Town of Milford, New Hampshire

Hazard Mitigation Plan Update 2015

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CHAPTER 1. PLANNING PROCESS

Section 1.1 ~ Overview of Planning Process

The Milford Hazard Mitigation Plan Update 2015 was prepared by the Nashua Regional Planning Commission (NRPC) for the Town of Milford, NH. NRPC staff worked closely with the Milford Hazard Mitigation Team to write this plan. The Milford Hazard Mitigation Team included:

- Jack Kelly, Fire Chief, Fire Department, Town of Milford, NH
- Jodie Levandowski, Town Planner, Community Development Department, Town of Milford, NH
- Rick Riendeau, Director, Department of Public Works, Town of Milford, NH
- Guy Scaife, Town Administrator, Town of Milford, NH
- Eric Schelberg, Ambulance Director, Town of Milford, NH
- Jason Smedick, Fire Captain, Fire Department, Town of Milford, NH
- Mike Viola, Police Chief, Police Department, Town of Milford, NH

NRPC staff met with the Milford Hazard Mitigation Team for a series of 4 meetings in order to prepare the Milford Hazard Mitigation Plan Update 2015. Agendas from these meetings appear in the Appendix to this Plan. In between meetings, NRPC worked directly with Milford Hazard Mitigation Team members to obtain additional information needed to write the Plan.

The primary differences between the 2015 Plan and the 2006 Plan are 1) preparedness actions are not included in the 2015 Plan, 2) man-made hazards are not included in the 2015 Plan, and 3) Fluvial Erosion is included as a hazard in the 2015 Plan.

Section 1.2 ~ Involvement of Neighboring Communities and Local/Regional Agencies

At the first Hazard Mitigation Team meeting, held on August 21, 2013, the group discussed who should be invited to participate on the planning team that was not currently represented. It was determined that the current Team provided adequate representation and no additional members were necessary. The Team also discussed who should be informed about the Plan, such as neighboring communities, local and regional agencies involved in hazard mitigation, agencies with authority to regulate development, and others. It was concluded that the following entities should be informed of the Plan update:

- Gary Daniels, Chair, Board of Selectmen, Town of Milford, NH
- Robert Suprenant, Superintendent, Milford School District, Milford, NH
- Fred Douglas, Chair, Board of Selectmen, Town of Lyndeborough, NH
- William Condra, Chair, Board of Selectmen, Town of Wilton, NH

- Charles Moser, Chair, Mason Board of Selectmen, Town of Mason, NH
- Darrell Philpot, Chair, Brookline Selectboard, Town of Brookline, NH
- Mark LeDoux, Chair, Hollis Board of Selectmen, Town of Hollis, NH
- Dwight Brew, Chair, Amherst Board of Selectmen, Town of Amherst, NH
- James Whipple, Chair, Mont Vernon Board of Selectmen, Town of Mont Vernon, NH
- Ian Dyar, Emergency Services Director, American Red Cross, Concord, NH
- Homeland Security and Emergency Management, Danielle Morse, Field Representative, Concord, NH

A copy of the letter that was sent to these entities appears in the Appendix to this Plan. No comments were received.

The update of this Plan included the incorporation of Fluvial Erosion Hazard data, which had not previously been available. As a result, additional efforts were made to involve neighboring communities and local and regional agencies involved in hazard mitigation. NRPC staff met with the Souhegan River Local Advisory Committee on January 17, 2013 to discuss the fluvial erosion hazard study and how the results would be incorporated into local hazard mitigation plan updates. NRPC staff held a second meeting with the Souhegan River Local Advisory Committee on November 20, 2014 to present the final results of the fluvial erosion hazard study and draft hazard mitigation plans. Agendas from these meetings appear in the Appendix to this Plan.

At the outset of this project, NRPC staff met with the Milford Board of Selectmen on July 8, 2013 to present on the hazard mitigation plan update process and discuss how the fluvial erosion hazard data would be incorporated into the plan update. NRPC staff made a second presentation to the Milford Board of Selectmen on October 13, 2014 to discuss the results of the fluvial erosion hazard study and the options available to community officials to use the fluvial erosion hazard zones as a public safety tool. Agendas and handouts from these meetings appear in the Appendix to this Plan. The Milford Planning Board was given opportunity to provide input on this Plan through the participation of Jodie Levandowski, Milford Town Planner, who served on the Hazard Mitigation Team and was a liaison to the Planning Board.

Section 1.3 ~ Public Participation

During the first Hazard Mitigation Team meeting, held on August 21, 2013, the Team brainstormed all the methods currently employed to notify the public of Town meetings and news. These methods include the Town's website (http://www.milford.nh.gov/), Twitter account (https://twitter.com/TownOfMilfordNH), Facebook accounts (https://www.facebook.com/MilfordNH) (https://www.facebook.com/MilfordNHFire), and local cable access television (http://75.150.118.158/cablecast/public/Main.aspx?ChannelID=2). The Team determined that these methods should also be used to encourage public participation in the Hazard Mitigation Plan update process. In addition, announcements were made at various televised Board of Selectmen meetings

regarding the update process. There was no public response to provide input to the Milford Hazard Mitigation Plan Update 2015 process.

NRPC staff also developed a webpage for the Milford Hazard Mitigation Plan Update 2015 (http://www.nashuarpc.org/energy-environmental-planning/hazard-mitigation-planning/), which allows members of the public to participate in the update process even if they cannot attend meetings. The webpage was updated throughout the planning process and includes the 2006 Milford Hazard Mitigation Plan, 2054 Hazard Mitigation Plan Outline, and Hazard Mitigation Plan Review Checklist. It also provides meeting times, locations, agendas, and homework assignments. The Town of Milford's website links to this webpage. The Nashua Regional Planning Commission will keep the website active and will add information about ongoing updates over the next 5 years. A screen shot of the website appears in the Appendix to this Plan.

In addition, NRPC staff organized and facilitated two watershed wide public workshops in the Souhegan River Watershed in order to provide information to residents about the fluvial erosion hazard study and the hazard mitigation plan updates. The Souhegan River Watershed includes the New Hampshire towns of Merrimack, Bedford, Goffstown, New Boston, Amherst, Mont Vernon, Lyndeborough, Milford, Brookline, Wilton, Greenfield, Temple, Mason, Greenville, and New Ipswich. These workshops were advertised through a variety of media, including announcements in NRPC's electronic newsletter, fliers in the communities, ads in the Milford Cabinet and Merrimack Journal, and emails to Conservation Commission members in the watershed. The first workshop was held on May 22, 2013 just prior to the start of the fluvial erosion field assessments. The second workshop was held on September 11, 2014 after the data collection was complete. Staff members from NH Dept. of Environmental Services and Field Geology Services were present at both workshops to answer questions from the public. Both meetings were well attended; 22 members of the public attended the May 22, 2013 workshop and 26 members of the public attended the September 11, 2014 workshop. Advertisements from both workshops can be found in the Appendix to this Plan.

Section 1.4 ~ Existing and Potential Authorities, Policies, Programs, and Resources

At the first Hazard Mitigation Team meeting, held on August 21, 2013, the Team discussed Milford's existing authorities, policies, programs, and resources related to hazard mitigation and its ability to expand and improve on these. The purpose of this discussion was to determine the ability of the Town to implement its hazard mitigation strategies and to identify potential opportunities to enhance specific policies, programs, or projects. The evaluation of Milford's existing authorities, policies, programs, and resources includes planning and regulatory capabilities, emergency management capabilities, floodplain management capabilities, administrative and technical capabilities, and fiscal capabilities. Each of these areas provides an opportunity to integrate hazard mitigation principles and practices into the local decision making process.

Planning and Regulatory Capabilities

Planning and regulatory capability is based on the implementation of plans, ordinances, and programs that demonstrate Milford's commitment to guiding and managing growth in a responsible manner. The following is a summary of the relevant local plans, ordinances, and programs already in place in the Town of Milford. Each one should be considered as an available mechanism for incorporating the recommendations of the Milford Hazard Mitigation Plan Update 2015.

- Floodplain Management District—the purpose of this Ordinance is to promote the public health, safety, and general welfare and to minimize public and private losses due to flood conditions in specific areas of the Town of Milford.
- Open Space and Conservation District—the Open Space and Conservation District is intended to encourage environmentally sound planning to conserve open space, retain and protect important natural and cultural features, and provide for efficient use of land and community services to advance the goals stated in the master plan.
- Stormwater Management and Erosion Control Ordinance –the purpose of this Regulation is to provide for the health, safety, and general welfare of the citizens of the Town of Milford through the regulation of discharges into the Town's Stormwater Drainage System, waterbodies, streams, and wetlands in a manner compliant with the requirements of State and federal law, including the provisions of the Federal Stormwater Management legislation for Municipal Separate Storm Sewer Systems (MS4's), as amended.
- Neighborhood Overlay District—Milford's Neighborhood Overlay District as envisioned is to insure that all relevant Master Plan goals are fully integrated into the types of new housing and development that are either currently or proposed to be permitted in each zoning district.
- 2013-2018 CIP—6 year evolving plan is updated annually. A formal CIP review committee reports to Planning Board. The Planning Board endorses the CIP and submits it to the Milford BOS.
- Zoning Ordinances—the regulations set down in this Ordinance are for the purpose of promoting the public health, safety, morals, general welfare and civil rights of the inhabitants of the Town of Milford.
- Town of Milford Development Regulations—Site Plan and Subdivision Regulations
- Building Code—International Building Code and International Residential Code
- Master Plan 2010 Update
- National Flood Insurance Program

Emergency Management Capabilities

Hazard mitigation is a key component of emergency management, along with preparedness, response, and recovery. Opportunities to reduce potential losses through mitigation practices are typically implemented before a hazard event occurs, such as enforcement of policies to regulate development that is vulnerable to hazards due to its location or design. Existing emergency management capabilities for the Town of Milford include:

Emergency Management Plans

- Milford Hazard Mitigation Plan 2006—this document provides a guide for the community to reduce the impact of natural hazards on its residents and the built environment. It addresses natural hazards in the Town, previous occurrences of these hazards, the probability of future hazard events, and the vulnerability of Milford's critical facilities to these hazards. The Hazard Mitigation Plan also identifies and prioritizes mitigation actions to reduce Milford's vulnerability to natural hazards.
- Milford Emergency Response Plan—this document outlines responsibilities and the means by which resources are deployed during and following an emergency or disaster.

Emergency Management Departments, Facilities, Personnel, and Volunteers

- Milford Fire Department and Milford Police Department—these departments provide policies, programs, and resources related to hazard mitigation and emergency preparedness.
- Milford Ambulance Service—new Ambulance Facility opened December 2013; stand-alone operation; 2 capable vehicles, 1 spare
- Souhegan Valley Mutual Aid—provides fire, police, ambulance, and highway assistance to municipalities in southwest Hillsborough County
- CERT Team—28 active members, web EOS trained; includes Amherst, Mont Vernon, Milford, and Lyndeborough; 3 HAM radio operators
- Emergency Operations Center—primary EOC located at Fire Department, secondary in Board of Selectmen room
- Fire Chief serves as Emergency Management Director
- Heron Pond School—primary shelter, generator, medical personnel available if needed
- High School and Town Hall—secondary shelters, no generators

Emergency Management Communications

- 911 dispatch—primary communications center through MACC-Base, Town of Amherst provides backup, Milford can also dispatch through Town of Hollis
- Nixle—connects public safety agencies to Milford residents via text, web, and email
- Twitter—emergency management announcements
- Town of Milford Facebook and Milford Fire Department Facebook—emergency management announcements
- Local access TV—emergency management announcements
- Milford Town website—emergency management announcements and education
- State radio communications
- Radio room in Town Hall bunker

Floodplain Management Capabilities

The Town of Milford participates in the National Flood Insurance Program (NFIP). This provides full insurance coverage based on risk as shown on detailed Flood Insurance Rate Maps (FIRMs). Milford joined the NFIP on May 1, 1980. As a participant in the NFIP, communities must agree to adopt a floodplain management ordinance and enforce the regulations found in the ordinance. Milford has

adopted the "Floodplain Management District," found in Section 6.03.0 of the Town of Milford, NH Zoning Ordinance. The Floodplain Management District is enacted to promote public health, safety, and general welfare and to minimize public and private losses due to flood conditions in specific areas of Milford by the establishment of standards designed to:

- Protect human life and public health
- Minimize expenditure of money for costly flood control projects
- Minimize the need for rescue and relief efforts associated with flooding
- Minimize prolonged business and employment interruptions
- Minimize damage to public facilities and utilities
- Help maintain a stable tax base
- Insure that purchasers of property are notified of special flood hazards
- Insure that persons who occupy areas of special flood hazard assume responsibility for their actions
- Insure continued eligibility of owners of property in the Town of Milford for participation in the NFIP pursuant to the rules and regulations published in the Federal Register (Vol. 41, #207, 10/26/76).

Additional information on the Floodplain Management District and Milford's participation in the NFIP can be found in Section 3.7 of this Plan.

Administrative and Technical Capabilities

Milford's ability to develop and implement mitigation projects, policies, and programs is closely related to the staff time and resources it allocates to that purpose. Administrative capability can be improved by coordinating across departments and integrating mitigation planning into existing Town procedures. The following departments, boards, and personnel are critical to Milford's hazard mitigation administrative and technical capabilities:

- Planning Department—GIS and mapping capabilities
- Fire Department—mapping capabilities, Fire Chief serves as EMD
- Police Department
- Department of Public Works
- Town Administrator
- Building Inspector
- Health Officer
- Board of Selectmen
- Planning Board
- Zoning Board of Adjustments
- CIP Committee

Fiscal Capabilities

In addition to administrative and technical capabilities, the ability of the Town of Milford to implement mitigation actions is closely associated with the amount of money available for these projects.

Mitigation actions identified in this Plan, including those in Table 12—Implementation and Administration, may utilize the following funding sources:

- State and Federal Grants, including, but not limited to:
    - Congestion Mitigation and Air Quality (CMAQ) Program—this program is administered by the Federal Highway Administration and was implemented to support surface transportation projects and related efforts that contribute to air quality improvements and provide congestion relief.
    - FEMA Hazard Mitigation Grant Program—the Hazard Mitigation Grant Program provides grants to implement long-term hazard mitigation measures after a major disaster declaration. The purpose of the Program is to reduce the loss of life and property due to natural disasters and to enable mitigation measures to be implemented during the immediate recovery from a disaster.
    - FEMA Pre-Disaster Mitigation Program—the Pre-Disaster Mitigation Program provides funds for hazard mitigation planning and the implementation of mitigation projects prior to a disaster.
    - Community Development Block Grant Program—the Community Development Block Grant (CDBG) program, administered through the US Department of Housing and Urban Development, provides communities with resources to address a wide range of unique community development needs, including Disaster Recovery Assistance. HUD provides flexible grants to help cities, counties, and States recover from Presidentially declared disasters, especially in low-income areas, subject to availability of supplemental appropriations.
- Capital Improvements Plan
    - The Milford Capital Improvements Plan (CIP) attempts to link, within a rational framework, the provision of needed facilities, products, or services with the spending necessary to attain such items. The CIP must address the goals and intent of the master plan with fiscal realities.
    - Town of Milford annually prepares a six-year capital improvements plan (CIP) to lay out a framework of municipal programs and projects that require significant capital outlays. The CIP encompasses major projects currently underway, and/or future projects to be undertaken in most cases with public funds.
    - Included in the CIP analysis are estimated costs for each project, probable operating costs, eligibility for impact fee assessment, and anticipated funding sources. A project is deemed eligible for inclusion in the CIP if the total cost is a minimum of $75,000 and is reasonably expected to have a useful life of at least five (5) years. Replacement vehicles, although often acquired in groups, are not eligible unless the single unit value is equal to or greater than $75,000.
    - The Capital Improvements Plan (CIP) contains the capital improvement projects reviewed by the Capital Improvements Plan Citizens' Advisory Committee based on its analysis of project requests submitted and orally presented by Town department heads,

the Milford Conservation Commission, the Water and Sewer Commission, and the Milford School District.

- Fund Balance—this money can be used in the event of a true emergency, however, it requires Dept. of Revenue Administration approval and must meet strict guidelines on how it can be spent.
- The Town of Milford does not have a specific emergency fund.

Summary and Analysis of Milford's Existing Authorities, Policies, Programs, and Resources

Measures of Effectiveness are defined as follows:

- Excellent—the existing program works as intended and is exceeding its goals
- Good—the existing program works as intended and meets its goals
- Average—the existing program works as intended but could be improved to meet higher standards
- Poor—the existing program does not work as intended, often falls short of its goals, and/or may present unintended consequences

Capability	Description	Area of Town Covered	Responsible Entities	Effectiveness	Changes or Improvements Needed
Planning and Regulatory	Floodplain Management District, Open Space and Conservation District, Stormwater Management & Erosion Control Ordinance, CIP, Zoning Ordinances, Development Regulations, Building Code, Master Plan, NFIP	Entire jurisdiction	Planning Board and Zoning Board	Good	Ordinances should be reviewed on a regular basis to ensure they are consistent with goals outlined in the Master Plan and Hazard Mitigation Plan.
Emergency Management	Plans; Departments, Facilities, Personnel, and Volunteers; Communications	Entire jurisdiction	Milford Fire Dept., Milford Police Dept., Milford Ambulance Service, Souhegan Valley Mutual Aid, CERT Team	Good	Utilize a variety of communications methods to ensure all residents are educated about emergency preparedness and hazard mitigation measures they can take.
Floodplain Management	Floodplain Management District, NFIP	Designated Flood Hazard	Milford Planning Board	Excellent	No changes or improvements needed.

		Areas in Milford			
Administrative and Technical	Planning Dept., Fire Dept., Police Dept., DPW, Town Administrator, Building Inspector, Health Officer, Board of Selectmen, Planning Board, Zoning Board, CIP Committee	Entire jurisdiction	Entities listed in Description	Good	Promote communication across all departments to ensure Hazard Mitigation Plan goals and actions are implemented.
Fiscal	Grant funding, Capital Improvements Program (CIP), Fund Balance	Entire jurisdiction	Board of Selectmen, Planning Board	Good	Hazard mitigation actions should be considered for inclusion in the CIP and departmental budgets. Milford's Hazard Mitigation Plan should be updated at least every 5 years in order to maintain eligibility for FEMA grants.

Section 1.5 ~ Review and Incorporation of Existing Documents

A number of existing documents were reviewed and incorporated into the Milford Hazard Mitigation Plan Update 2015. The Milford Zoning Ordinance was used to provide information on where and how the Town builds. This was particularly helpful when mapping critical facilities corridors (Section 3.4). The Milford Capital Improvements Plan was used to help document the Town's fiscal capabilities (Section 1.4). The Milford Master Plan provided insight on future development patterns (Section 2.1) and helped to inform the analysis and prioritization of mitigation actions (Section 4.3). The Milford Emergency Management Plan was also used to inform the analysis and prioritization of mitigation actions. The State of New Hampshire Multi-Hazard Mitigation Plan Update 2013 provided insight when developing the description of natural hazards (Section 3.1), description of previous hazards (Section 3.2), probability of future hazards (Section 3.3), vulnerability by hazard (Section 3.5), and goals to reduce vulnerabilities (Section 4.1). Finally, the City of Nashua's Comprehensive Emergency Management Plan was referenced to write the hazard descriptions used to determine Milford's vulnerability by hazard (Section 3.5).

Section 1.6 ~ Updating the Plan

The Town of Milford is required to update its Hazard Mitigation Plan at least every five years. In order to monitor, evaluate, and update the Mitigation Strategies identified in Table 12—Implementation and Administration, the Milford Hazard Mitigation Team will meet annually. The Milford Fire Chief is responsible for initiating this review and will consult with members of the Milford Hazard Mitigation Team and the community. During this meeting, the Team will identify mitigation actions that can be conducted in the current year as well as mitigation actions that will require budget requests for the following year. These mitigation actions will be monitored throughout the year by the Team.

Changes should be made to the Plan to accommodate projects that have failed or are not considered feasible after an evaluation and review for their consistency with the benefit cost analysis, STAPLEE analysis, timeframe, community's priorities, and funding resources. Mitigation strategies that were not ranked as priorities during the 2015 update should be reviewed as well during the monitoring, evaluation, and update of this Plan to determine feasibility of future implementation. New mitigation actions or plans proposed upon adoption of this Plan should follow the benefit cost and STAPLEE analysis methods utilized in this Plan to ensure consistency with the adopted Plan and to help the Hazard Mitigation Team evaluate overall potential for success.

In addition to this annual meeting, the Hazard Mitigation Team will meet after any hazard occurrence as part of the Town's debriefing exercise. The Hazard Mitigation Plan will be updated following this meeting to reflect changes in priorities and mitigation strategies that have resulted from the hazard event. It is especially important to incorporate updates within one year after a Presidential Disaster Declaration.

The Town of Milford will utilize its website, local cable channel, and existing social media outlets, including Facebook and Twitter to notify members of the public about the annual Hazard Mitigation Plan Update meeting and to involve them in the update process. Any public input that is received will be incorporated into the Plan update. In addition, following its annual meeting, the Hazard Mitigation Team will report the results of its update process to the Milford Board of Selectmen. The Board of Selectmen's meetings are open to the public and are also broadcast on Milford public access cable.

CHAPTER 2. CHANGES FROM PREVIOUS PLAN

Section 2.1 ~ Changes in Development

There have been no significant changes in development patterns in Milford since the 2006 Hazard Mitigation Plan. Likewise, there have been no significant changes in development that have occurred in hazard prone areas that have increased Milford's vulnerability to hazards. This is largely the result of a slowing economy and less new development coming into Milford.

Section 2.2 ~ Progress on Local Mitigation Efforts

The mitigation actions and implementation framework identified in the Milford Hazard Mitigation Plan Update 2015 have been revised to reflect progress in local mitigation efforts. Progress has been made on a number of local mitigation efforts, including the establishment of an inter-municipal mutual aid agreement to expand municipal water supply, the development of a database of special needs individuals and groups to improve emergency services, the establishment of a back-up emergency services communications facility, the enactment of Site Plan and Subdivision Regulations requiring tank enclosures, and the completion of a town center area traffic flow study to identify alternative travel routes for emergency access and evacuation routes.

In order to assess progress on local mitigation efforts, the Hazard Mitigation Team reviewed the actions originally presented in the Milford Hazard Mitigation Plan 2006 and determined if they had been completed, deleted, or deferred. Progress on each action and its current priority level were also evaluated to determine if it should continue to be included in the mitigation actions identified in this Plan update.

Table 1—Status of Previous Actions

2006 Mitigation Action	Description	Status	Explanation
Improve Emergency Operations Center	Properly equip Emergency Operations Center in Town Hall so to improve the provision of emergency response services.	Deleted	This action was deleted because it was no longer deemed necessary. Current EOC is adequate. This is a mitigation action (Emergency Services Protection). However, because it was deleted it will not be tracked in future natural hazard mitigation plans.
Update and Reformat Out-of-Date Emergency Operations Plan	Provide emergency response service town-wide.	Completed	Because this is a preparedness action and not a mitigation action, it will not be tracked in future natural hazard mitigation plans.

2006 Mitigation Action	Description	Status	Explanation
Regional Communication System (with radio interoperability on the same frequency)	Encourage neighboring towns to upgrade their radio systems to VHF interoperability. Utilize a mobile operations center. In the event of a severe emergency throughout town/region, this will assist with emergency evacuations and procedures.	Completed	Because this is a preparedness action and not a mitigation action, it will not be tracked in future natural hazard mitigation plans.
Generators at all Town facilities and schools	Acquire and install generators at all Town facilities and Schools. Acquire switching gear for portable generators. Enter into agreements with suppliers for backup generators. The addition of generators will protect town facilities and shelters and will enable emergency preparations to be conducted at additional sites.	Deferred	Generators will be included in new Town Hall renovations if possible. Generators will be included in the new ambulance facility. Generators are currently located in Fire House. Installing generators in Critical Infrastructure and Key Resources is a mitigation action (Emergency Services Protection). This action will continue to be tracked in future natural hazard mitigation plans.
Reserve Emergency Operations Center	Establish a reserve Emergency Operations Center at the high school in order to better provide emergency services Town-wide.	Deleted	This action was not deemed necessary. EOC has full capability in Fire Station and Town Hall. Police Dept. or Ambulance Facility could serve as reserve EOC if needed. This is a mitigation action (Emergency Services Protection). However, because it was deleted it will not be tracked in future natural hazard mitigation plans.
Expansion of Municipal Water Supply	Maintain and improve the existing system and expand municipal water supply. Protect backup service and participate in inter-municipal mutual aid. Protect health and improve fire protection Town-wide.	Completed	This is a mitigation action (Emergency Services Protection). However, because it was completed it will not be tracked in future natural hazard

2006 Mitigation Action	Description	Status	Explanation
			mitigation plans.
Emergency Notification and Warning System	Emergency notification or Reverse 911 system such as City Watch. Expand subscribers. This system would notify each residence or enterprise of an emergency via telephone, email, pager, or cell phone. Would provide a warning and instructions of how to address the situation.	Completed	Milford currently utilizes Nixle, social media, and Town website for emergency notification. Because this is a preparedness action and not a mitigation action, it will not be tracked in future natural hazard mitigation plans.
Identify Special Needs Population	Survey population and develop database of special needs individuals and groups to improve emergency services to special needs individuals.	Completed	This is a mitigation action (Public Education). Although it has been completed, the database will need to be updated to account for changes in the population. As such, it will continue to be tracked in the future natural hazard mitigation plans.
Back-up Emergency Services Communications Facility	Back-up Emergency Services Communications facility to increase the efficiency of the communications system. Dispatch emergency response services Town-wide.	Completed	Milford currently uses Amherst as a back and can also use Hollis if needed. Each department can dispatch themselves if needed. This is a mitigation action (Emergency Services Protection). However, because it has been completed it will not be tracked in future natural hazard mitigation plans.

