemetery
51	Acton Cemetery	Cemetery
52	Acton Cemetery	Cemetery
53	Acton Cemetery	Cemetery
54	Acton Cemetery	Cemetery
55	Acton Cemetery	Cemetery
56	Acton Cemetery	Cemetery
57	Acton Cemetery	Cemetery
58	Acton Cemetery	Cemetery
59	Acton Cemetery	Cemetery
60	Acton Cemetery	Cemetery

# ACTON HAZARD MITIGATION PLAN



FEMA Pre-Disaster Mitigation Planning Grant  
**ACTON, MA**

NATURAL HAZARDS MAP  
 Composite Natural Hazards and Hazard Areas



**Sites**

- Critical Infrastructure Sites
- Repetitive Loss Sites
- Blinds / Transportation
- Local
- Collector
- Arterial
- Interstates
- Transit
- Highways
- Water Bodies
- Reservoir

This map was prepared for the study by the planning program of the Metropolitan Area Planning Council (MAPC) and is intended for general informational purposes only. It is not intended to be used for any other purpose. The information on this map was derived from various sources and is not guaranteed to be accurate. The Metropolitan Area Planning Council (MAPC) is a non-profit organization that provides planning and policy advice to the Metropolitan Area Planning Council (MAPC) and its member municipalities. The Metropolitan Area Planning Council (MAPC) is a non-profit organization that provides planning and policy advice to the Metropolitan Area Planning Council (MAPC) and its member municipalities.

