Wentworth

Hazard Mitigation Plan Update 2021

This plan integrates the following:

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

March 18, 2021
Final for Formal (Adopted)

Prepared for the Town of Wentworth and NH Homeland Security & Emergency Management
By
The Wentworth Planning Team

With assistance from Mapping and Planning Solutions

WENTWORTH

"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)

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Cover Photo: Wentworth Town Hall
Photo Credit: MAPS

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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 Office of Strategic Initiatives (OSI)
- Mapping and Planning Solutions (MAPS)
- NH Forests & Lands (DNCR)

This plan is an update to the prior Wentworth Hazard Mitigation Plan, approved on January 1, 2015.

Approval Notification Dates for 2021 Update

Approved Pending Adoption (APA): ..... March 4, 2021
Jurisdiction Adoption:..... March 13, 2021
CWPP Approval:..... ____ __, 2021
Plan Approval Date (FEMA): ..... ____ __, 2021
Receipt of FEMA Letter ..... ____ __, 2021
Plan Distribution (MAPS): ....._____, 2021

TOWN OF WENTWORTH HAZARD MITIGATION PLANNING TEAM (HMPT)

The Town of Wentworth would like to thank the following people for the time and effort spent to complete this plan. The following people have attended meetings or been instrumental in completing this plan:

- Wallace Trott..... Wentworth Police Chief
- Jeffry Ames..... Wentworth Fire Chief & EMD
- Martha Morrill..... Wentworth Citizen
- Francis Muzzey..... Wentworth BOS (former)
- Ronald H. ..... Wentworth Citizen
- Morgan Currier..... Wentworth BOS (former)
- Tracy Currier..... Wentworth Citizen
- George Morrill ..... Wentworth Citizen
- Tanya Vela..... Wentworth AA (former)
- R. Pete Chierich..... Wentworth Citizen
- Michelle Clark ..... Wentworth Citizen
- Linda Franz..... Wentworth AA
- Martha Trott ..... Wentworth Police AA
- Paul Manson..... Wentworth Road Agent
- Omer Ahern Jr. ..... Wentworth BOS
- Andrew Lasser..... Wentworth Citizen
- Jordan King..... Wentworth BOS
- Arnie Scheller ..... Wentworth BOS
- Travis Heath ..... Wentworth Citizen
- Hannah Paquette..... Wentworth Citizen
- Palmer Koelb ..... Wentworth BOS (former)
- Angel Ekstrom ..... Central NH PHN
- Jennifer Gilbert ..... NH OSI
- Kayla Henderson ..... NH HSEM
- Alexx Monastiero ..... NH HSEM (former)
- Paul Hatch ..... NH HSEM
- June Garneau ..... MAPS
- Olin Garneau ..... MAPS

Many thanks for all the hard work and effort given by every one of you. This plan would not exist without your knowledge and experience. The Town of Wentworth 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 list on the previous page:

EMD ..... Emergency Management Director
BOS..... Board of Selectmen or Select Board
PHN..... Public Health Network
AA ..... Administrative Assistant

Executive Summary

The Wentworth Hazard Mitigation Plan Update 2021 was compiled to assist the Town of Wentworth in reducing and mitigating future losses from natural, technological or human-caused hazardous events. The plan was developed by participants of the Wentworth 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 is an **update** to the 2015 Wentworth Hazard Mitigation Plan. 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.

It must be noted that five of the seven planning meetings for the development of this project were completed before the arrival of COVID-19 in the United States; because of COVID-19, the remaining two meetings were held virtually. This plan's final writing has been completed during the COVID-19 outbreak; therefore, there are some references to the virus, particularly in Chapter 5, Section C, Infectious Diseases.

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

TECHNOLOGICAL HAZARDS

1) Long Term Utility Outage
2) Hazardous Materials
3) Aging Infrastructure
4) Dam Failure

HUMAN-CAUSED HAZARDS

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

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 Wentworth or not applicable. An explanation of why these hazards are not included in 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, establishing notification systems, providing public outreach, tree trimming, opening shelters and perhaps burying overhead power lines are just a few of the action items that may be put in place.

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 some mitigation action items, such as burying power lines. In preparing this plan, the Wentworth 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:

Wentworth Hazard Mitigation Plan Update 2021	the plan or this plan
Wentworth	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 Wentworth 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 Wentworth will reduce the impacts of natural hazards and other potential disasters through 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 Wentworth Hazard Mitigation Plan Update 2021, 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 Wentworth 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 grants from the Federal Emergency Management Agency (FEMA). 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's goal is to have all New Hampshire communities complete a local hazard mitigation plan as a means 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 Wentworth Hazard Mitigation Plan Update 2021 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 places emphasis on 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.

[1] Disaster Mitigation Act (DMA) of 2000, Section 101, b1 & b2
[2] Disaster Mitigation Act (DMA) of 2000, Section 322a

C. JURISDICTION

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

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 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 Office of Strategic Initiatives (OSI) 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. For a community to take advantage of this opportunity, it must first prepare a CWPP. 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****: A CWPP must be collaboratively developed by local and state government representatives, 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 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), 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 18). Community officials were urged to contact as many people as possible to participate in the planning process, including residents and officials and residents from surrounding communities. The Town of Wentworth understands that natural hazards do not recognize political boundaries.

Wentworth is part of the Pemi-Baker Cooperative School District, SAU 48, with Ashland, Campton, Holderness, Rumney, Thornton and Plymouth. Students in grades K-8 attend Wentworth Elementary School in Wentworth. Middle and high school students in grades 9-12 attend Plymouth High School in Plymouth with the towns mentioned above. Several school representatives were in attendance at the meetings.

The team also provided excellent public and stakeholder notification. Many interested citizens and stakeholders had the opportunity to become aware of the hazard mitigation planning taking place in Wentworth. A Press Release (see right) was posted at several community locations and on the town's Facebook page (see the following page). Meeting dates were also posted on the town's website and other department's pages (see below ant the following page for a few examples of these postings).

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

Press Release

FOR IMMEDIATE RELEASE
Updated: October 22, 2019

Contact: June Garneau
603-837-7122

TOWN OF WENTWORTH COMMENCES HAZARD MITIGATION PLANNING

The Emergency Management Director of the Town of Wentworth will be meeting with June Garneau, of Mapping and Planning Solutions and other Team members from Wentworth, to begin work on the required five-year update to the **2015 Wentworth Hazard Mitigation Plan**. As a result of this meeting, 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 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.

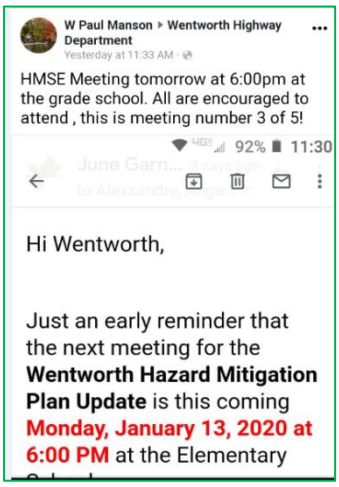
By examining critical infrastructure and key resources, along with past hazards, the team will establish priorities for future mitigation projects and steps that can be taken to increase public awareness of hazards in general.

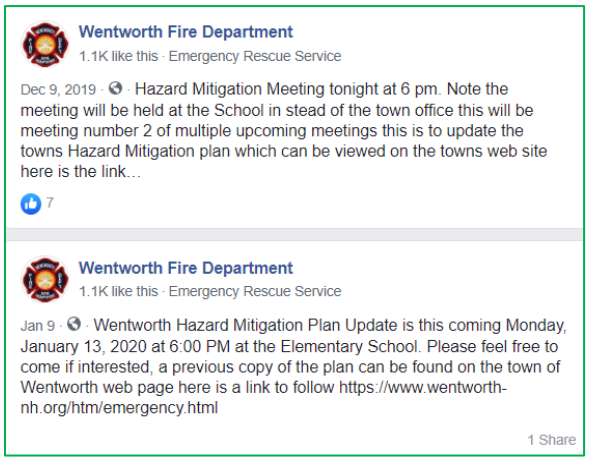
As mandated by the Disaster Mitigation Act of 2000, all municipalities are required to complete a local Hazard Mitigation Plan in order to qualify for Federal Emergency Management Administration (FEMA) funding should a natural disaster occur. The planning processes are made possible by grants from FEMA.

The Hazard Mitigation Planning Team is currently being formed. Wentworth citizens and any interested stakeholders are invited to participate. All interested parties should contact Jeff Ames, the Wentworth Fire Chief & Emergency Management Director, at 764-9982 if they wish to be included in the process.

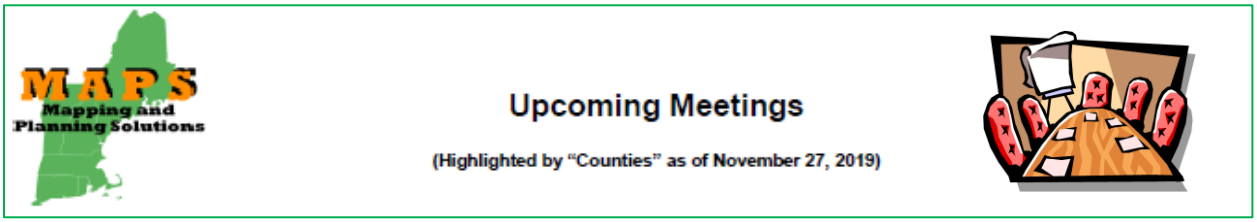
The next meeting is scheduled for **Monday, November 18** from **6:00 PM to 8:00 PM** at the Wentworth Town Offices. The subsequent meeting is scheduled for December 9th, also at 6:00 PM. The general public is encouraged to attend all meetings.

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





Lastly, the planner sent a monthly calendar to NH EMDs, Police Chiefs, Fire Chiefs, Rangers and other state, federal and private officials, including stakeholders for the town (an example is shown below).



Day	Date	Time	Town/Location	Plan Type	HSEM Field Rep	County
Tuesday	12/3/19	10:00 AM	Hanover @ Hanover Public Safety Building	EOP	Paul Hatch	Grafton
Wednesday	12/4/19	9:00 AM	Bath @ Bath Police Station	EOP	Paul Hatch	Grafton
Thursday	12/5/19	5:00 PM	Kensington @ Kensington Town Offices (T)	HMP	Liz Gilboy	Rockingham
Thursday	12/5/19	6:00 PM	East Kingston @ East Kingston Fire Station	HMP	Liz Gilboy	Rockingham
Friday	12/6/19	10:00 AM	Stratham @ Stratham Fire Station	HMP	Paul Hatch	Rockingham
Monday	12/9/19	6:00 PM	Wentworth @ Wentworth Town Offices	HMP	Paul Hatch	Grafton
Tuesday	12/10/19	7:00 PM	Jefferson @ Jefferson Town Offices	MP	N/A	Coos
Wednesday	12/11/19	9:00 AM	Berlin @ White Mountain Community College	EOP	Heidi Lawton	Coos
Wednesday	12/18/19	9:00 AM	Bethlehem @ Bethlehem Public Library	HMP	Paul Hatch	Grafton
Friday	1/10/19	10:00 AM	Stratham @ Stratham Fire Station	HMP	Paul Hatch	Rockingham

It was noted that team composition is expected to be lower in smaller communities because of the small population base and because many people "wear more than one hat". It is often challenging to attract individual citizens to participate in town government and those who do generally hold full-time jobs and work as volunteers in various town positions. With small populations, the percentage of interested citizens in the towns' planning processes is also small.

Wentworth had excellent participation in the development of this plan. Emergency responders and the Highway Department were represented at each meeting. Members of the Select Board, the Administrative Assistant and a representative from the regional public health network were also active participants in meetings. Lastly, many interested citizens took the opportunity to attend several meetings. Comments made by all team members, including the community members who attended, were integrated into the narrative discussion and incorporated into the document's essence.