2006 Mitigation Action	Description	Status	Explanation
Develop Plan to Address Hazardous Material Incidents Along the Railroad.	Work with Smart Team to develop a notification, evacuation, and contingency plan to address hazardous materials spills along the railroad. Provide training to emergency personnel on evacuation procedures in case of a spill.	Completed	Because this is a preparedness action and not a mitigation action, it will not be tracked in future natural hazard mitigation plans.
Enact Site Plan and Subdivision Regulations Requiring Tank Enclosures	Enact site plan and subdivision regulations requiring tank enclosures and camera surveillance/ SCADA systems. Enclose tanks and install cameras and insure regular inspections.	Completed	Tank enclosures are required in the groundwater protection district. It may also be done as a condition of plan approval, but is not formally in regulations. This is a mitigation action (Prevention). Because it has been completed it will not be tracked in future natural hazard mitigation plans.
Develop a Plan to Specifically Address Traffic Flow Concerns in the Town Center	Develop a plan to specifically address traffic flow concerns in the town center area in order to improve overall traffic flow along the roadway. Identify alternative travel routes to access emergencies and for evacuation purposes.	Deleted	This action is no longer deemed necessary to ensure emergency access. This is a mitigation action (Emergency Services Protection). However, because it has been deleted it will not be tracked in future natural hazard mitigation plans.
Develop a Community Preparedness Guide for Public Distribution	Develop a Community Preparedness Guide for public distribution, which includes an outline of where to go and who to contact in an emergency situation. Include measures for property protection and structural protection.	Completed	Because this is a preparedness action and not a mitigation action, it will not be tracked in future natural hazard mitigation plans.
Develop Measures to Prevent Water Supply Contamination	Develop measures to prevent water supply contamination and regular testing to provide health protection Town-wide.	Completed	This is a mitigation action (Prevention). However, because it has been deleted it will not be tracked in future natural hazard mitigation plans.

2006 Mitigation Action	Description	Status	Explanation
Compile a Lightning Evacuation Plan	Compile a lightning evacuation plan that addresses departmental responsibilities, evacuation procedure, and safety precautions. Lightning protection for elevated and/or exposed structures.	Deleted	This action is no longer deemed necessary. Because this is a preparedness action and not a mitigation action, it will not be tracked in future natural hazard mitigation plans.
Fire Station Location Study	Conduct a fire station location study to evaluate the delivery of emergency services. Identify locations that would enable shorter response time to properties.	Completed	A site on the west end of Town has been selected if necessary. Because this is a preparedness action and not a mitigation action, it will not be tracked in future natural hazard mitigation plans.
Portable Weather Station	Purchase a portable weather station and install anemometers to monitor wind speed and direction.	Completed	Because this is a preparedness action and not a mitigation action, it will not be tracked in future natural hazard mitigation plans.
Aircraft Emergency Response Exercise	Work with Manchester Airport and State of NH Department of Safety and schedule an emergency response exercise.	Completed	Manchester airport holds an exercise every 3 years that Milford Ambulance participates in. Milford also participates in annual tabletop drill. Because this is a preparedness action and not a mitigation action, it will not be tracked in future natural hazard mitigation plans.
Tele-Communications Breakdown Prevention Measures	Include preventive measures against a telecommunications breakdown in the Emergency Preparedness Guide. Move to back-up emergency service communication facility.	Deleted	Because this is a preparedness action and not a mitigation action, it will not be tracked in future natural hazard mitigation plans.

2006 Mitigation Action	Description	Status	Explanation
Vaccination Program	Train medical staff to perform vaccinations and prepare other emergency services to prepare site set up and security.	Completed	This is a mitigation action. However, because it does not mitigate against any of the natural hazards addressed in this natural hazards mitigation plan, it will not continue to be tracked.
Dig Safe Participation and Training with Local Gas Company.	Specialized training to recognize response to a natural gas pipeline incident.	Completed	Because this addresses manmade hazards and not natural hazards, it will not be tracked in future natural hazard mitigation plans.
Training and Inspection	State Fire Marshall involvement in the training and inspection of propane tanks to prevent ruptures.	Completed	Because this addresses manmade hazards and not natural hazards, it will not be tracked in future natural hazard mitigation plans.

Section 2.3 ~ Changes in Priorities

Many of the "mitigation" actions identified in Milford's 2006 Hazard Mitigation Plan were actually preparedness actions. While preparedness actions are important, the Milford Hazard Mitigation Plan Update 2015 will focus exclusively on mitigation actions. Therefore, only true mitigation actions from the 2006 Plan will be addressed here.

The STAPLEE scoring system in the 2006 Milford Hazard Mitigation Plan was different from the STAPLEE scoring system used in the 2015 update. This makes it difficult to analyze changes in mitigation action priority levels by comparing STAPLEE scores. As such, Table 2 also notes whether the action falls within the top 50% or bottom 50% of all mitigations actions identified in the plan.

The following mitigation actions dropped in priority level from the 2006 Plan to the 2015 Plan:

- Improve Emergency Operations Center. Properly equip Emergency Operations Center in Town Hall so to improve the provision of emergency response services.
- Establish a reserve Emergency Operations Center at the high school in order to better provide emergency services Town-wide.
- Maintain and improve the existing system and expand municipal water supply. Protect backup service and participate in inter-municipal mutual aid. Protect health and improve fire protection Town-wide.

- Back-up Emergency Services Communications facility to increase the efficiency of the communications system. Dispatch emergency response services Town-wide.
- Enact site plan and subdivision regulations requiring tank enclosures.
- Develop a plan to specifically address traffic flow concerns in the town center area in order to improve overall traffic flow along the roadway. Identify alternative travel routes to access emergencies and for evacuation purposes.
- Develop measures to prevent water supply contamination.
- Identify special needs populations.

The following mitigation action maintained its priority level from the 2006 Plan to the 2015 Plan:

- Install generators at all Town facilities.

No mitigation action rose in priority level from the 2006 Plan to the 2015 Plan.

Table 2—Changes in Mitigation Priorities

2006 Mitigation Action	Current Status	Priority Level in 2006 Plan	Priority Level in 2015 Plan
Improve Emergency Operations Center. Properly equip Emergency Operations Center in Town Hall so to improve the provision of emergency response services.	Deleted	STAPLEE Score = 20 Rank = 2 out of 24 Top 50% of all preparedness and mitigation actions.	This action has been deleted and is no longer considered a priority. A similar action was not identified in the 2015 Plan update.
Establish a reserve Emergency Operations Center at the high school in order to better provide emergency services Town-wide.	Deleted	STAPLEE Score = 16 Rank = 17 out of 24 Bottom 50% of all preparedness and mitigation actions.	This action has been deleted and is no longer considered a priority. A similar action was not identified in the 2015 Plan update.
Maintain and improve the existing system and expand municipal water supply. Protect backup service and participate in inter-municipal mutual aid. Protect health and improve fire protection Town-wide.	Completed	STAPLEE Score = 18 Rank = 11 out of 24 Top 50% of all preparedness and mitigation actions.	This action has been completed and is no longer considered a priority. A similar action was not identified in the 2015 Plan update.

2006 Mitigation Action	Current Status	Priority Level in 2006 Plan	Priority Level in 2015 Plan
Back-up Emergency Services Communications facility to increase the efficiency of the communications system. Dispatch emergency response services Town-wide.	Completed	STAPLEE Score = 20 Rank = 3 out of 24 Top 50% of all preparedness and mitigation actions.	This action has been completed and is no longer considered a priority. A similar action was not identified in the 2015 Plan update.
Enact site plan and subdivision regulations requiring tank enclosures.	Completed	STAPLEE Score = 13 Rank = 23 out of 24 Bottom 50% of all preparedness and mitigation actions.	This action has been completed and is no longer considered a priority. A similar action was not identified in the 2015 Plan update.
Develop a plan to specifically address traffic flow concerns in the town center area in order to improve overall traffic flow along the roadway. Identify alternative travel routes to access emergencies and for evacuation purposes.	Deleted	STAPLEE Score = 20 Rank = 4 out of 24 Top 50% of all preparedness and mitigation actions.	This action has been completed and is no longer considered a priority. A similar action was not identified in the 2015 Plan update.
Develop Measures to Prevent Water Supply Contamination	Completed	STAPLEE Score = 17 Rank = 15 out of 24 Bottom 50% of all preparedness and mitigation actions.	This action has been completed and is no longer considered a priority. A similar action was not identified in the 2015 Plan update.
Identify Special Needs Population. Survey population and develop database of special needs individuals and groups to	Completed	STAPLEE Score = 18 Rank = 12 out of 24 Top 50% of all	STAPLEE Score = 7 Rank = 12 out of 13 Bottom 50% of all

2006 Mitigation Action	Current Status	Priority Level in 2006 Plan	Priority Level in 2015 Plan
improve emergency services to special needs individuals.		preparedness and mitigation actions.	preparedness and mitigation actions.
Install generators at all critical Town facilities and schools	Deferred	STAPLEE Score = 16 Rank = 16 out of 24 Bottom 50% of all preparedness and mitigation actions.	STAPLEE Score = 8 Rank = 10 out of 13 Bottom 50% of all preparedness and mitigation actions.

CHAPTER 3. HAZARD IDENTIFICATION AND RISK ASSESSMENT

Section 3.1 ~ Description of Natural Hazards

The Town of Milford is susceptible to a variety of natural hazards, which are outlined in Table 3. For each hazard type, the hazard location within the Town, extent, and impact are also noted. Extent refers to how bad the hazard can be; it is not the same as location. Examples of extent include potential wind speed, depth of flooding, and existing scientific scales (ex. Fujita Tornado Damage Scale). Impact refers to damages or consequences resulting from the hazard.

Table 3—Natural Hazards in Jurisdiction

Hazard Type	Hazard Location within Jurisdiction	Hazard Extent	Impact
Drought	Entire jurisdiction.	NH DES Drought Management Plan: • Level 1—Alert, 4 month cumulative precipitation less than 65% of normal for the period • Level 2—Warning, 6 month cumulative precipitation less than 65% of normal for the period • Level 3—Emergency, 12 month cumulative precipitation less than 75% of normal for the period	Loss of crops. Inadequate quantity of drinking water. Loss of water for fire protection. Increased risk of fire. Loss of natural resources.

Hazard Type	Hazard Location within Jurisdiction	Hazard Extent	Impact
		• Level 4—Disaster, not quantified	
Earthquake	Entire jurisdiction.	Richter Scale: • <3.4—detected only by seismometers • >8—total damage, surface waves seen, objects thrown in air For full definitions of Richter Scale, see Section 3.5 Vulnerability by Hazard	Structural damage or collapse of buildings. Damage or loss of infrastructure, including roads, bridges, railroads, power and phone lines, municipal communications, 911 communications, radio system. Loss of water for fire protection. Increased risk of fire (gas break). Risk to life, medical surge.
Extreme Temperatures	Entire jurisdiction.	Extreme heat—period of 3 consecutive days when air temperature reaches 90°F or higher on each day. Extreme cold—extended exposure to typical NH winter weather without heat or shelter; period of 3 consecutive days when air temperature is 0°F or lower on each day.	Overburdened power systems may experience failures due to extreme heat. Shortages of heating fuel in extreme cold due to high demand. Medical surge. Loss of municipal water supply for drinking water and fire protection due to freezing temperatures.
Flooding	Floodplains cover approximately 9.33% of Milford—7.91% of Milford is located in 1% annual floodplain and 1.42% of Milford is located in the 0.2%	FEMA flood probabilities: • 1% possibility per year • 0.2% possibility per year	Water damage to structures and their contents. Damage or loss of infrastructure, including roads, bridges,

Hazard Type	Hazard Location within Jurisdiction	Hazard Extent	Impact
	annual floodplain. Largest floodplain area in Milford is around the Souhegan River.	State of NH Dam Hazard Potential Classification system (for flooding resulting from dam/levee failure): • Class S—significant hazard • Class H—high hazard • Class L—low hazard • Class NM—non-menace For full definitions of Dam Hazard Classes, see Section 3.5 Vulnerability by Hazard	railroads, power and phone lines, municipal communications, 911 communications, radio system. Environmental hazards resulting from damage. Isolation of neighborhoods resulting from flooding.
Fluvial Erosion	The largest Fluvial Erosion Hazard (FEH) zones in Milford can be found along the Souhegan River. FEH zones can also be found along Tucker Brook and Hartshorn Brook.	Stream Sensitivity Rating: • Low • Moderate • High • Very High • Extreme For full definitions of Stream Sensitivity Ratings, see Section 3.5 Vulnerability by Hazard	Physical loss of land. Damage or loss of infrastructure, including roads, bridges, railroads, power and phone lines, municipal communications, 911 communications, radio system. Water damage to structures and their contents. Environmental hazards resulting from damage. Isolation of neighborhoods resulting from damaged transportation infrastructure.
Hurricane/Severe Wind	Entire jurisdiction.	Saffir-Simpson Hurricane Wind Scale: • Category 1—sustained winds 74-95 mph	Wind damage to structures and trees. Water damage to structures and their

Hazard Type	Hazard Location within Jurisdiction	Hazard Extent	Impact
		• Category 2—sustained winds 96-110 mph • Category 3—sustained winds 111-129 mph • Category 4—sustained winds 130-156 mph • Category 5—sustained winds 157 mph or higher	contents. Damage or loss of infrastructure, including roads, bridges, railroads, power and phone lines, municipal communications, 911 communications, radio system. Environmental hazards resulting from damage. Isolation of neighborhoods resulting from flooding. Water pressure, quality, and capacity issues impacting fire protection. Loss of natural resources.
Severe Thunderstorm/Lightning	Entire jurisdiction. Areas particularly prone to lightning strikes in Milford include Milford Town Hall (1 Union Square), Cirtronics (528 South Street), and Light of the World Church (273 Elm Street).	Heavy rainfall, high winds, lightning, tornados, downbursts, fires.	Smoke and fire damage to structures and property. Disruption to power lines, municipal communications, and 911 communications. Damage to critical electronic equipment. Injury or death to people involved in outdoor activity.
Severe Winter Weather	Entire jurisdiction.	Depth of snow in a given time frame (ex. 2 or more inches per hour over a 12 hour period). Blizzard—violent	Disruption to road network. Damage to trees municipal communications, and

Hazard Type	Hazard Location within Jurisdiction	Hazard Extent	Impact
		snowstorm with minimum winds of 35 mph and visibility less than ¼ mile for 3 hours. Ground snow load factor. Ice Storm—Sperry-Piltz Ice Accumulation Index: • 0—little impact • 5—catastrophic damage to exposed utility systems For full definitions of Sperry-Plitz Ice Accumulation Index, see Section 3.5 Vulnerability by Hazard	911 communications. Structural damage to roofs/collapse. Increase in CO, other hazards.
Tornado/Downburst	Entire jurisdiction.	Fujita Tornado Damage Scale: • F0—winds <73 mph • F1—winds 73-112 mph • F2—winds 113-157 mph • F3—winds 158-206 mph • F4—winds 207-260 mph • F5—winds 261-318 mph	Wind damage to structures and trees. Damage or loss of infrastructure, including roads, bridges, railroads, power and phone lines, municipal communications, 911 communications, radio system. Environmental hazards resulting from damage. Medical surge. Loss of natural resources.
Wildfire	Forested areas in jurisdiction, including Miles Slip Road and McGettigan Road.	NWCG Fire Size Classification: • A—greater than 0 but less than or equal to 0.25 acres • B—0.26 to 9.9 acres	Smoke and fire damage to structures in wild land/urban interface. Damage to habitat.

Hazard Type	Hazard Location within Jurisdiction	Hazard Extent	Impact
		• C—10.0 to 99.9 acres • D—100-299 acres • E—300 to 999 acres • F—1,000 to 4,999 acres • G—5,000 to 9,999 acres • H—10,000 to 49,999 acres • I—50,000 to 99,999 acres • J—100,000 to 499,999 acres • K—500,000 to 999,999 acres • L—1,000,000+ acres	Impacts to air quality. Impact to roadways. Loss of natural resources.

Section 3.2 ~ Description of Previous Hazards

The first step in determining the probability of future hazard events in the Town of Milford is to examine the location, extent, and impact of previous hazards. If a hazard event has not occurred within Milford but has occurred in the region it is also noted.

Table 4—Previous Occurrences of Hazards in Jurisdiction

Hazard Type	Date	Hazard Location within Jurisdiction	Hazard Extent	Impact
Drought	1960-1969	Entire jurisdiction	Long term drought—9 years of less than normal precipitation	Farms had minimal grass for grazing animals and poor crops. Wells went dry for 2 consecutive years in mid-1960s.
Drought	1999	Entire jurisdiction	Level 2—Warning. Drought warning issued on June 29, 1999.	Damage to crops. Low water levels in dug wells.
Drought	March 2002	Entire jurisdiction	Level 3—Emergency. First time Level 3 Drought Impact Level had been declared.	Damage to crops. Low water levels in dug wells.
Earthquake	There have been no	Earthquakes noted		

Hazard Type	Date	Hazard Location within Jurisdiction	Hazard Extent	Impact
	earthquakes centered in Milford to date.	below were centered in NH and had a magnitude of 3.0 or greater.		
Earthquake	March 18, 1926	Manchester, NH	No historic data on extent	Intensity V effects observed in Amherst, Lyndeborough, Manchester, Mason, and Wilton.
Earthquake	December 20, 1940	Lake Ossipee, NH	Magnitude 5.5 on Richter Scale	No damage in Milford
Earthquake	December 24, 1940	Lake Ossipee, NH	Magnitude 5.5 on Richter Scale	No damage in Milford
Earthquake	December 4, 1963	Laconia, NH (43.6 latitude, -71.5 longitude)	Magnitude 3.7 on Richter Scale	No damage in Milford
Earthquake	June 28, 1981	Sanbornton, NH (43.56 latitude, -71.56 longitude)	Magnitude 3.0 on Richter Scale	No damage in Milford
Earthquake	January 19, 1982	Sanbornton, NH (43.5 latitude, -71.6 longitude)	Magnitude 4.7 on Richter Scale	No damage in Milford
Earthquake	October 25, 1986	Northfield, NH (43.399 latitude, -71.59 longitude)	Magnitude 3.9 on Richter Scale	No damage in Milford
Earthquake	October 20, 1988	Milan, NH (44.539 latitude, -71.158 longitude)	Magnitude 3.9 on Richter Scale	No damage in Milford
Earthquake	November 22, 1988	Milan, NH (44.557 latitude, -71.183 longitude)	Magnitude 3.2 on Richter Scale	No damage in Milford
Earthquake	April 6, 1989	Berlin, NH (44.511 latitude, -71.144 longitude)	Magnitude 3.5 on Richter Scale	No damage in Milford
Earthquake	October 6, 1992	Canterbury, NH (43.324 latitude, -71.578 longitude)	Magnitude 3.4 on Richter Scale	No damage in Milford
Earthquake	June 16, 1995	Lyman, NH (44.286 latitude, -71.915 longitude)	Magnitude 3.8 on Richter Scale	No damage in Milford
Earthquake	August 21, 1996	Bartlett, NH (44.184 latitude, -71.352 longitude)	Magnitude 3.8 on Richter Scale	No damage in Milford
Earthquake	January 27, 2000	Raymond, NH (43.00 latitude, -71.18 longitude)	Magnitude 3.0 on Richter Scale	No damage in Milford
Earthquake	September 26, 2010	Boscawen, NH (43.2915 latitude, -71.6568 longitude)	Magnitude 3.4 on Richter Scale	No damage in Milford

Hazard Type	Date	Hazard Location within Jurisdiction	Hazard Extent	Impact
Earthquake		Earthquakes noted below were centered outside of NH but were felt by NH municipalities.		
Earthquake	November 18, 1929	Grand Banks, Newfoundland	Magnitude 7.2 on Richter Scale	No damage in Milford
Earthquake	November 1, 1935	Timiskaming, Canada	Magnitude 6.25 on Richter Scale	No damage in Milford
Earthquake	June 15, 1973	Near Canadian/NH border	Magnitude 4.8 on Richter Scale	No damage in Milford
Earthquake	June 23, 2010	Buckingham, Quebec, Canada	Magnitude 5.0 on Richter Scale	No damage in Milford
Earthquake	August 23, 2011	Washington, DC	Magnitude 5.8 on Richter Scale	No damage in Milford
Earthquake	October 16, 2012	Hollis Center, ME	Magnitude 4.0 on Richter Scale	No damage in Milford
Extreme Temperature (Cold)	January 16-20, 2000	Entire jurisdiction	5 consecutive days of minimum temperatures at or below 0°F: • 1/16/00: -3°F • 1/17/00: -2°F • 1/18/00: -5°F • 1/19/00: -6°F • 1/20/00: -4°F	No known impact in Milford
Extreme Temperature (Cold)	January 28-30, 2000	Entire jurisdiction	3 consecutive days of minimum temperatures at or below 0°F: • 1/28/00: -6°F • 1/29/00: -2°F • 1/30/00: -4°F	No known impact in Milford
Extreme Temperature (Cold)	January 18-20, 2003	Entire jurisdiction	3 consecutive days of minimum temperatures at or below 0°F: • 1/18/00: -9°F • 1/19/00: -11°F • 1/20/00: -11°F	No known impact in Milford
Extreme Temperature (Cold)	January 28-31, 2003	Entire jurisdiction	4 consecutive days of minimum temperatures at or below 0°F: • 1/28/03: -9°F • 1/29/03: -5°F • 1/30/03: -0°F • 1/31/03: -0°F	No known impact in Milford

Hazard Type	Date	Hazard Location within Jurisdiction	Hazard Extent	Impact
Extreme Temperature (Cold)	February 13-17, 2003	Entire jurisdiction	5 consecutive days of minimum temperatures at or below 0°F: • 2/13/03: -3°F • 2/14/03: -11°F • 2/15/03: -10°F • 2/16/03: -7°F • 2/17/03: -2°F	No known impact in Milford
Extreme Temperature (Cold)	February 26-28, 2003	Entire jurisdiction	3 consecutive days of minimum temperatures at or below 0°F: • 2/26/03: -4°F • 2/27/03: -6°F • 2/28/03: -1°F	No known impact in Milford
Extreme Temperature (Cold)	January 9-12, 2004	Entire jurisdiction	4 consecutive days of minimum temperatures at or below 0°F: • 1/9/04: -7°F • 1/10/04: -8°F • 1/11/04: -8°F • 1/12/04: -7°F	No known impact in Milford
Extreme Temperature (Cold)	January 14-17, 2004	Entire jurisdiction	4 consecutive days of minimum temperatures at or below 0°F: • 1/14/04: -10°F • 1/15/04: -10°F • 1/16/04: -12°F • 1/17/04: -9°F	Wind chills of -30°F, 6 fatalities in NH
Extreme Temperature (Cold)	January 24-27, 2004	Entire jurisdiction	4 consecutive days of minimum temperatures at or below 0°F: • 1/24/04: -4°F • 1/25/04: -6°F • 1/26/04: -6°F • 1/27/04: -0°F	No known impact in Milford
Extreme Temperature (Cold)	January 18-25, 2005	Entire jurisdiction	8 consecutive days of minimum temperatures at or below 0°F: • 1/18/05: 0°F • 1/19/05: -8°F • 1/20/05: -3°F • 1/21/05: -5°F • 1/22/05: -12°F	No known impact in Milford

Hazard Type	Date	Hazard Location within Jurisdiction	Hazard Extent	Impact
			• 1/23/05: -9°F • 1/24/05: 0°F • 1/25/05: -1°F	
Extreme Temperature (Cold)	January 28-30, 2005	Entire jurisdiction	3 consecutive days of minimum temperatures at or below 0°F: • 2/28/05: -1°F • 2/29/05: -7°F • 2/30/05: -5°F	No known impact in Milford
Extreme Temperature (Cold)	January 16-18, 2009	Entire jurisdiction	3 consecutive days of minimum temperatures at or below 0°F: • 1/16/09: -16°F • 1/17/09: -16°F • 1/18/09: -9°F	No known impact in Milford
Extreme Temperature (Cold)	January 25-27, 2009	Entire jurisdiction	3 consecutive days of minimum temperatures at or below 0°F: • 1/25/09: -7°F • 1/26/09: -7°F • 1/27/09: -5°F	No known impact in Milford
Extreme Temperature (Cold)	January 15-18, 2011	Entire jurisdiction	4 consecutive days of minimum temperatures at or below 0°F: • 1/15/11: -6°F • 1/16/11: -5°F • 1/17/11: 0°F • 1/18/11: -2°F	No known impact in Milford
Extreme Temperature (Cold)	January 23-27, 2011	Entire jurisdiction	5 consecutive days of minimum temperatures at or below 0°F: • 1/23/05: -5°F • 1/24/05: -10°F • 1/25/05: -9°F • 1/26/05: -3°F • 1/27/05: -2°F	No known impact in Milford
Extreme Temperature (Cold)	January 15-17, 2012	Entire jurisdiction	3 consecutive days of minimum temperatures at or below 0°F: • 1/15/12: -2°F • 1/16/12: -2°F • 1/17/12: 0°F	No known impact in Milford
Extreme	May 3-5, 2001	Entire jurisdiction	3 consecutive days	No known impact in

