

Milford, NH

Hazard Mitigation Plan Update 2024



This plan integrates the following:

- Hazard Mitigation Plan Update (FEMA)
- Community Wildfire Protection Plan (DNCR)

Final for Adoption
February 26, 2024

Prepared for the Town of Milford and NH Homeland Security &
Emergency Management

By

The Milford Hazard Mitigation Planning Team (HMPT)

With assistance from Mapping and Planning Solutions

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“Plans are worthless, but planning is everything. There is a very great distinction because when you are planning for an emergency you must start with this one thing: The very definition of “emergency” is that it is unexpected, therefore it is not going to happen the way you are planning.”

-Dwight D. Eisenhower

HAZARD MITIGATION PLAN DEFINITIONS

” A natural hazard is a source of harm or difficulty created by a meteorological, environmental, or geological event.”

“Hazard mitigation is any sustained action taken to reduce or eliminate the long-term risk to human life and property from hazards (44CFR 201.2). Hazard mitigation activities may be implemented prior to, during, or after an event. However, it has been demonstrated that hazard mitigation is most effective when based on an inclusive, comprehensive, long-term plan that is developed before a disaster occurs.”

(Source: Local Mitigation Plan Review Guide, FEMA, October 1, 2011)



Plan Prepared and Authored By

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Acknowledgments

This plan integrates elements to qualify it as a Community Wildfire Protection Plan (CWPP), according to the US Forest Service and the NH Department of Natural & Cultural Resources (DNCR). The plan was created through a grant from NH Homeland Security & Emergency Management (HSEM). The following organizations have contributed invaluable assistance and support for this project:

- NH Homeland Security & Emergency Management (HSEM)
- Federal Emergency Management Agency (FEMA)
- NH Bureau of Economic Affairs (BEA)
- Mapping and Planning Solutions (MAPS)
- NH Forests & Lands (DNCR)

**This plan is an update to the most recent Milford hazard mitigation plan, approved in 2015.
This plan was funded under the Pre-disaster Mitigation Grant Program (PDM18)**

Approval Notification Dates for 2024 Update

Approved Pending Adoption (APA) February 26, 2024
 Jurisdiction Adoption: _____, 2024
 CWPP Approval: _____, 2024
***Plan Approval Date (HSEM): _____, 2024**
 Receipt of FEMA Letter _____, 2024
 Plan Distribution (MAPS): _____, 2024
**The start of the next five-year clock*

TOWN OF MILFORD HAZARD MITIGATION PLANNING TEAM (HMPT)

The Town of Milford would like to thank the following people for the time and effort spent to complete this plan; this plan would not exist without your knowledge and experience. Many thanks for all the hard work and effort each of you gave.

- John Shannon.....Milford Town Administrator (former)
- Gary DanielsMilford Select Board Chair
- Kenneth Flaherty.....Milford Fire Chief & EMD
- Jason Smedick.....Milford Fire Captain (former)
- Dennis Haerincq.....Milford Fire Captain (former)
- Michael Goldstein.....Milford Firefighter
- Francis Coffey.....Milford Firefighter
- Alex TaylorMilford Firefighter
- Spencer Pickett.....Milford Firefighter
- Rick Riendeau.....Milford DPW Director (former)
- Michael Viola.....Milford Police Chief
- Shawn PelletierMilford Police Captain
- Craig FryeMilford Police Captain
- Lincoln Daley..... Milford Community Development Director
- Eric Schelberg..... Milford Ambulance Service Director
- Arene Berry Milford Recreation Director
- Patty Crooker GNRPHN, EPC (former)
- Mark Munroe GNRPHN EPC (former)
- Michael Apollo..... GNRPHN, EPC (former)
- Jennifer Gilbert..... NH OSI
- Elizabeth Gilboy ... NH HSEM
- June Garneau MAPS
- Olin Garneau..... MAPS

The Town of Milford would like to thank the Federal Emergency Management Agency and NH Homeland Security & Emergency Management as the primary funding sources for this plan.

Acronyms associated with the above list:

DPW Department of Public Works
 EMD Emergency Management Director
 GNRPHN..... Greater Nashua Regional Public Health Network
 EPC Emergency Preparedness Coordinator

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Executive Summary

The Milford, NH Hazard Mitigation Plan Update 2024 was compiled to assist the Town of Milford in reducing and mitigating future losses from natural, technological, or human-caused hazardous events. The plan was developed by the Milford Hazard Mitigation Planning Team (HMPT), interested stakeholders, the general public, and Mapping and Planning Solutions (MAPS). The plan contains the tools necessary to identify specific hazards and aspects of existing and future mitigation efforts.

This plan updates the Town of Milford, New Hampshire Hazard Mitigation Plan Update 2015. To produce an accurate and current planning document, the planning team used the 2015 plan as a foundation, building upon that plan to provide more timely information.



All planning meetings for this project’s development were completed during the COVID-19 pandemic in the United States, except for the first meeting held on March 17, 2020. All other meetings were held virtually. This plan’s final writing was completed during the COVID-19 outbreak; therefore, references to the virus, particularly in Chapter 5, Section C, Infectious Diseases, indicate the pandemic’s development at the time of this writing.

Mitigation action items for natural hazards are the main focus of this plan. However, this plan addresses technological and human-caused hazards in addition to natural hazards, as shown below

NATURAL HAZARDS

- | | |
|--------------------------------------|-------------------------|
| 1) Inland Flooding | 7) Drought |
| 2) Severe Winter Weather | 8) High Wind Events |
| 3) Infectious Diseases | 9) Earthquakes |
| 4) Extreme Temperatures | 10) Wildfires |
| 5) Tropical & Post-Tropical Cyclones | 11) Landslide & Erosion |
| 6) Lightning & Hail | |

TECHNOLOGICAL HAZARDS

- | | |
|-----------------------------|----------------------------------|
| 1) Aging Infrastructure | 4) Hazardous Materials |
| 2) Conflagration | 5) Dam Failure |
| 3) Long-Term Utility Outage | 6) Known & Emerging Contaminants |

HUMAN-CAUSED HAZARDS

- | | |
|----------------------------|-------------------------|
| 1) Transport Accidents | 3) Terrorism & Violence |
| 2) Mass Casualty Incidents | 4) Cyber Events |

Some hazards listed in the 2018 New Hampshire Hazard Mitigation Plan were not included in this plan as the team felt they were unlikely to occur in Milford or were not applicable. An explanation of why these hazards are excluded from this plan can be seen in Chapter 3, Section A.

This plan also provides a list of Critical Infrastructure & Key Resources (CIKR) categorized as follows: Emergency Response Facilities (ERF), Non-Emergency Response Facilities (NERF), Facilities and Populations to Protect (FPP), and Potential Resources (PR). Also, this plan addresses the town’s involvement in the National Flood Insurance Program (NFIP).

When faced with an array of hazards, some communities can cope with the impact of these hazards. For example, although severe winter weather is often a common hazard in New Hampshire, most New Hampshire communities handle two to three-foot snowstorms with little or no disruption of services. On the other hand, an unexpected ice storm can have disastrous effects on a community. Mitigation for sudden storms such as ice storms is difficult to achieve. Establishing warming and cooling centers, creating notification systems, providing public outreach, tree trimming, opening shelters, and perhaps burying overhead power lines are just a few action items that may be implemented.

In summary, finding mitigation action items for every hazard that affects a community can be difficult. With today’s economic constraints, cities and towns are less likely to have the financial ability to complete more expensive mitigation action items, such as burying power lines. In preparing this plan, the Milford HMPT has considered a comprehensive list of mitigation action items that could diminish the impact of hazards and has also decided to maintain a list of preparedness action items for future reference and action.

To simplify the language in the plan, the following abbreviations and acronyms will be used:

Milford, NH Hazard Mitigation Plan Update 2024.....	the plan or this plan
Milford	the town or the community
Hazard Mitigation Planning Team.....	the team or HMPT
Hazard Mitigation Plan.....	HMP
Emergency Operations Plan	EOP
Mapping and Planning Solutions	MAPS
Mapping and Planning Solutions Planner.....	the planner
NH Homeland Security & Emergency Management	HSEM
Federal Emergency Management Agency	FEMA

For more acronyms, please refer to Appendix E: Acronyms

Mission Statement:
To make Milford less vulnerable to the effects of hazards through the effective administration of hazard mitigation planning, wildfire hazard assessments, and a coordinated approach to mitigation policy and planning activities.

Vision Statement:
The Town of Milford will reduce the impacts of natural hazards and other potential disasters by implementing mitigation measures, public education and deliberate capital expenditures within the community. Homes and businesses will be safer and the community’s ISO rating may be improved.

Chapter 1: Hazard Mitigation Planning Process

A. AUTHORITY & FUNDING

The Milford, NH Hazard Mitigation Plan Update 2024 was prepared following the Disaster Mitigation Act of 2000 (DMA), Section 322 Mitigation Planning, signed into law by President Clinton on October 30, 2000. This hazard mitigation plan was prepared by the Milford Hazard Mitigation Planning Team (HMPT) under contract with New Hampshire Homeland Security & Emergency Management (HSEM), operating under the guidance of Section 206.405 of 44 CFR Chapter 1 (10-1-97 Edition) and with the assistance and professional services of Mapping and Planning Solutions (MAPS). HSEM funded this plan through Federal Emergency Management Agency (FEMA) grants. Matching funds for team members' time were also part of the funding formula.

B. PURPOSE & HISTORY OF THE FEMA MITIGATION PLANNING PROCESS

The ultimate purpose of the Disaster Mitigation Act of 2000 (DMA) is to:

“...establish a national disaster hazard mitigation program -

- To reduce the loss of life and property, human suffering, economic disruption and disaster assistance costs resulting from natural disasters; and*
- To provide a source of pre-disaster hazard mitigation funding that will assist States and local governments (including Indian tribes) in implementing effective hazard mitigation measures that are designed to ensure the continued functionality of critical services and facilities after a natural disaster”.¹*

DMA 2000 amends the Robert T. Stafford Disaster Relief and Emergency Assistance Act by, among other things, adding a new section, “322 – Mitigation Planning”, which states:

“As a condition of receipt of an increased Federal share for hazard mitigation measures under subsection (e), a State, local, or tribal government shall develop and submit for approval to the President a mitigation plan that outlines processes for identifying the natural hazards, risks, and vulnerabilities of the area under the jurisdiction of the government.”²

HSEM aims to have all New Hampshire communities complete a local hazard mitigation plan to reduce future losses from natural hazards before they occur. HSEM outlined a process whereby communities throughout the state may be eligible for grants and other assistance upon completing this hazard mitigation plan.

The Plan is a planning tool to reduce future losses from natural, technological, and human-caused hazards as required by the Disaster Mitigation Act of 2000. This plan does not constitute a section of the town's Master Plan. However, mitigation action items from this plan may be incorporated into future Master Plan updates.

The DMA emphasizes local mitigation planning. It requires local governments to prepare and adopt jurisdiction-wide hazard mitigation plans as a condition for receiving grants under the Hazard Mitigation Grant Program (HMGP). Local governments must review this plan yearly and update this plan every five years to continue program eligibility.

C. JURISDICTION

This plan addresses one jurisdiction – the Town of Milford, NH.

¹ Disaster Mitigation Act (DMA) of 2000, Section 101, b1 & b2

² Disaster Mitigation Act (DMA) of 2000, Section 322a

D. SCOPE OF THE PLAN & FEDERAL & STATE PARTICIPATION

A community's hazard mitigation plan often identifies many natural hazards and is somewhat broad in scope and outline. The scope and effects of this plan were assessed based on the impact of hazards and wildfire on *Critical Infrastructure & Key Resources (CIKR)*, *current residential buildings*, *other structures within the town*, *future development*, *administrative, technical and physical capacity of emergency response services* and *response coordination between federal, state and local entities*.

In seeking approval as a Hazard Mitigation Plan and a Community Wildfire Protection Plan (CWPP), the planning effort included the participation of NH Homeland Security & Emergency Management (HSEM), the United States Department of Agriculture-Forest Service (USDA-FS), the NH Department of Natural & Cultural Resources (DNCR), and the NH Bureau of Economic Affairs (BEA) as well as routine notification of upcoming meetings to state and federal entities above. Designation as a CWPP may allow a community to gain federal funding for hazardous fuel reduction and other mitigation projects supported by the USDA-FS. By merging the two federal planning processes (hazard and wildfire), duplication is eliminated, and the town has access to a larger pool of resources for pre-disaster planning.

The Healthy Forest Restoration Act (HFRA) of 2003 includes statutory incentives for the US Forest Service to consider local communities as they develop and implement forest management and hazardous fuel reduction projects. However, a community must first prepare a CWPP to take advantage of this opportunity. This hazard mitigation planning process not only satisfies FEMA's criteria regarding wildfires and all other hazards but also addresses the minimum requirements for a CWPP:

- **Collaboration:** *Local and state government representatives must collaboratively develop a CWPP in consultation with federal agencies and other interested parties.*
- **Prioritized Fuel Reduction:** *A CWPP must identify and prioritize areas for hazardous fuel reduction treatments and recommend the types and methods of treatment that will protect one or more at-risk communities and essential infrastructure.*
- **Treatment of Structural Ignitability:** *A CWPP must recommend measures that homeowners and communities can take to reduce the ignitability of structures throughout the area addressed by the plan.³*

Finally, as required under the Code of Federal Regulations (CFR), Title 44, Part 201.6(c) (2) (ii) and 201.6(c) (3) (ii), the plan must address the community's participation in the National Flood Insurance Program (NFIP) and its continued compliance with the program. As part of a vulnerability assessment, the plan must address the NFIP-insured structures that have been repetitively damaged due to floods.

³ Healthy Forest Restoration Act; HR 1904, 2003; Section 101-3-a.b.c; http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=108_cong_bills&docid=f:h1904enr.txt.pdf

E. PUBLIC & STAKEHOLDER INVOLVEMENT

Public and stakeholder involvement was stressed during the initial meeting, and community officials were given a matrix of potential team members (page 19). Community officials were urged to contact as many people as possible to participate in the planning process, including Milford residents and officials and residents from surrounding communities. The press release was used to notify academia, businesses, and private and non-profit organizations that work with underserved communities and socially vulnerable populations that meetings were taking place, and they were invited to attend. The Town of Milford understands that natural hazards do not recognize political boundaries.

Many interested citizens and stakeholders had the opportunity to become aware of the hazard mitigation planning in Milford. The team provided excellent public and stakeholder notification. A press release (see right) was posted at the Fire Station, circulated to all town departments, and shared on the town’s, the Fire Department’s, and the Recreation Department’s Facebook pages. It was also sent via the town’s listserv to approximately 2,500 residents’ emails and was posted on the town website. Meeting dates and other notifications were also posted on the town website and calendar; please see below and on the following page for a few examples.

News

- [Milford Heritage Commission Meeting August 12, 2020 at 7pm](#)
- [Coronavirus/COVID-19 Milford Business Bulletin Board Update](#)
- [Extended hours starting August 11th for Town Hall Phased Re-Opening](#)
- [Town of Milford Commences Hazard Mitigation Planning](#)
- [COVID-19 Business Resources New Hampshire Self Employed Livelihood Fund \(SELF\)](#)

*Mapping and Planning Solutions
105 Union Street, Suite 1
Whitefield, NH 03598*

Press Release

FOR IMMEDIATE RELEASE
Updated: July 1, 2020

Contact: June Garneau
603-837-7122

**TOWN OF MILFORD COMMENCES
HAZARD MITIGATION PLANNING**

The Emergency Management Director of the Town of Milford has met with June Garneau, of Mapping and Planning Solutions and other team members from Milford, to begin work on the required five-year update to the **2015 Milford Hazard Mitigation Plan**. As a result of these meetings, Mapping and Planning Solutions is conducting a series of meetings on the Hazard Mitigation Plan over the next few months.

Through this series of public meetings, the planning team will address issues such as flooding, hurricanes, drought, landslides and wildfires, and determine efforts the town can undertake to mitigate the effects of both natural and human-caused hazards. The team will also examine potential shelter sites and the need for generators at those sites.

By examining critical infrastructure and key resources, along with past hazards, the team will establish priorities for future mitigation projects and steps that can be taken to increase public awareness of hazards in general.

As mandated by the Disaster Mitigation Act of 2000, all municipalities are required to complete a local Hazard Mitigation Plan in order to qualify for Federal Emergency Management Administration funding should a natural disaster occur. The planning processes are made possible by grants from FEMA.

The Hazard Mitigation Planning Team is currently being formed. Milford citizens and any interested stakeholders are invited to participate. The next meeting is scheduled for **Tuesday, July 7, 2020 from 1:00 PM to 3:00 PM** via "Zoom". The general public is encouraged to attend all meetings. All interested parties should contact Chief Ken Flaherty, the Milford Fire Chief & Emergency Management Director, at 249-0680 if they wish to be included in the process; you will be added to the Zoom meeting invitation list.

More information on the hazard mitigation planning process is available from June Garneau at Mapping and Planning Solutions, 603-837-7122.



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Hazard Mitigation Planning Meeting

Event Date: Tuesday, August 11, 2020 - 1:00pm to 3:00pm

The Hazard Mitigation Planning Team is currently being formed. Milford citizens and any interested stakeholders are invited to participate. The next meeting is scheduled for Tuesday, August 11, 2020 from 1:00 PM to 3:00 PM via "Zoom". The general public is encouraged to attend all meetings. All interested parties should contact Chief Ken Flaherty, the Milford Fire Chief & Emergency Management Director, at 249-0680 if they wish to be included in the process; you will be added to the Zoom meeting invitation list.

More information on the hazard mitigation planning process is available from June Garneau at Mapping and Planning Solutions, 603-837-7122.

Home » Emergency Management » Emergency Management Calendar

Emergency Management Calendar

Month Week Day Year Upcoming Town Calendar

August 2020

Filter by Type: - Any - Apply

Sun	Mon	Tue	Wed	Thu	Fri	Sat
26	27	28	29	30	31	1
2	3	4	5	6	7	8
9	10	11 Hazard Mitigation Planning Meeting 1:00pm to 3:00pm	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31	1	2	3	4	5

NEWS BREAK Home Local Classifieds

Town of Milford Commences Hazard Mitigation Planning

Milford, NH | nh.gov | 28d

The **Emergency Management** Director of the Town of Milford has met with June Garneau, of Mapping and Planning Solutions and other **team members** from Milford, to begin work on the required five-year update to the 2015 Milford Hazard Mitigation Plan. As a result of these meeting, Mapping and Planning Solutions is conducting a series of meetings on the Hazard Mitigation Plan over the next few months.

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Contact Information
1 Union Square
Milford, NH 03055
Visit Website
Month View

Select Share: [Email] [Facebook] [Twitter] [LinkedIn] Add


Tuesday August 11 1:00pm - 3:00pm EDT

Hazard Mitigation Planning Meeting

The Hazard Mitigation Planning Team is currently being formed. Milford citizens and any interested stakeholders are invited to participate. The next meeting is scheduled for Tuesday, August 11, 2020 from 1:00 PM to 3:00 PM via "Zoom". The general public[More](#)


Select Share: [Email] [Facebook] [Twitter] [LinkedIn] Add

Lastly, the planner sent a monthly calendar (see below) and email inviting stakeholders to participate in planning meetings being held by MAPS. Milford’s neighbors, Mont Vernon, Amherst, Hollis, Brookline, Masson, Wilton, and Lyndeborough, are part of MAPS’ monthly email. EMDs, Police Chiefs, Fire Chiefs, Rangers, and other state, federal, and private officials were included in this email blast.



Upcoming Zoom Meetings

(Highlighted by “Counties” as of October 9, 2020)



Day	Date	Time	Town/Location	Plan Type	HSEM Field Rep	County
Tuesday	10/13/20	10:00 AM	Bethlehem Zoom Meeting	HMP	Paul Hatch	Grafton
Tuesday	10/13/20	1:00 PM	Durham Zoom Meeting	EOP/COOP	Alex Marinaccio	Stratford
Wednesday	10/14/20	9:30 AM	Hanover Zoom Meeting	HMP	Paul Hatch	Grafton
Wednesday	10/14/20	6:00 PM	Sandwich Zoom Meeting	EOP	Heidi Lawton	Carroll
Thursday	10/15/20	9:00 AM	Gorham Zoom Meeting	EOP	Heidi Lawton	Coos
Tuesday	10/20/20	9:00 AM	Goffstown Zoom Meeting	HMP	Liz Gilboy	Hillsborough
Tuesday	10/20/20	1:00 PM	Milford Zoom Meeting	HMP	Liz Gilboy	Hillsborough

It was noted that team composition is expected to be lower in some communities because of the small population base; many people wear more than one hat. In most towns, a small percentage of interested citizens participate in the town’s planning processes. It is often very challenging to attract citizens to participate in town government - those who participate generally hold full-time jobs and work as volunteers in various town positions.

Milford had excellent participation in the development of this plan. In addition to the Emergency Management Director (EMD)/Fire Chief, other members of the Fire Department participated in the meetings. The Town Administrator, a member of the Select Board, the Community Development Director, and the Recreation Director also participated, as did members of the Police and Public Works Departments. Comments made by all team members were integrated into the narrative discussion and incorporated into the document’s essence. Although the general public was informed about the planning meetings, no one from the general public attended.

§201.6(b) requires that there be an open public involvement process in the formation of a plan. This process shall provide an opportunity for the public to comment on the plan during its formation as well as an opportunity for any neighboring communities, businesses, and others to review any existing plans, studies, reports, and technical information and incorporation of those in the plan, to assist in the development of a comprehensive approach to reducing losses from natural disasters.

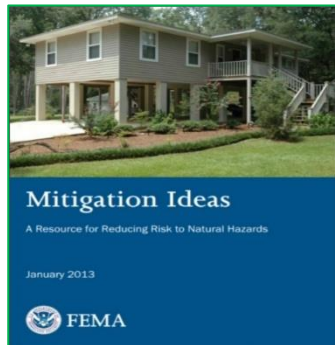
F. INCORPORATION OF EXISTING PLANS, STUDIES, REPORTS, AND TECHNICAL INFORMATION

The planning process included a complete review of the Town of Milford, New Hampshire Hazard Mitigation Plan Update 2015 for updates, development changes, and accomplishments. The team worked with the planner to identify pertinent information from the reviewed documents; this information was then added to the appropriate place in the plan. Also, as noted in the bibliography and footnotes throughout the plan, many other documents were used to create this mitigation plan. Some, but not all, of those plans and documents are listed below:

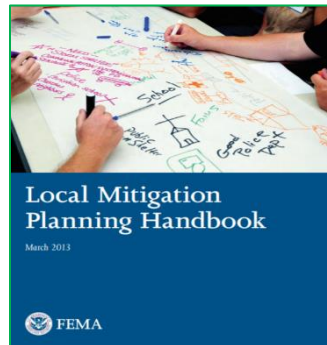
Town of Milford, New Hampshire Hazard Mitigation Plan Update 2015	Compare & Contrast
Milford Master Plan (2016).....	Community Information
Milford Annual Reports (2020 & 2021)	Fire Report & Development
Other Hazard Mitigation Plans (Greenfield, Goffstown, Bethlehem)	Formats & Mitigation Ideas
Milford Development Regulations	
• Subdivision Regulations (2017)	New Development Regulations
• Site Plan Review Regulations	Approval Process
The Milford Zoning Ordinance (2022)	
• Zoning Regulations & Floodplain Management District (2020).....	Zoning & Floodplain Regulations
Census Data	Population Data
The NH DRA Summary of Inventory of Valuation MS-1 2021 for Milford.....	Structure Evaluation
The Economic & Labor Market Information Bureau Community Profile	Population Trends
The American Community Survey (ACS 2015-2019)	Population Trends
Mitigation Ideas, FEMA, January 2013.....	Mitigation Strategies
The Department of Cultural & Natural Resources (DNCR)	DNCR Fire Report
The NH Bureau of Economic Affairs (BEA)	Flood Losses
Property Tax Valuation (Department of Revenue Administration).....	Property Information

Other technical manuals, federal and state laws, and research data were combined with these elements to produce this integrated hazard mitigation plan. Please refer to *Appendix A: Bibliography* and the plan’s footnotes.

Other technical manuals, federal and state laws, and research data were combined with these elements to produce this integrated hazard mitigation plan. Please refer to *Appendix A: Bibliography* and the plan’s footnotes.



https://www.fema.gov/sites/default/files/2020-06/fema-mitigation-ideas_02-13-2013.pdf



https://www.fema.gov/sites/default/files/2020-06/fema-local-mitigation-planning-handbook_03-2013.pdf

G. HAZARD MITIGATION GOALS

Before identifying new mitigation action items, the team reviewed and agreed to the goals in the State of New Hampshire Multi-Hazard Mitigation Plan, Update 2018. These goals are detailed below.

OVERARCHING GOALS

The following are the five overarching goals of this plan:

- *Minimize loss and disruption of human life, property, the environment, and the economy due to natural, technological, and human-caused hazards through a coordinated and collaborative effort between federal, state, and local authorities to implement appropriate hazard mitigation measures.*
- *Enhance the protection of the general population, citizens, and community guests before, during, and after a hazard event through public education about disaster preparedness and resilience and expanded awareness of the threats and hazards that face the community.*
- *Promote comprehensive hazard mitigation planning at local levels to identify, introduce, and implement cost-effective hazard mitigation measures.*
- *Address the challenges posed by climate change related to increasing the risk and impacts of the hazards identified within this plan.*
- *Strengthen Continuity of Operations and Continuity of Government at the local level to ensure the continuation of essential services.*

NATURAL HAZARD OBJECTIVES

- *Reduce long-term flood risks by assessing, identifying, and strategically mitigating at-risk or vulnerable infrastructure (dams, stream crossings, roadways, and coastal levees).*
- *Minimize illnesses and deaths related to events that threaten human and animal health.*
- *Assist communities with plan development, outreach, and public education to reduce the impact of natural disasters.*
- *Ensure mitigation strategies consider the protection and resiliency of natural, historical, and cultural resources.*

TECHNOLOGICAL HAZARD OBJECTIVES


- *Ensure technological hazards are responded to appropriately and mitigate the effect on citizens.*
- *Build upon state and local capabilities to identify and respond to emerging contaminants.*
- *Effectively collaborate between federal, state, and local agencies and private partners, Non-Governmental Organizations (NGOs), and Volunteer Organizations Active in Disaster (VOADs).*

- Enhance public education about technological hazards to prevent and mitigate hazard impacts on the population.
- Ensure hazardous material (HazMat) teams are adequately equipped and trained to respond, contain and mitigate incidents involving technological hazards.
- Reduce the possibility of long-term utility outages by planning, training, and exercising on utility failure events.
- Lessen the effects of technological hazards on communications infrastructure by building more resilient voice and data systems.

HUMAN-CAUSED HAZARD OBJECTIVES

- Ensure grant-related funding processes allow for reasonable and practical actions at the community and state levels.
- Identify Critical Infrastructure & Key Resources (CIKR) risks or vulnerabilities and protect or harden infrastructure against hazards.
- Improve the ability to respond to and mitigate Cyber Events through increased training, exercising, improved equipment, and utilizing the latest technologies.
- Foster collaboration between federal, state, and local agencies on training, exercising, and preparing for mass casualty incidents and terrorism.
- Ensure that state and community assets (i.e., hospitals, state agencies, non-profits, universities, nursing homes, prisons, etc.) are prepared for all phases of emergency management, including training, reunification, and exercising.

Did You Know?



On average,
\$1 spent on **HAZARD MITIGATION**
provides the **NATION** approximately **\$4** IN FUTURE BENEFITS

Money spent on reducing the risk of natural hazards is a wise investment. FEMA administers three grant programs that provide funding for eligible mitigation planning and projects: the Hazard Mitigation Grant Program (HMGP), the Flood Mitigation Assistance (FMA) Program, and the Pre-Disaster Mitigation (PDM) Program.

FEMA E-Brief, April 12, 2017

H. HAZARD MITIGATION PLANNING PROCESS & METHODOLOGY

The planning process consisted of twelve steps; some were accomplished independently, while others were interdependent. Many factors affected the planning process's sequence, such as the number of meetings, community preparation, attendance, and other community needs. The planning process resulted in significant cross-talk regarding natural, technical, and human-caused hazards.



All steps were included but not necessarily in the numerical sequence listed. The list of steps is as follows:

PLANNING STEPS

Step 01: Team formation, orientation, and goals

Step 02: Identify hazards and their risk and probability

Table 3.1 – Hazard Identification & Risk Assessment (HIRA)

Step 03: Profile and list historic and potential hazards

Table 3.2 – Historic Hazard Identification

Step 04: Profile, list, and establish risk for Critical Infrastructure & Key Resources (CIKR)

Tables 4.1 to 4.4 – Critical Infrastructure & Key Resources

Step 05: Assess the community's participation in the National Flood Insurance Program (NFIP)

Chapter 3, Section D

Step 06: Prepare an introduction to the community, discuss emergency service capabilities and development trends, and review statistical information about the town

Chapter 2, Sections A, B, and C & Table 2.1, Town Statistics

Step 07: Review current plans, policies, and mutual aid and brainstorm to identify improvements

Table 6.1 – Current Plans, Policies & Mutual Aid

Step 08: Examine the mitigation action items from the last plan

Table 7.1 – Accomplishments since the last plan

Step 09: Evaluate and categorize potential mitigation action items

Tables 8.1 - Potential Mitigation Strategies & the STAPLEE

Step 10: Prioritize mitigation action items to determine an action plan

Table 9.1 – The Mitigation Action Plan

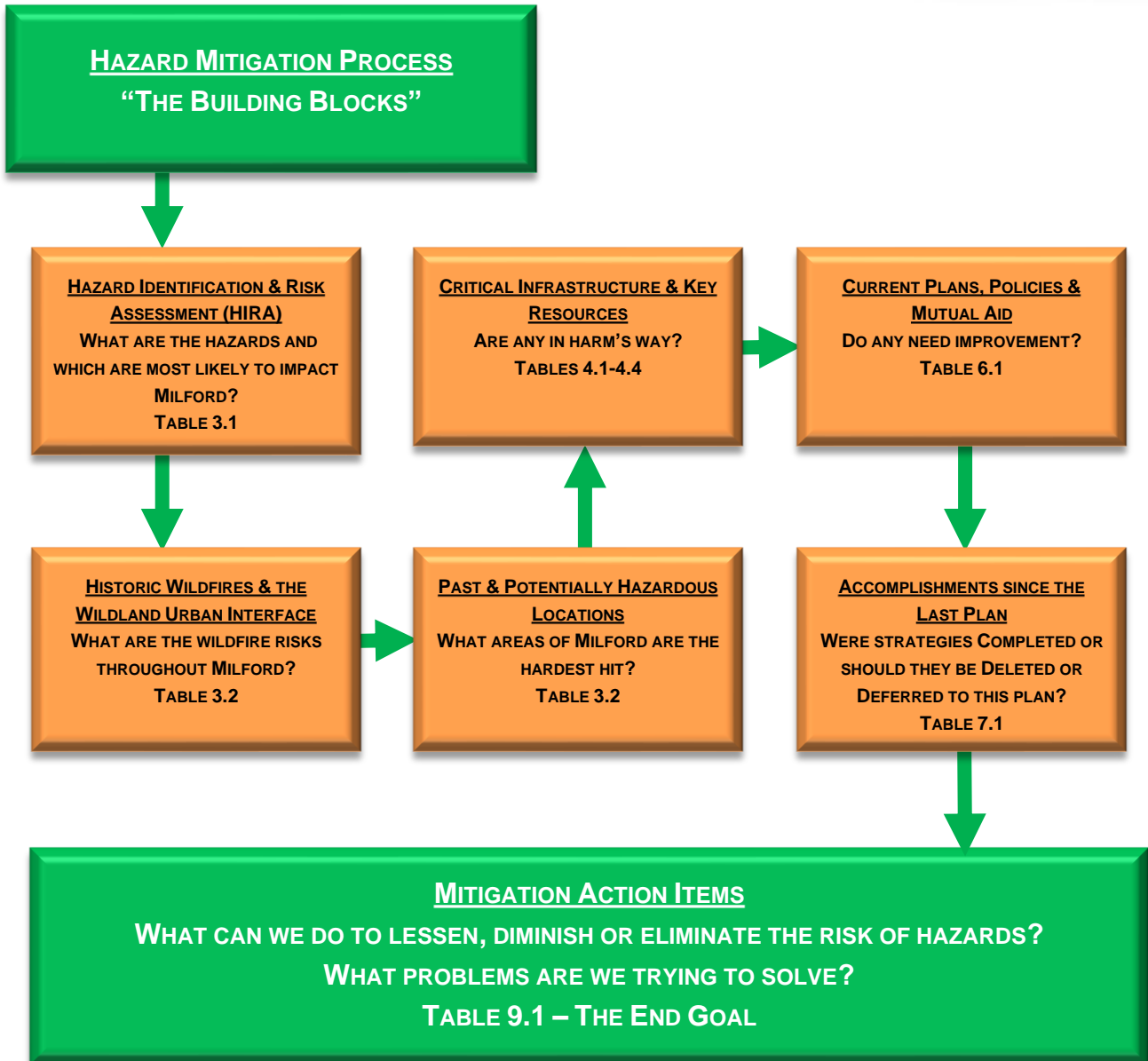
Step 11: Review the plan before submission to HSEM for APA (Approved Pending Adoption)

Step 12: Adopt and monitor the plan

I. HAZARD MITIGATION BUILDING BLOCKS & TABLES

Using a “building block” approach, the base, or foundation, for this mitigation plan was the prior plan. Each completed table had its starting point with the last hazard mitigation plan completed by the community.

Ultimately, the “building blocks” led to the final goal of developing prioritized mitigation “action items” that would lessen or diminish the impact of natural hazards on the town when put into an action plan.



J. NARRATIVE DESCRIPTION OF THE PROCESS

Completion of this new hazard mitigation plan required significant planning preparation. The plan was developed with substantial local, state, and federal coordination. All meetings were geared to accommodate brainstorming, open discussion, and increased awareness of potentially hazardous conditions in the town.

The planning process included a complete review of the Town of Milford, New Hampshire Hazard Mitigation Plan Update 2015. Using the 2015 plan as a base, each element of the old plan was examined and revised to reflect changes that had taken place in development and the priorities of the community. Also, referring to the 2015 plan, strategies from the past were reassessed and improved upon for the future.

The following narrative explains how the 2015 Plan was used during each step of the planning process to make revisions that resulted in this plan.

MEETING 1, MARCH 17, 2020

The first full meeting of the Milford Hazard Mitigation Team was held on March 18, 2020. Meeting attendance included Arene Berry (Recreation Director), Rick Riendeau (Former Department of Public Works Director), John Shannon (Former Town Administrator), Gary Daniels (Select Board Chair), Shawn Pelletier (Police Department), Craig Frye (Police Department), Michael Viola (Police Chief), Jason Smedick (Former Fire Captain), Michael Goldstein (Fire Department), Francis Coffey (Fire Department), Kenneth Flaherty (Fire Chief/EMD), Lincoln Daley (Community Development Director), Dennis Haerinck (Former Fire Captain), Olin Garneau (Mapping and Planning Solutions) and June Garneau (Mapping & Planning Solutions).

To introduce the team to the planning process, the planner reviewed the evolution of hazard mitigation plans, the funding, the 12 Step Process (handout), the collaboration with other agencies, and the Goals (handout). The planner also explained the need to sign in, track time (handout), and provide public notice to encourage community involvement.

Work then began on *Table 2.1, Town Statistics*. Most of the work on this table was completed at this meeting except for a few items the planner would determine through GIS or get later. There was some discussion about housing statistics and a possible change to the town’s shelter.

**HAZARD MITIGATION
POTENTIAL TEAM MEMBERS**

FEDERAL

- USDA Forest Service

STATE

- Department of Transportation (DOT)
- Department of Natural & Cultural Resources (DNCR)
- Bureau of Economic Affairs (BEA)

LOCAL

- Select Board Member(s)
- Town Manager/Administrator
- Planning Board Member(s)
- Town Planner
- Police Chief
- Fire Chief
- Emergency Management Director
- Emergency Medical Services
- Education/School
- Recreation Director
- DPW Director or Road Agent
- Water & Waste Management
- Public Utilities
- Dam Operator(s)
- Major Employer(s)
- Senior Citizen Facilities
- Vulnerable populations
- Academia

OTHER OR SPECIAL INTEREST

- Landowners
- Homeowners Association(s)
- Forest Management
- Developers & Builders
- Major Businesses

Next on the agenda were hazard identification and the completion of *Table 3.1, Hazard Identification & Risk Assessment (HIRA)*. The team assessed which hazards could affect the community using the town’s last HMP and the State of New Hampshire Multi-Hazard Mitigation Plan Update 2018. After the hazards had been identified, the team then assessed the risk severity and probability by ranking each hazard on a scale of 1-5 (5 being very high or catastrophic) based on the following:

The Human Impact	Probability of Death or Injury
The Property Impact	Physical Losses and Damages
The Business Impact	Interruption of Service
The Probability	Likelihood of this occurring within 25 years

The rankings were then calculated to reveal the hazards which pose the most significant risks to the community. Eleven natural hazards, six technological hazards, and four human-caused hazards were identified. After analyzing these hazards in *Table 3.1, Inland Flooding, Severe Winter Weather, and Infectious Diseases* were designated “High Risk” natural hazards for the town.

With time running out, the planner explained what would occur at the next meeting, including a deeper look at these hazards and considering possible mitigation actions. The next meeting was set for March 31, 2020; however, this meeting was canceled due to the onset of COVID-19. The team agreed that May 19, 2020, would be the next meeting.

MEETING 2, JUNE 9, 2020

Virtual meeting attendance included Arene Berry, Rick Riendeau, John Shannon, Shawn Pelletier, Craig Frye, Michael Viola, Jason Smedick, Michael Goldstein, Francis Coffey, Kenneth Flaherty, Lincoln Daley, Dennis Haerincek, Eric Schelberg (Milford Ambulance Service), Patty Crooker (Greater Nashua Regional Public Health Network), Mark Munroe (Greater Nashua Regional Public Health Network), Liz Gilboy (NH Homeland Security & Emergency Management), Olin Garneau and June Garneau.

The planner reviewed the work done at the previous meeting, including *Table 2.1, Town Statistics*, and *Table 3.1, Hazard Identification & Risk Assessment (HIRA)*. The team did not make any changes to either of these tables. Next, having completed *Table 3.1* at the previous meeting, the team started working on descriptions of each hazard and how these hazards have or could impact the community.

Meeting 1 – March 17, 2020

1) Introduction

- a) Evolution of Hazard Mitigation Plans & Community Wildfire Protection Plans
- b) Reasons for Hazard Mitigation and Update
- c) Community involvement to solicit input on how to mitigate the effects of hazards
- d) Devise a plan that lessens, diminishes or completely eliminates the threat of Hazards to the Town

2) The Process

- a) Funding
- b) Review of 12 Step Process & The Team (handout)
- c) Collaboration with other Agencies (HSEM, WMNF)

3) Meetings

- a) Community Involvement - Public Notice, Press Release
- b) Stakeholders
- c) Signing In, Tracking Time, Agendas, Narrative (handout)

4) Today's Topics

- a) Table 2.1, Town Information
- b) Table 3.1, Hazard Identification & Analysis
- c) Hazard Descriptions
- d) Table 4.1-4.4, Critical Infrastructure & Key Resources

5) Homework

- a) Homework – Critical Infrastructure & Key Resources
- b) Digital Photos – contributions welcome

6) Future Meetings

- a) March 31, 2020 @ 10:00 AM
- b) May 19, 2020 @ 10:00 AM
- c) June 9, 2020 @ 10:00 AM

Meeting 2 – June 9, 2020

1) Last Meeting

- a) Reviewed planning process, purpose, funding & collaboration.
- b) Reviewed of community involvement and stakeholders
- c) Worked on Town Statistics
- d) Worked Hazard Identification & Risk Assessment (HIRA)

2) Today's Topics

- a) Review....
 - i) Town Statistics
 - ii) Hazard Identification & Risk Assessment (HIRA)
- b) Work on....
 - i) Hazard Descriptions
 - ii) Critical Infrastructure & Key Resources
 - iii) Historic Hazard Identification

3) Homework

- a) Review materials sent by MAPS
- b) Digital Photos – contributions welcome

4) Future Meetings

- a) _____

To gain more knowledge of the impact of these hazards, the planner asked the team to describe each hazard as it relates to Milford. For example, some of the questions asked were:

- *How often do these hazards occur?*
- *Do the hazards damage either the roads or structures?*
- *Have the hazards resulted in a loss of life?*
- *Are the elderly and functional needs populations particularly at risk?*
- *What has been done in the past to cope with the hazards?*
- *Was outside help requested?*
- *Are the hazards further affected by an extended power failure?*
- *What mitigation actions can we take to eliminate the hazards or diminish their impact?*

In addition to bringing more awareness to the hazards, these questions provided helpful information for analyzing the impact of the hazards on the community. The planner noted that these descriptions would be used in Chapter 5.

With time running out, the planner thanked the team for their work and assigned “homework” to team members, including requesting that the DPW Director prepare a list of road/culvert projects that would need to be completed within the next five years. The next meeting was scheduled for Tuesday, July 7, 2020.

MEETING 3, JULY 7, 2020

Virtual meeting attendance included Rick Riendeau, John Shannon, Michael Goldstein, Kenneth Flaherty, Dennis Haerinck, Eric Schelberg, Alex Taylor (Fire Department), Spencer Pickett (Fire Department), Liz Gilboy, Olin Garneau, and June Garneau.

The meeting began with a review of the work done at the previous meeting. The planner reviewed *Table 2.1, Town Statistics* to ensure the town data was accurate; no changes were made. The planner then reviewed *Table 3.1, Hazard Identification & Risk Assessment (HIRA)*, to ensure the team felt the hazards were in the correct order for the town.

The team began work on *Table 3.2, Historic Hazard Identification*, which lists past and potentially hazardous locations and events. First, they looked at the hazards listed in the last plan and determined which they would like to see kept in this plan. Next, the team examined the record of Major Disasters and Emergency Declarations that have taken place in recent years.

Next on the agenda were *Tables 4.1–4.4, Critical Infrastructure & Key Resources (CIKR)*. The Emergency Response Facilities, the Non-Emergency Response Facilities, the Facilities & Populations to Protect, and the Potential Resources from the 2015 plan were examined; a few minor adjustments were made for this plan. In addition, the evacuation routes, helicopter landing zones, and bridges on the evacuation routes were defined. Lastly, each CIKR was analyzed for its hazard risk.

Meeting 3 – July 7, 2020

- 1) Last Meeting**
 - a) Reviewed planning process, purpose, funding & collaboration.
 - b) Reviewed of community involvement and stakeholders
 - c) Reviewed....
 - i) Table 2.1, Town Statistics
 - ii) Table 3.1, Hazard Identification & Risk Assessment (HIRA)
 - d) Worked on....
 - i) Hazard Descriptions
- 2) Today's Topics**
 - a) Review....
 - i) Hazard Descriptions
 - b) Work on....
 - i) Tables 4.1-4.4, Critical Infrastructure & Key Resources
 - ii) Table 3.2, Historic Hazard Identification
 - iii) Table 6.1, Current Plans, Policies & Mutual Aid (time allowing)
- 3) Homework**
 - a) Review materials sent by MAPS
 - b) Digital Photos – contributions welcome
- 4) Future Meetings**
 - a) _____

With time running out, the planner reviewed what would occur at the next meeting and thanked the team. The next virtual meeting was set for August 11, 2020.

MEETING 4 – AUGUST 11, 2020

Virtual meeting attendance included Rick Riendeau, John Shannon, Craig Frye, Michael Viola, Jason Smedick, Michael Goldstein, Francis Coffey, Kenneth Flaherty, Dennis Haerinck, Olin Garneau, and June Garneau.

First on the agenda was a review of the last meeting, including *Table 3.2, Historic Hazard Identification*. While reviewing Table 3.2, the planner took the opportunity to explain the Wildland Urban Interface (WUI); this area is determined to be where the urban environment interfaces with the wildland environment and the area most prone to the risk of wildfires. In Milford, it was noted that the WUI, if determined using the 1,320-foot buffer method, would cover only the area along Class V roadways but that much of the town is forested. Therefore, all of Milford is thought to be in the WUI. Mitigation strategies were discussed to protect structures and educate citizens about wildfires. *Table 4.1-4.4, Critical Infrastructure & Key Resources*, was reviewed and completed. The team worked on the hazard risk for the evacuation routes and bridges in the town.

Meeting 4 – August 11, 2020

1) Last Meeting

- a) Reviewed...
 - i) Table 2.1, Town Statistics
 - ii) Table 3.1, Hazard Identification & Risk Assessment (HIRA)
- b) Worked on...
 - i) Table 3.2, Historic Hazard Identification
 - ii) Tables 4.1-4.4, Critical Infrastructure & Key Resources

2) Today's Topics

- a) Review...
 - i) Table 3.2, Historic Hazard Identification
 - ii) Tables 4.1-4.4, Critical Infrastructure & Key Resources
- b) Work on...
 - i) Table 6.1, Current Plans, Policies & Mutual Aid
 - ii) Table 7.1, Past Hazard Mitigation Plan Assessment

3) Homework

- a) Review materials sent by MAPS
- b) Digital Photos – contributions welcome

4) Future Meetings

- a) September 15, 2020 @ 1:00 PM

The team then began working on *Table 6.1, Current Plans, Policies & Mutual Aid*; like other tables, this table was also pre-populated with information from the 2015 plan. Looking closely at the existing policies from the last plan and current mechanisms that are in place, the team determined if each plan, policy, or mutual aid system should be designated as “No Improvements Needed” or “Improvements Needed” based on the “Key to Effectiveness” found in Chapter 6.

It was explained to the team that those items that needed improvement would become new “Action Items” for this plan and be discussed again and re-prioritized when we got to our final table, *Table 9.1, The Mitigation Action Plan*.

The planner adjourned the meeting and promised to write statements supporting the concepts and ideas in Table 6.1. The next meeting was scheduled for Tuesday, September 15, 2020.

MEETING 5 – SEPTEMBER 15, 2020

Virtual meeting attendance included Arene Berry, Rick Riendeau, John Shannon, Craig Frye, Michael Viola, Michael Goldstein, Francis Coffey, Kenneth Flaherty, Lincoln Daley, Dennis Haerinck, Eric Schelberg, Kayla Henderson (NH Homeland Security & Emergency Management-Former), Liz Gilboy, Olin Garneau, and June Garneau.

The planner first took the team through a review of Table 6.1 to ensure that the comments and ideas expressed by the team were fully represented. Work on this table resulted in 14 new “Action Items” for this plan, some of which are also in Table 7.1.

Table 7.1, *Accomplishments since the Last Plan*, pre-populated with data from the 2015 plan, was the next agenda item. The planner led the team through each strategy to determine which of these was “Completed,” should be “Deleted,” or should be “Deferred” to this plan as a new mitigation action item. Some of the action items from the 2015 plan had been completed or partially completed by the town. Some were deleted as they were no longer useful or considered emergency preparedness, not mitigation. Still, others were “deferred” for consideration as new “Action Items” for this plan.

Next, the team began work on *Table 8.1, Potential Mitigation Action Items & the STAPLEE*, and *Table 9.1, The Mitigation Action Plan*. The planner explained that these tables were combined for the meeting but would become separate tables in the final plan. Having pre-populated the tables with the action items that had been deferred from Tables 6.1 and 7.1, the team looked carefully at each “Action Item” to assign responsibility, the time frame for completion, the type of funding that would be required, and the estimated cost of the action (see Chapter 9, Section B).

Work on this table included the STAPLEE process, as shown in Chapter 8. The team went through the STAPLEE process for the identified action items and provided an opportunity to consider the cost-benefit of each action item. The STAPLEE analysis would become *Table 8.1, Potential Mitigation Action Items & the STAPLEE*.

Although most of Tables 8.1 and 9.1 were complete, there were a few action items to discuss at the next meeting. The planner provided the team with an explanation of the Ranking/Prioritizing (Chapter 9, Section A) method and adjourned the meeting. The next meeting was scheduled for October 20, 2020.

Meeting 5 – September 15, 2020

1) Last Meeting

- a) Reviewed....
 - i) Table 3.2, Historic Hazard Identification
 - ii) Tables 4.1-4.4, Critical Infrastructure & Key Resources
- b) Worked on....
 - i) Table 6.1, Current Plans, Policies & Mutual Aid

2) Today’s Topics

- a) Review....
 - i) Table 6.1, Current Plans, Policies & Mutual Aid
- b) Work on....
 - i) Table 7.1, Past Hazard Mitigation Plan Assessment
 - ii) Table 8.1, Mitigation Action Plan & STAPLEE

3) Homework

- a) Review materials sent by MAPS
- b) Digital Photos – contributions welcome

4) Future Meetings

- a) Tuesday, October 20, 2020 @ 1:00 PM
- b) Tuesday, November 17, 2020 @ 1:00 PM
- c) Tuesday, December 8, 2020 @ 1:00 PM

Link to explore – FEMA Mitigation Ideas:

https://www.fema.gov/sites/default/files/2020-06/fema-mitigation-ideas_02-13-2013.pdf

Documentation for the planning process, including public involvement, is required to meet DMA 2000 (44CFR§201 (c) (1) and §201.6 (c) (1)). The plan must include a description of the planning process used to develop the plan, including how it was prepared, who was involved in the process, and how other agencies participated. A description of the planning process should include how the planning team or committee was formed, how input was sought from individuals or other agencies who did not participate on a regular basis, what the goals and objectives of the planning process were, and how the plan was prepared. The description can be in the plan itself or contained in the cover memo or an appendix.