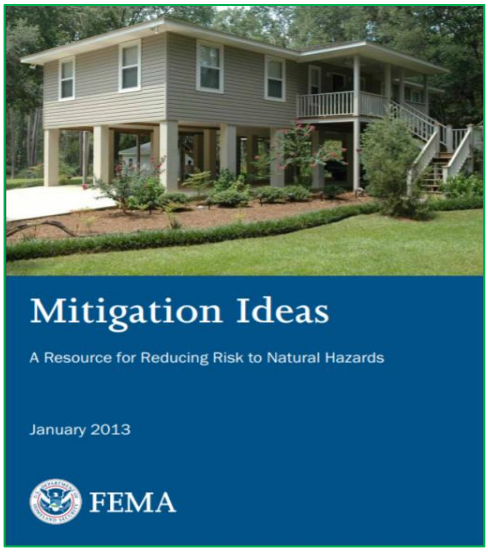
§201.6(b) requires that there be an open public involvement process in the formation of a plan. This process shall provide an opportunity for the public to comment on the plan during its formation as well as an opportunity for any neighboring communities, businesses, and others to review any existing 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 Wentworth Hazard Mitigation Plan of 2015 for updates, development changes and accomplishments. 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 as follows:

The Wentworth Hazard Mitigation Plan of 2015 ..... Compare & Contrast
Wentworth Master Plan (1986) ..... Community Information
Wentworth Annual Reports (2018 & 2019) ..... Fire Report & Development
Other Hazard Mitigation Plans (Groton, Landaff, Lyme) ..... Formats & Mitigation Ideas
The Wentworth Ordinance Subdivision Regulations (2020) ..... New Development Regulations
Flood Plain Development Ordinance (Part of Subdivision Regulations) ..... Floodplain Regulations
Census 2010 Data ..... Population Data
The NH DRA Summary of Inventory of Valuation MS-1 2019 for Wentworth ..... Structure Evaluation
The Economic & Labor Market Information Bureau Community Profile ..... Population Trends
The American Community Survey (ACS 2014-2018) ..... Population Trends
Mitigation Ideas, FEMA, January 2013 ..... Mitigation Strategies
The Department of Cultural & Natural Resources (DNCR) ..... DNCR Fire Report
The NH Office of Strategic Initiatives (OSI) ..... Flood Losses
Property tax valuation (Department of Revenue) ..... 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 the Bibliography in *Appendix A: Bibliography* and the plan's footnotes.



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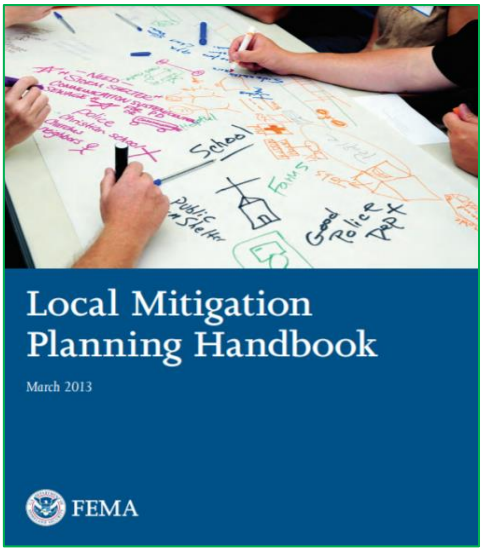


https://www.fema.gov/media-library/assets/documents/31598

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 guests of the community 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 continued comprehensive hazard mitigation planning at local levels to identify, introduce and implement cost-effective hazard mitigation measures.*
- *Address the challenges posed by climate change as they pertain 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 through assessment, identification and strategic mitigation of at-risk or vulnerable infrastructure (dams, stream crossings, roadways, coastal levees, etc.).*
- *Minimize illnesses and deaths related to events that present a threat to 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 to 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 of technological hazards to assist in preventing and mitigating 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 that 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 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.*

H. Hazard Mitigation Planning Process & Methodology

The planning process consisted of twelve steps; some steps were accomplished independently while other areas 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 all types of natural, technical and human-caused hazards by team members.

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 & mutual aid & brainstorm to identify improvements
Table 6.1 – Current Plans, Policies & Mutual Aid

Step 08: Examine the mitigation actions 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/FEMA 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 the mitigation plan update was the prior plan. Each table that was completed had its starting point with the last hazard mitigation plan completed by the community.

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

Hazard Mitigation Process
"The Building Blocks"

Hazard Identification & Risk Assessment (HIRA)
What are the hazards and which are most likely to impact Wentworth?
Table 3.1

Critical Infrastructure & Key Resources
Are any in harm's way?
Tables 4.1-4.4

Current Plans, Policies & Mutual Aid
Do any need improvement?
Table 6.1

Historic Wildfires & the Wildland Urban Interface
What are the wildfire risks throughout Wentworth?
Table 3.2

Past & Potentially Hazardous Locations
In What areas of Wentworth is the town hardest hit?
Table 3.2

Accomplishments since the Last Plan
Were strategies Completed or should they be Deleted or Deferred to this plan?
Table 7.1

Mitigation Action Items
What can we do to lessen, diminish or eliminate the risk of hazards?
What problems are we trying to solve?
Table 9.1 – The End Goal

J. Narrative Description of the Process

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

The planning process included a complete review of the 2015 Wentworth Hazard Mitigation Plan. 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 Wentworth Hazard Mitigation Plan was used during each step of the planning process to make revisions that resulted in this plan.

Meeting 1, October 21, 2019

The first full meeting of the Wentworth Hazard Mitigation Team was held on October 21, 2019. Meeting attendance included Wallace Trott (Police Chief), Jeffry Ames (Fire Chief & EMD), Martha Morrill (Citizen), Francis Muzzey (Select Board), Ronald H. (Citizen), Morgan Currier (Select Board), Tracy Currier (Citizen), George Morrill (Citizen), Tanya Vela (Administrative Assistant), Angel Ekstrom (Central NH Public Health Network), Alexx Monastiero (NH HSEM), Kayla Henderson (NH HSEM), Paul Hatch (NH HSEM), Olin Garneau (Mapping and Planning Solutions) and June Garneau (Mapping & Planning Solutions).

To introduce the team to the planning process, June reviewed the evolution of hazard mitigation plans, the funding, the 12 Step Process (handout), the collaboration with other agencies and the Goals (handout). June 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 complete at this meeting except for a few items that June would either determine through GIS or get at a later date. There was some discussion about the seasonal population change in Wentworth. It was determined that Wentworth has approximately a 33% change in population during the summer months and a more modest increase of 5% during winter weekends.

Hazards Mitigation Potential Team Members

Federal
USDA Forest Service

State
Department of Transportation (DOT)
Department of Natural & Cultural Resources (DNCR)
Office of Strategic Initiatives (OSI)

Local
Select Board Members (Past/Present)
Town Manager/Administrator
Town Planner
Police Chief
Fire Chief
Emergency Management Director
Emergency Medical Services
Fire Warden
Health Officer
Building Inspector
Code Enforcement Officer
Education/School
Recreation Director
Public Works Director
Road Agent
Water Management
Public Utilities
Waste Management
Dam Operator(s)
Major Employer(s)

Local - Special Interest
Land Owners
Home Owners
Forest Management
Timber Management
Tourism & Sportsman's Groups
Developers & Builders

Experts
GIS Specialists

Next on the agenda were hazard identification and the completion of *Table 3.1, Hazard Identification & Risk Assessment (HIRA)*. Using the town's last HMP and the State of New Hampshire Multi-Hazard Mitigation Plan Update 2018, the team assessed which hazards could affect the community. 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 ..... Death or Injury
The Property Impact ..... Physical Losses and Damages
The Business Impact ..... Interruption of Service
The Probability ..... Likelihood of occurrence within 25 years

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

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. Also, the evacuation routes, helicopter landing zones and bridges on the evacuation routes were defined. Lastly, each of the Critical Infrastructure & Key Resources were analyzed for their "Hazard Risk".

After completing Tables 4.1-4.4, June explained what would occur at the following meeting and thanked the team. The next meeting was set for November 18, 2019, but was later canceled and rescheduled for December 9, 2019. The meeting was adjourned.

Meeting 1 – October 21, 2019

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) November 18, 2019 @ 6:00 PM
- b) December 9, 2019 @ 6:00 PM

MEETING 2, DECEMBER 9, 2019

Meeting attendance included Wallace Trott, Jeffry Ames, Martha Morrill, Francis Muzzey, Ronald H., George Morrill, Tanya Vela, R. Pete Chierich (Citizen), Michelle Clark (Citizen), Linda Franz (Citizen), Martha Trott (Administrative Assistant), Paul Manson (Road Agent), Omer Ahern Jr. (Select Board), Olin Garneau and June Garneau.

The meeting began with a review of the work that was done at the previous meeting. June reviewed *Table 2.1, Town Statistics,* to ensure that the town data was accurate; no changes were made. June then reviewed *Table 3.1, Hazard Identification & Risk Assessment (HIRA),* to ensure that the hazards were in the correct order for the town; minor adjustments were made. The team settled on 19 hazards that affect Wentworth.

Next June reviewed *Tables 4.1-4.4, Critical Infrastructure & Key Resources*; the team again made some minor changes but was otherwise satisfied with the listed CIKR.

After reviewing the tables from the previous meeting, June took the opportunity to explain the Wildland Urban Interface (WUI); this area is determined to be the area in which the urban environment interfaces with the wildland environment and the area prone to the risk of wildfires. In Wentworth, it was noted that the WUI, if determined using the 1,320' buffer method, would cover only the area along Class V roadways, but that much of the town is forested. Therefore, the entire town was thought to be in the WUI. Mitigation strategies were discussed to protect structures and educate the town's citizens about the wildfire risk. Some mapping was also discussed while discussing the WUI.

Meeting 2 – December 9, 2019

1) Last Meeting
- a) Reviewed planning process, purpose, funding & collaboration.
- b) Reviewed of community involvement and stakeholders
- c) Worked on Table 2.1, Town Statistics
- d) Worked on Table 3.1, Hazard Identification & Analysis
- e) Worked on Table 4.1-4.4, Critical Infrastructure & Key Resources

2) Today's Topics
- a) Review….
  - i) Table 2.1, Town Statistics
  - ii) Table 3.1, Hazard Identification & Analysis
  - iii) Table 4.1-4.4, Critical Infrastructure & Key Resources
- b) Work on….
  - i) Hazard Descriptions
  - ii) Table 3.2, Historic Hazard Identification
  - iii) Table 7.1, Accomplishments since the prior Plan (time allowing)

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

4) Future Meetings
- a) December 9, 2019 @ 6:00 PM

Having completed Table 3.1, the team started working on descriptions of each hazard and how they could impact the community. To gain more knowledge of the impact of these hazards, June asked the team to describe each hazard as it relates to Wentworth. 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 the 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 information to analyze the impact of the community's hazards. June noted that these descriptions would be used in Chapter 5.

With time running out before the hazard descriptions were completed, June advised the team that the remaining hazard descriptions would be completed at the next meeting. June thanked the team for their work and assigned "homework" to team members, including requesting that the Road Agent prepare a list of road/culvert projects that would need to be completed within the next five years. The next meeting was scheduled for January 13, 2020.

MEETING 3, JANUARY 13, 2020

Meeting attendance included Wallace Trott, Jeffry Ames, Francis Muzzey, Ronald H., Morgan Currier, Tracy Currier, George Morrill, Michelle Clark, Martha Trott, Paul Manson, Omer Ahern Jr., Andrew Lasser (Citizen), Travis Heath (Citizen), Hannah Paquette (Citizen), Palmer Koelb (Select Board), Kayla Henderson, Olin Garneau and June Garneau.

For the newcomers, June did a quick review of the tables completed at previous meetings. No adjustments were made, but the review brought everyone "up to speed" on the process.

The completion of the hazard descriptions started at the previous meeting was next on the agenda. Development trends in town were also discussed.