Hazard Type	Date	Hazard Location within Jurisdiction	Hazard Extent	Impact
Temperature (Heat)			of temperatures above 90°F: • 5/3/01—93°F • 5/4/01—92°F • 5/5/01—92°F	Milford
Extreme Temperature (Heat)	June 15-17, 2001	Entire jurisdiction	3 consecutive days of temperatures above 90°F: • 6/15/01—92°F • 6/16/01—95°F • 6/17/01—91°F	No known impact in Milford
Extreme Temperature (Heat)	July 22-26, 2001	Entire jurisdiction	5 consecutive days of temperatures above 90°F: • 7/22/01—90°F • 7/23/01—90°F • 7/24/01—92°F • 7/25/01—95°F • 7/26/01—93°F	No known impact in Milford
Extreme Temperature (Heat)	August 7-10, 2001	Entire jurisdiction	4 consecutive days of temperatures above 90°F: • 8/7/01—94°F • 8/8/01—97°F • 8/9/01—96°F • 8/10/01—100°F	No known impact in Milford
Extreme Temperature (Heat)	July 2-5, 2002	Entire jurisdiction	4 consecutive days of temperatures above 90°F: • 7/2/02—90°F • 7/3/02—95°F • 7/4/02—98°F • 7/5/02—97°F	No known impact in Milford
Extreme Temperature (Heat)	July 30-August 2, 2002	Entire jurisdiction	4 consecutive days of temperatures above 90°F: • 7/30/02—90°F • 7/31/02—91°F • 8/1/02—91°F • 8/2/02—93°F	No known impact in Milford
Extreme Temperature (Heat)	August 13-20, 2002	Entire jurisdiction	8 consecutive days of temperatures above 90°F: • 8/13/02—94°F • 8/14/02—96°F • 8/15/02—98°F • 8/16/02—95°F • 8/17/02—94°F • 8/18/02—92°F	No known impact in Milford

Hazard Type	Date	Hazard Location within Jurisdiction	Hazard Extent	Impact
			• 8/19/02—94°F • 8/20/02—92°F	
Extreme Temperature (Heat)	June 25-28, 2003	Entire jurisdiction	4 consecutive days of temperatures above 90°F: • 6/25/03—90°F • 6/26/03—93°F • 6/27/03—92°F • 6/28/03—92°F	No known impact in Milford
Extreme Temperature (Heat)	July 5-7, 2003	Entire jurisdiction	3 consecutive days of temperatures above 90°F: • 7/5/03—91°F • 7/6/03—90°F • 7/7/03—91°F	No known impact in Milford
Extreme Temperature (Heat)	July 17-19, 2006	Entire jurisdiction	3 consecutive days of temperatures above 90°F: • 7/17/06—90°F • 7/18/06—93°F • 7/19/06—94°F	No known impact in Milford
Extreme Temperature (Heat)	August 2-4, 2006	Entire jurisdiction	3 consecutive days of temperatures above 90°F: • 8/2/06—96°F • 8/3/06—97°F • 8/4/06—92°F	No known impact in Milford
Extreme Temperature (Heat)	August 16-20, 2006	Entire jurisdiction	5 consecutive days of temperatures above 90°F: • 8/16/09—90°F • 8/17/09—90°F • 8/19/09—91°F • 8/19/09—93°F • 8/20/09—90°F	No known impact in Milford
Extreme Temperature (Heat)	July 4-10, 2010	Entire jurisdiction	7 consecutive days of temperatures above 90°F: • 7/4/10—90°F • 7/5/10—90°F • 7/6/10—97°F • 7/7/10—98°F • 7/8/10—97°F • 7/9/10—92°F • 7/10/10—92°F	No known impact in Milford
Extreme Temperature (Heat)	July 17-20, 2010	Entire jurisdiction	4 consecutive days of temperatures above 90°F: • 7/17/10—93°F	No known impact in Milford

Hazard Type	Date	Hazard Location within Jurisdiction	Hazard Extent	Impact
			• 7/18/10—93°F • 7/19/10—93°F • 7/20/10—90°F	
Extreme Temperature (Heat)	August 30-Sept. 3, 2010	Entire jurisdiction	5 consecutive days of temperatures above 90°F: • 8/30/10—92°F • 8/31/10—91°F • 9/1/10—94°F • 9/2/10—95°F • 9/3/10—96°F	No known impact in Milford
Extreme Temperature (Heat)	July 21-24, 2011	Entire jurisdiction	4 consecutive days of temperatures above 90°F: • 7/21/11—92°F • 7/22/11—96°F • 7/23/11—101°F • 7/24/11—96°F	No known impact in Milford
Extreme Temperature (Heat)	June 21-23, 2012	Entire jurisdiction	3 consecutive days of temperatures above 90°F: • 6/21/12—96°F • 6/22/12—94°F • 6/23/12—93°F	No known impact in Milford
Extreme Temperature (Heat)	July 13-16, 2012	Entire jurisdiction	4 consecutive days of temperatures above 90°F: • 7/13/12—92°F • 7/14/12—92°F • 7/15/12—93°F • 7/16/12—91°F	No known impact in Milford
Extreme Temperature (Heat)	August 3-6, 2012	Entire jurisdiction	4 consecutive days of temperatures above 90°F: • 8/3/12—91°F • 8/4/12—94°F • 8/5/12—95°F • 8/6/12—93°F	No known impact in Milford
Extreme Temperature (Heat)	June 1-3, 2013	Entire jurisdiction	3 consecutive days of temperatures above 90°F: • 6/1/13—93°F • 6/2/13—92°F • 6/3/13—91°F	No known impact in Milford
Extreme Temperature (Heat)	July 16-21, 2013	Entire jurisdiction	6 consecutive days of temperatures above 90°F: • 7/16/13—90°F • 7/17/13—91°F	No known impact in Milford

Hazard Type	Date	Hazard Location within Jurisdiction	Hazard Extent	Impact
			• 7/18/13—93°F • 7/19/13—93°F • 7/20/13—96°F • 7/21/13—91°F	
Flooding	1927	Hillsborough County	No historic data on extent	Damage to road network.
Flooding	March 11-21, 1936	Hillsborough County	25-50 year recurrence interval	$133,000,000 in property damage and 77,000 homeless throughout New England. Primary impact to structures, infrastructure, and road network. Flooding caused by heavy snowfall totals, heavy rains, and warm weather.
Flooding	July 11, 1973	Hillsborough County	No data on extent available	FEMA Disaster Declaration #399
Flooding	July 29-August 10, 1986	Hillsborough County	No data on extent available	FEMA Disaster Declaration #771
Flooding	March 30-April 11, 1987	Hillsborough County	25-50+ year recurrence interval	$4,888,889 in damage in NH. FEMA Disaster Declaration #789. Primary impact to agricultural fields.
Flooding	August 7-11, 1990	Hillsborough County	No data on extent available	$2,297,777 in damage in NH. FEMA Disaster Declaration #876. Primary impact to infrastructure.
Flooding	October 20-23, 1996	Hillsborough County	No data on extent available	$2,341,273 in damage in NH. FEMA Disaster Declaration #1144. Primary impact to structures and infrastructure.
Flooding	July 2, 1998	Hillsborough County	No data on extent available	$3,400,000 in damage in NH, 6 counties impacted including Hillsborough. FEMA Disaster Declaration #1231.

Hazard Type	Date	Hazard Location within Jurisdiction	Hazard Extent	Impact
				Primary impact to structures and infrastructure.
Flooding	October 26, 2005	Hillsborough County	50-100 year recurrence interval	5 counties impacted in NH, including Hillsborough. FEMA Disaster Declaration #1610. Primary impact to structures and infrastructure.
Flooding	May 12-23, 2006	Hillsborough County	As much as 14 inches of rainfall in region. 100-500 year recurrence interval.	7 counties impacted in NH, including Hillsborough. FEMA Disaster Declaration #1643. Primary impact to infrastructure.
Flooding	April 15, 2007	Hillsborough County Landslide on NH Route 101 near Milford/Wilton town line.	100-500 year recurrence interval	$27,000,000 in damages in NH; 2,005 home owners and renters applied for assistance in NH. FEMA Disaster Declaration #1695. Primary impact to structures and infrastructure. Significant flooding to Granite Town Plaza, Brookstone Manor, Milford Wastewater Treatment Plant, Milford Boys & Girls Club, Emerson Park & Keyes Field, North River Road condos, and Great Brook condos.
Flooding	September 6-7, 2008	Hillsborough County	50-100 year recurrence interval	$6.90 per capita in damages in Hillsborough County. FEMA Disaster Declaration #1799 Primary impact to structures and infrastructure.

Hazard Type	Date	Hazard Location within Jurisdiction	Hazard Extent	Impact
Flooding	March 14, 2010	Hillsborough County	50-100 year recurrence interval	$1,880,685 in FEMA public assistance in NH; $1.80 per capita in Hillsborough County. Flooding near Johnson Corner due to undersized culvert. FEMA Disaster Declaration #1913 Primary impact to roads and bridges.
Fluvial Erosion	Late 1980s, early 1990s	Tucker Brook—Milford, NH	No data on extent.	Bridge over Tucker Brook was destroyed.
Fluvial Erosion	May 13-14, 2006	Suncook River—Epsom, NH	Avulsion	River channel changed course following heavy rain event, shortening path by ½ mile. Excessive sedimentation downstream.
Fluvial Erosion	August 28, 2011	East Branch Pemigewasset River—Lincoln, NH	Stream bank erosion	Damage to bridge abutments at Loon Mountain Ski Resort during Tropical Storm Irene.
Fluvial Erosion	August 28, 2011	Peabody River—Gorham, NH	Berm breach and stream bank erosion	High flows eroded through a berm and eroded the banks in front of numerous properties during Tropical Storm Irene. Significant damage to White Birch Lane.
Fluvial Erosion	August 28, 2011	Saco River—Harts Location, Bartlett, Conway, NH	Stream bank erosion	Stream bank erosion adjacent to a campground in Harts Location. Erosion of a protective berm in Bartlett.
Fluvial Erosion	July 2-3, 2013	Merriam Brook—Surry, NH	Aggradation	Existing channel path filled in with sediment following heavy rain event, forcing flow to begin

Hazard Type	Date	Hazard Location within Jurisdiction	Hazard Extent	Impact
				creating new path in backyards of two properties.
Hurricane	Great Hurricane of 1938	Hillsborough County	No data on extent available	$12,337,643 total damages (not adjusted for inflation), 13 deaths and 494 injuries in NH. Damage to road network and structures caused by flooding.
Hurricane	August 31, 1954 (Carol)	Hillsborough County	Saffir-Simpson Scale Category 3.	Extensive tree and crop damage.
Hurricane	September 12, 1960 (Donna)	Hillsborough County	Saffir-Simpson Scale Category 3	Water damage to structures due to flooding.
Hurricane	September 27, 1985 (Gloria)	Hillsborough County	Saffir-Simpson Scale Category 2	Damage to trees and power lines from high winds.
Hurricane	August 19, 1991 (Bob)	Hillsborough County	Saffir-Simpson Scale Category 1	FEMA Disaster Declaration #917. Damage to structures, trees, and power lines from high winds.
Hurricane	September 16-18, 1999 (Floyd)	Hillsborough County	Tropical Storm (winds 39-73 mph)	FEMA Disaster Declaration #1305. Primary impact to trees, infrastructure, and road network.
Hurricane	August 28, 2011 (Irene)	Hillsborough County	Tropical Storm (winds 39-73 mph).	Damage to trees and power lines from high winds. Flash floods.
Hurricane	October 26, 2012 (Sandy)	Hillsborough County	Tropical Storm (winds 39-73 mph).	Minimal damage.
Severe Thunderstorm	There has been no significant damage from severe thunderstorms in Milford to date.			
Severe Winter Weather	March 11-14, 1888	Entire jurisdiction	30-50 inches of snow	No historic data on impact
Severe Winter Weather	1922	Entire jurisdiction	No historic data on extent	Extreme snow drifts paralyzed road network.

Hazard Type	Date	Hazard Location within Jurisdiction	Hazard Extent	Impact
Severe Winter Weather	February 14-15, 1940	Entire jurisdiction	Over 30 inches of snow	Snow and high winds paralyzed road network.
Severe Winter Weather	February 14-17, 1958	Entire jurisdiction	20-33 inches of snow	Primary impact to road network.
Severe Winter Weather	March 18-21, 1958	Entire jurisdiction	22-24 inches of snow	Primary impact to road network.
Severe Winter Weather	March 2-5, 1960	Entire jurisdiction	Up to 25 inches of snow	Primary impact to road network.
Severe Winter Weather	January 18-20, 1961	Entire jurisdiction	Up to 25 inches of snow	Blizzard conditions paralyze road network.
Severe Winter Weather	February 22-28, 1969	Entire jurisdiction	24-98 inches of snow in Central NH	Primary impact to road network. Slow moving storm.
Severe Winter Weather	December 25-28, 1969	Entire jurisdiction	12-18 inches of snow	Primary impact to road network.
Severe Winter Weather	January 19-21, 1978	Entire jurisdiction	Up to 16 inches of snow	Primary impact to road network.
Severe Winter Weather	February 5-7, 1978 (Blizzard of '78)	Entire jurisdiction	25-33 inches of snow	Snow paralyzed road network, trapped commuters in cars, and forced closure of businesses.
Severe Winter Weather	April 5-7, 1982	Entire jurisdiction	18-22 inches of snow	Primary impact to road network.
Severe Winter Weather	March, 1983	Entire jurisdiction	Over 18 inches of snow, 30-40 mph winds	Snow paralyzed road network and forced closure of businesses.
Severe Winter Weather	December 1996	Entire jurisdiction	14 inches of snow	Damage to power lines forces closure of businesses.
Severe Winter Weather	January 7, 1998	Entire jurisdiction	Ice storm, no data on extent available	$12,446,202 in total damages, 1 death and 6 injuries in NH. $17,000,000 in damages to PSNH equipment. FEMA Disaster Declaration #1199. 20 major road closures; 67,586 without power; 2,310 without phone service; 1 communication tower failure.
Severe Winter Weather	December 11, 2008	Entire jurisdiction	Ice storm, no data on extent available	$10,383,602 in FEMA public

Hazard Type	Date	Hazard Location within Jurisdiction	Hazard Extent	Impact
				assistance in NH; $6.35 per capita in Hillsborough County. FEMA Disaster Declaration #1812 Damage to power and phone lines and trees.
Severe Winter Weather	February 23, 2010	Entire jurisdiction	Snow followed by rainfall between 2-6 inches. Winds over 70 mph.	$6,268,179 in FEMA public assistance in NH; $3.68 per capita in Hillsborough County. FEMA Disaster Declaration #1892 Damage to power and phone lines, trees, and road network. Over 330,000 customers without power state-wide.
Severe Winter Weather	October 29-30, 2011	Entire jurisdiction	15-20 inches of snow.	$3,052,769 in FEMA public assistance in NH; $5.11 per capita in Hillsborough County. FEMA Disaster Declaration #4049 Damage to power and phone lines, trees, and road network.
Severe Winter Weather	February 8-10, 2013	Entire jurisdiction	Snowfall totals of 12-18 inches across region, up to 30 inches in parts of NH. Winds 10-20 mph with gusts up to 40 mph. Visibility less than ¼ mile.	FEMA Disaster Declaration #4105
Tornado	No tornado has originated in Milford to-date			
Tornado	July 2, 1961	Northern Hillsborough Co, originated near Weare, NH	Fujita Scale F2	0 fatalities, 0 injuries

Hazard Type	Date	Hazard Location within Jurisdiction	Hazard Extent	Impact
Tornado	July 21, 1961	Central Hillsborough Co, originated near New Boston, NH	Fujita Scale F1	0 fatalities, 0 injuries
Tornado	May 9, 1963	Northeastern, Hillsborough Co, originated near Goffstown, NH	Fujita Scale F1	0 fatalities, 0 injuries
Tornado	May 20, 1963	Western Hillsborough Co, originated near Peterborough, NH	Fujita Scale F1	0 fatalities, 0 injuries
Tornado	June 9, 1963	Northeastern Hillsborough Co, originated near Manchester, NH	Fujita Scale F2	0 fatalities, 0 injuries
Tornado	August 28, 1965	Eastern Hillsborough Co, originated near Litchfield, NH	Fujita Scale F1	0 fatalities, 0 injuries
Tornado	July 19, 1966	Southern Hillsborough Co, originated near Amherst, NH	Fujita Scale F1	0 fatalities, 0 injuries
Tornado	July 17, 1968	Central Hillsborough Co, originated near Wilton, NH	Fujita Scale F2	0 fatalities, 0 injuries
Tornado	August 20, 1968	Northeastern Hillsborough Co, originated near Manchester, NH	Fujita Scale F1	0 fatalities, 0 injuries
Tornado	July 19, 1972	Southeastern Hillsborough Co, originated near Hudson, NH	Fujita Scale F1	0 fatalities, 0 injuries
Tornado	July 5, 1984	Western Hillsborough Co, originated near Harrisville, NH	Fujita Scale F1	0 fatalities, 0 injuries
Tornado	July 5, 1984	Southeastern Hillsborough Co, originated near Pelham, NH	Fujita Scale F1	0 fatalities, 0 injuries
Tornado	June 16, 1986	Western Hillsborough Co, originated near Swanzey, NH	Fujita Scale F1	0 fatalities, 0 injuries
Tornado	July 3, 1997	Central Hillsborough Co, originated near Greenfield, NH	Fujita Scale F2	0 fatalities, 0 injuries
Tornado	May 31, 1998	Western Hillsborough Co,	Fujita Scale F2	0 fatalities, 0 injuries

Hazard Type	Date	Hazard Location within Jurisdiction	Hazard Extent	Impact
		orginated near Antrim, NH		
Downburst	July 6, 1999	Merrimack, Grafton, and Hillsborough Co.	Macroburst	2 fatalities, 2 lost roofs, damage to trees and utility infrastructure
Wildfire (brush fire)	2004	Brox Property	3 acres, NWCG Fire Size Classification B	No historic data on impact
Wildfire	July 26, 2010	0.5 miles past end of Summer Street, within 200 acres of woods including Mayflower Hill Conservation Area	3-4 acres, NWCG Fire Size Classification B	80 firefighters from 12 surrounding communities assisted in fighting the fire; residents of Summer Street self-evacuated

Section 3.3 ~ Probability of Future Hazard Events

After documenting the occurrence of previous hazard events in the Town of Milford and the surrounding region, the Hazard Mitigation Team used this information to calculate the annual probability of these events occurring in the future. The first step was to determine how many times a particular hazard had occurred in a given number of years. The number of occurrences was then divided by the number of years to determine annual probability. For example, if history shows that a particular hazard typically occurs 1 time every 4 years, the annual probability is 25%. Annual probability was calculated twice for each hazard. First, annual probability was calculated since the first recorded historic occurrence of the event. Second, annual probability was calculated based on occurrences since 2000 to reflect potential recent changes in hazard event occurrence rates. The probability of future hazard events for each hazard type in the Town of Milford is outlined in Table 5.

Table 5—Probability of Future Hazard Events

Hazard Type	Probability of Future Event	Source
Drought	11 years of drought from 1960 through 2013. 11 events in 54 years = .204 events per year **Annual Probability = 20.4%** 1 year of drought from 2000 through 2013.	NH Dept. of Environmental Services and public input

Hazard Type	Probability of Future Event	Source
	1 event in 14 years = .071 **Annual Probability = 7.1%**	
Earthquake	History shows no known earthquakes centered in Milford. However, this hazard is still possible. 6 magnitude 5.0 or greater earthquakes felt in NH from 1929 through 2013. 6 events in 85 years = .071 events per year **Annual Probability = 7.1%** 2 magnitude 5.0 or greater earthquakes felt in NH from 2000 through 2013. 2 events in 14 years = .143 events per year **Annual Probability = 14.3%**	US Geological Survey; Northern California Earthquake Data Center, Advanced National Seismic System http://www.ncedc.org/anss/catalog-search.html
Extreme Temperatures	21 extreme heat events from 2000 through 2013. 21 event in 14 years = 1.5 event per year **Annual Probability = 100%** 16 extreme cold events from 2000 through 2013. 16 event in 14 years = 1.14 event per year	National Climatic Data Center, National Oceanic and Atmospheric Administration http://www.ncdc.noaa.gov/cdo-web/search

Hazard Type	Probability of Future Event	Source
	Annual Probability = 100%	
Flooding	24 flooding events in Hillsborough County from 1785 through 2013. 24 events in 229 years = .105 events per year **Annual Probability = 10.5%** 6 flooding events in Hillsborough County from 2000 through 2013. 6 events in 14 years = .429 events per year **Annual Probability = 42.9%**	FEMA, local knowledge, and public input
Fluvial Erosion	Because of limited data on previous fluvial erosion events, probability cannot be calculated statistically. Low probability is defined as 0-25% chance of occurrence annually. **Annual Probability = 0-25%**	NH Dept. of Environmental Services, local knowledge, and public input
Hurricane/Severe Wind	8 hurricanes/tropical storms from 1938 through 2013. 8 events in 76 years = .105 events per year **Annual Probability = 10.5%** 2 hurricanes/tropical storms from 2000 through 2013. 2 events in 14 years = .143	National Weather Service and public input

Hazard Type	Probability of Future Event	Source
	events per year **Annual Probability = 14.3%**	
Severe Thunderstorm/Lightning	Because of limited data on previous severe thunderstorm events, probability cannot be calculated statistically. History shows no occurrences of severe thunderstorms in Milford. However, this hazard is still possible and therefore, the probability is low. Low probability is defined as 0-25% chance of occurrence annually. **Annual Probability = 0-25%**	FEMA Mitigation Planning Workshop (Unit 3), local knowledge, and public input
Severe Winter Weather	19 severe winter weather events from 1888 through 2013. 19 events in 126 years = .151 events per year **Annual Probability = 15.1%** 4 severe winter weather events from 2000 through 2013. 4 events in 14 years = .286 events per year **Annual Probability = 28.6%**	FEMA, local knowledge, and public input
Tornado/Downburst	16 tornados and 1 downburst in Hillsborough	Tornado History Project (Joshua Lietz, Storm Prediction Center, National Climatic

Hazard Type	Probability of Future Event	Source
	Co. from 1961 through 2013. 17 events in 53 years = .321 events per year **Annual Probability = 32.1%** 0 tornados and 0 downbursts in Hillsborough Co. from 2000 through 2013. 0 events in 14 years = 0 events per year **Annual Probability = 0-25%**	Data Center) and public input http://www.tornadohistoryproject.com
Wildfire	Because of limited data on previous wildfire events, probability cannot be calculated statistically. History shows no occurrences of wildfires in Milford. However, this hazard is still possible and therefore, the probability is low. Low probability is defined as 0-25% chance of occurrence annually. **Annual Probability = 0-25%**	FEMA Mitigation Planning Workshop (Unit 3), local knowledge, and public input

Section 3.4 ~ Critical Facilities and their Vulnerability

The next step in determining Milford's overall vulnerability was to inventory the Town's community assets and determine what assets would be affected by each type of hazard event. The Hazard Mitigation Team began by reviewing the Milford Zoning Ordinance to provide information on where and how the Town builds and to identify the corridors where critical facilities would likely be located. The

Team then identified the broad categories of important assets within Milford, including critical facilities essential to health and welfare; vulnerable populations, such as children and the elderly; economic assets and major employers; areas of high-density residential and commercial development; and historic, cultural, and natural resources. The Team then further divided the Town's critical facilities into the following categories:

1. **General Occupancy**
    a. Residential
    b. Commercial
    c. Industrial
    d. Agriculture
    e. Religion
    f. Government
    g. Education
2. **Essential Facilities**
    a. Fire Station
    b. Police Station
    c. Department of Public Works
    d. Schools
    e. Emergency Operations Centers
    f. Medical Care Facilities
3. **Transportation Systems**
    a. Highway Systems
    b. Railway Systems
    c. Bus Facilities
    d. Airport Systems
4. **Utility Systems**
    a. Potable Water
    b. Drinking Water
    c. Oil/Propane Facilities
    d. Natural Gas Facilities
    e. Electric Power
    f. Communications
5. **High Potential Hazard Facilities**
    a. Dams/Levees
    b. Nuclear Power Plants
    c. Military
6. **Hazardous Materials Facilities (**http://www2.epa.gov/toxics-release-inventory-tri-program)

The critical facilities within each category appear in the Tables 6.1-6.6 below. Each table includes the critical facility's name, content vulnerability, and locational vulnerability to hazards.