MEETING 6 – OCTOBER 20, 2020

Virtual meeting attendance included Arene Berry, Rick Riendeau, John Shannon, Shawn Pelletier, Craig Frye, Michael Viola, Jason Smedick, Michael Goldstein, Francis Coffey, Lincoln Daley, Dennis Haerinck, Michael Apollo (Greater Nashua Regional Public Health Network), Liz Gilboy, Olin Garneau, and June Garneau.

To begin the meeting, the planner walked the team through a complete review of Table 7.1. Having translated her notes from the last meeting into paragraphs, the planner reviewed each item in Table 7.1 to see if the concepts and ideas of the team remained intact and to verify the accuracy of the information. With this review, two items from Table 7.1 (not in Table 6.1) were deferred as new mitigation action items for this plan. Although several strategies from the last plan were determined to be emergency preparedness and not mitigation, the team kept them as reminders to complete these important action items.

Next, the team began where we had left off in Tables 9.1 and 8.1. After considering each strategy forwarded from Tables 6.1 & 7.1, the team considered additional mitigation items used in other plans. After much discussion and a careful review, the team settled on twenty-six mitigation action items that they felt were achievable and could potentially diminish the impact of future natural hazards.

MEETING 7 – NOVEMBER 17, 2020

Virtual meeting attendance included Arene Berry, John Shannon, Craig Frye, Michael Viola, Jason Smedick, Francis Coffey, Ken Flaherty, Lincoln Daley, Dennis Haerinck, Alex Taylor, Liz Gilboy, Olin Garneau, and June Garneau.

Once all of the mitigation action items had been determined and the STAPLEE was completed for each, the team was now ready to rank and prioritize the action items that had been identified.

Before the meeting, the planner had pre-ranked the action items based on the time frame, the town’s authority to accomplish the strategy, the type of strategy, and the STAPLEE score and placed them in four categories, as shown in Chapter 9, Section A. A virtual “handout” with the identified action items was made for the team. Using this handout, the team could see the action items and determine if any changes are needed.

Meeting 6 – October 20, 2020

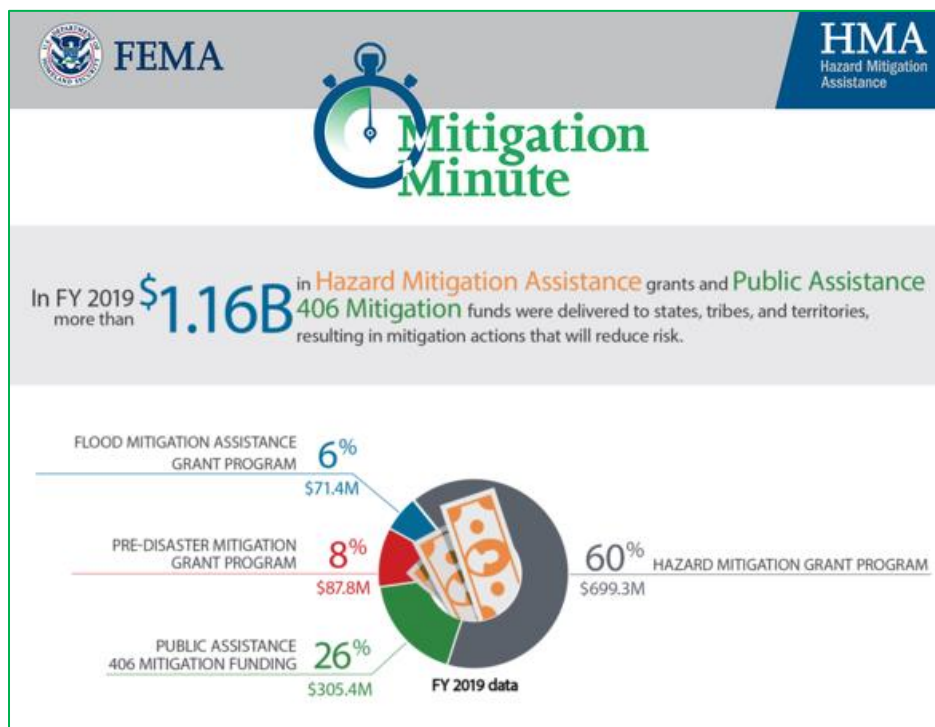
- 1) Last Meeting**
 - a) Reviewed....
 - i) Table 6.1, Current Plans, Policies & Mutual Aid
 - b) Worked on....
 - i) Table 7.1, Past Hazard Mitigation Plan Assessment
 - ii) Table 8.1, Mitigation Action Plan & STAPLEE (did not finish)
- 2) Today’s Topics**
 - a) Review....
 - i) Table 7.1, Past Hazard Mitigation Plan Assessment
 - b) Work on....
 - i) Table 8.1, Mitigation Action Plan & STAPLEE
- 3) Homework**
 - a) Review materials sent by MAPS
 - b) Digital Photos – contributions welcome
- 4) Future Meetings**
 - a) Tuesday, November 17, 2020 @ 1:00 PM
 - b) Tuesday, December 8, 2020 @ 1:00 PM

Meeting 7 – November 17, 2020

- 1) Last Meeting**
 - a) Reviewed....
 - i) Table 7.1, Past Hazard Mitigation Plan Assessment
 - b) Worked on....
 - i) Table 8.1, Mitigation Action Plan & STAPLEE
- 2) Today’s Topics**
 - a) Review....
 - i) Table 8.1, Mitigation Action Plan & STAPLEE
 - b) Work on....
 - i) Ranking & Priority
- 3) Homework**
 - a) Review materials sent by MAPS
 - b) Digital Photos – contributions welcome
- 4) Future Meetings**
 - a) Tuesday, December 8, 2020 @ 1:00 PM (if needed)

Then, within each rank, the team assigned a priority. For example, if seven action items were ranked A, the priority was 1-7. In this fashion, the team determined which action items were the most important within their rank and in which order they would be accomplished.

With Tables 8.1 and 9.1 completed, meetings were over, and the team’s work was complete, except for the final review. The planner agreed to put the final “draft” plan together and email a copy for the town’s review. The planner explained the process from this point forward and thanked the team for their hard work. No additional meeting was scheduled.



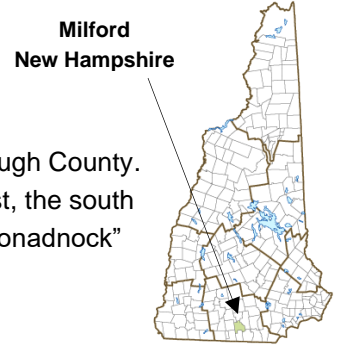
*Mitigation Minute for January 15, 2020
Federal Emergency Management Agency (FEMA)*

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Chapter 2: Community Profile

A. INTRODUCTION

Milford is a beautiful community in the south-central part of New Hampshire in Hillsborough County. Milford is bordered to the north by Lyndeborough and Mont Vernon, the east by Amherst, the south by Brookline and Hollis, and the west by Wilton and Mason. Milford is located in the “Monadnock” tourism region of New Hampshire.



TOWN GOVERNMENT

A five-member Select Board governs the Town of Milford; a Town Administrator oversees the day-to-day operations. The town’s departments include but are not limited to Fire, Police, Public Works, Planning, Zoning, Recreation, and Conservation. The largest employer in Milford is Hitchiner Manufacturing, with 512+ employees, followed by the Milford School District, with 431+ employees.

DEMOGRAPHICS & HOUSING

Over the last 30 years, Milford’s population has increased drastically; the population change from 1990 (11,828) to 2020 (16,131) showed an increase of 4,303, according to US Census 2020. These numbers represent a growth rate of approximately 36.38%.

The American Community Survey (2015-2019) estimates 6,661 housing units, most single-family (3,863). There are 2,464 multiple-family units and 334 mobile homes and other housing units. The estimated median household income is \$79,647, and the median age is 41.8 years.⁴

EDUCATION & CHILD CARE

There are multiple schools located in Milford; they include:

- Jacques Memorial Elementary School (grades PreK-1)
- Heron Pond Elementary School (grades 2-5)
- Milford Middle School (grades 6-8)
- Milford High School (grades 9-12)
- Project Drive at Bales (grades 3-12)

Milford has no colleges or universities; however, eight childcare facilities have a capacity of 401 children.

Incorporated: 1794

Origin: This town was incorporated in 1794 from portions of Hollis, Amherst, and the Mile Slip, a strip of land that fell between the Dunstable grant and the Raby (Brookline) grant. A section of Milford was known as the Duxbury School Farm, a thousand acres of land intended to support Duxbury, Massachusetts schools. The town was probably named for its location near a shallow water crossing on the Souhegan River by an early mill site known as the Mill Ford. Milford bears the nickname of the Granite Town in the Granite State, because of its extensive high-quality granite quarries. At one time, Milford was a prime stop on the Underground Railroad.

Villages and Place Names: East Milford, South Milford, Richardson

Population, Year of the First Census Taken: 939 residents in 1800

Population Trends: Population change for Milford totaled 9,789 over 49 years, from 6,622 in 1970 to 16,411 in 2019. The largest decennial percent change was a 36 percent increase occurring between 1980 to 1990; population increased 31 percent in the previous decade. The 2019 Census estimate for Milford was 16,411 residents, which ranked 16th among New Hampshire’s incorporated cities and towns.

Population Density and Land Area, 2019 (US Census Bureau): 645.6 persons per square mile of land area. Milford contains 25.4 square miles of land area and 0.1 square miles of inland water area.

Source: Economic & Labor Market Information Bureau, NH Employment Security; January 2021; Received 6/19/2019

⁴ American Community Survey, 2015-2019; the Census Bureau

NATURAL FEATURES

The Town of Milford covers approximately 25.4 square miles of land and 0.1 square miles of inland water. The community's terrain includes rolling hills and dense woods, often seen in southern New Hampshire. The highest peak is Boynton Hill, at 814' above sea level. The lowest elevation is approximately 259' above sea level near the town center.

Vegetation is typical of New England, including deciduous and conifer forests, open fields, swamps, and riverine areas.

TRANSPORTATION

Three major roadways run through Milford, NH Routes 13, 101, and 101A. NH Route 13 travels from Mont Vernon in the north to Brookline in the south. NH Route 101A branches off Route 101, running through downtown Milford and eventually connecting to Route 101 near the Amherst border. NH Route 101 travels from Wilton in the west, dipping down through Milford's center and into Amherst in the east. Other minor and less traveled roadways lend access to other areas of the town.

B. EMERGENCY SERVICES

EMERGENCY OPERATIONS CENTER & EMERGENCY MANAGEMENT DIRECTOR

The Town of Milford has a designated Emergency Management Director (EMD) and a Deputy EMD. The Fire Station has been designated the Emergency Operations Center (EOC) as part of the town's emergency preparedness program. The EOC is where the EMD, department heads, government officials, and volunteer agencies gather to coordinate their response to a significant emergency or disaster.

FIRE RESCUE

The Milford Fire Department is a municipal fire department providing quality fire services to Milford residents and visitors 24 hours a day, 365 days a year. The department employs a full-time Chief, a deputy Chief, six full-time firefighters, and 32 on-call firefighters, and operates one station within the community. The Fire Department and other area departments participate in the Souhegan Valley Fire Mutual Aid Association.

MILFORD AMBULANCE SERVICE (EMS)

Milford Ambulance Service provides emergency medical services and medical transportation for the town. The ambulance service has a full-time Director, eleven other full-time staff, and 23 part-time per diem and volunteer EMTs.

POLICE DEPARTMENT

The Milford Police Department is a full-time department providing quality law enforcement services to residents and visitors. The department employs a full-time Chief, twenty-seven full-time sworn officers, and four other full-time employees. The Milford Police Department has mutual aid agreements with surrounding towns, the NH State Police, and the Hillsborough County Sheriff's Office.

DEPARTMENT OF PUBLIC WORKS

The Milford Department of Public Works (DPW) operates year-round, 24 hours daily. The department’s mission is to support Milford citizens through the safe operation, proper maintenance, and future development of highways, supporting infrastructure, and utilities. The department staff includes a full-time Director, twenty-two full-time employees, and 2-6 other part-time employees. The department is a member of the NH Public Works Mutual Aid Association.

MEDICAL FACILITIES

Milford’s has multiple medical facilities that are located close to the town; they include:

- Southern NH Medical Center in Nashua (12 miles, 163 beds)
- St. Joseph Hospital in Nashua (12 miles, 126 beds)
- Elliot Hospital in Manchester (21 miles, 296 beds)
- Catholic Medical Center in Manchester (18 miles, 330 beds).

EMERGENCY SHELTER(S)

The primary shelter is where evacuees are directed during an emergency. In Milford, the designated primary shelter is the Milford High School, which offers a large sleeping area, restrooms, showers, and kitchen facilities and has a permanent generator. The designated secondary shelter for the town is the Heron Pond Elementary School.

C. MILFORD’S CURRENT & FUTURE DEVELOPMENT TRENDS

Nearly every New Hampshire community experienced a significant drop in new home construction and values after the Great Recession of 2008. Milford was no exception, as shown in the chart to the right from City-Data.com. However, unlike in other parts of the state, this trend began to change in 2013 in Milford as new single-family home construction permit requests increased.⁵ The planning team noted that the number of new single-family homes continues to rise and that, among other projects, a 124-unit multi-family project had been approved.

Since early in the Covid-19 pandemic, it became apparent in nearly every New Hampshire community and the US that the real estate market is thriving. Whether the current market is due to the pandemic or other factors is yet to be determined, but New Hampshire has had a red-hot seller’s market for the past year.

When work began on this plan’s update, no major or minor subdivisions were expected in Milford, although two subdivisions with eight (+/-) homes each were being discussed. It was noted that older subdivisions that had been relatively dormant were now making a comeback; Curtis Common, Falcon Ridge, and Timber Ridge are either being built or are in future phases of the

Year	Number of Buildings	Average Cost
1997	54	\$100,000
1998	69	\$115,900
1999	61	\$134,600
2000	92	\$136,500
2001	65	\$148,400
2002	94	\$200,100
2003	77	\$206,700
2004	114	\$171,800
2005	74	\$222,700
2006	47	\$201,200
2007	24	\$194,900
2008	20	\$198,700
2009	14	\$132,300
2010	17	\$159,600
2011	16	\$152,800
2012	9	\$180,900
2013	11	\$180,900
2014	17	\$187,900
2015	27	\$150,700
2016	62	\$150,800
2017	48	\$169,400
2018	48	\$169,400
2019	54	\$265,700

⁵ City Data; <http://www.city-data.com/city/Milford-New-Hampshire.html>

projects. No new subdivisions have been built in hazard zones. Per regulations, in new subdivisions with no town water, cisterns are required for fire suppression unless otherwise indicated by the Fire Department.

The Town Reports stated that the last two years “*presented a number of challenges for the Community Development Office in response to Covid 19 pandemic and meeting the demands for services.*” In both 2020 and 2021, the Community Development Office stated, “*Despite the pandemic, residential development and construction activity in Milford increased (2020) or remained consistent (2021) and is reflective of continuing strong economic conditions within the region, availability of housing stock, and the desire of residents to reinvest in their properties.*”⁶

The Planning Board remained active in both 2020 and 2021. In 2020, the Planning Board reported, “*Several major projects were reviewed and approved by the Board this past year.*” These projects included an outdoor storage expansion, a storage building at an existing business, a self-storage facility, and two commercial buildings. “*In addition, the Planning Board approved two subdivisions and two lot line adjustment applications totaling approximately 3 new building lots and nine condominium units.*”⁷ In the 2021 Town Report, the Planning Board noted the construction of a new coffee shop, the review and approval of a senior housing project, and a warehouse. “*In addition, the Planning Board approved ten (10) subdivision applications, three (3) lot line adjustments, and sixteen (16) site plan applications.*”⁸

The Zoning Board of Adjustments (ZBA) also remained busy in Milford during 2020 and 2021. The ZBA reported that 30 cases were heard before the Board in 2020, and 29 were heard in 2021. Most hearings before the ZBA in 2020 and 2021 were for special exceptions (40); the remainder were for variances (19).⁹

Milford’s town officials will monitor and guide growth and development using the Master Plan, the Milford Development Regulations (Subdivision & Site Plan Review), the Zoning Ordinance, and the Floodplain Development Ordinance. The Community Development Director, the Planning Board, the Select Board, the Zoning Board of Adjustment, the Building Inspector/Code Enforcement Officer, and other town officials are almost always aware of construction that is taking place. Building permits are required.

No new town-owned Critical Facilities are being planned at this time. However, the town’s boards will ensure that future building plans consider any risk from natural hazards and that any new facilities will be built to mitigate the potential impact of flooding. The town recognizes the importance of growth and understands the impact of hazards on new facilities and homes if built within the community’s hazard-prone areas. The Planning Board will follow town regulations to ensure that any public or private construction in hazardous areas will be built to minimize vulnerability to the hazards identified in this plan.

⁶ Town Report, Milford, NH; 2020 (page 27) & 2021 (page 26), Community Development Reports

⁷ Town Report, Milford NH, 2020, page 74, Planning Board Report

⁸ Town Report, Milford, NH 2021, page 75, Planning Board Report

⁹ Town Report, Milford NH 2020 (page 76) & 2021 (page 77), Zoning Board of Adjustment Report

TABLE 2.1: TOWN STATISTICS

Town Statistics				
Census Population Data	2020	2010	2000	1990
Milford, NH - Census Population Data	16,131	15,115	13,606	11,828
Hillsborough County	422,937	400,721	382,384	336,549
<i>Elderly Population-% over 65 (ACS 2015-2019*)</i>	15.7%			
<i>Median Age (ACS 2015)-2019*)</i>	41.8			
<i>Median Household Income (ACS 2015)-2019*)</i>	\$79,647			
<i>Individuals below the poverty level (ACS 2015)-2019*)</i>	4.4%			
<i>Change in Population-Winter (%)</i>	0%			
<i>Change in Population-Summer (%)</i>	0%			
Housing Statistics (2020: DEC Redistricting Data (PL 94-171))				
<i>Total Housing Units</i>	6,846			
<i>Occupied Housing Units</i>	6,630			
<i>Vacant Housing Units</i>	216			
Assessed Building Value				
Types of Buildings	Value	1% Damage	5% Damage	
<i>Residential</i>	\$1,276,934,358	\$12,769,344	\$63,846,718	
<i>Manufactured Housing</i>	\$22,972,800	\$229,728	\$1,148,640	
<i>Discretionary Preservation Easement</i>	\$0	\$0	\$0	
<i>Farm Structures & Land under RSA 79-D</i>	\$187,900	\$1,879	\$9,395	
<i>Commercial</i>	\$274,196,567	\$2,741,966	\$13,709,828	
<i>Tax Exempt</i>	\$0	\$0	\$0	
<i>Utilities</i>	\$41,886,600	\$418,866	\$2,094,330	
<i>Totals</i>	\$1,616,178,225	\$16,161,782	\$80,808,911	
<i>The above chart shows the 2021-MS1 structure values. These values estimate structure loss value due to natural hazards (see Chapter 5), based on a loss of 0-1% or 1-5% of structures in the community. Source: 2021 Town Report, Assessing Department, 2021 Annual Report; page 25</i>				
Regional Coordination				
<i>County</i>	Hillsborough			
<i>Tourism Region</i>	Monadnock			
Municipal Services & Government				
<i>Town Administrator</i>	Yes			
<i>Selectboard (5 member)</i>	Yes; elected			
<i>Planning Board</i>	Yes; appointed			
<i>School Board</i>	Yes; elected			
<i>Zoning Board of Adjustment</i>	Yes; appointed			
<i>Conservation Committee</i>	Yes; appointed			
<i>Master Plan</i>	Yes; 2016			

Town Statistics	
<i>Emergency Operation Plan (EOP)</i>	Yes, June 26, 2017
<i>Hazard Mitigation Plan (HMP)</i>	Yes; 2015
<i>Zoning Ordinances</i>	Yes; adopted 1969, amended 2022
<i>Milford Development Regulations</i>	Includes Subdivision & Site Plan Regulations (2017)
<i>Capital Improvement Plan (CIP)</i>	Yes; adopted in 2016; updated in 2019 for 2020-2025
<i>Capital Reserve Funds (CRF)</i>	Yes, amended annually
<i>Building Permits Required</i>	Yes
<i>Town Web Site</i>	Yes; www.milford.nh.gov
<i>Floodplain Ordinance</i>	Yes; 2020 (part of Zoning 2022)
<i>Member of NFIP</i>	1-May-80
<i>Flood Insurance Rate Maps (DFIRMS)</i>	25-Sep-09
<i>Flood Insurance Rate Study (FIS)</i>	25-Sep-09
Percent of Local Assessed Valuation by Property Type - 2019 (NH Department of Revenue)	
<i>Residential Buildings</i>	82.0%
<i>Commercial Land & Buildings</i>	16.5%
<i>Other (including Utilities)</i>	1.6%
Emergency Services	
<i>Town Emergency Warning System(s)</i>	CodeRED, Nixel, fire whistle for fire response
<i>School Emergency Warning System(s)</i>	PowerSchool
<i>Emergency Page</i>	No
<i>Social Media</i>	Facebook: Fire, Police, Recreation, Planning, EMS & Town
<i>ListServ or Subscription Service</i>	Recreation, Constant Contact, >2,500
<i>Local Newspapers</i>	The Cabinet (Milford); Nashua Telegraph (Nashua)
<i>Public Access TV</i>	Public Education & Government (PEG) Access Channels 20, 21 & 22
<i>Local TV Stations</i>	WMUR, Channel 9 (Manchester); WCVB, Channel 5, (Boston); WBZ, Channel 4 (Boston); WHDH, Channel 7 (Boston); NH-1, Comcast 6 (Londonderry)
<i>Local Radio</i>	WGIR, 101.1 FM (Manchester); NPR 88.3 FM (Nashua); WRKO, 680 AM (Boston); WBZ, 1030 AM (Boston); WZID 95.7 FM (Manchester)
<i>Police Department</i>	Yes; full-time Chief, 27 sworn full-time officers, 4 other full-time
<i>Police Dispatch</i>	Milford Area Communication Center (MACC Base)
<i>Police Mutual Aid</i>	Surrounding towns, NH State Police, Hillsborough County Sheriff's Office
<i>Animal Control Officer</i>	No
<i>Fire Department</i>	Yes; full-time Chief, six full-time, 32 on-call firefighters (40 slots)
<i>Fire Dispatch</i>	Milford Area Communication Center (MACC Base)
<i>Fire Mutual Aid</i>	Souhegan Valley Fire Mutual Aid Association
<i>Fire Stations</i>	One

Town Statistics	
<i>Fire Warden</i>	Yes
<i>Emergency Medical Services</i>	Milford Ambulance Service; full-time Director; 11 other full-time staff; 23 part-time per diem and volunteer
<i>EMS Dispatch</i>	Milford Area Communication Center (MACC Base)
<i>Emergency Medical Transportation</i>	Milford Ambulance Service
<i>HazMat Team</i>	Souhegan Mutual Aid Response Team (SMART - Nashua)
<i>Established Emergency Management Director (EMD)</i>	Yes
<i>Established Deputy EMD</i>	Yes
<i>Line of Succession (should EMD be out of the area)</i>	1 st - Deputy EMD
	2 nd - Police Chief
	3 rd - Selectboard or designee
<i>Public Health Network</i>	Greater Nashua Regional Public Health Network
<i>Health Officer</i>	Yes
<i>Deputy Health Officers</i>	Yes (2)
<i>Building Inspector & Code Enforcement Officer</i>	Yes
<i>Established Public Information Officer (PIO)</i>	No
<i>Nearest Hospital(s)</i>	Nashua: Southern NH Medical Center (12 miles, 163 beds); St. Joseph Hospital (12 miles, 126 beds)
	Manchester: Elliot Hospital (21 miles, 296 beds); Catholic Medical Center (18 miles, 330 beds)
<i>Local Humane Society or Veterinarians</i>	Milford Veterinary Clinic
<i>Primary EOC</i>	Fire Station (generator)
<i>Secondary EOC</i>	Town Hall (portable generator)
<i>Primary Shelter</i>	Milford High School (no generator)
<i>Secondary Shelter</i>	Heron Pond Elementary School (generator)
Utilities	
<i>Town Sewer</i>	Municipal & Private Septic
<i>Department of Public Works</i>	Yes; full-time Director; 22 full-time, 2-6 part-time employees
<i>Miles of Class V Roads</i>	87 miles paved; 1.5 miles gravel
<i>NH Public Works Mutual Aid</i>	Yes
<i>Water Supply</i>	Milford Water Utilities (Water & Sewer Commissions), Pennichuck Water & Private Wells
<i>Waste Water Treatment Plant</i>	Yes
<i>Electric Supplier</i>	Eversource Energy
<i>Natural Gas Supplier</i>	Liberty Utilities
<i>Cellular Telephone Access</i>	Yes
<i>Pipelines</i>	Natural Gas Pipeline
<i>High-Speed Internet</i>	Yes
<i>Telephone Company</i>	Consolidated Communications & Comcast

Town Statistics	
Transportation	
<i>Primary Evacuation Routes</i>	NH Route 13 & 101
<i>Secondary Evacuation Routes</i>	NH Route 101A, North River Road, Mason Road, and other feeder roads
<i>Nearest Interstate</i>	Everett Tpk., Exits 7-8 (9 miles); I-293, Exit 3 (14 miles)
<i>Nearest Airstrip</i>	Boire Field, Nashua (6,000 ft. asphalt runway)
	Amato's Field, Milford (gravel, 3-4,000 ft.)
<i>Nearest Commercial Airport(s)</i>	Manchester-Boston Regional Airport (18 miles)
	Logan Airport, Boston (55 miles)
<i>Public Transportation</i>	Souhegan Valley Rides (Blue Bus, elderly, Nashua Transit Authority)
<i>Railroad</i>	Boston & Maine (PanAm owns track; freight line; 2-3 stops in town)
Education & Childcare	
<i>Elementary School</i>	Grades Pre-K-1; Jacques Memorial Elementary
	Grades 2-5; Heron Pond Elementary
	Grades 3-12; Project Drive at Bales
<i>Middle School</i>	Grades 6-8; Milford Middle School
<i>High School</i>	Grades 9-12; Milford High School
<i>School Administrative Unit</i>	SAU 40
<i>Private School</i>	No
<i>Licensed Childcare Facilities</i>	Eight facilities, 401 capacity
Fire Statistics (NH Division of Forests & Lands, Fire Warden Report, and the Town)	
<i>Wildfire Fires (2019)</i>	None over one acre
<i>Hillsborough County Fire Statistics (2020)</i>	11 fires, 1 acre
<i>State Forest Fires Statistics (2020)</i>	113 fires, 89 acres
*ACS: The American Community Survey, a five-year average of randomly mailed long-form surveys from the Census Bureau	
Unless otherwise noted, information found in Table 2.1 was derived from the Economic & Labor Market Information Bureau, NH Employment Security, January 2021. Community Response Received 6/19/2019, https://www.nhes.nh.gov/elmi/products/cp/profiles-pdf/milfordpdf .	

Chapter 3: Hazard Identification, Risk Assessment & Probability

A. HAZARD IDENTIFICATION

The first step in hazard mitigation is to identify hazards. The team determined that eleven natural hazards can potentially affect the community. *Table 3.1, Hazard Identification & Risk Assessment (HIRA)*, estimates the level of impact that each listed hazard could have on humans, property, and business and averages them to establish an index of severity. The probability estimate for each hazard is multiplied by its severity to establish an overall relative threat” factor.

Some hazards in Table 3.1 include subcategories of hazards. For instance, Severe Winter Weather includes snowstorms, ice storms, blizzards, and nor’easters. In such instances¹⁰, the analysis included a discussion of the subcategories. However, ultimately, the final analysis was based on the category in general, as shown in Table 3.1

The NH State Hazard Mitigation Plan includes many of the same potential hazards identified in Milford. However, several of the State’s hazards were excluded from this Plan - these hazards scored a zero during the HIRA process and were excluded from Table 3.1 on page 37. The reasons for exclusion are further explained below.

<u>State Hazard</u>	<u>Reason for exclusion from this plan</u>
Coastal Flooding	Distance away from the sea
Solar Storm & Space Weather	The team felt this was not something the town could manage
Avalanches	No known areas of avalanches
Radiological	Distance away from any radiological sites

Specific hazards that have affected the town, the region, and the state are detailed in *Table 3.2, Historic Hazard Identification*, and Chapter 5.

B. RISK ASSESSMENT

The hazards listed in Table 3.1 were classified based on the “Relative Threat” score as calculated in Column F; these were then separated into three categories using Jenks’ Optimization, also known as the natural breaks’ classification¹¹. The “Relative Threat” score was then labeled into three categories, *High Risk, Medium Risk, and Low Risk*, as shown in Table 3.1, Column G; these categories are also indicated in Chapter 5, Sections B-D. The plan demonstrates each hazard’s likelihood of occurrence combined with its potential effect on the town. This process illustrates a comprehensive hazard statement and helps the town understand which hazards should receive the most attention.

In addition to the relative threat analysis in Table 3.1, the team used *Tables 4-1-4.4, Critical Infrastructure & Key Resources (CIKR)*, to identify and analyze the potential hazard risk based on a scale of 1-3 for each CIKR.

¹⁰ Inland Flooding (Riverine, 100-year, local road flooding, ice jams, dam failure); Extreme Temperatures (hot & cold); High Wind Events (Tornadoes & Downbursts); Infectious Diseases (too many to list)

¹¹ The natural breaks classification process is a method of manual data classification partitions data into classes based upon natural groups within the data distribution; ESRI, <http://support.esri.com/en/knowledgebase/GISDictionary/term/natural%20breaks%20classification>

C. PROBABILITY

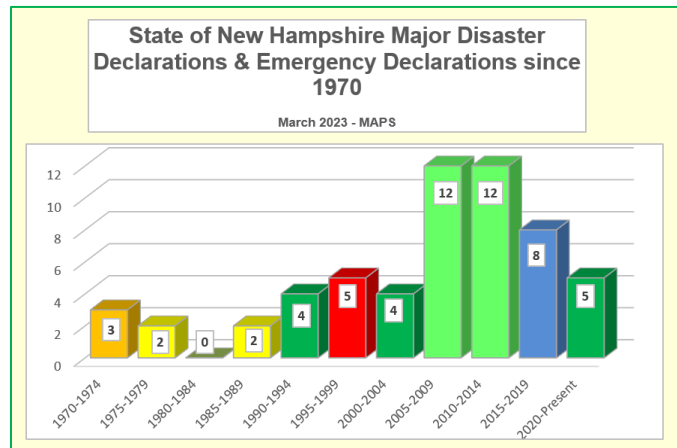
The determination of the probability of occurrence is contained within Column D in Table 3.1, which assesses hazards based on the likelihood that the hazards will occur within 25 years. The probability scores indicate whether the identified hazard has a *Very Low, Low, Moderate, High, or Very High* probability. Probability categories are also indicated in Chapter 5, Sections B-D.

Overall, the Town of Milford is relatively safe from natural, technological, and human-caused hazards. However, due to Milford’s geographic location, forested lands, hills, heavy snowpack, and topography, there is always a probability that future hazards will occur.

HAZARD PROBABILITY & CLIMATE CHANGE

Although not identified as a natural hazard in this plan, no plan can be considered complete without discussing climate change’s impact on weather patterns. *“The challenges posed by climate change, such as more intense storms, frequent heavy precipitation, heat waves, drought, extreme flooding, and higher sea levels, could significantly alter the types and magnitudes of hazards impacting states in the future,”* FEMA stated in its State Mitigation Plan Review Guide¹². FEMA recognizes climate change by including climate change in the hazard mitigation guide for state planners.

The chart to the right shows the increased frequency of Major Disaster Declarations (DR) and Emergency Declarations (EM) in New Hampshire, possibly indicating the impact of climate change.¹³ The decade beginning in 2020 includes five disaster declarations: DR-4516 and EM-3445 (Covid-19), DR-4622 (Cheshire County), DR-4624 (Cheshire and Sullivan Counties), and DR-4369 (Belknap, Carroll, Grafton, and Coos Counties).



Communities in New Hampshire, such as Milford, should become increasingly aware of climate change's impact on the hazards already experienced and anticipate an increase in probability in the future.

HAZARD PROBABILITY COMBINED WITH LONG-TERM UTILITY OUTAGE

Any potential disaster in Milford is particularly impactful if combined with a long-term utility outage, as would most likely be the case with severe winter storms, blizzards, ice storms, hurricanes, tropical storms, and windstorms. An outage could result in frozen pipes and a lack of water and heat during the winter, a concern for the town’s elderly and vulnerable citizens. The food supply of individual citizens could become quickly depleted should a power failure last for a week or more. When combined with a long-term utility outage, any hazard’s effects could have a higher probability of damaging impacts on the community.

¹² State Mitigation Plan Review Guide, FEMA, Released March 2015, Effective March 2016, Section 3.2, page 13

¹³ Derived from FEMA’s record of disasters; categorized by decade since 1970 by the planner; 2020-2029 includes Covid-19

TABLE 3.1: HAZARD IDENTIFICATION & RISK ASSESSMENT (HIRA)

Hazard Identification & Risk Assessment (HIRA)							
Scoring for Probability (Columns A, B & C)	Column A	Column B	Column C	Column D	Column E (A+B+C)/3	Column F D x E	Column G Risk
1=Very Low (0-20%)	What is the probability of death or injury?	What is the probability of physical losses & damage?	What is the probability of interruption of service?	What is the probability of this occurring within 25 years?	Average of Human, Property & Business Impact	Relative Threat	High 8.0-12.0 Medium 5.0-7.9
2=Low (21-40%)							
3=Moderate (41-60%)							
4=High (61-80%)	Human Impact	Property Impact	Business Impact	Probability of Occurrence	Severity	Risk Severity x Occurrence	Low 0.0-4.9
5=Very High (81-100%)							
Natural Hazards							
1) Inland Flooding	1.00	4.00	3.00	4.00	2.67	10.67	High
2) Severe Winter Weather	2.00	4.00	4.00	3.00	3.33	10.00	High
3) Infectious Diseases	2.00	2.00	4.00	3.00	2.67	8.00	High
4) Extreme Temperatures	1.00	2.00	1.00	5.00	1.33	6.67	Medium
5) Tropical & Post-Tropical Cyclones	2.00	3.00	3.00	2.00	2.67	5.33	Medium
6) Lightning & Hail	1.00	2.00	1.00	4.00	1.33	5.33	Medium
7) Drought	1.00	2.00	2.00	3.00	1.67	5.00	Medium
8) High Wind Events	1.00	3.00	1.00	2.00	1.67	3.33	Low
9) Earthquakes	1.00	4.00	4.00	1.00	3.00	3.00	Low
10) Wildfires	1.00	2.00	1.00	1.00	1.33	1.33	Low
11) Landslide & Erosion	1.00	2.00	1.00	1.00	1.33	1.33	Low
Technological Hazards							
1) Aging Infrastructure	1.00	4.00	4.00	4.00	3.00	12.00	High
2) Conflagration	2.00	4.00	4.00	2.00	3.33	6.67	Medium
3) Long-Term Utility Outage	1.50	1.00	4.00	3.00	2.17	6.50	Medium
4) Hazardous Materials	4.00	4.00	4.00	1.00	4.00	4.00	Low
5) Dam Failure	2.00	4.00	4.00	1.00	3.33	3.33	Low
6) Known & Emerging Contaminates	1.00	2.00	1.00	2.00	1.33	2.67	Low
Human-Caused Hazards							
1) Transport Accidents	4.00	2.00	3.00	3.00	3.00	9.00	High
2) Mass Casualty Incidents	4.00	2.00	4.00	2.00	3.33	6.67	Medium
3) Terrorism & Violence	4.00	4.00	4.00	1.00	4.00	4.00	Low
4) Cyber Events	1.00	1.00	3.00	2.00	1.67	3.33	Low

D. NATIONAL FLOOD INSURANCE PROGRAM (NFIP) STATUS

Milford entered the National Flood Insurance Program (NFIP) member on May 1, 1980. Milford has a relatively small floodplain with approximately 2.07 square miles of land in the 100-year floodplain and .37 square miles in the 200-year floodplain for a total of 2.44 square miles in the floodplain.¹⁴ There is an additional 0.1 square miles of inland water. Milford’s floodplain makes up approximately 9.6% of the land in the community¹⁵. The floodplain areas are primarily along the Souhegan River, Purgatory, Hartshorn, Tucker, Birch, Great, Ox, and Medlyn-Woods Brooks. Milford is likely to experience flooding on several roads and along rivers and streams; the overall flood risk is moderate due to riverine and 100- and 200-year flood events. The latest Flood Insurance Rate Studies (FIRS) and Digital Flood Insurance Rate Maps (DFIRMS) are dated September 25, 2009.

According to the New Hampshire Bureau of Economic Affairs (BEA), there are 36 NFIP policies in effect in Milford for a total amount of insurance in force of \$9,521,600. Of these policies, 25 are single-family, one is other residential, and 10 are non-residential; no 2-4 family units have policies. There have been ten paid losses for a total amount of \$130,404. Two repetitive losses were claimed for a total of \$11,730.13¹⁶.

Severe Repetitive Loss (SRL) Properties--NFIP-insured buildings that, on the basis of paid flood losses since 1978, meet either of the loss criteria described on page SRL 1. SRL properties with policy effective dates of January 1, 2007, and later will be afforded coverage (new business or renewal) only through the NFIP Servicing Agent’s Special Direct Facility so that they can be considered for possible mitigation activities.

Source: <http://www.fema.gov/national-flood-insurance-program/definitions#R>

ARTICLE VI, FLOODPLAIN MANAGEMENT

SECTIONS 6.03.0 THROUGH 6.03.16¹⁷

Floodplain management regulations in Article VI, Sections 6.03.0 through 6.03.16, as listed in the box to the right, serve as a guide for the town to regulate or prohibit building or substantial improvements in the FEMA floodplain. The Milford Floodplain Management ordinances provide a thorough and thoughtful use of regulations to promote safety within the flood zone and mitigate future flood damage.

Sections 6.03.1 and 6.03.2, written in *italics* below, are taken directly from the Ordinance to explain the purpose and findings.

- MILFORD FLOODPLAIN MANAGEMENT REGULATIONS**
- SECTION 6.03.0, FLOODPLAIN MANAGEMENT DISTRICT (2020)
 - SECTION 6.03.1, PURPOSE
 - SECTION 6.03.2, FINDINGS OF FACT AND APPLICABILITY
 - SECTION 6.03.3, ADMINISTRATIVE PROVISIONS
 - SECTION 6.03.4, DEFINITIONS
 - SECTION 6.03.5, FLOODPLAIN ADMINISTRATOR DUTIES AND RESPONSIBILITIES
 - SECTION 6.03.6, FLOOD ZONE AND FLOODWAY DETERMINATIONS
 - SECTION 6.03.7, SUBSTANTIAL IMPROVEMENT AND DEMANAGE DETERMINATIONS
 - SECTION 6.03.8, FLOODPLAIN PERMITTING REQUIREMENTS
 - SECTION 6.03.9, FLOOD ELEVATION DETERMINATIONS
 - SECTION 6.03.10, FLOODPLAIN DEVELOPMENT REQUIREMENTS
 - SECTION 6.03.11, STRUCTURE REQUIREMENTS
 - SECTION 6.03.12, MANUFACTURED HOMES AND RECREATIONAL VEHICLES
 - SECTION 6.03.13, WATER SUPPLY AND SEWAGE DISPOSAL SYSTEMS
 - SECTION 6.03.14, FLOODWAY REQUIREMENTS
 - SECTION 6.03.15, WATERCOURSE ALTERATIONS
 - SECTION 6.03.16, VARIANCES AND APPEALS

¹⁴ GIS Analysis of Hillsborough County DFIRM (Digital Flood Insurance Rate Map)
¹⁵ Square miles in the flood zone (2.44) / square miles in the community (25.5) = 9.6%
¹⁶ NH Bureau of Economic Affairs; Jennifer Gilbert, July 6, 2020
¹⁷ Town of Milford, Zoning Ordinances, 2022 Edition; pages 52-65;
https://www.milford.nh.gov/system/files/uploads/final_zoning_ordinance_2022_march_2022.pdf

Section 6.03.1, Purpose, states,

- A. *This Ordinance, adopted pursuant to the authority of RSA 674:16, RSA 674:17, and 674:56, shall be known as the Town of Milford Floodplain Management Ordinance (“Ordinance”). The regulations in this Ordinance shall overlay and supplement the regulations in the Town of Milford Zoning Ordinance, and shall be considered part of the Zoning Ordinance for purposes of administration and appeals under state law.*
- B. *The purpose of this Ordinance is to promote the public health, safety, and general welfare; minimize hazards to persons and property from flooding; to protect watercourses from encroachment; and to maintain the capability of floodplains to retain and carry off floodwaters.*

Section 6.03.2, Findings of Fact and Applicability, states,

- A. *Certain areas of the Town of Milford are subject to periodic flooding, causing serious damages to properties within these areas. Relief is available in the form of flood insurance as authorized by the National Flood Insurance Act of 1968. Therefore, the Town of Milford chosen to become a participating community in the National Flood Insurance Program (NFIP), and agrees to comply with the requirements of the National Flood Insurance Act of 1968 (P.L. 90-488, as amended) as detailed in this Ordinance.*
- B. *The following regulations in this Ordinance shall apply to all lands within the Town of Milford and designated as special flood hazard areas by the Federal Emergency Management Agency (FEMA) in its “Flood Insurance Study (FIS) for Town of Milford, NH” dated September 25, 2009 together with the associated Flood Insurance Rate Map (FIRM) panels 33011C0451D, 33011C0452D, 33011C0453D, 33011C0454D, 33011C0456D, 33011C0457D, 33011C0458D, 33011C0459D, 33011C0465D, 33011C0470D, 33011C0478D, 33011C0486D dated September 25, 2009 and associated amendments and revisions, which are declared to be a part of this Ordinance and are hereby incorporated by reference.*
- C. *This Ordinance establishes a permit system and review procedure for development in a special flood hazard area of the Town of Milford.*

The town uses Article VI to guide development and to ensure compliance and enforcement of NFIP standards. The Office of Community Development, the Planning Board (initiator), and the Select Board (enforcer) adhere to the rules, regulations, and requirements outlined in Article VI.

Milford’s Floodplain Administrator is responsible for determining substantial improvement and damage. These determinations are made for all development in a special flood hazard area that proposes to improve an existing structure, including alterations, movement, enlargement, replacement, repair, additions, rehabilitations, renovations, repairs of damage from any origin (such as, but not limited to flood, fire, wind, or snow) and any other improvement of or work on such structure including within its existing footprint.



In 1968, although well-intentioned government flood initiatives were already in place, Congress established the National Flood Insurance Program (NFIP) to address both the need for flood insurance and the need to lessen the devastating consequences of flooding. The goals of the program are twofold: to protect communities from potential flood damage through floodplain management, and to provide people with flood insurance.

For decades, the NFIP has been offering flood insurance to homeowners, renters and business owners, with the one condition that their communities adopt and enforce measures to help reduce the consequences of flooding.

The Floodplain Administrator, in coordination with any other applicable community official(s), shall be responsible for the following:

- Determine if a substantial damage (SD) determination needs to be made and communicate SD and permit requirements to property owners.
- Verify the cost of repairs to the structure.
- Verify the market value of the structure.
- Make the SD determination and issue it to the property owner.
- Permit development/ensure compliance with community ordinance.
- Inspect development and maintain as-built compliance documentation post-construction.

The team understands that the benefits of the NFIP also extend to structures not in the 100-year floodplain. The town will continue to work with the Bureau of Economic Affairs and carefully monitor its compliance with the NFIP. The team felt it worthwhile to have NFIP brochures and information available at the Town Hall for current homeowners and potential developers. There are several flood-related mitigation strategies in this plan.

Table 3.1, Table 3.2 and Chapter 5, Section B provide more information on past and potential hazards in Milford.

All sections of Article VI 6.03 are available online. The Milford Zoning Ordinance can be found on the town’s website on the Ordinances & Regulations page.¹⁸

¹⁸ <https://www.milford.nh.gov/community-development/pages/ordinances-regulations>

TABLE 3.2: HISTORIC HAZARD IDENTIFICATION

2015 HMPT = 2015 Hazard Mitigation Planning Team
 2024 HMPT = 2024 Hazard Mitigation Planning Team

Disaster Declarations (*Declared in Hillsborough County & elsewhere in NH*)

- DR Major Disaster Declarations (DR) since 1953
- EM Emergency Declarations (EM) since 1953
- FM Fire Management Assistance Declaration (FM) since 1953

Table 3.2 includes the following sections:

A. Inland Flooding	D. Severe Winter Weather	G. Miscellaneous Hazards
B. Wildfires	E. Earthquakes	H. Other Hazards
C. High Wind Events	F. Drought	

Type of Event	Date of Event	Location	Description	Source
<p>A. Inland flooding includes flooding caused by 100-year rain events, heavy rainfall, rapid snowmelt, ice jam flooding, dam failure, and local road flooding: Riverine flooding is the most common disaster event in NH. Significant riverine flooding in some areas of the state occurs in less than ten-year intervals and seems to be increasing with climate change. The entire State of NH has a high flood risk. Flood events have the potential to impact the community on a townwide basis. No significant flooding events have occurred in Milford since the Tucker Brook culvert failure in 2018.</p>				
<p>Summary of flood events, including Major Disaster & Emergency Declarations in the state & regionwide</p>				
Flooding Before 1970	1927, 1936, 1938, 1943 (2), 1953, 1955, 1959			See below
Flooding 1970-1979	1972 (DR-327), 1973 (DR-399), 1974 (DR-411), 1976, 1978 (DR-549), 1979 (EM-3073)			
Flooding 1980-1989	1986 (DR-771), 1987 (DR-789)			
Flooding 1990-1999	1990 (DR-876), 1991 (DR-923), 1991 (DR -917), 1995, 1996 (DR-1077), 1996 (DR-1144), 1998 (DR-1231)			
Flooding 2000-2009	2003 (DR-1489), 2005 (DR-1610), 2006 (DR-1643), 2007 (DR-1695), 2008 (DR-1787), 2008 (DR-1799)			
Flooding 2010 - 2019	2010 (DR-1892), 2010 (DR-1913), 2011 (DR-4006), 2012 (DR-4065), 2013 (DR-4139), 2015 (DR-4206), 2017 (DR-4329), 2017 (DR-4355), 2018 (DR-4370), 2019 (DR-4457)			
Flooding 2020 - Present	2021 (DR-4622), 2021 (DR-4624)			

Type of Event	Date of Event	Location	Description	Source
A detailed summary of flood events in the community				
Inland Flooding (Heavy Rain)	July 29-August 10, 1986	Cheshire, Hillsborough & Sullivan	Major Disaster Declaration DR-771: See below	FEMA & 2024 HMPT
Inland Flooding (Heavy Rain)	March 30-April 11, 1987	Carroll, Cheshire, Grafton, Hillsborough, Merrimack, Rockingham, Strafford & Sullivan	Major Disaster Declaration DR-789: There is no specific information on this particular event, but the Public Works Director indicated that considerable flooding occurred in the mid-1980s, which created a campaign to replace many culverts throughout the community.	FEMA & 2024 HMPT
Inland Flooding (Ice jam flood)	The late 1980s	Milford	Ice jam on the Souhegan River caused flooding at the trailer park on Elm Street, the farm fields, and the rest of the neighborhood. Flooding up to trailers, but no recollection of actual structure damage	2024 HMPT
Inland Flooding	In the late 1980s and early 1990s	Tucker Brook	The bridge over Tucker Brook was destroyed; the bridge was out for a considerable amount of time and caused some transportation issues that were remediated	2015 HMPT
Inland Flooding (Heavy Rain)	August 7-11, 1990	Belknap, Carroll, Cheshire, Coos, Grafton, Hillsborough, Merrimack, & Sullivan	Major Disaster Declaration DR-876: No recollection of this event in Milford.	FEMA & 2024 HMPT
Inland Flooding (Heavy Rain)	October 20-23, 1996	Grafton, Hillsborough, Merrimack, Rockingham, Strafford & Sullivan	Major Disaster Declaration DR-1144: No recollection of this event in Milford.	FEMA & 2024 HMPT
Inland Flooding (Heavy Rain)	June 12-July 2, 1998	Belknap, Carroll Grafton, Hillsborough, Merrimack & Rockingham	Major Disaster Declaration DR-1231: No recollection of this event in Milford.	FEMA & 2024 HMPT
Inland Flooding (Heavy Rain)	October 7-18, 2005	Belknap, Cheshire, Grafton, Hillsborough, Merrimack & Sullivan	Major Disaster Declaration DR-1610: State and federal disaster assistance reached more than \$3 million to help residents and business owners in New Hampshire recover from losses resulting from the severe storms and flooding in October. There is no recollection of this event in Milford, although this storm caused significant flooding in Alstead.	FEMA & 2024 HMPT
Inland Flooding (Heavy Rain)	May 12-23, 2006	Belknap, Carroll, Grafton, Hillsborough, Merrimack, Rockingham & Strafford	Major Disaster Declaration DR-1643: Flooding occurred in most of southern NH during May 12-23, 2006 (Mother's Day Storm). In Milford, the Souhegan River caused flooding at the trailer park on Elm Street, the farm fields, Brookstone Manor, the Oak Street area, the Boys & Girls Club, and the MCAA Fields; no significant structure damage was recalled.	FEMA & 2024 HMPT

Type of Event	Date of Event	Location	Description	Source
Inland Flooding (Heavy Rain)	April 15-23, 2007	All Ten NH Counties	Major Disaster Declaration DR-1695: FEMA & SBA obligated more than \$27.9 million in disaster aid for flood damages following the April nor'easter. (Tax Day Storm); in Milford, 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; this storm did more damage in Milford than the Mother's Day Storm.	FEMA, 2015 HMPT & 2024 HMPT
Inland Flooding (Heavy Rain)	September 6-7, 2008	Hillsborough	Major Disaster Declaration: DR-1799: A period of severe storms and flooding on September 6-7, 2008. There is no recollection of this event in Milford.	FEMA & 2024 HMPT
Inland Flooding (Heavy Rain)	February 23 - March 3, 2010	Grafton, Hillsborough, Merrimack, Rockingham, Strafford & Sullivan	Major Disaster Declaration: DR-1892: See below, Section D	FEMA & 2024 HMPT
Inland Flooding (Heavy Rain)	March 14-31, 2010	Hillsborough & Rockingham	Major Disaster Declaration DR-1913: Flooding occurred in Hillsborough and Rockingham counties. There was no recollection of this event in Milford.	FEMA & 2024 HMPT
Inland Flooding (Tropical Storm Irene)	August 26-September 6, 2011	EM 3333: All Ten NH Counties DR-4026: Carroll, Coos, Grafton, Merrimack, Belknap, Strafford, & Sullivan	Major Disaster Declaration DR-4026 & Emergency Declaration EM-3333: See below, Section C	FEMA & 2024 HMPT
Inland Flooding (Bridge Washout)	Fall 2018	Tucker Brook	Mason Road culverts (2 double) at the Wilton town line washed out from heavy rain	2024 HMPT

B. Wildfires: New Hampshire is heavily forested and is therefore vulnerable to wildfire, particularly during periods of drought. The proximity of many populated areas to the state's forested land exposes these areas to the potential impact of wildfire. Wildfires have the potential to impact the community on a townwide basis. No significant wildfire events have occurred in Milford since the Burns Hill Fire.