The team then began work on *Table 3.2, Historic Hazard Identification*, which lists past and potentially hazardous locations and events. First, they looked at the hazards that were 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 Disaster and Emergency Declarations that have taken place in recent years.

Meeting 3 – January 13, 2020

1) Last Meeting
- a) Reviewed….
  - i) Table 2.1, Town Statistics
  - ii) Table 3.1, Hazard Identification & Analysis
  - iii) Table 4.1-4.4, Critical Infrastructure & Key Resources
- b) Discussed….
  - i) Wildland Urban Interface
  - ii) Mapping
- c) Worked on….
  - i) Hazard Descriptions

2) Today's Topics
- a) Work on….
  - i) Table 3.2, Historic Hazard Identification
  - ii) Table 6.1, Current Plans, Policies & Mutual Aid
  - iii) Table 7.1, Accomplishments since the prior Plan

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

4) Future Meetings
- a) February 10, 2020 @ 6:00 PM

With time running out, June reviewed what would occur at the next meeting and thanked the team. The next meeting was set for February 24, 2020.

MEETING 4 – FEBRUARY 24, 2020

Meeting attendance included Wallace Trott, Francis Muzzey, Ronald H., Morgan Currier, Tracy Currier, George Morrill, R. Pete Chierich, Michelle Clark, Linda Franz, Omer Ahern Jr., Palmer Koelb, Kayla Henderson, Olin Garneau and June Garneau.

First on the agenda was a quick review of previous work, including a review of *Table 2.1, Town Statistics, Table 3.1, Hazard Identification & Risk Assessment, Table 3.2, Historic Hazard Identification and Table 4.1-4.4, Critical Infrastructure & Key Resources.*

Next, the team 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 these policies should be designated as "No Improvements Needed" or "Improvements Needed" based on the "Key to Effectiveness" found in Chapter 6.

Meeting 4 – February 24, 2020

1) Last Meeting
- a) Reviewed….
  - i) Table 2.1, Town Statistics
  - ii) Table 3.1, Hazard Identification & Analysis
- b) Finished….
  - i) Hazard Descriptions
- c) Discussed….
  - i) Development Trends
- d) Worked on….
  - i) Table 3.2, Historic Hazard Identification

2) Today's Topics
- a) Work on….
  - i) Table 6.1, Current Plans, Policies & Mutual Aid
  - ii) Table 7.1, Accomplishments since the prior Plan

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

4) Future Meetings
- a) March 9, 2020 @ 6:00 PM
- b) March 23, 2020 @ 6:00 PM

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.*

Table 7.1, Accomplishments since the Last Plan, also pre-populated with data from the 2015 plan, was the next agenda item. June 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, while 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. June promised to write statements to support the concepts and ideas expressed in Table 6.1 and Table 7.1.

To end the meeting, June provided the team with handouts detailing a comprehensive list of possible mitigation action items (see Chapter 8, Section A & B and Appendix F). June also encouraged team members to explore the link on their agendas for the FEMA Mitigation Idea booklet to see if any strategies in this book would be useful in Wentworth (see right).

Link to explore:

FEMA Mitigation Ideas

https://www.fema.gov/media-library-data/20130726-1904-25045-0186/fema_mitigation_ideas_final508.pdf

The next meeting was scheduled for March 9, 2020.

MEETING 5 – MARCH 9, 2020

Meeting attendance included Wallace Trott, Jeff Ames, Francis Muzzey, Ronald H., Morgan Currier, Tracy Currier, George Morrill, R. Pete Chierich, Michelle Clark, Linda Franz, Martha Trott, Omer Ahern Jr., Andrew Lasser, Palmer Koelb, Kayla Henderson and June Garneau.

To begin the meeting, June provided the team with a recap of the work that had already been done. The recap included a brief look at each of the following completed tables:

- *Table 2.1 – Town Statistics*
- *Table 3.1 – Hazard Identification & Risk Assessment (HIRA)*
- *Table 3.2 – Historic Hazard Identification*
- *Tables 4.1-4.4 – Critical Infrastructure & Key Resources*

This review helped the team understand how each of these tables served as a building block for the final two tables, *Table 8.1, Potential Mitigation Strategies & the STAPLEE* and *Table 9.1, The Mitigation Action Plan*.

Meeting 5 – March 9, 2020

1) Last Meeting
- a) Reviewed….
  - i) Table 2.1, Town Statistics
  - ii) Table 3.1, Hazard Identification & Analysis
  - iii) Table 3.2, Historic Hazard Identification
  - iv) 4.1-4.4, Critical Infrastructure & Key Resources
- b) Worked on….
  - i) Table 6.1, Current Plans, Policies & Mutual Aid
  - ii) Table 7.1, Accomplishments since the prior Plan (did not finish)

2) Today's Topics
- a) Review….
  - i) Table 6.1, Current Plans, Policies & Mutual Aid
- b) Finish….
  - i) Table 7.1, Accomplishments since the prior Plan
- c) Work on….
  - i) Table 9.1, Mitigation Action Plan
  - ii) STAPLEE

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

4) Future Meetings
- a) March 23, 2020 @ 6:00 PM
- b) _____

Next, June walked the team through a complete review of Table 6.1. The team had completed this table at the last meeting, but there were a few unanswered questions, and several items that June felt should be reviewed. The team had also begun work at the last meeting on *Table 7.1, Accomplishments since the Last Plan;* June had taken notes and had subsequently translated those notes from the last meeting into paragraphs.

June reviewed each item in Table 7.1 to see if the team's concepts and ideas remained intact and verify the information's accuracy. A few changes were made with this review, leaving several additional items from Table 7.1 (that were not also in Table 6.1) deferred to become 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 decided to keep some of them as reminders to get these important action items completed.

With time running out, June provided the team with a quick look at *Table 8.1, Potential Mitigation Action Items & the STAPLEE* and *Table 9.1, The Mitigation Action Plan* to give them some idea of our next steps. June reminded the team that the next meeting is scheduled for March 23, 2020 (later changed to May 18, 2020), but that one additional meeting may be needed. June agreed to forward information on an additional meeting later in the week and adjourned the meeting.

MEETING 6 – MAY 18, 2020 (VIRTUAL MEETING)

Virtual meeting attendance included Jeff Ames, R. Pete Chierich, Linda Franz, Paul Mason, Omer Ahern Jr., Jordan King (Select Board), Arnie Scheller (Select Board), Olin Garneau and June Garneau.

Meeting 6 – May 18, 2020

1) Last Meeting
- a) Reviewed….
  - i) Table 6.1, Current Plans, Policies & Mutual Aid
- b) Finished & Reviewed….
  - i) Table 7.1, Accomplishments since the prior Plan (did not finish)

2) Today's Topics
- a) Review….
  - i) Table 7.1, Accomplishments since the prior Plan
- b) Work on….
  - i) Table 9.1, Mitigation Action Plan
  - ii) STAPLEE

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

4) Future Meetings
- a) April 27, 2020 @ 6:00 PM
- b) _____

Next, the team began work on *Table 8.1, Potential Mitigation Action Items & the STAPLEE* and *Table 9.1, The Mitigation Action Plan*. June explained to the team that these tables were combined for the meeting but that they would become separate tables in the final plan. Having pre-populated the tables with the action items 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. Using handouts provided by the planner, the team could go through the STAPLEE process for the action items that had been identified. The STAPLEE analysis would then become *Table 8.1, Potential Mitigation Action Items & the STAPLEE*. Most importantly, the STAPLEE process enabled the team to consider the cost-benefit of each action item.

The team reviewed additional potential action items and the action items identified in Tables 6.1 and 7.1. Using the handouts provided, the team reviewed a comprehensive list of mitigation strategies. These strategies were derived from several sources, including the FEMA document "Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards, January 2013" (see Chapter 8, Sections A & B and Appendix F).

Although most of Tables 8.1 and 9.1 were complete, there were a few action items to discuss at the next meeting and the "ranking" and "prioritizing" of each action item. June provided the team with one last handout that would be used during the next meeting, an explanation of the Ranking/Prioritizing (Chapter 9, Section A) method.

The next meeting was scheduled for June 1, 2020 (virtual meeting).

MEETING 7 – JUNE 1, 2020 (VIRTUAL MEETING)

Virtual meeting attendance included Jeff Ames, George Morrill, R. Pete Chierich, Linda Franz, Paul Mason, Omer Ahern Jr., Jordan King, Arnie Scheller, Olin Garneau and June Garneau.

The meeting began where we had left off in Tables 9.1 & 8.1. After we had considered each strategy that was forwarded from Tables 6.1 & 7.1, the team considered additional mitigation items, some June had suggested from other plans. After much discussion and a careful review, the team ultimately settled on twenty-three "Mitigation Action Items" that they felt were achievable and would help diminish the impact of natural hazards in the future.

Meeting 7 – June 1, 2020

1) Last Meeting
- a) Worked on….
  - i) Table 9.1, Mitigation Action Plan
  - ii) STAPLEE

2) Today's Topics
- a) Continue work on….
  - i) Table 9.1, Mitigation Action Plan
  - ii) STAPLEE
  - iii) Rank & Prioritizing

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

4) Future Meetings
- a) _____

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

Before the meeting, June had pre-ranked the action items based on the time frame, the town's authority to get the strategy accomplished, the type of strategy and the STAPLEE score and placed them in four categories as shown in Chapter 9, Section A. A handout with all of the identified action items was made for the team. Using this handout, the team could see all of the action items and determine any changes needed, including the "rank".

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

With Tables 8.1 and 9.1 completed, the team's work was complete, except for the final review. June agreed to put the final "draft" plan together and email a copy for the town's review. June explained the process from this point forward and thanked the team for their hard work. No additional meeting was scheduled.

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.

Chapter 2: Community Profile

A. INTRODUCTION

Wentworth is a beautiful community located in Grafton County in west-central New Hampshire. Wentworth is bordered to the east by Rumney, the south by Dorchester, the north by Warren and the west by Orford. As a community in the Dartmouth-Lake Sunapee tourism region of New Hampshire, Wentworth is located in the hills and lakes of central New Hampshire.

TOWN GOVERNMENT

A three-member Select Board governs the Town of Wentworth. The town's departments include, but are not limited to, Fire, Police, Highway, Planning, Zoning, Cemetery and Conservation. The largest employer in Wentworth is King Forest Lumber Company, with 141+ employees.

DEMOGRAPHICS & HOUSING

Over the last 30 years, Wentworth's population has increased; the population change from 1980 (527) to 2010 (911) showed an increase of 384 according to US Census 2010. These statistics represent a growth rate of approximately 72.87%. Wentworth's population in 2018 was estimated to be 956.[4]

The American Community Survey (2014-2018) estimates 556 housing units, most of which are single-family (461). Multiple-family structures total 36, and mobile homes and other housing units number 59. The median household income is estimated to be $65,703, and the median age is 51.7 years.[5] Census 2010 estimates that of the 151 vacant housing units, 122 are used for recreational, seasonal, or occasional use. This data confirms the presence of second-homes and seasonal residents.

EDUCATION & CHILD CARE

Wentworth students in grades K-8 attend Wentworth Elementary School in Wentworth. Students in grades 9-12 are part of Pemi-Baker Cooperative School District in Plymouth with Ashland, Campton, Holderness, Rumney, Thornton and Plymouth. There are no colleges or universities in Wentworth, nor are there any childcare facilities.

Incorporated: 1766

Origin: This town was first chartered in 1766 to John Page and others, and named Wentworth, in honor of Governor Benning Wentworth. The grantees were given five years to meet the terms of the grant, and the majority was unable to do so, forfeiting their claim. In 1772, Asa Porter and others from Haverhill petitioned Governor John Wentworth, Benning's nephew, for some of the forfeited shares, which was granted. Between them the Wentworth governors issued over 150 new town charters in New Hampshire, and nearly 130 new town charters in what is now Vermont, providing homes and farms for over 30,000 families.