## CRITICAL INFRASTRUCTURE SITES

ID	Name	Type	Address	City	State	Zip
1	Acton High School	School	100 School St	Acton	MA	01726
2	Acton Middle School	School	100 School St	Acton	MA	01726
3	Acton Elementary School	School	100 School St	Acton	MA	01726
4	Acton Senior Center	Senior Center	100 School St	Acton	MA	01726
5	Acton Town Hall	Town Hall	100 School St	Acton	MA	01726
6	Acton Fire Station	Fire Station	100 School St	Acton	MA	01726
7	Acton Police Station	Police Station	100 School St	Acton	MA	01726
8	Acton Library	Library	100 School St	Acton	MA	01726
9	Acton Post Office	Post Office	100 School St	Acton	MA	01726
10	Acton Water Treatment Plant	Water Treatment Plant	100 School St	Acton	MA	01726
11	Acton Sewer Treatment Plant	Sewer Treatment Plant	100 School St	Acton	MA	01726
12	Acton Wastewater Treatment Plant	Wastewater Treatment Plant	100 School St	Acton	MA	01726
13	Acton Solid Waste Transfer Station	Solid Waste Transfer Station	100 School St	Acton	MA	01726
14	Acton Landfill	Landfill	100 School St	Acton	MA	01726
15	Acton Hazardous Waste Treatment, Storage, and Disposal Unit	Hazardous Waste Treatment, Storage, and Disposal Unit	100 School St	Acton	MA	01726
16	Acton Air Quality Monitoring Station	Air Quality Monitoring Station	100 School St	Acton	MA	01726
17	Acton Emergency Services Center	Emergency Services Center	100 School St	Acton	MA	01726
18	Acton Fire Department	Fire Department	100 School St	Acton	MA	01726
19	Acton Police Department	Police Department	100 School St	Acton	MA	01726
20	Acton Library	Library	100 School St	Acton	MA	01726
21	Acton Post Office	Post Office	100 School St	Acton	MA	01726
22	Acton Water Treatment Plant	Water Treatment Plant	100 School St	Acton	MA	01726
23	Acton Sewer Treatment Plant	Sewer Treatment Plant	100 School St	Acton	MA	01726
24	Acton Wastewater Treatment Plant	Wastewater Treatment Plant	100 School St	Acton	MA	01726
25	Acton Solid Waste Transfer Station	Solid Waste Transfer Station	100 School St	Acton	MA	01726
26	Acton Landfill	Landfill	100 School St	Acton	MA	01726
27	Acton Hazardous Waste Treatment, Storage, and Disposal Unit	Hazardous Waste Treatment, Storage, and Disposal Unit	100 School St	Acton	MA	01726
28	Acton Air Quality Monitoring Station	Air Quality Monitoring Station	100 School St	Acton	MA	01726
29	Acton Emergency Services Center	Emergency Services Center	100 School St	Acton	MA	01726
30	Acton Fire Department	Fire Department	100 School St	Acton	MA	01726
31	Acton Police Department	Police Department	100 School St	Acton	MA	01726
32	Acton Library	Library	100 School St	Acton	MA	01726
33	Acton Post Office	Post Office	100 School St	Acton	MA	01726
34	Acton Water Treatment Plant	Water Treatment Plant	100 School St	Acton	MA	01726
35	Acton Sewer Treatment Plant	Sewer Treatment Plant	100 School St	Acton	MA	01726
36	Acton Wastewater Treatment Plant	Wastewater Treatment Plant	100 School St	Acton	MA	01726
37	Acton Solid Waste Transfer Station	Solid Waste Transfer Station	100 School St	Acton	MA	01726
38	Acton Landfill	Landfill	100 School St	Acton	MA	01726
39	Acton Hazardous Waste Treatment, Storage, and Disposal Unit	Hazardous Waste Treatment, Storage, and Disposal Unit	100 School St	Acton	MA	01726
40	Acton Air Quality Monitoring Station	Air Quality Monitoring Station	100 School St	Acton	MA	01726
41	Acton Emergency Services Center	Emergency Services Center	100 School St	Acton	MA	01726
42	Acton Fire Department	Fire Department	100 School St	Acton	MA	01726
43	Acton Police Department	Police Department	100 School St	Acton	MA	01726
44	Acton Library	Library	100 School St	Acton	MA	01726
45	Acton Post Office	Post Office	100 School St	Acton	MA	01726
46	Acton Water Treatment Plant	Water Treatment Plant	100 School St	Acton	MA	01726
47	Acton Sewer Treatment Plant	Sewer Treatment Plant	100 School St	Acton	MA	01726
48	Acton Wastewater Treatment Plant	Wastewater Treatment Plant	100 School St	Acton	MA	01726
49	Acton Solid Waste Transfer Station	Solid Waste Transfer Station	100 School St	Acton	MA	01726
50	Acton Landfill	Landfill	100 School St	Acton	MA	01726