Summary of wildfire events, including Major Disaster & Emergency Declarations in the state and other recent large fires

Wildfire (Shaw Mountain)	July 2, 1953	Carroll County	Major Disaster Declaration DR-11: This wildfire occurred in Carroll County at Shaw Mountain. This fire did not reach Hillsborough County or Milford.	FEMA & 2024 HMPT
Wildfire	July 26, 2010	Summer Street	0.5 miles past the end of Summer Street, within 200 acres of woods, including the Mayflower Hill Conservation Area; 3-4 acres. Eighty firefighters from 12 surrounding communities assisted in fighting the fire; residents of Summer Street self-evacuated.	2015 HMPT

Type of Event	Date of Event	Location	Description	Source
Wildfire (Bayle Mountain)	May 2015	Carroll County	The Bayle Mountain Fire: This Class D fire burned 275 acres and took five days to put out on rocky and steep terrain in Ossipee, NH. Blackhawk and private helicopters and fire crews from all over the state extinguished this fire. The Bayle Mountain Fire did no damage to homes. This fire did not reach Hillsborough County or Milford.	Local Resources
Wildfire (Stoddard)	April 2016	Cheshire County	Fire Management Assistance Declaration, FM-5123: Stoddard, NH. The Stoddard Fire burned 190 acres in April 2016 and caused the evacuation of 17 homes; Class D fire. This fire did not reach Hillsborough County or Milford.	FEMA & 2024 HMPT
Wildfire (Covered Bridge Fire)	November 2016	Carroll County	The Covered Bridge Fire: A brush fire near the Albany Covered Bridge grew to 329 acres, primarily on White Mountain National Forest land. No structures were lost; Class E fire. This fire did not reach Hillsborough County or Milford.	Local Resources
Wildfire (Dilly Cliff)	October 2017	Grafton County	The Dilly Cliff Fire in the Lost River Gorge Trail in North Woodstock off Route 112 (Lost River Road); Class C: Human-caused; 75 acres. The Dilly Cliff Fire was determined to be extinguished 36 days later. This fire did not reach Hillsborough County or Milford.	Local Resources
A detailed summary of wildfire events in the community				
Wildfire (Burns Hill)	May 2020	Burns Hill	A four-acre fire burned in a remote area of Burns Hill. The fire took five mutual aid towns and five hours to extinguish due to a lack of water resources.	2024 HMPT
No wildfires of significance have occurred in Milford since the 2015 Hazard Mitigation Plan was completed.				2024 HMPT
C. High Wind Events including Tropical & Post-Tropical Cyclones, Tornadoes, Downbursts & Windstorms: Tornadoes are spawned by thunderstorms and occasionally by hurricanes; tornadoes may occur singularly or in multiples. A downburst is a severe localized wind blasting down from a thunderstorm. Downburst activity is prevalent throughout NH and becoming more common with climate change; most downbursts go unrecognized unless significant damage occurs. Hurricanes develop from tropical depressions, which form off the coast of Africa. New Hampshire's exposure to direct and indirect impacts from hurricanes is real but modest compared to other states in New England. A hurricane that is downgraded to a Tropical Storm is more likely to impact New Hampshire. Tornadoes, cyclones, and other wind events can impact the community on a townwide basis. No significant high wind events have occurred in Milford since a suspected microburst struck Patch Hill Road and Hilton Homes in the fall of 2016.				
Summary of high wind events & tropical & post-tropical cyclone events, including Major Disaster & Emergency Declarations in the state & regionwide				
Tropical & Post-Tropical Cyclones	1804, 1869, 1938 (Number 4), 1944 (Number 7), 1954 (Carol & Edna), 1960 (Donna), 1976 (Belle), 1978 (Amelia), 1985 (Gloria), 1991 (Bob, DR-917), 1999 (Floyd, DR-1305), 2005 (Katrina, EM-3258), 2011 (Irene, EM-3333 & DR-4026), 2012 (Sandy, EM-3360)			See below
High Wind Events Tornadoes	All were reported as F2 tornadoes except for the June 1953 tornado, an F3. 1814, 1890, 1951, 1953, 1957, 1961, 1963, 2008 (DR-1782)			See below

Type of Event	Date of Event	Location	Description	Source
A detailed summary of high wind & tropical & post-tropical cyclone events in the community.				
Tropical & Post-Tropical Cyclone (Great New England Hurricane)	September 21, 1938	All Ten NH Counties	The Great New England Hurricane: Statewide, there were multiple deaths; damages in NH were about \$12.3 million in 1938 (about \$200 million now). Throughout New England, 20,000 structures were damaged, and 26,000 automobiles, 6,000 boats, and 325,000 sugar maples were lost. 80% of the people lost power. Although there was no local recollection, it was expected that the damage would have been similar to the rest of the state in Milford. (Source http://nhpr.org/post/75th-anniversary-new-englands-greatest-hurricane)	FEMA & 2024 HMPT
Tropical & Post-Tropical Cyclone (Hurricanes Carol & Edna)	August 31, 1954	All Ten NH Counties	Hurricanes Carol and Edna: Hurricane Carol resulted in extensive tree damage and significant crop losses. Localized flooding and winds measuring over 100 mph also occurred. Hurricane Carol was followed by Hurricane Edna just 12 days later, which caused weakened trees to fall; there were significant tree and crop damages in Milford. (Source: http://www.wmur.com/Timeline-History-Of-NH-Hurricanes/11861310)	FEMA, 2015 HMPT & 2024 HMPT
High Wind Events (Tornado)	The 1960s	Hammond Road	Small twister; no damage was reported	2024 HMPT
Tropical & Post-Tropical Cyclone (Hurricane Donna)	September 12, 1960	Hillsborough County	Water damage to structures due to flooding; also, some tree damage on Hammond Road	2015 HMPT & 2024 HMPT
Tropical & Post-Tropical Cyclone (Hurricanes Gloria) Long-Term Utility Outage	September 27, 1985	Hillsborough County	Damage to trees and power lines from high winds; some power outages were reported	2015 HMPT & 2024 HMPT
Tropical & Post-Tropical Cyclone (Hurricane Bob)	August 18-20, 1991	Carroll, Hillsborough, Rockingham & Strafford	Major Disaster Declaration DR-917: High winds caused damage to structures, trees, and power lines.	FEMA, 2015 HMPT & 2024 HMPT
Tropical & Post-Tropical Cyclone (Tropical Storm Floyd)	September 16-18, 1999	Belknap, Cheshire & Grafton	Major Disaster Declaration DR-1305: The declaration covers damage to public property from the storm that spawned heavy rains, high winds, and flooding throughout September 16-18. Although not declared in Hillsborough County, trees and infrastructure were impacted in Milford.	FEMA, 2015 HMPT & 2024 HMPT

Type of Event	Date of Event	Location	Description	Source
Tropical & Post-Tropical Cyclone (Hurricane Katrina evacuation)	August 29- October 1, 2005	All Ten NH Counties	Emergency Declaration EM-3258: Assistance was provided to evacuees from the area struck by Hurricane Katrina, with emergency assistance to those areas beginning on August 29, 2005, and continuing. The President's action made federal funding available to the state and all 10 New Hampshire counties. No evacuees or pets were brought to Milford due to this event.	FEMA & 2024 HMPT
Tropical & Post-Tropical Cyclone (Tropical Storm Irene) Long-Term Utility Outage	August 26- September 6, 2011	EM 3333: All Ten NH Counties DR-4026: Carroll, Coos, Grafton, Merrimack, Belknap, Strafford, & Sullivan	Major Disaster Declaration DR-4026 & Emergency Declaration EM-3333: Tropical Storm Irene, August 26th- September 6, 2011, occurred in seven New Hampshire counties, causing flood and wind damage. An Emergency Declaration was declared for all ten New Hampshire counties; in Milford, damage to trees and power lines from high winds, flash flooding, and power loss for some residents occurred.	FEMA, 2015 HMPT & 2024 HMPT
Tropical & Post-Tropical Cyclone (Hurricane Sandy) Long-Term Utility Outage	October 26- November 8, 2012	DR-4095: Belknap, Carroll, Coos, Grafton, Rockingham & Sullivan EM-3360: All Ten NH Counties	Major Disaster Declaration DR-4095 & Emergency Declaration EM-3360: The declaration covers damage to property from the storm that spawned heavy rains, high winds, high tides, and flooding from October 26-November 8, 2012. Hurricane Sandy came ashore in NJ and brought high winds, power outages, and heavy rain to six New Hampshire counties; no significant damage in Milford.	FEMA, 2015 HMPT & 2024 HMPT
High Wind Events (Microburst)	Fall 2016	Patch Hill Road & Hilton Homes	A microburst occurred near Patch Hill Road and at the Hilton Homes Development; trees were down, and structural damage occurred.	2024 HMPT
D. Severe Winter Weather including Nor'easters, Blizzards & Ice Storms: Severe winter weather in NH may include heavy snowstorms, blizzards, nor'easters, and ice storms, particularly at elevations over 1,000 feet above sea level. Generally speaking, NH will experience at least one of these hazards during any winter season; however, most NH communities are well prepared for such hazards. Severe winter weather and ice storms can impact the community on a town wide basis. No significant winter weather events have occurred in Milford since the January 26-28, 2015 storm.				
Summary of severe winter weather events, including Major Disaster & Emergency Declarations in the state & nationwide				
Severe Winter Weather (Ice Storms)	Major ice storms have occurred, causing significant disruptions to power, transportation, and public and private utilities. 1942, 1969, 1970, 1979, 1991, 1998 (DR-1199), 2008 (DR-1812)			FEMA & 2024 HMPT
Severe Winter Weather (Snowstorms)	Major severe winter weather events marked by snowfalls exceeding 2' in parts of the state resulted in power and transportation systems disruptions. 1920, 1929, 1940, 1950, 1952, 1958 (2), 1960, 1961, 1969, 1978, 1982, 1993 (EM-3101), 2001 (EM-3166), 2003 (EM-3177), 2003 (EM-3193), 2004, 2005 (EM-3207), 2005 (EM-3208), 2005 (EM-3211), 2008 (EM-3297), 2009, 2011 (EM-3344 & DR-4049), 2013 (EM-1405), 2015 (DR-4209), 2017 (DR-4316), 2018 (DR-4371)			FEMA & 2024 HMPT

Type of Event	Date of Event	Location	Description	Source
A detailed summary of severe winter storm events in the community				
Severe Winter Weather (Snowstorm)	Winter of 1968-69	All Ten NH Counties	The winter of 1968-69 brought record amounts of snow to all New Hampshire. NH experienced difficulty with snow removal because of the great depths that had fallen from December 1968 to April 1969. There was no recollection of events in Milford; however, it is expected that snow amounts in Milford were similar to accumulation in the rest of the state. The Department of Public Works handled the heavy snow accumulation in Milford.	2024 HMPT
Severe Winter Weather (High Winds, Coastal Flooding & Snowstorm)	February 16, 1978	All Ten NH Counties	Major Disaster Declaration DR-549: The Blizzard of '78, a regionwide blizzard severely affecting southern New England, resulted in high snow accumulations throughout New England and New Hampshire. Recorded accumulations show up to 28" in northeast New Hampshire, 25" in west-central New Hampshire, and 33" along coastal New Hampshire. Hurricane-force winds made this storm one of the worst in the northeastern United States. There was no recollection of events in Milford; however, it is expected that snow amounts in Milford were similar to accumulation in the rest of the state. The Public Works Department handled the heavy snow accumulation in Milford.	FEMA & 2024 HMPT
Severe Winter Weather (Snowstorm & High Winds)	March 13-17, 1994	All Ten NH Counties	Emergency Declaration EM-3101: The Public Works Department handled the heavy snow accumulation in Milford.	FEMA & 2024 HMPT
Severe Winter Weather (Ice Storm)	January 7-25, 1998	Belknap, Carroll, Cheshire, Coos, Grafton, Hillsborough, Merrimack, Strafford & Sullivan	Major Disaster Declaration DR-1199: A significant ice storm struck nearly every part of the state, with a more significant impact in northern communities and areas over 1,000 feet above sea level. The Department of Public Works handled the heavy snow accumulation in Milford.	FEMA & 2024 HMPT
Severe Winter Weather (Snowstorm)	March 5-7, 2001	Cheshire, Coos, Grafton, Hillsborough, Merrimack, & Strafford	Emergency Declaration EM-3166: The emergency declaration covers jurisdictions with record and near-record snowfall from a late winter storm in March 2001 that affected six New Hampshire counties. The Department of Public Works handled the heavy snow accumulation in Milford.	FEMA & 2024 HMPT
Severe Winter Weather (Snowstorm)	February 17-18, 2003	Cheshire, Hillsborough, Merrimack, Rockingham & Strafford	Emergency Declaration EM-3177: The emergency declaration covers jurisdictions with record and near-record snowfall from a snowstorm that occurred February 17-18, 2003, and affected five New Hampshire counties. The Department of Public Works handled the heavy snow accumulation in Milford.	FEMA & 2024 HMPT
Severe Winter Weather (Snowstorm)	December 6-7, 2003	Belknap, Carroll, Cheshire, Coos, Grafton, Hillsborough, Merrimack & Sullivan	Emergency Declaration EM-3193: The emergency declaration covers jurisdictions with record and near-record snowfall that occurred throughout December 6-7, 2003, and affected eight New Hampshire counties. The Department of Public Works handled the heavy snow accumulation in Milford.	FEMA & 2024 HMPT

Type of Event	Date of Event	Location	Description	Source
Severe Winter Weather (Snowstorms)	January 22-23, 2005 February 10-11, 2005 March 11-12, 2005	All Ten NH Counties	Emergency Declaration EM 3208-002: The Federal Emergency Management Agency (FEMA) had obligated more than \$6.5 million to reimburse state and local governments in New Hampshire for costs incurred in three snow storms that hit the state in 2005. The total aid for all three storms was \$6,892,0237 (January (EM-3207): State \$3,658,114, Hillsborough \$848,606; February (EM-3208): State \$1,121,727, Hillsborough County not declared; March (EM-3211): State \$2,113,182, Hillsborough \$710,836). The Department of Public Works handled the heavy snow accumulation in Milford.	FEMA & 2024 HMPT
Severe Winter Weather (Snowstorm & Ice Storm) Long-Term Utility Outage	December 11-23, 2008	All Ten NH Counties	Major Disaster Declaration DR-1812 & Emergency Declaration EM-3297: Damaging ice storm impacted the entire state, resulting in fallen trees and large-scale power outages. Nearly \$15 million in federal aid was obligated by May 2009. Ice damage from this storm occurred in Milford and elsewhere, causing power outages for up to 14 days; schools were also closed. The Department of Public Works dealt with tree and limb damage and was able to handle the snow accumulation in Milford.	FEMA & 2024 HMPT
Severe Winter Weather (Snowstorm)	February 23 - March 3, 2010	Grafton, Hillsborough, Merrimack, Rockingham, Strafford & Sullivan	Major Disaster Declaration: DR-1892: Flood and wind damage occurred in southern NH, including six counties, resulting in 330,000 homes without power. More than \$2 million was obligated by FEMA by June 2010. The Department of Public Works handled the heavy snow accumulation in Milford.	FEMA & 2024 HMPT
Severe Winter Weather (Snowstorm) Long-Term Utility Outage	October 29-30, 2011	DR-4049: Hillsborough & Rockingham EM-3344: All Ten NH Counties	Major Disaster Declaration DR-4049 & Emergency Declaration EM-3344: A severe winter storm occurred in two New Hampshire counties on October 29-30, 2011. EM-3344: The emergency declaration for snow removal and damage repair included all ten NH countries. (Snowtober) The Department of Public Works handled the heavy snow accumulation in Milford. Trick or treating was canceled because of downed power lines. Power was out for some for 2-3 days.	FEMA & 2024 HMPT
Severe Winter Weather (Snowstorm)	February 8, 2013	All Ten NH Counties	Major Disaster Declaration DR-4105: A severe winter storm resulted in heavy snow in February 2013 in all ten New Hampshire counties. (Nemo) The Department of Public Works handled the heavy snow accumulation in Milford.	FEMA & 2024 HMPT
Severe Winter Weather (Snowstorm)	January 26-28, 2015	Hillsborough, Rockingham & Strafford	Major Disaster Declaration DR-4209: A severe winter storm and snowstorm occurred in three southern New Hampshire counties, resulting in disaster aid to supplement state and local recovery efforts. The Public Works Department handled the heavy snow accumulation in Milford. In February 2015, the heavy snow accumulation caused the roof of the Milford High School to collapse; damage but no injuries.	FEMA & 2024 HMPT

Type of Event	Date of Event	Location	Description	Source
<p>E. Earthquakes: According to the NH State Hazard Mitigation Plan, New Hampshire lies in an area of "Moderate" seismic activity compared to other areas of the United States. "Major" activity areas border New Hampshire to the north and southwest. Generally, earthquakes in NH cause little or no damage and have not exceeded a magnitude of 5.5 since 1940. Earthquakes have the potential to impact the community on a townwide basis. No significant earthquakes have occurred in Milford since the previous hazard mitigation plan.</p>				
<p>Summary of earthquakes with a magnitude of 4.0 or greater in the state & regionwide</p>				
Earthquakes	<p>Earthquakes having a magnitude of 4.0 or greater in New Hampshire History. 6/11/1638 (Central NH, 6.5), 10/29/1727 (Off Coastline, 6.0-6.3), 11/18/1755 (Off Coastline, 5.8), 11/10/1810 (Portsmouth, NH, 4.0), 7/23/1823 (Off Hampton, NH, 4.1), 12/19/1882 (Concord, NH, Unknown), 3/5/1905 (Lebanon, NH, Unknown), 8/30/1905 (Rockingham County, Unknown), 11/09/1925 (Ossipee, NH, 4.0), 3/18/1926 (New Ipswich, NH, Unknown), 11/10/1936 (Laconia, NH, Unknown), 12/20/1940 (Tamworth, NH, 5.5-5.8), 12/24/40 (Tamworth, NH, 5.5-5.8), 1/19/1982 (Laconia, NH, 4.0), 11/20/1988 (Berlin, NH, 4.0), 4/6/1989 (Berlin, NH, 4.1), 10/16/2012 (Hollis Center, ME, 4.0)</p>			State of NH Multi-Hazard Mitigation Plan, Update 2018
<p>A detailed summary of earthquakes that have been felt in the NH since 1940 with a magnitude of 3.0 or greater</p>				
Earthquake	December 20, 1940	Tamworth, NH	Magnitude 5.5	State of NH Multi-Hazard Mitigation Plan, Update 2018 & 2024 HMPT
Earthquake	December 24, 1940	Tamworth, NH	Magnitude 5.5	
Earthquake	June 15, 1973	Quebec Border / NH	Magnitude 4.8	
Earthquake	January 18, 1982	Franklin, NH	Magnitude 4.5	
Earthquake	November 20, 1988	Berlin, NH	Magnitude 4.0	
Earthquake	April 6, 1989	Berlin, NH	Magnitude 4.1	
Earthquake	April 20, 2002	Plattsburg, NY	Magnitude 5.1	
Earthquake	June 23, 2010	Ontario-Quebec Border	Magnitude 5.0	
Earthquake	September 26, 2010	Boscawen, NH	Magnitude 3.1	
Earthquake	October 16, 2012	Hollis Center, ME	Magnitude 4.0; not felt in Milford	
<p>F. Drought: Drought is generally less damaging or disruptive than floods and other hazards and is more challenging to define. A drought is a natural hazard that evolves over months or even years and can last as long as several years to as short as a few months. According to the NH State Hazard Mitigation Plan, New Hampshire has a low probability, severity, and overall risk for drought. Droughts have the potential to impact the community on a townwide basis. Milford remained in drought conditions through 2020 and 2021 and is again in drought conditions in 2022.</p>				
<p>Summary of drought in the state & regionwide</p>				
Drought	1775, 1840, 1882, 1910's, 1929-1936, 1939-1944, 1947-1950, 1960-1969, 1999; 2001-2002, 2016-2017		Occurrences of severe droughts in recorded New Hampshire history.	State of NH Multi-Hazard Mitigation Plan, Update 2018

Type of Event	Date of Event	Location	Description	Source
Summary of drought in the community since 1929				
Drought	1929-1936	Statewide	Regional	State of NH Multi-Hazard Mitigation Plan, Update 2018, 2015 HMPT & 2024 HMPT
Drought	1939-1944	Statewide	Severe in the southeast and moderate elsewhere	
Drought	1947-1950	Statewide	Moderate	
Drought	1960-1969	Statewide	Regional longest recorded continuous spell of less than average precipitation; Milford farms had minimal grass for grazing animals and poor crops. Wells went dry for two consecutive years in the mid-1960s.	
Drought	1999	Townwide	Damage to crops. Low water levels in dug wells.	
Drought	2001-2002	Statewide	This drought was the third-worst drought on record. In Milford, there was damage to crops and low water levels in dug wells.	
Drought	2016-2017	Statewide	The declared drought for the summer of 2016 and winter and spring of 2017 moderated from extreme in southern New Hampshire to dry in most northern communities. The drought affected Milford by losing a few dug wells and springs and reducing hay production.	2024 HMPT
Drought	2020-2021	Statewide	Moderate-level drought in late June and early July 2020 and continuing into 2021; Milford had a water ban during the summer of 2021. This drought was most prolonged in the northern regions of the state.	2024 HMPT
Drought	2022	Statewide	As of August 18, 2022, Hillsborough County was experiencing severe drought conditions. The impact on Milford is not currently known.	2024 HMPT
<p>G. Miscellaneous Past or Potential Hazards: Natural, technological, and human-caused hazards and other unusual hazardous events have been noted throughout New Hampshire. One concern is transporting hazardous material through communities by rail and tractor-trailer; however, other natural, technological, or human-caused hazards can impact the community on a townwide basis. Covid-19 is currently ongoing in Milford and the world.</p>				
Infectious Disease	January 20, 2020 – ongoing	All Ten NH Counties	Major Disaster Declaration, DR-4516: The Federal Emergency Management Agency ("FEMA") within the US Department of Homeland Security is giving public notice of its intent to assist the State of New Hampshire, local and tribal governments, and certain private nonprofit organizations under the major disaster declaration issued by the President on April 3, 2020, as a result of the Coronavirus Disease 2019 ("COVID-19").	FEMA & 2024 HMPT
Infectious Disease	January 20, 2020 – ongoing	All Ten NH Counties	Emergency Declaration EM-3445: Ten county declaration to provide individual assistance and public assistance as a result of the impact of COVID-19	FEMA & 2024 HMPT

Type of Event	Date of Event	Location	Description	Source
H. Other Hazards: Identified hazards with no specific example of occurrence.				
Natural Hazards		<p>Although the team did not identify specific examples or past occurrences of these hazards, it felt worthwhile to list them as potential hazards to the town. These hazards can potentially impact the community either locally or townwide.</p> <p>See <i>Table 3.1, Hazard Threat Analysis</i>, and Chapter 5 for more details on these hazards.</p>		
Extreme Temperatures				
Lightning				
Landslide & Erosion				
Technological Hazards				
Aging Infrastructure				
Conflagration				
Hazardous Materials				
Dam Failure				
Known & Emerging Contaminates				
Human-caused				
Transport Accidents				
Mass Casualty Incidents				
Terrorism & Violence				
Cyber Events				

Historic hazard events were derived from the following sources unless noted otherwise:

- Website for NH Disasters: <http://www3.gendisasters.com/mainlist/newhampshire/Tornadoes>
- FEMA Disaster Information: <http://www.fema.gov/disasters>
- The Tornado Project: <http://www.tornadoproject.com/alltorns/nhtorn.htm>
- The Tornado History Project: <http://www.tornadohistoryproject.com/>
- The Disaster Center (NH): <http://www.disastercenter.com/newhamp/tornado.html>
- EarthquakeTrack.com; <http://www.EarthquakeTrack.com>

For more information on state and county-wide past events, see Major Disaster and Emergency Declarations, Appendix D, NH Major & Emergency Declarations.

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Chapter 4: Critical Infrastructure & Key Resources (CIKR)

Team discussion and brainstorming identified Milford’s Critical Infrastructure & Key Resources (CIKR). The hazard risk rating was based on a scale of 1-3, with 1 indicating little or no risk.

TABLE 4.1 - EMERGENCY RESPONSE FACILITIES (ERF) & EVACUATION

EMERGENCY RESPONSE FACILITIES (ERF)			
ERFs are primary facilities and resources needed during an emergency response.			
Facility	Type of Facility	Hazard Risk	
Town Hall (portable generator)	Secondary EOC, Town Government & Records	All Hazards	1
Police Station (undersized generator)	Law Enforcement	All Hazards	1
Fire Station (generator)	Primary EOC & Fire Suppression	All Hazards	1
Milford Ambulance Service (generator)	Emergency Medical Services	All Hazards	1
Highway Garage (no generator)	Heavy Equipment, Sand & Gravel	All Hazards & Inland Flooding	2
Milford High School (no generator)	Primary Shelter & School	All Hazards	1
Heron Pond Elementary School (generator)	Secondary Shelter & School	All Hazards	1
Milford Area Communication Center (MACC Base) (generator)	Dispatch & Communications	All Hazards	1
NH State DOT Shed, Division 5 (generator)	Fuel for town vehicles, Sand, Gravel, and Heavy Equipment	All Hazards	1
Communications Antennas (Town Hall, Federal Hill, Police Station, Fire Station, and Ambulance Station)	Communications	All Hazards & Lightning	2
Cell Towers (Town Hall, Mayflower Drive, Dram Cup Hill, Odd Fellows Home)	Communications	All Hazards & Lightning	2
St. Joseph's Urgent Care (generator)	Medical Facility	All Hazards	1
Southern NH Medical Center (Nashua)	Hospital	All Hazards	1
St. Joseph Hospital (Nashua)	Hospital	All Hazards	1
Multiple locations (Route 101, Route 13, Hampshire Hills, Scarborough, the Armory, Heron Pond Road)	Heli Landing Zones	All Hazards	1
Evacuation Routes			
NH Route 13	Primary Evacuation Route	All Hazards	1
NH Route 101	Primary Evacuation Route	All Hazards	1
NH Route 101A	Secondary Evacuation Route	All Hazards	1
North River Road	Secondary Evacuation Route	All Hazards & Inland Flooding	2
Mason Road	Secondary Evacuation Route	All Hazards & Inland Flooding	2
Bridges & Culverts on the Evacuation Routes			
NH Route 13 bridge over Souhegan River	Primary Evacuation Route	All Hazards	1
Wilton Road bridge over Souhegan River	Primary Evacuation Route	All Hazards	1

EMERGENCY RESPONSE FACILITIES (ERF)			
ERFs are primary facilities and resources needed during an emergency response.			
Facility	Type of Facility	Hazard Risk	
NH Route 101A bridge over Tucker Brook	Primary Evacuation Route	All Hazards	1
Union Street bridge over Great Brook	Primary Evacuation Route	All Hazards	1
NH Route 101A bridge over Great Brook	Primary Evacuation Route	All Hazards	1
North River Road bridge over Hartshorn Brook	Secondary Evacuation Route	All Hazards & Inland Flooding	2
Jennison Road bridge over Hartshorn Brook	Secondary Evacuation Route	All Hazards & Inland Flooding	2
Mason Road bridge over Tucker Brook	Secondary Evacuation Route	All Hazards	1
Mason Road bridge over Great Brook	Secondary Evacuation Route	All Hazards & Inland Flooding	2
Purgatory Road bridge over Purgatory Brook	Secondary Evacuation Route	All Hazards & Inland Flooding	2
Whitten Road bridge over Tucker Brook	Secondary Evacuation Route	All Hazards	1
Osgood Road bridge over Great Brook	Secondary Evacuation Route	All Hazards	1
Lincoln Street bridge over Great Brook	Secondary Evacuation Route	All Hazards	1
Joslin Road bridge over Hartshorn Brook	Secondary Evacuation Route	All Hazards & Inland Flooding	2
Perry Road bridge over Tucker Brook	Secondary Evacuation Route	All Hazards & Inland Flooding	2
Hartshorn Road bridge over Hartshorn Brook	Secondary Evacuation Route	All Hazards & Inland Flooding	2
Hartshorn Road bridge (2) over Hartshorn Brook	Secondary Evacuation Route	All Hazards & Inland Flooding	2
Dams (categories: High Hazard, Significant Hazard, Low Hazard, and Non-Menace)			
Railroad Pond Dam @ Great Brook (Milford)	Low Hazard	All Hazards	1
Goldman Dam @ Souhegan River (Private)	Low Hazard	All Hazards	1
McLane Dam @ Souhegan River (Milford)	Low Hazard	All Hazards	1
Osgood Pond Dam @ Great Brook (Milford)	Low Hazard	All Hazards	1
Hartshorn Pond Dam @ Hartshorn Brook (Milford)	Low Hazard	All Hazards	1
Farm Pond Dam @ Unnamed Stream (Private)	Non-menace	All Hazards	1
Compressor Pond Dam @ Ox Brook (Milford)	Low Hazard	All Hazards	1
Great Brook Dam @ Great Brook (Private)	Non-menace	All Hazards	1
Hitachi Fire Pond @ Unnamed Brook (Private)	Non-menace	All Hazards	1
Dana Fire Pond @ Seasonal Stream (Private)	Non-menace	All Hazards	1
Badger Hill 1 @ Water body runoff (Private)	Non-menace	All Hazards	1
Badger Hill 3 @ Water body runoff (Private)	Non-menace	All Hazards	1
Milford Elm Street Trust @ Water body runoff (Milford)	Low Hazard	All Hazards	1
Detention Basin A @ Water body runoff (Private)	Non-menace	All Hazards	1
Ciardelli Dam @ Unnamed Stream (Private)	Low Hazard	All Hazards	1

TABLE 4.2 – NON-EMERGENCY RESPONSE FACILITIES (NERF)

NON-EMERGENCY RESPONSE FACILITIES (NERF)			
NERFS are facilities not necessary for immediate emergency response efforts, although they are critical. This would include facilities to protect public health and safety and provide backup emergency facilities.			
Facility	Type of Facility	Hazard Risk	
Water Utilities Department & Waste Water Treatment Facility	Town Water/Sewer & Fire Suppression	All Hazards & Inland Flooding	2
Souhegan Street	Electric Substation	All Hazards	1
Hammond Road	Electric Substation	All Hazards	1
Consolidated Equipment	Switching Station - Phone	All Hazards	1
Suburban propane farms (4 tanks)	Liquid Propane Farms	All Hazards & Hazardous Materials	2
Ciardelli (oil & propane)	Liquid Propane Farms	All Hazards & Hazardous Materials	2
Rymes (oil)	Home Heating Fuel	All Hazards & Hazardous Materials	2

TABLE 4.3 – FACILITIES & POPULATIONS TO PROTECT (FPP)

FACILITIES & PEOPLE TO PROTECT (FPP)			
FPPs are facilities that need to be protected because of their importance to the town and residents who may need help during a hazardous event.			
Facility	Type of Facility	Hazard Risk	
Milford Middle School	School	All Hazards	1
Jacques Elementary School (no generator)	School; K-1st grade	All Hazards	1
Heron Pond Elementary School (generator)	Secondary Shelter & School	All Hazards	1
Project Drive at Bales School	Alternative School	All Hazards	1
Milford Drive-In	Gathering of People	All Hazards & Inland Flooding	2
American Legion	Gathering of People	All Hazards	1
Boys & Girls Club	Gathering of People	All Hazards & Inland Flooding	2
Little Arrows Childcare	Gathering of People	All Hazards	1
Children's Choice ELC	Gathering of People	All Hazards	1
Hampshire Hills Fitness Center	Gathering of People	All Hazards	1
The Hampshire Dome	Gathering of People	All Hazards	1
Masonic Temple	Gathering of People	All Hazards	1
VFW Harley Sanford Post	Gathering of People	All Hazards	1
Share (food pantry & Town's welfare office)	Gathering of People	All Hazards	1

FACILITIES & PEOPLE TO PROTECT (FPP)			
FPPs are facilities that need to be protected because of their importance to the town and residents who may need help during a hazardous event.			
Facility	Type of Facility	Hazard Risk	
Maplewood/Abner Hutchinson Farm	Historic (State)	All Hazards	1
Centennial High School/Bales Elementary School	Historic (State)	All Hazards	1
Hillsborough Mills	Historic (National)	All Hazards	1
Milford Cotton and Woolen Manufacturing Company	Historic (National)	All Hazards	1
Milford Suspension Bridge	Historic (National)	All Hazards	1
Milford Town House and Library Annex	Historic (National)	All Hazards	1
Peabody, William, House	Historic (National)	All Hazards	1
Nottingham Place (30 units)	55+ Community	All Hazards	1
Cahill Place (49 units)	55+ Community	All Hazards	1
Stonehouse Condos (27 units)	55+ Community	All Hazards	1
The Mill/Linsey Landing (69 units)	55+ Community	All Hazards & Inland Flooding	2
The Reserve (73 units)	55+ Community	All Hazards	1
Hutchinson Point (21 units)	55+ Community	All Hazards	1
Ledgewood (98 units)	55+ Community	All Hazards	1
Beech Brook (40 units)	55+ Community	All Hazards	1
Multiple churches and houses of worship	Gathering of People	All Hazards	1

TABLE 4.4 – POTENTIAL RESOURCES (PR)

POTENTIAL RESOURCES (PR)			
PRs are potential resources that could be helpful for emergency response in the case of a hazardous event.			
Shaw's Supermarket	Food & water	All Hazards	1
Milford Lumber	Building materials	All Hazards & Inland Flooding	2
Market Basket	Food & water	All Hazards	1
Multiple gas stations (with WEX card)	Fuel for town vehicles	All Hazards	1
Please refer to the Resource Inventory List in the 2017 Emergency Operations Plan for additional resources.			

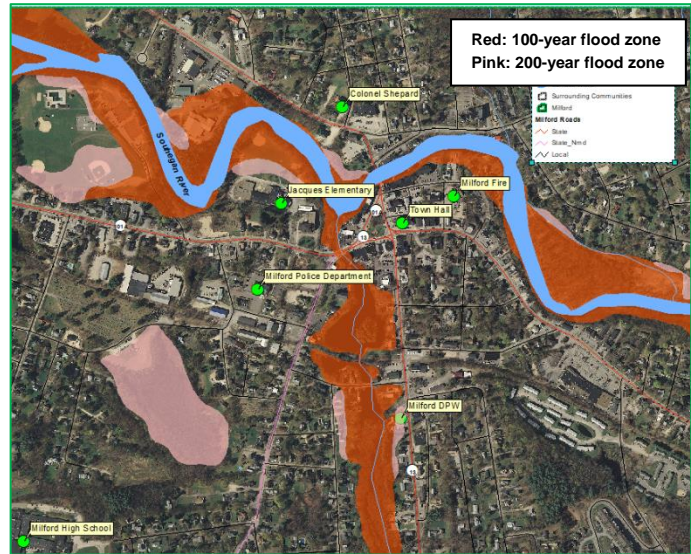
Chapter 5: Hazard Effects in Milford

A. IDENTIFYING VULNERABLE CRITICAL INFRASTRUCTURE & KEY RESOURCES (CIKR)

Because damages from floods and wildfires are more predictable than damages from other disasters, it is essential to identify the Critical Infrastructure & Key Resources (CIKR) that are most likely to be damaged by these events.

Overall Flood Risk

Milford’s CIKR were identified and listed in Chapter 4; each CIKR was analyzed for its flooding potential. This analysis and the GIS map snip to the right indicate the floodplain along the Souhegan River traveling through Milford Village and along Great Brook south of the Village. The town’s CIKR, including several not shown in the map snip (green circles), are not in the FEMA floodplain, except for the DPW garage, which is slightly within the 200-year floodplain. All other CIKRs are outside the flood zone except for a few culverts and bridges on the evacuation routes. It is expected that there may be other structures and homes within the flood zone. Town officials should consider all at-risk properties when a flood hazard is likely. Please refer to Chapter 4, Tables 4.1-4.4, for more information.

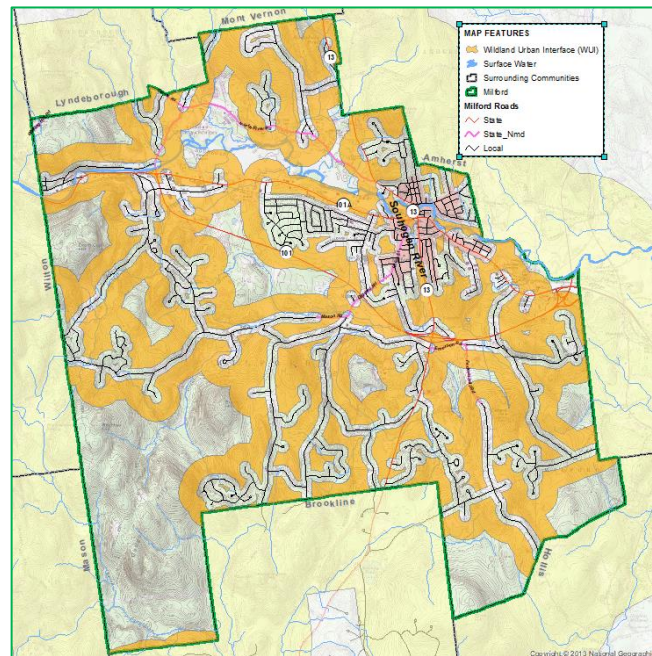


Overall Wildfire Risk

CIKR falling within the Wildland Urban Interface (WUI) were reviewed using the same methodology used for flooding. Identifying these facilities helped the team create and prioritize wildfire mitigation action items.

Traditionally, the WUI is determined using GIS analysis to create a 300’ buffer from the centerline of all Class V roads and an additional 1,320’ buffer from the first buffer. The orange symbology in the map snip to the right shows the traditional WUI in Milford. This area is where the urban environment interfaces with the wildland environment and is the most prone to wildfire risk.

The traditional WUI was initially developed to identify human-interface areas that may exceed the typical length of fire hoses. In rural communities, this would virtually cover the entire town. A different method to determine the WUI in suburban communities includes identifying developments, streets, roads with limited egress, a high canopy of old-growth softwoods, or older wooden structures.



Three of Milford's critical facilities were found in the WUI - Heron Pond Elementary School, Jacques Elementary School, and Milford Middle School. It is noted that all three schools have ample defensible space, and although they are located in the traditional WUI, the fire risk at these three locations is minimal. Other critical facilities are within the 300' WUI buffer of roadways, therefore easily accessible by fire apparatus and hoses. Most of the town's CIKR also have adequate defensible space.

No facilities were identified in Table 4.3 as having a high risk for wildfires. However, many additional structures in Milford are expected to be prone to wildfires, particularly in neighborhoods with limited egress and a canopy of old-growth trees or where forests completely surround structures. Because large community areas are forested, it can be assumed that nearly every structure in town is at some risk of wildfire. Mitigation strategies were discussed to protect structures and educate the citizens about the wildfire risk.

B. CALCULATING THE POTENTIAL LOSS

Determining the damage caused by hazards is difficult because it will depend on the hazard's extent and severity, making each hazard event unique. Therefore, we have assumed that hazards could damage 0-1% or 1-5% of the town's structures. Structure damage depends on the nature of the hazard and whether or not the impact is localized.

MS-1 Assessed Value of All Buildings – 2021			
Types of Buildings	Value	1% Damage	5% Damage
Residential	\$1,276,934,358	\$12,769,344	\$63,846,718
Manufactured Housing	\$22,972,800	\$229,728	\$1,148,640
Farm Structures & Land	\$187,900	\$1,879	\$9,395
Commercial	\$274,196,567	\$2,741,966	\$13,709,828
Tax Exempt	\$0	\$0	\$0
Utilities	\$41,886,600	\$418,866	\$2,094,330
Totals	\$1,616,178,225	\$16,161,782	\$80,808,911

2021 Town Report, Assessing Department, page 25

This plan assumes that the potential loss from the identified natural hazards would range from **\$0 to \$16,161,782** or **\$16,161,782 to \$80,808,911**, based on the 2021 MS1 total structure value of **\$1,616,178,225**.¹⁹ (See chart above)

Human loss of life was not included in the potential loss estimates but could be expected to occur depending on the hazard's severity and type. Although descriptions are given for technological and human-caused hazards, no potential loss estimates for these hazards are provided in this plan.

Table 3.1, The Hazard Identification & Risk Assessment (HIRA), is used to evaluate the probability and the potential impact of all hazards.

¹⁹ 2021 Town Report, Assessing Department, 2021 Annual Report; page 25

C. NATURAL HAZARDS

The descriptions below represent the **local impact** on the community for the hazards identified by the team. The **extent** of these hazards is shown in *Appendix C, The Extent of Hazards*. Charts such as the Saffir-Simpson Hurricane Wind Scale, the Beaufort Wind Scale, the National Weather Service Heat Index, the Sperry-Piltz Ice Accumulation Index, and the Enhanced Fujita Scale for tornadoes are included in Appendix C.

The **Hazard Identification & Risk Assessment (HIRA)** and the **Probability** noted for each hazard below are taken from the analysis done in Table 3.1, *Hazard Identification & Risk Assessment (HIRA)*. The numbers preceding the hazard name in this section correspond to Table 3.1 and are ordered by Relative Threat. The estimated loss is determined using the methodology and table, as explained in Section B of this chapter.

1) INLAND FLOODING

Hazard Identification & Risk Assessment (HIRA)	High
Probability	High
Estimated Structure Loss Value	\$16,161,782 to \$80,808,911

100-Year Flood Events, Riverine Flooding & Local Road Flooding

Riverine flooding and 100-year flood events can occur due to hurricanes, tropical and post-tropical cyclones, and summer and fall rains. Local road flooding is often the result of rapid snowmelt combined with heavy rain events. Rain from tropical downpours, hurricanes, or severe thunderstorms can also cause culverts to be overwhelmed and roads to wash out. Additionally, impervious surfaces, timber harvesting, undersized or aging culverts, and inadequate ditching are significant causes of local road flooding.

In the spring, rapid snowmelt and heavy rain may cause a rise in Milford's surface waters, particularly the Souhegan River. The Hillsborough County floodplain Map shows that Milford has a relatively small floodplain, primarily along the Souhegan River, Great Brook, and several other brooks and streams.

Since the previous hazard mitigation plan, no extraordinary rain events have impacted Milford. However, during the Mother's Day Storm in 2006 and the Tax Day storm in 2007, Milford experienced significant flooding (see Table 3.2). During Tropical Storm Irene in 2011, flash flooding was accompanied by downed trees and power lines.

It is noted in **Table 9.1, The Mitigation Action Plan**, that the number of poor and fair culverts that were on the Priority Culvert Listing prepared by the DPW were far too great to list separately in this plan. However, the Priority Culvert Listing is included as it was received from the town in October 2020 in Appendix G. This extensive list shows the difficult task confronting the Milford DPW and the locations where known problems exist.

The flooding, washouts, and erosion of roads make for a daunting task of upkeep for the Department of Public Works, which maintains approximately 87 miles of paved roads, 1.5 miles of gravel roads, and 421 culverts. Fortunately, Milford's main thoroughfares, NH Routes 13, 101, 101A, and several named state roads are the state's responsibility. While staying within its budget, the DPW has been and continues to be proactive in the maintenance and repairs of culverts and has reduced the incidence of local road erosion and washouts.

The expected loss value from inland flooding would be based on the cost of repairing roadways and the potential cost of damage to structures. Flooding can be severe enough to take out utilities and create areas of town that become inaccessible to emergency responders. The economic impact on the community, the loss of accessibility, and the time and cost of road repair also factor into the estimated loss value. Therefore, the estimated loss value was determined to be between 1% and 5% of the total structure value.

2) SEVERE WINTER WEATHER

Hazard Identification & Risk Assessment (HIRA)	High
Probability	Moderate
Estimated Structure Loss Value	\$16,161,782 to \$80,808,911

Snowstorms, Blizzards & Nor’easters

Heavy snowstorms typically occur from December through April. New England usually experiences at least one or two heavy snowstorms with varying severity each year. Power outages, extreme cold, and impacts on infrastructure are all effects of winter storms felt in Milford in the past. These impacts are a risk to the community, including isolation, especially to the elderly (15.7%) and other vulnerable populations. In addition, the ability to get in and out of town and emergency service access can be hindered.



Damage caused by severe winter snowstorms varies according to wind velocity, snow accumulation, duration, and moisture content. Seasonal accumulation can also be as significant as an individual snowstorm. Heavy overall winter accumulations can impact the roof load of some buildings. Significant snowstorms, nor’easters, and blizzards could diminish food supplies within two days.

The winter of 2015, particularly February, brought substantial accumulation to nearly every state region. Homeowners in every county were advised to monitor snow loads on rooftops closely. In Milford, there was a partial collapse of the high school’s roof; this collapse caused damage and the cancellation of classes, but no injuries were reported. Two years later, in March 2017, “A dome at Milford’s The Hampshire Dome complex collapsed Wednesday. The dome depressurized under the weight of the snow and ice about noon, according to the Hampshire Hills Athletic Club”.²⁰ Once again, there was damage but no injuries.

According to U.S. Climate Data, Milford’s average annual snowfall is roughly 56”.²¹ The Department of Public Works (DPW) is very proactive and forward-thinking, always preparing for the community’s future needs. Using modern technology to assist with and manage much of its work, the department remains fully aware of the maintenance, equipment, and staffing resources it needs to keep on top of any winter or hazardous conditions. The DPW handles usual snow amounts without difficulty despite the frequency of poor weather conditions. Driving can be difficult, and adaptation to current conditions is critical. Keeping roads free of danger provides added safety for drivers and allows for more efficient emergency response.

Ice Storms

Unlike typical snowstorms, which are generally handled well by the DPW, ice storms present significant problems. Ice storms are more concerning than 2-4’ snowstorms, though the probability of a significant ice storm is lower than

²⁰ <https://www.wmur.com/article/no-one-hurt-in-collapse-of-the-hampshire-dome/9135792>
²¹ <https://www.usclimatedata.com/climate/milford/new-hampshire/united-states/usnh0374>

a significant snowstorm. An ice storm can inflict several million dollars of damage on forests and structures. Downed power lines and fallen trees make it difficult for the highway crew and emergency responders. School buses are also at risk.

Significant ice storms occurred in New Hampshire in 1979, 1998, and 2008. Most ice storms are more impactful at higher elevations; Milford’s elevation range is roughly 259’ at the Souhegan River to 814’ at the summit of Boynton Hill.²² Fortunately, only the 2008 Ice Storm had a significant impact on Milford. Due to fallen trees, limbs, and power lines, electricity and phone were out for Milford’s citizens for up to 14 days in some locations. Schools were also closed for several days. Although this storm impacted Milford, the damage and extent were less severe than in other parts of the state, particularly at elevations over 1,000’. The DPW readily handled the snow accumulation that fell in Milford.

The planning team reported that no significant winter snow or ice events have occurred since the last hazard mitigation plan – things have been relatively quiet throughout the state. However, due to the widespread nature of severe winter weather, particularly from ice storms, the potential loss value is estimated to be between 1% and 5% of the total assessed value of all structures in town.