Villages and Place Names: unknown

Population, Year of the First Census Taken: 241 residents in 1790

Population Trends: Population change for Wentworth totaled 647 over 57 years, from 300 in 1960 to 947 in 2017. The largest decennial percent change was a 40 percent increase between 1970 and 1980. The 2017 Census estimate for Wentworth was 947 residents, which ranked 187th among New Hampshire's incorporated cities and towns.

Population Density and Land Area, 2017 (US Census Bureau): 22.6 persons per square mile of land area. Wentworth contains 41.8 square miles of land area and 0.2 square miles of inland water area.

Source: Economic & Labor Market Information Bureau, NH Employment Security, July 2019; Received 6/14/2018

[4] Economic & Labor Market Information Bureau, NH Employment Security, March 2020. Community Response 6/14/2018.
[5] American Community Survey, 2014-2018; the Census Bureau

NATURAL FEATURES

The Town of Wentworth covers approximately 41.8 square miles of land area and 0.2 square miles of inland water. The community is dominated by the lakes and hills of central New Hampshire. The highest peak is Carr Mountain, at 3,453' above sea level. The lowest elevation in town is around 630' above sea level near the center of town.

Vegetation is typical of northern New England, including deciduous and conifer forests, open fields, swamp and riverine areas. The terrain lends itself to an abundance of small ponds, streams and rivers, most notably the Baker River.

TRANSPORTATION

Two major roadways run through Wentworth; they are NH Routes 118 and 25A. NH Route 118 travels from the Rumney in the east to Wentworth's center and then heads north into Warren. NH Route 25A travels from NH Route 118 in the center of Wentworth, west into Orford. Other smaller and less traveled roadways lend access to other areas of the town.

B. EMERGENCY SERVICES

EMERGENCY OPERATIONS CENTER & EMERGENCY MANAGEMENT DIRECTOR

The Town of Wentworth has a designated Emergency Management Director (EMD). The EMD maintains an Emergency Operations Center (EOC) as part of its 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 event. In Wentworth, the designated EOC is the Fire Station.

WENTWORTH FIRE RESCUE & EMS

The Wentworth Fire Department is a volunteer fire department providing quality fire services and emergency medical services to the residents and visitors of Wentworth 24 hours a day, 365 days a year. The department staffs a volunteer Chief, 16 volunteer firefighters and operates one station within the community. The Wentworth Fire Department participates in Lakes Region Fire Mutual Aid along with other area departments. Emergency medical services and transportation is provided by Warren-Wentworth Ambulance.

WENTWORTH POLICE DEPARTMENT

The Wentworth Police Department is a part-time department providing quality law enforcement services to Wentworth's residents and visitors. The department staffs a part-time Chief and three part-time officers. The Wentworth Police Department has mutual aid with Rumney, Warren, the NH State Police and the Grafton County Sheriff's Office. The NH State Police provides continuous coverage when the Wentworth Police Department is not operating.

WENTWORTH HIGHWAY DEPARTMENT

The Wentworth Highway Department operates on a year-round, 24-hour basis as needed. The department staffs a full-time Road Agent, one full-time and one part-time employee. The department's mission is to support Wentworth's citizens through the safe operation, proper maintenance and future development of highways, supporting infrastructure and utilities in a cost-conscious manner without sacrificing quality. The department belongs to the NH Public Works Mutual Aid Association.

MEDICAL FACILITIES

Wentworth's closest medical facility is Speare Memorial Hospital in Plymouth (16 miles, 25 beds). If the need arises, alternative medical facilities are Cottage Hospital in Woodsville (25 miles, 25 beds) and Dartmouth-Hitchcock Medical Center in Lebanon (34 miles, 396 beds).

EMERGENCY SHELTER(S)

The primary shelter is the location to which evacuees are directed at the time of an emergency. In Wentworth, the designated primary shelter is the Wentworth Elementary 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 Baker River Bible Church, which also has a generator.

C. WENTWORTH'S CURRENT & FUTURE DEVELOPMENT TRENDS

Over the last ten years, Wentworth's development has been consistent with development trends in the rest of New Hampshire. Nearly every New Hampshire community had experienced a significant drop in new home construction since 2005-2006. This trend is only now beginning to change, but the change has been slow in Wentworth.

The 2018 Wentworth Annual Report states that "There were four minor lot line adjustments in 2018"; the 2019 Wentworth Annual Report states that "There were two minor lot line adjustments in 2019". No major subdivisions, new critical infrastructure or businesses have been developed in Wentworth since the 2015 hazard mitigation plan. However, it is noted that since the onset of Covid-19, many NH communities have experienced a significant increase in real estate as residents of more populous areas move to rural or less populated areas.

The team reported that development in Wentworth over the past five years has been slow; in addition to the lot line changes mentioned above, an allowance for auxiliary dwellings has occurred. The town is in the planning stages for a new Fire Station and has established a Capital Reserve Fund for a new site and building. Lastly, a new cell tower was approved by the Planning Board. However, no significant subdivisions have been requested, and no large-scale development is anticipated in the near future. No development has occurred in hazard-prone areas or has impacted the town's hazard vulnerability.

The Planning Board and the Select Board will monitor Wentworth's growth using existing regulatory documents such as the Subdivision Regulations, including the Flood Plain Management Ordinance, and an updated Master Plan for which requests for bids have been sent out. As a small community, Planning Board, Select Board members and other town officials are almost always aware of any building that is taking place.

The Planning Board will follow town building and subdivision regulations to ensure that any building in hazardous areas will be built to minimize vulnerability to the hazards identified in this plan. The town recognizes the importance of growth and understands the impact of hazards on new facilities and homes built within the community's hazardous areas. Town officials will continue to monitor any new growth and development, including critical facilities such as a new Fire Station, regarding potentially hazardous events.

Wentworth's Conserved Land as a Percent of Land in the community *(GIS Analysis; 2019Conservation Files, Granit, UNH)*		
	Square Miles	**Percent of Town Land**
Approximate Square Miles in Community	41.80	100.0%
Approximate Total Un-Conserved Land	34.21	81.9%
Approximate Total Conserved Land	7.59	18.1%
Municipal/County Land (1)	0.29	0.7%
Federal Owned Land (2)	5.81	13.9%
State Owned Land (3)	0.61	1.5%
Quasi Private(4)	0.00	0.0%
Private Land (5)	0.88	2.1%

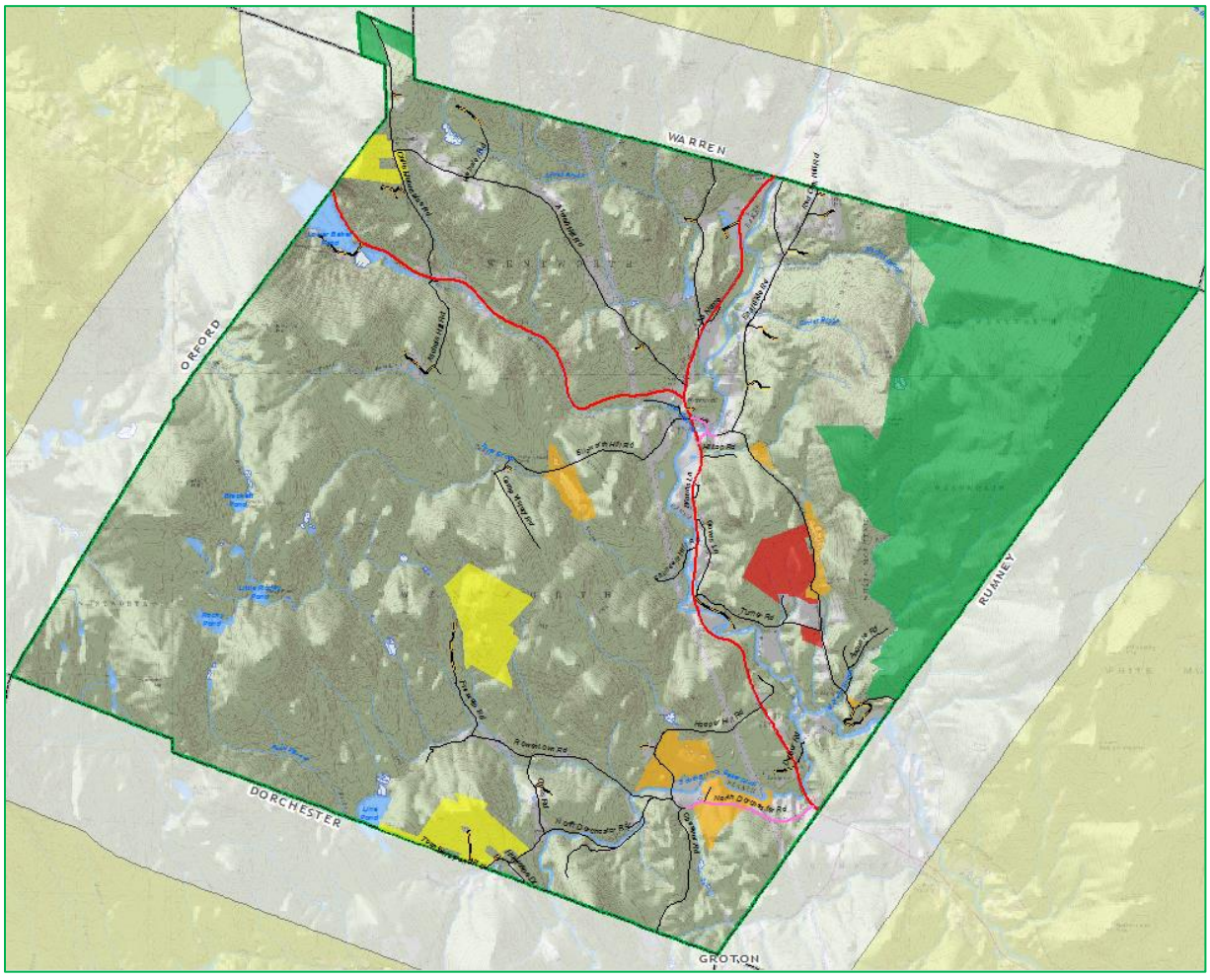


TABLE 2.1: TOWN STATISTICS

Table 2.1 - Town Statistics				
Census Population Data	**2010**	**2000**	**1990**	**1980**
Wentworth, NH - Census Population Data	**911**	**797**	**631**	**527**
Grafton County	**89,118**	**81,826**	**74,998**	**65,806**
Population Estimate for 2018 *(US Census)*	956			
Elderly Population-% over 65 (ACS 2014-2018)*	24.6%			
Median Age (ACS 2014-2018)*	51.7			
Median Household Income (ACS 2014-2018)*	$65,703			
Individuals below the poverty level (ACS 2014-2018)*	11.5%			
Change in Population-Summer Weekends (%)	33%			
Change in Population-Winter Weekends (%)	5%			
Housing Statistics *(2010 Census)*				
Total Housing Units	533			
Occupied Housing Units	382 *(328 Owner Occupied; 54 Renter Occupied)*			
Vacant Housing Units	151 *(122 Seasonal, Recreation, Occasional Use; 8 all other vacant units)*			
Assessed structure value (2019-MS1)	**Value**		**1% Damage**	**5% Damage**
Residential	$52,913,700		$529,137	$2,645,685
Manufactured Housing	$2,516,400		$25,164	$125,820
Commercial	$6,157,900		$61,579	$307,895
Tax Exempt	$3,014,100		$30,141	$150,705
Utilities	$8,425,200		$84,252	$421,260
Totals	$73,027,300		$730,273	$3,651,365
**The chart above indicates structure values and the likely loss value based on a loss of 1% or 5% of structures.*				
Regional Coordination				
County	Grafton			
Tourism Region	Dartmouth-Lake Sunapee			
Municipal Services & Government				
Town Manager or Administrator	No			
Select Board (3 members)	Yes; elected			
Planning Board	Yes; elected			
School Board	Yes; elected			
Zoning Board of Adjustment	No			