51	Acton Hazardous Waste Treatment, Storage, and Disposal Unit	Hazardous Waste Treatment, Storage, and Disposal Unit	100 School St	Acton	MA	01726
52	Acton Air Quality Monitoring Station	Air Quality Monitoring Station	100 School St	Acton	MA	01726
53	Acton Emergency Services Center	Emergency Services Center	100 School St	Acton	MA	01726
54	Acton Fire Department	Fire Department	100 School St	Acton	MA	01726
55	Acton Police Department	Police Department	100 School St	Acton	MA	01726
56	Acton Library	Library	100 School St	Acton	MA	01726
57	Acton Post Office	Post Office	100 School St	Acton	MA	01726
58	Acton Water Treatment Plant	Water Treatment Plant	100 School St	Acton	MA	01726
59	Acton Sewer Treatment Plant	Sewer Treatment Plant	100 School St	Acton	MA	01726
60	Acton Wastewater Treatment Plant	Wastewater Treatment Plant	100 School St	Acton	MA	01726
61	Acton Solid Waste Transfer Station	Solid Waste Transfer Station	100 School St	Acton	MA	01726
62	Acton Landfill	Landfill	100 School St	Acton	MA	01726
63	Acton Hazardous Waste Treatment, Storage, and Disposal Unit	Hazardous Waste Treatment, Storage, and Disposal Unit	100 School St	Acton	MA	01726
64	Acton Air Quality Monitoring Station	Air Quality Monitoring Station	100 School St	Acton	MA	01726
65	Acton Emergency Services Center	Emergency Services Center	100 School St	Acton	MA	01726
66	Acton Fire Department	Fire Department	100 School St	Acton	MA	01726
67	Acton Police Department	Police Department	100 School St	Acton	MA	01726
68	Acton Library	Library	100 School St	Acton	MA	01726
69	Acton Post Office	Post Office	100 School St	Acton	MA	01726
70	Acton Water Treatment Plant	Water Treatment Plant	100 School St	Acton	MA	01726
71	Acton Sewer Treatment Plant	Sewer Treatment Plant	100 School St	Acton	MA	01726
72	Acton Wastewater Treatment Plant	Wastewater Treatment Plant	100 School St	Acton	MA	01726
73	Acton Solid Waste Transfer Station	Solid Waste Transfer Station	100 School St	Acton	MA	01726
74	Acton Landfill	Landfill	100 School St	Acton	MA	01726
75	Acton Hazardous Waste Treatment, Storage, and Disposal Unit	Hazardous Waste Treatment, Storage, and Disposal Unit	100 School St	Acton	MA	01726
76	Acton Air Quality Monitoring Station	Air Quality Monitoring Station	100 School St	Acton	MA	01726
77	Acton Emergency Services Center	Emergency Services Center	100 School St	Acton	MA	01726
78	Acton Fire Department	Fire Department	100 School St	Acton	MA	01726
79	Acton Police Department	Police Department	100 School St	Acton	MA	01726
80	Acton Library	Library	100 School St	Acton	MA	01726
81	Acton Post Office	Post Office	100 School St	Acton	MA	01726
82	Acton Water Treatment Plant	Water Treatment Plant	100 School St	Acton	MA	01726
83	Acton Sewer Treatment Plant	Sewer Treatment Plant	100 School St	Acton	MA	01726
84	Acton Wastewater Treatment Plant	Wastewater Treatment Plant	100 School St	Acton	MA	01726
85	Acton Solid Waste Transfer Station	Solid Waste Transfer Station	100 School St	Acton	MA	01726
86	Acton Landfill	Landfill	100 School St	Acton	MA	01726
87	Acton Hazardous Waste Treatment, Storage, and Disposal Unit	Hazardous Waste Treatment, Storage, and Disposal Unit	100 School St	Acton	MA	01726
88	Acton Air Quality Monitoring Station	Air Quality Monitoring Station	100 School St	Acton	MA	01726
89	Acton Emergency Services Center	Emergency Services Center	100 School St	Acton	MA	01726
90	Acton Fire Department	Fire Department	100 School St	Acton	MA	01726
91	Acton Police Department	Police Department	100 School St	Acton	MA	01726
92	Acton Library	Library	100 School St	Acton	MA	01726
93	Acton Post Office	Post Office	100 School St	Acton	MA	01726
94	Acton Water Treatment Plant	Water Treatment Plant	100 School St	Acton	MA	01726
95	Acton Sewer Treatment Plant	Sewer Treatment Plant	100 School St	Acton	MA	01726
96	Acton Wastewater Treatment Plant	Wastewater Treatment Plant	100 School St	Acton	MA	01726
97	Acton Solid Waste Transfer Station	Solid Waste Transfer Station	100 School St	Acton	MA	01726
98	Acton Landfill	Landfill	100 School St	Acton	MA	01726
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100	Acton Air Quality Monitoring Station	Air Quality Monitoring Station	100 School St	Acton	MA	01726