3) INFECTIOUS DISEASES

Hazard Identification & Risk Assessment (HIRA) High
Probability Moderate
Estimated Structure Loss Value Not estimated

“Infectious diseases are disorders caused by organisms — such as bacteria, viruses, fungi, or parasites. Many organisms live in and on our bodies. They’re normally harmless or even helpful, but under certain conditions, some organisms may cause disease.

Some infectious diseases can be passed from person to person. Some are transmitted by bites from insects or animals. And others are acquired by ingesting contaminated food or water or being exposed to organisms in the environment.”²³

Infectious diseases and epidemics or pandemics present a possible threat to Milford. Milford is susceptible to an epidemic and subsequent quarantine with worldwide pandemics such as Covid-19, Lyme Disease, SARS, the Zika Virus, H1N1, the Avian Flu, and even the common seasonal flu virus. In fact, the United States and the world have been coping with the COVID-19 pandemic for more than two years. All non-essential businesses and schools throughout New Hampshire and most of the United States were closed during the pandemic's early months in the spring of 2020.

Multiple facilities in Milford hold events and activities that could increase the likelihood of spreading infectious diseases. In addition to the high school, middle school, and two elementary schools, eight 55+ communities, multiple churches, houses of worship, social facilities such as the American Legion, fitness centers, and an active indoor athletic facility are located in Milford. Students and visitors from all over the state make their way to Milford for special events and competitions. Although most of the students attending Milford’s schools reside in town, the interaction between students and out-of-town sports teams and clubs can bring infectious diseases.

²² https://en.wikipedia.org/wiki/Milford,_New_Hampshire

²³ Infectious diseases, Overview, <https://www.mayoclinic.org/diseases-conditions/infectious-diseases/symptoms-causes/syc-20351173>

When Covid-19 was first reported in the state, the Emergency Management Director partially opened the Emergency Operations Center. With assistance from public health networks, town officials did their best to mitigate the onset of Covid-19 in Milford. To help mitigate the crisis, town officials closed the Town Hall to the public during the spring of 2020; town officials still conducted business remotely, online, or by appointment. A testing site was set up at the Milford Armory. The Town Hall was reopened later in 2020 and remains operating with mitigation measures, such as plexiglass and floor markings to promote social distancing. The town continues to encourage social distancing, using face masks, and protecting the town’s most vulnerable citizens. Milford applied for Public Assistance through FEMA and worked with the State of New Hampshire Governor’s Office for Emergency Relief and Recovery (GOFERR) for additional relief assistance.



As of September 29, 2022, 350,117 Covid-19 cases, 2,705 deaths, and 1,727 new cases were reported in the State of New Hampshire (see the chart on the right).²⁴ Although deaths by town are no longer available, the state reported 962 cumulative deaths in Hillsborough County, making Hillsborough the most impacted of NH’s ten counties.²⁵ On September 30, 2022, the Center for Disease Control (CDC) reported 1,053,789 Covid deaths in the United States since the pandemic began.²⁶

COVID-19 Summary Report	
<i>(data updated as of September 29, 2022, 9:00 AM)</i>	
NH Total Case Count	350,117
New Cases for the Previous Week	1,727
Deaths Attributed to COVID-19	2,705
Total Current COVID-19 Cases	1,971
Current Hospitalizations Treated for COVID-19	25

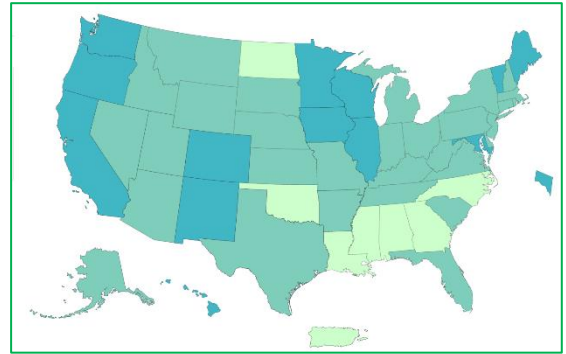
Milford’s Covid-19 numbers may directly reflect the number of 55+ communities and elderly residents in town. On June 12, 2020, the town informed the planner that there had been 107 confirmed virus cases; this number jumped dramatically during the pandemic, with 4,241 confirmed cases reported on September 30, 2022. As of this date, thirty-three new cases have been reported in the past 14 days.²⁷

Covid-19, specifically the Omicron BA.5 and its variants, has raised concerns in New Hampshire, the United States, and the world. The virus has consistently changed since early 2020, and now in late 2022, the deadly Delta is behind us, and the fast-spreading Omicron variants seem to be here to stay. Testing and vaccines are helping to keep severe illness to a minimum; vaccines are available for all persons, including young children and toddlers. Although vaccination rates continue to climb slowly, a portion of the public remains unwilling or unable to be vaccinated, thus increasing the threat to our hospital systems. Unvaccinated individuals continue to represent the majority of hospitalizations, severe illnesses, and deaths.

The CDC reported on September 28, 2022, that 79.5% of the US population had received at least one vaccine dose, 67.9% had completed the primary vaccine series, 48.8% had received their first booster vaccine, and 36.6% of the population over 50 had received the second vaccine booster.²⁸

²⁴ <https://www.covid19.nh.gov/>
²⁵ <https://www.covid19.nh.gov/dashboard/map>; cumulative deaths; Hillsborough County including Manchester & Nashua
²⁶ <https://covid.cdc.gov/covid-data-tracker/#datatracker-home>
²⁷ <https://www.wmur.com/article/covid-19-cases-nh-town/37155089#>
²⁸ https://covid.cdc.gov/covid-data-tracker/#vaccinations_vacc-people-second-booster-pop65

The CDC recommends that adults, particularly those who are medically compromised or over 65, receive two doses, two boosters, and a recently introduced vaccine that includes protection from the Omicron BA.5 variant and subvariants. Recommendations for children are slightly different.



The map to the right from the CDC shows the number of people who have received their second booster dose by state; the darker the green, the higher the percentage.²⁹

As part of our discussion about infectious disease, it makes sense to discuss the opioid epidemic affecting the state and the nation in general. According to the CDC, New Hampshire has the 22nd highest rate of opioid-related overdose deaths in the country, with a 30.3% rate, representing the deaths of 393 people in 2020.³⁰

Like many New Hampshire communities, Milford has also struggled with citizens’ use of opioids. The 2022 Police Crime Statistics report indicates a 12% change in “Drug/Narcotic Offenses” between 2020 and 2021.³¹ Milford’s emergency service personnel plan extensively to prepare for and respond to infectious diseases. The team felt that an epidemic or pandemic, like Covid-19, would continue to threaten the community’s citizens. However, because there would be no direct impact on the town structures, the structure loss value was not estimated.

4) EXTREME TEMPERATURES

Hazard Identification & Risk Assessment (HIRA)	Medium
Probability	Very High
Estimated Structure Loss Value	Not estimated

Extreme Cold & Heat

Winter temperatures can fall below -30°F, and summer temperatures, laden with high humidity, can soar to nearly 100°F. There was more concern about cold temperatures in the past, but with improved heating systems and local communications, most New Hampshire residents can cope with extreme cold. Many New Hampshire residents have also equipped their homes with generators and woodstoves. Residents of Milford have proven to be very self-sufficient. Some cities and towns, including Milford, offer warming and cooling centers and have established a functional needs list to check vulnerable citizens. The Library and the Herron Pond Elementary School have been used in Milford as cooling or warming centers.

More concerning today is extreme heat conditions, which seem to be more likely with climate change; temperatures above 95° for a week or more can impact the elderly and other vulnerable populations. Few residents, particularly vulnerable populations, have air conditioners and are less able to cope with extreme heat. The estimated elderly population in Milford is 15.7%, and the estimated poverty rate is 4.4% of the total population³². No deaths or illnesses have been reported in Milford since the last hazard mitigation plan due to extreme temperatures.

²⁹ https://covid.cdc.gov/covid-data-tracker/#vaccinations_vacc-people-second-booster-pop50
³⁰ https://www.cdc.gov/nchs/pressroom/sosmap/drug_poisoning_mortality/drug_poisoning.htm
³¹ Town Report, Milford, New Hampshire 2021; Milford Police Department; page 47
³² US Census Bureau, American Community Survey, ACS, 2015-2019

Extreme Temperatures combined with Long Term Utility Outage

When combined with power failure, extreme temperatures are of the most concern; power failure could result in no water, heat, or air conditioning for the town’s most vulnerable populations. Town officials and the community as a whole should be concerned; they should look after their citizens to ensure that extreme temperatures do not create a life or property-threatening disaster.

The town provides warnings and recommendations regarding extreme temperatures on social media, including Facebook and the town’s listserv (see Table 2.1). The Library and Herron Pond Elementary School, the likely cooling and warming centers, have been used in the past.

5) TROPICAL & POST-TROPICAL CYCLONES

Hazard Identification & Risk Assessment (HIRA)	Medium
Probability	Low
Estimated Structure Loss Value	\$16,161,782 to \$80,808,911

Damaging winds due to tropical and post-tropical cyclones (hurricanes) are considered a medium risk, primarily because of Milford's forested land. Significant forest damage could occur, like the 1938 hurricane and hurricanes Carol and Edna in 1954. Although tropical and post-tropical cyclones could fit into several categories (wind and flooding), the team considered tropical and post-tropical cyclones separate events. Tropical and post-tropical cyclones are rare in New Hampshire but should be considered potential hazards. In most cases, tropical cyclones have been down-graded to post-tropical cyclones when they reach northern New Hampshire.

Tropical Storm Irene in 2011, the remnants of Hurricane Irene brought heavy rain and wind to Milford but did not have a significant flood or wind impact. Tropical Storm Sandy in 2012 had little impact in Milford, except for heavy rain and minor winds. Since the prior hazard mitigation plan, no tropical or post-tropical cyclones have reached Milford.

The probability that a tropical and post-tropical cyclone would remain a Category 1 or higher in this part of the state is low. However, the chance of flooding and wind damage from tropical storms remains high. Therefore, the potential loss value due to tropical and post-tropical cyclones was determined to be between 1% and 5% of the total assessed structure value.

6) LIGHTNING & HAIL

Hazard Identification & Risk Assessment (HIRA)	Medium
Probability	High
Estimated Structure Loss Value	\$0 to \$16,161,782

Lightning

Lightning strikes have occurred in Milford as a result of severe summer storms. Some of the town’s structures are older and historic buildings, as detailed in Table 4.3. Forests surround other vulnerable structures. Dry timber on the forest floor, some of which remains from past ice or windstorms and the age of many buildings and outbuildings combined with lightning strikes, can pose a significant disaster threat. Lightning could damage specific structures, but the direct damage would not be widespread.

Although lightning is a potential problem, the town reports few occurrences. It was noted that a house on Brook View Drive, electronics at the Town Offices, and the electrical equipment at the Milford Trail Apartments had been struck by lightning in the past. Each of these events resulted in considerable damage. It was noted that severe thunder and lightning storms have happened more often in recent years. Climate change may be the impetus for more frequent and severe thunder and lightning storms.

Hail

Although uncommon in Milford, hailstorm events resulting from significant thunder and lightning storms can occur anytime. Summer storms may produce hail large enough to damage roofs, siding, and automobiles. Damage from hail could also result in failed crops, thus impacting the local economy and individual citizens. However, it should be noted that Milford is not a heavily farmed community. Overall, it was felt that a hailstorm event would be unlikely and would cause minimal damage.

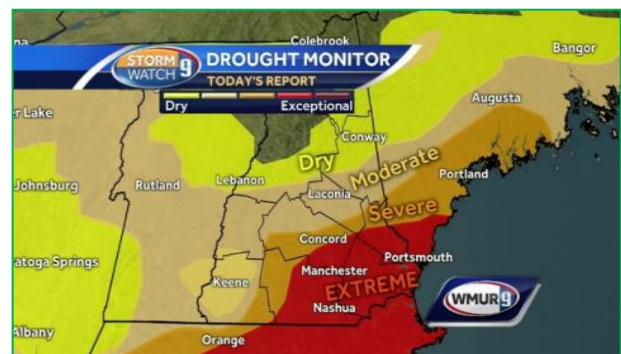
Since the last hazard mitigation plan, no significant lightning or hail events have occurred in Milford. The potential structure loss value was determined to be 0% to 1% of the total assessed structure value, based on the history of lightning strikes, their localized nature, and the minimal damage expected from hail.

7) DROUGHT

Hazard Identification & Risk Assessment (HIRA)	Medium
Probability	Moderate
Estimated Structure Loss Value	Not estimated

An extended period without precipitation or drought could elevate the risk of wildfire and blow-downs in the community's forested areas. With an extreme drought, the water supply and aquifer levels could be threatened. According to the NH Department of Environmental Services (DES), drought is not rare in New Hampshire. DES states, *“In actuality, New Hampshire experiences drought quite frequently. For example, between the years 2000 and 2020, drought conditions occurred within 11 of those 20 years.”*³³ A concern is that more frequent and longer-lasting droughts will occur with climate change. Only four significant droughts occurred before 2000, while three have occurred in just the past six years (2016, 2020, and 2022). In addition, drought conditions contributed to damage to the local forests and increased the risk of wildfire.

The 2016-2017 drought brought extreme drought conditions in the south and dry or no drought conditions in the north³⁴; Milford was in extreme drought during most of the 2016 drought (see the red section on the map to the right). There were reports of the loss of a few dug wells and hay production. The public water supply and water for fire suppression remained at acceptable levels.



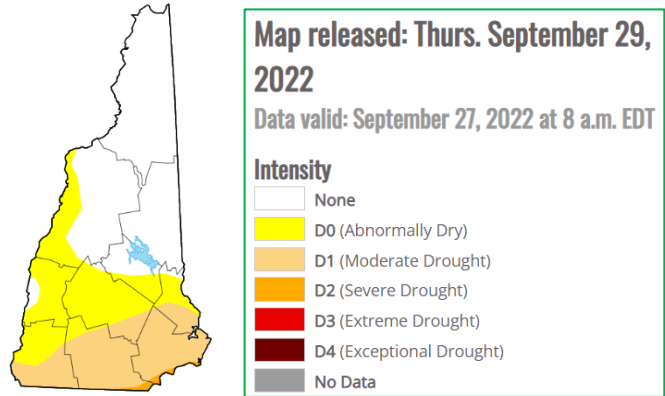
WMUR Archives; September 15, 2016

³³ <https://www.des.nh.gov/climate-and-sustainability/storms-and-emergencies/drought#:~:text=In%20actuality%2C%20New%20Hampshire%20experiences,11%20of%20those%20%20years.>
³⁴ <https://www.wmur.com/article/extreme-drought-conditions-worsen-in-new-hampshire/5269231>

The 2020-2021 drought was less significant than the 2016 drought in southern NH. During the 2020 drought, Milford experienced a moderate-level drought and posted a water ban. There was no reported loss of wells or fire ponds.

As of September 27, 2022, Hillsborough County and Milford showed moderate drought conditions after a period of steady rain late in the month. One week prior, on September 13, Milford was in severe drought conditions.³⁵ The most recent data is shown in the chart to the right.

The cost of future droughts is challenging to calculate as any cost would likely result from associated fire risk, crop loss, and diminished water supply. Based on these assumptions, the structure loss value was not estimated.



8) HIGH WIND EVENTS

Hazard Identification & Risk Assessment (HIRA)	Low
Probability	Low
Estimated Structure Loss Value	\$16,161,782 to \$80,808,911

Isolated High Wind Events

Isolated high winds and downdrafts are likely to occur in Milford. These unpredictable wind events could fall timber, down power lines, and impair emergency response. These unexpected windstorms often affect old-growth softwood, mainly when the water table is high in the spring.

High winds often occur throughout Milford, but particularly susceptible areas, like Patch Hill Road and the Hilton Homes Development, are more susceptible than others. The team noted that Eversource, in cooperation with tree-removal companies, has substantially increased its trimming efforts in recent years. In coordination with the utility companies, the Department of Public Works removes downed trees to aid in repairing power lines.

Tornadoes & Downbursts (microbursts & macrobursts)

The most significant difference between tornadoes and downbursts, also known as microbursts and macrobursts, is the size and direction from which the wind comes; all winds of these types can cause significant damage.

A tornado generally covers a large area, perhaps even several miles. It has winds that blow in a circular fashion leaving behind downed trees lying in a swirling pattern. Straight-line winds and winds that burst downward indicate a microburst; the fallen trees left behind lay in roughly the same direction. A microburst must be 2.5 miles in width or less, whereas a macroburst is a similar wind event more than 2.5 miles wide and lasting longer than a microburst. Like high winds, the effects would be primarily power outages and blowdowns; however, if a tornado, microburst, or macroburst were severe enough, property damage could also occur. In Milford, a microburst would be more likely than a tornado.

³⁵ <https://droughtmonitor.unl.edu/CurrentMap/StateDroughtMonitor.aspx?NH>

The planning team reported one microburst occurrence since the last hazard mitigation plan. In the fall of 2016, a microburst was reported in the Patch Hill Road and Hilton Homes Development area, near steep terrain at the Amherst town line. Many trees were felled, and some structural damage occurred.

Although downbursts are becoming more common, damaging high wind events are rare natural hazards in New Hampshire. Damage from high wind events largely depends on where the hazard strikes. If a high wind event strikes a densely populated or commercial area, the impact could be significant and result in personal injury, property damage, and economic hardship. Based on the potential devastation from tornadoes, macrobursts, or microbursts, the potential loss value was estimated to be between 1% and 5% of the total structure value.

9) EARTHQUAKES

Hazard Identification & Risk Assessment (HIRA)	Low
Probability	Very Low
Estimated Structure Loss Value	\$16,161,782 to \$80,808,911

Earthquakes can cause buildings and bridges to collapse, disrupt gas, electric, and phone lines, and are often associated with landslides and flash floods. Since 1940, only two earthquakes with a magnitude greater than 5.0 have occurred in New Hampshire; both earthquakes occurred in Tamworth in December of 1940 (5.5-5.8). Since 1982, three earthquakes with a magnitude greater than 4.0 have occurred in the state. One of these earthquakes occurred in Laconia (4.0); two occurred in Berlin, one in 1988 (4.0), and another in 1989 (4.1) (see Table 3.2).

Many New Hampshire residents felt the 4.0 earthquake in October 2012 (Hollis Center, ME). However, the team noted that this earthquake was not felt in Milford, some distance away. Less significant earthquakes commonly occur in NH and are felt by people in the immediate vicinity, but no damage is usually reported. One of these more minor quakes, with a 3.2 magnitude, occurred near Antrim, NH, in August 2022.

It is well documented that fault lines run throughout the state, but high-magnitude earthquakes have not been frequent in New Hampshire's history. Although historically, earthquakes have been rare, the potential exists, and depending on the location, the impact could be significant. Therefore, the potential structure loss value due to earthquakes was determined to be between 1% and 5% of the total assessed structure value.

10) WILDFIRES

Hazard Identification & Risk Assessment (HIRA)	Low
Probability	Very Low
Estimated Structure Loss Value	\$16,161,782 to \$80,808,911

There are two potential losses with a wildfire, the loss of forest land and the threat to the built-up human environment and structures within the Wildland Urban Interface (WUI). In many cases, the only time it is feasible for a community to control a forest fire is when the built-up human environment is threatened.

Any wildfire discussion must include a discussion of the WUI. The WUI can be determined in various ways; however, it represents the area where the forest and human habitation intersect. At times, the WUI is defined as the area out of reach of available fire hoses and water resources, while other times, it is determined to be areas with substantial tree cover and limited egress. For many New Hampshire communities, entire towns are thought to be in the WUI because of the abundance of hardwood and softwood trees.

All structures within the WUI are assumed to be at some level of risk and, therefore, vulnerable to wildfire. In more populated areas, the WUI is often determined to be in densely populated neighborhoods where a towering canopy of old-growth trees and limited access make people and structures more vulnerable. See Section A in this chapter for more discussion on the WUI in Milford.

Although it has a bustling business and downtown district, substantial areas of Milford are more remote and forested. The forests of Milford are described as consisting primarily of a combination of softwoods and northern hardwoods.

With a low probability of drought and high humidity, it was felt that most wildfires are “duff” fires, the burning of *“the layer of decomposing organic materials lying below the litter layer of freshly fallen twigs, needles, and leaves and immediately above the mineral soil.”*³⁶ Due to the mixture of hardwood and softwood trees and the slash left on the forest floor by past ice storms, logging operations, and blowdowns, there is potential for fast-burning fuels, and a wildfire could occur. Also, the recreational use of woods trails by snowmobilers, ATV operators, campers, and other outdoor enthusiasts creates an opportunity for sparks and out-of-control fires to ignite the town’s forested areas.

The Milford 2021 Annual Report indicated that in that year, 4% of the Fire Department’s calls were fire calls, and 10% were for hazardous conditions without fires.³⁷ Overall, in 2021, the department answered 1,156 calls, providing more than 7,140 hours of service. Both of these numbers are slightly down from the reported numbers for 2020. One significant wildfire occurred in Milford at Burns Hill in May 2020. The four-acre fire, in a remote area of the town with no water resources, took five mutual aid towns five hours to put out.

Burn permits are required in Milford, as they are throughout the state, but often, burning occurs without the proper permits. Sometimes, it is difficult for the fire department to monitor all conditions, and the occasional unauthorized burn will occur. To help mitigate the effects of wildfire, the Milford Fire Department strives to improve and maintain firefighting equipment, maintain water resources, and manage a Capital Reserve Fund to help pay costs for new equipment.

Significant wildfires in New Hampshire are uncommon, but four large fires have occurred recently - the Dilly Cliff Fire in Woodstock, the Covered Bridge Fire in Albany, the Bayle Mountain Fire in Ossipee, and the Stoddard Fire in Stoddard (see Table 3.2). Given the right conditions - drought, lightning, human interface - the potential for a significant wildfire is good. The impact of climate change on drought could also play a role in producing wildfires. Therefore, the potential loss value was estimated to be between 1% and 5% of the total assessed structure value.



³⁶ <http://www.fs.fed.us/nwacfire/home/terminology.html>

³⁷ 2021 Annual Report, Milford, NH; Fire Department Report, page 34 (pie graph)

11) LANDSLIDE & EROSION

Hazard Identification & Risk Assessment (HIRA)	Low
Probability	Very Low
Estimated Structure Loss Value	\$0 to \$16,161,782

Landslides and erosion are often associated with heavy rains, steep terrain, and the overflow of riverbanks. Landslides often occur where unstable slopes threaten to collapse on homes, buildings, and roads. Erosion and the subsequent loss of land along the river banks, road washouts, overburdened culverts, and changes in the course of rivers could also occur.

Milford experiences minor erosion of the Souhegan River riverbank and other smaller rivers whenever there is a significant change in the water level. However, the Souhegan River has not significantly eroded since the last hazard mitigation plan.

The planning team reported one landslide more than ten years ago when the hillside above NH Route 101 fell onto and blocked the highway. Sheet pilings to hold the earth back and other tactics were implemented to mitigate landslide potential in this location. No significant landslides have occurred in Milford since the last hazard mitigation plan.

Although landslides and erosion are minor issues in Milford, no structures appear to be in harm’s way at this time. In the unlikelihood that structure loss would be experienced, it would be localized; therefore, the structure loss value was estimated to be between 0% and 1% of the total assessed structure value. Refer to Inland Flooding in this chapter for more information on road erosion.

D. TECHNOLOGICAL HAZARDS

The following technological hazards were also considered while developing this hazard mitigation plan. Though these hazards are not analyzed in more detail as part of this plan, they are worth mentioning as real and possible hazards that could occur in Milford. The estimated structure loss was not determined for technological hazards.

1) AGING INFRASTRUCTURE

Hazard Identification & Risk Assessment (HIRA)	High
Probability	High

“Infrastructure is the backbone of our community. While we don’t always acknowledge it, the condition of our infrastructure has a very real impact on our lives. We all depend on roads and bridges to get us where we are going, water infrastructure that delivers clean on-demand water, electricity to light our home and office, and schools that will facilitate a learning environment.”³⁸

Aging infrastructure is the continued deterioration of roads, bridges, culverts, ports, railroads, wastewater facilities, airports, dams, utilities, and public water and sewage systems. The State Multi-Hazard Mitigation Plan states that the average lifespan of a bridge is 50 years; the current average age of state-owned bridges in New Hampshire is 52-56 years.³⁹ The American Society of Civil Engineers gave NH an overall C- in its 2017 report card.⁴⁰

³⁸ <https://www.infrastructurereportcard.org/wp-content/uploads/2016/10/2017-NH-Report-Card-hq-with-cover.pdf>

³⁹ NH Multi-hazard Mitigation Plan, 2018, page 156

⁴⁰ Ibid

Milford's aging infrastructure is a concern, as it is throughout New Hampshire and the United States. Ninety-one miles of roads, eight town-owned bridges, public water and sewer lines, and aging facilities pose potential risks to the public if not monitored and maintained. Milford does an excellent job keeping on top of infrastructure projects, such as culvert maintenance and improvements, to ensure better resiliency within the community.

2) CONFLAGRATION

Hazard Identification & Risk Assessment (HIRA) Medium
Probability Low

*“Conflagration is an uncontrolled burning that threatens human life, health, property or ecology. A conflagration can be accidentally or intentionally created”.*⁴¹

Milford's risk for a large uncontrolled fire is particularly threatening in the downtown district and Milford Oval. This area contains a high density of older wooden and brick properties, including the Town Hall, the Police Station, and small businesses. When combined with high winds and a lack of water resources, these factors could potentially result in a sizeable uncontrolled fire that could spread from building to building across the downtown district. A fire of this sort could result in an explosion, affect the transportation infrastructure, hamper communication and power systems, and shut down the businesses in the Milford Oval.

The impact on communication, power, and transportation would likely be temporary, but damage to homes and businesses could be significant.

3) LONG-TERM UTILITY OUTAGE

Hazard Identification & Risk Assessment (HIRA) Medium
Probability Moderate

Long-term utility outages of five or more days have occurred in Milford due to local line damage from high winds, storms, and problems with the power grid. In fact, during the 2008 Ice Storm, Milford residents lost power for as long as eleven days.

A significant or extended power outage lasting more than a week could result in hardship for individual residents, particularly the elderly, disabled, or poor. However, the team reported that long-term power outages have diminished due to utility companies' efforts to trim trees and branches near power lines and that no long-term utility outages have occurred since the last hazard mitigation plan.

The team felt that many residents are self-sufficient, as many are now equipped with generators and woodstoves. Still, long-term utility outage is a concern, particularly when combined with natural hazards. An extended power failure's most significant impact would be the inconvenience caused by the inability to pump water for residents who rely on wells. Driving during severe weather events to obtain necessities can also be difficult due to poor road conditions.

⁴¹ Fire Definitions; HotAsBlazes.com

4) HAZARDOUS MATERIALS

Hazard Identification & Risk Assessment (HIRA) Low
Probability Very Low

Hazardous material in fixed locations is a concern in many New Hampshire communities. However, Milford's concern for hazardous materials in fixed locations is relatively low.

Manufacturers, gas stations, fuel depots, small businesses, and even homes can have hazardous chemicals, explosive materials, or poisons on site; these types of facilities exist in Milford. Breaches in the storage, use, production, or disposal can affect the groundwater, aquifers, water supply, and the air we breathe. Residents on private property may also store hazardous materials.

Tier II facilities are those that generally use chemicals in their day-to-day operations. Several of Milford's 16± Tier II reporting facilities were noted as susceptible to damage from a fixed hazardous material event. These include but are not limited to bulk fuel storage facilities such as Suburban propane farms and Rymes and Ciardelli oil storage. Hitchiner, Hendrix, High Ten, Cirtronics, and other manufacturers in Milford use chemicals daily. If hazardous materials ignite, entire buildings could be susceptible to explosion and fire. The resulting losses could be substantial in terms of structure loss and loss of business revenue for local merchants.

Since the previous hazard mitigation plan, the team did not report any hazardous materials leaks, spills, or explosions that were not transportation-related. The town supports hazardous materials collections to help homeowners dispose of household materials like paint.

5) DAM FAILURE

Hazard Identification & Risk Assessment (HIRA) Low
Probability Very Low

According to the Department of Environmental Services (DES) and GIS data files, Milford has eight low-hazard and seven non-menace dams; there are no high or significant-hazard dams in the community. The Town of Milford owns six low-hazard dams; several are flood-control dams. The planning team reported that the town's active dams receive regular maintenance, are in good shape, and do not need major repairs.

It was also reported that the potential for minor damage to structures and roads is apparent for only one of the town-owned dams. Failure at the other dams would result in some backyards and roads, but not likely structure damage.

6) KNOWN & EMERGING CONTAMINANTS

Hazard Identification & Risk Assessment (HIRA) Low
Probability Low

Known contaminants in drinking water occur naturally or when introduced by man. Damage to the environment, the local flora and fauna, a reduction in land values, restrictions on the use of public water sources, and an increase in short- and long-term health issues are some of the impacts of contaminants. Emerging contaminants have not been

historically monitored, possibly due to a lack of laboratory capabilities or an understanding of human health risks. There may be a need for more robust water treatment equipment.⁴²

Naturally occurring contaminants could include trace elements such as arsenic, lead, manganese, and uranium. The most concerning of these to private well water is arsenic; arsenic is naturally occurring and common in groundwater. The NH State Multi-hazard Mitigation Plan states that “...health studies of New Hampshire residents have demonstrated the connection between arsenic and the increased prevalence of conditions such as bladder and other cancers and developmental effects on children.”⁴³

Human-made contaminants generally include compounds such as pesticides and metals that have impacted the groundwater or surface water. Hazardous material spills and other accidental introductions of chemicals into the ground and surface water can affect the safety of public and private water supplies.

Contamination of the aquifer with radon or arsenic is a concern as some residents rely on wells for drinking water. Emerging contaminants, such as poly or perfluoroalkyl substances (PFAs), have also been found in ground and surface water in New Hampshire; additional emerging contaminants, such as Methyl Tertiary Butyl Ether (MtBE), have also been found. Increased public awareness and testing of PFAs and MtBEs are helping to counteract the effects of emerging contaminants. The Town of Milford should encourage testing by individual homeowners for known and emerging contaminants.

The planning team reported that emerging contaminants are currently not an issue in Milford. The town is, however, monitoring the transfer station for any issues that may arise.

E. HUMAN-CAUSED HAZARDS

The following human-caused hazards were also considered while developing this hazard mitigation plan. Though these hazards are not analyzed in more detail as part of this plan, they are worth mentioning as real and possible hazards that could occur in Milford. The estimated structure loss was not determined for human-caused hazards.

1) TRANSPORT ACCIDENTS

Hazard Identification & Risk Assessment (HIRA) High
Probability Moderate

The possibility of vehicular accidents involving hazardous materials is identified as potentially significant in Milford. The town’s major roads, NH Routes 101, 101A, and 13, carry a large volume of truck traffic, making deliveries to known hazmat locations and residential properties. These roadways traverse the Milford area, traveling through areas with little or no population and, at other times, through densely populated areas such as the Milford Oval, shown to the right.⁴⁴



⁴² NH Multi-hazard Mitigation Plan-2018

⁴³ Ibid

⁴⁴ Snip from Exploring the Milford Oval, WCVB, Chronicle video; <https://www.wcvb.com/article/exploring-the-milford-oval/26476951#>

Some of Milford’s roads are narrow and winding; all are subject to severe winter weather, making them treacherous when affected by flooding, winter snow, and ice. Vehicular accidents, wildlife collisions, and truck accidents involving hazardous materials are always possible in these conditions. A major ice storm or another significant event can make egress and access difficult for individuals and first responders. All roadways in Milford are susceptible to hazards such as road flooding and high winds leading to downed trees in the roadways and potentially hazardous materials spills.

Since the previous hazard mitigation plan, one transportation incident involving hazardous materials was reported – in May 2020, an incident involving a septic truck caused effluent to spill into a catch basin. The Department of Environmental Services (DES) supervised the clean-up work performed by Clean Harbors.

Depending on an accident’s location, the resulting losses from a transportation accident, particularly one involving hazardous material, could be significant regarding property and structural damage. Losses are likely localized and may involve densely populated areas; however, speed limits are reduced in these areas to mitigate truck and traffic speed.

2) MASS CASUALTY INCIDENTS

Hazard Identification & Risk Assessment (HIRA) Medium
Probability Low

A Mass Casualty Incident (MCI) is any number of casualties exceeding the number of available resources. MCIs have been known to occur due to bus, auto, train, and aircraft accidents and incidents involving large crowds. MCIs can also result from natural hazards such as hurricanes, floods, earthquakes, and tornadoes. No MCIs have occurred since the previous hazard mitigation plan except for minor bus incidents. However, as noted above in Transportation Accidents, a septic truck accident occurred in May 2020.

An MCI could happen anywhere in Milford, but more likely on NH Routes 101, 101A, and 13. These busy roadways, while fortunately maintained by the state, can be treacherous during inclement weather.

3) TERRORISM & VIOLENCE

Hazard Identification & Risk Assessment (HIRA) Low
Probability Very Low

Terrorism is feared throughout our country and the world. Although Milford has several low-risk targets, such as the Milford schools, the Town Hall, and local churches, no significant high-risk targets are located in the community. NH Route 101, a major thoroughfare crossing the state's southern tier, is heavily traveled. Major disruptions on Routes 101, 101A, or 13 could cause significant transportation issues during an emergency, causing business, travel, commerce, and response difficulties.

As with many small towns, the terrorism threat is minimal; if a terrorist incident were to occur, it would most likely be a homegrown terrorist event.

4) CYBER EVENTS

Hazard Identification & Risk Assessment (HIRA) Low
Probability Low

Presidential Policy Directive (PDD-41) describes a cyber incident as *“An event occurring on or conducted through a computer network that actually or imminently jeopardizes the integrity, confidentiality, or availability of computers, information or communications systems or networks, physical or virtual infrastructure controlled by computers or information systems, or information resident thereon. For purposes of this directive, a cyber incident may include vulnerability in an information system, system security procedures, internal controls, or implementation that could be exploited by a threat source.”*⁴⁵

With the increased use of computers and the internet, cyber events could include targets such as banks, hospitals, schools, churches, town, city, and state government operations, emergency operations and critical infrastructure. Cyber events have been known to occur almost anywhere, from very small towns to large facilities in New Hampshire, causing large expenditures, disruption in everyday business practices, and data loss. Several communities in New Hampshire have had their data held for ransom.

The Milford planning team reported that the town’s website had been hacked several times, but never for a ransom; the Information Technology (IT) department recovered. Several years ago, the library computers were hacked to allow public access to one shared folder, and the folder was held for bitcoin ransom; the ransom was not paid, and IT handled recovery. Like other towns, phishing emails are an ongoing issue that good user education can mitigate.

Cyber-attacks are a real threat, but off-site servers and backups, cloud services, added security measures and user education could significantly mitigate the risk of a cyber event. The Milford IT department takes measures to protect essential town data and documents. The town adopted a comprehensive cyber security policy in September 2022.

⁴⁵ PDD-41; <https://obamawhitehouse.archives.gov/the-press-office/2016/07/26/presidential-policy-directive-united-states-cyber-incident>

Chapter 6: Current Plans, Policies, & Mutual Aid

A. ANALYSIS OF THE EFFECTIVENESS OF CURRENT PROGRAMS

After researching historic hazards, identifying CIKR, and determining potential hazards, the team determined what was already being done to protect its citizens and structures. Once identified, the team addressed each policy or plan to determine its effectiveness and whether improvements were needed. This analysis became one of the tools the team used to identify mitigation action items for this plan.

Creating new action items was less challenging, knowing Milford's current regulations. In addition, this process helped identify current plans and policies that are working well and those that should be addressed as a new "Action Item" and the responsible departments. The following table, *Table 6.1, Policies, Plans & Mutual Aid*, shows the analysis resulting from the team's discussion.

Existing policies, plans and mutual aid that were designated as "Improvements Needed" were added to **Table 9.1, Mitigation Action Items** as new strategies and were reprioritized to meet the current needs of the town.

TABLE 6.1: CAPABILITIES ASSESSMENT

KEY TO EFFECTIVENESS

- 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 does not work as intended or does not meet its goals.
- Poor** The existing program does not work as intended, often falls short of its goals, or may present unintended consequences.

Note from 2015 Plan: Existing "Authorities" only listed 1) Planning & Regulatory, 2) Emergency Management, 3) Administrative & Technical, and 4) Fiscal. All were in general terms and, therefore, not added to this table, although parts of each are discussed here.

Current Program or Activity	Description	Managing Department	How Effective	Improvements Needed
Emergency Generators	The town has emergency backup power at many of the town's Critical Infrastructure & Key Resources (CIKR), including the Town Hall (portable), the Police Station (undersized), the Fire Station, the Milford Ambulance, Herron Pond Elementary School, and MACC Base.	Emergency Management Director	Average	Improvements Needed: Although Milford has emergency backup power at many of the town's Critical Infrastructure & Key Resources (CIKR), the town could benefit from permanent generators for Milford High School (primary shelter), the Police Station (undersized generator), the Town Hall (portable) and the DPW garage. This strategy is deferred to purchase and install emergency generators for these facilities to improve their effectiveness during a disaster. Action Items #20, #21, #24 and #25 (also in Table 7.1)
Tree Removal Program	Tree Removal Programs reduce damage to power lines from fallen trees and limbs, stormwater ditches, and structures and reduce wildfire risk.	Department of Public Works	Good	Improvements Needed: As trees become damaged and threaten structures on town roads, the Department of Public Works removes them. The NH DOT and Eversource do this for state roads and utilities as needed. This strategy is deferred to continue local tree and brush removal efforts to help mitigate the effects of high wind events, ice storms, wildfires, and other natural hazards. Action Item #3 (also in Table 7.1)

Current Program or Activity	Description	Managing Department	How Effective	Improvements Needed
Culvert & Stormwater Maintenance Plan	The Milford Department of Public Works and NH DOT clean the drainage basins yearly and after major flooding events. Culverts are repaired as needed. A Culvert & Storm Water Maintenance Plan includes an inventory of all culverts and ditches in the community and a record of the location, size, etc.	Department of Public Works	Average	Improvements Needed: The Milford Department of Public Works (DPW) does a good job cleaning and repairing drainage basins and culverts. An extensive written culvert and stormwater maintenance plan has been developed to ensure continuity of actions and efficient stormwater management. This strategy is deferred for continued maintenance of all culvert/drainage systems and the current culvert and stormwater maintenance plan. Action Items #2 (also in Table 7.1)
National Flood Insurance Program (NFIP) & Floodplain Ordinance (part of Zoning Ordinance)	The National Flood Insurance Program (NFIP) addresses both the need for flood insurance and the need to lessen the devastating consequences of flooding. The goals of the NFIP are to protect communities from potential flood damage through floodplain management and to provide people with flood insurance. A community's floodplain ordinance regulates all new and substantially improved structures located in the 100-year floodplain, as identified on the FEMA Flood Maps, which in Milford are dated September 25, 2009	Community Development	Good	Improvements Needed: The town developed a flood ordinance and became a member of the National Flood Insurance Program (NFIP) on May 1, 1980 . The town's Flood Ordinance works well to successfully prohibit or force compliance to the ordinance for building and substantial improvements to structures within the FEMA flood zone. The Flood Ordinance was last amended in 2020. This strategy is deferred to this plan to continue compliance with the NFIP, obtain NFIP brochures to have available at the Town Hall, and provide public outreach regarding the benefits of membership in the NFIP, whether or not properties are in the FEMA floodplain. It is also deferred to provide links to the NFIP and Ready.gov and vital information on flood mitigation techniques for property owners. Action Item #5 (also in Table 7.1)
Public Education & Awareness	The Town of Milford is very well situated to provide public information and outreach to its citizens through various means, including social media and its website.	Emergency Management Director & Other Departments	Good	Improvements Needed: The Fire Department has a website with some emergency-related links, including CodeRED; however, there is no Emergency Management webpage. An emergency web page is a great way to provide outreach to residents on emergency preparedness and mitigation techniques to reduce or eliminate the impact of natural hazards. This is deferred to this plan to develop and provide robust information and links on an Emergency Management webpage to educate the public on general and seasonal mitigation techniques. The town also can get information out to the public via multiple social media platforms (see Table 2.1). Action Item #6 (also in Table 7.1)
CodeRED & Nixle	CodeRED (the NH ENS system's vendor) is a reverse calling warning system that uses listed hardline phone numbers. CodeRED does not automatically include cell and unlisted numbers or email addresses. The Milford School District uses the "Power School" reverse calling system for school activities and emergency notifications. Milford's emergency responders also use Nixle.	Emergency Management Director	Good	Improvements Needed: CodeRED (the NH ENS system's vendor) is an excellent warning system, but CodeRED only automatically stores hardline resident phone numbers. The town has continuously provided information to residents about CodeRED. This strategy is deferred to continue providing public outreach to encourage all residents to contact CodeRED to add cell numbers, emails, unlisted numbers, and verify their information. Use the website, a possible brochure at the town office, social media platforms, or a sign-up at Town Meeting. The town should also encourage residents to sign up for alerts from Nixle. Action Item #8

Current Program or Activity	Description	Managing Department	How Effective	Improvements Needed
Emergency Action Plan (Dams)	Dam Emergency Action Plans are designed to provide notification and evacuation procedures should a dam failure occur.	Department of Public Works & Department of Environmental Services (DES)	Average	Improvements Needed: The town does not have copies of all EAPs for local dams. This strategy is deferred to determine which dams should have Emergency Action Plans and to obtain them.
Emergency Operation Plan (June 2017)	An Emergency Operations Plan identifies the response procedures and capabilities of the Town of Milford in the event of a natural, technological or human-caused hazard.	Emergency Management Director	Excellent	Improvements Needed: The Milford Emergency Operations Plan (EOP) was last updated in 2017 and will be ready for an update in 2022-23, based on the state's 5-year recommendation. The new EOP should include an EOC Call Alert List, a detailed Resource Inventory List, and Player Packets. This is deferred to this plan to update the EOP. Action Item #19
Fire Department Training	Fire Department and EMS personnel training for all fire situations, including wildfire suppression.	Fire Training Officer & Fire Chief	Good	Improvements Needed: The Fire Training Officer coordinates all fire responders and includes the many aspects of emergency response. Training is done through the Souhegan Fire Mutual Aid Association and the State of New Hampshire Fire & EMS Training Facilities. This strategy is deferred for continued training through the life of the plan. Action Item #10
Hazardous Materials Response Team	A Hazardous Materials Response Team is a specialized team of individuals with the skill and expertise to manage HazMat-related incidents successfully. Most local fire departments are trained to offer a "defensive position" until HazMat experts arrive on the scene.	Fire Training Officer & Fire Chief	Good	Improvements Needed: Although Milford does not have a HazMat Team, firefighters are trained in the basic response to HazMat incidents and are adept at maintaining perimeters until specialized teams arrive. The Milford Fire Training Officer would likely call dispatch, who would contact the Souhegan HazMat Team through the City of Nashua. Although this is preparedness, this is deferred to this plan to continue HazMat training for the members of the Milford Fire Department. Action Item #9
Town of Milford, New Hampshire Hazard Mitigation Plan Update (2015)	A hazard mitigation plan is designed to address natural, technological, and human-caused hazards and to understand the risks these pose to the community. A hazard mitigation plan aims to create action items that will make the community safer by lessening or eliminating the impact of hazards.	Emergency Management Director	Average	Improvements Needed: The Town of Milford, New Hampshire Hazard Mitigation Plan Update 2015 is being updated with this plan. This strategy is deferred to review this plan, the Milford, NH Hazard Mitigation Plan Update 2024, on an annual basis and to update the plan again in 2029. Action Item #16
Master Plan (2016)	A Master Plan includes goals, objectives, and expectations for the town's future development.	Planning Board	Good	Improvements Needed: The Milford Master Plan was last updated in 2016 and will not be ready for a recommended complete update until 2026. This strategy is deferred to review and update the Master Plan and consider including a Natural Hazards Section, a discussion on Climate Change, and mitigation action items from this plan in future updates. Action Item #12
NIMS & ICS Training	The National Incident Management System (NIMS) and the Incident Command System (ICS) provide training that can help ensure effective command, control, and communications during emergencies.	Emergency Management Director	Good	Improvements Needed: Most first responders have done NIMS and ICS training. Although this is preparedness, this strategy is deferred to this plan to continue providing NIMS (IS-700) & ICS (ICS 100 & ICS 200) training to new first responders and town officials as they become elected or appointed. Action Item #11

Current Program or Activity	Description	Managing Department	How Effective	Improvements Needed
Radio Communications	Radio communications are vital for an emergency response to all types of hazards. Radios should be interoperable and up-to-date with current technology.	Emergency Management Director	Poor	<p>Improvements Needed: All three emergency departments in Milford (Police/Fire/EMS) have radio interoperability; however, the Department of Public Works does not have radio communications capabilities. Communications systems and radios are outdated with state and federal requirements and do not work as intended. There are also areas of town that have dead spots. This strategy is deferred to improve radio capabilities, provide radios to the Department of Public Works, and actively work on solutions to fix Milford's communications issues. Action Item #23</p>
Subdivision Regulations (2017)	The purpose of subdivision regulations is to provide for the town's orderly present and future development by promoting public health, safety, convenience, and welfare.	Planning Board	Good	<p>Improvements Needed: The Milford Subdivision Regulations, most recently updated in 2017, are in good shape. The Subdivision Regulations address setbacks, road frontage, and the lot's size. The regulations also address the availability of water resources for fire suppression, regulations on the steepness of driveways and roads, and maintaining adequate stormwater flow to prevent flooding. This strategy is deferred to review the Subdivision Regulations and this hazard mitigation plan upon its approval and to discuss possible regulatory changes that may reduce the chance of hazards. Action Item #13</p>
Pressurized, Dry Hydrants & other Water Resources	Milford Fire and the Milford Water Utilities maintain pressurized hydrants and dry hydrants. Milford Water Utilities and the Pennichuck Water Company maintain many pressurized hydrants in Milford. The Fire Department or private landowners also maintain multiple dry hydrants, cisterns, and drafting sites.	Milford Fire Department & Milford Water Utilities	Good	<p>Improvements Needed: Pressurized hydrants, dry hydrants, and drafting sites throughout Milford provide water resources for firefighting. This strategy is deferred to maintain the pressurized hydrants (Milford Water Utilities & Pennichuck Water), the dry hydrants, and other water resources (Fire Department) in the community to help mitigate the effects of structure fires and wildfires. Action Item #1</p>
Zoning Ordinances (2020)	Zoning Regulations deal with land use, including rural, residential, flood zone, agriculture, and timber management, and often include drainage and infrastructure provisions.	Select Board & Planning Board	Good	<p>Improvements Needed: The Zoning Ordinance was last updated in 2020. The Zoning Ordinance is a working document that is reviewed and updated whenever an issue arises that needs the attention of the Planning or Select Boards. This strategy is deferred to review the Zoning Ordinance and this hazard mitigation plan upon its approval and to discuss possible regulatory changes that may reduce the chance of hazards. Action Item #14</p>
Capital Improvement Program (CIP)	A Capital Improvement Plan (CIP) is a decision-making tool used to plan and schedule town improvements over at least six years. A CIP provides a suggested timeline for budgeting and implementing needed capital improvements.	Planning Board	Good	<p>Improvements Needed: The Milford Capital Improvement Program has been reviewed and updated. A CIP is generally reviewed to ensure the program's goals are achieved. This strategy is deferred to review the CIP and this hazard mitigation plan upon its approval and to discuss possible regulatory changes that may reduce the chance of hazards. Action Item #17</p>

Current Program or Activity	Description	Managing Department	How Effective	Improvements Needed
Building Code & Permits	The town has adopted International Building Codes (IBC) or International Residential Codes (IRC). The town requires builders to follow the adopted codes for new construction to meet national standards for flood, wind, earthquake, fire, and snow load.	Building Inspector & Electrical Inspector	Good	No Improvements Needed: The Town of Milford has a Building Inspector. The permitting process requires builders to abide by the International Building Codes (IBC) and the International Residential Codes (IRC), which the State of New Hampshire and the town have adopted. (also, in Table 7.1)
E- 911 Signage Compliance	E-911 signage compliance includes markers at driveway entrances that identify residence locations in conjunction with the E-911 alerting system. The town does have an ordinance regulating signage.	Building Inspector & Fire Department	Excellent	No Improvements Needed: Milford is about 90% compliant with E-911 signage; this is an excellent percentage of residents with appropriate 911 signage. The town continues to promote compliance with current and new landowners.
Amateur Radio Emergency Service	Amateur radio (ham radio) operators can greatly assist the town during emergencies to augment the town's communication resources.	Emergency Management Director	Good	No Improvements Needed: Several ham radio operators in the town are willing and able to assist emergency responders when needed.
Bridge Maintenance Program	The state and town inspect state-owned and town-owned bridges biannually, and red-listed bridges are inspected yearly. There is one red-listed bridge in Milford. All bridges are part of ongoing maintenance programs.	Department of Public Works	Good	No Improvements Needed: The Milford Department of Public Works (DPW) has established a short and long-term schedule for bridge maintenance and replacement included in the Capital Reserve Program. Currently, one red-listed bridge has no plans for improvement because of the limited number of residents on Harshorn Mill Road.
NH Forest and Lands & Fire Permits	NH Forest & Lands, a division of the NH Department of Natural & Cultural Resources (DNCR), regulates open burning and permits.	NH Forests & Lands (DNCR) & Local Fire Warden	Excellent	No Improvements Needed: The system in place with NH Forests & Lands (DNCR) and the local fire warden works well. The public is aware of fire permitting requirements and the ability to get permits online (\$5.50 fee is required).
Burning Index	New Hampshire Forests & Lands (DNCR) has a burning index that measures wildfire risk, including how likely fires are to start on a given day. It also evaluates the potential damages wildfires can create, the number of people needed to fight them, and the type of equipment that might be needed.	NH Hampshire Forests & Lands (DNCR) & Fire Department	Excellent	No Improvements Needed: The Fire Department receives regular notification of the burning index via fax and email from NH Forests & Lands. This notification is made daily during the fire danger season.
Capital Reserve Fund (CRF)	A type of account on a town's balance sheet reserved for long-term capital investment projects or any other large and anticipated expense(s) that will be incurred. Reserve funds are set aside to ensure adequate funding to at least partially finance future projects, equipment, and other expenditures.	Town Administration & Department Heads	Good	No Improvements Needed: The town's Capital Reserve Funds are set aside each year at budget time to assist the town's departments with planned purchases of equipment and supplies or in emergencies. The Milford Capital Reserve Funds work well and are part of the town warrant at the annual Town Meeting.