Table 2.1 - Town Statistics	
Conservation Committee	Yes; appointed
Master Plan	Yes; 1986
Emergency Operation Plan (EOP)	Yes; September 1, 2015
Hazard Mitigation Plan (HMP)	Yes; January 1, 2015
Zoning Ordinances	No
Subdivisions Regulations	Yes; updated in 2007; updated 2020
Site Plan	No
Capital Improvement Plan	No
Capital Reserve Funds	Yes
Building Permits Required	No
Town Web Site	Yes; www.wentworth-nh.org
Floodplain Management Ordinance	Yes; part of Subdivision Regulations
Member of NFIP	April 18, 1983
Flood Insurance Rate Maps (DFIRMS)	February 20, 2008
Flood Insurance Rate Study (FIS)	February 20, 2008
Percent of Local Assessed Valuation by Property Type - 2017 ***(NH Department of Revenue)***	
Residential Buildings	82.9%
Commercial Land & Buildings	7.1%
Other (including Utilities)	10.0%
Emergency Services	
Town Emergency Warning System(s)	CodeRED
School Emergency Warning System(s)	Power School
Emergency Page	No
Social Media	Facebook: Highway, Fire & Warren-Wentworth Ambulance
ListServ or Subscription Service	No
Local Newspapers	Record Enterprise
Public Access TV	No
Local TV Stations	WMUR, Channel 9 (Manchester)
Local Radio	WPNH 100.1 FM (Plymouth), WVFM 105.7 FM (Campton), NHPR 97.3 FM (Plymouth)
Police Department	Yes; part-time Chief, three part-time officers
Police Dispatch	Grafton County Dispatch
Police Mutual Aid	Rumney, Warren, Orford, Piermont, NH State Police & Grafton County Sheriff's Office

Table 2.1 - Town Statistics	
Animal Control Officer	Yes; Police when not available
Fire Department	Yes; volunteer Chief, 16 volunteer firefighters
Fire Dispatch	Lakes Region Fire Mutual Aid
Fire Mutual Aid	Lakes Region Fire Mutual Aid
Fire Stations	One
Fire Warden	Yes
Emergency Medical Services	Warren-Wentworth Ambulance
EMS Dispatch	Lakes Region Fire Mutual Aid
Emergency Medical Transportation	Warren-Wentworth Ambulance
HazMat Team	Team 2 (Campton); Central NH HazMat Team (Capital and Lakes)
Established EMD	Yes
Established Deputy EMD	No
Public Health Network	Central NH Public Health Network
Health Officer	Yes
Deputy Health Officer	No
Building Inspector	No
Established Public Information Officer (PIO)	No
Nearest Hospital(s)	Speare Memorial Hospital, Plymouth (16 miles, 25 beds)
	Cottage Hospital, Woodsville (25 miles, 25 beds)
	Dartmouth-Hitchcock Medical Center, Lebanon (34 miles, 396 beds)
Local Humane Society or Veterinarians	Rumney Animal Hospital (Rumney), Plymouth Animal Hospital (Plymouth), NH Humane Society (Laconia)
Primary EOC	Fire Station (no generator)
Secondary EOC	Wentworth Elementary School (generator)
Primary Shelter	Wentworth Elementary School (generator)
Secondary Shelter	Baker River Bible Church (generator)
Utilities	
Highway Department	Yes; full-time Road Agent, one full-time, one part-time
Town Sewer	Private septic
Miles of Class V Roads	GIS: 6.94 paved, 23.70 gravel, 30.66 total miles
Public Works Mutual Aid	Yes
Water Supply	Private wells
Waste Water Treatment Plant	No

Table 2.1 - Town Statistics	
Electric Supplier	NH Electric Coop
Natural Gas Supplier	No
Cellular Telephone Access	Limited
Pipelines	No
High-Speed Internet	Limited
Telephone Company	Consolidated Communications & Spectrum
Transportation	
Primary Evacuation Routes	NH Route 25/118 & NH Route 25A
Secondary Evacuation Routes	East Side Road, Buffalo Road, North Dorchester Road
Nearest Interstate	I-93, Exit 26 (16 miles)
Nearest Airstrip	Plymouth Regional Airport (2,380 ft. turf runway)
Nearest Commercial Airport(s)	Lebanon Municipal, Lebanon (40 miles)
	Manchester-Boston Regional Airport, Manchester (76 miles)
Public Transportation	No
Railroad	No
Education & Childcare	
Elementary School	Wentworth Elementary School (grades K-8)
Middle/High School	Part of Pemi-Baker Cooperative School District in Plymouth with Ashland, Campton, Holderness, Rumney, Thornton and Plymouth
School Administrative Unit	SAU 48
Private School	None
Licensed Childcare Facilities	One facility; 3 children (per the town)
Fire Statistics ***(NH Division of Forests & Lands, Fire Warden Report and the Town)***	
Wildfire Fires (2015-2019)	No wildfires over one 1-acre have occurred since the last plan
Grafton County Fire Statistics (2018)	8 fires, 7 acres
State Forest Fires Statistics (2018)	53 fires, 46 acres
**ACS: The American Community Survey, a five-year average of randomly mailed long-form surveys from the Census Bureau*	
Information found in Table 2.1, unless otherwise noted, was derived from the Economic & Labor Market Information Bureau, NH Employment Security, March 2020. Community Response Received 6/14/2018, https://www.nhes.nh.gov/elmi/products/cp/profiles-pdf/wentworth.pdf.	

Chapter 3: Hazard Identification, Risk Assessment & Probability

A. Hazard Identification

The first step in hazard mitigation is to identify hazards. The team determined that 11 natural hazards have the potential to affect the community. *Table 3.1, Hazard Identification & Risk Assessment (HIRA),* provides estimates of 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 estimate of "probability" for each hazard is multiplied by its severity to establish an overall "relative threat" factor.

The NH State Hazard Mitigation Plan includes many of the same potential hazards that have been identified in Wentworth. Several of the state's hazards, however, were excluded from this plan. These include the following:

State Hazard	Reason for exclusion from this plan
Coastal Flooding	Distance away from the sea
Solar Storm & Space Weather	The team felt this was out of their control
Avalanches	No known areas of avalanches
Radiological	Distance away from any radiological sites
Known & Emerging Contaminants	Homeowners would handle mitigation
Conflagration	No known areas for a conflagration event

Specific hazards that have affected the town, the region and the state in the past 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 upon 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 classification[6]. 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 in combination 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 determined 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.

[6] 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

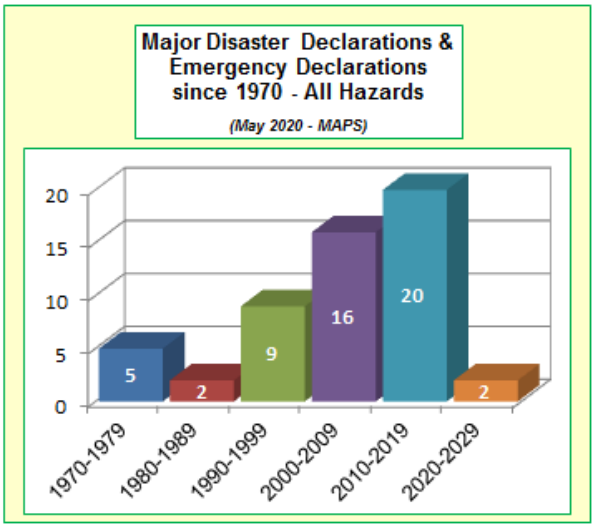
The determination of the probability of occurrence is contained within Column D in Table 3.1, which assesses hazards based upon the likelihood of the hazard's manifestation within 25 years. The probability scores indicate whether the identified hazard has a *Very Low, Low, Moderate, High, or Very High*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

Overall, the Town of Wentworth is reasonably safe from the effects of natural, technological and human-caused hazards. However, due to Wentworth'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 today 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 new State Mitigation Plan Review Guide[7]. By including climate change in the hazard mitigation guide for state planners, FEMA recognizes climate change.

The chart to the right shows the increased frequency of Major Disaster Declarations and Emergency Declarations in the State of New Hampshire, which may indicate climate change.[8] COVID-19 is indicated for the decade beginning in 2020.



Communities in New Hampshire, such as Wentworth, 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 Wentworth is particularly impactful if combined with a long term utility outage, as would most likely be the case with severe winter storms, blizzards and ice storms, hurricanes, tropical storms and windstorms. The food supply of individual citizens could become quickly depleted should a power failure last for a week or more. During the winter months, an outage could result in frozen pipes and the lack of water and heat, a particular concern for the town's elderly and vulnerable citizens. When combined with a long-term utility outage, any hazard's effects could result in a higher probability of damaging impacts on the community.

[7] State Mitigation Pan Review Guide, FEMA, Released March 2015, Effective March 2016, Section 3.2, page 13
[8] Derived from FEMA's record of disasters; categorized by decade since 1970 by the planner

TABLE 3.1: HAZARD IDENTIFICATION & RISK ASSESSMENT (HIRA)

Table 3.1 - 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** 8-16.9 **Medium** 4-7.9 **Low** 0-3.9
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	
5=Very High (81-100%)							
Natural Hazards							
1) Inland Flooding	2.00	4.00	4.00	5.00	3.33	16.67	High
2) High Wind Events	2.00	3.00	1.00	4.00	2.00	8.00	High
3) Severe Winter Weather	2.00	3.00	1.00	4.00	2.00	8.00	High
4) Landslide & Erosion	1.00	4.00	2.00	3.00	2.33	7.00	Medium
5) Tropical & Post-Tropical Cyclones	2.00	4.00	4.00	2.00	3.33	6.67	Medium
6) Lightning	1.00	2.00	2.00	4.00	1.67	6.67	Medium
7) Wildfires	2.00	4.00	4.00	2.00	3.33	6.67	Medium
8) Infectious Diseases	4.00	1.00	3.00	2.00	2.67	5.33	Medium
9) Extreme Temperatures	1.00	1.00	1.00	4.00	1.00	4.00	Medium
10) Earthquakes	1.00	2.00	2.00	2.00	1.67	3.33	Low
11) Drought	1.00	1.00	2.00	2.00	1.33	2.67	Low
Technological Hazards							
1) Long Term Utility Outage	2.00	1.00	1.00	5.00	1.33	6.67	Medium
2) Hazardous Materials	2.00	3.00	3.00	2.00	2.67	5.33	Medium
3) Aging Infrastructure	1.00	3.00	3.00	2.00	2.33	4.67	Medium
4) Dam Failure	1.00	4.00	2.00	2.00	2.33	4.67	Medium
Human-Caused Hazards							
1) Cyber Events	1.00	2.00	3.00	3.00	2.00	6.00	Medium
2) Terrorism & Violence	3.00	2.00	2.00	2.00	2.33	4.67	Medium
3) Mass Casualty Incidents	3.00	2.00	1.00	2.00	2.00	4.00	Medium
4) Transport Accidents	3.00	2.00	1.00	2.00	2.00	4.00	Medium

D. National Flood Insurance Program (NFIP) Status

Wentworth has been a member of the National Flood Insurance Program (NFIP) since April 18, 1983. Wentworth has a relatively small flood plain with approximately 2.05 square miles of land in the 100 and 200-year floodplain[9], which includes 0.3 square miles of inland water. Wentworth's floodplain areas are primarily along the Baker River, the South Branch Baker River and Pond Brook; there are other small streams and brooks throughout the town that may also experience flooding. The latest Flood Insurance Rate Studies (FIRS) and Digital Flood Insurance Rate Maps (DFIRMS) are dated February 20, 2008.

According to the NH Office Strategic Initiatives, there are eight NFIP residential policies and seven non-residential policies in effect in Wentworth for a total of $5,992,400 of insurance in force. Two losses have been paid for a total of $8,339; there have been no repetitive losses[10].

Wentworth Floodplain Management Ordinance

The Town of Wentworth adopted and incorporated the "Wentworth Floodplain Management Ordinance" on March 13, 2007, as part of its subdivision regulations (Section VI. Appendix)[11]. The Subdivision Regulations were revised and approved on February 3, 202 and included revisions to the FEMA Regulations.