**ACTON HAZARD MITIGATION PLAN**

**APPENDIX B:**

**MEETING AGENDAS FOR:**

**METRO BOSTON NORTH/WEST REGIONAL HAZARD  
MITIGATION COMMUNITY PLANNING TEAM**

**AND**

**LOCAL MULTIPLE HAZARD COMMUNITY PLANNING TEAM**

# ACTON HAZARD MITIGATION PLAN



Cristine McCombs

Director



Stephen H. Burrington

COMMISSIONER



Marc D. Draisen  
Executive Director

**METRO  
NORTH/WEST  
PRE-DISASTER  
MITIGATION PLAN**

## MetroWest

Ashland  
Framingham  
Holliston  
Natick  
Southborough  
Wayland  
Weston

## MAGIC

Acton  
Bedford  
Bolton  
Boxborough  
Carlisle  
Concord  
Hudson  
Lexington  
Lincoln  
Littleton  
Maynard  
Stow

## NORTH SUBURBAN

Burlington  
Natick  
Reading  
Stoneham  
Wakefield  
Wilmington  
Woburn

# The Commonwealth of Massachusetts

*Mitt Romney, Governor*

## **Massachusetts Emergency Management Agency**

400 WORCESTER ROAD, FRAMINGHAM, MA 01702-5399 508-820-2000 FAX 508-820-1404

## **Department of Conservation and Recreation**

251 CAUSEWAY STREET, SUITE 600-900, BOSTON, MA 02114 617-626-1250 FAX 617-626-1351

## **Metropolitan Area Planning Council**

60 TEMPLE PLACE, 6<sup>TH</sup> FLOOR, BOSTON, MA 02111 617-451-2770 FAX 617-482-7185

# MAGIC

## Hazard Mitigation Community Planning Team

THURSDAY, AUGUST 17, 9:30 AM

Acton Town Hall, Room 204  
472 Main Street (Rt. 27), Acton, MA

## AGENDA

**9:30 WELCOME & INTRODUCTIONS** *(Please sign contact sheet)*

**9:45 OVERVIEW OF FEDERAL DISASTER MITIGATION ACT & PRE-DISASTER MITIGATION PLANNING**

- *Presentation, Questions & Discussion*  
--Martin Pillsbury, Manager of Regional Planning, MAPC

**10:15 GETTING STARTED: THE METRO NORTH/WEST PRE-DISASTER MITIGATION PLAN - MAGIC SUBREGION**

- *Review of Scope of Work & Schedule*  
-- MAPC planning team: Heidi Samokar & Justin Sellers
- *Questions & Discussion - Local Issues & Priorities*

**11:00 PREVIEW OF MAPPING AND DATABASES FOR THE PLAN**

- *Examples from the North Shore & Metro Boston PDM Plans*

**11:20 NEXT STEPS / MEETING SCHEDULE**

**11:30 ADJOURN**

ACTON HAZARD MITIGATION PLAN



Ken McBride  
Acting Director



Priscilla E. Geigis  
Acting Commissioner



Marc D. Draisen  
Executive Director

**METRO NORTH/WEST  
PRE-DISASTER  
MITIGATION PLAN**

**MetroWest**

Ashland  
Framingham  
Holliston  
Natick  
Southborough  
Wayland  
Weston

**MAGIC**

Acton  
Bedford  
Bolton  
Boxborough  
Carlisle  
Concord  
Hudson  
Lexington  
Lincoln  
Littleton  
Maynard  
Stow

**NORTH SUBURBAN**

Burlington  
Natick  
Reading  
Stoneham  
Wakefield  
Wilmington  
Woburn

# The Commonwealth of Massachusetts

*Deval Patrick, Governor*

## **Massachusetts Emergency Management Agency**

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## **Department of Conservation and Recreation**

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## **Metropolitan Area Planning Council**

60 TEMPLE PLACE, 6<sup>TH</sup> FLOOR, BOSTON, MA 02111 617-451-2770 FAX 617-482-7185

# MAGIC Region

## Hazard Mitigation Community Planning Team

**THURSDAY, MARCH 22, 9:30 AM**

**Acton Town Hall, Room 204**

**472 Main Street (Rt. 27), Acton, MA**

**9:30 WELCOME, INTRODUCTIONS & OVERVIEW OF AGENDA**

**9:40 REVIEW OF HAZARD MAPPING AND CRITICAL INFRASTRUCTURE DATA COLLECTION**

- *Allan Bishop, GIS Manager, will present the draft regional hazard map and a sample community map,*
- *Draft local hazard maps will be distributed on CD ROM to all towns*
- *Update on Critical Facilities data base and process for local review and QA/QC of draft hazard maps and data*

**10:30 UPDATE ON LOCAL PLANS**

- *Heidi Samokar and Justin Sellars will discuss local and regional issues emerging in the planning process*
- *Review next steps in mapping localized hazard areas*
- *Martin Pillsbury will review plan approval requirements*

**10:45 QUESTIONS AND DISCUSSION WITH TEAM MEMBERS**

**11:00 NEXT STEPS / MEETING SCHEDULE / ADJOURN**

ACTON HAZARD MITIGATION PLAN



Don Boyce  
Director



Richard Sullivan  
COMMISSIONER



Marc D. Draisen  
Executive Director

**MetroWest**  
Ashland  
Framingham  
Holliston  
Natick  
Southborough  
Wayland  
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**NORTH SUBURBAN**  
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# The Commonwealth of Massachusetts