Table 6.1—General Occupancy Critical Facilities

Facility Type and Name	Content Vulnerability	Drought	Earthquake	Extreme Temperatures	Flooding	Fluvial Erosion*	Hurricane	Severe Thunderstorm	Severe Winter Weather	Tornado/Downburst	Wildfire
Commercial—Milford Drive In	Potentially large population present, located in 1% annual floodplain		✓		✓	n/a	✓	✓	✓	✓	✓
Commercial—Milford Motel	Potentially large population present		✓			n/a	✓	✓	✓	✓	✓
Commercial—American Legion	Potentially large population present		✓			n/a	✓	✓	✓	✓	✓
Commercial—Boys and Girls Club	Potentially large population present, located in 1% annual floodplain		✓		✓	n/a	✓	✓	✓	✓	✓
Commercial—Little Arrows Childcare Services	Potentially large population present		✓			n/a	✓	✓	✓	✓	✓
Commercial—Children's Choice ELC	Potentially large population present		✓			n/a	✓	✓	✓	✓	✓
Commercial—Growing Imagination ELC	Potentially large population present		✓			n/a	✓	✓	✓	✓	✓
Commercial—Souhegan Home and Hospice Care	Potentially large population present		✓			n/a	✓	✓	✓	✓	✓
Commercial—Shaw's Market	Potentially large population present, contents valuable to local economy		✓			n/a	✓	✓	✓	✓	✓
Commercial—Hampshire Hills Fitness Center	Potentially large population present		✓			n/a	✓	✓	✓	✓	✓
Commercial—Masonic Temple	Potentially large population present		✓			n/a	✓	✓	✓	✓	✓
Commercial—VFW Harley Sanford Post	Potentially large population present		✓			n/a	✓	✓	✓	✓	✓
Commercial—Knights of Columbus	Potentially large population present		✓			n/a	✓	✓	✓	✓	✓

Facility Type and Name	Content Vulnerability	Drought	Earthquake	Extreme Temperatures	Flooding	Fluvial Erosion*	Hurricane	Severe Thunderstorm	Severe Winter Weather	Tornado/Downburst	Wildfire
Commercial—Edgewood Plaza	Potentially large population present, contents valuable to local economy		✓			n/a	✓	✓	✓	✓	✓
Commercial—Market Basket	Potentially large population present, contents valuable to local economy		✓			n/a	✓	✓	✓	✓	✓
Commercial—Stop & Shop Plaza	Potentially large population present, contents valuable to local economy		✓			n/a	✓	✓	✓	✓	✓
Commercial—Granite Town Plaza	Potentially large population present, contents valuable to local economy		✓			n/a	✓	✓	✓	✓	✓
Commercial—Early Learning Center of Milford	Potentially large population present		✓			n/a	✓	✓	✓	✓	✓
Commercial—Blake's Plaza	Potentially large population present, contents valuable to local economy		✓			n/a	✓	✓	✓	✓	✓
Commercial—Milford Veterinary Hospital	Contents valuable to domestic animal health		✓			n/a	✓	✓	✓	✓	✓
Commercial—JP Pest Services	Hazardous materials		✓			n/a	✓	✓	✓	✓	✓
Commercial—Community House	Potentially large population present		✓			n/a	✓	✓	✓	✓	✓
Commercial—Pine Valley Mill	Potentially large population present, contents valuable to local economy		✓			n/a	✓	✓	✓	✓	✓
Education—The Colonel Shepard Montessori School	Potentially large population present		✓			n/a	✓	✓	✓	✓	✓
Education—Milford Christian Academy	Potentially large population present		✓			n/a	✓	✓	✓	✓	✓

Facility Type and Name	Content Vulnerability	Drought	Earthquake	Extreme Temperatures	Flooding	Fluvial Erosion*	Hurricane	Severe Thunderstorm	Severe Winter Weather	Tornado/Downburst	Wildfire
Government—Milford District Court (State Government)	Official records and documents, large staff present		✓			n/a	✓	✓	✓	✓	✓
Government—Milford Transfer Station	Potentially large population present		✓			n/a	✓	✓	✓	✓	✓
Government—Wadleigh Memorial Library	Official records and documents, potentially large population present		✓			n/a	✓	✓	✓	✓	✓
Government—Milford Town Hall	Official records and documents, potentially large staff and population present		✓			n/a	✓	✓	✓	✓	✓
Government—Post Office	Contents important to communications		✓			n/a	✓	✓	✓	✓	✓
Government—Milford Historical Society	Official records and documents		✓			n/a	✓	✓	✓	✓	✓
Industrial—AirMar Technologies	Industrial complex, hazardous materials		✓			n/a	✓	✓	✓	✓	✓
Industrial—Kerk Motion Products	Industrial complex, hazardous materials		✓			n/a	✓	✓	✓	✓	✓
Industrial—Hy-Ten Plastics, Inc.	Industrial complex, hazardous materials		✓			n/a	✓	✓	✓	✓	✓
Industrial—Spear Company	Industrial complex, hazardous materials		✓			n/a	✓	✓	✓	✓	✓
Industrial—Fletcher Quarry	Industrial complex, hazardous materials		✓			n/a	✓	✓	✓	✓	✓
Industrial—Barbour Inc.	Industrial complex, hazardous materials		✓			n/a	✓	✓	✓	✓	✓
Industrial—Tri	Industrial complex, hazardous materials		✓			n/a	✓	✓	✓	✓	✓

Facility Type and Name	Content Vulnerability	Drought	Earthquake	Extreme Temperatures	Flooding	Fluvial Erosion*	Hurricane	Severe Thunderstorm	Severe Winter Weather	Tornado/Downburst	Wildfire
Industrial—American/New England Steel	Industrial complex, hazardous materials, located in 1% annual floodplain		✓		✓	n/a	✓	✓	✓	✓	✓
Industrial—Amherst Label	Chemical storage		✓			n/a	✓	✓	✓	✓	✓
Industrial—Hitchiner Manufacturing Inc.	Industrial complex, hazardous materials		✓			n/a	✓	✓	✓	✓	✓
Industrial—Hendrix Wire & Cable Corp.	Industrial complex, hazardous materials		✓			n/a	✓	✓	✓	✓	✓
Industrial—Hi-Tech	Industrial complex, hazardous materials		✓			n/a	✓	✓	✓	✓	✓
Industrial—Alene Candles	Industrial complex, hazardous materials		✓			n/a	✓	✓	✓	✓	✓
Industrial—Degree Control	Industrial complex, hazardous materials		✓			n/a	✓	✓	✓	✓	✓
Industrial—Technical Graphic Inc.	Industrial complex, hazardous materials		✓			n/a	✓	✓	✓	✓	✓
Industrial—Milford Technology Center	Industrial complex, hazardous materials		✓			n/a	✓	✓	✓	✓	✓
Industrial—Chappel Tractor	Industrial complex, hazardous materials		✓			n/a	✓	✓	✓	✓	✓
Industrial—St. Gobain	Industrial complex, hazardous materials		✓			n/a	✓	✓	✓	✓	✓
Industrial—Hampshire Paper	Industrial complex, hazardous materials		✓			n/a	✓	✓	✓	✓	✓
Industrial—Blue Seal	Industrial complex, hazardous materials		✓			n/a	✓	✓	✓	✓	✓
Industrial—Granite State Concrete	Industrial complex, hazardous materials		✓			n/a	✓	✓	✓	✓	✓

Facility Type and Name	Content Vulnerability	Drought	Earthquake	Extreme Temperatures	Flooding	Fluvial Erosion*	Hurricane	Severe Thunderstorm	Severe Winter Weather	Tornado/Downburst	Wildfire
Industrial—Achille Agway	Chemical Storage, located in 0.2% annual floodplain		✓		✓	n/a	✓	✓	✓	✓	✓
Industrial—JP Chemical	Chemical storage		✓			n/a	✓	✓	✓	✓	✓
Industrial—CoorsTek	Hazardous materials, located in 1% annual floodplain		✓		✓	n/a	✓	✓	✓	✓	✓
Recreation—Milford Athletic Association ball field	Potentially large population present, located in 1% annual floodplain	✓			✓	n/a		✓			
Recreation—Keyes Field	Potentially large population present, located in 1% annual floodplain	✓			✓	n/a		✓			
Recreation—Hugo E. Tientini Ballpark	Potentially large population present	✓				n/a		✓			
Recreation—Kaley Park	Potentially large population present, located in 1% annual floodplain	✓			✓	n/a		✓			
Religious—First Congregational Church	Potentially large population present		✓			n/a	✓	✓	✓	✓	✓
Religious First Baptist Church	Potentially large population present		✓			n/a	✓	✓	✓	✓	✓
Religious—Milford United Methodist Church	Potentially large population present		✓			n/a	✓	✓	✓	✓	✓
Religious—Church of Our Savior	Potentially large population present		✓			n/a	✓	✓	✓	✓	✓
Religious—St. Patrick's Church	Potentially large population present		✓			n/a	✓	✓	✓	✓	✓
Religious—First Church of Christ Scientist	Potentially large population present		✓			n/a	✓	✓	✓	✓	✓

Facility Type and Name	Content Vulnerability	Drought	Earthquake	Extreme Temperatures	Flooding	Fluvial Erosion*	Hurricane	Severe Thunderstorm	Severe Winter Weather	Tornado/Downburst	Wildfire
Religious—Unitarian Universalist Congregation	Potentially large population present		✓			n/a	✓	✓	✓	✓	✓
Religious—Colonial Hill Baptist Church	Potentially large population present		✓			n/a	✓	✓	✓	✓	✓
Commercial—Pine Valley Mill	Large population present, contents have personal value to owners		✓			n/a	✓	✓	✓	✓	✓
Residential—Belmont Terrace	Large population present, contents have personal value to owners, elderly housing		✓			n/a	✓	✓	✓	✓	✓
Residential—Nottingham Place	Large population present, contents have personal value to owners, elderly housing		✓			n/a	✓	✓	✓	✓	✓
Residential—Brookstone Manor	Large population present, contents have personal value to owners, nursing home, located in 1% annual floodplain		✓		✓	n/a	✓	✓	✓	✓	✓
Residential—Harborside Healthcare-Crestwood	Large population present, contents have personal value to owners, elderly housing		✓			n/a	✓	✓	✓	✓	✓
Residential—Brickwood Condominiums	Large population present, contents have personal value to owners		✓			n/a	✓	✓	✓	✓	✓
Residential—Meadowbrook Park	Large population present, contents have personal value to owners		✓			n/a	✓	✓	✓	✓	✓
Residential—Leisure Acres Mobile Home	Large population present, contents have personal value to owners		✓			n/a	✓	✓	✓	✓	✓
Residential—Harborside Healthcare Milford	Large population present, contents have personal value to owners, elderly housing		✓			n/a	✓	✓	✓	✓	✓

Facility Type and Name	Content Vulnerability	Drought	Earthquake	Extreme Temperatures	Flooding	Fluvial Erosion*	Hurricane	Severe Thunderstorm	Severe Winter Weather	Tornado/Downburst	Wildfire
Residential—Milhaven Mobile Home Park	Large population present, contents have personal value to owners, located in 1% annual floodplain		✓		✓	n/a	✓	✓	✓	✓	✓
Residential—Beech Brook	Large population present, contents have personal value to owners, elderly housing		✓			n/a	✓	✓	✓	✓	✓
Residential—Granite Square	Large population present, contents have personal value to owners, elderly housing		✓			n/a	✓	✓	✓	✓	✓
Residential—Milford Mill	Large population present, contents have personal value to owners, elderly housing		✓			n/a	✓	✓	✓	✓	✓
Residential—North River Condos	Large population present, contents have personal value to owners		✓			n/a	✓	✓	✓	✓	✓
Residential—Ponemah Hill Condos	Large population present, contents have personal value to owners		✓			n/a	✓	✓	✓	✓	✓
Residential—Fairhaven Mobile Home Park	Large population present, contents have personal value to owners		✓			n/a	✓	✓	✓	✓	✓
Residential—The Quarry Condominiums	Large population present, contents have personal value to owners		✓			n/a	✓	✓	✓	✓	✓
Residential—North Street Apartments	Large population present, contents have personal value to owners		✓			n/a	✓	✓	✓	✓	✓
Residential—Longely Place I	Large population present, contents have personal value to owners		✓			n/a	✓	✓	✓	✓	✓
Residential—Longely Place II	Large population present, contents have personal value to owners		✓			n/a	✓	✓	✓	✓	✓
Residential—Rivers Edge Condominiums	Large population present, contents have personal value to owners		✓			n/a	✓	✓	✓	✓	✓

Facility Type and Name	Content Vulnerability	Drought	Earthquake	Extreme Temperatures	Flooding	Fluvial Erosion*	Hurricane	Severe Thunderstorm	Severe Winter Weather	Tornado/Downburst	Wildfire
Residential—Pillsbury Home	Large population present, contents have personal value to owners		✓			n/a	✓	✓	✓	✓	✓
Residential—Stone House	Large population present, contents have personal value to owners, elderly housing		✓			n/a	✓	✓	✓	✓	✓
Residential—Milford Trails	Large population present, contents have personal value to owners		✓			n/a	✓	✓	✓	✓	✓
Residential—Town and Country SVMHC	Large population present, contents have personal value to owners		✓			n/a	✓	✓	✓	✓	✓
Residential—Cahill Place	Large population present, contents have personal value to owners		✓			n/a	✓	✓	✓	✓	✓
Residential—Heritage Estates	Large population present, contents have personal value to owners		✓			n/a	✓	✓	✓	✓	✓
Residential—Quarry Wood Green Apartments	Large population present, contents have personal value to owners		✓			n/a	✓	✓	✓	✓	✓
Residential—Eastern Trails Apartments	Large population present, contents have personal value to owners		✓			n/a	✓	✓	✓	✓	✓
Residential—Highland Estates	Large population present, contents have personal value to owners		✓			n/a	✓	✓	✓	✓	✓
Residential—Westchester I and II Condominiums	Large population present, contents have personal value to owners		✓			n/a	✓	✓	✓	✓	✓
Residential—Great Brook Condos	Large population present, contents have personal value to owners, located in 0.2% annual floodplain		✓		✓	n/a	✓	✓	✓	✓	✓
Residential—Mals Trailer Court	Large population present, contents have personal value to owners		✓			n/a	✓	✓	✓	✓	✓
Residential—Ledgewood Estates	Large population present, contents have personal value to owners, elderly housing		✓			n/a	✓	✓	✓	✓	✓

**It is beyond the scope of this project to determine whether each general occupancy facility is located in the fluvial erosion hazard zone. A mapping exercise such as this has been included as a mitigation action in Section 4.2 of this Plan Update.*

Table 6.2—Essential Facilities

Facility Name	Content Vulnerability	Drought	Earthquake	Extreme Temperatures	Flooding	Fluvial Erosion	Hurricane	Severe Thunderstorm	Severe Winter Weather	Tornado/Downburst	Wildfire
Milford Police Station	Contents and staff valuable to emergency management		✓				✓	✓	✓	✓	✓
Milford Fire Department	Contents and staff valuable to emergency management		✓				✓	✓	✓	✓	✓
Milford Ambulance Service	Contents and staff valuable to emergency management		✓				✓	✓	✓	✓	✓
MACC Base	Contents and staff valuable to communications and emergency management		✓				✓	✓	✓	✓	✓
Milford DPW	Contents valuable to transportation network and public infrastructure		✓				✓	✓	✓	✓	✓
Milford High School	Potentially large population present, shelter		✓				✓	✓	✓	✓	✓
Milford Middle School	Potentially large population present		✓				✓	✓	✓	✓	✓
Heron Pond Elementary School	Potentially large population present, shelter		✓				✓	✓	✓	✓	✓
Sage School	Potentially large population present, shelter		✓				✓	✓	✓	✓	✓
Jacques Memorial Elementary School	Potentially large population present		✓				✓	✓	✓	✓	✓
Dartmouth Hitchcock	Contents valuable to public health, large staff and population present		✓				✓	✓	✓	✓	✓
St. Joseph Medical Center	Contents valuable to public health, large staff and population present		✓				✓	✓	✓	✓	✓

Facility Name	Content Vulnerability	Drought	Earthquake	Extreme Temperatures	Flooding	Fluvial Erosion	Hurricane	Severe Thunderstorm	Severe Winter Weather	Tornado/Downburst	Wildfire
Primary Care of Milford	Contents valuable to public health, large staff and population present		✓				✓	✓	✓	✓	✓

Table 6.3—Transportation Critical Facilities

Facility Type and Name	Content Vulnerability	Drought	Earthquake	Extreme Temperatures	Flooding	Fluvial Erosion*	Hurricane	Severe Thunderstorm	Severe Winter Weather	Tornado/Downburst	Wildfire
Highway System—Elm Street	Infrastructure valuable to public mobility and vehicle travel; portions located in Fluvial Erosion Hazard Zone		✓		✓	✓	✓	✓	✓	✓	
Highway System—Savage Road Bridge	Structure valuable to motor vehicle travel and safety		✓			n/a	✓		✓	✓	
Highway System—Mason Road Bridge	Structure valuable to motor vehicle travel and safety		✓			n/a	✓		✓	✓	
Highway System—Mason Road Bridge	Structure valuable to motor vehicle travel and safety, located in 1% annual floodplain		✓		✓	n/a	✓		✓	✓	
Highway System—Route 101/101A Bridge	Structure valuable to motor vehicle travel and safety		✓			n/a	✓		✓	✓	
Highway System—Route 101/Ponemah Hill Road Bridge	Structure valuable to motor vehicle travel and safety		✓			n/a	✓		✓	✓	
Highway System—Route 13/101 Bridge	Structure valuable to motor vehicle travel and safety		✓			n/a	✓		✓	✓	

Facility Type and Name	Content Vulnerability	Drought	Earthquake	Extreme Temperatures	Flooding	Fluvial Erosion*	Hurricane	Severe Thunderstorm	Severe Winter Weather	Tornado/Downburst	Wildfire
Highway System—Union Street Bridge	Structure valuable to motor vehicle travel and safety, located in 1% annual floodplain		✓		✓	n/a	✓		✓	✓	
Highway System—Route 101 Bridge	Structure valuable to motor vehicle travel and safety		✓			n/a	✓		✓	✓	
Highway System—Route 101 Bridge	Structure valuable to motor vehicle travel and safety, located in 1% annual floodplain		✓		✓	n/a	✓		✓	✓	
Highway System—Route 101/Osgood Road Bridge	Structure valuable to motor vehicle travel and safety		✓			n/a	✓		✓	✓	
Highway System—Melendy Road Bridge	Structure valuable to motor vehicle travel and safety, located in 1% annual floodplain		✓		✓	n/a	✓		✓	✓	
Highway System—Whitten Road Bridge	Structure valuable to motor vehicle travel and safety, located in 1% annual floodplain		✓		✓	n/a	✓		✓	✓	
Highway System—Wilton Road Bridge	Structure valuable to motor vehicle travel and safety, located in 1% annual floodplain		✓		✓	n/a	✓		✓	✓	
Highway System—Lincoln Street Bridge	Structure valuable to motor vehicle travel and safety		✓			n/a	✓		✓	✓	
Highway System—Perry Road Bridge	Structure valuable to motor vehicle travel and safety, located in 1% annual floodplain		✓		✓	n/a	✓		✓	✓	
Highway System—Route 101/Perry Road Bridge	Structure valuable to motor vehicle travel and safety		✓			n/a	✓		✓	✓	
Highway System—Elm Street/Westchester Street Bridge	Structure valuable to motor vehicle travel and safety		✓			n/a	✓		✓	✓	
Highway System—207 Union Street Bridge	Structure valuable to motor vehicle travel and safety		✓			n/a	✓		✓	✓	

Facility Type and Name	Content Vulnerability	Drought	Earthquake	Extreme Temperatures	Flooding	Fluvial Erosion*	Hurricane	Severe Thunderstorm	Severe Winter Weather	Tornado/Downburst	Wildfire
Highway System—Colonel Bridge	Structure valuable to motor vehicle travel and safety		✓			n/a	✓		✓	✓	
Highway System—Veteran Memorial Bridge	Structure valuable to motor vehicle travel and safety, located in 1% annual floodplain		✓		✓	n/a	✓		✓	✓	
Highway System—North River Road Bridge	Structure valuable to motor vehicle travel and safety		✓			n/a	✓		✓	✓	
Highway System—Hartshorn Mill Road Bridge	Structure valuable to motor vehicle travel and safety		✓			n/a	✓		✓	✓	
Highway System—Annand Drive Bridge	Structure valuable to motor vehicle travel and safety		✓			n/a	✓		✓	✓	
Highway System—Mason Road Bridge	Structure valuable to motor vehicle travel and safety		✓			n/a	✓		✓	✓	
Highway System—333 Savage Road Bridge	Structure valuable to motor vehicle travel and safety		✓			n/a	✓		✓	✓	
Highway System—164 Annand Drive Bridge	Structure valuable to motor vehicle travel and safety		✓			n/a	✓		✓	✓	
Highway System—Birchbrook Bridge	Structure valuable to motor vehicle travel and safety, located in 1% annual floodplain		✓		✓	n/a	✓		✓	✓	
Highway System—Jenson Road Bridge	Structure valuable to motor vehicle travel and safety, located in 1% annual floodplain		✓		✓	n/a	✓		✓	✓	
Highway System—North Purgatory/Center Road Bridge	Structure valuable to motor vehicle travel and safety, located in 1% annual floodplain		✓		✓	n/a	✓		✓	✓	
Highway System—Melendy Road Bridge	Structure valuable to motor vehicle travel and safety, located in 0.2% annual floodplain		✓		✓	n/a	✓		✓	✓	

Facility Type and Name	Content Vulnerability	Drought	Earthquake	Extreme Temperatures	Flooding	Fluvial Erosion*	Hurricane	Severe Thunderstorm	Severe Winter Weather	Tornado/Downburst	Wildfire
Highway System—78 Armory Road Bridge	Structure valuable to motor vehicle travel and safety, located in 0.2% annual floodplain		✓		✓	n/a	✓		✓	✓	
Highway System—Hartshorn Mill Road Culvert over Hartshorn Brook	Structure valuable to motor vehicle travel and safety, received Mostly Incompatible rating		✓		✓	✓	✓	✓	✓	✓	
Highway System—North River Road Culvert over Hartshorn Brook	Structure valuable to motor vehicle travel and safety, received Partially Compatible rating		✓		✓	✓	✓	✓	✓	✓	
Highway System—Whitten Road Culvert over Tucker Brook	Structure valuable to motor vehicle travel and safety, received Partially Compatible rating		✓		✓	✓	✓	✓	✓	✓	
Highway System—Elm Street Culvert over Tucker Brook	Structure valuable to motor vehicle travel and safety, received Mostly Incompatible rating		✓		✓	✓	✓	✓	✓	✓	
Pedestrian Infrastructure—Rail Trail Pedestrian Bridge	Structure valuable to pedestrian travel and safety		✓			n/a	✓		✓	✓	
Pedestrian Infrastructure—Great Crossing-Keyes Park Pedestrian Bridge	Structure valuable to pedestrian travel and safety, located in 1% annual floodplain		✓		✓	n/a	✓		✓	✓	
Pedestrian Infrastructure—Swinging Bridge	Structure valuable to pedestrian travel and safety, located in 1% annual floodplain		✓		✓	n/a	✓		✓	✓	
Pedestrian Infrastructure—Green Bridge	Structure valuable to pedestrian travel and safety, located in 0.2% annual floodplain		✓		✓	n/a	✓		✓	✓	
Railway System—101/101A RR crossing	Structure valuable to rail and motor vehicle travel and safety		✓				✓		✓	✓	

Facility Type and Name	Content Vulnerability	Drought	Earthquake	Extreme Temperatures	Flooding	Fluvial Erosion*	Hurricane	Severe Thunderstorm	Severe Winter Weather	Tornado/Downburst	Wildfire
Railway System—Hitchiner Way RR crossing	Structure valuable to rail and motor vehicle travel and safety		✓				✓		✓	✓	
Railway System—Elm Street RR crossing	Structure valuable to rail and motor vehicle travel and safety		✓				✓		✓	✓	
Railway System—Old Wilton Rd/Elm St RR crossing	Structure valuable to rail and motor vehicle travel and safety		✓				✓		✓	✓	
Railway System—Westchester Drive/Elm St RR crossing	Structure valuable to rail and motor vehicle travel and safety		✓				✓		✓	✓	
Railway System—West St RR crossing	Structure valuable to rail and motor vehicle travel and safety		✓				✓		✓	✓	
Railway System—Cottage St RR crossing	Structure valuable to rail and motor vehicle travel and safety		✓				✓		✓	✓	
Railway System—Union St RR crossing	Structure valuable to rail and motor vehicle travel and safety		✓				✓		✓	✓	
Railway System—172 South St RR crossing	Structure valuable to rail and motor vehicle travel and safety		✓				✓		✓	✓	
Railway System—Tonella Rd RR crossing	Structure valuable to rail and motor vehicle travel and safety		✓				✓		✓	✓	
Railway System—Powers St RR crossing	Structure valuable to rail and motor vehicle travel and safety		✓				✓		✓	✓	
Railway System—Nashua St/Riverside RR crossing	Structure valuable to rail and motor vehicle travel and safety		✓				✓		✓	✓	
Railway System—WWTP Access Rd RR crossing	Structure valuable to rail and motor vehicle travel and safety		✓				✓		✓	✓	
Railway System—Railroad Pond Railroad Bridge	Structure valuable to rail and motor vehicle travel and safety		✓			n/a	✓		✓	✓	

Facility Type and Name	Content Vulnerability	Drought	Earthquake	Extreme Temperatures	Flooding	Fluvial Erosion*	Hurricane	Severe Thunderstorm	Severe Winter Weather	Tornado/Downburst	Wildfire
Railway System—Elm Street Railroad Bridge	Structure valuable to rail and motor vehicle travel and safety, located in 1% annual floodplain		✓		✓	n/a	✓		✓	✓	

**The field assessment protocol used to determine fluvial erosion hazard zones was only able to determine potential structural vulnerability in culverts and cannot be applied to bridges.*

Table 6.4—Utility Systems

Facility Type and Name	Content Vulnerability	Drought	Earthquake	Extreme Temperatures	Flooding	Fluvial Erosion*	Hurricane	Severe Thunderstorm	Severe Winter Weather	Tornado/Downburst	Wildfire
Communication—Verizon Telephone	Structure valuable to communications		✓				✓	✓	✓	✓	✓
Communications—Fire Tower	Structure valuable to communications		✓				✓	✓	✓	✓	✓
Communications—SBA Towers	Structure valuable to communications		✓				✓	✓	✓	✓	✓
Communications—Crowncastle Cell Tower	Structure valuable to communications		✓				✓	✓	✓	✓	✓
Communications—US Cellular	Structure valuable to communications		✓				✓	✓	✓	✓	✓
Electric—Milford Electric substation	Structure valuable to utility network		✓				✓	✓	✓	✓	✓
Electric—PSNH	Structure valuable to utility network		✓				✓	✓	✓	✓	✓