Wentworth adopted the "Town of Wentworth Floodplain Management Ordinance" as part of the Town's Subdivision Regulations. The Floodplain Management Ordinance states, *"This ordinance, adopted pursuant to the authority of RSA 674:16, shall be known as the Town of Wentworth Floodplain Management Ordinance. The following regulations shall apply to all lands designated as special flood hazard areas by the Federal Emergency Management Agency (FEMA) in its "Flood Insurance Study for the Town of Wentworth, N.H." together with the associate Flood Insurance Rate Maps, and Flood Boundary & Floodway Maps of the Town dated April 18, 1983, which are declared to be a part of this ordinance and are hereby incorporated by reference, and any subsequent revisions thereto."*[12]

The ordinance goes on to state in its "Purpose" *that "Certain areas of the Town of Wentworth, New Hampshire, are subject to periodic flooding, causing serious damage 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 Wentworth,*

NATIONAL FLOOD INSURANCE PROGRAM

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.

Source: *http://www.floodsmart.gov/floodsmart/pages/about/nfip_overview.jsp*

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

[9] GIS Analysis of Grafton County DFIRM (Digital Flood Insurance Rate Map)
[10] NH Office of Strategic Initiatives; Jennifer Gilbert, February 8, 2019
[11] https://www.wentworth-nh.org/doc/planning/forms/wentworth-planning-board-subdivision-regulations.pdf
[12] Ibid; page 54

New Hampshire, has chosen to become a participating community in the National Flood Insurance Program, and agrees to comply with the requirements of the National Flood Insurance Act of 1968 (P.L. 90-488, as amended) as detailed in the Flood Management Ordinance. This Ordinance establishes a permit system and review procedure for development activities in the designated flood hazard areas of the Town of Wentworth, New Hampshire." The opening paragraphs of the Floodplain Management Ordinance also discuss Severability, Greater Restriction and Enforcement.

Other elements of the Wentworth Floodplain Management Ordinance include Item I-Definitions, Item II-Permits, Item III-Construction Requirements, Item IV-Water and Sewer Systems, Item V-Certification, Item VI-Other Permits, Item VII-Watercourses, Item VIII-Special Flood Hazard Areas and Item IX-Variances and Appeals.

Although not addressed in the floodplain ordinance, road and culvert washouts are a potential concern in Wentworth, although many of these problems have been mitigated. With any significant rainfall, particularly when combined with rapid snowmelt, roads, ditches and culverts within the town may become overwhelmed.

As a small and close-knit community, the Wentworth Select Board, the Planning Board, the Emergency Management Director and the hazard mitigation planning team are almost always aware of any new construction or substantial improvements. Through its Floodplain Management Ordinance and other best practices, Wentworth complies with the National Flood Insurance Program requirements.

The town is aware that the benefits of the NFIP also extend to structures that are not in the 100-year floodplain and will continue to work with the NH Office of Strategic Initiatives to carefully monitor its compliance with the NFIP. The team felt that it is worthwhile to have NFIP brochures and information available at the Town Office for current homeowners and potential developers. It has included 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 Wentworth.

Ice Jam on the Baker River
Photo Credit: Town of Wentworth

TABLE 3.2: HISTORIC HAZARD IDENTIFICATION

Table 3.2 includes the following sections:

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

2015 HMPT = 2015 Hazard Mitigation Planning Team
2021 HMPT = 2021 Hazard Mitigation Planning Team

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

Table 3.2 - Historic Hazard Identification				
Type of Event	**Date of Event**	**Location**	**Description**	**Source**
A. Inland flooding includes riverine, heavy rainfall, rapid snowmelt, ice jam flooding, flooding due to dam failure & local road flooding. Riverine flooding is the most common disaster event in the State of 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 or dam failures have taken place in Wentworth since October 29-November 1, 2017.				
Summary of flood events, including Major Disaster & Emergency Declarations in the state & regionwide				
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 - Present	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)**			
A detailed summary of flood events in the community				
Flooding	1927	Wentworth	Flood damage resulted in permanently closing the road at the Railroad Depot (currently King Lumber)	2015 HMPT
Inland Flooding Heavy Rain	July 11, 1973	All Ten NH Counties	**Major Disaster Declaration DR-399:** Roads washed out from floodwaters; no structures were affected; southern dam on Buffalo Road overflowed and closed the road; Route 25A closed temporarily, and some other roads experienced washouts.	FEMA & 2021 HMPT
Inland Flooding Heavy Rain	January 21, 1974	Belknap, Carroll, Cheshire & Grafton	**Major Disaster Declaration DR-411:** No significant impact in Wentworth was recalled.	FEMA & 2021 HMPT

Table 3.2 - Historic Hazard Identification				
Type of Event	**Date of Event**	**Location**	**Description**	**Source**
Inland Flooding Heavy Rain	March 30-April 11, 1987	Carroll, Cheshire, Grafton, Hillsborough, Merrimack Rockingham, Strafford & Sullivan	**Major Disaster Declaration DR-789:** Beech Hill Road washed out, and the town dump-truck toppled over, disappeared into the ditch, and lost its load. No injuries were reported.	FEMA & 2021 HMPT
Inland Flooding Heavy Rain	August 7-11, 1990	Belknap, Carroll, Cheshire, Coos, Grafton, Hillsborough, Merrimack, & Sullivan	**Major Disaster Declaration DR-876:** No significant impact in Wentworth was recalled.	FEMA & 2021 HMPT
Inland Flooding Heavy Rain	October 20-November 15, 1995	Carroll, Cheshire, Coos, Grafton, Merrimack & Sullivan	**Major Disaster Declaration DR-1077:** No significant impact in Wentworth was recalled.	FEMA & 2021 HMPT
Inland Flooding Heavy Rain	October 20-23, 1996	Grafton, Hillsborough, Merrimack, Rockingham, Strafford & Sullivan	**Major Disaster Declaration DR-1144:** Significant flooding occurred in Wentworth during this period. The Baker River flooded the town's recreation areas as floodwaters reached almost to the top of the tennis court fence. There were no road washout outs, structure flooding or injuries.	FEMA & 2021 HMPT
Inland Flooding Heavy Rain	June 12-July 2, 1998	Belknap, Carroll Grafton, Hillsborough, Merrimack & Rockingham	**Major Disaster Declaration DR-1231:** No significant impact in Wentworth was recalled.	FEMA & 2021 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; no significant impact in Wentworth.	FEMA, 2015 HMPT & 2021 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. (Mother's Day Storm); no significant impact in Wentworth.	FEMA, 2015 HMPT & 2021 HMPT
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); culverts got washed out	FEMA, 2015 HMPT & 2021 HMPT

Table 3.2 - Historic Hazard Identification				
Type of Event	**Date of Event**	**Location**	**Description**	**Source**
Inland Flooding Heavy Rain & Tornado	July 24-August 14, 2008	Belknap, Carroll & Grafton & Coos	**Major Disaster Declaration DR-1787:** A period of severe storms and flooding which also spawned a tornado on July 24, 2008. See below, Section C, High Wind Events; there was no significant impact in Wentworth.	FEMA, 2015 HMPT & 2021 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, Severe Winter Weather; no significant impact in Wentworth.	FEMA, 2015 HMPT & 2021 HMPT
Inland Flooding Heavy Rain	May 26-30, 2011	Coos & Grafton County	**Major Disaster Declaration DR-4006:** Flooding and hail occurred due to a severe storm in Coos & Grafton Counties. (Memorial Day Weekend Storm); no significant impact in Wentworth.	FEMA, 2015 HMPT & 2021 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, High Wind Events.	FEMA & 2021 HMPT
Inland Flooding Heavy Rain	July 9-10, 2013	Cheshire, Sullivan & Grafton	**Major Disaster Declaration DR-4139:** Severe storms, flooding, and landslides occurred in Cheshire and Sullivan Counties and southern Grafton County. No significant impact in Wentworth was recalled.	FEMA & 2021 HMPT
Inland Flooding Heavy Rain **Landslide & Erosion Long Term Utility Outage**	July 1-2, 2017	Grafton & Coos	**Major Disaster Declaration DR-4329:** The Federal Emergency Management Agency (FEMA) announced that federal disaster assistance was available to supplement state and local recovery efforts in the areas affected by severe storms and flooding in two New Hampshire Counties. The July 2017 storm caused considerable damage in Wentworth; Hamilton Field and Riverside Park were both flooded, and some residents lost power for up to five days. Sections of six local roads washed out, and people were left stranded at Camp Pemi. The EOC was opened. A large section of NH Route 25A was lost, and damage occurred on Rowentown, Frescoln, North Dorchester, Cross, Beech Hill and Ellsworth Hill Roads. The South Branch Baker River and its tributaries flooded, causing three bridges to wash out. Wentworth received FEMA assistance in the amount of $102,837.10 (74%).	FEMA & 2021 HMPT

Table 3.2 - Historic Hazard Identification				
Type of Event	**Date of Event**	**Location**	**Description**	**Source**
Inland Flooding Heavy Rain **Erosion Long Term Utility Outage**	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 the state of New Hampshire to supplement state and local recovery efforts in areas affected by severe storms and flooding. The October 2017 storm caused flooding in Hamilton Field and Riverside Park and flooded King Forest Lumber (lumber floated down the river). One resident lost 7-10 feet along the Baker River as the cumulative effects of both the July and October storms were felt. Wentworth received FEMA assistance for this storm in the amount of $23,167.64 (75%).	FEMA & 2021 HMPT
Inland Flooding Heavy Rain	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 in one New Hampshire County. No significant impact occurred in Wentworth as a result of this storm.	FEMA & 2021 HMPT
Flooding/Ice Jams	Past & Potential	North Dorchester Road, Rowentown Road area	Flooding due to ice jams on the South Branch Baker River has caused flooding on North Dorchester Road and in the Rowentown Road area; some properties were affected; culverts in the area underperform.	2015 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 wildfire's potential impact. Wildfires have the potential to impact the community on a townwide basis. No significant wildfire events have taken place in Wentworth since the prior hazard mitigation plan.				
Summary of wildfire events including Major Disaster & Emergency Declarations in the stat and regionwide				
Wildfire (Shaw Mountain)	July 2, 1953	Carroll County	**Major Disaster Declaration DR-11:** This wildfire occurred in Carrol County at Shaw Mountain. This fire did not reach Grafton County or Wentworth.	FEMA & 2021 HMPT
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 assisted in extinguishing this fire. The Bayle Mountain Fire did no structure damage. Although this fire did not reach Grafton County or Wentworth, the Wentworth Fire Department provided assistance to put this fire out.	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 Grafton County or Wentworth.	FEMA & 2021 HMPT

Table 3.2 - Historic Hazard Identification				
Type of Event	**Date of Event**	**Location**	**Description**	**Source**
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 Grafton County or Wentworth.	Local Resources
Wildfire (Dilly Cliff)	October 2017	Grafton County	**The Dilly Cliff Fire occurred near and along** 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 after it began. Although this fire did not reach Grafton County or Wentworth, the Wentworth Fire Department provided assistance to put this fire out.	Local Resources
A detailed summary of wildfire events in the community				
Wildfire	October 1947	Ellsworth Hill Road & Johnson Road area	Wildfire in Ellsworth Hill Road/Johnson Road Area; class and cause unknown; fire lasted three weeks.	2009 HMPT
Wildfire	1990s	Multiple Locations	19 Class A Fires (11 of which were at the dump, 1 downed power line, 1 permitted debris burning, 3 unpermitted debris burning, 1 child playing with rockets, 1 lightning strike, 1 unknown cause) & no Class B or higher Fires	2009 HMPT
Wildfire	2000s	Multiple Locations	2 Class Unknown Fires, 17 Class A Fires (3 miscellaneous cause, 4 downed power lines, 1 lightning strike which rekindled, 1 campfire, 1 ashes dumped from a campfire, 1 ashes dumped from a wood fire boiler, 1 cigarette tossed onto side of the road, 1 metal cutting, 1 out-of-control permitted fire, 1 permitted debris burning, 1 unpermitted debris burning) & 8 Class B fires (1 campfire, 1 arson/suspicious, 1 child playing with matches, 1 lightning strike, 1 cigarette, 2 permitted debris burning, 1 unpermitted debris burning)	2009 HMPT
No wildfires of significance have occurred in Wentworth since the 2015 Hazard Mitigation Plan was completed.				2021 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 is becoming more common with climate change. Most downbursts go unrecognized unless significant damage occurs. Hurricanes develop from tropical depressions that form off the coast of Africa. New Hampshire's exposure to direct and indirect impacts from hurricanes is real, but modest, compared to other New England states. A hurricane that is downgraded to a tropical storm is more likely to impact New Hampshire. Tornadoes and other wind events have the potential to impact the community on a townwide basis. No significant high wind events have taken place in Wentworth since Hurricane Sandy on October 26-November 8, 2012				
Summary of high wind events & tropical & post-tropical cyclone events including Major Disaster & Emergency Declarations in the state & regionwide				