Current Program or Activity	Description	Managing Department	How Effective	Improvements Needed
Life Safety & Fire Codes	Provides guidance for all buildings for life safety and fire codes	Fire Inspector	Good	No Improvements Needed: The National Fire Protection Association (NFPA) and the NH safety and fire codes guide the Milford Fire Department to inspect all commercial, public assembly, and rental properties. The Milford Fire Department does its best to provide timely inspections based on available human resources.
Mutual Aid Agreements (Fire, Police, Highway & EMS)	Mutual Aid agreements provide communications capabilities and cooperative assistance between area cities and towns; mutual aid provides access to resources appropriate to the scope of the emergency.	Police, Fire & Highway Departments & EMS	Good	No Improvements Needed: The Milford Fire Department has a mutual aid agreement with the Souhegan Valley Fire Mutual Aid Association. The Milford Police Department has mutual aid agreements with surrounding towns, the NH State Police (Troop B), and the Hillsborough County Sheriff's Office. The Department of Public Works is a NH Public Works Mutual Aid Association member. Milford Ambulance Service performs EMS services and medical transportation and has an understanding with surrounding communities for mutual aid. All mutual aid systems in Milford work well.
State Health Department Public Health Plan	The state plan, "Influenza, Pandemic, Public Health Preparedness and Response Plan" is written by the state health department to be prepared for any public health emergency; the town is part of the Greater Nashua Regional Public Health Network.	Greater Nashua Regional Public Health Network	Good	No Improvements Needed: The State Public Health Plan assists the community as part of the services provided by the Greater Nashua Regional Public Health Network. The Milford Health Officer attends public health meetings whenever possible.
Local Road Design Standards	Local road design standards are specifications for the construction of new roads in a community.	Select Board, Planning Board & Department of Public Works	Good	No Improvements Needed: Local road standards have been established to provide specifications for building new roads to ensure that the town does not assume ownership of substandard roads. The town will not assume ownership of roads not built to Class V standards. The Select Board determines the acceptance of new roads.
School Emergency Operations Plan (SEOP)	A School Emergency Operations Plan guides response to emergencies at the school.	Police, Fire & Emergency Management Director	Good	No Improvements Needed: SAU 40 and the Milford School District complete school Emergency Operations Plans annually according to state requirements. The Milford High School, the Milford Middle School, and the town's three elementary schools (Jacques Memorial, Heron Pond, and Project Drive at Bales) have current plans that will be updated according to the state's requirements. Drills and exercises are done annually and include the participation of the town's emergency responders.

Current Program or Activity	Description	Managing Department	How Effective	Improvements Needed
Shoreland Water Quality Protection Act (formerly the Comprehensive Shoreland Protection Act)	The Shoreland Water Quality Protection Act (SWQPA) establishes minimum standards for using and developing shorelands adjacent to the state's public water bodies. The SWQPA includes changes to vegetation requirements within the natural woodland and waterfront buffers, impervious surface limitations, and the shoreland permit by notification process.	State of NH	Good	No Improvements Needed: The Town of Milford follows and exceeds the Shoreland Water Quality Protection Act regulations. Compliance with the Act is encouraged; the Community Development Office oversees compliance.
Site Plan Review Regulations (2017)	Site Plan Review Regulations ensure that uses permitted by zoning are constructed on a site to fit into the area where they are being constructed without causing drainage, traffic, or lighting problems.	Planning Board & Select Board	Good	No Improvements Needed: The town's stringent site plan review regulations apply to all non-residential and multi-family; these regulations do what they are meant to do. These regulations accomplish what is established and outlined in the Milford Master Plan.
Social Media Accounts	Social media accounts, such as Facebook, Twitter, Instagram, and local online newsletters, can provide excellent information on emergency preparedness and hazard mitigation strategies that can be taken to protect homes and property.	Department Heads	Good	No Improvements Needed: Facebook pages are maintained by the Town Hall, the Fire, Police, Recreation, Planning, and EMS Departments. In addition, other social medial platforms include a subscription service for the Recreation Department and community residents through Constant Contact (>2,500 citizens). These social media accounts work very well to keep the citizens of Milford informed about things happening in their town.
Wellhead Protection Program	A wellhead protection plan aims to prevent the contamination of groundwater used for drinking water. The protected area is the surface and subsurface area surrounding the public water supply where contaminants are likely to reach.	Milford Water Utilities	Good	No Improvements Needed: Milford Water Utilities has identified a wellhead protection area. As the state suggests, the town has reviewed the wellhead protection plan to comply with state regulations.

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Chapter 7: Last Mitigation Plan

A. DATE OF LAST PLAN

Based on the Disaster Mitigation Act (DMA) of 2000, Milford has developed hazard mitigation plans in the past. The most recent update was formally approved in 2015. The Milford, NH Hazard Mitigation Plan Update 2024 updates the 2015 plan.

Below are the action items that were identified in the 2015 plan. The team identified the current status of each strategy based on three sets of questions:

COMPLETED

- Has the strategy been completed?
- If so, what was done?

Strategies “deferred” from the prior plan, were added to **Table 9.1, Mitigation Action Plan** as new strategies and were reprioritized to meet the current needs of the town.

DELETED

- Should the strategy be deleted?
- Is the strategy mitigation or preparedness?
- Is the strategy useful to the town under the current circumstances?

DEFERRED

- Should the strategy be deferred for consideration in this plan?
- Should this strategy be reconsidered and included as a new action item for this plan if the strategy was not completed?

In *Table 7.1, Accomplishments since the Last Plan*, the team assessed what had been accomplished and determined what additional work may be needed. Items in red font were extracted word-for-word from the 2015 Hazard Mitigation Plan; they do not represent a time frame for this plan. Two additional columns not shown here – *Responsible Party and Cost & Funding* – can be found in the 2015 Hazard Mitigation Plan.

TABLE 7.1: ACCOMPLISHMENTS SINCE THE LAST PLAN

New Mitigation Project	Time Frame	Completed, Deleted, or Deferred
<p style="color: red;">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.</p>	<p style="color: red;">Anticipated start by January 2016. This action will be completed on an ongoing basis throughout the life of the plan.</p>	<p>Deleted: The Town of Milford has a Building Inspector. The permitting process requires builders to abide by the International Building Codes (IBC) and the International Residential Codes (IRC), which the State of New Hampshire and the town have adopted. This action item from the last plan is deleted; enforcement of the IBC and IRC codes is part of the standard building process. (also, in Table 6.1)</p>

New Mitigation Project	Time Frame	Completed, Deleted, or Deferred
<p>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.</p>	<p>Anticipated start by June 2015. This action will be completed on an ongoing basis throughout the life of the plan.</p>	<p>Completed & Deferred: Outreach to the citizens of Milford has been done in the past regarding potential hazards, but more can be done. This strategy is deferred to establish an Emergency Management web page to provide outreach on emergency preparedness and mitigation techniques property owners can use to reduce or eliminate the impact of natural hazards. The town should develop robust information and links on general and seasonal mitigation. The town can also inform the public via social media. (see Table 2.1). Action Item #6 (also in Table 6.1)</p>
<p>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.</p>	<p>Anticipated start by January 2015. Anticipated completion by December 2015.</p>	<p>Completed & Deferred: Milford has worked with other partners to address the National Flood Insurance Program (NFIP) and remains compliant. This strategy is deferred to continue compliance with the NFIP, obtain NFIP brochures, and provide public outreach regarding membership benefits in the NFIP, whether or not properties are in the FEMA floodplain. This strategy is also deferred to provide robust information on flood mitigation techniques that can be taken to protect individual homes and properties. Provide links to the NFIP, Ready.gov, and other pertinent websites. Action Item #5 (also in Table 6.1)</p>
<p>Incorporate flood mitigation into local planning. Revise/adopt subdivision regulations and erosion control regulations to improve floodplain management in Milford.</p>	<p>Anticipated start by April 2015. Anticipated completion by March 2016.</p>	<p>Completed & Deleted: In 2020, a new floodplain development ordinance was adopted as part of the Zoning Ordinance. The new ordinance follows the recommendations of the state flood ordinance template. This strategy is completed; therefore, it is deleted.</p>
<p>Map and assess vulnerability to erosion. Conduct stream assessments and prepare fluvial erosion hazard zone maps.</p>	<p>Anticipated start by September 2014. Anticipated</p>	<p>Deleted: As suggested in the last plan, the mapping and assessment of erosion vulnerability have not been done. The Mill and Downtown Milford are located on the Souhegan River and are therefore subject to erosion; however, fluvial erosion is closely monitored. This strategy from the prior plan was determined to be no longer needed; therefore, it is deleted.</p>
<p>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.</p>	<p>Anticipated start by April 2015. This action will be completed on an ongoing basis throughout the life of the plan.</p>	<p>Completed & Deferred: The town has designated the library as a cooling center for use during regular business hours. The High School, the Library, or the Town Hall could also be used during extreme heat. This strategy is deferred to promote public facilities as cooling and warming centers. Action Item #7</p>
<p>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.</p>	<p>Anticipated start by June 2015. Anticipated completion by May 2017.</p>	<p>Completed & Deferred: The town has worked with utility companies to harden the electrical infrastructure and trim trees near power lines. A regulation is in place requiring undergrounding of utilities for new subdivisions. Lightning protection at the Town Hall has not been installed. This strategy is deferred to continue tree and brush trimming to mitigate the effects of high wind events, ice storms, wildfires, and other natural hazards. Action Items #3 (also in Table 6.1)</p>

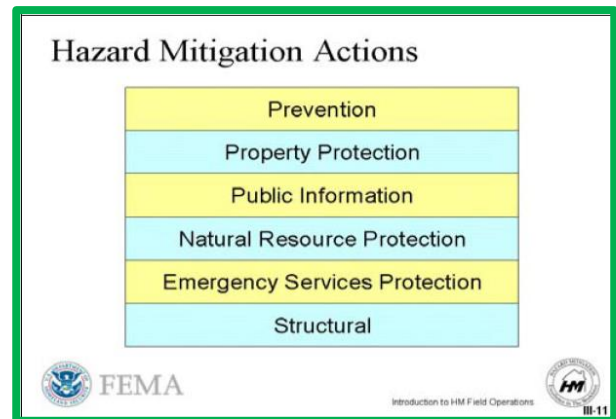
New Mitigation Project	Time Frame	Completed, Deleted, or Deferred
<p>Reduce the urban heat island effect by encouraging tree planting around buildings and parking lots.</p>	<p>Anticipated start by June 2015. This action will be completed on an ongoing basis throughout the life of the plan.</p>	<p>Deferred: Although the urban heat island effect has been addressed indirectly, the town has not directly planted trees around buildings and parking lots to minimize this effect. This strategy is deferred to encourage planting trees and shrubbery while constructing new buildings and parking areas to reduce the effects of the urban heat island. Action Item #22</p>
<p>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.</p>	<p>Anticipated start by December 2016. Anticipated completion by December 2018.</p>	<p>Completed & Deferred: The Milford Department of Public Works (DPW) does a good job cleaning and repairing drainage basins and culverts. An extensive written culvert and stormwater maintenance plan has been developed to ensure continuity of actions and efficient stormwater management. This strategy is deferred for continued maintenance of all culvert/drainage systems and the current culvert and stormwater maintenance plan. Action Item #2 (also in Table 6.1)</p>
<p>Install generators at all critical Town facilities and schools.</p>	<p>Anticipated start by April 2016. Anticipated completion by October 2018.</p>	<p>Deferred: Due to oversight and funding, permanent generators were not installed at the Town Hall (which has a portable) or the Milford High School (Primary Shelter). This strategy is deferred to install permanent generators at the High School, Town Hall, Police Station, and DPW garage. Action Items #20, #21, #24 & #25 (also in Table 6.1)</p>
<p>Develop a plan and process for water conservation during drought conditions. Educate residents on water-saving techniques.</p>	<p>Anticipated start by June 2017. Anticipated completion by June 2018.</p>	<p>Completed & Deleted: The town has issued a water ban during drought, including the 2020 drought. The regulations generally introduce an odd/even day schedule for outdoor watering; during a water ban, no watering is allowed. This strategy is deleted as the town will continue to issue water bans and other restrictions, as needed, in the future.</p>
<p>Survey population and develop database of special needs individuals and groups to improve emergency services to special needs individuals.</p>	<p>Anticipated start by December 2015. This action will be completed on an ongoing basis throughout the life of the plan</p>	<p>Completed & Deleted: The Police Department has developed and maintains functional needs and a morning call list. This action item from the last plan is deleted, as both a functional needs list and a morning call list have been completed, maintained, and actively used in the community.</p>
<p>Work with property owners to elevate or remove loss structures from flood-prone areas to minimize future flood losses.</p>	<p>Life of the plan. Anticipated start by April 2018. This action will be completed on an ongoing basis throughout the life of the plan.</p>	<p>Completed & Deleted: Efforts have been made to diminish repetitive flood losses, and Town Officials continue to monitor flood-prone structures. Although discussions have taken place to consider future purchases of flood-prone properties, the team felt this was not likely to happen within the scope of this plan. Therefore, this strategy is deleted.</p>

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Chapter 8: New Mitigation Strategies & STAPLEE

A. MITIGATION STRATEGIES BY TYPE

The following list of mitigation categories and possible strategy ideas was compiled from several sources, including the USFS, FEMA, other planners, and past hazard mitigation plans. This list was used during a brainstorming session to discuss the issues in town. Team involvement and the brainstorming sessions proved helpful in bringing new ideas, better relationships, and more in-depth knowledge of the community.



Prevention

- Forest fire fuel reduction programs
- Special management regulations
- Fire Protection Codes NFPA 1
- Firewise® landscaping
- Culvert and hydrant maintenance
- Planning and zoning regulations
- Building Codes
- Density controls
- Driveway standards
- Slope development regulations
- Master Plan
- Capital Improvement Plan
- Rural Fire Water Resource Plan
- NFIP compliance

Public Education & Awareness

- Hazard information centers
- Public education and outreach programs
- Emergency website creation
- Firewise® training
- National Flood Insurance Program (NFIP)
- Public hazard notification
- Defensible space brochures

Emergency Service Protection

- Critical facilities protection
- Critical infrastructure protection
- Emergency training for town officials
- Ongoing training for first responders

Property Protection

- Current use or other conservation measures
- Transfer of development rights
- Firewise® landscaping
- Water drafting facilities
- High-risk notification for homeowners
- Structure elevation
- Real estate disclosures
- Floodproofing
- Building codes
- Development regulations

Natural Resource Protection

- Best management practices within the forest
- Forest and vegetation management
- Forestry and landscape management
- Development regulations for wetlands
- Watershed management
- Erosion control
- Soil stabilization
- Open space preservation initiatives

Structural Projects

- Structure acquisition and demolition
- Structure acquisition and relocation
- Bridge replacement
- Dam removal
- Culvert up-size or realignment

B. POTENTIAL MITIGATION STRATEGIES BY HAZARD

To further promote the concept of mitigation, the team was provided with a handout developed by Mapping and Planning Solutions and used to determine what additional mitigation action items might be appropriate for the town. The mitigation action items from that handout are listed below and on the following page. The planning team considered each item from this comprehensive list of possible mitigation action items to determine if any of these action items could be put in place for Milford, emphasizing new and existing buildings and infrastructure.

Strategies that may apply to more than one hazard	Type of Project
• <i>Community Outreach and Education</i>	<i>Public Awareness</i>
• <i>Changes to Zoning Regulations</i>	<i>Prevention</i>
• <i>Changes to Subdivision Regulations</i>	<i>Prevention</i>
• <i>Steep Slopes Ordinance</i>	<i>Prevention</i>
• <i>Density Controls</i>	<i>Prevention</i>
• <i>Driveway Standards</i>	<i>Prevention</i>
• <i>Emergency Website Creation</i>	<i>Public Awareness</i>
• <i>Critical Infrastructure & Key Resources</i>	<i>Emergency Service Protection</i>
• <i>Emergency Training for Town Officials</i>	<i>Emergency Service Protection</i>
• <i>High-risk Notification to Homeowners</i>	<i>Property Protection</i>
• <i>Master Plan Update or Development</i>	<i>Prevention</i>
• <i>Capital Improvement Plan</i>	<i>Prevention</i>
Flood Mitigation Ideas	Type of Project
• <i>Stormwater Management Ordinances</i>	<i>Prevention</i>
• <i>Floodplain Ordinances</i>	<i>Prevention</i>
• <i>Updated Floodplain Mapping</i>	<i>Prevention</i>
• <i>Watershed Management</i>	<i>Natural Resource Protection</i>
• <i>Drainage Easements</i>	<i>Prevention</i>
• <i>Purchase of Easements</i>	<i>Prevention</i>
• <i>Wetland Protection</i>	<i>Natural Resource Protection</i>
• <i>Structural Flood Control Measures</i>	<i>Prevention</i>
• <i>Bridge Replacement</i>	<i>Structural Project</i>
• <i>Dam Removal</i>	<i>Structural Project</i>
• <i>NFIP Compliance</i>	<i>Prevention</i>
• <i>Acquisition, Demolition & Relocation</i>	<i>Structural Project</i>
• <i>Structure Elevation</i>	<i>Structural Project</i>
• <i>Floodproofing</i>	<i>Property Protection</i>
• <i>Erosion Control</i>	<i>Natural Resource Protection</i>
• <i>Floodplain/Coastal Zone Management</i>	<i>Prevention</i>
• <i>Building Codes Adoption or Amendments</i>	<i>Prevention</i>
• <i>Culvert & Hydrant Maintenance</i>	<i>Prevention</i>
• <i>Culvert & Drainage Improvements</i>	<i>Structural Protection</i>
• <i>Transfer of Development Rights</i>	<i>Property Protection</i>

Natural Hazard Mitigation Ideas	Type of Project
Landslide & Erosion	
• Slide-Prone Area Ordinance.....	Prevention
• Drainage Control Regulations.....	Prevention
• Grading Ordinances.....	Prevention
• Hillside Development Ordinances.....	Prevention
• Open Space Initiatives.....	Prevention
• Acquisition, Demolition & Relocation.....	Structural Project
• Vegetation Placement and Management.....	Natural Resource Protection
• Soil Stabilization.....	Natural Resource Protection
Lightning & Hail	
• Building Construction.....	Property Protection
High Wind Events	
• Construction Standards and Techniques.....	Property Protection
• Safe Rooms.....	Prevention
• Manufactured Home Tie Downs.....	Property Protection
• Building Codes.....	Property Protection
Wildfire	
• Building Codes.....	Property Protection
• Defensible Space.....	Prevention
• Forest Fire Fuel Reduction.....	Prevention
• Burning Restriction.....	Property Protection
• Water Resource Plan.....	Prevention
• Firewise® Training & Brochures.....	Public Awareness
• Woods Roads Mapping.....	Prevention
Extreme Temperatures	
• Warming & Cooling Stations.....	Prevention
Severe Winter Weather	
• Snow Load Design Standards.....	Property Protection
Subsidence	
• Open Space.....	Natural Resource Protection
• Acquisition, Demolition & Relocation.....	Structural Project
Earthquake	
• Construction Standards and Techniques.....	Property Protection
• Building Codes.....	Property Protection
• Bridge Strengthening.....	Structural Project
• Infrastructure Hardening.....	Structural Project
Drought	
• Water Use Ordinances.....	Prevention

C. STAPLEE METHODOLOGY

Table 8.1, *Potential Mitigation Items & the STAPLEE*, reflects the newly identified potential hazard mitigation action items and the results of the STAPLEE evaluation, as explained below. Many of these potential mitigation action items overlap. Some areas identified as “All Hazards” would also apply indirectly to wildfire response.

Each proposed mitigation action item aims *to reduce or eliminate hazards' long-term risk to human life and property*. To determine the effectiveness of each mitigation action item in accomplishing this goal, a set of criteria that was developed by FEMA, the STAPLEE method, was applied to each proposed action item.

The STAPLEE method analyzes a project's social, technical, administrative, political, legal, economic, and environmental characteristics; public administration officials and planners commonly use it to make planning decisions. The following questions were asked about the proposed mitigation action items discussed in Table 8.1.

Social..... Is the proposed action item socially acceptable to the community? Is there an equity issue involved that would result in one segment of the community being treated unfairly?

Technical..... Will the proposed action item work? Will it create more problems than it solves?

Administrative Can the community implement the action item? Is there someone to coordinate and lead the effort?

Political Is the action item politically acceptable? Is there public support both to implement and maintain the project?

Legal..... Is the community authorized to implement the proposed action item? Is there a clear legal basis or precedent for this activity?

Economic What are the costs and benefits of this action item? Does the cost seem reasonable for the size of the problem and the potential benefits?

Environmental How will the action item impact the environment? Will it need environmental regulatory approvals?

Each proposed mitigation action item was evaluated and scored based on the above criteria. Each of the STAPLEE categories was discussed and was awarded one of the following scores:

1 - Poor 2 - Average..... 3 - Good

An evaluation chart with total scores for each new action item is shown in Table 8.1.

The “Type” of Action Item was also considered (see section A of this chapter for reference):

- **Prevention**
- **Public Education & Awareness**
- **Emergency Service Protection**
- **Property Protection**
- **Natural Resource Protection**
- **Structural Projects**

D. TEAM’S UNDERSTANDING OF HAZARD MITIGATION ACTION ITEMS

The team determined that any strategy designed to reduce personal injury or damage to property that could be done before an actual disaster would be listed as a potential mitigation action item. This decision was made even though not all projects listed in Table 8.1 and Table 9.1, *The Mitigation Action Plan*, are fundable under FEMA pre-mitigation guidelines. The team determined that this plan was primarily a management document designed to assist the Select Board and other town officials in all aspects of managing and tracking potential emergency planning action items. For instance, the team knew some action items were more appropriately identified as preparedness or readiness issues. As no other established planning mechanisms recognize some of these issues, the team did not want to “lose” any of the ideas discussed during these planning sessions and thought this method was the best way to achieve that objective.

The town understands that the action items for a town of 200 may not be the same as those for 30,000. Also, the action items for a town in the middle of predominantly hardwood forests are not the same as those for a town on the Jersey Shore. Therefore, the Town of Milford has accepted the “Mitigation Action Items” in Tables 8.1 and 9.1 as the complete list of “Mitigation Action Items” for this town and only this town. Furthermore, the Town of Milford indicates that having considered a comprehensive list of possible mitigation action items (see sections A & B of this chapter) for this plan, there are no additional “Mitigation Action Items” to add time.

TABLE 8.1: POTENTIAL MITIGATION ACTION ITEMS & THE STAPLEE

Potential mitigation action items in Table 8.1 are listed in numerical order and indicate if they were derived from prior tables in this plan, i.e., (Table 7.1). Items in green, such as (MU14) represent mitigation action items taken from Mitigation Ideas, A Resource for Reducing Risk to Natural Hazards, FEMA, January 2013; see Appendix F: *Potential Mitigation Ideas*, for more information.

Proposed Mitigation Action Items	Type of Activity	S	T	A	P	L	E	E	TTL
Action Item #1: Inspect the functionality of all hydrants and maintain and repair all hydrants and other water resources in Milford. Consider other areas with limited water resources and address these issues by installing new hydrants, fire ponds, and cisterns. (WF8) (Table 6.1)	<u>Affected Location</u> -Dry & Pressurized Hydrants -Water resources <u>Type of Activity</u> -Prevention -Emergency Service Protection -Property Protection -Natural Resource Protection	3	3	3	3	3	3	3	21
		<i>No apparent difficulty with this action item</i>							
Action Item #2: Maintain, improve, and upgrade all culvert/drainage systems and the current culvert and stormwater maintenance plan. (F5) (Tables 6.1 & 7.1)	<u>Affected Location</u> -Culverts & Ditches <u>Type of Activity</u> -Prevention -Emergency Service Protection -Property Protection -Natural Resource Protection	3	3	3	2	3	2	3	19
		Political: Some people may not want to spend taxpayer money on this project Economical: Budget constraints							

Proposed Mitigation Action Items	Type of Activity	S	T	A	P	L	E	E	TTL
<p>Action Item #3: In addition to work done by and with local utility companies, monitor and maintain brush cutting, drainage system maintenance, and tree removal as part of a tree maintenance program. Create defensible space around power lines, oil and gas lines, and other infrastructure. Reduce wildfire risk by clearing dead vegetation, cutting high grass, and reducing fuel loads in the community. (SW4, WF7, WF9 & F14) (Tables 6.1 & 7.1)</p>	<p><u>Affected Location</u> -Townwide</p> <p><u>Type of Activity</u> -Prevention -Emergency Service Protection -Property Protection -Natural Resource Protection</p>	3	3	2	2	3	3	3	19
		<p><i>Administrative: Planning Board approval for Scenic Road tree removal is needed</i> <i>Political: Some people may object to cutting damaged trees on their properties</i></p>							
<p>Action Item #4: Post important information on the town's Emergency Management webpage and notices of red flag burning days. Obtain and have available Firewise® brochures to educate homeowners on methods to reduce fire risk around their homes (WF10) and provide a link to Firewise® on the Emergency page of the town's website. Provide Firewise® brochures to those residents seeking burn permits (if not obtained online); advise residents of the importance of maintaining defensible space, the safe disposal of yard and household waste, and the removal of dead or dry leaves, needles, twigs, and combustible materials from roofs, decks, eaves, porches and yards. (WF12)</p>	<p><u>Affected Location</u> -Townwide</p> <p><u>Type of Activity</u> -Prevention -Public Education & Awareness -Emergency Service Protection -Property Protection -Natural Resource Protection</p>	3	3	3	3	3	3	3	21
		<p><i>No apparent difficulty with this action item</i></p>							
<p>Action Item #5: Advise the public about the local flood hazard, flood insurance, and flood protection measures (F10) by obtaining and keeping a supply of National Flood Insurance (NFIP) brochures in the Town Offices. Give NFIP materials to homeowners and builders when proposing new development or substantial improvements; encourage property owners to purchase flood insurance (F22), whether or not they are in the flood zone. Through public outreach, educate homeowners on the risks of building in the flood zone and measures that can be taken to reduce the chance of flooding. Add links to the NFIP, Ready.gov, and other flood mitigation information to the town's Emergency Management webpage, a possible brochure, social media platforms, and local newsletters. Work with residents to ensure they comply with the town's floodplain ordinance. (F23) (Tables 6.1 & 7.1)</p>	<p><u>Affected Location</u> -Areas prone to flooding</p> <p><u>Type of Activity</u> -Prevention -Public Education & Awareness -Property Protection</p>	3	3	3	3	3	3	3	21
		<p><i>No apparent difficulty with this action item</i></p>							
<p>Action Item #6: Provide robust information on an emergency management web page and social media platforms to educate the public on hazard mitigation and preparedness measures. Include preparedness information such as shelter locations, evacuation routes, methods of emergency alerting, and 911 compliance. Also include mitigation strategies for hazards such as drought, earthquakes, tornadoes, severe winter weather, lightning, and climate change. Provide information on infectious diseases, encourage homeowners to install carbon monoxide monitors and alarms, and monitor radon in their homes. Offer residents and business owners reminders to clear snow from roofs during high accumulation snow years. (MU14, SW7, WF11, D9, T3, EQ7, ET1, ET4, L2, HA3, WW5) (Tables 6.1 & 7.1) (Tables 6.1 & 7.1)</p>	<p><u>Affected Location</u> -Townwide</p> <p><u>Type of Activity</u> -Prevention -Public Education & Awareness -Property Protection</p>	3	3	3	3	3	3	3	21
		<p><i>No apparent difficulty with this action item</i></p>							

Proposed Mitigation Action Items	Type of Activity	S	T	A	P	L	E	E	TTL
<p>Action Item #7: Provide public outreach to Milford's citizens regarding the Public Library's availability as a "cooling or warming center" during extended high temperatures and severe winter weather. Other facilities, including the Town Hall and the High School, may also be used. (ET3 & WW6) (Table 7.1)</p>	<p>Affected Location -Library -Town Hall -High School</p> <p>Type of Activity -Prevention -Public Education & Awareness</p>	3	3	3	3	3	3	3	21
	<p>No apparent difficulty with this action item</p>								
<p>Action Item #8: Provide public outreach to encourage all residents to contact CodeRED to add cell numbers, unlisted numbers, and emails and to verify their information. Use the website, Constant Contact (Recreation Department), available social media platforms, or a sign-up at Town Meeting. (MU14) (Table 6.1)</p>	<p>Affected Location -Townwide</p> <p>Type of Activity -Prevention -Public Education & Awareness -Emergency Service Protection</p>	3	3	3	3	3	3	3	21
	<p>No apparent difficulty with this action item</p>								
<p>Action Item #9: Continue HazMat training for the members of the Milford Fire Department. (Table 6.1)</p>	<p>Affected Location -Fire Station</p> <p>Type of Activity -Prevention -Emergency Service Protection</p>	3	3	3	3	3	3	3	21
	<p>No apparent difficulty with this action item</p>								
<p>Action Item #10: The Fire Chief is to provide ongoing training, including the many aspects of emergency response for all fire responders. Souhegan Fire Mutual Aid Association and the State of New Hampshire Fire & EMS Training Facilities would be utilized. (Table 6.1)</p>	<p>Affected Location -Townwide</p> <p>Type of Activity -Prevention -Emergency Service Protection</p>	3	3	3	3	3	3	3	21
	<p>No apparent difficulty with this action item</p>								
<p>Action Item #11: The Emergency Management Director (EMD) to encourage all town officials who may be required to respond to an emergency and any new emergency responders to take NIMS 700 (S-700) & ICS (ISC100 & ISC200). Additionally, the EMD should encourage key personnel to learn about and become adept with WEB-EOC. (Table 6.1)</p>	<p>Affected Location -Townwide</p> <p>Type of Activity -Prevention -Emergency Service Protection</p>	3	3	3	3	3	3	3	21
	<p>No apparent difficulty with this action item</p>								
<p>Action Item #12: Review this plan, the Milford, NH Hazard Mitigation Plan Update 2024, whenever an annual review of the Master Plan is done, and consider incorporating a discussion on climate change, a natural hazards section, and mitigation action items from this plan. (MU6) (Table 6.1)</p>	<p>Affected Location -Townwide</p> <p>Type of Activity -Prevention</p>	3	3	3	3	3	3	3	21
	<p>No apparent difficulty with this action item</p>								
<p>Action Item #13: Review the Subdivision Regulations and this hazard mitigation plan upon its approval, and discuss possible regulatory changes that may reduce the town's risk for natural hazards. (WF2, F1 & MU6) (Table 6.1)</p>	<p>Affected Location -Townwide</p> <p>Type of Activity -Prevention -Emergency Service Protection -Property Protection -Natural Resource Protection</p>	3	3	3	3	3	3	3	21
	<p>No apparent difficulty with this action item</p>								

Proposed Mitigation Action Items	Type of Activity	S	T	A	P	L	E	E	TTL
Action Item #14: Review the Zoning Ordinance after this plan is complete to discuss regulatory changes that will reduce the chance of hazards identified in this plan. (WF2, F1 & MU6) (Table 6.1)	<u>Affected Location</u> -Townwide	3	3	3	3	3	3	3	21
	<u>Type of Activity</u> -Prevention -Emergency Service Protection -Property Protection -Natural Resource Protection	No apparent difficulty with this action item							
Action Item #15: Review the Site Plan Review Regulations after this plan is complete to discuss changes that will reduce the chance of hazards identified in this plan. (WF2, F1 & MU6)	<u>Affected Location</u> -Townwide	3	3	3	3	3	3	3	21
	<u>Type of Activity</u> -Prevention -Emergency Service Protection -Property Protection -Natural Resource Protection	No apparent difficulty with this action item							
Action Item #16: Provide an annual review of the Milford, NH Hazard Mitigation Plan Update 2024, including reviewing the status of the Action Items listed in this plan to encourage completion. Obtain approval from the local elected body annually and provide a complete plan update in five years. (MU11) (Table 6.1)	<u>Affected Location</u> -Townwide	3	3	3	3	3	3	3	21
	<u>Type of Activity</u> -Prevention	No apparent difficulty with this action item							
Action Item #17: Review the Milford Capital Improvement Program (CIP) after approval of this plan to integrate concepts, ideas, and action items from this hazard mitigation plan and to discuss possible changes that may reduce the chance for hazards (MU6) (Table 6.1)	<u>Affected Location</u> -Townwide	3	3	3	3	3	3	3	21
	<u>Type of Activity</u> -Prevention -Emergency Service Protection	No apparent difficulty with this action item							
Action Item #18: Obtain approval of this hazard mitigation plan as a Community Wildfire Protection Plan (CWPP) to enable potential assistance from the state and federal governments for future wildfire mitigation projects. (WF2)	<u>Affected Location</u> -Townwide	3	3	3	3	3	3	3	21
	<u>Type of Activity</u> -Prevention -Property Protection -Natural Resource Protection	No apparent difficulty with this action item							
Action Item #19: Update the Milford Emergency Operations Plan to coincide with the new state ESF format. Include an analysis of the impact of natural hazards on Critical Infrastructure & Key Resources that may be needed during an emergency. Like the current EOP, the new EOP will include an EOC Call Alert List, a detailed Resource Inventory List, and Player Packets. (MU6) (Table 6.1)	<u>Affected Location</u> -Townwide	3	3	3	3	3	3	3	21
	<u>Type of Activity</u> -Prevention -Emergency Service Protection	No apparent difficulty with this action item							
Action Item #20: Obtain funding and install a permanent generator at the Milford Police Station to ensure the capabilities of this important Emergency Response Facility. (MU13) (Tables 6.1 & 7.1)	<u>Affected Location</u> -Milford Police Station	3	3	3	3	3	3	3	21
	<u>Type of Activity</u> -Prevention -Emergency Service Protection	Economical: Budget constraints (need to make "match")							

Proposed Mitigation Action Items	Type of Activity	S	T	A	P	L	E	E	TTL
Action Item #21: Obtain funding and install a permanent generator at the Milford Town Hall to ensure the continuation of government during a disaster. The Town Hall is also designated as the Secondary Emergency Operations Center (EOC). (MU13) (Tables 6.1 & 7.1)	<u>Affected Location</u> -Milford Town Hall <u>Type of Activity</u> -Prevention -Emergency Service Protection	3	3	3	3	3	2	3	20
		<i>Economical:</i> Budget constraints (need to make "match")							
Action Item #22: Encourage planting trees and shrubbery as part of plans for new buildings and parking areas to reduce the effects of the urban heat island. Consider adding standards to the development regulations to reduce the impact of the urban heat island effect. (MU6) (Table 7.1)	<u>Affected Location</u> -Townwide <u>Type of Activity</u> -Prevention	3	3	3	2	3	3	3	20
		<i>Political:</i> Some developers and property owners might object because of the added cost							
Action Item #23: Improve radio capabilities, provide radios to the Department of Public Works, and work on solutions to fix the communications issues in Milford. Although a plan to improve communications was not approved in 2020, this is deferred to put communications upgrades on a future Town Warrant. (MU13) (Table 6.1)	<u>Affected Location</u> -Townwide <u>Type of Activity</u> -Prevention -Emergency Service Protection	3	3	3	1	3	2	3	18
		<i>Political:</i> Some residents will not see the need to spend money; improvement funding must be voted on at Town Meetings and receive 60% of the Meetings. Mont Vernon and Wilton may be impacted or may not want to pay for system improvements <i>Economical:</i> Budget constraints (bonded and paid for, economical for initial investment)							
Action Item #24: Obtain funding and install a permanent generator at the Milford Department of Public Works Garage to ensure the continued functionality of this important critical facility. (MU13) (Tables 6.1 & 7.1)	<u>Affected Location</u> -Milford DPW Garage <u>Type of Activity</u> -Prevention -Emergency Service Protection	3	3	3	1	3	1	3	17
		<i>Political:</i> Some people may not want to spend taxpayer money on this project <i>Economical:</i> Budget constraints							
Action Item #25: Obtain funding and install a permanent generator at the Milford High School to ensure the usage of this important critical facility as the designated Primary Shelter for the town. (MU13) (Tables 6.1 & 7.1)	<u>Affected Location</u> -Milford High School <u>Type of Activity</u> -Prevention -Emergency Service Protection	3	2	2	1	2	1	3	14
		<i>Technical:</i> Will need to decide how much of the facility is generated and the actual needs <i>Administrative:</i> Would need the cooperation of the school <i>Political:</i> Some people may object to the cost of a new generator. They may expect the school to fit the cost; also, the school may have higher priorities; also, talking about a new high school in 5-7 years <i>Legal:</i> Would need the cooperation of the school <i>Economical:</i> Large budget constraint							
Action Item #26: Work with Eversource, the School Board, and other entities to establish a secondary egress from the Heron Pond School. (WF3)	<u>Affected Location</u> -Heron Pond School <u>Type of Activity</u> -Prevention -Emergency Service Protection -Structural Project	3	3	1	3	2	1	1	14
		<i>Administrative:</i> Cooperation from several entities will be needed <i>Legal:</i> Legal fees and easements will need to be established with Eversource and one property owner <i>Political:</i> Need homeowner issues resolved, and others may not see the need to do this <i>Economical:</i> Budget constraints <i>Environmental:</i> Possible pushback from environmental group(s)							

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Chapter 9: Implementation Schedule for Prioritized Action Items

A. PRIORITY METHODOLOGY

After reviewing the finalized STAPLEE numerical ratings, the team developed *Table 9.1, The Mitigation Action Plan*. To do this, team members created four categories in which to place the potential mitigation action items.

CATEGORY A

Category A includes those items that are being done and will continue to be done in the future.

CATEGORY B

Category B includes those items under the direct control of town officials within the financial capability of the town using only town funding, those already being done or planned, and those that could generally be completed within one year.

CATEGORY C

Category C includes those items that the town does not have sole authority to act upon, those for which funding might be beyond the town's capability, and those that would generally take between 13-36 months to complete.

CATEGORY D

Category D includes those items that would take a significant funding effort, those that the town has little control over the final decision, and those that would take more than 37 months to complete.

Each potential mitigation action item was placed in one of these four categories. Then, those action items were prioritized within each category according to cost-benefit, time frame, and capability. Actual cost estimates were unavailable during the planning process. However, the team could agree on the cost-benefit for each proposed action item using the STAPLEE process and a Very Low Cost to High Cost estimate (see the following page).

The team also considered the following criteria while ranking and prioritizing each action item:

- *Does the action reduce damage?*
- *Does the action contribute to community objectives?*
- *Does the action meet existing regulations?*
- *Does the action protect historic structures?*
- *Does the action keep in mind future development?*
- *Can the action be implemented quickly?*

The prioritization exercise helped the committee evaluate the new hazard mitigation action items they had brainstormed throughout the hazard mitigation planning process. While all actions would improve the town's hazard and wildfire responsiveness capability, funding availability will be a driving factor in determining what and when new mitigation action items are implemented.

B. WHO, WHEN, HOW?

Once this was completed, the team developed an action plan to outline responsibilities, time frames, and methods for implementing each action item. The following questions were asked to develop a schedule for the identified mitigation action items.

WHO? Who will lead the implementation efforts? Who will put together funding requests and applications?

WHEN? When will these actions be implemented, and in what order?

HOW? How will the community fund these projects? How will the community implement these projects? What resources will be needed to implement these projects?

In addition to the prioritized mitigation action items, *Table 9.1, The Mitigation Action Plan*, includes the responsible party (WHO), how the project will be supported (HOW), and what the time frame is for implementation of the project (WHEN).

Once the plan is approved, the community will begin working on the action items listed in *Table 9.1, The Mitigation Action Plan* (see below and on the following pages). An estimation of completion for each action item is noted in the “Time Frame” column of Table 9.1. Some projects, including most training and education of residents on emergency and evacuation procedures, could be tied into the emergency operations plan and implemented through that planning effort.

TABLE 9.1: THE MITIGATION ACTION PLAN

Table 9.1, *The Mitigation Action Plan*, beginning on the following page, includes problem statements expressed by the planning team. These action items are listed by priority and indicate if they were derived from other tables in this plan.

Key to the Estimated Cost	
Very Low Cost	\$0-\$1,000 or staff time only
Low Cost	\$1,000-\$20,000
Medium Cost	\$20,000-\$100,000
High Cost	\$100,000 or more

Key to the Time Frame	
Life of Plan	Starting on Plan adoption 2024-2029 (0-60 months)
Short Term	1 year 2024-2025 (0-12 months)
Medium Term	2 years starting in 2025 – 2027 (12 – 36 months)
Long-term	3 years starting in 2026 – 2029 (36 -60 months)

In the following table, “Final R/P” means final rate and priority. Items in green, such as (MU14), represent mitigation action items taken from Mitigation Ideas, A Resource for Reducing Risk to Natural Hazards, FEMA, January 2013; see *Appendix F: Potential Mitigation Ideas* for more information.

Mitigation Action Items are listed in order of priority.

Final R/P	Problem Statement New Mitigation Action Item	Type of Hazard	Managing Department	Funding or Support	Time Frame	Est. Cost
	<p>A summary of the 421 culverts in Milford in October 2020 found that 93 were rated “fair” and 21 were rated “poor.” These culverts are shown in Appendix G in this plan, as it was felt to be unnecessary to separate them for this table. The ongoing mitigation Action Item is to repair, replace, upgrade, and maintain Milford’s drainage and culvert systems over the life of this plan to improve stormwater flow townwide.</p>	Inland Flooding & Aging Infrastructure	Department of Public Works	Local & Grants	Life of the Plan	High Cost
0-1	<p><i>Problem Statement: The Fire Department tests and maintains multiple dry hydrants, and the water precincts (2) test and maintain the pressurized hydrants. Hydrant maintenance must continue to ensure water availability while fighting wildfires or conflagrations.</i></p> <p>Action Item #1: Inspect the functionality of all hydrants and maintain and repair all hydrants and other water resources in Milford. Consider other areas with limited water resources and address these issues by installing new hydrants, fire ponds, or cisterns. (WF8) (Table 6.1)</p>	Wildfire & Conflagration	Fire Department & Water Precincts	Local	Life of the Plan	Very Low Cost
0-2	<p><i>Problem Statement: The Milford Highway Department works to clean and repair drainage basins and culverts. A written stormwater maintenance plan has been developed and will need to be maintained and updated over time.</i></p> <p>Action Item #2: Maintain, improve, and upgrade all culvert/drainage systems and the current culvert and stormwater maintenance plan. (F5) (Tables 6.1 & 7.1)</p>	Inland Flooding	DPW	Local	Life of the Plan	Medium Cost

Final R/P	Problem Statement New Mitigation Action Item	Type of Hazard	Managing Department	Funding or Support	Time Frame	Est. Cost
0-3	<p>Problem Statement: As trees become damaged and threaten power lines and structures on town roads, the Department of Public Works removes them. NH DOT does this for state roads along with Eversource as needed. There is a need to continue to work to keep this hazard to a minimum.</p> <p>Action Item #3: In addition to work done by and with local utility companies, monitor and maintain brush cutting, drainage system maintenance, and tree removal as part of a tree maintenance program. Create defensible space around power lines, oil and gas lines, and other infrastructure. Reduce wildfire risk by clearing dead vegetation and cutting the community's high grass and other fuel loads. (SW4, WF7, WF9 & F14) (Tables 6.1 & 7.1)</p>	High Wind Events, Wildfire, Severe Winter Weather-Ice Storms & Inland Flooding	DPW	Local	Life of the Plan	Very Low Cost
0-4	<p>Problem Statement: Although the town does a great job using its Emergency Management webpage to promote preparedness, residents may not know the steps they can take to reduce the fire risk at their homes.</p> <p>Action Item #4: Post important information on the town's Emergency Management webpage and notices of red flag burning days. Obtain and have available Firewise® brochures to educate homeowners on methods to reduce fire risk around their homes (WF10) and provide a link to Firewise® on the Emergency page of the town's website. Provide Firewise® brochures to residents seeking burn permits (if not obtained online); advise residents of the importance of maintaining defensible space, the safe disposal of yard and household waste, and the removal of dead or dry leaves, needles, twigs, and combustible materials from roofs, decks, eaves, porches and yards. (WF12)</p>	Wildfire & Conflagration	Town Administrator & Fire Department	Local	Life of the Plan	Very Low Cost

Final R/P	Problem Statement New Mitigation Action Item	Type of Hazard	Managing Department	Funding or Support	Time Frame	Est. Cost
0-5	<p>Problem Statement: Residents and builders may not be aware of flood regulations and the availability of flood insurance through the National Flood Insurance Program (NFIP). They may also not be aware of the risk of building in the floodplain and the steps they can take to reduce flooding.</p> <p>Action Item #5: Advise the public about the local flood hazard, flood insurance, and flood protection measures (F10) by obtaining and keeping a supply of National Flood Insurance (NFIP) brochures in the Town Offices. Give NFIP materials to homeowners and builders when proposing new development or substantial improvements; encourage property owners to purchase flood insurance (F22), whether or not they are in the flood zone. Through public outreach, educate homeowners on the risks of building in the flood zone and measures that can be taken to reduce the change of flooding. Add links to the NFIP, Ready.gov, and other flood mitigation information to the town's Emergency Management webpage, a possible brochure, social media platforms, and local newsletters. Work with residents to ensure they comply with the town's floodplain ordinance. (F23) (Tables 6.1 & 7.1)</p>	Inland Flooding	Community Development	Local	Life of the Plan	Very Low Cost
0-6	<p>Problem Statement: Although the town has established an Emergency Management page to provide public education on emergency preparedness and mitigation, these efforts should be more robust and continue into the future.</p> <p>Action Item #6: Provide robust information on an Emergency Management web page and social media platforms to educate the public on hazard mitigation and preparedness measures. Include preparedness information such as shelter locations, evacuation routes, methods of emergency alerting, and 911 compliance. Also include mitigation strategies for natural hazards such as drought, earthquakes, tornadoes, severe winter weather, lightning, and climate change. Provide information on infectious diseases, encourage homeowners to install carbon monoxide monitors and alarms, and monitor radon in their homes. Offer residents and business owners reminders to clear snow from roofs during high accumulation snow years. (MU14, SW7, WF11, D9, T3, EQ7, ET1, ET4, L2, HA3, WW5) (Tables 6.1 & 7.1)</p>	All Hazards including Severe Wind, Drought, Earthquake, Extreme Temperatures, Hail, Lightning, Severe Winter Weather, Tornado, Wildfire & Infectious Disease	Emergency Management Director & other Department Heads	Local	Life of the Plan	Very Low Cost

Final R/P	Problem Statement New Mitigation Action Item	Type of Hazard	Managing Department	Funding or Support	Time Frame	Est. Cost
0-7	<p>Problem Statement: Public outreach has been done to advise the citizens of Milford of the possibility of using the Public Library as a cooling shelter in times of extended high temperatures and as a warming center in times of extended cold temperatures. Additional public outreach needs to be done.</p> <p>Action Item #7: Provide public outreach to Milford's citizens regarding the Public Library's availability as a "cooling or warming center" during extended high temperatures and severe winter weather. Other facilities, including the Town Hall and the High School, may also be used. (ET3 & WW6) (Table 7.1)</p>	Extreme Temperatures & Severe Winter Weather	Town Administrator	Local	Life of the Plan	Very Low Cost
0-8	<p>Problem Statement: CodeRED is an excellent warning system but only automatically stores hardline resident phone numbers. Residents may not be aware that they can add cell numbers, emails, and unlisted numbers.</p> <p>Action Item #8: Provide public outreach to encourage all residents to contact CodeRED to add cell numbers, unlisted numbers, and emails and verify their information. Use the website, Constant Contact (Recreation Department), available social media platforms, or a sign-up at Town Meeting. (MU14) (Table 6.1)</p>	All Hazards	Fire Department	Local	Life of the Plan	Very Low Cost
0-9	<p>Problem Statement: Although Milford does not have a HazMat Team, firefighters are trained in the basic response to HazMat incidents and are adept at maintaining perimeters until specialized teams arrive. The Milford EMD or the Fire Officer in charge would initially call dispatch, who would then call the Souhegan HazMat Team or the State Fire Marshal's Office (FMO) to request an available HazMat Response Team. HazMat training needs to continue.</p> <p>Action Item #9: Continue HazMat training for the members of the Milford Fire Department. (Table 6.1)</p>	Hazardous Materials	Fire Department	Local	Life of the Plan	Very Low Cost