Facility Type and Name	Content Vulnerability	Drought	Earthquake	Extreme Temperatures	Flooding	Fluvial Erosion*	Hurricane	Severe Thunderstorm	Severe Winter Weather	Tornado/Downburst	Wildfire
Fuel—First Student School Bus	Private fuel tanks, contents valuable to energy supply		✓				✓			✓	
Fuel—State Highway Fuel Facility	Contents valuable to energy supply		✓				✓			✓	
Fuel—Sunoco	Contents valuable to energy supply		✓				✓			✓	
Fuel--Texaco	Contents valuable to energy supply		✓				✓			✓	
Fuel—Citgo Silva Mart I	Contents valuable to energy supply		✓				✓			✓	
Fuel—Citgo Silva Mart II	Contents valuable to energy supply		✓				✓			✓	
Fuel—Irving (2 locations)	Contents valuable to energy supply		✓				✓			✓	
Fuel—Shell Station/Stoney's Automotive	Contents valuable to energy supply		✓				✓			✓	
Fuel—Mobile Station	Contents valuable to energy supply		✓				✓			✓	
Fuel—Cumberland Farms Gulf	Contents valuable to energy supply		✓				✓			✓	
Fuel—Fletcher Quarry	Contents valuable to energy supply		✓				✓			✓	
Fuel—Fitch's Corner	Contents valuable to energy supply		✓				✓			✓	
Fuel—Draper Mobile	Contents valuable to energy supply		✓				✓			✓	
Fuel—Ralph's Service Station	Contents valuable to energy supply		✓				✓			✓	

Facility Type and Name	Content Vulnerability	Drought	Earthquake	Extreme Temperatures	Flooding	Fluvial Erosion*	Hurricane	Severe Thunderstorm	Severe Winter Weather	Tornado/Downburst	Wildfire
Oil/Propane—Suburban Propane	Contents valuable to energy supply		✓				✓			✓	
Oil/Propane—Fred Fuller Oil Co.	Contents valuable to energy supply		✓				✓			✓	
Oil/Propane—Ciardelli Fuel	Contents valuable to energy supply		✓				✓			✓	
Oil/Propane—Milford Propane	Contents valuable to energy supply		✓				✓			✓	
Water—Milford Wastewater Treatment Plant	Structure valuable to public health and sanitation, located in 1% annual floodplain		✓		✓		✓			✓	
Water—GPW Kokko Well	Structure valuable to water supply	✓									
Water—GPW Keyes Well	Structure valuable to water supply, located in 1% annual floodplain	✓			✓						
Water—Curtis Well water pump station	Structure valuable to water supply, located in 1% annual floodplain	✓			✓						
Water—Badger Hill Pump House	Structure valuable to water supply	✓									
Water—Water Tank #1	Structure valuable to water supply	✓									
Water—Water Tank #2	Structure valuable to water supply	✓									
Water—Water Tank #3	Structure valuable to water supply	✓									
Water—Water Tower	Structure valuable to water supply	✓	✓				✓			✓	
Water—Dry Hydrant/Fire Pond	Structure valuable to fire aid	✓									

Facility Type and Name	Content Vulnerability	Drought	Earthquake	Extreme Temperatures	Flooding	Fluvial Erosion*	Hurricane	Severe Thunderstorm	Severe Winter Weather	Tornado/Downburst	Wildfire
Water—Chappelle Dry Hydrant	Structure valuable to fire aid	✓									
Water—Lovejoy Quarry	Dry hydrant/fire pond, structure valuable to fire aid, located in 0.2% annual floodplain	✓			✓						
Water—Cistern	Structure valuable to fire aid	✓									
Water—Trombly Cistern	Structure valuable to fire aid	✓									
Water—Drafting Basin	Structure valuable to fire aid	✓									

**It is beyond the scope of this project to determine whether utility infrastructure is located in the fluvial erosion hazard zone. A mapping exercise such as this has been included as a mitigation action in Section 4.2 of this Plan Update.*

Table 6.5—High Potential Hazard Facilities

Facility Type and Name	Content Vulnerability	Drought	Earthquake	Extreme Temperatures	Flooding	Fluvial Erosion*	Hurricane	Severe Thunderstorm	Severe Winter Weather	Tornado/Downburst	Wildfire
Railroad Pond Dam Location—42.8347 lat, -71.6508 long Hazard Class—L Water body—Great Brook Owner—Town of Milford	Structure valuable to flood control, located in 1% floodplain		✓		✓	n/a	✓		✓	✓	

Facility Type and Name	Content Vulnerability	Drought	Earthquake	Extreme Temperatures	Flooding	Fluvial Erosion*	Hurricane	Severe Thunderstorm	Severe Winter Weather	Tornado/Downburst	Wildfire
Goldman Dam Location—42.8369 lat, -71.6486 long Hazard Class—L Water body—Souhegan River Owner—privately held	Structure valuable to flood control, located in 1% floodplain		✓		✓	n/a	✓		✓	✓	
McLane Dam Location—42.8358 lat, -71.6461 long Hazard Class—L Water body—Souhegan River Owner—Town of Milford	Structure valuable to flood control, located in 1% floodplain		✓		✓	n/a	✓		✓	✓	
Osgood Pond Dam Location—42.8205 lat, -71.6638 long Hazard Class—L Water body—Great Brook Owner—Town of Milford	Structure valuable to flood control, located in 1% floodplain		✓		✓	n/a	✓		✓	✓	
Hartshorn Pond Dam Location—42.8616 lat, -71.6691 long Hazard Class—L Water body—Hartshorn Brook Owner—Town of Milford	Structure valuable to flood control, located in 1% floodplain		✓		✓	n/a	✓		✓	✓	
Farm Pond Dam Location—42.8041 lat, -71.6775 long Hazard Class—NM Water body—unnamed stream Owner—privately held	Structure valuable to flood control		✓			n/a	✓		✓	✓	
Compressor Pond Dam Location—42.8058 lat, -71.6616 long Hazard Class—L Water body—Ox Brook Owner—Town of Milford	Structure valuable to flood control, located in 1% floodplain		✓		✓	n/a	✓		✓	✓	

Facility Type and Name	Content Vulnerability	Drought	Earthquake	Extreme Temperatures	Flooding	Fluvial Erosion*	Hurricane	Severe Thunderstorm	Severe Winter Weather	Tornado/Downburst	Wildfire
Great Brook Dam Location—42.803 lat, -71.6994 long Hazard Class—NM Water body—Great Brook Owner—privately held	Structure valuable to flood control, located in 1% floodplain		✓		✓	n/a	✓		✓	✓	
Hitachi Fire Pond Location—42.8083 lat, -71.645 long Hazard Class—NM Water body—unnamed brook Owner—privately held	Structure valuable to flood control		✓			n/a	✓		✓	✓	
Dana Fire Pond Location—42.8205 lat, -71.7013 long Hazard Class—NM Water body—seasonal stream Owner—privately held	Structure valuable to flood control		✓			n/a	✓		✓	✓	
Badger Hill 1 Location—42.788 lat, -71.6966 long Hazard Class—NM Water body—runoff Owner—privately held	Structure valuable to flood control		✓			n/a	✓		✓	✓	
Badger Hill 3 Location—42.7883 lat, -71.6966 long Hazard Class—NM Water body—runoff Owner—privately held	Structure valuable to flood control		✓			n/a	✓		✓	✓	
Milford Elm Street Trust Fire PD Location—42.8438 lat, -71.7225 long Hazard Class—L Water body—runoff Owner—Town of Milford	Structure valuable to flood control		✓			n/a	✓		✓	✓	

Facility Type and Name	Content Vulnerability	Drought	Earthquake	Extreme Temperatures	Flooding	Fluvial Erosion*	Hurricane	Severe Thunderstorm	Severe Winter Weather	Tornado/Downburst	Wildfire
Detention Basin A Location—42.8241 lat, -71.6213 long Hazard Class—NM Water body—runoff Owner—privately held	Structure valuable to flood control		✓			n/a	✓		✓	✓	
Military—National Guard Armory	Contents and staff valuable to national security		✓				✓	✓	✓	✓	✓

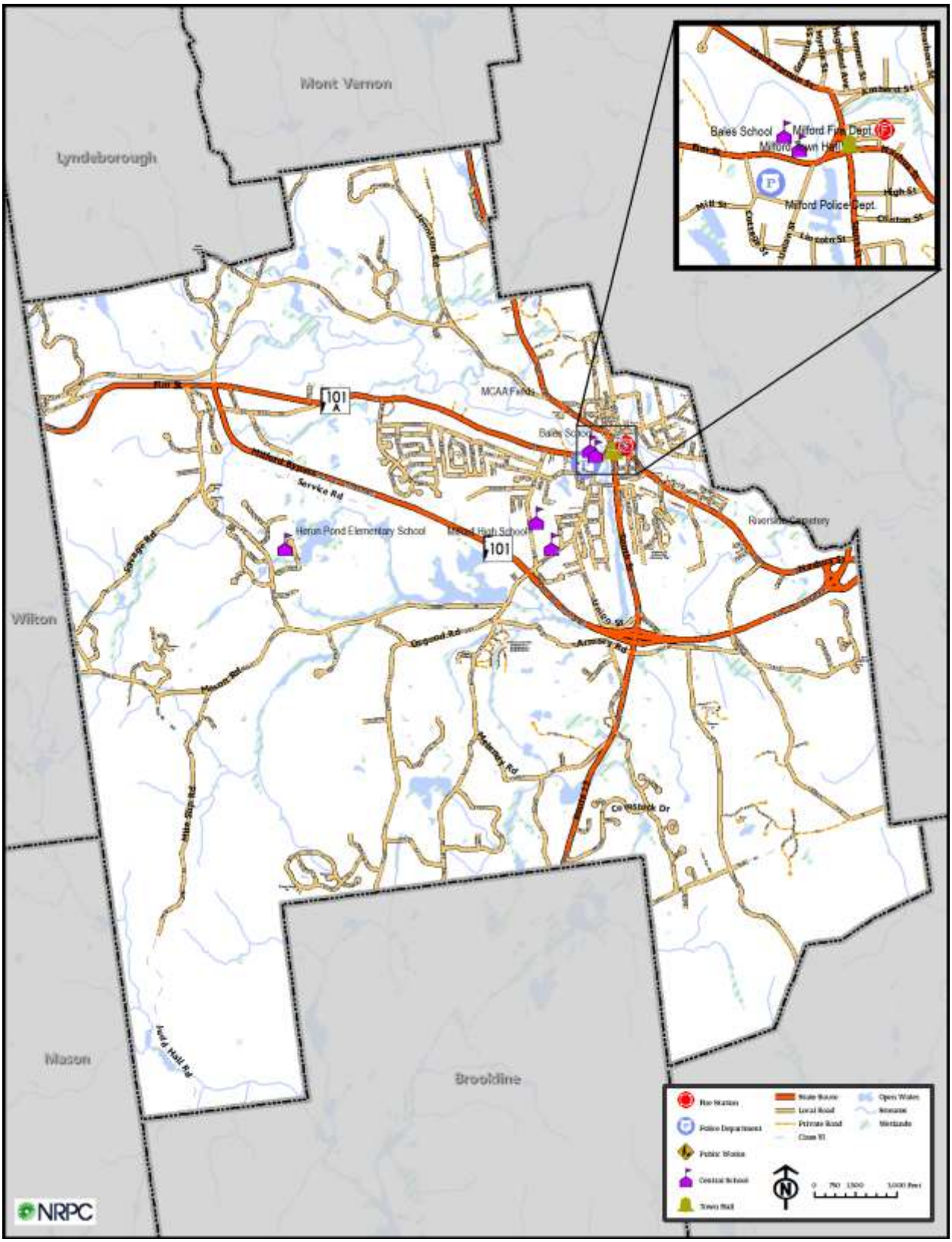
**The field assessment protocol used to determine fluvial erosion hazard zones was only able to determine potential structural vulnerability in culverts and cannot be applied to dams.*

Table 6.6—Hazardous Materials Facilities

Facility Type and Name	Content Vulnerability	Drought	Earthquake	Extreme Temperatures	Flooding	Fluvial Erosion	Hurricane	Severe Thunderstorm	Severe Winter Weather	Tornado/Downburst	Wildfire
Savage Well Superfund Site (facilities building)	Superfund Site—located in 1% annual floodplain, portions of Parcel 13-3 are located in Very High Fluvial Erosion Hazard zone		✓		✓	✓	✓	✓	✓	✓	✓
Fletcher Paint Superfund Site/Mill Street	Superfund Site—located in 1% annual floodplain, portions of Parcel 25-12 are located in Very High Fluvial Erosion Hazard zone				✓	✓					
Fletcher Paint Superfund Site	Superfund Site—located in 1% annual floodplain, portions of Parcel 25-11 are located in Very High Fluvial Erosion Hazard zone				✓	✓					

Facility Type and Name	Content Vulnerability	Drought	Earthquake	Extreme Temperatures	Flooding	Fluvial Erosion	Hurricane	Severe Thunderstorm	Severe Winter Weather	Tornado/Downburst	Wildfire
OK Tool Superfund Site (facilities building)	Superfund Site—located in 1% annual floodplain, portions of Parcel 13-3 are located in Very High Fluvial Erosion Hazard zone		✓		✓	✓	✓	✓	✓	✓	✓

Milford Critical Facilities Map



Section 3.5 ~ Vulnerability by Hazard

Drought

Hydrological drought is evidenced by extended periods of negative departures from normal rainfall. New Hampshire has been under several drought warnings, including a drought emergency, since 1999. The most severe drought conditions occurred between 1960 and 1969; the event had a greater than 25 year recurrence interval. The southern New Hampshire region experienced a 100-year drought event from 1964 to 1965.

Although drought is not likely to damage structures, low water levels can have a negative impact on existing and future home sites, especially those that depend on groundwater for water needs. Additionally, the dry conditions of a drought may lead to an increase wild fire risk. Drought can cause the most significant impact to agricultural land and assets.

Because the impacts of drought are long lasting and wide ranging, it is beyond the scope of this Plan to estimate the dollar value of losses to Milford resulting from drought. Instead, the Hazard Mitigation Team estimated the percentage of land in Milford vulnerable to drought as a quantitative measure of this hazard's impact.

Total Acres of Land in Milford	Total Acres of Agricultural Land in Milford	% of Land in Milford Vulnerable to Drought
16,192	783	4.8%

Critical Facility Type	Total Number of this type of Critical Facilities in Milford	Number of this type of Critical Facilities in Drought Hazard Area	Percentage of this type of Critical Facilities in Drought Hazard Area
General Occupancy	101	4	4%
Essential Facilities	13	0	0%
Transportation	55	0	0%
Utility System	40	14	35%
High Potential Hazard	15	0	0%
Hazardous Materials	4	0	0%

Earthquake

The Richter magnitude scale was developed by Charles F. Richter in 1935 as a way to compare the size of earthquakes. The magnitude of an earthquake is calculated from the logarithm of the amplitude of waves recorded by seismographs.

- Magnitude <2.0—micro-earthquakes. Recorded by seismographs, but not felt or rarely felt by people. Several million occur annually worldwide on average.
- Magnitude 2.0-2.9—felt slightly by some people. No damage to buildings. Over 1 million occur annually worldwide on average.
- Magnitude 3.0-3.9—often felt by people but very rarely cause damage. Shaking of indoor objects can be noticeable. Over 100,000 occur annually worldwide on average.
- Magnitude 4.0-4.9—noticeable shaking of indoor objects and rattling noises. Felt by most people in affected area. Generally causes minimal to no damage. Moderate to significant damage is very unlikely. 10,000-15,000 occur annually worldwide on average.
- Magnitude 5.0-5.9—felt by everyone. Can cause damage of varying severity to poorly constructed buildings; slight to no damage to all other buildings. Few, if any, casualties. 1,000-1,500 occur annually worldwide on average.
- Magnitude 6.0-6.9—felt up to hundreds of miles from epicenter. Strong to violent shaking in epicenter. Damage to many buildings in populated areas. Poorly designed structures have moderate to severe damage. Earthquake-resistant structures have slight to moderate damage. Damage can be caused far from epicenter. Death toll up to 25,000. 100-150 occur annually worldwide on average.
- Magnitude 7.0-7.9—felt in very large area. Damage to most buildings, including partial or complete collapse. Death toll up to 250,000. 10-20 occur annually worldwide on average.
- Magnitude 8.0-8.9—felt in extremely large region. Major damage to buildings over large areas. Structures likely destroyed. Moderate to heavy damage to sturdy or earthquake-resistant buildings. Death toll up to 1 million. 1 occurs annually worldwide on average.
- Magnitude 9.0< —damage and shaking extends to distant locations. Near or total destruction. Severe damage and collapse to all buildings. Permanent changes in ground topography. 1 occurs every 10-50 years worldwide on average.

Since 1940, there have been 14 earthquakes centered in NH with a magnitude of 3.0 or greater and only two earthquakes with a magnitude of 5.0 or greater. There have been no recorded earthquakes to-date centered in Milford, however, one could occur.

Earthquake Hazard Loss Estimate

Step 1. Determine potential earthquake strength in Milford

- US Seismic Hazard, 2% in 50 years PGA is 0.10 to 0.12(g) in Milford
- *Source: USGS NH Seismic Map*

Step 2. Determine percent building damage ratio to single family residence from PGA (g) 0.10 earthquake

- Wood Frame Construction with Low general seismic design level = 0.6% building damage
- *Source: FEMA Identifying Hazards and Estimating Losses, pg 4-17*

Step 3. Determine percent of structures in Milford that would be damaged by PGA (g) 0.10 earthquake

- 1-5% of structures estimated to be damaged by earthquake
- *Source: Milford Hazard Mitigation Team (no historical data on earthquake damage in Milford)*

Step 4. Determine total assessed value of structures in Milford

- Total Assessed Value of all Structures in Milford = $1,052,810,300
- *Source: Milford Assessing Department (9/5/14)*

Step 5. Determine total loss from PGA (g) 0.10 Earthquake

- Total Loss from Earthquake = Total Assessed Value of all Structures *Percentage of Structures Estimated to be Damaged * Percent Building Damage Ratio
- Total Loss from Earthquake = $1,052,810,300 * .01 * .006 = $63,168.62
- Total Loss from Earthquake = $1,052,810,300 * .05 * .006 = $315,843.09
- **$63,168.62 to $315,843.09**

Critical Facility Type	Total Number of this type of Critical Facilities in Milford	Number of this type of Critical Facilities in Earthquake Hazard Area	Percentage of this type of Critical Facilities in Earthquake Hazard Area
General Occupancy	101	97	96%
Essential Facilities	13	13	100%
Transportation	55	55	100%
Utility System	40	27	67.5%
High Potential Hazard	15	15	100%
Hazardous Materials	4	2	50%

Extreme Temperatures

Extreme temperatures can be broken into both extreme heat and extreme cold. Though the hazards are different, the effects would be similar to vulnerable populations in Milford.

Extreme heat is defined as a period of three consecutive days during which the air temperature reaches 90 degrees Fahrenheit or higher on each day. Extreme heat should not be confused with a drought (extended periods of negative departures from normal rainfall). Overburdened power networks may experience failures due to the impacts of extreme heat.

Extreme cold has no formal definition in New Hampshire, though can be explained as the extended exposure to typical winter temperatures without heat and shelter. With the rising costs of heating fuel and electric heat, many low-income or homeless citizens are not able to adequately heat their homes, exposing themselves to cold related emergencies or death. Extremely cold winters can lead to shortages in heating fuels due to high demand.

Though the entire Milford population may experience a thermal emergency, populations without adequate climate control are most at risk. Extreme temperatures are not likely to cause damage to structures, although pipes can burst in extreme cold conditions.

Flooding

Localized Flooding

Localized flooding can result from even minor storms. Runoff overloads the drainage ways and flows into the streets and low-lying areas. Homes and businesses can be inundated, especially basements and the lower part of first floors. Localized flooding poses most of the same problems caused by larger floods, but because it typically has an impact on fewer people and affects small areas, it tends to bring less State or Federal involvement such as funding, technical help, or disaster assistance. As a result, the community and the affected residents or business owners are left to cope with the problems on their own. Finally, flooding of this type tends to recur; small impacts accumulated over time can become major problems.

Riverine Flooding

Riverine flooding involves the overflowing of normal flood channels, rivers or streams, generally as a result of prolonged rainfall or rapid thawing of snow cover. The lateral spread of floodwater is largely a function of the terrain, becoming greater in wide, flat areas, and affecting narrower areas in steep terrain. In the latter cases, riparian hillsides in combination with steep declines in riverbed elevation often force waters downstream rapidly, sometimes resulting in flash floods.

Floodplains cover approximately 9.33% of Milford; 7.91% of Town is within the 1% Annual Floodplain and 1.42% of Town is within the 0.2% Annual Floodplain. The largest floodplain area in Milford surrounds the Souhegan River. The floodplain is widest near the inlets of Purgatory, Tucker, and Hartshorn Brooks. Also notable are floodplains comprising part of the swamp northwest of Osgood Pond and the floodplain in the extreme south of Milford surrounding Mitchell Brook.

Dam Failure

The NH Department of Environmental Services indicates several failure modes for dams. Most typical include hydraulic failure or the uncontrolled overflowing of water, seepage, or leaking at the dam's foundation or gate; structural failure or rupture; general deterioration; and gate inoperability. These modes vary between dams depending on their construction type.

The State of New Hampshire uses a hazard potential classification to define the extent of a dam breach or failure. All class S (Significant) and H (High hazard) dams have the potential to cause damage if they breach or fail.

Class H—high hazard: dam that has a high hazard potential because it is in a location and of a size that failure or misoperation of the dam would result in probably loss of human life as a result of: water levels and velocities causing the structural failure of a foundation of a habitable residential structure or commercial or industrial structure that is occupied under normal conditions; water levels rising above 1st floor elevation of a habitable residential structure or a commercial or industrial structure that is occupied under normal conditions when the rise due to dam failure is greater than 1 foot; structural damage to an interstate highway, which could render the roadway impassible or otherwise interrupt

public safety services; release of a quantity and concentration of material that qualify as “hazardous waste” under RSA 147-A:2 VII; any other circumstance that would more likely than not cause one or more deaths.

Class S—significant hazard: dam has a significant hazard potential because it is in a location and of a size that failure or misoperation of the dam would result in any of the following: no probably loss of lives; major economic loss to structures or property; structural damage to a Class I or Class II road that would render the road impassable or otherwise interrupt public safety services; major environmental or public health losses.

Class L—low hazard: dam has a low hazard potential because it is in a location and of a size that failure or misoperation of the dam would result in any of the following: no possible loss of life; low economic loss to structures or property; structural damage to a town or city road or private road accessing property other than the dam owner’s that could render the road impassible or otherwise interrupt public safety service; the release of liquid industrial, agricultural, or commercial wastes, septage, or contaminated sediment if the storage capacity is less than 2 acre-feet and is located more than 250 feet from a water body or water course; reversible environmental losses to environmentally-sensitive sites.

Class NM—non-menace: dam that is not a menace because it is in a location and of a size that failure or misoperation of the dam would not result in probable loss of life or loss to property, provided the dam is less than 6 feet in height it if has a storage capacity greater than 50 acre-feet; or less than 25 feet in height if it has a storage capacity of 15-50 acre-feet.

Milford has 7 Class NM dams (Non-Menace), 8 Class L dams (Low hazard potential), 0 Class S dams (Significant hazard potential), and 0 Class H dams (High hazard potential). There have been no known dam breaches to-date in Milford.

Flood Hazard Loss Estimate

Step 1. Determine percent building damage to a 1 or 2 story building with basement

- 1 foot flood depth = 15% building damage
- 2 foot flood depth = 20% building damage
- 3 foot flood depth = 23% building damage
- 4 foot flood depth = 28% building damage
- *Source: FEMA Identifying Hazards and Estimating Losses, pg 4-13*

Step 2. Determine number of buildings in Milford located in the floodplain

- 197 buildings located in floodplain
- *Source: Milford Assessing Department (9/5/14)*

Step 3. Determine total value of buildings in Milford located in floodplain

- Average assessed value of all structures in Milford = $209,556.19
- Total number of buildings in Milford located in floodplain = 197
- Total assessed value of all buildings in Milford in floodplain = $209,556.19 * 197
- Total assessed value of all buildings in Milford in floodplain = $41,282,569.43

- *Source: Milford Hazard Mitigation Team calculations based on Milford Assessing data*

Step 4. Determine total loss from flooding

- Total Loss from Flooding = Total Assessed Value of all Buildings in Floodplain * Percent Building Damage Ratio
- Total Loss from 1 foot flood depth = $41,282,569.43 * .15 = **$6,192,385.41**
- Total Loss from 2 foot flood depth = $41,282,569.43 * .20 = **$8,256,513.89**
- Total Loss from 3 foot flood depth = $41,282,569.43 * .23 = **$9,494,990.97**
- Total Loss from 4 foot flood depth = $41,282,569.43 * .28 = **$11,559,119.44**

Critical Facility Type	Total Number of this type of Critical Facilities in Milford	Number of this type of Critical Facilities in 1% Annual Floodplain	Percentage of this type of Critical Facilities in 1% Annual Floodplain	Number of this type of Critical Facilities in 0.2% Annual Floodplain	Percentage of this type of Critical Facilities in 0.2% Annual Floodplain
General Occupancy	101	9	9%	2	2%
Essential Facilities	13	0	0%	0	0%
Transportation	55	14	25.5%	3	5.5%
Utility System	40	3	7.5%	1	2.5%
High Potential Hazard	15	7	50%	0	0%
Hazardous Materials	4	1	25%	0	0%

Fluvial Erosion

Fluvial (river-related) erosion is the wearing away of river beds and banks by the action of running water. Fluvial erosion is a natural process and is most active during flood events. It can result in significant changes to the physical location and dimensions of river and stream channels.

New Hampshire has more than 16,000 miles of rivers and streams. Communities have historically developed along these waterways, placing infrastructure and property in hazard prone areas. Riverine flooding is the most common disaster event in NH. In recent years, some areas of the State have experienced multiple disastrous flood events at recurrence intervals of less than 10 years. On October 3, 2008 Hillsborough and Merrimack Counties experienced severe storms and flooding that led to a Presidential Disaster Declaration and $1,050,147 in damages.

Transportation infrastructure and agricultural property are typically the most vulnerable to fluvial erosion hazards. Fluvial erosion events frequently cause culverts failures, undermine bridges and roads,

and wash away stream banks. Residential, commercial, and municipal properties as well as utility infrastructure can also be impacted.