Table 3.2 - Historic Hazard Identification				
Type of Event	**Date of Event**	**Location**	**Description**	**Source**
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 reported as F2 tornadoes except for the June 1953 tornado, which was an F3.** 1814, 1890, 1951, 1953, 1957, 1961, 1963, 2008 **(DR-1782)**			See below
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, and damages were about $12.3 million in 1938 dollars (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 NH's residents lost power. It was expected that in Wentworth, the damage would have been similar to the rest of the state. There was the anecdotal recollection that trees were down all over town. *(Source http://nhpr.org/post/75th-anniversary-new-englands-greatest-hurricane)*	2021 HMPT
Tropical & Post-Tropical Cyclone Hurricanes Carol & Edna	August 31, 1954	All Ten NH Counties	**Hurricanes Carol & Edna:** Hurricane Carol resulted in an extensive amount of trees blown down and large 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 already weakened trees to fall. Although there was no local recollection, it was expected that in Wentworth, the damage would have been similar to the rest of the state. *(Source: http://www.wmur.com/Timeline-History-Of-NH-Hurricanes/11861310)*	2021 HMPT
Tropical & Post-Tropical Cyclone Tropical Storm Floyd	September 16-18,1999	Belknap, Cheshire & Grafton	**Major Disaster Declaration DR-1305:** The declaration covered damage to public property from the storm that spawned heavy rains, high winds and flooding. In Wentworth, there was no recollection of damages from this storm.	FEMA & 2021 HMPT
Tropical & Post-Tropical Cyclone Hurricane Katrina (evacuation)	August 29-October 1, 2005	All Ten NH Counties	**Emergency Declaration EM-3258:** Assistance was provided to pets and evacuees from the area struck by Hurricane Katrina. The President's action made Federal funding available to the state and all ten New Hampshire counties. The Wentworth planning team had no recollection of either pets or evacuees coming to Wentworth due to Hurricane Katrina.	FEMA, 2015 HMPT & 2021 HMPT

Table 3.2 - Historic Hazard Identification				
Type of Event	**Date of Event**	**Location**	**Description**	**Source**
Tornado	July 2009	Wentworth	A tornado watch was given to Wentworth; however, a tornado was not seen in town.	2015 HMPT
Tropical & Post-Tropical Cyclone 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 & Presidential Emergency Declaration EM-3333:** Tropical Storm Irene occurred in seven New Hampshire counties causing flood and wind damage. Also, an Emergency Declaration was declared for all ten New Hampshire counties. In Wentworth, Tropical Storm Irene dropped heavy rains, caused flooding and road closures, power outages and road washouts. Frescoln Road was washed out, and the Athletic Fields flooded and were covered with silt deposits. There was significant property damage, and every tributary of the Baker River experienced overflowing. Rowentown Road and the Cross Road Bridge were breached.	FEMA, 2015 HMPT & 2021 HMPT
Tropical & Post-Tropical Cyclone Hurricane Sandy	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 property damage from the storm that spawned heavy rains, high winds, high tides and flooding. Hurricane Sandy came ashore in NJ and brought high winds, power outages and heavy rain to six New Hampshire counties. There were high winds, trees down, debris in roadways, and power outages in Wentworth, but no major flooding.	FEMA, 2015 HMPT & 2021 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 have the potential to impact the community on a townwide basis. No significant winter weather events have taken place in Wentworth since March of 2008.				
Summary of severe winter weather events including Major Disaster & Emergency Declarations in the state & regionwide				
Severe Winter Weather (Ice Storms)	**Major ice storms that have occurred, causing significant disruptions to power, transportation, public and private utilities** 1942, 1969, 1970, 1979, 1991, 1998 **(DR-1199),** 2008 **(DR-1812)**			FEMA 2021 HMPT
Severe Winter Weather (Snowstorms)	**Major severe winter weather events marked by snowfalls exceeding 2' in parts of the state and resulting in disruptions to power and transportation systems** 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 2021 HMPT

Table 3.2 - Historic Hazard Identification				
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 1968-1969	All Ten NH Counties	The winter of 1968-69 brought record amounts of snow to all of New Hampshire. Pinkham Notch at the base of Mount Washington recorded more than 75" of snowfall in four days at the end of February 1969 in addition to snow that had already fallen in previous storms. All of NH experienced snow removal difficulty because of the great depths that had fallen from December 1968 to April 1969. Heavy equipment was used to move snow in Wentworth. The Highway Department did its best to keep up with the extreme accumulations of snow.	2021 HMPT
Severe Winter Weather High Winds, Tidal Surge, Coastal Flooding & Snow	February 16, 1978	All Ten NH Counties	**Major Disaster Declaration DR-549: The** Blizzard of '78, a region-wide 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" in coastal New Hampshire. This storm also brought hurricane-force winds, which made this storm one of the more intense winter storms to occur this century across the northeastern United States. The Highway Department handled the heavy snow that fell in Wentworth.	FEMA & 2021 HMPT
Severe Winter Weather Snowstorm & High Winds	March 13-17, 1994	All Ten NH Counties	**Emergency Declaration EM-3101:** The Highway Department handled the heavy snow that fell in Wentworth.	FEMA & 2021 HMPT
Severe Winter Weather Ice Storm **Long Term Utility Outage**	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. In Wentworth, many trees fell or were damaged; some homeowners lost property value because of the loss of trees. Power was out for up to a week for some residents. Substantial snow at higher elevations, above 800 feet; Tenney Mountain Ski Area had trees fall on lifts and had to close them for a few days. Forests were devastated.	FEMA & 2021 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 a record and near-record snowfall from a late winter storm that affected six New Hampshire counties. The Highway Department handled heavy snow accumulations.	FEMA, 2015 HMPT & 2021 HMPT

Table 3.2 - Historic Hazard Identification				
Type of Event	**Date of Event**	**Location**	**Description**	**Source**
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 a record and near-record snowfall that affected eight New Hampshire counties. The Highway Department handled heavy snow accumulations.	FEMA, 2015 HMPT & 2021 HMPT
Severe Winter Weather (Snowstorms)	January 22-23, 2005 February 10-11, 2005 March 11-12, 2005	**EM-3208-002** (Jan, Feb & Mar): All Ten NH Counties **EM-3207** (Jan): Nine NH Counties **EM-3208** (Feb): Five NH Counties **EM-3211** (Mar): Five 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 snowstorms that hit the state in 2005. The total aid for all three storms was $6,892,023 (January: $3,658,114; February: $1,121,727; March: $2,113,182). **Emergency Declaration EM-3207:** The January storm (Grafton: $137,118; State of NH: $1,107,426); **Emergency Declaration EM-3208:** The February storm (Grafton: $213,539; State of NH: $521,536). **Emergency Declaration EM-3211:** The March storm (Not declared in Grafton County; State of NH: $697,501). The Highway Department handled heavy snow accumulations.	FEMA & 2021 HMPT
Severe Winter Weather Snowstorm	March 2008	Wentworth	This severe late-winter storm brought additional heavy wet snow combined with rain. In Wentworth, three roofs collapsed on Rowentown Road. The snow load on roofs was a concern. The Highway Department handled heavy snow accumulations.	2015 HMPT
Severe Winter Weather Snowstorm & Ice Storm	December 11-23, 2008	All Ten NH Counties	**Major Disaster Declaration DR-1812 & Emergency Declaration EM-3297:** Damaging ice storm impacted the entire state, including all 10 New Hampshire counties resulting in fallen trees and large scale power outages. Nearly $15 million in federal aid was obligated by May 2009. The Highway Department handled heavy snow accumulations.	FEMA, 2015 HMPT & 2021 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. The Highway Department handled heavy snow accumulations.	FEMA & 2021 HMPT
Severe Winter Weather Snowstorm	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. **EM-3344:** The emergency declaration for snow removal and damage repair included all ten NH countries. (Snowtober). The Highway Department handled heavy snow accumulations.	FEMA, 2015 HMPT & 2021 HMPT

Table 3.2 - Historic Hazard Identification				
Type of Event	**Date of Event**	**Location**	**Description**	**Source**
Severe Winter Weather Snowstorm	February 8, 2013	All Ten NH Counties	**Major Disaster Declaration DR-4105:** Severe winter storm resulted in heavy snow in all ten New Hampshire counties (Nemo). The Highway Department handled heavy snow accumulations.	FEMA, 2015 HMPT & 2021 HMPT
E. Earthquakes: According to the State Hazard Mitigation Plan, New Hampshire is considered to lie in an area of "Moderate" seismic activity when compared to other areas of the United States. New Hampshire is bordered to the north and southwest by areas of "Major" activity. 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 were felt in Wentworth since October 16, 2012, when the earthquake was felt, but no damage occurred.				
Summary of earthquakes with a magnitude of 4.0 or greater in the state & regionwide				
Earthquakes	**Earthquakes with a magnitude of 4.0 or greater in recorded 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 **(Ossipee, NH, 5.5-5.8)**, 12/24/40 **(Ossipee, 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)**			State of NH Multi-Hazard Mitigation Plan, Update 2018
A detailed summary of earthquakes that were felt in the community since 1940 with a magnitude of 3.0 or greater				
Earthquake	December 20, 1940	Ossipee, NH	Magnitude 5.5	State of NH Multi-Hazard Mitigation Plan, Update 2018, 2015 HMPT & 2021 HMPT
Earthquake	December 24, 1940	Ossipee, NH	Magnitude 5.5	
Earthquake	June 15, 1973	Quebec Border / NH	Magnitude 4.8	
Earthquake	January 19, 1982	West of Laconia, 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	June 26, 2010	Boscawen, NH	Magnitude 3.1	
Earthquake	October 16, 2012	Hollis Center, ME	Magnitude 4.0; felt in Wentworth, but no reported damage.	