Deval Patrick, Governor

## Massachusetts Emergency Management Agency

400 WORCESTER ROAD, FRAMINGHAM, MA 01702-5399 508-820-2000 FAX 508-820-1404

## Department of Conservation and Recreation

251 CAUSEWAY STREET, SUITE 600-900, BOSTON, MA 02114-2104 617-626-1250 FAX 617-626-1351

## Metropolitan Area Planning Council

60 TEMPLE PLACE, 6<sup>TH</sup> FLOOR, BOSTON, MA 02111 617-451-2770 FAX 617-482-7185

# MAGIC Region

## Hazard Mitigation Community Planning Team

**MONDAY, OCTOBER 22, 10:30 AM**

**Acton Town Hall, Room 204  
472 Main Street (Rt. 27), Acton, MA**

**10:30 WELCOME, INTRODUCTIONS & OVERVIEW OF AGENDA**

**10:40 HAZARD MAPPING AND CRITICAL INFRASTRUCTURE DATA**

- *Allan Bishop, GIS Manager, will present the final regional hazard maps and an example set of community maps*
- *Final hazard maps and Critical Facilities data bases will be distributed to all towns (hard copy and on CD-ROM)*

**11:00 UPDATE ON LOCAL PLANS**

- *Martin Pillsbury will introduce Christine Wallace, Senior Planner working on completing the PDM plans for MAGIC communities*
- *Update on local PDM plans (Christine Wallace)*
- *Review of next steps for plan completion, review, and approval*

**11:15 REGIONAL ISSUES IN THE PDM PLAN**

- *Facilitated discussion to identify and prioritize key regional issues that should be included in the Regional PDM Plan for MAGIC*

**11:45 QUESTIONS AND DISCUSSION WITH TEAM MEMBERS**

# ACTON HAZARD MITIGATION PLAN

## **Meeting Agenda Local Multiple Hazard Community Planning Team Town of Acton**

October 22, 2007 9:00 AM  
Acton Town Hall – Room 204

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- I. Review of Project Scope, Status, & Schedule**
  
- II. Selection of Goals**
  
- III. Review of Mapping**
  - a. Map Series
  - b. Areas of Concern
  - c. Potential Development
  
- IV. Discussion on Mitigation Matrix**  
*(for floods, high winds, fires, winter storms, and geologic hazards)*
  - a. Hazards / Areas of Concern
  - b. Existing Mitigation
  - c. Proposed Mitigation
  - d. Prioritization
  
- V. Next Steps**
  - a. Prepare Draft Hazard Mitigation Plan
  - b. Schedule Public Hearing to Present the Plan
  - c. Submit Draft Plan to FEMA/MEMA for review

## ACTON HAZARD MITIGATION PLAN

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ACTON HAZARD MITIGATION PLAN

**APPENDIX C:**  
**DOCUMENTATION OF THE PUBLIC MEETING**

ACTON HAZARD MITIGATION PLAN

**BOARD OF SELECTMEN & SEWER COMMISSIONERS'  
MEETING AGENDA**

*Francis Faulkner Meeting Room  
Town Hall  
February 25, 7:00 PM*

**I. CITIZENS' CONCERNS**

**II. PUBLIC HEARINGS AND APPOINTMENTS**

**1. 7:02 OPERATIONAL MINUTE**

The Town Manager will provide a brief report on topics of interest.

**2. 7:03 COMPREHENSIVE COMMUNITY PLAN, MEMBERSHIP  
INTRODUCTION**

Enclosed please find materials in the subject regard, for Board consideration

**3. 7:10 SITE PLAN #2/19/03-388, 56-60 POWDER MILL ROAD,  
AUTOPLEX REALTY, LLC (CONTINUATION FROM JANUARY 28,  
2008)**

Enclosed please find materials in the subject regard, for Board consideration.

**4. 7:25 HAZARDOUS MITIGATION PLAN COORDINATION**

Enclosed please find materials in the subject regard, for Board consideration

**5. 8:00 ROUTE 27/MAIN STREET AND HAYWARD ROAD TRAFFIC  
PRESENTATION**

Enclosed please find materials in the subject regard, for Board consideration.

**6. 8:45 COMMUTER PARKING DISCUSSION**

Enclosed please find materials in the subject regard, for Board consideration.

**III. SELECTMEN'S BUSINESS**

**7. ALG/BUDGET DISCUSSION**

No materials enclosed

ACTON HAZARD MITIGATION PLAN

**APPENDIX D:**

**DOCUMENTATION OF PLAN ADOPTION BY THE BOARD OF  
SELECTMEN**

# ACTON HAZARD MITIGATION PLAN

**[To be added after the plan is adoption by the town]**