Final R/P	Problem Statement New Mitigation Action Item	Type of Hazard	Managing Department	Funding or Support	Time Frame	Est. Cost
0-10	<p>Problem Statement: <i>Training of all fire responders is coordinated by the Fire Chief and includes the many aspects of emergency response. This training needs to continue.</i></p> <p>Action Item #10: The Fire Chief is to provide ongoing training for all fire responders, including the many aspects of emergency response. Souhegan Fire Mutual Aid Association and the State of New Hampshire Fire & EMS Training Facilities would be utilized. (Table 6.1)</p>	Wildfires & Conflagration	Fire Department	Local	Life of the Plan	Very Low Cost
0-11	<p>Problem Statement: <i>Although first responders, including firefighters, have received NIMS & ICS training, not all of Milford's town officials have.</i></p> <p>Action Item #11: The Emergency Management Director (EMD) to encourage all town officials who may be required to respond to an emergency and any new emergency responders to take NIMS 700 (S-700) & ICS (ISC100 & ISC200). Additionally, the EMD should encourage key personnel to learn about and become adept with WEB-EOC. (Table 6.1)</p>	All Hazards	Emergency Management Director	Local	Life of the Plan	Very Low Cost
0-12	<p>Problem Statement: <i>The Milford Master Plan (2016), which is reviewed annually and will need an update in 2026 (based on the state's 10-year recommendation), does not have a Natural Hazards section.</i></p> <p>Action Item #12: Review this plan, the Milford, NH Hazard Mitigation Plan Update 2024, whenever an annual review of the Master Plan is done, and consider incorporating a discussion on climate change, a natural hazards section, and mitigation action items from this plan. (MU6) (Table 6.1)</p>	All Hazards	Planning Board	Local	Life of the Plan	Very Low Cost
1-1	<p>Problem Statement: <i>Although Milford's Subdivision Regulations are in good shape, they should be reviewed upon completing this hazard mitigation plan.</i></p> <p>Action Item #13: Review the Subdivision Regulations and this hazard mitigation plan upon its approval, and discuss possible regulatory changes that may reduce the town's risk for natural hazards. (WF2, F1 & MU6) (Table 6.1)</p>	Wildfire & Inland Flooding	Planning Board	Local	Short Term	Very Low Cost

Final R/P	Problem Statement New Mitigation Action Item	Type of Hazard	Managing Department	Funding or Support	Time Frame	Est. Cost
1-2	<p>Problem Statement: <i>The Milford Zoning Ordinance, most recently updated in 2020, is in good shape. The Zoning Ordinance should be reviewed when this plan is completed.</i></p> <p>Action Item #14: Review the Zoning Ordinance after this plan is complete to discuss regulatory changes that will reduce the chance of hazards identified in this plan. (WF2, F1 & MU6) (Table 6.1)</p>	All Hazards	Planning Board	Local	Short Term	Very Low Cost
1-3	<p>Problem Statement: <i>The Milford Site Plan Review Regulations are in good shape. The Site Plan Review Regulations should be reviewed when this plan is completed.</i></p> <p>Action Item #15: Review the Site Plan Review Regulations after this plan is complete to discuss changes that will reduce the chance of hazards identified in this plan. (WF2, F1 & MU6)</p>	All Hazards	Planning Board	Local	Short Term	Very Low Cost
1-4	<p>Problem Statement: <i>This Plan, the Milford, NH Hazard Mitigation Plan Update 2024, will require an annual review and a complete update in five years.</i></p> <p>Action Item #16: Provide an annual review of the Milford, NH Hazard Mitigation Plan Update 2024, including reviewing the status of the Action Items listed in this plan to encourage completion. Obtain approval from the local elected body annually and provide a complete plan update in five years. (MU11) (Table 6.1)</p>	All Hazards	Emergency Management Director	Local	Short Term & Long Term	Very Low Cost
1-5	<p>Problem Statement: <i>A Milford Capital Improvement Program (CIP) review is part of the annual budget review process. The CIP should be reviewed to ensure that the program's goals will be achieved to assist the town's departments with planned purchases of equipment and supplies.</i></p> <p>Action Item #17: Review the Milford Capital Improvement Program (CIP) after approval of this plan to integrate concepts, ideas, and action items from this hazard mitigation plan and to discuss possible changes that may reduce the chance for hazards (MU6) (Table 6.1)</p>	All Hazards	Planning Board & Community Development	Local	Short Term	Very Low Cost

Final R/P	Problem Statement New Mitigation Action Item	Type of Hazard	Managing Department	Funding or Support	Time Frame	Est. Cost
1-6	<p><i>Problem Statement: The Milford, NH Hazard Mitigation Plan Update, 2024, will need to be approved as a Community Wildfire Protection Plan (CWPP).</i></p> <p>Action Item #18: Obtain approval of this hazard mitigation plan as a Community Wildfire Protection Plan (CWPP) to enable potential assistance from the state and federal governments for future wildfire mitigation projects. (WF2)</p>	Wildfire & Conflagration	Mapping & Planning Solutions	Local	Short Term	Very Low Cost
2-1	<p><i>Problem Statement: The Milford Emergency Operations Plan (EOP) was last updated in 2017 and will need to be updated again in 2024.</i></p> <p>Action Item #19: Update the Milford Emergency Operations Plan to coincide with the new state ESF format. Include an analysis of the impact of natural hazards on Critical Infrastructure & Key Resources that may be needed during an emergency. Like the current EOP, the new EOP will include an EOC Call Alert List, a detailed Resource Inventory List, and Player Packets. (MU6) (Table 6.1)</p>	All Hazards	Emergency Management Director	Local & Grants	Medium Term	Low Cost
2-2	<p><i>Problem Statement: Although Milford has emergency backup power at many of the town's Critical Infrastructure & Key Resources (CIKR), some CIKRs do not have permanent backup emergency power, including the Police Station (which currently has an undersized generator).</i></p> <p>Action Item #20: Obtain funding and install a permanent generator at the Milford Police Station to ensure the capabilities of this important Emergency Response Facility. (MU13) (Tables 6.1 & 7.1)</p>	All Hazards	Emergency Management Director & Select Board	Local & Grants	Medium Term	Medium Cost

Final R/P	Problem Statement New Mitigation Action Item	Type of Hazard	Managing Department	Funding or Support	Time Frame	Est. Cost
2-3	<p><i>Problem Statement: Although Milford has emergency backup power at many of the town's Critical Infrastructure & Key Resources (CIKR), some CIKRs do not have permanent backup emergency power, including the Town Office.</i></p> <p>Action Item #21: Obtain funding and install a permanent generator at the Milford Town Hall to ensure the continuation of government during a disaster. The Town Hall is also designated as the Secondary Emergency Operations Center (EOC). (MU13) (Tables 6.1 & 7.1)</p>	All Hazards	Emergency Management Director & Select Board	Local & Grants	Medium Term	Medium Cost
2-4	<p><i>Problem Statement: Although the urban heat island effect has been addressed indirectly, the town has not directly planted trees around buildings and parking lots to minimize this effect.</i></p> <p>Action Item #22: Encourage planting trees and shrubbery while developing new buildings and parking areas to reduce the effects of the urban heat island. Consider adding standards to the development regulations to reduce the impact of the urban heat island effect. (MU6) (Table 7.1)</p>	Extreme Temperatures	Planning Board	Local	Medium Term	Very Low Cost
2-5	<p><i>Problem Statement: Communications systems and radios are out-of-date with state and federal requirements and do not work as intended. There are also areas of town that have dead spots.</i></p> <p>Action Item #23: Improve radio capabilities, provide radios to the Department of Public Works, and work on solutions to fix the communications issues in Milford. Although a plan to improve communications was not approved on the 2020 Town Warrant, this is deferred to put communications upgrades on a future warrant. (MU13) (Table 6.1)</p>	All Hazards	Town Administrator	Local & Grants	Medium Term	High Cost

Final R/P	Problem Statement New Mitigation Action Item	Type of Hazard	Managing Department	Funding or Support	Time Frame	Est. Cost
2-6	<p>Problem Statement: Milford has emergency backup power at many Critical Infrastructure & Key Resources (CIKR). Some CIKRs do not have permanent backup emergency power, including the DPW Garage (which currently has an undersized old generator that is not wired).</p> <p>Action Item #24: Obtain funding and install a permanent generator at the Milford Department of Public Works Garage to ensure the continued functionality of this important critical facility. (MU13) (Tables 6.1 & 7.1)</p>	All Hazards	Emergency Management Director & Select Board	Local & Grants	Medium Term	Medium Cost
2-7	<p>Problem Statement: Although Milford has emergency backup power at many of the town's Critical Infrastructure & Key Resources (CIKR), some CIKRs do not have permanent backup emergency power, including the Milford High School, the designated Primary Shelter.</p> <p>Action Item #25: Obtain funding and install a permanent generator at the Milford High School to ensure the usage of this important critical facility as the designated Primary Shelter for the town. (MU13) (Tables 6.1 & 7.1)</p>	All Hazards	SAU #40, School Board, Emergency Management Director & Select Board	Local & Grants	Medium Term	High Cost
3-1	<p>Problem Statement: Although Eversource, the School Board, and the Fire Department are working on this issue, the Heron Pond School does not have secondary egress.</p> <p>Action Item #26: Work with Eversource, the School Board, and other entities to establish a secondary egress from the Heron Pond School. (WF3)</p>	All Hazards & Wildfire	Emergency Management, School Board & Planning Board	Local	Long Term	Medium Cost

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Chapter 10: Adopting, Monitoring, Evaluating, and Updating the Plan

A. HAZARD MITIGATION PLAN MONITORING, EVALUATION, AND UPDATES

The Town's Emergency Management Director will call meetings of all responsible town parties to review plan progress annually on the anniversary of plan adoption and, as needed, based on the occurrence of hazard events and report outcomes to the Select Board. The public will be notified of these meetings by posting the agenda at the Town Hall. Responsible parties identified for mitigation actions will be asked to submit their reports before the meeting. Meetings will entail the following actions:

- Review previous hazard events to discuss and evaluate major issues, the effectiveness of current mitigation, and possible mitigation for future events.
- Assess how the mitigation strategies of the Plan can be integrated with other Town plans and operational procedures.
- Review and evaluate progress toward implementing the current mitigation plan based on reports from responsible parties.
- Amend the current Plan to improve mitigation practices.
- Evaluate and assess the Plan's effectiveness in achieving its goals, stated purpose, and priorities.

The following questions will serve as the criteria that are used to evaluate and update the Plan:

Plan Mission and Goal

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

Hazard Identification and Risk Assessment

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

Existing Mitigation Strategies

- Are the current strategies effectively mitigating the effect of any recent hazard events?

- Has there been any damage to property since the Plan was last reviewed?
- How could the existing mitigation strategies be improved to reduce the impact of recent occurrences of hazards?

Proposed Mitigation Strategies

- What progress has been accomplished for the previously identified proposed mitigation strategies?
- How have any completed mitigation strategies reduced the Town’s vulnerability and impact from hazards since the strategy was completed? If not, and if they have been tested, what changes are needed to make them more effective?
- Should the criteria for prioritizing the proposed strategies be altered in any way?
- Should the priority given to individual mitigation strategies be changed based on any recent changes to financial and staffing resources or recent hazard events?

Review of the Plan and Integration with Other Planning Documents

- Is the current process for reviewing the Hazard Mitigation Plan effective?
- How could it be improved?
- Are there any town plans in the process of being updated that should have the content of this Hazard Mitigation Plan incorporated into them or integrated with other town planning tools and operational procedures, including the Zoning Regulations, the Subdivision Regulations, the Master Plan, and the Capital Improvement Plan?

Following these discussions, it is anticipated that the Planning Team may decide to reassign the roles and responsibilities for implementing mitigation strategies to different town departments or revise the goals and objectives contained in the Plan.

B. INTEGRATION WITH OTHER PLANS

This plan will only enhance mitigation if balanced with all other town plans. Milford completed its last hazard mitigation plan in 2015 and has completed many projects from that plan. Examples of these can be found in Table 7.1 and include providing public education for all types of hazards, mitigating repetitive loss structures, developing a functional needs list, and developing a written stormwater maintenance plan and culvert inventory. The town was able to integrate these actions into other town activities, budgets, plans, and mechanisms.

The town will incorporate elements from this plan into the following documents:

MILFORD MASTER PLAN

Traditionally, Master Plans are updated every 5 to 10 years and detail the use of capital reserves funds and capital improvements. A complete update of the Milford Master Plan was completed in 2016 and is due for a recommended update in 2026. Future updates to the Master Plan may include a natural hazards section and a discussion about climate change; updates will also integrate concepts, ideas, and action items from this hazard mitigation plan. **(Action Item #12)**

MILFORD EMERGENCY OPERATIONS PLAN 2017 (EOP)

The EOP is designed to allow the town to respond more effectively to disasters and mitigate the risk to people and property. EOPs are generally reviewed after each hazardous event and updated on a five-year basis. The last Milford EOP was completed in 2017. An update for the Emergency Operations Plan is expected to be completed in 2023. The new EOP will include elements from this hazard mitigation plan. **(Action Items #19)**

TOWN BUDGET, CAPITAL IMPROVEMENT PLAN & CAPITAL RESERVE FUNDS

The Town of Milford maintains a Capital Improvement Plan (CIP) and Capital Reserve Funds (CRF) for major expenditures. Capital Reserve Funds are adjusted annually with the Select Board and the town’s department heads at budget time. The budget is then voted on at the annual Town Meeting. During the annual budget planning process, specific mitigation actions identified in this plan that require town fiscal support will be reviewed for incorporation into the budget. **Refer to action items requiring local money, match money, or address the CIP and CRF (multiple action items).**

THE MILFORD ORDINANCES & SUBDIVISION REGULATIONS

As time goes by and the town's needs change, the existing planning mechanisms will be reviewed and updated. The Planning Board will review this plan and incorporate any changes that help mitigate the community's susceptibility and its citizens to the dangers of natural, technical, or human-caused disasters. This integration can be seen in this plan’s mitigation action items. **(Action Items #12 - #17)**

The local governments will modify other plans and actions to incorporate hazard or wildfire issues. The town will note when this has been done and include it as part of its annual plan review. The Select Board ensures this process will be followed in the future.

C. PLAN APPROVAL & ADOPTION

The Emergency Management Director will update the Plan every five years and incorporate the results of the Town’s plan monitoring and evaluation procedures. The next anticipated annual update will begin upon the anniversary of the Plan’s approval. The next full update of the Plan is scheduled to begin before the fifth anniversary of approval. Plan updates may begin earlier following a significant natural hazard event within the Town and region, such as a federally declared disaster.

The public meetings of the Planning Team shall be publicized through legal notices in local newspapers, posted fliers, and on the town website. Written and email comments shall be directed to the EMD. The updated Plan will incorporate input from the public, other municipalities, and government agencies. The Select Board is responsible

for approving the Plan submission to FEMA and for adopting the Plan. The update will follow a similar planning process and outline as the current planning process, making deviations when needed. The update will be expanded to better address natural hazards, development, climate change, vulnerable populations, regional impacts, and other pertinent issues.

This plan was completed in a series of open meetings beginning on March 17, 2020. The plan was presented to the town for review, submitted to HSEM/FEMA for APA, Approved Pending Adoption, formally adopted by the Select Board, and resubmitted to HSEM/FEMA for Final Approval. Once Final Approval from HSEM was met, copies of the plan were distributed to the town, HESM, FEMA, DNCR, and the USDA-FS; the plan was then distributed as these entities saw fit. Copies of the plan remain on file at Mapping and Planning Solutions (MAPS) in digital and paper formats.

Chapter 11: Signed Community Documents and Approval Letters

A. PLANNING SCOPE OF WORK & AGREEMENT

PLANNING SCOPE OF WORK & AGREEMENT



HAZARD MITIGATION PLAN UPDATE

PARTIES TO THE AGREEMENT

Mapping and Planning Solutions
Town of Milford, NH

Current Plan Expiration: 6/8/2020
PDM18 Grant Expiration: 4/1/2022

This agreement between the Town of Milford (the town) or its official designee and Mapping and Planning Solutions (MAPS) outlines the town's desire to engage the services of MAPS to assist in planning and technical services in order to produce the Milford Hazard Mitigation Plan Update (the plan).

Agreement

This agreement outlines the responsibilities that will ensure that the plan is developed in a manner that involves town members and local, federal, and state emergency responders and organizations. The agreement identifies the work to be done by detailing the specific tasks, schedules, and finished products that are the result of the planning process.

The goal of this agreement is that the plan and planning process be consistent with town policies and that it accurately reflects the values and individuality of the town. This is accomplished by forming a working relationship between the town's citizens, the planning team, and MAPS.

The plan created as a result of this agreement will be presented to the town for adoption once conditional approval (also known as Approved Pending Adoption or APA) is received from Homeland Security & Emergency Management (HSEM). When adopted, the plan provides guidance to the town, commissions, and departments; adopted plans serve as a guide and do not include any financial commitments by the town. All adopted plans should address mitigation strategies for reducing the risk of natural, technological, and human-caused disasters on life and property. They should be written so they may be integrated within other town planning initiatives.

Scope of Work

MAPS - Responsibilities include, but are not limited to, the following:

- MAPS will collect data that is necessary to complete the plan and meet the requirements of the FEMA Plan Review Tool by working with the planning team (the team) and taking public input from community members.
- With the assistance of the team, MAPS will coordinate and facilitate meetings and provide any materials, handouts, and maps necessary to provide a full understanding of each step in the planning process.
- MAPS will assist the team in the development of goals, objectives, and implementation strategies and clearly define the processes needed for future plan monitoring, educating the public, and integrating the plan with other town plans and activities.
- MAPS will coordinate and collaborate with other federal, state, and local agencies throughout the process.

- MAPS will explain and delineate the town's Wildland Urban Interface (WUI) and working with the team, will establish a list of potential hazards and analyze the risk severity of each.
- MAPS will author, edit and prepare the plan for review by the team prior to submitting the plan to HSEM for APA (Approved Pending Approval). Upon receipt of the APA by HSEM, MAPS will assist the planning team as needed and will continue to work with the town until final approval and distribution of the plan is complete, unless extraordinary circumstances prevail.
- MAPS shall provide, at its office, all supplies and space necessary to complete the Milford Hazard Mitigation Plan.
- Once the final documents are received, the plan will be printed and distributed by MAPS. The final documents include the HSEM formal approval email, the FEMA formal letter of approval, and the approved Community Wildfire Protection Plan (CWPP) documents. MAPS will provide the town with two copies of the plan containing all signed documents and approvals, along with CDs containing these same documents in digital form for distribution by the town as it sees fit. Additional CDs may be requested at no additional cost. CD copies of the plan will be distributed by MAPS to collaborating agencies, including, but not limited to, HSEM, FEMA, the Department of Natural and Cultural Resources (DNCR), and the US Forest Service.
- MAPS will provide all "Quarterly Reports" that are required by HSEM for the duration of this project. These quarterly reports will be done online, and a copy of the report will be forwarded to the primary contact for Milford.
- MAPS will provide plan maintenance reminders on an annual basis leading up to the next five-year plan update at no cost to the town.
- Understanding that emergencies can and do happen, MAPS will make every effort to proceed with meetings. However, the town shall ensure that attendance at any given meeting is adequate to proceed with the meeting. MAPS reserves the right to invoice the town for travel, meal expenses, and staff costs that are incurred when meeting attendance is inadequate.

The Town - Responsibilities include but are not limited to the following:

- The town shall ensure that the planning team includes members who are able to support the planning process by identifying available town resources including people who will have access to and can provide pertinent data. The planning team should include, but not be limited to, such town members as the local Emergency Management Director, the Fire, Ambulance, and Police Chiefs, members of the Selectboard and the Planning Board, the Public Works Director or Road Agent, representatives from relevant federal and state organizations, other local officials, property owners, and relevant businesses or organizations.
- The town shall determine a lead contact to work with MAPS. This contact shall assist with recruiting participants for planning meetings, including the development of mailing lists when and if necessary, distribution of flyers, and placement of meeting announcements. In addition, this contact shall assist MAPS with organizing public meetings to develop the plan and offer assistance to MAPS in developing the work program which will produce the plan.
- The town shall gain the support of stakeholders for the recommendations found within the plan.
- The town shall provide public access for all meetings and provide public notice at the start of the planning process and at the time of adoption, as required by FEMA.
- The proposed plan shall be submitted to the Selectboard for consideration and adoption.

- After adoption and final approvals are received, the town will:
 - *Distribute copies of the plan as it sees fit throughout the local community.*
 - *Develop a team to monitor and work toward plan implementation.*
 - *Publicize the plan to the community and ensure citizen awareness.*
 - *Urge the Planning Board to incorporate priority projects into the town’s Capital Improvement plan (if available).*
 - *Integrate mitigation strategies and priorities from the plan into other town planning documents.*

Terms

- **Fees & Payment Schedule:** The contract price is limited to \$9,999.75; an invoice will be sent to the town for each payment as outlined below.

▪ 1. Initial payment upon signing of this contract and receipt of first invoice	\$5,400.00
▪ 2. Second payment upon plan submittal to HSEM for APA	\$4,400.00
▪ 3. Final payment upon project completion and receipt of final plan copy	<u>\$199.75</u>
Total Fees.....	\$9,999.75

- **Payment Procedures:** The payment procedure is as follows:
 - MAPS will invoice the town
 - The town will pay MAPS
 - The town will forward the MAPS invoice along with an invoice from the town on letterhead to HSEM
 - HSEM will reimburse the town for the monies paid to MAPS

All payments to MAPS are fully reimbursable to the town by Homeland Security & Emergency Management.

- **Required Matching Funds:** The total cost for this project under PDM18 is \$13,333.00 with a federal share of \$9,999.75 and a match amount of \$3,333.25 (75%/25% split). Matching funds are the responsibility of the Town of Milford, not MAPS. The town will be responsible for providing and documenting any and all resources to be used to meet the FEMA-required match. Mapping and Planning Solutions will however assist the town with attendance tracking by asking meeting attendees to “sign in” at all meetings and to “log” any time spent outside of the meetings working on this project. MAPS will provide the town with final attendance records in spreadsheet form at project’s end for the town to use in its match fulfillment.
- **Project Period:** This project shall begin upon signing this agreement by both parties and continue through a date yet to be determined or whenever the planning process is complete. The project period may be extended by mutual written agreement between the town, MAPS, and Homeland Security if required. The actual project end date is dependent upon timely adoptions and approvals which may be outside of the control of MAPS and the town. It is anticipated that six or seven two-hour meetings will be required to gather the necessary information to create the updated plan.

The grant provided for this project is funded through PDM18; per the grant agreement between the town and HSEM, all work must be completed by April 1, 2022. It is expected that this project will be completed long before the grant expiration date of April 1, 2022.

- **Ownership of Material:** All reports, documents, and other materials produced during the project period shall be owned by the town; each party may keep file copies of any generated work. MAPS shall have the right to use work products collected during the planning process; however, MAPS shall not use any data in such a way as to reveal personal or public information about individuals or groups which could reasonably be considered confidential.

- **Termination:** This agreement may be terminated if both parties agree in writing. In the event of termination, MAPS shall forward all information prepared to date to the town. MAPS shall be entitled to recover its costs for any work that was completed.
- **Limit of Liability:** MAPS agrees to perform all work in a diligent and efficient manner according to the terms of this agreement. MAPS' responsibilities under this agreement depend upon the cooperation of the Town of Milford. MAPS and its employees, if any, shall not be liable for opinions rendered, advice, or errors resulting from the quality of data that is supplied. Adoption of the plan by the town and final approval of the plan by HSEM and FEMA relieve MAPS of content liability. Mapping and Planning Solutions carries annual general liability insurance and workmen's comp insurance.
- **Amendments:** Changes, alterations, or additions to this agreement may be made if agreed to in writing between both the Town of Milford and Mapping and Planning Solutions.
- **About Mapping and Planning Solutions:** Mapping and Planning Solutions provides hazard mitigation and emergency operations planning throughout New Hampshire. Mapping and Planning Solutions has developed more than 65 Hazard Mitigation Plans, more than 65 Emergency Operations Plans and has completed the following courses in Emergency Preparedness, Planning, and Operations:
 - Introduction to Incident Command System, IS-100.a
 - ICS Single Resources and Initial Action Incidents, IS-200.a
 - National Incident Management System (NIMS) An Introduction, IS-700.a
 - National Response Framework, An Introduction, IS 800.b
 - Emergency Planning, IS-235
 - Homeland Security Exercise & Evaluation Program (HSEEP)
 - IS-547.a – Introduction to Continuity Operations
 - IS-546.a – Continuity of Operations (COOP) Awareness Course
 - G-318; Preparing & Review Hazard Mitigation Plans
 - Climate Change Adaptation Planning, AWR-347
 - ALICE; School Shooting Workshop, Littleton High School
 - L0550 Continuity Planners Workshop (2320EM1216)

➤ **Contacts:**

For Mapping & Planning Solutions

June Garneau
Mapping and Planning Solutions
PO Box 283
Twin Mountain, NH 03595
jgarneau@mappingandplanning.com
(603) 991-9664 (cell)

For the Town

Ken Flaherty, Fire Chief & EMD
Town of Milford
39 School Street
Milford, NH 03055
kflaherty@milford.nh.gov
(603) 673-2257

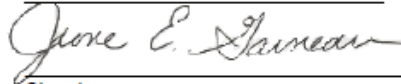
FOR THE TOWN OF MILFORD, NH

Signature

Printed Name/Title

Date

FOR MAPPING AND PLANNING SOLUTIONS




Signature
June Garneau, Owner
March 25, 2020

Signatures are scanned facsimiles; original signatures are on file.

B. APPROVED PENDING ADOPTION (APA) & FORMAL APPROVAL EMAIL


HMP Approvable Pending Adoption (APA) Notice: Milford, ...




Neiderbach, Josiah <josiah.r...>


To pdargie@milford.nh.gov; kflaherty@milford.nh.gov; mbender@milford.nh.gov

Cc Bogdan, Kerry; jgarneau@mappingandplanning.com; FEMA-R1-MitigationPlans; Clasby, Virginia; **+3 others**



3:00 PM

 This message was sent with High importance.



Milford NH APA Review.docx 95 KB

Reference: Adoption Required to Finish Local Mitigation Plan Process

Dear Officials:

The Risk Analysis Branch of the FEMA Region 1 Mitigation Division has determined the *Milford, NH Hazard Mitigation Plan Update 2024* meets all applicable FEMA Mitigation Planning requirements (Local Mitigation Planning Policy Guide, effective April 19, 2023), except its adoption by: Town of Milford, NH.

This status is “Approvable Pending Adoption” (APA). Plan adoption is required to receive formal FEMA approval.

Local governments, including special districts, with a plan status of “Approvable Pending Adoption” are not eligible for FEMA mitigation grant programs with a mitigation plan requirement. The next step in the approval process is to formally adopt the mitigation plan and send a resolution or adoption documentation in accordance with Element F1 of the [Local Mitigation Planning Policy Guide](#), on pages 31-32, to the State for submission to FEMA. A sample adoption resolution can also be found in Appendix B of the Policy Guide.

It is critical for the jurisdiction to adopt the plan as soon as possible. Jurisdictions that adopt the plan more than one year after APA status has been issued must either:

- Validate that their information in the plan remains current with respect to both the risk assessment (no recent hazard events, no changes in development) and their mitigation strategy (no changes necessary); or
- Make the necessary updates before submitting the adoption resolution to FEMA.

An approved local mitigation plan, including adoption by the local government, is one of the conditions for applying for and/or receiving FEMA mitigation grants from the following programs:

- Building Resilient Infrastructure and Communities (BRIC)
- Flood Mitigation Assistance (FMA)
- Hazard Mitigation Grant Program (HMGP)
- HMGP Post-Fire
- If applicable, High Hazard Potential Dams Grant Program (HHPD)

If a plan does not meet the HHPD requirements, then the jurisdiction is not eligible for assistance from the HHPD Grant Program. If any jurisdiction with HHPDs is interested in this assistance, they should contact the FEMA Regional Mitigation Planner listed below to learn more about how to include all dam risks in the plan, or at least their portion of the plan.

We look forward to receiving the adoption resolution/documentation soon and discussing options for implementing this mitigation plan. If we can assist in any way, please contact Jay Neiderbach at 202-285-7769 and josiah.neiderbach@fema.dhs.gov.

Sincerely,

Jay

Josiah (Jay) Neiderbach, Mitigation Planner
Risk Analysis Branch | Mitigation Division | DHS / FEMA, Region I
M: 202.285.7769 E: josiah.neiderbach@fema.dhs.gov

Attachment: FEMA Local Mitigation Plan Review Tool

Signatures are scanned facsimiles; original signatures are on file.

C. FORMAL APPROVAL FROM FEMA

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INSERTION OF FINAL APPROVAL LETTER

Signatures are scanned facsimiles; original signatures are on file.

D. SIGNED CERTIFICATE OF ADOPTION

CERTIFICATE OF ADOPTION

MILFORD, NH

SELECT BOARD

A RESOLUTION ADOPTING THE MILFORD, NH HAZARD MITIGATION PLAN UPDATE 2024

WHEREAS, the Town of Milford has historically experienced severe damage from natural hazards, and it continues to be vulnerable to the effects of those natural hazards profiled in this plan, 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 Approved Pending Adoption (APA) status from the Federal Emergency Management Agency (FEMA) for its Hazard Mitigation Plan Update 2024 under the requirements of 44 CFR 201.6; and

WHEREAS, public and committee meetings were held between March 17, 2020, and November 17, 2020, regarding the development and review of the Hazard Mitigation Plan Update 2024 and

WHEREAS, the plan specifically addresses hazard mitigation strategies and plan maintenance procedures 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 Select Board:

1. The plan is hereby adopted as an official plan of the Town of Milford;
2. The respective officials identified in the mitigation action items of the plan are hereby directed to pursue implementation of the recommended actions assigned to them;

Milford, Hazard Mitigation Plan Update Certificate of Adoption, page two

- 3. Future revisions and plan maintenance required by 44 CFR 201.6 and FEMA are hereby adopted as a part of this resolution for five (5) years from the date of this resolution;
- 4. The Emergency Management Director shall present an annual report on the progress of the plan's action items to the Select Board.

Adopted this day, the _____ of _____, 2024

Select Board Chair

Select Boar Vice-Chair

Signature

Signature

Print Name

Print Name

Member of the Select Board

Member of the Select Board

Signature

Signature

Print Name

Print Name

Member of the Select Board

Emergency Management Director

Signature

Signature

Print Name

Print Name

IN WITNESS WHEREOF, the undersigned has affixed his/her signature and the corporate seal of the Town of Milford on this day, _____, 2024

Notary

Expiration

Dates

Signatures are scanned facsimiles; original signatures are on file.

E. CWPP APPROVAL LETTER FROM DNCR

**Milford, NH
A Resolution Approving the
Milford, NH Hazard Mitigation Plan Update 2024
As a Community Wildfire Protection Plan**

Several public meetings and committee meetings were held between March 17, 2020, and November 17, 2020, regarding the development and review of the Milford, NH Hazard Mitigation Plan Update 2024. The Milford, NH Hazard Mitigation Plan Update 2024 contains potential future projects to mitigate hazard and wildfire damage in the Town of Milford.

The Fire Chief/Emergency Management Director, along with the Select Board, desires that this plan be accepted by the Department of Natural and Cultural Resources (DNCR) as a Community Wildfire Protection Plan, having adhered to the requirements of said plan.

The Select Board and the Fire Chief/Emergency Management Director approve the Milford, NH Hazard Mitigation Plan Update 2024 and understand that with approval by DNCR, this plan will also serve as a Community Wildfire Protection Plan.

For the Town of Milford,

APPROVED and SIGNED this day, _____, 2024.

Chairman of the Select Board

Printed Name

Fire Chief/Emergency Management Director

Printed Name

For the Department of Natural & Cultural Resources (DNCR)

APPROVED and SIGNED this day, _____, 2024.

Forest Ranger – NH Division of Forest and Lands, DNCR

APPROVED and SIGNED this day, _____, 2024.

Steve Sherman, Chief, Forest Protection Bureau – NH Division of Forests & Lands, DNCR

Signatures are scanned facsimiles; original signatures are on file.

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F. ANNUAL OR POST HAZARD REVIEW FORMS

YEAR ONE - Annual or Post Hazard Review Form

CHECK ALL THAT APPLY

- Annual Review - **Year One**: _____ (Date)
- Annual Review – Post Hazardous Event: _____ (Event/Date)
- Annual Review – Post Hazardous Event: _____ (Event/Date)

After inviting the public and stakeholders to attend hearings, this page shall be executed annually by the town’s governing body and the designated Emergency Management Director.

Milford, NH
Hazard Mitigation Plan Update

REVIEWED AND APPROVED

DATE: _____

SIGNATURE: _____

PRINTED NAME: _____

Emergency Management Director

CONCURRENCE OF APPROVAL

SIGNATURE: _____

PRINTED NAME: _____

Chairman of the Select Board

Changes and notes regarding the 2024 Hazard Mitigation Plan Update

Please use the reverse side for additional notes 

YEAR TWO - Annual or Post Hazard Review Form

CHECK ALL THAT APPLY

- Annual Review - **Year Two**: _____ (Date)
- Annual Review – Post Hazardous Event: _____ (Event/Date)
- Annual Review – Post Hazardous Event: _____ (Event/Date)

After inviting the public and stakeholders to attend hearings, this page shall be executed annually by the town’s governing body and the designated Emergency Management Director.

Milford, NH
Hazard Mitigation Plan Update

REVIEWED AND APPROVED

DATE: _____

SIGNATURE: _____

PRINTED NAME: _____

Emergency Management Director

CONCURRENCE OF APPROVAL

SIGNATURE: _____

PRINTED NAME: _____

Chairman of the Select Board

Changes and notes regarding the 2024 Hazard Mitigation Plan Update

Please use the reverse side for additional notes 

YEAR THREE - Annual or Post Hazard Review Form

CHECK ALL THAT APPLY

- Annual Review - **Year Three:** _____ (Date)
- Annual Review – Post Hazardous Event: _____ (Event/Date)
- Annual Review – Post Hazardous Event: _____ (Event/Date)

After inviting the public and stakeholders to attend hearings, this page shall be executed annually by the town’s governing body and the designated Emergency Management Director.

Milford, NH
Hazard Mitigation Plan Update

REVIEWED AND APPROVED

DATE: _____

SIGNATURE: _____

PRINTED NAME: _____

Emergency Management Director

CONCURRENCE OF APPROVAL

SIGNATURE: _____

PRINTED NAME: _____

Chairman of the Select Board

Changes and notes regarding the 2024 Hazard Mitigation Plan Update

Please use the reverse side for additional notes 

YEAR FOUR - Annual or Post Hazard Review Form

CHECK ALL THAT APPLY

Annual Review - **Year Four**: _____ (Date)

Annual Review – Post Hazardous Event: _____ (Event/Date)

Annual Review – Post Hazardous Event: _____ (Event/Date)

After inviting the public and stakeholders to attend hearings, this page shall be executed annually by the town’s governing body and the designated Emergency Management Director.

Milford, NH
Hazard Mitigation Plan Update

REVIEWED AND APPROVED

DATE: _____

SIGNATURE: _____

PRINTED NAME: _____

Emergency Management Director

CONCURRENCE OF APPROVAL

SIGNATURE: _____

PRINTED NAME: _____

Chairman of the Select Board

Changes and notes regarding the 2024 Hazard Mitigation Plan Update

Please use the reverse side for additional notes 

Chapter 12: Appendices

- APPENDIX A: BIBLIOGRAPHY
- APPENDIX B: TECHNICAL AND FINANCIAL ASSISTANCE FOR HAZARD MITIGATION
 - *Hazard Mitigation Grant Program (HMGP)*
 - *Pre-Disaster Mitigation (PDM)*
 - *Flood Mitigation Assistance (FMA)*
 - *Repetitive Flood Claims (RFC)*
 - *Severe Repetitive Loss (SRL)*
- APPENDIX C: THE EXTENT OF HAZARDS
- APPENDIX D: MAJOR DISASTER & EMERGENCY DECLARATIONS
- APPENDIX E: ACRONYMS
- APPENDIX F: POTENTIAL MITIGATION IDEAS

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APPENDIX A: BIBLIOGRAPHY

Documents

- **Local Hazard Mitigation Planning Review Guide**, FEMA, October 2011
- **Local Hazard Mitigation Planning Handbook**, FEMA, March 2013
- **Mitigation Ideas, A Resource for Reducing Risk to Natural Hazards**, FEMA, January 2013
- **Hazard Mitigation Unified Guidance**, FEMA, July 12, 2013
- **Hazard Mitigation Assistance Guidance**, FEMA, February 27, 2015
- **Hazards Mitigation Plans**
 - Town of Milford, New Hampshire Hazard Mitigation Plan Update 2015
 - Greenfield Hazard Mitigation Plan, 2020
 - Goffstown Hazard Mitigation Plan, 2021
 - Bethlehem Hazard Mitigation Plan, 2021
- **NH State Multi-Hazard Mitigation Plan**, 2018
 - https://prd.blogs.nh.gov/dos/hsem/wp-content/uploads/2015/11/State-of-New-Hampshire-Multi-Hazard-Mitigation-Plan-Update-2018_FINAL.pdf
- **NH Division of Forests and Lands Quarterly Update**
 - <http://www.nhdf.org/fire-control-and-law-enforcement/fire-statistics.aspx>
- **Disaster Mitigation Act (DMA) of 2000**, Section 101, b1 & b2 and Section 322a
 - <http://www.fema.gov/library/viewRecord.do?id=1935>
- **Economic & Labor Market Information Bureau**, NH Employment Security, January 2021; Community Response for Milford, Received, 6/19/19, Census 2000 and Revenue Information derived from this site;
 - <http://www.nhes.nh.gov/elmi/products/cp/profiles-htm/Milford.htm>

Photos

- Photos are taken by MAPS unless otherwise noted.

Map Snips

- Map snips are created by MAPS using readily available data from NH Granit unless otherwise indicated

Wildfire Links

- US Forest Service; <http://www.fs.fed.us>
- US Fire Administration; <http://www.usfa.dhs.gov/>
- US Department of Agriculture Wildfire Programs: <http://www.wildfireprograms.usda.gov/>
- Firewise®; <http://www.firewise.org/>
- Fire Adapted Communities; www.fireadapted.org
- Wildfire Preparedness Guide to Forest Wardens; www.quickseries.com
- Ready Set Go; www.wildlandfires.org
- Fire education for children; www.smokeybear.com

Additional Websites

- NH Homeland Security & Emergency Management; <http://www.nh.gov/safety/divisions/hsem/>
- US Geological Society; <http://water.usgs.gov/ogw/subsidence.html>
- Department Environmental Services;
<http://des.nh.gov/organization/divisions/water/dam/drought/documents/historical.pdf>
- The Disaster Center (NH); <http://www.disastercenter.com/newhamp/tornado.html>
- Floodsmart, about the NFIP; http://www.floodsmart.gov/floodsmart/pages/about/nfip_overview.jsp
- NOAA, National Weather Service; <http://www.nws.noaa.gov/glossary/index.php?letter=w>
- NOAA, Storm Prediction Center; <http://www.spc.noaa.gov/faq/tornado/beaufort.html>
- National Weather Service; http://www.nws.noaa.gov/om/cold/wind_chill.shtml
- Center for Disease Control; <https://www.cdc.gov/disasters/winter/index.html>
- Slate; <http://www.slate.com/id/2092969/>
- NH Bureau of Economic Affairs; <http://www.nh.gov/osi/planning/index.htm>
- Code of Federal Regulations; Title 14, Aeronautics and Space; Part 1, Definitions and Abbreviations;
https://www.ecfr.gov/cgi-bin/text-idx?tpl=/ecfrbrowse/Title14/14tab_02.tpl
- Federal Aviation Administration; <http://faa.custhelp.com>
- US Legal, Inc.; <http://definitions.uslegal.com/v/violent-crimes/>

APPENDIX B: TECHNICAL & FINANCIAL ASSISTANCE FOR HAZARD MITIGATION

The Federal Emergency Management Agency’s (FEMA’s) HMA programs promote funding for mitigation measures that reduce or eliminate long-term risk to people and property from future disasters. These programs allow communities across the nation to enhance mitigation and take steps that will foster greater resilience and reduce disaster suffering⁴⁶:

HAZARD MITIGATION GRANT PROGRAM (HMGP)

HMGP provides funding to rebuild communities in a way that mitigates future disaster losses in those communities. Funding is made available after the President issues a major disaster declaration. It is based on up to 15% or 20% of the estimated federal assistance provided.

HAZARD MITIGATION GRANT PROGRAM POST FIRE (HMGP POST FIRE)

The HMGP Post Fire program provides funding after a Fire Management Assistance Grant (FMAG) is declared, and helps communities implement hazard mitigation measures after wildfire disasters. State, local tribal, and territorial governments are eligible to apply for funding. The funding amount is pre-calculated and based on historical FMAG declarations and is reassessed every fiscal year.

FLOOD MITIGATION ASSISTANCE (FMA)

FMA is a competitive grant program that provides funding to states, local communities, tribes, and territories. Funds can be used for projects that reduce or eliminate the risk of repetitive flood damage to buildings insured by the National Flood Insurance Program (NFIP). The program is funded by an annual congressional appropriation and since 2016 has made \$160 million available for mitigation projects.

HMA Eligible Activities				
MITIGATION PROJECTS	HMGP	HMGP POST FIRE	BRIC	FMA
Property Acquisition	Yes	Yes	Yes	Yes
Structure Elevation	Yes	Yes	Yes	Yes
Mitigation Reconstruction	Yes	Yes	Yes	Yes
Flood Risk Reduction Measures	Yes	Yes	Yes	Yes
Dry Floodproofing Non-Residential Buildings	Yes	Yes	Yes	Yes
Tsunami Vertical Evacuation	Yes	Yes	Yes	–
Safe Rooms Construction	Yes	Yes	Yes	–
Wildfire Mitigation	Yes	Yes	Yes	–
Retrofitting	Yes	Yes	Yes	Yes
Generators	Yes	Yes	Yes	–
Earthquake Early Warning System	Yes	Yes	Yes	–
CAPABILITY AND CAPACITY BUILDING				
New Plan Creation and Updates	Yes	Yes	Yes	Yes
Planning-Related Activities	Yes	Yes	Yes	Yes
Project Scoping/ Advance Assistance	Yes	Yes	Yes	Yes
Financial Technical Assistance	–	–	–	Yes

Note: The table above is not an exhaustive list of eligible activities. Please see program guidance or Notice of Funding Opportunity (NOFO) for more information on eligible activities.

⁴⁶ https://www.fema.gov/sites/default/files/documents/fema_hma-trifold_2021.pdf; sections of this appendix are taken directly from this Hazard Mitigation Assistance flier, although not all sections are quoted

BUILDING RESILIENT INFRASTRUCTURE AND COMMUNITIES (BRIC)

BRIC is a competitive grant program that provides funding for mitigation projects to reduce the risks from disasters and natural hazards. The amount of funding is based on a 6% set-aside of the assistance FEMA provides following major disaster declarations through the Public Assistance and Individuals and Households Program. The BRIC program was designed to foster innovation and provides a yearly grant cycle, offering applicants a consistent source of funding.

PRE-DISASTER MITIGATION (PDM)

PDM is a grant program that helped state, local, tribal, and territorial governments plan and implement hazard mitigation projects. For 20 years, PDM funded mitigation projects, but in FY 2020 BRIC replaced PDM for any new funding. Any grant awarded in FY 2019 will continue to be managed under PDM for any new funding.

ROLES OF APPLICANTS AND SUBAPPLICANTS

Mitigation project subapplications are developed by local governments (subapplicants) and submitted to their state, territory, or tribal government (applicant). States, territories, and tribes are responsible for selecting the subapplications that align with their mitigation priorities and submit these in an application to FEMA. FEMA conducts a final eligibility review of all subapplications to ensure compliance with federal regulations. For competitive mitigation grants, FEMA will select projects for funding. All HMA grants have programmatic and administration requirements that are the responsibility of the applicant and subapplicant.

ADDITIONAL RESOURCES

For general questions about the HMA programs, please contact your State Hazard Mitigation Officer or FEMA Region. Other resources are available; see the Hazard Mitigation Assistance flier, FEMA, or go to www.fema.gov/hazard-mitigation-assistance.⁴⁷

Who is eligible to apply?

APPLICANTS	HMGP	HMGP POST FIRE	BRIC	FMA
State/territorial agencies	Yes	Yes	Yes	Yes
Federally recognized tribes	Yes	Yes	Yes	Yes

SUBAPPLICANT	HMGP	HMGP POST FIRE	BRIC	FMA
State agencies	Yes	Yes	Yes	Yes
Federally recognized tribes	Yes	Yes	Yes	Yes
Local governments/communities	Yes	Yes	Yes	Yes
Private nonprofit organizations	Yes	Yes	-	-

Cost-share requirements

PROGRAM	COST SHARE*
HMGP	75 / 25
HMGP Post Fire	75 / 25
BRIC	75 / 25
BRIC (Economically Disadvantaged Rural Communities**)	90 / 10
FMA (Community Flood Mitigation, Project Scoping, Individual Mitigation of Insured Properties, and Planning Grants)	75 / 25
FMA (Repetitive loss properties)	90 / 10
FMA (Severe repetitive loss properties)	100 / 0

* Percent of federal/non-federal cost share
 ** Economically Disadvantaged Rural Communities” is synonymous with small impoverished communities as used in the Stafford Act.

⁴⁷ https://www.fema.gov/sites/default/files/documents/fema_hma-trifold_2021.pdf

APPENDIX C: THE EXTENT OF NATURAL HAZARDS

Hazards indicated with an asterisk * are included in this plan.

***SEVERE WINTER WEATHER**

Ice and snow events typically occur during the winter months and can cause loss of life, property damage, and tree damage.

Snowstorms

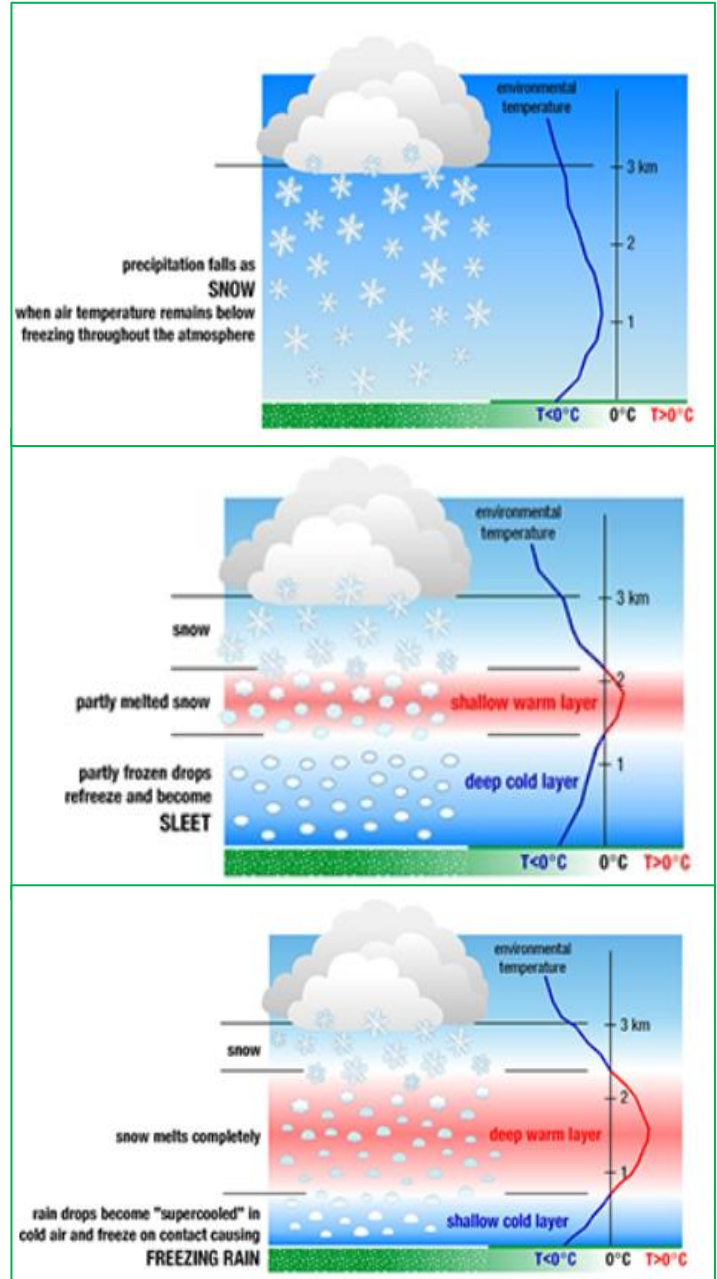
A winter storm can range from moderate snow to blizzard conditions. Blizzard conditions are considered blinding wind-driven snow over 35 mph that lasts several days. A severe winter storm deposits four or more inches of snow for 12 hours or six inches for 24 hours.

Sleet

Snowflakes melt as they fall through a small band of warm air and later refreeze when passing through a wider band of cold air. These frozen raindrops then fall to the ground as sleet.