The New Hampshire Department of Environmental Services (DES) and New Hampshire Geological Survey (NHGS) conducted an assessment to identify areas prone to river and stream erosion that could impact public health and safety. The assessment was conducted over the summer and fall of 2013 in the Souhegan and Piscataquog River watersheds. A private firm that specializes in the science of fluvial geomorphology, Field Geology Services, was contracted to conduct the field work. They assessed river and stream reaches using field surveys, topographical maps, aerial photos, and historic archives. Within the Souhegan Watershed, assessments were conducted on segments of the Souhegan River main stem, Baboosic Brook, Beaver Brook, Blood Brook, Great Brook, Hartshorn Brook, Stoney Brook, and Tucker Brook. Only a small section of the Piscataquog River Watershed falls within the Nashua Region and the only reach that was assessed in this area was the South Branch Piscataquog River in Lyndeborough.

Fluvial Erosion Hazard Zone maps provide an important tool for planners, emergency management personnel, and municipal officials. They can be used to identify opportunities for bridge and culvert upgrades, stream and floodplain restoration projects, and areas where development may want to be avoided. The Nashua Regional Planning Commission has incorporated the Fluvial Erosion Hazard data generated by this study into the Town's 2015 Hazard Mitigation Plan Update. Specific mitigation actions that can address public safety and fluvial erosion hazards include:

Map & Assess Vulnerability to Erosion

- Conduct stream assessments and prepare fluvial erosion hazard zone maps
- Develop and maintain a database to track community vulnerability to erosion
- Use GIS to identify concentrations of at-risk structures and infrastructure

Structure and Infrastructure Projects

- Ensure adequate stormwater drainage
- Reduce encroachment of roads, bridges, and culverts into stream channels and flood prone areas
- Ensure culverts and bridges are adequately sized and properly aligned and graded
- Consider relocating at-risk buildings and infrastructure

Help Citizens and Emergency Management Officials become More Aware of Erosion Risks

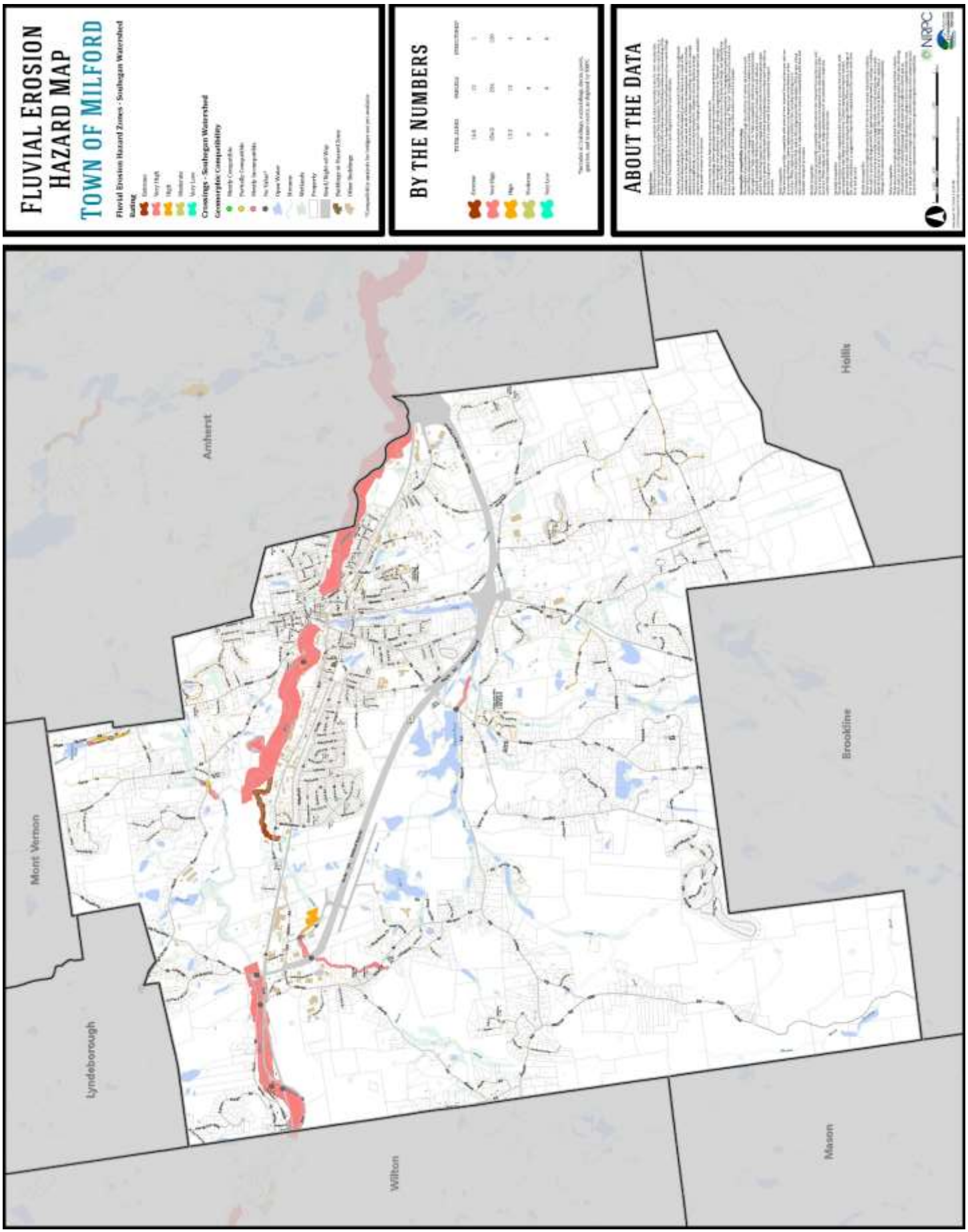
- Notify property owners in high-risk areas
- Develop outreach materials describing erosion risks and potential mitigation techniques
- Offer GIS erosion hazard mapping online

Consider Fluvial Erosion Hazard Areas in Land Use Policy

- Adopt sediment and erosion control regulations
- Consider establishing fluvial erosion hazard overlay districts

- Develop and implement an erosion management plan
- Locate utilities and critical facilities outside of areas susceptible to erosion
- Provide rivers and streams the area they need to maintain or re-establish their natural equilibrium in order to minimize erosion hazards, protect public safety and welfare, and decrease property damage and loss.

Map 2—Fluvial Erosion Hazard Zones in Milford



Fluvial Erosion Hazard (FEH) zones attempt to identify lands most vulnerable to fluvial erosion. Each river reach assessed through this project was assigned a sensitivity rating as a measure of extent. Sensitivity can be defined as the potential of a river to respond to flood events, through bank erosion and lateral migration (across the floodplain) processes. Rivers, as a result of the combination of their geologic context and extent of historical development, will vary in their likelihood to experience flood-event driven rapid changes. Past activities, such as for example channel straightening, can increase the potential for change in a flood. Reaches already experiencing erosion are prone to such rapid changes, given the exposed bank materials available for the power of water to erode into. The occurrences of such features are incorporated into the sensitivity rankings, where generally, the greater number of features present that can cause changes, the higher the sensitivity to change.

Broadly, assignment of an "Extreme" category means a reach that is experiencing considerable erosion of its beds and banks, and typically has flood chutes and meander cutoffs that maximize the potential for changing flow paths and further erosion during a large flood. Conversely, a rating of "Very Low" is typically found in a bedrock gorge, where the flow path will not change on time scales of concern to people.

Fluvial Erosion Hazard Zones in Milford

Sensitivity Rating	Total Acres	Parcels	Structures*
Extreme	16.8	13	1
Very High	356.8	226	120
High	13.3	13	4
Moderate	0	0	0
Very Low	0	0	0

*Includes all buildings, outbuildings, decks, pools, gazebos, and tennis courts as digitized by Nashua Regional Planning Commission

It is beyond the scope of this project to assign potential damage estimates to structures caused by fluvial erosion. This data is not readily available because specific flood damages caused by channel erosion and migration processes are not often documented. In addition, standard loss estimation models and tables for erosion damage are not available (*Understanding Your Risks*, FEMA, pg 4-30).

Culverts were also assessed as part of the Fluvial Erosion Hazard study and each culvert was assigned a score ranking it on a scale from "fully compatible" to "fully incompatible." These rankings provide guidance on the long-term ability of culverts to handle flow and sediment transport processes and their risk of failure. Not all culverts in Milford were assessed in this study. The following results only include those culverts that were assessed.

- Fully Compatible culverts conform with natural river channel form and process and have a low risk of failure. Culvert replacement is not expected over the lifetime of the structure. When replaced, a similar structure is recommended. ***Total # of Fully Compatible culverts in Milford =*** **0**
- Mostly Compatible culverts also have a low risk of failure and replacement is not expected over the lifetime of the structure. When replaced, minor design adjustments are recommended to achieve full compatibility. ***Total # of Mostly Compatible culverts in Milford =*** **0**

- Partially Compatible culverts are either compatible with current form or process, but not both. There is a moderate risk of culvert failure and replacement may be needed during the design lifetime. When replaced, a redesign of the culvert installation is recommended. ***Total # of Partially Compatible culverts in Milford =*** **2**
- Mostly Incompatible culverts are typically undersized for their channel and/or are poorly aligned with the upstream channel geometry. These culverts have a moderate to high risk of structural failure and should be redesigned when replaced to improve compatibility. ***Total # of Mostly Incompatible culverts in Milford =*** **2**
- Fully Incompatible culverts are typically undersized for their channel and/or are poorly aligned with the upstream channel geometry. They also have reduced passage of sediment through the culvert and an increased risk of erosion. These culverts have a high risk of failure and should be prioritized for replacement with more compatible structures. ***Total # of Fully Incompatible culverts in Milford =*** **0**

A complete table of all the culverts assessed in Milford, including location information and compatibility ratings, appears in the Appendix to this Plan.

Hurricane/Tropical Storm

The Atlantic hurricane season lasts from June 1 through November 30 and peaks in late August and September. The Saffir-Simpson Hurricane Wind Scale categorizes hurricanes from 1 to 5 based on sustained wind speed. The National Weather Service National Hurricane Center provides the following estimates of potential property damage based on hurricane wind speed (http://www.nhc.noaa.gov/aboutsshws.php).

Category 1—sustained winds 74-95 mph. Very dangerous winds will produce some damage. Well-constructed frame homes could have damage to roof, shingles, vinyl siding, and gutters. Large branches of trees will snap and shallowly rooted trees may be toppled. Extensive damage to power lines and poles likely will result in power outages that could last a few to several days.

Category 2—sustained winds 96-110 mph. Extremely dangerous winds will cause extensive damage. Well-constructed frame homes could sustain major roof and siding damage. Many shallowly rooted trees will be snapped or uprooted and block numerous roads. Near-total power loss is expected with outages that could last from several days to weeks.

Category 3—sustained winds 111-129 mph. Devastating damage will occur. Well-built framed homes may incur major damage or removal of roof decking and gable ends. Many trees will be snapped or uprooted, blocking numerous roads. Electricity and water will be unavailable for several days to weeks after the storm passes.

Category 4—sustained winds 130-156 mph. Catastrophic damage will occur. Well-built framed homes can sustain severe damage with loss of most of the roof structure and/or some exterior walls. Most trees will be snapped or uprooted and power poles downed. Fallen trees and power poles will isolate

residential areas. Power outages will last weeks to possibly months. Most of the area will be uninhabitable for weeks or months.

Category 5—sustained winds 157 mph or higher. Catastrophic damage will occur. A high percentage of framed homes will be destroyed, with total roof failure and wall collapse. Fallen trees and power poles will isolate residential areas. Power outages will last for weeks to possible months. Most of the area will be uninhabitable for weeks or months.

FEMA declared disasters in Hillsborough County during Hurricane Bob (1991) and Hurricane Floyd (1999). Though these were the only formally declared incidents, Milford has experienced strong remnants of numerous tropical cyclones including Hurricane Carol (1954), Donna (1960), Gloria (1985), Irene (2011), and Sandy (2012).

Hurricane Hazard Loss Estimate

There are no standard loss estimation models or tables for wind damage (*Understanding Your Risks,* FEMA, pg 4-30). As such, the Hazard Mitigation Team used data from previous hurricane events to determine damage estimates. Historically, the strongest hurricane seen in NH was a Category 3, so loss estimates were calculated based on a hurricane of that strength. Hurricanes have primarily damaged road networks and infrastructure in NH. It is beyond the scope of this project to estimate the costs of repairing or replacing transportation and utility infrastructure damaged by a hurricane. The Hazard Mitigation Team used the following calculations to estimate loss to single family residential structures from a hurricane.

Step 1. Determine percent building damage ratio to single family residence from Category 3 hurricane

- Wood Frame Construction, Low general hurricane design level = 20% building damage
- *Source: Milford Hazard Mitigation Team*

Step 2. Determine percent of structures in Milford that would be damaged by Category 3 hurricane

- 5% of structures estimated to be damaged by Category 3 hurricane
- *Source: Milford Hazard Mitigation Team (no historical data on hurricane damage in Milford)*

Step 3. Determine total assessed value of structures in Milford

- Total Assessed Value of all Structures in Milford = $1,052,810,300
- *Source: Milford Assessing Department (9/5/14)*

Step 4. Determine total loss from Category 3 hurricane

- Total Loss from Hurricane = Total Assessed Value of all Structures *Percentage of Structures Estimated to be Damaged * Percent Building Damage Ratio
- Total Loss from Hurricane = $1,052,810,300 * .05 * .2 = **$10,528,103**

Critical Facility Type	Total Number of this type of Critical Facilities in Milford	Number of this type of Critical Facilities in Hurricane Hazard Area	Percentage of this type of Critical Facilities in Hurricane Hazard Area
General Occupancy	100	97	96%

Essential Facilities	13	13	100%
Transportation	55	55	100%
Utility System	40	27	67.5%
High Potential Hazard	15	15	100%
Hazardous Materials	4	2	50%

Severe Thunderstorm

Severe thunderstorms typically contain heavy rainfall, high winds, and lightning. In extreme cases, thunderstorms have the potential to create tornadoes and downbursts. While thunderstorms are a common occurrence during the summer, not all thunderstorms create damage or injure humans.

Severe thunderstorms can create heavy rainfall, which may result in localized flooding. While thunderstorm tracking has become more accurate, severe thunderstorms typically result in very little warning and the aftermath of their rain and wind is extremely difficult to estimate.

By definition, all thunderstorms contain lightning. Lightning is a giant spark of electricity that occurs within the atmosphere or between the atmosphere and the ground. As lightning passes through the air, it heats the air to a temperature of about 50,000 degrees Fahrenheit, considerably hotter than the surface of the Sun. During a lightning discharge, the sudden heating of the air causes it to expand rapidly. After the discharge, the air contracts quickly as it cools back to ambient temperatures. This rapid expansion and contraction causes a shock wave that we hear as thunder.

Lightning is a major hazard to citizens involved in outdoor activities. A lightning strike at a densely attended special event has the potential to create a major mass casualty incident. Lightning also can create wildfires and structure fires and may cause power and/or communications outages.

Severe Thunderstorm Hazard Loss Estimate

Losses from severe thunderstorms would be similar to those sustained by hurricanes, only on a smaller, more localized scale. The Hazard Mitigation Team used the following calculations to estimate loss to single family residential structures from a severe thunderstorm.

Step 1. Determine percent building damage ratio to single family residence from severe thunderstorm

- Wood Frame Construction, Low general hurricane design level = 5% building damage
- *Source: Milford Hazard Mitigation Team*

Step 2. Determine percent of structures in Milford that would be damaged by severe thunderstorm

- 0.5% of structures estimated to be damaged by severe thunderstorm
- *Source: Milford Hazard Mitigation Team (no historical data on severe thunderstorm damage in Milford)*

Step 3. Determine total assessed value of structures in Milford

- Total Assessed Value of all Structures in Milford = $1,052,810,300
- *Source: Milford Assessing Department (9/5/14)*

Step 4. Determine total loss from severe thunderstorm

- Total Loss from Severe Thunderstorm = Total Assessed Value of all Structures *Percentage of Structures Estimated to be Damaged * Percent Building Damage Ratio
- Total Loss from Severe Thunderstorm = $1,052,810,300 * .005 * .05 = **$263,202.58**

Critical Facility Type	Total Number of this type of Critical Facilities in Milford	Number of this type of Critical Facilities in Severe Thunderstorm Hazard Area	Percentage of this type of Critical Facilities in Severe Thunderstorm Hazard Area
General Occupancy	101	101	100%
Essential Facilities	13	13	100%
Transportation	55	5	9.1%
Utility System	40	7	17.5%
High Potential Hazard	15	1	7%
Hazardous Materials	4	2	50%

Severe Winter Weather

A heavy snowstorm is generally considered to be one that deposits two or more inches of snow per hour in a twelve-hour period. Heavy snow can immobilize a region, stranding commuters, closing businesses, and disrupting emergency services. Accumulating snow can collapse buildings and knock down trees and power lines. Snow removal from roadways, utility damage, and disruption to businesses can have a significant economic impact on municipalities and residents.

A blizzard is a violent snowstorm with winds blowing at a minimum speed of 35 miles per hour and visibility of less than one-quarter mile for three hours. A Nor'easter is a large weather system traveling from south to north, passing along the coast. As the storm's intensity increases, the resulting counterclockwise winds impact the coast and inland areas in a Northeasterly direction. Winds from a Nor'easter can meet or exceed hurricane force, knocking down trees, utility poles, and power lines.

Ice storms occur when a mass of warm, moist air collides with a mass of cold, arctic air. The less dense warm air rises and the moisture precipitates out in the form of rain. When this rain falls through the colder, more-dense air and comes in contact with cold surfaces, ice forms and can become several inches thick. Heavy accumulations of ice can knock down trees, power lines, and communications for extended periods of time. Ice Storm extent can be defined by the Sperry-Piltz Ice Accumulation Index:

- 0—minimal risk of damage to exposed utility systems; no alerts or advisories needed for crews, few outages
- 1—some isolated or localized utility interruptions are possible, typically lasing on a few hours. Roads and bridges may become slick and hazardous.
- 2—scattered utility interruptions expected, typically lasing 12-24 hours. Roads and travel conditions may be extremely hazardous due to ice accumulation.

- 3—numerous utility interruptions with some damage to main feeder lines and equipment expected. Tree limb damage is excessive. Outages lasing 1-5 days.
- 4—prolonged and widespread utility interruptions with extensive damage to main distribution feeder lines and some high voltage transmission lines/structures. Outages lasing 5-10 days.
- 5—catastrophic damage to entire exposed utility systems, including both distribution and transmission networks. Outages could last several weeks in some areas. Shelters needed

In recent years, FEMA issued disaster declarations in Hillsborough County for severe winter weather in 1998, 2008, 2010, 2011, and 2013. Among these storms was a rare Nor'easter in late October of 2011 that caused major destruction in Hillsborough and Rockingham Counties. Heavy wet snow fell on trees that had much of their foliage remaining. Many trees could not withstand the extra weight of the snow and collapsed under the stress. Damage was very focused in the southern part of New Hampshire and caused nearly three times the amount of debris that the 2008 ice storm produced.

Severe Winter Weather Hazard Loss Estimate

Severe Winter Weather events have primarily damaged road networks and infrastructure in NH. It is beyond the scope of this project to estimate the costs of repairing or replacing transportation and utility infrastructure damaged by severe winter weather. The Hazard Mitigation Team used the following calculations to estimate loss to single family residential structures from severe winter weather.

Step 1. Determine percent building damage ratio to single family residence from severe winter weather
- Wood Frame Construction, no additional provisions for roof snow loads = 5% building damage
- *Source: Milford Hazard Mitigation Team*

Step 2. Determine percent of structures in Milford that would be damaged by severe winter weather
- 1% of structures estimated to be damaged by severe winter weather
- *Source: Milford Hazard Mitigation Team*

Step 3. Determine total assessed value of structures in Milford
- Total Assessed Value of all Structures in Milford = $1,052,810,300
- *Source: Milford Assessing Department (9/5/14)*

Step 4. Determine total loss from Severe Winter Weather
- Total Loss from Severe Winter Weather = Total Assessed Value of all Structures *Percentage of Structures Estimated to be Damaged * Percent Building Damage Ratio
- Total Loss from Severe Winter Weather = $1,052,810,300 * .01 * .05 = **$526,405.15**

Critical Facility Type	Total Number of this type of Critical Facilities in Milford	Number of this type of Critical Facilities in Severe Winter Weather Hazard Area	Percentage of this type of Critical Facilities in Severe Winter Weather Hazard Area
General Occupancy	101	97	96%
Essential Facilities	13	13	100%
Transportation	55	55	100%

Utility System	40	7	17.5%
High Potential Hazard	15	15	100%
Hazardous Materials	4	2	50%

Tornado/Downburst

A tornado is a violently rotating column of air extending from a thunderstorm to the ground. The most violent tornadoes are capable of tremendous destruction with wind speeds of 250 mph or more. Damage paths can be in excess of 1 mile wide and 50 miles long. Tornadoes are created when cold air overrides warm air, causing the warm air to rise rapidly.

A downburst is a severe localized wind blasting down from a thunderstorm. These 'straight line' winds are distinguishable from tornadic activity by their pattern of destruction and debris. Depending on the size and location of these events, the destruction to property may be devastating. Downbursts fall into two categories. Microbursts cover an area less than 2.5 miles in diameter and macrobursts cover an area at least 2.5 miles in diameter.

Hillsborough County has a higher risk of tornado activity compared to the rest of the State. Between 1961 and 1998 there were 15 known tornadoes in Hillsborough County. The most recent downburst activity occurred on July 6, 1999 in the form of a macroburst in Merrimack, Grafton and Hillsborough Counties. There were two fatalities as well as roof damage, widespread power outages, and downed trees, utility poles and wires.

Tornado Hazard Loss Estimate

There are no standard loss estimation models or tables for tornados (*Understanding Your Risks,* FEMA, pg 4-27). As such, the Hazard Mitigation Team used data from previous tornado events to determine damage estimates. Historically, the strongest tornado seen in Hillsborough County was a F2, so loss estimates were calculated based on a tornado of that strength.

Step 1. Determine percent building damage ratio to single family residence from F2 tornado

- Wood Frame Construction, Low general tornado design level = 50% building damage
- *Source: Milford Hazard Mitigation Team*

Step 2. Determine percent of structures in Milford that would be damaged by F2 tornado

- 1% of structures estimated to be damaged by F2 tornado
- *Source: Milford Hazard Mitigation Team (no historical data on tornado damage in Milford)*

Step 3. Determine total assessed value of structures in Milford

- Total Assessed Value of all Structures in Milford = $1,052,810,300
- *Source: Milford Assessing Department (9/5/14)*

Step 4. Determine total loss from F2 Tornado

- Total Loss from Tornado = Total Assessed Value of all Structures *Percentage of Structures Estimated to be Damaged * Percent Building Damage Ratio
- Total Loss from Tornado = $1,052,810,300 * .01 * .5 = **$5,264,051.50**

Critical Facility Type	Total Number of this type of Critical Facilities in Milford	Number of this type of Critical Facilities in Tornado Hazard Area	Percentage of this type of Critical Facilities in Tornado Hazard Area
General Occupancy	101	97	96%
Essential Facilities	13	13	100%
Transportation	55	55	100%
Utility System	40	27	67.5%
High Potential Hazard	15	15	100%
Hazardous Materials	4	2	50%

Wildfire

Wildfires are fires ignited in grassy or wooded areas. They may be ignited intentionally by humans, naturally through lightning, or accidentally due to spark ignition from sources such as power lines or fireworks. The interface between forested lands and developed lands poses an ongoing threat to property from wildfires. Potential wildfire areas outside of the recommended response time radius from the fire station may pose a higher risk to structures and residents than those located closer to the fire station.

Wildfire hazard losses are dependent on a number of factors, including access to parcels, lot size, proximity to forested lands, topography, building materials, and proximity to fire protection water source.

Wildfire Hazard Loss Estimate

Step 1. Determine percent building damage ratio to single family residence from wildfire

- Wood Frame Construction, combustible siding and decking = 20% building damage
- *Source: Milford Hazard Mitigation Team*

Step 2. Determine percent of structures in Milford that would be damaged by wildfire

- 0.5% of structures estimated to be damaged by wildfire
- *Source: Milford Hazard Mitigation Team*

Step 3. Determine total assessed value of structures in Milford

- Total Assessed Value of all Structures in Milford = $1,052,810,300
- *Source: Milford Assessing Department (9/5/14)*

Step 4. Determine total loss from Wildfire

- Total Loss from Wildfire = Total Assessed Value of all Structures *Percentage of Structures Estimated to be Damaged * Percent Building Damage Ratio
- Total Loss from Wildfire = $1,052,810,300 * .005 * .2 = **$1,052,810.30**

Critical Facility Type	Total Number of this type of Critical Facilities in Milford	Number of this type of Critical Facilities in Wildfire Hazard Area	Percentage of this type of Critical Facilities in Wildfire Hazard Area
General Occupancy	101	97	96%
Essential Facilities	13	13	100%
Transportation	50	0	0%
Utility System	40	7	17.5%
High Potential Hazard	15	1	7%
Hazardous Materials	4	2	50%

Section 3.6 ~ Overall Summary of Vulnerability

Table 7a—Overall Summary of Vulnerability by Hazard

Hazard	Types of Critical Facilities Impacted by Hazard	Impact of Hazard	% of Critical Facilities in Hazard Area	% of Structures Estimated to be Damaged	$ Value of Loss
Drought	Agricultural land. Not likely to have a significant impact on structures.	Loss of crops. Inadequate quantity of drinking water. Loss of water for fire protection. Increased risk of fire.	General Occupancy = 4% Essential Facilities = 0% Transportation = 0% Utility Systems = 35% High Potential Hazard = 0% Hazardous Materials = 0%	783 acres of agricultural land	Calculating $ value of losses is beyond the scope of this Plan (see Section 3.5 Drought for explanation)
Earthquake	General Occupancy Essential Facilities Transportation Utility Systems High Potential Hazard Hazardous Materials	Structural damage or collapse of buildings. Damage or loss of infrastructure, including roads, bridges, railroads, power and phone lines, municipal	General Occupancy = 96% Essential Facilities = 100% Transportation = 100% Utility Systems	1% to 5%	$63,168.62 to $315,843.09

Hazard	Types of Critical Facilities Impacted by Hazard	Impact of Hazard	% of Critical Facilities in Hazard Area	% of Structures Estimated to be Damaged	$ Value of Loss
		communications, radio system. Loss of water for fire protection. Risk to life, medical surge.	= 67.5% High Potential Hazard = 100% Hazardous Materials = 50%		
Extreme Temperatures	Not likely to have a significant impact on structures.	Overburdened power networks. Heating fuel shortages. Risk to life from prolonged exposure.	General Occupancy = 0% Essential Facilities = 0% Transportation = 0% Utility Systems = 0% High Potential Hazard = 0% Hazardous Materials = 0%	0%	$0
Flooding	General Occupancy Transportation High Potential Hazard Hazardous Materials	Water damage to structures and their contents. Damage or loss of infrastructure, including roads, bridges, railroads, power and phone lines, municipal communications, radio system. Environmental hazards resulting from damage. Isolation of neighborhoods resulting from	General Occupancy = 9% in 1% annual floodplain; 2% in 0.2% annual floodplain Essential Facilities = 0% in 1% annual floodplain; 0% in 0.2% annual floodplain Transportation = 28% in 1% annual floodplain; 6% in 0.2% annual floodplain	Up to 197 buildings	1 foot flood = $6,192,385.41 2 foot flood = $8,256,513.89 3 foot flood = $9,494,990.97 4 foot flood = $11,559,119.44

Hazard	Types of Critical Facilities Impacted by Hazard	Impact of Hazard	% of Critical Facilities in Hazard Area	% of Structures Estimated to be Damaged	$ Value of Loss
		flooding.	Utility Systems = 7.5% in 1% annual floodplain; 2.5% in 0.2% annual floodplain High Potential Hazard = 50% in 1% annual floodplain; 0% in 0.2% annual floodplain Hazardous Materials = 100% in 1% annual floodplain; 0% in 0.2% annual floodplain		
Fluvial Erosion	• General Occupancy • Transportation Systems	Washed out culverts. Undermined bridges and roadways. Property loss and damage to structures located along washed out stream banks.	General Occupancy = n/a Essential Facilities = 0% Transportation = 9.1% Utility Systems = n/a High Potential Hazard = n/a Hazardous Materials = 100%	Up to 125 structures	It is beyond the scope of this project to assign potential damage estimates to structures caused by fluvial erosion.
Hurricane/Tropical Storm	General Occupancy Essential Facilities	Wind damage to structures and trees.	General Occupancy = 96%	5%	$10,528,103

Hazard	Types of Critical Facilities Impacted by Hazard	Impact of Hazard	% of Critical Facilities in Hazard Area	% of Structures Estimated to be Damaged	$ Value of Loss
	Transportation Utility Systems High Potential Hazard Hazardous Materials	Water damage to structures and their contents. Damage or loss of infrastructure, including roads, bridges, railroads, power and phone lines, municipal communications, radio system. Environmental hazards resulting from damage. Isolation of neighborhoods resulting from flooding.	Essential Facilities = 100% Transportation = 100% Utility Systems = 67.5% High Potential Hazard = 100% Hazardous Materials = 50%		
Severe Thunderstorm	General Occupancy Essential Facilities Utility System High Potential Hazard Hazardous Materials	Smoke and fire damage to structures. Disruption to power lines and municipal communications. Damage to critical electronic equipment. Injury or death to people involved in outdoor activity.	General Occupancy = 100% Essential Facilities = 100% Transportation = 0% Utility Systems = 17.5% High Potential Hazard = 7% Hazardous Materials = 50%	0.5%	$263,202.58
Severe Winter Weather	General Occupancy Essential Facilities Transportation	Disruption to road network. Damage to trees and power lines,	General Occupancy = 96% Essential	1%	$526,405.15

Hazard	Types of Critical Facilities Impacted by Hazard	Impact of Hazard	% of Critical Facilities in Hazard Area	% of Structures Estimated to be Damaged	$ Value of Loss
	Utility High Potential Hazard Hazardous Materials	communications. Structural damage to roofs/collapse. Increase in CO, other hazards.	Facilities = 100% Transportation = 100% Utility Systems = 17.5% High Potential Hazard = 100% Hazardous Materials = 50%		
Tornado/Downburst	General Occupancy Essential Facilities Transportation Utility System High Potential Hazard Hazardous Materials	Wind damage to structures and trees. Damage or loss of infrastructure, including roads, bridges, railroads, power and phone lines, municipal communications, radio system. Environmental hazards resulting from damage. Medical surge.	General Occupancy = 96% Essential Facilities = 100% Transportation = 100% Utility Systems = 67.5% High Potential Hazard = 100% Hazardous Materials = 50%	1%	$5,264,051.50
Wildfire	General Occupancy Essential Facilities Utility System High Potential Hazard Hazardous Materials	Smoke and fire damage to structures in wild land/urban interface. Damage to habitat. Impacts to air quality.	General Occupancy = 96% Essential Facilities = 100% Transportation = 0% Utility Systems	0.5%	$1,052,810.30

Hazard	Types of Critical Facilities Impacted by Hazard	Impact of Hazard	% of Critical Facilities in Hazard Area	% of Structures Estimated to be Damaged	$ Value of Loss
		Loss of natural resources.	= 17.5% High Potential Hazard = 7% Hazardous Materials = 50%		

Table 7b—Overall Summary of Vulnerability by Facility Type

Facility Type	Total # of facilities	# susceptible to Drought	# susceptible to Earthquake	# susceptible to Extreme Temperatures	# susceptible to Flooding	# susceptible to Fluvial Erosion	# susceptible to Hurricane	# susceptible to Severe Thunderstorm	# susceptible to Severe Winter Weather	# susceptible to Tornado/Downburst	# susceptible to Wildfire
General Occupancy	101	4	97	0	9 in 1% annual, 2 in 0.2% annual	n/a	97	101	97	97	97
Essential Facilities	13	0	13	0	0 in 1% annual; 0 in 0.2% annual	0	13	13	13	13	13
Transportation	55	0	55	0	14 in 1% annual; 3 in 0.2% annual	5	55	5	55	55	0
Utility	40	14	27	0	3 in 1% annual; 1 in 0.2% annual	n/a	27	7	7	27	7
High Hazard	15	0	15	0	7 in 1% annual; 0 in 0.2% annual	n/a	15	1	15	15	1
Hazardous Materials	4	0	2	0	4 in 1% annual; 0 in 0.2% annual	4	2	2	2	2	2

Section 3.7 ~ National Flood Insurance Program

The Town of Milford participates in the National Flood Insurance Program (NFIP). This provides full insurance coverage based on risk as shown on detailed Flood Insurance Rate Maps (FIRMs). Milford joined the NFIP on May 1, 1980. The Town's initial Flood Hazard Boundary Map was identified on March 22, 1974 and its initial Flood Insurance Rate Map was identified on May 1, 1980. The current effective map date is September 25, 2009.

Milford has 63 NFIP policies in force and $15,116,700 of insurance in force. There have been 7 paid losses totaling $130,404. Milford has no repetitive loss properties.

As a participant in the NFIP, communities must agree to adopt a floodplain management ordinance and enforce the regulations found in the ordinance. Milford has adopted the "Floodplain Management District," found in Section 6.03.0 of the Town of Milford, NH Zoning Ordinance. The Floodplain Management District is enacted to promote public health, safety, and general welfare and to minimize public and private losses due to flood conditions in specific areas of Milford by the establishment of standards designed to:

- Protect human life and public health
- Minimize expenditure of money for costly flood control projects
- Minimize the need for rescue and relief efforts associated with flooding
- Minimize prolonged business and employment interruptions
- Minimize damage to public facilities and utilities
- Help maintain a stable tax base
- Insure that purchasers of property are notified of special flood hazards
- Insure that persons who occupy areas of special flood hazard assume responsibility for their actions
- Insure continued eligibility of owners of property in the Town of Milford for participation in the NFIP pursuant to the rules and regulations published in the Federal Register (Vol. 41, #207, 10/26/76).

The Floodplain Management District is an overlay district and supplements the regulations of the underlying district in the Town's Zoning Ordinance. The Ordinance is applicable to "Areas of Special Flood Hazard," which are delineated on the "Flood Insurance Rate Maps, Hillsborough County, NH." The map is based on the "Flood Insurance Study for the County of Hillsborough, NH" dated September 25, 2009 or as amended, together with the associated "Flood Insurance Rate Maps" dated September 25, 2009 prepared by FEMA.

The ordinance includes the following sections: Purpose (§6.03.1), Definitions (§6.03.2), Permits (§6.03.3), Criteria (§6.03.4), Appeals and Variances (§6.03.5), Effective Date and Filing (§6.03.6), Notices and Records (§6.03.7), and Appeal to Court (§6.03.8).

To demonstrate the Milford's continued compliance with NFIP requirements, the Hazard Mitigation Team identified the follow mitigation actions as part of its comprehensive mitigation strategy. These actions also appear in Section 4.2, Table 9—Mitigation Actions.

Table 8—National Flood Insurance Program Mitigation Actions

National Flood Insurance Program Mitigation Actions			
Mitigation Action	**Mitigation Type**	**Hazard Addressed**	**Critical Facilities Addressed**
Establish mutual aid agreements with neighboring communities to address administering the NFIP following a major storm event. Form partnerships between local, state, and regional entities to expand resources and improve coordination to support floodplain management.	• Emergency Services Protection	• Flooding • Erosion • Hurricane	• General Occupancy • Essential Facilities • Transportation Systems • Utility Systems • High Potential Hazard • Hazardous Materials
Incorporate flood mitigation into local planning. Revise/adopt subdivision regulations and erosion control regulations to improve floodplain management in Milford.	• Prevention • Natural Resources Protection	• Flooding • Erosion • Hurricane	• General Occupancy • Essential Facilities • Transportation Systems • Utility Systems • High Potential Hazard • Hazardous Materials

CHAPTER 4. MITIGATION STRATEGY

Section 4.1 ~ Goals and Objectives to Reduce Vulnerabilities to Hazards

The first step in developing a mitigation strategy is to establish goals that reflect what the municipality wishes to achieve through the implementation of its Hazard Mitigation Plan. The Milford Hazard Mitigation Team established the following goals and objectives, based on its desire to protect the Town's population, critical facilities, infrastructure, emergency services, natural resources, and private property. These goals provided the basis for identifying and prioritizing mitigation actions.

Goal 1—Prevent the impacts of natural hazards on the Town's population, critical facilities, infrastructure, emergency services, natural resources, and private property whenever possible.

- Objective 1.1—Manage development of known hazard areas to avoid the risks associated with natural hazards.
- Objective 1.2—Plan to incorporate hazard mitigation into capital improvements and other future initiatives.
- Objective 1.3—Ensure building codes and other standards include requirements that make new construction more disaster resistant.
- Objective 1.4—Support the maintenance of this hazard mitigation plan.

Goal 2—Protect the Town's existing critical facilities, infrastructure, and private property from the impacts of natural hazards through cost effective mitigation activities.

- Objective2.1—Modify existing structures to reduce damage from future natural hazard events.
- Objective 2.2—Perform cost effective flood hazard mitigation measures to protect private property.

Goal 3—Educate and inform the Town's residents to help them become more resilient to natural hazards impacting the community.

- Objective 3.1—Utilize educational methods to change the perception from "disaster losses are acceptable" to "many disaster losses are preventable if mitigation practices are followed."
- Objective 3.2—provide educational opportunities across all age ranges.
- Objective 3.3—Develop and distribute public awareness materials regarding the relative risk of natural hazards and practical mitigation measures to reduce damages and injuries.

Goal 4—Address the challenges of natural resource degradation and the associated increased risk from hazards.

- Objective 4.1—Ensure development in hazard areas does not destroy natural barriers to damage, such as floodplains and vegetation.
- Objective 4.2—Protect or recreate environmental assets to help safeguard the built environment.

Goal 5—Protect emergency services, critical facilities, and other critical capabilities from hazard damage in order for them to remain operational.

- Objective 5.1—Identify critical facilities, infrastructure, and emergency services and their vulnerabilities to natural hazards.
- Objective 5.2— Develop and implement programs to promote hazard mitigation actions that protect the provision of emergency services in Town.
- Objective 5.3—Identify, maintain, and protect evacuation routes from hazard damage so they are usable when needed.

Section 4.2 ~ Mitigation Actions

After establishing goals and objectives to reduce vulnerabilities to each hazard type, the Hazard Mitigation Team identified mitigation actions to achieve these goals. The resulting mitigation actions appear in Table 9 below.

Table 9—Mitigation Actions

Mitigation Action	Mitigation Type	Hazard Addressed	Critical Facilities Addressed
Mitigation Actions Originally Identified in 2006 Plan			
Survey population and develop database of special needs individuals and groups to improve emergency services to special needs individuals.	• Public Education	• Earthquake • Extreme Temperatures • Flooding • Fluvial Erosion • Hurricane/Tropical Storm • Severe Thunderstorm • Severe Winter Weather • Tornado/Downburst • Wildfire	• Human lives
Install generators at all critical Town facilities and schools.	• Emergency Services Protection	• Earthquake • Extreme Temperatures • Flooding • Fluvial Erosion • Hurricane/Tropical Storm • Severe Thunderstorm • Severe Winter Weather • Tornado/Downburst	• Essential Facilities
National Flood Insurance Program Mitigation Actions			
Establish mutual aid agreements with neighboring communities to address administering the NFIP following a major storm event. Form	• Emergency Services Protection	• Flooding • Fluvial Erosion • Hurricane/Tropical Storm	• General Occupancy • Essential Facilities • Transportation Systems • Utility Systems • High Potential Hazard

Mitigation Action	Mitigation Type	Hazard Addressed	Critical Facilities Addressed
partnerships between local, state, and regional entities to expand resources and improve coordination to support floodplain management.			• Hazardous Materials
Incorporate flood mitigation into local planning. Revise/adopt subdivision regulations and erosion control regulations to improve floodplain management in Milford.	• Prevention • Natural Resources Protection	• Flooding • Fluvial Erosion • Hurricane/Tropical Storm	• General Occupancy • Essential Facilities • Transportation Systems • Utility Systems • High Potential Hazard • Hazardous Materials
Additional Mitigation Actions			
Develop a plan and process for water conservation during drought conditions. Educate residents on water saving techniques.	• Prevention • Public Education • Natural Resources Protection	• Drought	• General Occupancy • Utility System
Map and assess vulnerability to erosion. Conduct stream assessments and prepare fluvial erosion hazard zone maps.	• Prevention	• Fluvial Erosion	• General Occupancy • Essential Facilities • Transportation Systems • Utility Systems • High Potential Hazard • Hazardous Materials
Reduce urban heat island effect by encouraging tree planting around buildings and parking lots.	• Prevention • Natural Resources Protection	• Extreme Temperatures	• Vulnerable populations
Improve stormwater drainage system capacity and flood control infrastructure. Consider costs and benefits of a variety of	• Prevention • Structural	• Flooding	• General Occupancy • Essential Facilities • Transportation Systems • Utility Systems • High Potential

Mitigation Action	Mitigation Type	Hazard Addressed	Critical Facilities Addressed
infrastructure upgrades, including stormwater pipe storage, stormwater ponds, stormwater tank storage, and culvert upsizing and realignment. Adopt policies to reduce stormwater runoff.			Hazard • Hazardous Materials
Protect vulnerable populations from the impacts of extreme temperatures and severe winter storms by establishing shelters and cooling stations at designated municipal and school facilities.	• Prevention • Public Education	• Extreme Temperatures • Severe Winter Weather	• Vulnerable populations
Enforce the International Building Code (IBC) and International Residential Code (IRC) to protect buildings and infrastructure from the impacts of earthquakes, flooding, hurricanes, and winter storms.	• Prevention • Property Protection	• Earthquake • Flooding • Hurricanes • Severe Winter Weather	• General Occupancy • Essential Facilities • Transportation Systems • Utility Systems • High Potential Hazard • Hazardous Materials
Conduct outreach and education programs to increase awareness of severe winter weather (including carbon monoxide risks), severe thunderstorm, tornado, and wildfire risk through Risk Watch, Milford Fire Department's comprehensive injury prevention program.	• Public Education	• Severe Thunderstorm • Severe Winter Weather • Tornado • Wildfire	• General Occupancy • Essential Facilities • Transportation Systems • Utility Systems • High Potential Hazard • Hazardous Materials
Protect power lines by working with utility companies to harden	• Prevention	• Hurricane • Severe Winter Weather	• Transportation Systems • Utility Systems

Mitigation Action	Mitigation Type	Hazard Addressed	Critical Facilities Addressed
electrical infrastructure, including trimming trees near power lines. Consider the costs and benefits of requiring that overhead power lines be buried in all new developments. Protect critical facilities and equipment from lightning damage by installing lightning protection devices.			
Work with property owners to elevate or remove loss structures from flood-prone areas to minimize future flood losses.	• Prevention	• Flooding	• General Occupancy • Essential Facilities • Utility Systems • Hazardous Materials

Section 4.3 ~ Prioritizing Mitigation Actions

After identifying mitigation actions to address each hazard, the Team then began a two-step process to prioritize them. The first step was to conduct a benefit cost review. Benefit cost reviews provide a comprehensive overview of the monetary and non-monetary costs and benefits associated with each action. During this process, the Hazard Mitigation Team asked a variety of questions such as, "How beneficial is this action to the entire Town?" "How many people will benefit from this action?" "How large of an area is impacted by this project?" "How costly is this project?"

Table 10—Benefit Cost Review

Mitigation Action	Likely Benefits	Likely Costs
Establish mutual aid agreements with neighboring communities to address administering the NFIP following a major storm event. Form partnerships between local, state, and regional entities to expand resources and improve coordination to support floodplain management.	• This action helps municipalities to share resources and decreases the burden on any one community. • This action would be most beneficial to residents in flood-prone areas of Town. • This action has the potential to reduce flood related economic losses.	• Responding to a mutual aid call in a neighboring community could take away resources from Milford. • Mutual aid calls for non-federally declared disasters would not be reimbursed by FEMA. • percentage of $4,100 *(source: 2014 Milford Budget, Emergency Management line*

Mitigation Action	Likely Benefits	Likely Costs
		item)
Incorporate flood mitigation into local planning. Revise/adopt subdivision regulations and erosion control regulations to improve floodplain management in Milford.	• This action would be most beneficial to residents in flood-prone areas of Town. • This action has the potential to reduce flood related economic losses.	• This action would impact property owners subject to the revised subdivision and erosion control regulations. • $50,000 *(source: 2014 Milford Budget, Planning & Zoning line item)*
Develop a plan and process for water conservation during drought conditions. Educate residents on water saving techniques.	• This action has environmental benefits if residents comply with reduced water consumption measures. • The state may have educational materials that the Town could utilize.	• This action may have limited impact if there is not an accompanying enforcement mechanism. • Milford has a mix of public and private wells, which makes enforcement difficult. • percentage of $1,368,189 *(Milford 2014 Water Department Operating Budget)*
Map and assess vulnerability to erosion. Conduct stream assessments and prepare fluvial erosion hazard zone maps.	• This action is the first step towards avoiding and reducing future losses from erosion. • This action can help determine how areas at greatest risk of erosion can be targeted for hazard mitigation opportunities.	• $0—the entire cost of this action is being borne by the NH DES through a FEMA Pre-Disaster Mitigation grant. There are no costs to the Town.
Reduce urban heat island effect by encouraging tree planting around buildings and parking lots.	• Tree planting enhances the visual appearance of Town. • Tree planting helps solve a symptom of extreme temperatures. • Tree planting improves air quality.	• This action would only apply to commercial development and may increase development costs. • Percentage of $323,963 *(source: 2014 Milford Budget, Planning & Zoning line item)*
Improve stormwater drainage system capacity and flood control infrastructure. Consider costs and benefits of a variety of infrastructure upgrades, including stormwater pipe storage, stormwater ponds, stormwater tank storage, and culvert upsizing and realignment. Adopt policies to reduce	• Taking this action helps reduce the risk of major repair costs that might occur if no action were taken. • There are environmental benefits to surface water quality. • Although individual culvert and storm drain repairs	• It is expensive to upgrade stormwater drainage systems. • Individual culvert and storm drain repairs may only benefit a localized area, while the economic costs are shared among the entire population. • Estimate of $75,000 per

Mitigation Action	Likely Benefits	Likely Costs
stormwater runoff.	only occur in a localized area, they may be beneficial to a large portion of the population depending on how heavily traveled and densely developed the area is.	drainage project *(source: 2012 Milford CIP Project Request DPWH11-01 South Street Drainage Improvements)*; $230,000 for Vacuum Sweeper *(Milford 2013-2018 CIP Project Request DPW11-02)*
Protect vulnerable populations from the impacts of extreme temperatures and severe winter storms by establishing shelters and cooling stations at designated municipal and school facilities.	• This action would benefit the entire Town and particularly the most at risk and needy populations. • This action has broad social benefits for the community.	• percentage of $4,100 *(source: 2014 Milford Budget, Emergency Management line item)*
Enforce the International Building Code (IBC) and International Residential Code (IRC) to protect buildings and infrastructure from the impacts of earthquakes, flooding, hurricanes, and winter storms.	• This action would be effective at avoiding and reducing future losses. • This action is beneficial to all applicable buildings across the entire Town.	• This action may not benefit older structures not subject to newer building codes. • percentage of $140,140 *(source: 2014 Milford Budget, Building Inspection line item)*
Conduct outreach and education programs to increase awareness of severe winter weather (including carbon monoxide risks), severe thunderstorm, tornado, and wildfire risk through Risk Watch, Milford Fire Department's comprehensive injury prevention program.	• The Town currently has the capacity to implement this action. • This action is beneficial to all residents in Town.	• This action may have limited impact because it can be difficult to get people to pay attention to outreach campaigns. • percentage of $4,100 *(source: 2014 Milford Budget, Emergency Management line item)*
Survey population and develop database of special needs individuals and groups to improve emergency services to special needs individuals.	• Helps vulnerable populations • Voluntary participation in database	• Cost covered by normal town operations • May be difficult to get personal contact information • Voluntary participation means not everyone would be covered • percentage of $4,100 *(source: 2014 Milford Budget, Emergency Management line item)*
Install generators at all critical Town facilities and schools.	• Critical facilities will continue to be able to function in the event of power outages.	• Generators are costly to purchase. • $25,000-$75,000 per generator, depending on

Mitigation Action	Likely Benefits	Likely Costs
	• Schools will be more effective shelters for vulnerable populations.	size *(source: 2014 Milford Budget for each department installing generator; FEMA Hazard Mitigation Assistance grant)*
Protect power lines by working with utility companies to harden electrical infrastructure, including trimming trees near power lines. Consider the costs and benefits of requiring that overhead power lines be buried in all new developments. Protect critical facilities and equipment from lightning damage by installing lightning protection devices.	• Reduced inconvenience and loss associated with a shutdown of critical facilities due to lightning damage and power outages	• Tree removal may be incompatible with local aesthetics • Burying power lines may be cost prohibitive • $1,200 per large tree for removal *(source: Milford Highway and Streets budget)* • $1,000-$5,000 per critical facility for lightning protection devices *(source: Milford Operating budget for each department)*
Work with property owners to elevate or remove loss structures from flood-prone areas to minimize future flood losses.	• This action would avoid future flood losses to the properties that are moved. • Decrease in emergency response costs.	• Loss of tax revenue from the properties that are removed. • FEMA covers the administrative costs associated removing structures. • Property owners cover costs of elevating structures • $0—no direct costs to Town, town only coordinates process • Percentage of $323,963 for coordination by Town *(source: 2014 Milford Budget, Planning & Zoning line item)*

After completing a Benefit Cost review for each action, the Hazard Mitigation Team then prioritized the actions by conducting a STAPLEE Analysis, which stands for Social, Technical, Administrative, Political, Legal, Economic, and Environmental factors. For each mitigation action, the Team asked the following questions:

- Social— Will the action unfairly affect any one segment of the population? Will it disrupt established neighborhoods? Is it compatible with present and future community values? Will it adversely affect cultural resources?

- Technical—How effective is the action in avoiding or reducing future losses? Will it create more problems than it solves? What are some secondary impacts? Does it solve a problem or only a symptom?
- Administrative— Does the community have the capability to implement the action? Can the community provide the necessary maintenance? Can it be accomplished in a timely manner?
- Political— Is there public support both to implement and maintain the action? Is the political leadership willing to support it? Does it present a financial burden to stakeholders?
- Legal— Does the community have the authority to implement the action? Is enabling legislation necessary? What are the legal side effects? Will the community be liable for the actions, support of actions, or lack of actions?
- Economic— What are the costs of this action? How will the costs be borne? Are state/federal grant programs applicable? Does the action fit into existing capital improvements or economic development budgets?
- Environmental— How will this action affect the environment? Does it comply with local, state, and federal environmental regulations? Is it consistent with community environmental goals? Are endangered or threatened species likely to be affected?

The cost and benefit of each mitigation action were then evaluated and assigned a quantitative score based on the STAPLEE criteria.