Freezing Rain & Ice Storms

Snowflakes melt as they fall through a warm band of air and then fall through a shallow band of cold air close to the ground to become supercooled. These supercooled raindrops instantly freeze upon contact with the ground and anything else below 32 degrees Fahrenheit. This freezing creates ice accumulations on roads, trees, utility lines, and other objects, resulting in an “ice storm”. *“Ice coating at least one-fourth-inch thickness is heavy enough to damage trees, overhead wires, and similar objects.”*⁴⁸



⁴⁸ NOAA, National Severe Storms Laboratory, <https://www.nssl.noaa.gov/education/svrwx101/winter/types/>

The Sperry-Piltz Ice Accumulation Index (SPIA) (below) is designed to help utility companies better prepare for predicated ice storms.⁴⁹

The Sperry-Piltz Ice Accumulation Index, or “SPIA Index” – Copyright, February, 2009

ICE DAMAGE INDEX	* AVERAGE NWS ICE AMOUNT (in inches) <small>*Revised-October, 2011</small>	WIND (mph)	DAMAGE AND IMPACT DESCRIPTIONS
0	< 0.25	< 15	Minimal risk of damage to exposed utility systems; no alerts or advisories needed for crews, few outages.
1	0.10 – 0.25	15 – 25	Some isolated or localized utility interruptions are possible, typically lasting only a few hours. Roads and bridges may become slick and hazardous.
	0.25 – 0.50	> 15	
2	0.10 – 0.25	25 – 35	Scattered utility interruptions expected, typically lasting 12 to 24 hours. Roads and travel conditions may be extremely hazardous due to ice accumulation.
	0.25 – 0.50	15 – 25	
	0.50 – 0.75	< 15	
3	0.10 – 0.25	> = 35	Numerous utility interruptions with some damage to main feeder lines and equipment expected. Tree limb damage is excessive. Outages lasting 1 – 5 days.
	0.25 – 0.50	25 – 35	
	0.50 – 0.75	15 – 25	
	0.75 – 1.00	< 15	
4	0.25 – 0.50	> = 35	Prolonged & widespread utility interruptions with extensive damage to main distribution feeder lines & some high voltage transmission lines/structures. Outages lasting 5 – 10 days.
	0.50 – 0.75	25 – 35	
	0.75 – 1.00	15 – 25	
	1.00 – 1.50	< 15	
5	0.50 – 0.75	> = 35	Catastrophic damage to entire exposed utility systems, including both distribution and transmission networks. Outages could last several weeks in some areas. Shelters needed.
	0.75 – 1.00	> = 25	
	1.00 – 1.50	> = 15	
	> 1.50	Any	

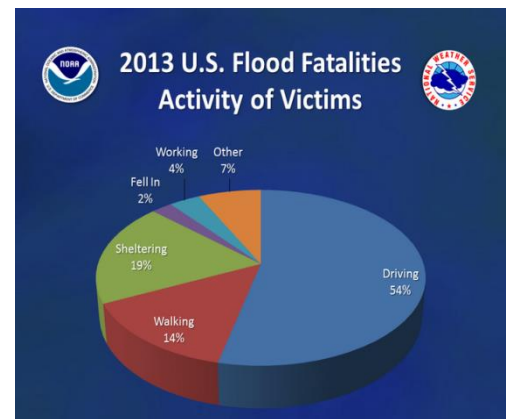
(Categories of damage are based upon combinations of precipitation totals, temperatures and wind speeds/directions.)

***INLAND FLOODING**

General Flooding Conditions

Floods are defined as a temporary overflow of water onto lands that are not usually covered by water. Flooding results from the overflow of major rivers and tributaries, storm surges, or inadequate local drainage. Floods can cause loss of life, property damage, crop/livestock damage, and water supply contamination. Floods can also disrupt travel routes on roads and bridges.

Inland floods are most likely to occur in the spring due to the increased rainfall and snowmelt; however, floods can occur anytime. A sudden thaw in the winter or a major downpour in the summer can cause flooding because there is suddenly too much water in one place with nowhere to go; warm temperatures and heavy rains cause rapid snowmelt, producing prime flood conditions. Also, rising waters in early spring often break the ice into chunks that float downstream and pile up, causing flooding behind them. Small rivers and streams pose unique flooding risks because jams easily block them. Ice in riverbeds and against structures presents a significant flooding threat to bridges, roads, and the surrounding lands.



⁴⁹ The Weather Channel, <http://www.weather.com/news/weather-winter/rating-ice-storms-damage-sperry-piltz-20131202>

Flooding (Dam Failure)

Flooding due to dam failure can be small enough to affect the immediate area or large enough to cause catastrophic results to cities, towns, and human life below the dam. The amount of flooding depends mainly on the dam's size and the water held by the dam. The size of the breach, the amount of water flowing from the dam, and the amount of human habitation downstream are also factors.

A "Dam" means any artificial barrier, including appurtenant works, which impounds or diverts water, has a height of 4 feet or more, or a storage capacity of 2 acres or more, or is located at the outlet of a great pond⁵⁰. A dam failure occurs when water overtops the dam or there is a structural failure of the dam, which causes there to be a breach and an unintentional release of water. Dams are classified in the following manner⁵¹:

Classification	Description	Inspection Intervals
Non-Menace	A dam is not a menace because it is in a location and size that failure or misoperation of the dam would not result in probable loss of life or property. The dam must be less than six feet in height if the storage capacity is greater than 50 acre-feet or less than 25 feet in height if it has a storage capacity of 15-50 acre-feet.	Every six years
Low Hazard	A dam that 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 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 impassable or otherwise interrupt public safety services, the release of liquid industrial, agricultural, or commercial wastes, septage, or contained sediment if the storage capacity is less two-acre-feet and is located more than 250 feet from a water body or watercourse, and/or reversible environmental losses to environmentally-sensitive sites.	Every six years
Significant Hazard	A dam that 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 no probable loss of lives; however, there would be a major economic loss to structures or property, structural damage to a Class I or Class II road that could render the road impassable or otherwise interrupt public safety services, major environmental pro-public health losses including one or more of the following: damages to a public water system (RSA 485:1-a, XV) which will take longer than 48 hours to repair, the release of liquid industrial, agricultural, or commercial wastes, septage, sewage, or contaminated sediments if the storage capacity is two acre-feet or more; or damage to an environmentally-sensitive site that does not meet the definition of reversible environmental losses.	Every four years
High Hazard	A 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 probable loss of human life as well 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 which is occupied under normal conditions; water levels rising above the first-floor elevation of a habitable residential structure or a commercial or industrial structure, which is occupied under normal conditions when the rise due to a dam failure is greater than one foot; structural damage to an interstate highway, which could render the roadway impassable or otherwise interrupt public safety services; the release of a quantity and concentration of material, which qualify as "hazardous waste" as defined by RSA 147-A:2 VII; or any other circumstance that would more likely than not cause one or more deaths.	Every two years

⁵⁰ NH DES http://des.nh.gov/organization/divisions/water/dwgb/wrpp/documents/primer_chapter11.pdf

⁵¹ <http://des.nh.gov/organization/commissioner/pip/factsheets/db/documents/db-15.pdf>

Flooding (local, road erosion)

Today, the risk of flooding is a serious concern with changes in land use, aging roads, designs that are no longer effective, and undersized culverts. Heavy rain, rapid snowmelt, and stream flooding often cause culverts to be overwhelmed and roads to wash out. In addition, inadequate and aging stormwater drainage systems create local flooding on asphalt and gravel roads.

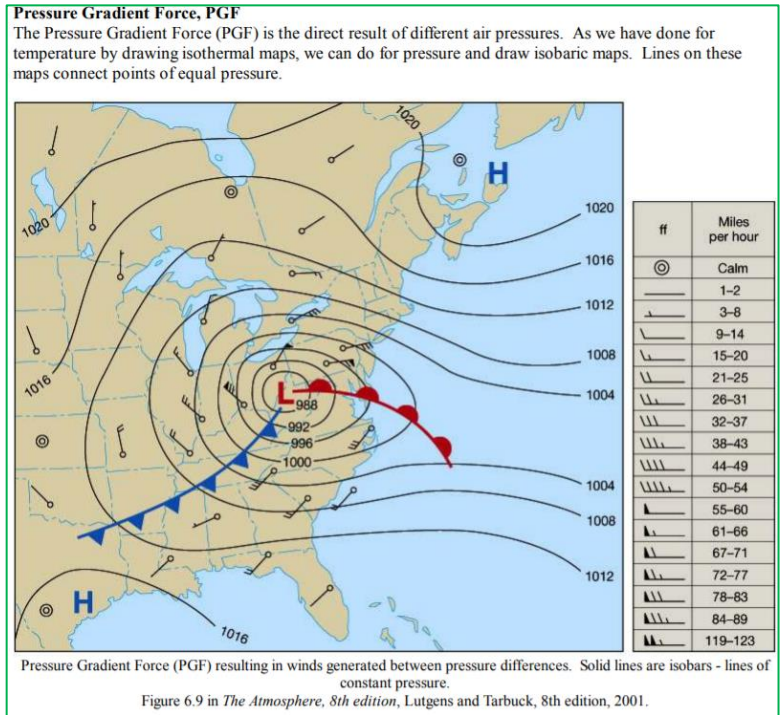
Flooding (Riverine)

Floodplains are usually located in lowlands near rivers; floodplains experience flooding regularly. The term 100-year flood does not mean that floods will occur once every 100 years. It is a statement of probability that scientists and engineers use to describe how one flood compares to others that are likely to occur. Using “1% annual chance of flood” is more accurate. Flooding is often associated with hurricanes, heavy rains, ice jams, and rapid snowmelt in the spring.

***HIGH WIND EVENTS**

Windstorm

The National Oceanic & Atmospheric Administration (NOAA) stated that wind is defined as “The horizontal motion of the air past a given point.” Winds begin with differences in air pressures. Air pressures higher in one place than another set up a force pushing from the high pressure toward the low pressure. The more significant the difference in pressures, the stronger the force. The distance between high and low pressure also determines how fast the moving air is accelerated. Meteorologists refer to the force that starts the wind flowing as the “pressure gradient force.” High and low pressures are relative. No set number divides high and low pressure. Wind is used to describe the prevailing direction from which the wind is blowing with speed given usually in miles per hour or knots.” Also, NOAA’s issuance of a Wind Advisory occurs when sustained winds reach 25 to 39 mph and gusts to 57 mph.^{52 53}



⁵² NOAA; <http://www.nws.noaa.gov/glossary/index.php?letter=w>

⁵³ Pressure Gradient Force Chart “snipped” from *Air Pressure and Wind*; https://www.weather.gov/media/zhu/ZHU_Training_Page/winds/pressure_winds/pressure_winds.pdf

Tornado

A tornado is a violent windstorm characterized by a twisting, funnel-shaped cloud. The atmospheric conditions required for the formation of a tornado include significant thermal instability, high humidity, and the convergence of warm, moist air at low levels with cooler, drier air aloft. Tornadoes develop when cold air overrides a layer of warm air, causing the warm air to rise rapidly. Most tornadoes remain suspended in the atmosphere but become a force of destruction if they touch down.

Tornadoes produce the most violent winds on earth at speeds of 280 mph or more. Also, tornadoes can travel at a forward speed of up to 70 mph. Damage paths can be more than one mile wide and 50 miles long. Violent winds and debris slamming into buildings cause the most structural damage.

The Fujita Scale is the standard scale for rating the severity of a tornado as measured by the damage it causes. A tornado is usually accompanied by thunder, lightning, heavy rain, and a loud “freight train” noise. A tornado covers a much smaller area than a hurricane but can be more violent and destructive.

“Dr. T. Theodore Fujita developed the Fujita Tornado Damage Scale (F-Scale) to provide estimates of tornado strength based on damage surveys. Since it's practically impossible to make direct measurements of tornado winds, an estimate of the winds based on damage is the best way to classify a tornado. The new Enhanced Fujita Scale (EF-Scale) addresses some of the limitations identified by meteorologists and engineers since introducing the Fujita Scale in 1971. The new scale identifies 28 different free-standing structures most affected by tornadoes considering construction quality and maintenance. The range of tornado intensities remains as before, zero to five, with 'EF-0' being the weakest, associated with very little damage and 'EF-5' representing complete destruction, which was the case in Greensburg, Kansas on May 4th, 2007, the first tornado classified as 'EF-5'. The EF scale was adopted on February 1, 2007.”⁵⁴ The chart (right), adapted from wunderground.com, compares the Fujita Scale to the Enhanced Fujita Scale.

EF SCALE	OLD F-SCALE	TYPICAL DAMAGE
EF-0 (65-85mph)	F0 (65-73 mph)	Light damage. Peels surface off some roofs; some damage to gutters or siding; branches have broken off trees; shallow-rooted trees pushed over.
EF-1 (86-110 mph)	F1 (74-112 mph)	Moderate damage. Roofs severely stripped; mobile homes overturned or badly damaged; loss of exterior doors; windows and other glass broken.
EF-2 (111-135 mph)	F2 (113-157 mph)	Considerable damage. Roofs torn off well-constructed houses; foundations of frame homes shifted; mobile homes completely destroyed; large trees snapped or uprooted; light object missiles generated; cars lifted off the ground.
EF-3 (136-165 mph)	F3 (158-206 mph)	Severe damage. Entire stories of well-constructed houses destroyed; severe damage to large buildings such as shopping malls; trains overturned; trees debarked; heavy cars lifted off the ground and thrown; structures with weak foundations blown away some distance.
EF-4 (166-200 mph)	F4 (207-260 mph)	Devastating damage. Well-constructed houses and whole frame houses completely leveled; cars thrown and small missiles generated.
EF-5 (>200 mph)	F5 (261-318 mph)	Incredible damage. Strong frame houses leveled off foundations and swept away; automobile-sized missiles fly through the air in excess of 100 m (109 yards); high-rise buildings have significant structural deformation; incredible phenomena will occur.
EF No rating	F6-F12 (319 mph to speed of sound)	Inconceivable damage. Should a tornado with a maximum wind speed in excess of EF5 occur, the extent and types of damage may not be conceivable. A number of missiles, such as iceboxes, water heaters, storage tanks, automobiles, etc., will create secondary damage to structures.

⁵⁴ Enhance Fujita Scale, http://www.wunderground.com/resources/severe/fujita_scale.asp

Downburst

According to NOAA, a downburst is a strong downdraft that causes damaging winds on or near the ground. Not to be confused with a downburst, the term "microburst" describes the size of the downburst. Comparing a microburst and the larger macroburst shows that both can cause extreme winds.

A microburst is a downburst with winds extending 2 ½ miles or less, lasting 5 to 15 minutes, and causing damaging winds as high as 168 MPH. A macroburst is a downburst with winds extending more than 2 ½ miles and lasting 5 to 30 minutes. Damaging winds, causing widespread, tornado-like damage, could be as high as 134 MPH.⁵⁵

Below is the Beaufort Wind Scale, showing expected damage based on the wind (knots), developed in 1805 by Sir Francis Beaufort of England and posted on NOAA’s Storm Prediction Center website.⁵⁶

Force	Wind (Knots)	WMO Classification	The appearance of Wind Effects	
			On the Water	On Land
0	Less than 1	Calm	The sea surface is smooth and mirror-like	Calm, smoke rises vertically
1	1-3	Light Air	Scaly ripples, no foam crests	Smoke drift indicates wind direction; still wind vanes
2	4-6	Light Breeze	Small wavelets, crests glassy, no breaking	Wind felt on face, leaves rustle, vanes bring to move
3	7-10	Gentle Breeze	Large wavelets, crests begin to break, scattered whitecaps	Leaves and small twigs constantly moving, light flags extended
4	11-16	Moderate Breeze	Small waves 1-4 ft. becoming longer, numerous whitecaps	Dust, leaves, and loose paper lifted; small tree branches move
5	17-21	Fresh Breeze	Moderate waves 4-8 ft. taking longer form, many whitecaps, some spray	Small trees begin to sway
6	22-27	Strong Breeze	Larger waves 8-13 ft., whitecaps common, more spray	Larger tree branches moving, whistling in wires
7	28-33	Near Gale	Sea heaps up, waves 13-20 ft., white foam streaks off breakers	Whole trees moving, resistance felt walking against the wind
8	34-40	Gale	Moderately high (13-20 ft.) waves of greater length, edges of crests begin to break into spindrift, foam blown in streaks	Whole trees in motion, resistance felt walking against the wind
9	41-47	Strong Gale	High waves (20 ft.), the sea begins to roll, and dense streaks of foam, and spray may reduce visibility	Slight structural damage occurs; slate blows off roofs
10	48-55	Storm	Very high waves (20-30 ft.) with overhanging crests, sea white with densely blown foam, heavy rolling, lowered visibility	Seldom experienced on land, trees broken or uprooted, "considerable structural damage."
11	56-63	Violent Storm	Exceptionally high (30-45 ft.) waves, foam patches cover the sea, visibility more reduced	
12	64+	Hurricane	Air-filled with foam, waves over 45 ft., sea completely white with driving spray, visibility greatly reduced	

⁵⁵ NOAA - <http://www.srh.noaa.gov/jetstream/tstorms/wind.html>

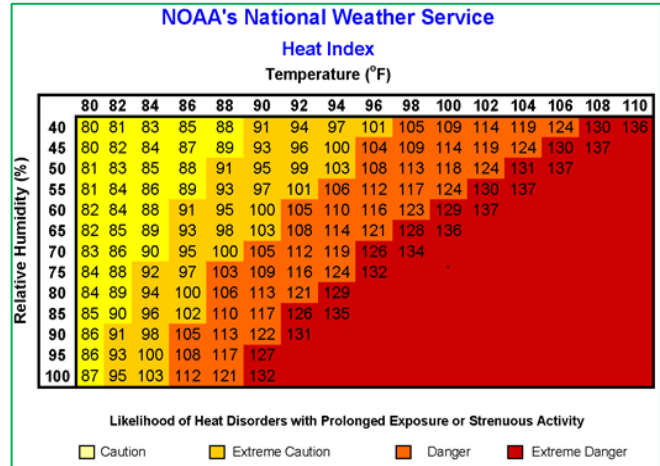
⁵⁶ NOAA, Storm Prediction Center, <http://www.spc.noaa.gov/faq/tornado/beaufort.html>

***EXTREME TEMPERATURES**

Extreme Heat

A heatwave is a “prolonged period of excessive heat, often combined with excessive humidity.” Heat kills by pushing the human body beyond its limits. In extreme heat and high humidity, evaporation is slowed, and the body must work extra hard to maintain a normal temperature.

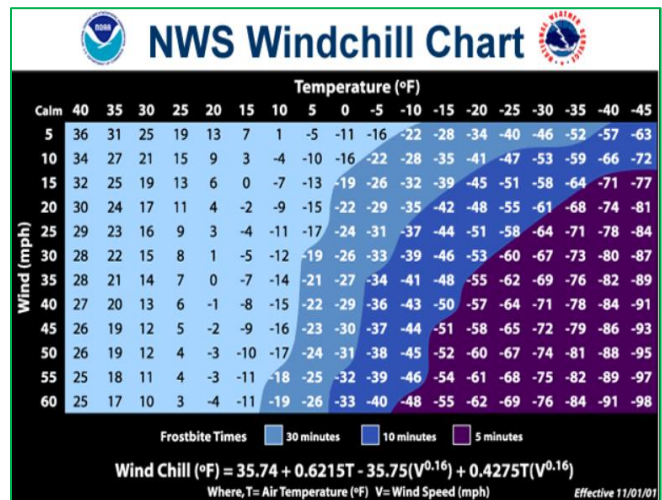
Most heat disorders occur when a victim is overexposed to heat or has over-exercised for their age and physical condition. Older adults, young children, and those who are sick or overweight are more likely to succumb to extreme heat.



Conditions that can induce heat-related illnesses include stagnant atmospheric conditions and poor air quality. Consequently, people living in urban areas may be at greater risk from a prolonged heat wave than those living in rural areas. Also, asphalt and concrete store heat longer and gradually release heat at night, producing higher nighttime temperatures known as the "urban heat island effect."⁵⁷ The chart above explains the likelihood of heat disorders that may result from high heat.⁵⁸

Extreme Cold

What constitutes extreme cold and its effects can vary across different areas of the country. In regions unaccustomed to winter weather, near-freezing temperatures are considered extreme cold. Whenever temperatures drop decidedly below average and wind speed increases, heat can leave the body more rapidly; these weather-related conditions may lead to serious health problems. Extreme cold is a dangerous situation that can bring on health emergencies in susceptible people without shelter, stranded, or living in poorly insulated homes or without heat.⁵⁹ The National Weather Service Chart (to the right) shows windchill due to wind and temperature.⁶⁰



⁵⁷ NOAA, Index/Heat Disorders; <http://www.srh.noaa.gov/ssd/html/heatwv.htm>

⁵⁸ NOAA; <http://www.nws.noaa.gov/os/heat/index.shtml>

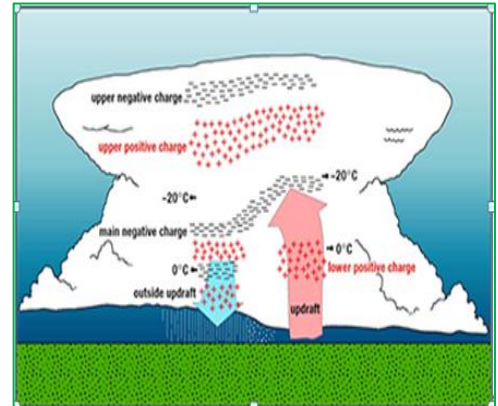
⁵⁹ CDC; <http://www.bt.cdc.gov/disasters/winter/guide.asp>

⁶⁰ National Weather Service; <http://www.nws.noaa.gov/om/windchill/>

LIGHTNING & HAIL*Lightning**

The NOAA National Severe Storms Laboratory (NSSL) stated, “Lightning is a giant spark of electricity in the atmosphere between clouds, the air, or the ground. In the early stages of development, air acts as an insulator between the positive and negative charges in the cloud and between the cloud and the ground. When the opposite charges build up enough, this insulating capacity of the air breaks down, and there is a rapid discharge of electricity that we know as lightning. The flash of lightning temporarily equalizes the charged regions in the atmosphere until the opposite charges build up again.”⁶¹

Thunder, a result of lightning, is created when the “lightning channel heats the air to around 18,000 degrees Fahrenheit...”⁶² thus causing the rapid expansion of the air and the sounds we hear as thunder. Although thunder heard during a storm cannot harm a person, the lightning associated with the thunder can strike people and strike homes, outbuildings, grass, and trees, sparking disaster. In addition, wildfires and structure loss are at high risk during severe lightning events.



“A conceptual model shows the electrical charge distribution inside deep convection (thunderstorms), developed by NSSL and university scientists. In the main updraft (in and above the red arrow), there are four main charge regions. In the convective region but outside the out draft (in and above the blue arrow), there are more than four charge regions.” - NOAA

Although thunderstorms and their associated lightning can occur any time of year, in New England, they are most likely to occur in the summer months in the late afternoon or early evening hours; they may even occur during a winter snowstorm. Trees, tall buildings, and mountains are often lightning targets because their tops are closer to the cloud; however, lightning is unpredictable and does not always strike the tallest thing in the area.

Thunderstorms and lightning occur most commonly in moist, warm climates. Data from the National Lightning Detection Network shows that an average of 20,000,000 cloud-to-ground flashes occur annually over the continental US. Around the world, lightning strikes the ground about 100 times each second, or 8 million times a day.

In general, lightning decreases across the US mainland toward the northwest. Over the entire year, the highest frequency of cloud-to-ground lightning is in Florida between Tampa and Orlando. This phenomenon is due to the presence, on many days during the year, of significant moisture content in the atmosphere at low levels (below 5,000 feet) and high surface temperatures that produce strong sea breezes along the Florida coasts. The western mountains of the US also produce strong upward motions and contribute to frequent cloud-to-ground lightning. There are also high frequencies along the Gulf of Mexico, the Atlantic coast, and the southeast United States. US regions along the Pacific west coast have the least cloud-to-ground lightning.”⁶³

⁶¹ NOAA National Severe Storms Laboratory, <https://www.nssl.noaa.gov/education/svrwx101/lightning>

⁶² Ibid

⁶³ Ibid

Hailstorm

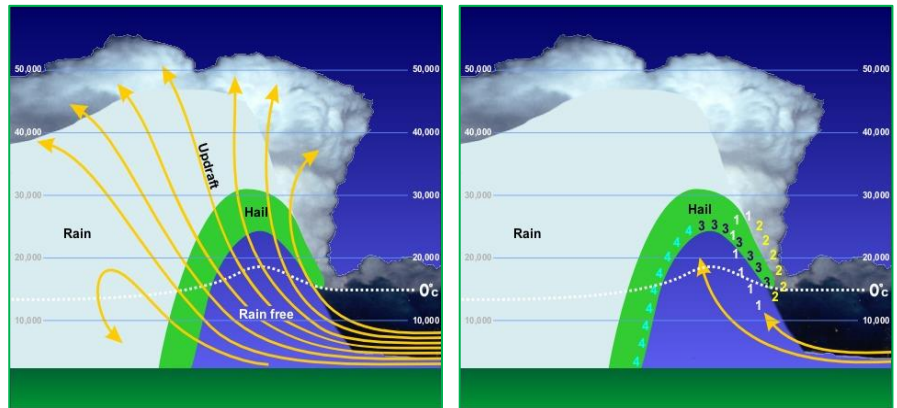
Lightning Activity Level (LAL) Grid		
LAL	Cloud & Storm Development	Lightning Strikes 15 Minutes
1	No thunderstorms	-
2	Cumulus clouds are common, but only a few reach the towering cumulus stage. A single thunderstorm must be confirmed in the observation area. The clouds produce mainly virga, but light rain will occasionally reach the ground. Lightning is very infrequent.	1-8
3	Towering cumulus covers less than two-tenths of the sky. Thunderstorms are few, but two to three must occur within the observation area. Light to moderate rain will reach the ground, and lightning is infrequent.	9-15
4	Towering cumulus covers two to three-tenths of the sky. Thunderstorms are scattered, and more than three must occur within the observation area. Moderate rain is common, and lightning is frequent.	16-25
5	Towering cumulus and thunderstorms are numerous. They cover more than three-tenths and occasionally obscure the sky. Rain is moderate to heavy, and lightning is frequent and intense.	>25
6	Similar to LAL 3, except thunderstorms are dry.	

<http://www.prh.noaa.gov/hnl/pages/LAL.php>

Hailstones are balls of ice that grow as they are held up by winds, known as updrafts, that blow upwards in thunderstorms. The updrafts carry droplets of supercooled water, water at a below-freezing temperature that is not yet ice. The supercooled water droplets freeze into ice balls and grow to become hailstones. The faster the updraft, the bigger the stones can grow. Most hailstones are smaller in diameter than a dime, but stones weighing more than a pound have been recorded. “The largest hailstone recovered in the US fell in Vivian, SD on June 23, 2010, with a diameter of 8 inches and a circumference of 18.62 inches. It weighed 1 lb. 15 oz.”⁶⁴

Dime/Penny	0.75	
Nickel	0.88	
Quarter	1.00	
Half Dollar	1.25	
Ping Pong	1.50	
Golf Ball	1.75	
Hen Egg	2.00	
Tennis Ball	2.50	
Baseball	2.75	
Tea Cup	3.00	
Grapefruit	4.00	
Softball	4.50	

The charts to the right show how hail is formed. How hailstones grow is complicated, but the results are irregular balls of ice that can be as large as baseballs. The chart above shows the relative size differences and a common way to “measure” the size of hail based on diameter.⁶⁵



⁶⁴ NOAA National Severe Storms Laboratory; <https://www.nssl.noaa.gov/education/svrwx101/hail/>

⁶⁵ <http://oceanservice.noaa.gov/education/yos/resource/JetStream/tstorms/hail.htm#hail>

***WILDFIRES**

The National Wildfire Coordinating Group (NWCG) states that, wildfires are designated into seven categories, as seen in the top chart to the right.⁶⁶ For statistical analysis, the US Forest Service recognizes the cause of fires according to the bottom chart to the right:⁶⁷

Class	Aces Burned
Class A	0 to .25 acres
Class B	.26 to 9 acres
Class C	10 to 99 acres
Class D	100 to 299 acres
Class E	300 to 999 acres
Class F	1,000 to 4,999 acres
Class G	5,000 acres or more
Code	Statistical Cause
1	Lightning
2	Equipment Use
3	Smoking
4	Campfire
5	Debris Burning
6	Railroad
7	Arson
8	Children
9	Miscellaneous

According to the International Wildland-Urban Interface Code (IWUIC), the definition of wildfire is an uncontrolled fire spreading through vegetative fuels, exposing and possibly consuming structures. In addition, the IWUIC defines the Wildland Urban Interface (WUI) area as *“that geographical area where structures and other human development meets or intermingles with wildland or vegetative fuels.”*⁶⁸

There are two major potential losses with a wildfire: the forest and the threat to the built-up human environment. In many cases, the only time it is feasible for a community to control a wildfire is when it threatens the built-up human environment.

***TROPICAL & POST-TROPICAL CYCLONES**

Cyclones (Hurricanes)

A hurricane is a tropical cyclone where winds reach 74 miles per hour or more and blow in a large spiral around a relatively calm center. The storm's eye is usually 20-30 miles wide, and the storm may extend over 400 miles. High winds are a primary cause of hurricane-inflicted loss of life and property damage.

“The Saffir-Simpson Hurricane Wind Scale” (on the following page⁶⁹) is a 1 to 5 rating based on a hurricane's sustained wind speed. This scale estimates potential property damage. Hurricanes reaching Category 3 and higher are considered major hurricanes because of their potential for significant loss of life and damage. Category 1 and 2 storms are still dangerous and require preventative measures. In the western North Pacific, the term "super typhoon" is used for tropical cyclones with sustained winds exceeding 150 mph.⁷⁰

Flooding is often caused by the coastal storm surge of the ocean and torrential rains, both of which may accompany a hurricane; these floods can result in the loss of lives and property.

Post-Tropical Cyclones

A tropical depression becomes a tropical storm when its maximum sustained winds are between 39-73 mph. Although tropical storms have less than 74 miles per hour winds, they can do significant damage like hurricanes. The damage most felt by tropical storms is from their torrential rains, which cause rivers and streams to flood and overflow their banks. Rainfall from tropical storms has been reported at rates of up to 6 inches per hour; 43 inches of rain in 24 hours was reported in Alvin, TX, due to Tropical Storm Claudette.⁷¹

⁶⁶ <http://www.nwcg.gov/pms/pubs/glossary/s.htm>
⁶⁷ https://www.fs.fed.us/cgi-bin/Directives/get_dirs/fsh?5109.14
⁶⁸ International Wildland-Urban Interface Code, 2012, International Code Council, Inc.
⁶⁹ National Hurricane Center; <http://www.nhc.noaa.gov/aboutsshws.php>
⁷⁰ National Hurricane Center, NOAA; <http://www.nhc.noaa.gov/aboutsshws.php>
⁷¹ http://www.wpc.ncep.noaa.gov/research/mcs_web_test_test_files/Page1637.htm

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

***EARTHQUAKES**

An earthquake is a rapid shaking of the earth caused by the breaking and shifting of rock beneath the earth’s surface. Earthquakes can cause buildings and bridges to collapse, disrupt gas, electric, and phone lines, and often cause landslides, flash floods, fires, and avalanches. More significant earthquakes usually begin with slight tremors but rapidly take the form of one or more violent shocks and end in vibrations of gradually diminishing force called aftershocks. An earthquake's underground point of origin is called its focus; the point on the surface directly above the focus is the epicenter. Two scales widely determine the magnitude and intensity of an earthquake: the more commonly used Richter scale (measures strength or magnitude) and the Mercalli Scale (measures intensity or severity). The chart to the right shows the two scales relative to one another. The Richter scale measures earthquakes starting at one as the lowest, with each successive unit being about ten times stronger and more severe than the previous one.⁷²

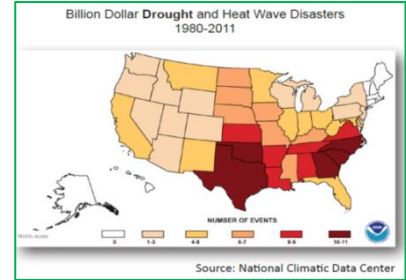
Four earthquakes occurred in New Hampshire between 1924 and 1989, having a magnitude of 4.2 or more. Two occurred in Tamworth, one west of Laconia and one near the Quebec border. It is well documented that fault lines are running throughout New Hampshire, but high-magnitude earthquakes have not been frequent in NH history.

Modified Mercalli Scale		Richter Magnitude Scale
I	Detected only by sensitive instruments	1.5
II	Felt by few persons at rest, especially on upper floors; delicately suspended objects may swing	2
III	Felt noticeably indoors, but not always recognized as earthquake; standing autos rock slightly, vibration like passing truck	2.5
IV	Felt indoors by many, outdoors by few, at night some may awaken; dishes, windows, doors disturbed; autos rock noticeably	3
V	Felt by most people; some breakage of dishes, windows, and plaster; disturbance of tall objects	3.5
VI	Felt by all, many frightened and run outdoors; falling plaster and chimneys, damage small	4
VII	Everybody runs outdoors; damage to buildings varies depending on quality of construction; noticed by drivers of autos	4.5
VIII	Panel walls thrown out of frames; fall of walls, monuments, chimneys; sand and mud ejected; drivers of autos disturbed	5
IX	Buildings shifted off foundations, cracked, thrown out of plumb; ground cracked; underground pipes broken	5.5
X	Most masonry and frame structures destroyed; ground cracked, rails bent, landslides	6
XI	Few structures remain standing; bridges destroyed, fissures in ground, pipes broken, landslides, rails bent	6.5
XII	Damage total; waves seen on ground surface, lines of sight and level distorted, objects thrown up in air	7
		7.5
		8

⁷² Modified Mercalli Scale/Richter Scale Chart; MO DNR, http://www.dnr.mo.gov/geology/geosrv/geores/richt_mercalli_relation.htm

***DROUGHT**

A drought is a long period of abnormally low precipitation that adversely affects the growing season or living conditions of plants and animals. Droughts are rare in New Hampshire. They are generally less damaging and disruptive than floods and are more difficult to define. The effect of drought is indicated through measurements of soil moisture, groundwater levels, and streamflow.



However, not all of these indicators will be minimal during a drought. For example, frequent minor rainstorms can replenish the soil moisture without raising groundwater levels or increasing streamflow. Low stream flow also correlates with low groundwater levels because groundwater discharge to streams and rivers maintains streamflow during extended dry periods. Low streamflow and low groundwater levels commonly cause diminished water supply.

The US Drought Monitor provides an intensity scale, as shown below, to indicate the “Category” of drought at any given time. During the peak months of the 2016 drought in New Hampshire, the southern part of the state was in Category D3 or Extreme Drought.

Category	Description	Possible Impacts	Ranges				
			Palmer Drought Severity Index (PDSI)	CPC Soil Moisture Model (Percentiles)	USGS Weekly Streamflow (Percentiles)	Standardized Precipitation Index (SPI)	Objective Drought Indicator Blends (Percentiles)
D0	Abnormally Dry	<ul style="list-style-type: none"> Going into drought: <ul style="list-style-type: none"> short-term dryness slowing planting, growth of crops or pastures Coming out of drought: <ul style="list-style-type: none"> some lingering water deficits pastures or crops not fully recovered 	-1.0 to -1.9	21 to 30	21 to 30	-0.5 to -0.7	21 to 30
D1	Moderate Drought	<ul style="list-style-type: none"> Some damage to crops, pastures Streams, reservoirs, or wells low, some water shortages developing or imminent Voluntary water-use restrictions requested 	-2.0 to -2.9	11 to 20	11 to 20	-0.8 to -1.2	11 to 20
D2	Severe Drought	<ul style="list-style-type: none"> Crop or pasture losses likely Water shortages common Water restrictions imposed 	-3.0 to -3.9	6 to 10	6 to 10	-1.3 to -1.5	6 to 10
D3	Extreme Drought	<ul style="list-style-type: none"> Major crop/pasture losses Widespread water shortages or restrictions 	-4.0 to -4.9	3 to 5	3 to 5	-1.6 to -1.9	3 to 5
D4	Exceptional Drought	<ul style="list-style-type: none"> Exceptional and widespread crop/pasture losses Shortages of water in reservoirs, streams, and wells creating water emergencies 	-5.0 or less	0 to 2	0 to 2	-2.0 or less	0 to 2

<https://droughtmonitor.unl.edu/AboutUSDM/AbouttheData/DroughtClassification.aspx>

*LANDSLIDE & EROSION

Erosion is the wearing away of lands, such as riverbank loss, beach, shoreline, or dune material. It is measured as the rate of change in the position or displacement of a riverbank or shoreline over a period of time. Short-term erosion typically results from periodic natural events, such as flooding, hurricanes, storm surge, and windstorms, but may be intensified by human activities. Long-term erosion results from multi-year impacts such as repetitive flooding, wave action, sea-level rise, sediment loss, subsidence, and climate change. Death and injury are not typically associated with erosion; however, erosion can destroy buildings and infrastructure.⁷³

While no universally accepted standard or scientific scale has been developed for measuring the severity of all landslides, severity can be measured in several other ways:

- Steepness/grade of the Slope (measured as a percent)
- Geographical Area
 - Measured in square feet, square yards, etc.
 - More accurately measured using LIDAR/GIS systems
- Earthquake, either causing the event or caused by the event (measured using the Moment Magnitude Intensity or Mercalli Scale)

There are also multiple types of landslides:

- Falls: A mass detaches from a steep slope or cliff and descends by free-fall, bounding, or rolling
- Topples: A mass tilts or rotates forward as a unit
- Slides: A mass displaces on one or more recognizable surfaces, which may be curved or planar
- Flows: A mass moves downslope with a fluid motion. A significant amount of water may or may not be part of the mass

Like flooding, landslides are unique in how they affect different geographic, topographic, and geologic areas. Therefore, consideration of many measurements is required to determine the severity of the landslide event.⁷⁴

*INFECTIOUS DISEASES

Bacterial & Viral Infections

Many organisms live inside our bodies and on our skin. Although these organisms are generally harmless and sometimes helpful, they can cause illnesses. Infectious diseases can be transmitted from person to person by bites from animals or insects (zoonotic), from the environment, or by consuming food or water that has been contaminated. In addition, infectious diseases may be caused by bacteria, viruses, fungi, and parasites.⁷⁵

Some of the more common infectious diseases include Lyme disease, HIV/AIDS, Tuberculosis, Rabies, West Nile Virus, Eastern Equine Encephalitis (EEE), Ebola, Avian Flu, Enterovirus D-68, Influenza, Hepatitis A, Zika Virus, Meningitis, Legionella, Sexually Transmitted Diseases (STD), Hepatitis C, Salmonella, SARS and Staph.⁷⁶

⁷³ Mitigation Ideas, A Resource for Reducing Risk to Natural Hazards, FEMA, January 2013

⁷⁴ State of New Hampshire Multi-Hazard Mitigation Plan Update 2018 & <https://oas.org/dsd/publications/Unit/oea66e/ch10.htm>

⁷⁵ <https://www.mayoclinic.org/diseases-conditions/infectious-diseases/symptoms-causes/syc-20351173>

⁷⁶ <https://www.dhhs.nh.gov/dphs/cdcs/index.htm>

“Throughout history, millions of people have died of diseases such as bubonic plague or the Black Death, which is caused by Yersinia pestis bacteria, and smallpox, which is caused by the variola virus. In recent times, viral infections have been responsible for two major pandemics: the 1918-1919 “Spanish Flu” epidemic that killed 20-40 million people, and the ongoing HIV/AIDS epidemic that killed an estimated 1.5 million people worldwide in 2013 alone.

Bacterial and viral infections can cause similar symptoms such as coughing and sneezing, fever, inflammation, vomiting, diarrhea, fatigue, and cramping – all of which are ways the immune system tries to rid the body of infectious organisms. But bacterial and viral infections are dissimilar in many other important respects, most of them due to the organisms’ structural differences and the way they respond to medications.”⁷⁷

In early 2020, a novel coronavirus emerged in China, spreading worldwide to become the worst pandemic since the 1918 Spanish Flu. Known as Covid-19, Johns Hopkins University reports that this novel coronavirus has infected 618,016,044 people and caused the deaths of 6,546,729 individuals worldwide as of October 2, 2022. As of this date, confirmed cases in the US were reported to be 96,394,980, with 1,059,605 reported deaths.⁷⁸ State Governors advised Most US residents to stay home; businesses closed to flatten the rising curve of confirmed cases through mitigation. However, the Delta and Omicron variants appeared in the US in December 2021, causing critical concerns about the possibility of overwhelming the country’s hospital systems. As of October 2022, mitigation, testing, treatments, and vaccination efforts appeared to be working in much of the United States, although the virus is still with us.

The pandemic is an evolving worldwide crisis, affecting millions of workers in the United States and presenting massive economic results. Although most people confirmed with Covid-19 eventually recover, the virus has impacted the elderly and compromised individuals, particularly those in confined living quarters such as nursing homes and prisons.

The extent of infectious diseases is generally described by the level and occurrence of a particular disease as follows⁷⁹:

- Endemic.....Disease with a constant presence or usual prevalence in a population within a geographic area
- Sporadic.....Disease that occurs infrequently and irregularly
- Hyperendemic.....Disease that is persistent and has high levels of occurrence
- Epidemic.....Disease that shows an increase, often sudden, in the number of cases of a disease above what is normally expected in that population in that area
- Outbreak.....Disease that has the same definition as an epidemic but is often used for a more limited geographic area
- Cluster.....Refers to an aggregation of cases grouped in place and time that are suspected to be greater than the number expected, even though the expected number may not be known.
- Pandemic.....An epidemic that has spread over several countries or continents, usually affecting a large number of people

⁷⁷ <https://www.webmd.com/a-to-z-guides/bacterial-and-viral-infections#1>

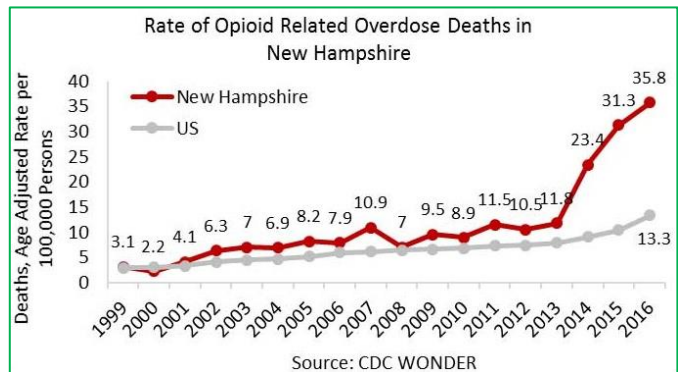
⁷⁸ <https://coronavirus.jhu.edu/map.html>

⁷⁹ <https://www.cdc.gov/ophss/csels/dsepd/ss1978/lesson1/section11.html>

Opioid Crisis

A revised report by the National Institute of Drug Abuse states, “Every day, more than 130 people in the United States die after overdosing on opioids. The misuse of and addiction to opioids—including prescription pain relievers, heroin, and synthetic opioids such as fentanyl - is a serious national crisis that affects public health as well as social and economic welfare. The Centers for Disease Control and Prevention estimates that the total “economic burden” of prescription opioid misuse alone in the United States is \$78.5 billion a year, including the costs of healthcare, lost productivity, addiction treatment, and criminal justice involvement.”

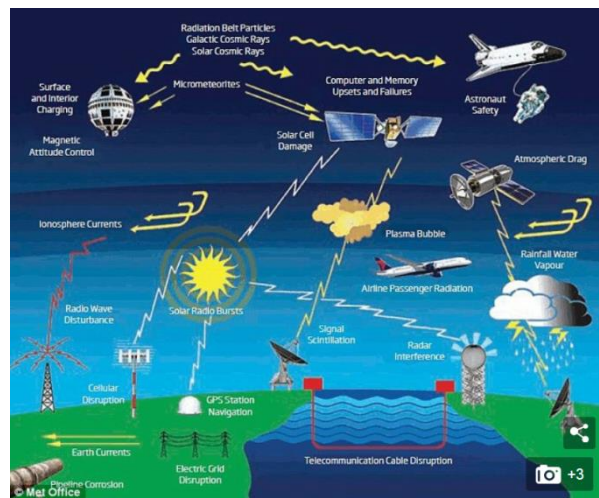
According to the National Institute on Drug Abuse, “New Hampshire has the second highest rate of opioid-related overdose deaths – a rate of 35.8 deaths per 100,000 persons – nearly 3 times higher than the national rate of 13.2 deaths per 100,000. From 2013 through 2016, opioid-related deaths in New Hampshire tripled. This increase was mainly driven by the number of deaths related to synthetic opioids (predominately fentanyl), which increased more than tenfold, from 30 to 363 deaths, during this time.”⁸⁰ The chart to the right shows the increase in opioid-related overdose deaths in New Hampshire compared to the US overall.⁸¹



SOLAR STORM & SPACE WEATHER

When sudden amounts of stored magnetic energy and ions are discharged from the Sun’s surface, solar flares, high-speed solar wind streams, solar energetic particles, and coronal mass ejections (CMEs) are possible. This magnetic energy sometimes finds its way to Earth by following the Sun’s magnetic field. Then, upon collision with the Earth’s magnetic field, these charged particles enter the Earth’s upper atmosphere, causing Auroras.

Charged magnetic particles can produce their own magnetic field, disrupting navigation, communication systems, and GPS satellites. In addition, they can potentially produce Geomagnetic Induced Currents (GICs), affecting the power grid and pipelines. In addition, an electromagnetic surge from a solar storm can produce an Electromagnetic Pulse (EMP). An EMP could cause significant damage to infrastructures such as nuclear power plants, banking systems, the electrical grid, sewage treatment facilities, cell phones, landlines, and even vehicles. The image above shows the potential impacts of solar storms and space weather.⁸²



⁸⁰ <https://www.drugabuse.gov/drugs-abuse/opioids/opioid-summaries-by-state/new-hampshire-opioid-summary>

⁸¹ Ibid

⁸² <https://www.dailymail.co.uk/sciencetech/article-3764842/A-solar-storm-destroy-planet-unless-create-massive-magnetic-shield-protect-Earth-warns-expert.html>

Solar Storm & Space Weather Extent⁸³

Geomagnetic Storms				
Scale	Description	Effect	Physical Measure	Average Frequency (1 cycle = 11 years)
G 5	Extreme	<p>Power systems: Widespread voltage control problems and protective system problems can occur; some grid systems may experience complete collapse or blackouts. Transformers may experience damage.</p> <p>Spacecraft operations: May experience extensive surface charging, problems with orientation, uplink/downlink, and tracking satellites.</p> <p>Other systems: Pipeline currents can reach hundreds of amps, HF (high frequency) radio propagation may be impossible in many areas for one to two days, satellite navigation may be degraded for days, low-frequency radio navigation can be out for hours, and aurora has been seen as low as Florida and southern Texas (typically 40° geomagnetic lat.).</p>	Kp. = 9	4 per cycle (4 days per cycle)
G 4	Severe	<p>Power systems: Possible widespread voltage control problems and some protective systems will mistakenly trip out key assets from the grid.</p> <p>Spacecraft operations: May experience surface charging and tracking problems; corrections may be needed for orientation problems.</p> <p>Other systems: Induced pipeline currents affect preventive measures, HF radio propagation is sporadic, satellite navigation is degraded for hours, low-frequency radio navigation is disrupted, and aurora has been seen as low as Alabama and northern California (typically 45° geomagnetic lat.).</p>	Kp. = 8, including a 9-	100 per cycle (60 days per cycle)
G 3	Strong	<p>Power systems: Voltage corrections may be required; false alarms are triggered on some protection devices.</p> <p>Spacecraft operations: Surface charging may occur on satellite components, drag may increase on low-Earth-orbit satellites, and corrections may be needed for orientation problems.</p> <p>Other systems: Intermittent satellite navigation and low-frequency radio navigation problems may occur, HF radio may be intermittent, and aurora has been seen as low as Illinois and Oregon (typically 50° geomagnetic lat.).</p>	Kp. = 7	200 per cycle (130 days per cycle)
G 2	Moderate	<p>Power systems: High-latitude power systems may experience voltage alarms; long-duration storms may cause transformer damage.</p> <p>Spacecraft operations: Corrective actions to orientation may be required by ground control; possible changes in drag affect orbit predictions.</p> <p>Other systems: HF radio propagation can fade at higher latitudes, and aurora has been seen as low as New York and Idaho (typically 55° geomagnetic lat.).</p>	Kp. = 6	600 per cycle (360 days per cycle)
G 1	Minor	<p>Power systems: Weak power grid fluctuations can occur.</p> <p>Spacecraft operations: Minor impact on satellite operations possible.</p> <p>Other systems: Migratory animals are affected at this and higher levels; aurora is commonly visible at high latitudes (northern Michigan and Maine).</p>	Kp. = 5	1700 per cycle (900 days per cycle)

Solar Radiation Storms				
Scale	Description	Effect	Physical Measure (Flux level of >=10 MeV particles)	Average Frequency (1 cycle = 11 years)
S 5	Extreme	<p>Biological: Unavoidable high radiation hazard to astronauts on EVA (extra-vehicular activity); passengers and crew in high-flying aircraft at high latitudes may be exposed to radiation risk.</p> <p>Satellite operations: Satellites may be rendered useless, memory impacts can cause loss of control, may cause serious noise in image data, star-trackers may be unable to locate sources, permanent damage to solar panels is possible.</p> <p>Other systems: Complete blackout of HF (high frequency) communications possible through the polar regions and position errors make navigation operations extremely difficult.</p>	10 ⁵	Fewer than 1 per cycle
S 4	Severe	<p>Biological: Unavoidable radiation hazard to astronauts on EVA; passengers and crew in high-flying aircraft at high latitudes may be exposed to radiation risk.</p> <p>Satellite operations: May experience memory device problems and noise on imaging systems; star-tracker problems may cause orientation problems, and solar panel efficiency can be degraded.</p> <p>Other systems: Blackout of HF radio communications through the polar regions and increased navigation errors over several days are likely.</p>	10 ⁴	3 per cycle

⁸³ Extent charts taken from <https://www.weather.gov/akq/SpaceWeather>

Solar Radiation Storms				
S 3	Strong	<p>Biological: Radiation hazard avoidance is recommended for astronauts on EVA; passengers and crew in high-flying aircraft at high latitudes may be exposed to radiation risk.</p> <p>Satellite operations: Single-event upsets, noise in imaging systems, and a slight reduction of efficiency in solar panels are likely.</p> <p>Other systems: Degraded HF radio propagation through the polar regions and navigation position errors likely.</p>	10 ³	10 per cycle
S 2	Moderate	<p>Biological: Passengers and crew in high-flying aircraft at high latitudes may be exposed to elevated radiation risk.</p> <p>Satellite operations: Infrequent single-event upsets are possible.</p> <p>Other systems: minor effects on HF propagation through the polar regions and navigation at polar cap locations possibly affected.</p>	10 ²	25 per cycle
S 1	Minor	<p>Biological: None.</p> <p>Satellite operations: None.</p> <p>Other systems: Minor impacts on HF radio in the polar regions.</p>	10	50 per cycle

Radio Blackout				
Scale	Description	Effect	Physical Measure	Average Frequency (1 cycle = 11 years)
R 5	Extreme	<p>HF Radio: Complete HF (high frequency) radio blackout on the entire sunlit side of the Earth lasting for a number of hours. This results in no HF radio contact with mariners and on-route aviators in this sector.</p> <p>Navigation: Low-frequency navigation signals used by maritime and general aviation systems experience outages on the sunlit side of the Earth for many hours, causing loss in positioning. Increased satellite navigation errors in positioning for several hours on the sunlit side of Earth, which may spread into the night side.</p>	X20 (2 x 10 ⁻³)	Less than 1 per cycle
R 4	Severe	<p>HF Radio: HF radio communication blackouts on most of the sunlit side of Earth for one to two hours. HF radio contact lost during this time.</p> <p>Navigation: Outages of low-frequency navigation signals cause increased errors in positioning for one to two hours. Minor disruptions of satellite navigation possible on the sunlit side of Earth.</p>	X10 (10 ⁻³)	8 per cycle (8 days per cycle)
R 3	Strong	<p>HF Radio: Wide area blackout of HF radio communication, loss of radio contact for about an hour on sunlit side of Earth.</p> <p>Navigation: Low-frequency navigation signals degraded for about an hour.</p>	X1 (10 ⁻⁴)	175 per cycle (140 days per cycle)
R 2	Moderate	<p>HF Radio: Limited blackout of HF radio communication on the sunlit side, loss of radio contact for tens of minutes.</p> <p>Navigation: Degradation of low-frequency navigation signals for tens of minutes.</p>	M5 (5 x 10 ⁻⁵)	350 per cycle (300 days per cycle)
R 1	Minor	<p>HF Radio: Weak or minor degradation of HF radio communication on the sunlit side, occasional loss of radio contact.</p> <p>Navigation: Low-frequency navigation signals are degraded for brief intervals.</p>	M1 (10 ⁻⁵)	2000 per cycle (950 days per cycle)

AVALANCHES

According to the National Snow & Ice Data Center, an avalanche is a rapid flow of snow down a hill or mountainside. Although avalanches can occur on any slope given the right conditions, certain times of the year and specific locations are naturally more dangerous than others. Most avalanches tend to happen during Wintertime, particularly from December to April. However, avalanche fatalities have been recorded for every month of the year.”⁸⁴



“All that is necessary for an avalanche is a mass of snow and a slope for it to slide down...A large avalanche in North America might release 230,000 cubic meters (300,000 cubic yards) of snow. That is the equivalent of 20 football fields filled 3 meters (10 feet) deep with snow. However, such large avalanches are often naturally released, when the snowpack becomes unstable and layers of snow fail. Skiers and recreationists usually trigger smaller, but often more deadly avalanches.”

North American Public Avalanche Danger Scale			
Avalanche danger is determined by the likelihood, size and distribution of avalanches.			
Danger Level	Travel Advice	Likelihood of Avalanches	Avalanche Size and Distribution
5 Extreme	Avoid all avalanche terrain.	Natural and human-triggered avalanches certain.	Large to very large avalanches in many areas.
4 High	Very dangerous avalanche conditions. Travel in avalanche terrain <u>not</u> recommended.	Natural avalanches likely; human-triggered avalanches very likely.	Large avalanches in many areas; or very large avalanches in specific areas.
3 Considerable	Dangerous avalanche conditions. Careful snowpack evaluation, cautious route-finding and conservative decision-making essential.	Natural avalanches possible; human-triggered avalanches likely.	Small avalanches in many areas; or large avalanches in specific areas; or very large avalanches in isolated areas.
2 Moderate	Heightened avalanche conditions on specific terrain features. Evaluate snow and terrain carefully; identify features of concern.	Natural avalanches unlikely; human-triggered avalanches possible.	Small avalanches in specific areas; or large avalanches in isolated areas.
1 Low	Generally safe avalanche conditions. Watch for unstable snow on isolated terrain features.	Natural and human-triggered avalanches unlikely.	Small avalanches in isolated areas or extreme terrain.

Safe backcountry travel requires training and experience. You control your own risk by choosing where, when and how you travel.

An avalanche has three main parts (see the image above). The first and most unstable is the starting zone, where the snow can fracture and slide. *“Typical starting zones are higher up on slopes. However, given the right conditions, snow can fracture at any point on the slope.”*⁸⁵

The second part is the avalanche track or the downhill path that the avalanche follows. The avalanche is evident where large swaths of trees are missing or where there are large pile-ups of rock, snow, trees, and debris at the bottom of an incline.

The third part of an avalanche is the runout zone. The avalanche stopped in the runout zone and left the most extensive and highest pile of snow and debris.

*“Several factors may affect the likelihood of an avalanche, including weather, temperature, slope steepness, slope orientation (whether the slope is facing north or south), wind direction, terrain, vegetation, and general snowpack conditions. Different combinations of these factors can create low, moderate, or extreme avalanche conditions. In addition, some of these conditions, such as temperature and snowpack, can change on a daily or hourly basis.”*⁸⁶

⁸⁴ Copyright Richard Armstrong, NSIDC, <http://nsidc.org/cryosphere/snow/science/avalanches.html>

⁸⁵ NSIDC, <http://nsidc.org/cryosphere/snow/science/avalanches.html>; image credit: Betsy Armstrong

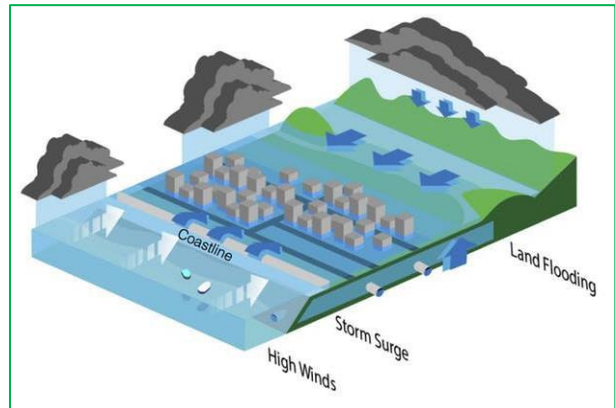
⁸⁶ Copyright Richard Armstrong, NSIDC, <http://nsidc.org/cryosphere/snow/science/avalanches.html>

When an avalanche is possible, an “avalanche advisory” is issued. This preliminary notification warns hikers, skiers, snowmobilers, and responders that conditions may be favorable for the development of avalanches. The chart above shows avalanche danger determined by likelihood, size, and distribution.⁸⁷

COASTAL FLOODING

Coastal areas are particularly susceptible to flooding, erosion, storm surge, and sea-level rise due to tropical and post-tropical cyclones, heavy rain events, gale-force winds, and other natural phenomena. The flooding that results is “determined by a combination of several factors such as storm intensity, forward speed, storm area size, coastline characteristics, angle of approach to the coast, tide height.”⁸⁸

The severity of the flooding can vary depending on “both the speed of onset (how quickly the floodwaters rise) and the flood duration. Nor’easters can impact the region for several days and produce storm surge with or without the addition of inland runoff from heavy precipitation.”⁸⁹ As shown in the image below, storm surge and inland flooding can affect the severity of flooding along the shore.⁹⁰



⁸⁷ http://www.avalanche.org/danger_card.php

⁸⁸ NH Multi-hazard Mitigation Plan-2018, page 55

⁸⁹ Ibid

⁹⁰ Ibid, page 53, “Understanding compound flooding from land and ocean sources”, Theodore Scontras, University of Maine)

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APPENDIX D: NH MAJOR DISASTER & EMERGENCY DECLARATIONS

Major Disaster (DR) & Emergency Declarations (EM)

This list includes one Fire Management Assistance Declaration (FM)
 Declarations are arranged chronologically; the most recent disaster is listed first

Number	Hazard	Date of Event	Counties	Description
DR-4693	Severe Winter Storm	December 22-25, 2022	Belknap, Grafton, Carroll & Coos	Major Disaster Declaration, DR-4693: A severe winter storm occurred December 22-25, 2022. Heavy, wet snow caused trees and power lines to fall; some roadways were closed. The declaration was declared in four of the state's ten counties.
DR-4624	Inland Flooding	July 29-July 30, 2021	Cheshire & Sullivan	Major Disaster Declaration, DR-4624: The Federal Emergency Management Agency announced a major disaster declaration and notification of individual and public assistance on October 4, 2021, for two NH Counties.
DR-4622	Inland Flooding	July 17-19, 2021	Cheshire	Major Disaster Declaration, DR-4622: The Federal Emergency Management Agency announced a major disaster declaration during a period of severe storms and flooding from July 17-19, 2021, in one New Hampshire County.
DR-4516	Infectious Disease	January 20, 2020 ongoing	All Ten NH Counties	Major Disaster Declaration, DR-4516: The Federal Emergency Management Agency ("FEMA") within the US Department of Homeland Security is giving public notice of its intent to assist the State of New Hampshire, local and tribal governments, and certain private nonprofit organizations under the major disaster declaration issued by the President on April 3, 2020, as a result of the Coronavirus Disease 2019 (Covid-19).
EM-3445	Infectious Disease	January 20, 2020 ongoing	All Ten NH Counties	Emergency Declaration EM-3445: A ten-county declaration to provide individual assistance and public assistance as a result of the impact of Covid-19
DR-4457	Severe Storm & Flooding	July 11-12, 2019	Grafton	Major Disaster Declaration, DR-4457: The Federal Emergency Management Agency announced a major disaster declaration for a period of severe storms and flooding from July 11-12, 2019, in one New Hampshire County.
DR-4371	Severe Winter Storm	March 13-14, 2018	Carroll, Strafford & Rockingham	Major Disaster Declaration, DR 4371: The Federal Emergency Management Agency announced a major disaster declaration on June 8, 2018, for a period of a severe winter storm from March 13-14, 2018.
DR-4370	Severe Storm & Flooding	March 2-8, 2018	Rockingham	Major Disaster Declaration, DR 4370: The Federal Emergency Management Agency announced a major disaster declaration on June 8, 2018, for a period of severe storms and flooding from March 2-8, 2018.
DR-4355	Severe Storms, Flooding	October 29-November 1, 2017	Sullivan, Grafton, Coos, Carroll, Belknap & Merrimack	Major Disaster Declaration, DR-4355: The Federal Emergency Management Agency (FEMA) announced that federal disaster assistance was available to supplement state and local recovery efforts in areas affected by severe storms and flooding from October 29-November 1, 2017, in five New Hampshire Counties.

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Number	Hazard	Date of Event	Counties	Description
DR-4329	Severe Storms, Flooding	July 1-2, 2017	Grafton & Coos	Major Disaster Declaration DR-4329: The Federal Emergency Management Agency (FEMA) announced that federal disaster assistance is available to the state of New Hampshire to supplement state and local recovery efforts in the areas affected by severe storms and flooding from July 1, 2017, to July 2, 2017, in Grafton County
DR-4316	Severe Winter Storm	March 14-15, 2017	Belknap & Carroll	Major Disaster Declaration DR-4316: Severe winter storm and snowstorm in Belknap & Carroll Counties; disaster aid to supplement state and local recovery efforts.
FM-5123	Forest Fire	April 21-23, 2016	Cheshire	Fire Management Assistance Declaration, FM-5123: Stoddard, NH
DR-4209	Severe Winter Storm	January 26-28, 2015	Hillsborough, Rockingham & Stafford	Major Disaster Declaration DR-4209: Severe winter storm and snowstorm in Hillsborough, Rockingham, and Strafford Counties; disaster aid to supplement state and local recovery efforts.
DR-4139	Severe Storms, Flooding	July 9-10, 2013	Cheshire, Sullivan & Grafton	Major Disaster Declaration DR-4139: Severe storms, flooding, and landslides from June 26 to July 3, 2013, in Cheshire, Sullivan, and southern Grafton Counties.
DR-4105	Severe Winter Storm	February 8, 2013	All Ten NH Counties	Major Disaster Declaration DR-4105: Nemo; heavy snow in February 2013.
DR-4095	Hurricane Sandy	October 26-November 8, 2012	Belknap, Carroll, Coos, Grafton, Rockingham & Sullivan	Major Disaster Declaration DR-4095: The declaration covers damage to property from the storm that spawned heavy rains, high winds, high tides, and flooding from October 26-November 8, 2012.
EM-3360	Hurricane Sandy	October 26-31, 2012	All Ten NH Counties	Emergency Declaration EM-3360: Hurricane Sandy came ashore in NJ and brought NH high winds, power outages, and heavy rain. It was declared in all ten counties in New Hampshire.
DR-4065	Severe Storm & Flooding	May 29-31, 2012	Cheshire	Major Disaster Declaration DR-4065: Severe Storm and Flood Event May 29-31, 2012, in Cheshire County.
DR-4049	Severe Storm & Snowstorm	October 29-30, 2011	Hillsborough & Rockingham	Major Disaster Declaration DR-4049: Severe Storm and Snowstorm Event October 29-30, 2011, in Hillsborough and Rockingham Counties.
EM-3344	Severe Snowstorm	October 29-30, 2011	All Ten NH Counties	Emergency Declaration EM-3344: Severe storm during October 29-30, 2011, in all ten counties in New Hampshire. (Snowtober)
DR-4026	Tropical Storm Irene	August 26-September 6, 2011	Carroll, Coos, Grafton, Merrimack, Belknap, Strafford, & Sullivan	Major Disaster Declaration DR-4026: Tropical Storm Irene Aug 26th- Sept 6, 2011, in Carroll, Coos, Grafton, Merrimack, Belknap, Strafford, & Sullivan Counties.
EM-3333	Tropical Storm Irene	August 26-September 6, 2011	All Ten NH Counties	Emergency Declaration EM-3333: Emergency Declaration for Tropical Storm Irene in all ten counties.
DR-4006	Severe Storm & Flooding	May 26-30, 2011	Coos & Grafton Counties	Major Disaster Declaration DR-4006: May Flooding Event, May 26th-30th, 2011, in Coos & Grafton County. (Memorial Day Weekend Storm)
DR-1913	Severe Storms & Flooding	March 14-31, 2010	Hillsborough & Rockingham	Major Disaster Declaration DR-1913: Flooding to two NH counties, including Hillsborough and Rockingham counties.
DR-1892	Severe Winter Storm, Rain & Flooding	February 23 - March 3, 2010	Grafton, Hillsborough, Merrimack, Rockingham, Strafford & Sullivan	Major Disaster Declaration: DR-1892: Flood and wind damage to most of southern NH, including six counties; 330,000 homes without power; more than \$2 million obligated by June 2010.

Number	Hazard	Date of Event	Counties	Description
DR-1812	Severe Winter Storm & Ice Storm	December 11-23, 2008	All Ten NH Counties	Major Disaster Declaration DR-1812: Damaging ice storms to the entire state, including all ten NH counties; fallen trees and large-scale power outages; five months after December's ice storm battered the region, nearly \$15 million in federal aid had been obligated.
EM-3297	Severe Winter Storm	December 11, 2008	All Ten NH Counties	Emergency Declaration EM-3297: Severe winter storm beginning on December 11, 2008.
DR-1799	Severe Storms & Flooding	September 6-7, 2008	Hillsborough	Major Disaster Declaration: DR-1799: Severe storms and flooding began on September 6, 2008.
DR-1787	Severe Storms & Flooding	July 24-August 14, 2008	Belknap, Carroll & Grafton & Coos	Major Disaster Declaration DR-1787: Severe storms, a tornado, and flooding on July 24, 2008.
DR-1782	Severe Storms, Tornado, & Flooding	July 24, 2008	Belknap, Carroll, Merrimack, Strafford & Rockingham	Major Disaster Declaration DR-1782: Tornado damage to several NH counties.
DR-1695	Nor'easter, Severe Storms & Flooding	April 15-23, 2007	All Ten NH Counties	Major Disaster Declaration DR-1695: Flood damages; FEMA & SBA obligated more than \$27.9 million in disaster aid following the April nor'easter. (Tax Day Storm)
DR-1643	Severe Storms & Flooding	May 12-23, 2006	Belknap, Carroll, Grafton, Hillsborough, Merrimack, Rockingham & Strafford	Major Disaster Declaration DR-1643: Flooding in most of southern NH; May 12-23, 2006. (aka Mother's Day Storm)
DR-1610	Severe Storms & Flooding	October 7-18, 2005	Belknap, Cheshire, Grafton, Hillsborough, Merrimack & Sullivan	Major Disaster Declaration DR-1610: State and federal disaster assistance has reached more than \$3 million to help residents and business owners in New Hampshire recover from losses from severe storms and flooding in October 2005.
EM-3258	Hurricane Katrina Evacuation	August 29-October 1, 2005	All Ten NH Counties	Emergency Declaration EM-3258: Assistance to evacuees from the area struck by Hurricane Katrina and to provide emergency assistance to those areas beginning on August 29, 2005, and continuing. The President's action made federal funding available to the state's ten counties.
EM-3211	Snow	March 11-12, 2005	Carroll, Cheshire, Hillsborough, Rockingham & Sullivan	Emergency Declaration EM-3211: March snowstorm; more than \$2 million has been approved to help pay for costs of the snow removal; Total aid for the March storm is \$2,112,182.01 (Carroll: \$73,964.57; Cheshire: \$118,902.51; Hillsborough: \$710,836; Rockingham: \$445,888.99; Sullivan: \$65,088.53; State of NH: \$697,501.41)
EM-3208	Snow	February 10-11, 2005	Carroll, Cheshire, Coos, Grafton & Sullivan	Emergency Declaration EM-3208: FEMA had obligated more than \$1 million by March 2005 to help pay for costs of the heavy snow and high winds; Total aid for the February storm is \$1,121,727.20 (Carroll: \$91,832.72; Cheshire: \$11,0021.18; Coos: \$11,6508.10; Grafton: \$213,539.52; Sullivan: \$68,288.90; State of NH: \$521,536.78)
EM 3208-002	Snow	January, February, March 2005	Belknap, Carroll, Cheshire, Grafton, Hillsborough, Rockingham, Merrimack, Strafford & Sullivan	Emergency Declaration EM 3208-002: The Federal Emergency Management Agency (FEMA) has obligated more than \$6.5 million to reimburse state and local governments in New Hampshire for costs incurred in three snowstorms that hit the state earlier this year, according to disaster recovery officials. Total aid for all three storms is \$6,892,023.87 (January: \$3,658,114.66; February: \$1,121,727.20; March: \$2,113,182.01)

Number	Hazard	Date of Event	Counties	Description
EM-3207	Snow	January 22-23, 2005	Belknap, Carroll, Cheshire, Grafton, Hillsborough, Rockingham, Merrimack, Strafford & Sullivan	Emergency Declaration EM-3207: More than \$3.5 million has been approved to help pay for the costs of the heavy snow and high winds; Total aid for the January storm is \$3,658,114.66 (Belknap: \$125,668.09; Carroll: \$52,864.23; Cheshire: \$134,830.95; Grafton: \$137,118.71; Hillsborough: \$848,606.68; Merrimack: \$315,936.55; Rockingham: \$679,628.10; Strafford: \$207,198.96; Sullivan: \$48,835.80; State of NH: \$1,107,426.59)
EM-3193	Snow	December 6-7, 2003	Belknap, Carroll, Cheshire, Coos, Grafton, Hillsborough, Merrimack & Sullivan	Emergency Declaration EM-3193: The declaration covers jurisdictions with record and near-record snowfall that occurred throughout December 6-7, 2003
DR-1489	Severe Storms & Flooding	July 21-August 18, 2003	Cheshire & Sullivan	Major Disaster Declaration DR-1489: Floods stemming from persistent rainfall and severe storms caused damage to public property from July 21 through August 18, 2003.
EM-3177	Snowstorm	February 17-18, 2003	Cheshire, Hillsborough, Merrimack, Rockingham & Strafford	Emergency Declaration EM-3177: The declaration covers jurisdictions with record and near-record snowfall from the snowstorm that occurred February 17-18, 2003
EM-3166	Snowstorm	March 5-7, 2001	Cheshire, Coos, Grafton, Hillsborough, Merrimack, Rockingham & Strafford	Emergency Declaration EM-3166: The declaration covers jurisdictions with record and near-record snowfall from the late winter storm that occurred in March 2001
DR-1305	Tropical Storm Floyd	September 16-18, 1999	Belknap, Cheshire & Grafton	Major Disaster Declaration DR-1305: The declaration covers damage to public property from the storm that spawned heavy rains, high winds, and flooding throughout September 16-18.
DR-1231	Severe Storms & Flooding	June 12-July 2, 1998	Belknap, Carroll, Grafton, Hillsborough, Merrimack & Rockingham	Major Disaster Declaration DR-1231:
DR-1199	Ice Storm	January 7-25, 1998	Belknap, Carroll, Cheshire, Coos, Grafton, Hillsborough, Merrimack, Strafford & Sullivan	Major Disaster Declaration DR-1199:
DR-1144	Severe Storms/Flooding	October 20-23, 1996	Grafton, Hillsborough, Merrimack, Rockingham, Strafford & Sullivan	Major Disaster Declaration DR-1144:
DR-1077	Storms/Floods	October 20-November 15, 1995	Carroll, Cheshire, Coos, Grafton, Merrimack & Sullivan	Major Disaster Declaration DR-1077:
EM-3101	High Winds & Record Snowfall	March 13-17, 1994	All Ten NH Counties	Emergency Declaration EM-3101:
DR-923	Severe Coastal Storm	October 30-31, 1991	Rockingham	Major Disaster Declaration DR-923:

Number	Hazard	Date of Event	Counties	Description
DR-917	Hurricane Bob, Severe Storm	August 18-20, 1991	Carroll, Hillsborough, Rockingham & Strafford	Major Disaster Declaration DR-917:
DR-876	Flooding, Severe Storm	August 7-11, 1990	Belknap, Carroll, Cheshire, Coos, Grafton, Hillsborough, Merrimack, & Sullivan	Major Disaster Declaration DR-876:
DR-789	Severe Storms & Flooding	March 30-April 11, 1987	Carroll, Cheshire, Grafton, Hillsborough, Merrimack, Rockingham, Strafford & Sullivan	Major Disaster Declaration DR-789
DR-771	Severe Storms & Flooding	July 29-August 10, 1986	Cheshire, Hillsborough & Sullivan	Major Disaster Declaration DR-771:
EM-3073	Flooding	March 15, 1979	Coos	Emergency Declaration EM-3073:
DR-549	High Winds, Tidal Surge, Coastal Flooding & Snow	February 16, 1978	All Ten NH Counties	Major Disaster Declaration DR-549: Blizzard of 1978
DR-411	Heavy Rains, Flooding	January 21, 1974	Belknap, Carroll, Cheshire & Grafton	Major Disaster Declaration DR-411:
DR-399	Severe Storms & Flooding	July 11, 1973	All Ten NH Counties	Major Disaster Declaration DR-399:
DR-327	Coastal Storms	March 18, 1972	Rockingham	Major Disaster Declaration DR-327:
DR-11	Forest Fire	July 2, 1953	Carroll	Major Disaster Declaration DR-11:

Source:

Disaster Declarations for New Hampshire

http://www.fema.gov/disasters/grid/state-tribal-government/33?field_disaster_type_term_tid_1=All

APPENDIX E: HAZARD MITIGATION PLANNING – LIST OF ACRONYMS

AAR	After Action Report	HSEM.....	Homeland Security Emergency Management
ACS	Acute Care Site	HSPD	Homeland Security Presidential Directive
ARC	American Red Cross	IAP	Incident Action Plan
ARES.....	Amateur Radio Emergency Service	IC.....	Incident Commander
BFE.....	Base Flood Elevation	ICC.....	Incident Command Center
BOCA	Building Officials and Code Administrators	ICS	Incident Command System
CBRNE	Chemical, Biological, Radiological,	JIC.....	Joint Information Center
CDC	Centers for Disease Control and Prevention	LEOP.....	Local Emergency Operations Plan
CDP	Center for Domestic Preparedness	MAPS	Mapping and Planning Solutions
CERT	Community Emergency Response Team	MCI.....	Mass Casualty Incident
CFR	Code of Federal Regulations	MEF.....	Mission Essential Function
CIKR	Critical Infrastructure & Key Resources	MOU	Memorandum of Understanding
CIP.....	Capital Improvements Program	NAWAS	National Warning System
COG	Continuity of Government	NEF	National Essential Function
COOP	Continuity of Operations	NERF.....	Non-Emergency Response Facility
CPCC	Continuity Policy Coordination Committee	NFIP	National Flood Insurance Program
CWPP	Community Wildfire Protection Plan	NGVD.....	National Geodetic Vertical Datum of 1929
DBHRT	Disaster Behavioral Health Response Team	NIMS	National Incident Management System
DEMD	Deputy Emergency Management Director	NOAA	National Oceanic and Atmospheric Association
DES	Department of Environment Services	NRP.....	National Response Plan
DFO	Disaster Field Office	NSPD	National Security Presidential Directive
DHHS	Department of Health and Human Services	NTAS.....	National Terrorism Advisory System
DHS	Department of Homeland Security		Nuclear and Explosive
DMCR	Disaster Management Central Resource	NWS.....	National Weather Service
DNCR	Department of Natural & Cultural Resources	BEA	Bureau of Economic Affairs
DOD.....	Department of Defense	PA	Public Assistance
DOE.....	Department of Energy	PDA.....	Preliminary Damage Assessment
DOJ	Department of Justice	PDD.....	Presidential Decision Directive
DOT	Department of Transportation	PIO	Public Information Officer
DPW	Department of Public Works	PMEF	Primary Mission Essential Function
DRC.....	Disaster Recovery Center	POD	Point of Distribution
EAS	Emergency Alert System	PPE	Personal Protective Equipment
EMD.....	Emergency Management Director	PR	Potential Resources
EMS.....	Emergency Medical Services	PSA	Public Service Announcement
EO	Executive Order	RERP	Radiological Emergency Response Plan
EOC.....	Emergency Operations Center	RNAT.....	Rapid Needs Assessment Team
EPA	U.S. Environmental Protection Agency	SERT.....	State Emergency Response Team
EPZ.....	Emergency Planning Zone	SITREP	Situation Report (Also SitRep)
ERF	Emergency Response Facility	SNS.....	Strategic National Stockpile
ERG.....	Emergency Relocation Group	SOG	Standard Operating Guidelines
ESF.....	Emergency Support Functions	SOP.....	Standard Operating Procedures
FEMA.....	Federal Emergency Management Agency	SPNHF	Society for the Protection of NH Forests
FIRM.....	Flood Insurance Rate Map	UC	Unified Command
FPP.....	Facilities & Populations to Protect	USDA-FS.....	US Department of Agriculture – Forest Service
GIS	Geographic Information System	USGS	United States Geological Society
HazMat	Hazardous Material(s)	VOAD	Volunteer Organization Active in Disasters
HFRA.....	Healthy Forest Restoration Act	WMD	Weapon(s) of Mass Destruction
HMGP.....	Hazard Mitigation Grant Program	WMNF	White Mountain National Forest
HSAS.....	Homeland Security Advisory System	WUI	Wildland Urban Interface

APPENDIX F: POTENTIAL MITIGATION IDEAS⁹¹

Drought

- D1 Assess Vulnerability to Drought Risk
- D2 Monitoring Drought Conditions
- D3 Monitor Water Supply
- D4 Plan for Drought
- D5 Require Water Conservation during Drought Conditions
- D6 Prevent Overgrazing
- D7 Retrofit Water Supply Systems
- D8 Enhance Landscaping & Design Measures
- D9 Educate Residents on Water Saving Techniques
- D10 Educate Farmers on Soil & Water Conservation Practices
- D11 Purchase Crop Insurance

Earthquake

- EQ1.... Adopt & Enforce Building Codes
- EQ2.... Incorporate Earthquake Mitigation into Local Planning
- EQ3.... Map & Assess Community Vulnerability to Seismic Hazards
- EQ4.... Conduct Inspections of Building Safety
- EQ5.... Protect Critical Facilities & Infrastructure
- EQ6.... Implement Structural Mitigation Techniques
- EQ7.... Increase Earthquake Risk Awareness
- EQ8.... Conduct Outreach to Builders, Architects, Engineers, and Inspectors
- EQ9.... Provide Information on Structural & Non-Structural Retrofitting

Erosion

- ER1.... Map & Assess Vulnerability to Erosion
- ER2.... Manage Development in Erosion Hazard Areas
- ER3.... Promote or Require Site & Building Design Standards to Minimize Erosion Risk
- ER4.... Remove Existing Buildings & Infrastructure from Erosion Hazard Areas
- ER5.... Stabilize Erosion Hazard Areas
- ER6.... Increase Awareness of Erosion Hazards

Extreme Temperatures

- ET1 Reduce Urban Heat Island Effect
- ET2 Increase Awareness of Extreme Temperature Risk & Safety
- ET3 Assist Vulnerable Populations
- ET4 Educate Property Owners about Freezing Pipes

Hailstorm

- HA1 Locate Safe Rooms to Minimize Damage
- HA2 Protect Buildings from Hail Damage
- HA3 Increase Hail Risk Awareness

Landslide

- LS1.... Map & Assess Vulnerability to Landslides
- LS2.... Manage Development in Landslide Hazard Areas
- LS3.... Prevent Impacts to Roadways
- LS4 Remove Existing Buildings & Infrastructure from Landslide

Lightning

- L1..... Protect Critical Facilities
- L2..... Conduct Lightning Awareness Programs

Flood

- F1 Incorporate Flood Mitigation in Local Planning
- F2 Form Partnerships to Support Floodplain Management
- F3 Limit or Restrict Development in Floodplain Areas
- F4 Adopt & Enforce Building Codes and Development Standards
- F5 Improve Stormwater Management Planning
- F6 Adopt Policies to Reduce Stormwater Runoff
- F7 Improve Flood Risk Assessment
- F8 Join or Improve Compliance with NFIP
- F9 Manage the Floodplain Beyond Minimum Requirements
- F10 Participate in the CRS
- F11 Establish Local Funding Mechanism for Flood Mitigation
- F12 Remove Existing Structures from Flood Hazard Areas
- F13 Improve Stormwater Drainage System Capacity
- F14 Conduct Regular Maintenance for Drainage Systems & Flood Control Structures
- F15 Elevate or Retrofit Structures & Utilities
- F16 Floodproof Residential & Non-Residential Structures
- F17 Protect Infrastructure
- F18 Protect Critical Facilities
- F19 Construct Flood Control Measures
- F20 Protect & Restore Natural Flood Mitigation Features
- F21 Preserve Floodplains as Open Space
- F22 Increase Awareness of Flood Risk & Safety
- F23 Educate Property Owners about Flood Mitigation Techniques

Severe Wind

- SW1 ... Adopt & Enforce Building Codes
- SW2... Promote or Require Site & Building Design Standards to Minimize Wind Damage
- SW3... Assess Vulnerability to Severe Wind
- SW4... Protect Power Lines & Infrastructure
- SW5... Retrofit Residential Buildings
- SW6... Retrofit Public Buildings & Critical Facilities
- SW7... Increase Severe Wind Awareness

Severe Winter Weather

- WW1 .. Adopt & Enforce Building Codes
- WW2.. Protect Buildings & Infrastructure
- WW3.. Protect Power Lines
- WW4.. Reduce Impacts to Roadways
- WW5.. Conduct Winter Weather Risk Awareness Activities
- WW6.. Assist Vulnerable Populations

Tornado

- T1 Encourage Construction of Safe Rooms
- T2 Require Wind-Resistant Building Techniques
- T2 Conduct Tornado Awareness Activities

⁹¹ Mitigation Ideas, A Resource for Reducing Risk to Natural Hazards, FEMA, January 2013

Wildfire

- WF1 Map & Assess Vulnerability to Wildfire
- WF2 Incorporate Wildfire Mitigation in the Comprehensive Plan
- WF3 Reduce Risk through Land Use Planning
- WF4 Develop a Wildland Urban Interface Code
- WF5 Require or Encourage Fire-Resistant Construction Techniques
- WF6 Retrofit At-Risk Structure with Ignition-Resistant Materials
- WF7 Create Defensible Space around Structures & Infrastructure
- WF8 Conduct Maintenance to Reduce Risk
- WF9 Implement a Fuels Management Program
- WF10 Participate in the Firewise® Program
- WF11 Increase Wildfire Awareness
- WF12 Educate Property Owners about Wildfire Mitigation Techniques

Multi-Hazards

- MU1 Assess Community Risk
- MU2 Map Community Risk
- MU3 Prevent Development in Hazard Areas
- MU4 Adopt Regulations in Hazard Areas
- MU5 Limit Density in Hazard Areas
- MU6 Integrate Mitigation into Local Planning
- MU7 Strengthen Land Use Regulations
- MU8 Adopt & Enforce Building Codes
- MU9 Create Local Mechanisms for Hazard Mitigation
- MU10 Incentivize Hazard Mitigation
- MU11 Monitor Mitigation Plan Implementation
- MU12 Protect Structures
- MU13 Protect Infrastructure & Critical Facilities
- MU14 Increase Hazard Education & Risk Awareness
- MU15 Improve Household Disaster Preparedness
- MU16 Promote Private Mitigation Efforts

APPENDIX G: MILFORD DPW; FAIR-POOR PRIORITY CULVERT LISTING, OCTOBER 2020 #1

			FAIR – POOR PRIORITY CULVERT LISTING OCTOBER 2020 #1							
	OBJECTID	Facility ID	Location Description	Diameter	Material	Condition	Length	CreationDate	CartelID	Comment
1	1520	IN-652_OUT-1040	WILTON RD	12	HDPE	Poor	60.32	9/17/2020 14:13	369	
2	16	IN-227_OUT-363	ELM ST	12	CMP	Poor	36.74	8/1/2017 21:56	16	
3	114	IN-144_OUT-247	ELM ST	15	RCP	Fair	56.39	8/1/2017 21:56	114	
4	168	IN-213_OUT-349	ELM ST	60	CI	Fair	48.78	8/1/2017 21:56	168	
5	1532	IN-488_OUT-804	ELM ST	12	CMP	Fair	149.70	9/17/2020 14:44	381	
6	4	IN-630_OUT-39	AMHERST ST	108	STO	Fair	278.42	8/1/2017 21:56	4	OUT IS 6' X 4' GRANITE BLOCK TUNNEL; IN IS METAL 30 IN PIPE
7	1970	IN-586_OUT-956	MASON RD	18	RCP	Poor	31.34	9/29/2020 14:16	804	
8	1968	IN-585_OUT-955	MASON RD	15	RCP	Fair	21.06	9/29/2020 13:37	802	
9	1969	IN-578_OUT-949	MASON RD	20	RCP	Fair	39.01	9/29/2020 13:49	803	OUT BURIED UNDER ROCKS
10	1972	IN-580_OUT-951	MASON RD	45	CMP	Fair	54.17	9/29/2020 14:19	806	
11	1975	IN-631_OUT-899	MASON RD	12	CMP	Fair	40.80	9/29/2020 14:30	809	
12	1982	IN-544_OUT-900	MASON RD	15	RCP	Fair	40.05	9/29/2020 14:46	816	
13	1983	IN-543_OUT-898	MASON RD	18	CMP	Fair	19.09	9/29/2020 14:49	817	
14	2010	IN-512_OUT-846	WHITTEN RD	32	CMP	Poor	27.43	9/29/2020 17:34	844	1 OF 2 PIPES, STRONG SMELL, EMPTIES INTO HERON POND, VERY BLOCKED PIPE
15	2011	IN-512_OUT-846	WHITTEN RD	32	CMP	Poor	27.43	9/29/2020 17:37	845	2 OF 2 PIPES, STRONG SMELL, EMPTIES INTO HERON POND, VERY BLOCKED PIPE
16	2016	IN-573_OUT-941	WHITTEN RD	8	PVC	Poor	38.87	9/29/2020 18:08	850	INLET IS PVC, OUT IS HDPE, CANNOT LOCATE

				FAIR – POOR PRIORITY CULVERT LISTING						
				OCTOBER 2020 #1						
17	1988	IN-433_OUT-668	WHITTEN RD	15	RCP	Fair	89.63	9/29/2020 15:09	822	
18	2017	IN-572_OUT-940	WHITTEN RD	12	RCP	Fair	41.95	9/29/2020 18:09	851	
19	2018	IN-409_OUT-938	WHITTEN RD	14	RCP	Fair	42.47	9/29/2020 18:12	852	
20	180	IN-234_OUT-378	UNION ST	30	RCP	Fair	69.59	8/1/2017 21:56	180	
21	1726	IN-606_OUT-991	FEDERAL HILL RD	15	RCP	Poor	25.16	9/22/2020 17:45	568	
22	1753	IN-533_OUT-883	FEDERAL HILL RD	18	CMP	Poor	67.80	9/22/2020 19:23	595	
23	1756	IN-531_OUT-880	FEDERAL HILL RD	15	CMP	Fair	22.47	9/22/2020 19:34	598	
24	1745	IN-604_OUT-987	FEDERAL HILL RD	24	CMP	Fair	30.40	9/22/2020 19:06	587	
25	1754	IN-814_OUT-1233	FEDERAL HILL RD	24	RCP	Fair	10.66	9/22/2020 19:23	596	
26	1626	IN-508_OUT-864	MCGETTIGAN RD	18	CMP	Poor	58.03	9/22/2020 12:30	469	
27	1622	IN-842_OUT-1265	MCGETTIGAN RD	15	HDPE	Fair	48.27	9/22/2020 12:30	465	
28	1627	IN-507_OUT-836	MCGETTIGAN RD	15	CMP	Fair	68.44	9/22/2020 12:31	470	
29	176	IN-222_OUT-356	MELENDY RD	12	CMP	Poor	41.98	8/1/2017 21:56	176	
30	1894	IN-404_OUT-638	MELENDY RD	18	CMP	Fair	30.10	9/24/2020 12:19	733	
31	1903	IN-450_OUT-688	MELENDY RD	15	RCP	Fair	82.38	9/24/2020 13:51	742	
32	1670	IN-560_OUT-921	PONEMAH HILL RD	18	CMP	Fair	56.94	9/22/2020 15:25	513	
33	1695	IN-555_OUT-917	PONEMAH HILL RD	15	RCP	Fair	27.43	9/22/2020 16:42	537	
34	1710	IN-588_OUT-958	PONEMAH HILL RD	12	RCP	Fair	40.64	9/22/2020 17:24	552	
35	109	IN-140_OUT-239	NORTH RIVER RD	42	RCP	Fair	36.50	8/1/2017 21:56	109	3X4 FT
36	1445	IN-142_OUT-243	NORTH RIVER RD	30	RCP	Fair	218.99	9/16/2020 18:05	295	
37	1446	IN-618_OUT-1006	NORTH RIVER RD	15	HDPE	Fair	36.08	9/16/2020 18:06	296	

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				FAIR – POOR PRIORITY CULVERT LISTING OCTOBER 2020 #1						
38	1448	IN-619_OUT-1007	NORTH RIVER RD	15	CMP	Fair	30.23	9/16/2020 18:06	298	
39	1431	IN-411_OUT-646	PURGATORY RD	24	HDPE	Fair	55.54	9/16/2020 17:28	283	
40	1432	IN-412_OUT-647	PURGATORY RD	15	CMP	Fair	35.27	9/16/2020 17:28	284	PIPE ROTTED AT ENDS
41	1433	IN-413_OUT-648	PURGATORY RD	12	RCP	Fair	22.38	9/16/2020 17:28	285	
42	1434	IN-608_OUT-994	PURGATORY RD	108	CMP	Fair	34.68	9/16/2020 17:28	286	
43	1435	IN-608_OUT-994	PURGATORY RD	108	CMP	Fair	34.68	9/16/2020 17:40	287	
44	2005	IN-903_OUT-1332	HERON POND RD	24	RCP	Fair	60.46	9/29/2020 16:50	839	
45	2009	IN-904_OUT-767	HERON POND RD	15	RCP	Fair	38.06	9/29/2020 16:57	843	
46	1959	IN-401_OUT-635	GREAT BROOK RD	12	UNK	Poor	30.99	9/29/2020 12:37	793	
47	1473	IN-499_OUT-823	JOSLIN RD		CMP	Fair	46.49	9/16/2020 19:25	323	
48	1475	IN-424_OUT-658	JOSLIN RD		UNK	Fair	22.35	9/16/2020 19:25	325	APPROX LOCATION CAN NOT VERIFY, CAN SEE STREAM BUT NOT PIPE ENDS
49	1612	IN-902_OUT-1331	MEADOWBROOK DR	12	HDPE	Fair	57.12	9/17/2020 19:51	460	
50	1613	IN-901_OUT-1330	MEADOWBROOK DR	12	HDPE	Fair	38.77	9/17/2020 19:51	461	
51	97	IN-236_OUT-381	EMERSON RD	66	RCP	Fair	88.32	8/1/2017 21:56	97	
52	107	IN-133_OUT-225	EMERSON RD	15	RCP	Fair	48.31	8/1/2017 21:56	107	
53	234	CB-14181_OUT-474	BOULDER DR	24	CMP	Poor	74.80	8/1/2017 21:56	234	
54	2083	IN-395_OUT-629	BOULDER DR	36	CMP	Poor	64.01	9/30/2020 17:10	916	
55	2079	IN-504_OUT-832	BOULDER DR	24	HDPE	Fair	75.21	9/30/2020 17:00	912	
56	1944	IN-383_OUT-613	YOUNG RD	12	CMP	Poor	25.94	9/24/2020 18:46	783	

				FAIR – POOR PRIORITY CULVERT LISTING						
				OCTOBER 2020 #1						
57	1941	IN-381_OUT-611	YOUNG RD	12	RCP	Fair	22.20	9/24/2020 18:25	780	
58	1660	IN-484_OUT-782	POWERS ST	30	RCP	Fair	192.72	9/22/2020 14:44	503	
59	1664	IN-1069_OUT-814	CAPRON RD	12	RCP	Fair	34.93	9/22/2020 14:56	507	
60	165	IN-210_OUT-346	COLBURN RD	12	STO	Fair	27.96	8/1/2017 21:56	165	
61	1769	IN-521_OUT-868	COLBURN RD	12	RCP	Fair	51.35	9/23/2020 12:24	610	
62	1770	IN-522_OUT-869	COLBURN RD	12	CMP	Fair	61.28	9/23/2020 12:24	611	
63	1779	IN-536_OUT-889	COLBURN RD	24	CMP	Fair	23.16	9/23/2020 13:03	619	
64	1758	IN-813_OUT-1232	FOSTER RD	15	CMP	Fair	21.22	9/22/2020 19:40	600	
65	1761	IN-538_OUT-892	FOSTER RD	12	CMP	Fair	35.95	9/22/2020 19:43	603	
66	1920	IN-378_OUT-608	ANNAND DR		RCP	Fair	36.18	9/24/2020 15:13	759	INLET SIDE IS BURIED
67	1924	IN-373_OUT-1275	ANNAND DR	18	RCP	Fair	53.33	44098.6716	763	
68	2031	IN-989_OUT-1432	MILE SLIP RD	12	CMP	Fair	17.61	9/29/2020 18:42	865	
69	2033	IN-451_OUT-707	MILE SLIP RD	48	CMP	Fair	16.44	9/29/2020 19:00	867	
70	2038	IN-593_OUT-965	MILE SLIP RD	18	CMP	Fair	34.14	9/29/2020 19:20	872	
71	1566	IN-635_OUT-1025	ADAMS ST		CMP	Poor	19.41	9/17/2020 17:48	414	
72	2014	IN-517_OUT-863	BROOKVIEW DR	12	CMP	Poor	27.71	9/29/2020 17:57	848	
73	1449	IN-414_OUT-649	CHRISTMAS TREE LN	12	CMP	Poor	24.91	9/16/2020 18:25	299	
74	211	IN-281_OUT-441	GREYSTONE PL	12	RCP	Poor	49.82	8/1/2017 21:56	211	

				FAIR – POOR PRIORITY CULVERT LISTING OCTOBER 2020 #1						
75	167	IN-211_OUT-347	TARRY LN	18	CMP	Poor	56.16	8/1/2017 21:56	167	
76	166	IN-212_OUT-348	TARRY LN	18	CMP	Fair	45.00	8/1/2017 21:56	166	
77	1947	IN-436_OUT-671	BURNS RD	15	RCP	Fair	43.74	9/24/2020 19:38	786	PLASTIC PIPE ON ONE SIDE, CONCRETE ON THE OTHER END
78	1948	IN-435_OUT-670	BURNS RD	15	RCP	Fair	52.89	9/24/2020 19:38	787	
79	2000	IN-392_OUT-626	CHAPPELL DR	15	CMP	Fair	119.90	9/29/2020 16:44	834	
80	2001	IN-391_OUT-625	LORDEN DR	12	CMP	Fair	58.11	9/29/2020 16:44	835	
81	1621	IN-505_OUT-834	CLARK RD	20	RCP	Fair	85.34	9/22/2020 12:27	464	
82	1763	IN-541_OUT-895	ECHO RD	18	CPP	Fair	53.49	9/22/2020 19:49	605	
83	1673	IN-530_OUT-879	FERNWOOD DR	15	RCP	Fair	28.78	9/22/2020 15:41	515	
84	151	IN-194_OUT-324	HOMESTEAD CIR	12	CMP	Fair	20.40	8/1/2017 21:56	151	
85	141	IN-177_OUT-289	MAYFLOWER DR	12	CMP	Fair	51.00	8/1/2017 21:56	141	
86	1650	IN-841_OUT-789	MILL ST	36	CMP	Fair	88.67	9/22/2020 14:15	493	
87	263	IN-353_OUT-526	NOONS QUARRY RD	30	RCP	Fair	105.40	8/1/2017 21:56	263	
88	1653	IN-628_OUT-1016	PROSPECT ST	12	CMP	Fair	109.79	9/22/2020 14:26	496	
89	1654	IN-629_OUT-1017	PROSPECT ST	12	HDPE	Fair	25.23	9/22/2020 14:26	497	
90	1883	IN-449_OUT-686	RUONALA RD	40	CMP	Fair	40.88	9/23/2020 19:22	723	
91	1884	IN-542_OUT-896	HELENE DR	18	RCP	Fair	42.39	9/23/2020 19:29	724	

				FAIR – POOR PRIORITY CULVERT LISTING OCTOBER 2020 #1						
92	1587	IN-430_OUT-666	SAVAGE RD	12	CMP	Fair	26.96	9/17/2020 18:55	435	
93	157	IN-205_OUT-336	TONELLA RD	12	RCP	Fair	42.65	8/1/2017 21:56	157	
94	1814	IN-547_OUT-904	OLD BROOKLINE RD	12	CMP	Fair	43.95	9/23/2020 15:24	654	
95	1593	IN-573_OUT-942	WOODWARD DR	18	CMP	Fair	69.53	9/17/2020 19:19	441	
96	1594	IN-906_OUT-1333	WOODWARD DR	12	CMP	Fair	53.29	9/17/2020 19:19	442	
97	1519	IN-252_OUT-398	MAPLE ST	12	HDPE	Fair	40.98	9/17/2020 14:13	368	
98	1471	IN-421_OUT-656	HARTSHORN MILL RD		STO	Fair	16.98	9/16/2020 19:18	321	2 OF 2 PIPES
99	1472	IN-421_OUT-656	HARTSHORN MILL RD	36	STO	Fair	16.98	9/16/2020 19:21	322	1 OF 2 PIPES
100	197	IN-267_OUT-416	OSGOOD RD	24	RCP	Fair	78.13	8/1/2017 21:56	197	DRAINS TO OSGOOD POND
101	1830	IN-946_OUT-1380	OSGOOD RD	18	CMP	Fair	7.67	9/23/2020 16:14	670	PIPE IN DAM, SUBMERGED

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The Town of Milford

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Milford Emergency Services

Photo Credits: Ambulance Facility Building Committee (town website); Milford Police Department Facebook page; Milford Fire Department Facebook page

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