Benefit Score Range: 0 = Not Beneficial, 1 = Somewhat Beneficial, 2 = Beneficial, 3 = Very Beneficial

Cost Score Range: 0 = Not Costly, -1 = Somewhat Costly, -2 = Costly, -3 = Very Costly

Next, the scores for each action were added to determine priority. Finally, the Hazard Mitigation Team reviewed the scores and resulting prioritization to make sure it was consistent with the Town's goals and Master Plan. Actions that received the same STAPLEE score will be further prioritized by the Hazard Mitigation Team based on implementation costs. The STAPLEE analysis and prioritized mitigation actions appear in Table 11 below.

Table 11—STAPLEE Analysis

Mitigation Action: Enforce the International Building Code (IBC) and International Residential Code (IRC) to protect buildings and infrastructure from the impacts of earthquakes, flooding, hurricanes, and winter storms.			
Criteria	**Evaluation**	**Cost**	**Benefit**
Social	There are no social impacts associated with this action. Enforcement would apply evenly across all applicable buildings, including new construction, major renovations, and changes of use.	0	2
Technical	This action is effective at avoiding and reducing future losses and it mitigates the impacts of these hazards.	0	2
Administrative (including responsible	Milford has the capability to implement this action. Responsibility would fall under the Building Department and	0	2

party)	Fire Department.		
Political	It is unclear whether there is public support to implement and maintain this action.	0	0
Legal	Milford has adopted these codes and has the legal authority to enforce them.	0	2
Economic (including direct cost)	This action falls under the existing Building Dept. budget and does not impose additional costs to the Town.	0	2
Environmental	This action has the potential to reduce property damage and subsequent environmental impacts.	0	2
Subtotal		**0**	**12**
Total		**12**	
Priority		**1**	

Mitigation Action: Conduct outreach and education programs to increase awareness of severe winter weather (including carbon monoxide risks), severe thunderstorm, tornado, and wildfire risk through Risk Watch, Milford Fire Department's comprehensive injury prevention program.			
Criteria	**Evaluation**	**Cost**	**Benefit**
Social	This action does not unfairly affect any one segment of the population. All Milford residents have access to Risk Watch and it is also available in Spanish.	0	2
Technical	This action would help to decrease risk and avoid future loss.	0	2
Administrative (including responsible party)	Milford has the capability to implement this action. The Fire Department is the responsible party and this action falls under its existing work plan.	0	2
Political	There is public support to implement and maintain this action.	0	2
Legal	Milford has the legal authority to implement this action.	0	2
Economic (including direct cost)	There are no additional costs associated with this project since it is part of the existing Fire Dept. budget.	0	2
Environmental	This action has the potential to reduce property damage and subsequent environmental impacts.	0	0
Subtotal		**0**	**12**
Total		**12**	
Priority		**1**	

Mitigation Action: Establish mutual aid agreements with neighboring communities to address administering the NFIP following a major storm event. Form partnerships between local, state, and regional entities to expand resources and improve coordination to support floodplain management.			
Criteria	**Evaluation**	**Cost**	**Benefit**
Social	There are no social impacts related to this action. It will not	0	2

	unfairly affect any segment of the population or disrupt established neighborhoods. It is compatible with present and future community values of working cooperatively with neighboring municipalities.		
Technical	This action does not create additional problems or cause secondary impacts. If used for proactive floodplain management, it can solve the problem of flooding in addition to the symptoms and can help reduce future loss.	0	2
Administrative (including responsible party)	Milford has the capability to implement this action and it can be accomplished in a timely manner. The Town already has mutual aid agreements implemented through Souhegan Valley Mutual Aid. Fire Dept. is the responsible party for this action.	0	2
Political	There is public support to implement and maintain this action and the Board of Selectmen are willing to support it.	0	2
Legal	Milford has the legal authority to implement this action. No enabling legislation is necessary.	0	0
Economic (including direct cost)	There are no additional costs to the Town for this action because it falls under existing budgets.	0	2
Environmental	This action has no negative environmental impacts. It could positively benefit the environment by improving floodplain management.	0	1
Subtotal		**0**	**11**
Total		**11**	
Priority		**2**	

Mitigation Action: Incorporate flood mitigation into local planning. Revise/adopt subdivision regulations and erosion control regulations to improve floodplain management in Milford.			
Criteria	**Evaluation**	**Cost**	**Benefit**
Social	This action would impact property owners subject to the revised subdivision and erosion control regulations. It would have a positive social impact on the community by reducing flooding.	0	2
Technical	This action helps solve the problem of flood related damage. It is effective in reducing future losses.	0	2
Administrative (including responsible party)	Milford has the capability to implement this action. Revisions to regulations require a town vote and public hearing. Community Development is the responsible party for this action.	0	2
Political	There is public support to implement and maintain this action and the Board of Selectmen are willing to support it.	0	2
Legal	Milford has the legal authority to implement this action.	0	0
Economic (including direct cost)	There are no additional costs to the Town for this action because it falls under the existing Community Development budget.	0	1
Environmental	This action has positive environmental impacts by encouraging erosion control and reduced floodplain development. It is	0	2

	consistent with community environmental goals.		
Subtotal		**0**	**11**
Total		**11**	
Priority		**2**	

Mitigation Action: Map and assess vulnerability to erosion. Conduct stream assessments and prepare fluvial erosion hazard zone maps.			
Criteria	**Evaluation**	**Cost**	**Benefit**
Social	This action will not unfairly affect any segment of the population, disrupt established neighborhoods, or adversely affect cultural resources. It is compatible with the community's values of protecting life and property.	0	1
Technical	This action is the first step towards avoiding and reducing future losses from erosion. Mapping and assessment will help to determine how areas at greatest risk of erosion can be targeted for hazard mitigation opportunities.	0	1
Administrative	NH Department of Environmental Services (NH DES) is the responsible party to implement this action. NH DES is currently conducting fluvial erosion hazard assessments in the Souhegan and Piscataquog River watersheds. This action can be accomplished in a timely manner. Field assessments and analysis will be complete by September 2014.	0	1
Political	There is public support to implement and maintain this action. The political leadership is also willing to support it.	0	1
Legal	NH DES and the Town of Milford have the authority to implement the action and no enabling legislation is necessary.	0	1
Economic	The entire cost of this action is being borne by NH DES through a FEMA Pre-Disaster Mitigation grant. There are no costs to the Town of Milford.	0	3
Environmental	This action has the potential to reduce property damage and subsequent environmental impacts.	0	2
Subtotal		**0**	**10**
Total		**10**	
Priority		**3**	

Mitigation Action: Protect vulnerable populations from the impacts of extreme temperatures and severe winter storms by establishing shelters and cooling stations at designated municipal and school facilities.			
Criteria	**Evaluation**	**Cost**	**Benefit**
Social	This action primarily benefits Milford's most vulnerable residents. It is compatible with present and future community values.	0	2
Technical	This action does not solve the problem of extreme temperatures but it does solve the symptom of exposure.	0	2
Administrative (including responsible party)	Milford has the capability to implement this action. The Fire Department is the responsible party and this action falls under its ongoing emergency management operations.	0	2

Political	There is public support to implement and maintain this action.	0	2
Legal	Milford has the legal authority to implement this action.	0	0
Economic (including direct cost)	This action falls under Milford's existing emergency management budget and does not impose additional costs on the Town.	0	2
Environmental	There are no environmental impacts associated with this action.	0	0
Subtotal		**0**	**10**
Total		**10**	
Priority		**3**	

Mitigation Action: Protect power lines by working with utility companies to harden electrical infrastructure, including trimming trees near power lines. Consider the costs and benefits of requiring that overhead power lines be buried in all new developments. Protect critical facilities and equipment from lightning damage by installing lightning protection devices.			
Criteria	**Evaluation**	**Cost**	**Benefit**
Social	This action will not unfairly affect any segment of the population, disrupt established neighborhoods, or adversely affect cultural resources.	0	2
Technical	This action is effective in avoiding or reducing future losses. It will not create more problems than it solves. It solves the problem rather than only a symptom. It will reduce the inconvenience from a shutdown of critical facilities resulting from power outages.	0	3
Administrative	Milford has the capacity to implement this action. The Highway Department would be the responsible party to implement the tree trimming portion of this action. Each critical facility department head is responsible for implementing the installation of lightning protection devices. Community Development is responsible for considering the costs/benefits of burying power lines.	-1	2
Political	There is public support to implement and maintain this action. The political leadership is also willing to support it. Developers may not support this action if it significantly increases their costs.	-1	2
Legal	Milford has the authority to implement this action. All applicable local and state laws will be followed.	0	2
Economic	The costs of installing lightning protection devices would be borne by the Town of Milford. The cost of taking this action is significantly less than the potential costs of damage to critical electronics and facilities. Tree trimming costs may be borne by utility companies.	-1	2
Environmental	This action will not impact the environment.	0	0
Subtotal		**-3**	**13**
Total		**10**	
Priority		**3**	

Mitigation Action: Reduce urban heat island effect by encouraging tree planting around buildings and parking lots.			
Criteria	**Evaluation**	**Cost**	**Benefit**
Social	This action only applies to commercial development. It is compatible with present and future community values and it enhances the visual appearance of Town.	0	2
Technical	This action helps to solve a symptom of extreme temperatures, but it does not solve problem itself.	0	1
Administrative (including responsible party)	Milford does have the capability to implement this action. Community Development is the responsible party.	0	2
Political	There is public support to implement and maintain this action and the Board of Selectmen are willing to support it.	0	0
Legal	The Town has the legal authority to make encourage tree planting through the development review process.	0	0
Economic (including direct cost)	There are no additional costs to the Town because this action falls under the existing Community Development budget.	0	2
Environmental	In addition to reducing urban heat island effects, there are a number of environmental benefits associated with tree planting including improved air quality and carbon sequestration.	0	2
Subtotal		**0**	**9**
Total			**9**
Priority			**4**

Mitigation Action: Improve stormwater drainage system capacity and flood control infrastructure. Consider costs and benefits of a variety of infrastructure upgrades, including stormwater pipe storage, stormwater ponds, stormwater tank storage, and culvert upsizing and realignment. Adopt policies to reduce stormwater runoff.			
Criteria	**Evaluation**	**Cost**	**Benefit**
Social	Maintenance activities primarily impact the downtown area. Stormwater is a primary source of pollution to surface water, which impacts the entire population.	0	2
Technical	This action helps to solve the problem of flooding rather than just a symptom. It can also help to avoid or reduce future losses.	0	2
Administrative (including responsible party)	Milford does have the capability to implement this action, though it is costly. Public Works is the responsible party for implementation and Community Development is responsible for enforcement. This falls under both departments' existing scope of work.	-2	2
Political	There is public support to implement and maintain this action and the Board of Selectmen are willing to support it.	0	1
Legal	Milford has the legal authority to implement this action. No enabling legislation is necessary.	0	2
Economic (including direct cost)	This action is very costly to implement. It falls under the existing Public Works budget and additional grant funding is sought	-3	2

	where available. However, it also has long term economic benefits to the community by reducing flooding.		
Environmental	This action has positive environmental benefits and is consistent with community environmental goals.	0	3
Subtotal		**-5**	**14**
Total		**9**	
Priority		**4**	

Mitigation Action: Install generators at all critical Town facilities and schools.			
Criteria	**Evaluation**	**Cost**	**Benefit**
Social	This action would benefit the entire population.	0	2
Technical	This action would help to reduce the impacts of natural hazards on critical facilities and emergency services provision.	0	2
Administrative (including responsible party)	Milford has the capability to implement this action. The Fire Department is the responsible party for facilitating the implementation of this action.	0	2
Political	There is public support to implement and maintain this action if it can be done in a cost effective manner.	0	1
Legal	The Town has the legal authority to install generators at Town-owned facilities. The School Board would need to give permission to install generators at School District owned facilities and formal legal agreements would need to be put into place.	-1	2
Economic (including direct cost)	This action could be expensive depending on the size of generator needed. FEMA Hazard Mitigation Assistance grants are available to install generators in Critical Infrastructure and Key Resources.	-2	2
Environmental	This action has no significant environmental impacts.	0	0
Subtotal		**-3**	**11**
Total		**8**	
Priority		**5**	

Mitigation Action: Develop a plan and process for water conservation during drought conditions. Educate residents on water saving techniques.			
Criteria	**Evaluation**	**Cost**	**Benefit**
Social	This action would only impact residents on town water (roughly 30-40% of population).	-1	2
Technical	The effectiveness of this action depends on the ability of the Town to implement and enforce it. It would help to reduce the impacts of drought.	-1	1
Administrative (including responsible party)	Milford has the capability to implement this action. The Water Department is the responsible party.	0	2
Political	It is unclear whether there is public support to implement and	0	0

	maintain this action.		
Legal	This action would require an ordinance under the water utilities to allow for enforcement. State requirements for education on water conservation already exist.	-1	2
Economic (including direct cost)	This action has no additional costs to the Town because it falls under the existing education budget.	0	2
Environmental	This action has a positive impact on the environment by reducing water consumption.	0	2
Subtotal		**-3**	**11**
Total			**8**
Priority			**5**

Mitigation Action: Survey population and develop database of special needs individuals and groups to improve emergency services to special needs individuals.			
Criteria	**Evaluation**	**Cost**	**Benefit**
Social	Helping vulnerable populations is compatible with community values, however, the manner in which it is accomplished must be appropriate. Residents tend to be reluctant to share their information with emergency management personnel.	-1	2
Technical	This action is only effective in avoiding or reducing future losses if residents voluntarily participate in it.	0	1
Administrative	The Town has the capability to implement this action if information is voluntarily provided by residents. The Fire Department would be the responsible party to implement this action. It may not be accomplished in a timely manner if residents are slow to provide information. Annual updates would be required.	-1	2
Political	The political leadership is willing to support this action, however, it is unclear whether there is public support to implement and maintain it.	-1	1
Legal	The community has the authority to implement the action and no enabling legislation is necessary. Participation in this program would be entirely voluntary.	0	2
Economic	This action is consistent with normal town operations and does not impose additional economic costs. It would reduce emergency response costs if enough residents participate.	0	2
Environmental	This action will not impact the environment.	0	0
Subtotal		**-3**	**10**
Total			**7**
Priority			**6**

Mitigation Action: Work with property owners to elevate or remove loss structures from flood-prone areas to minimize future flood losses.			
Criteria	**Evaluation**	**Cost**	**Benefit**
Social	This action impacts people with structures in the floodplain. It does not unfairly affect any one segment of the population because participation is voluntary.	0	1

Technical	This action would avoid future losses due to flooding.	0	3
Administrative (including responsible party)	Milford does have the capability to implement this action. The Community Development Dept. would be responsible for this action in cooperation with FEMA.	-1	2
Political	It is unclear whether there is public and political support for this action.	-1	1
Legal	There are no legal issues associated with this action. FEMA is responsible for purchasing properties. Milford simply facilitates the process.	0	1
Economic (including direct cost)	FEMA covers the administrative costs associated with removing properties. Property owners are responsible for the costs of elevating properties. Milford would see a loss of tax revenue from removing properties, however, emergency response costs would also decrease.	-2	1
Environmental	This action would reduce property damage and subsequent environmental impacts. It may also create additional open space in Town, depending on how the parcel was reused.	0	2
Subtotal		**-4**	**11**
Total		**7**	
Priority		**6**	

Section 4.4 ~ Implementing and Administering Mitigation Actions

The Town of Milford has integrated its 2006 Hazard Mitigation Plan into a variety of other planning mechanisms, including the update and reformat of the Milford Emergency Operations Plan, the inter-municipal mutual aid agreement to expand municipal water supply, the Plan addressing hazardous materials incidents along the railroad, Site Plan and Subdivision Regulations requiring tank enclosures, and the town center area traffic flow study to identify alternative travel routes for emergency access and evacuation routes.

In addition, the Town of Milford has incorporated and will continue to integrate requirements of the Milford Hazard Mitigation Plan Update 2015 into other planning mechanisms. For example, hazard assessments from the Milford Hazard Mitigation Plan Update 2015 will be integrated into the Emergency Response Plan.

In addition, updates to Milford's Capital Improvement Plan will include any applicable mitigation projects identified in the Hazard Mitigation Plan, such as drainage improvements. The next update to the Town's Master Plan will also incorporate elements of the Hazard Mitigation Plan where applicable.

The Milford Hazard Mitigation Team will be responsible for helping Town boards and departments to integrate the Hazard Mitigation Plan into their own planning mechanisms.

The Hazard Mitigation Team developed Table 12, which is an action plan that outlines who is responsible for implementing the prioritized mitigation actions, how they will be funded, and when they will be completed.

Table 12—Implementation and Administration

Mitigation Action	Responsible Party	Cost & Funding	Timeframe
Enforce the International Building Code (IBC) and International Residential Code (IRC) to protect buildings and infrastructure from the impacts of earthquakes, flooding, hurricanes, and winter storms.	Town of Milford Building Department and Town of Milford Fire Department	Cost = percentage of $140,140 Funding Source: Town of Milford Building Department budget	Anticipated start by January 2016. This action will be completed on an ongoing basis throughout the life of the plan.
Conduct outreach and education programs to increase awareness of severe winter weather (including carbon monoxide risks), severe thunderstorm, tornado, and wildfire risk through Risk Watch, Milford Fire Department's comprehensive injury prevention program.	Town of Milford Fire Department	Cost = percentage of $ 4,100 Funding Source: Town of Milford Emergency Management budget	Anticipated start by June 2015. This action will be completed on an ongoing basis throughout the life of the plan.
Establish mutual aid agreements with neighboring communities to address administering the NFIP following a major storm event. Form partnerships between local, state, and regional entities to expand resources and improve coordination to support floodplain management.	Town of Milford Fire Department	Cost = percentage of $ 4,100 Funding Source: Town of Milford Emergency Management budget	Anticipated start by January 2015. Anticipated completion by December 2015.
Incorporate flood mitigation into local planning. Revise/adopt subdivision regulations and erosion control regulations to improve floodplain management in Milford.	Town of Milford Community Development	Cost = $50,000 Funding Source: Town of Milford Community Development budget	Anticipated start by April 2015. Anticipated completion by March 2016.
Map and assess vulnerability to erosion. Conduct stream assessments and prepare fluvial erosion hazard zone maps.	NH Department of Environmental Services	Cost = $0 Funding Source: FEMA Pre-Disaster Mitigation Grant	Anticipated start by September 2014. Anticipated completion by September 2015
Protect vulnerable populations from the impacts of extreme temperatures and severe winter storms by establishing	Town of Milford Fire Department	Cost = percentage of $ 4,100 Funding Source:	Anticipated start by April 2015. This action will be completed on

Mitigation Action	Responsible Party	Cost & Funding	Timeframe
shelters and cooling stations at designated municipal and school facilities.		Town of Milford Emergency Management budget	an ongoing basis throughout the life of the plan.
Protect power lines by working with utility companies to harden electrical infrastructure, including trimming trees near power lines. Consider the costs and benefits of requiring that overhead power lines be buried in all new developments. Protect critical facilities and equipment from lightning damage by installing lightning protection devices.	Town of Milford Highway Department, Community Development Department, department heads in each critical facility	Cost = $1,200 per large tree for removal; $1,000-$5,000 per critical facility for lightning protection devices Funding Source: Milford Operating budget for each department, Milford Highway and Streets budget, Milford Community Development budget	Anticipated start by June 2015. Anticipated completion by May 2017.
Reduce urban heat island effect by encouraging tree planting around buildings and parking lots.	Town of Milford Community Development	Cost = percentage of $323,963 Funding Source: Town of Milford Community Development budget	Anticipated start by June 2015. This action will be completed on an ongoing basis throughout the life of the plan.
Improve stormwater drainage system capacity and flood control infrastructure. Consider costs and benefits of a variety of infrastructure upgrades, including stormwater pipe storage, stormwater ponds, stormwater tank storage, and culvert upsizing and realignment. Adopt policies to reduce stormwater runoff.	Town of Milford Community Development and Town of Milford Public Works	Cost = $75,000 per drainage project; $230,000 for Vacuum Sweeper Funding Source: Town of Milford Highway and Streets budget, grant funding where available	Anticipated start by December 2016. Anticipated completion by December 2018.
Install generators at all critical Town facilities and schools.	Town of Milford Fire Department	Cost = $25,000-$75,000 per generator, depending on size Funding Source: Milford Budget for	Anticipated start by April 2016. Anticipated completion by October 2018.

Mitigation Action	Responsible Party	Cost & Funding	Timeframe
		each department installing generator; FEMA Hazard Mitigation Assistance grant	
Develop a plan and process for water conservation during drought conditions. Educate residents on water saving techniques.	Town of Milford Water Department	Cost = percentage of $1,368,189 Funding Source: Town of Milford Water Department	Anticipated start by June 2017. Anticipated completion by June 2018.
Survey population and develop database of special needs individuals and groups to improve emergency services to special needs individuals.	Town of Milford Fire Department	Cost = percentage of $ 4,100 Funding Source: Town of Milford Emergency Management budget	Anticipated start by December 2015. This action will be completed on an ongoing basis throughout the life of the plan.
Work with property owners to elevate or remove loss structures from flood-prone areas to minimize future flood losses.	FEMA in cooperation with Milford Community Development Department	Cost = $0 direct costs to Town; percentage of $323,963 for coordination by Town Funding Source: FEMA, private property owners, Town of Milford Community Development budget	Anticipated start by April 2018. This action will be completed on an ongoing basis throughout the life of the plan.

CHAPTER 5. PLAN ADOPTION

Section 5.1 ~ Formal Adoption by Governing Body

CERTIFICATE OF ADOPTION

Town of Milford, NH BOARD OF SELECMEN

A RESOLUTION ADOPTING THE TOWN OF MILFORD, NH HAZARD MITIGATION PLAN UPDATE 2015

WHEREAS, the Town of Milford has historically experienced damage from natural hazards and it continues to be vulnerable to the effects of earthquake, extreme temperatures, flooding, fluvial erosion, hurricane/tropical storm, severe thunderstorm, severe winter weather, tornado, and wildfire, resulting in loss of property and life, economic hardship, and threats to public health and safety; and

WHEREAS, the Town of Milford has developed and received conditional approval from the Federal Emergency Management Agency (FEMA) for its Hazard Mitigation Plan Update 2015 under the requirements of 44 CFR 201.6; and

WHEREAS, public and committee meetings were held between August 21, 2013 and November 19, 2013 regarding the development and review of the Hazard Mitigation Plan Update **2015;** and

WHEREAS, the Plan specifically addresses hazard mitigation strategies and Plan maintenance procedure for the Town of Milford; and

WHEREAS, the Plan recommends several hazard mitigation actions/projects that will provide mitigation for specific natural hazards that impact the Town of Milford, with the effect of protecting people and property from loss associated with those hazards; and

WHEREAS, adoption of this Plan will make the Town of Milford eligible for funding to alleviate the impacts of future hazards; now therefore be it

RESOLVED by the Milford Board of Selectmen:

1. The Plan is hereby adopted as an official plan of the Town of Milford;
2. The respective officials identified in the mitigation strategy of the Plan are hereby directed to pursue implementation of the recommended actions assigned to them;
3. Future revisions and Plan maintenance required by 44 CFR 201.6 and FEMA are hereby adopted as a part of this resolution for a period of five (5) years from the date of this resolution.
4. An annual report on the progress of the implementation elements of the Plan shall be presented to the Board of Selectmen by

_____

Adopted this day, the 9th **of** March **, 2015.**

Gary Daniels

Gary Daniels, Chairman, Milford Board of Selectmen

IN WITNESS WHEREOF, the undersigned has affixed his/her signature and the corporate seal of the Town of Milford, the 9th of March, 2015.

Tina M. Philbrick

Witness

TINA M. PHILBRICK, Notary Public
My Commission Expires September 18, 2018

Section 5.2 ~ FEMA Approval Letter

U.S. Department of Homeland Security
FEMA Region I
99 High Street, Sixth Floor
Boston, MA 02110-2132

FEMA

Mark Fougere, Chairman
Board of Selectmen
Milford Town Office
1 Union Square
Milford, NH 03055

Dear Mr. Fougere:

Thank you for the opportunity to review the Town of Milford, New Hampshire Hazard Mitigation Plan Update 2015. The Department of Homeland Security (DHS), Federal Emergency Management Agency (FEMA) Region I has evaluated the plan for compliance with 44 C.F.R. Pt. 201. The plan satisfactorily meets all of the mandatory requirements set forth by the regulations.

With this plan approval, the Town of Milford is eligible to apply to New Hampshire Homeland Security and Emergency Management for mitigation grants administered by FEMA. Requests for mitigation funding will be evaluated individually according to the specific eligibility requirements identified for each of these programs. A specific mitigation activity or project identified in your community's plan may not meet the eligibility requirements for FEMA funding; even eligible mitigation activities or projects are not automatically approved.

Approved mitigation plans are eligible for points under the National Flood Insurance Program's Community Rating System (CRS). Complete information regarding the CRS can be found at **www.fema.gov/business/nfip/crs.shtm,** or through your local floodplain administrator.

The Town of Milford, New Hampshire Hazard Mitigation Plan Update 2015 must be reviewed, revised as appropriate, and resubmitted to FEMA for approval within **five years of the plan approval date of June 9, 2015** in order to maintain eligibility for mitigation grant funding. We encourage the Town to continually update the plan's assessment of vulnerability, adhere to its maintenance schedule, and implement, when possible, the mitigation actions proposed in the plan.

JUL 28 2015

Once again, thank you for your continued dedication to public service demonstrated by preparing and adopting a strategy for reducing future disaster losses. Should you have any questions, please do not hesitate to contact Marilyn Hilliard at (617) 956-7536.

Sincerely,

Paul F. Ford
Acting Regional Administrator

PFF: mh

cc: Beth Peck, New Hampshire State Hazard Mitigation Officer
Jennifer Gilbert, Asst. New Hampshire State NFIP Coordinator
Parker Moore, New Hampshire Hazard Mitigation Program Assistant
Mark Bender, Town Administrator, Milford
Jill Longval, Senior Environmental Planner, NRPC

Enclosure