Table 3.2 - Historic Hazard Identification				
Type of Event	**Date of Event**	**Location**	**Description**	**Source**
F. Drought: Droughts are generally not as damaging or disruptive as floods and other hazards, and they are 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. No significant droughts have occurred in Wentworth since the drought of 2020.				
Summary of drought in the state & regionwide				
Drought	**Occurrences of severe droughts in recorded New Hampshire history** 1775**,** 1840**,** 1882, 1910's**,** 1929-1936**,** 1939-1944, 1947-1950**,** 1960-1969, 1999; 2001-2002, 2016-2017, 2020			State of NH Multi-Hazard Mitigation Plan, Update 2018
Summary of drought in the community since 1929				
Drought	1929-1936	Statewide	Regional	State of NH Multi-Hazard Mitigation Plan, Update 2018 & 2021 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 normal precipitation	
Drought	2001-2002	Statewide	The third worst drought on record	
Drought	2016-2017	Statewide	Declared drought for the summer of 2016 and into 2017, moderating from extreme in southern New Hampshire to dry in the most northern communities. The drought affected Wentworth with the loss of a few dug wells and springs.	
Drought	2020	Statewide	Drought conditions, moderating from extreme in southern NH to abnormally dry in the northern communities, were declared during 2020. The impact of this drought is still being felt; however, no significant impact was reported in Wentworth.	
G. Miscellaneous Past or Potential Hazards: Natural, technological and human-caused hazards and other unusual hazardous events have been noted throughout New Hampshire. Among others, one concern is the transport of hazardous material through communities by rail and tractor-trailer. Other natural, technological or human-caused hazards have the potential to impact the community on a townwide basis. No additional hazards have taken place in Wentworth Covid-19 in 2020.				
Landslide & Erosion	July 2017	Rowentown Road	A hillside on the upper side of Rowentown Road slid onto the road, causing the road's closure for three days, limiting emergency response capabilities.	2021 HMPT
Cyber Events	Spring 2019	Town Offices	The town's website experienced a cyber-attack, but after paying for a "backup", the town got all of its information back. The town's critical information is now in the cloud.	2021 HMPT

Table 3.2 - Historic Hazard Identification				
Type of Event	**Date of Event**	**Location**	**Description**	**Source**
Infectious Diseases	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 provide assistance to 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").	2021 HMPT
Infectious Diseases	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	2021 HMPT
H. Other Hazards: Identified hazards with no specific example of an occurrence				
Natural Hazards	Although the team did not identify specific examples or past occurrences of these hazards, it was felt worthwhile to list them as potential hazards to the town. These hazards have the potential to impact the community either locally or on a townwide basis. See Table 3.1, Hazard Threat Analysis and Chapter 5 for more details on these hazards.			
Lightning				
Extreme Temperatures				
Technological Hazards				
Hazardous Materials				
Aging Infrastructure				
Dam Failure				
Human-caused				
Terrorism & Violence				
Mass Casualty Incidents				
Transport Accidents				

*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)

With team discussion and brainstorming, Critical Infrastructure & Key Resources (CIKR) within Wentworth were identified. 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 that may be needed during an emergency response.			
Facility	**Type of Facility**	**Hazard Risk**	
Town Offices (no generator)	Records, Maintain Town Government	All Hazards	1
Police Station	Police Department		
Fire Station (no generator)	Fire Department (siren) & Emergency Operations Center (EOC)	All Hazards	1
Highway Public Works Garage (no generator)	Heavy Equipment, Sand & Gravel	All Hazards & Flooding	2
Wentworth Elementary School (generator)	Primary Shelter	All Hazards	1
State DOT Garage (for 1st Responders, has generator)	Emergency Diesel & Gas	All Hazards	1
Speare Memorial Hospital (Plymouth)	Hospital	All Hazards	1
Dartmouth Hitchcock Medical Center (Lebanon)	Hospital (secondary)	All Hazards	1
Warren/Wentworth Ambulance (Warren)	Emergency Medical Services & Transport	All Hazards	1
Grafton County Dispatch (Police/911)	Communications	All Hazards	1
Lakes Region Fire Mutual Aid	Communications	All Hazards	1
Hydrants (dry & live)			
Zoe Road	Dry Hydrant/Fire Pond	All Hazards	1
Cape Moonshine Road	Dry Hydrant	All Hazards	1
John King's Gravel Pit	Dry Hydrant	All Hazards & Flooding	3
King Forest Industries	Live Hydrant	All Hazards & Flooding	2
Precision Industries	Live Hydrant	All Hazards & Flooding	3
Turner Road at Route 25 under state bridge	Dry Hydrant	All Hazards & Flooding	2

EMERGENCY RESPONSE FACILITIES (ERF)			
ERFs are primary facilities and resources that may be needed during an emergency response.			
Facility	**Type of Facility**	**Hazard Risk**	
Helicopter Landing Zones			
Peterson Airport (Private)	Airstrip & Heli Landing Zone	All Hazards & Flooding	2
Hamilton Ball Field	Helicopter Landing Zone (official)	All Hazards & Flooding	3
Baker River Bible Church Parking Lot	Helicopter Landing Zone (official)	All Hazards	1
Nichols Hill (Scheller)	Helicopter Landing Zone (official)	All Hazards for distance from the center of town	2
Rum Town Speedway	Helicopter Landing Zone (unofficial)	All Hazards	1
Wentworth Elementary School	Helicopter Landing Zone (unofficial)	All Hazards	1
Bridges on the evacuation routes			
Mountain Brook Bridge (East Side Road)	Bridge on Secondary Evacuation Route	All Hazards & Flooding	2
Town Line Bridge (Warren)	Bridge on Evacuation Route	All Hazards	1
Village Bridge over Baker River on Route 25	Bridge on Evacuation Route	All Hazards	1
Saunders Hill Bridge	Bridge on Evacuation Route	All Hazards & Flooding	2
Gove Falls Bridge	Bridge on Evacuation Route	All Hazards & Flooding	2
Route 25 by Turner Road	Bridge on Evacuation Route	All Hazards	2
DuFour Bridge	Bridge on Evacuation Route	All Hazards & Flooding	2
South Branch (Route 25)	Bridge on Evacuation Route	All Hazards	1
Thayer Bridge	Bridge on Evacuation Route	All Hazards	1
Rowen Town Bridge on South Branch	Bridge on Evacuation Route	All Hazards & Flooding	3
Evans Bridge	Bridge on Evacuation Route	All Hazards	1
Matava Bridge (south end of Rowen Town Cross Road)	Bridge on Evacuation Route	All Hazards & Flooding	2
Smith Bridge (by Welch's)	Bridge on Evacuation Route	All Hazards & Flooding	3
Stevens Bridge (Buffalo Road)	Bridge on Evacuation Route	All Hazards	1
Nichols Hill Bridge	Bridge on Evacuation Route	All Hazards	1
Frescoln Bridge (culvert)	Bridge on Evacuation Route	All Hazards & Flooding	3

EMERGENCY RESPONSE FACILITIES (ERF)			
ERFs are primary facilities and resources that may be needed during an emergency response.			
Facility	**Type of Facility**	**Hazard Risk**	
Culvert Route 25 and Beech Hill	Bridge on Evacuation Route	All Hazards & Flooding	2
Culvert (Buffalo and Turner)	Bridge on Evacuation Route	All Hazards & Flooding	2
High Hazard Dams			
Baker River Site 5 Dam (Swain Brook)	High Hazard Dam (DES)	All Hazards & Flooding	3
Baker River site 11 Dam (Baker River)	High Hazard Dam (DES)	All Hazards & Flooding	3
Baker River Site 11A Dam (Baker River)	High Hazard Dam (DES)	All Hazards & Flooding	3
Baker River Site 6A Dam (Tural Brook)	High Hazard Dam (DES)	All Hazards & Flooding	3
Evacuation routes			
Route 25/Mt. Moosilauke Highway	Primary Evacuation Route	All Hazards & Flooding	2
Route 25A	Primary Evacuation Route	All Hazards & Flooding	3
East Side Road	Secondary Evacuation Route	All Hazards & Flooding	2
Buffalo Road	Secondary Evacuation Route	All Hazards & Flooding	2
N. Dorchester Road	Secondary Evacuation Route	All Hazards & Flooding	2

TABLE 4.2 – NON-EMERGENCY RESPONSE FACILITIES (NERF)

NON-EMERGENCY RESPONSE FACILITIES (NERF)			
NERFs are facilities that are not necessary for immediate emergency response efforts, although they are critical. NERFs would include facilities to protect public health and safety and to provide backup emergency facilities.			
Facility	**Type of Facility**	**Hazard Risk**	
Wentworth Elementary School	Secondary EOC	All Hazards	1
Baker River Bible Church	Secondary Shelter	All Hazards	1
Wentworth Transfer Station	Waste Removal	All Hazards & Flooding	1
Consolidated Switching Station (Warren)	Utilities	All Hazards	1
Consolidated Switching Station (Rumney)	Utilities	All Hazards	1

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 to residents who may need help during a hazardous event.			
Facility	**Type of Facility**	**Hazard Risk**	
Wentworth Elementary	School	All Hazards	1
Baker River Bible Church (generator)	Secondary Shelter	All Hazards	1
Camp Pemigewasset (summer)	Summer Camp	All Hazards & Flooding	2
Pine Haven Campground	Campground	All Hazards & Flooding	2
Old Town Hall (1899)	Historical Building	All Hazards	1
Webster Memorial Library	Historical	All Hazards	1
Congregational Church	Historical Building (State Register)	All Hazards	1
Wentworth Historical Society & Museum	Historical Building	All Hazards & Flooding	1
Stevens-Currier House	Historical Building (State Register)	All Hazards & Flooding	2
Atwell Hill Baptist Church	Historical Building	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.			
Facility	**Type of Facility**	**Hazard Risk**	
King's Mill	Building Materials	All Hazards & Flooding	2
Precision Lumber	Building Materials	All Hazards & Flooding	2
Shawnee's General Store (generator)	Gas, Diesel & Food	All Hazards	1
Dollar General	Food & water; other resources	All Hazards	1
Appleknockers (Warren)	Home Supplies, food, water gas & diesel	All Hazards	1
Bixby's Sand & Gravel (Warren)	Sand, Gravel & Equipment	All Hazards	1
For all other Potential Resources, please refer to the Wentworth Emergency Operations Plan			

Chapter 5: Hazard Effects in Wentworth

A. Identifying Vulnerable Critical Infrastructure & Key Resources (CIKR)

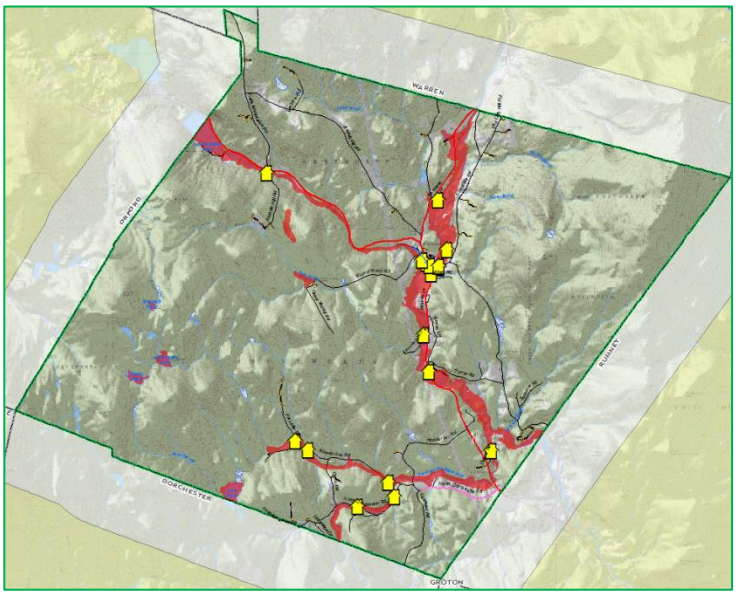
Because damages from floods and wildfires are more predictable than damages from other disasters, it is essential to identify the Critical Facilities & Key Resources (CIKR) that are most likely to be damaged by these events.

The Flood Risk to CIKR

Wentworth's CIKR were identified and listed in Chapter 4; each of these CIKR was analyzed for their potential for flooding. This analysis and available GIS data indicate that Wentworth's primary CIKR, the Town Offices, the Police and Fire Stations, the Elementary School and the Highway Garage are not located in the 100-year floodplain. However, as shown in the table and map to the right, several other CIKR (yellow houses) are located in the floodplain (red shading). Many of these are expected to be at or near water, including ten culverts and bridges. One dry hydrant, one live hydrant and two helicopter landing zones were also found in the floodplain. The Historical Society building, King Forest Industries and Shawnee's General Store are additional CKIR in the flood zone that should be closely monitored during a significant flooding event.

MAPS_Structures Flood

	ALL_H	NAME	Hazmit_Type
	ERF	Dry Hydrant-John King's Gravel Pit	Dry Hydrant
	ERF	King Forest Industries-Hydrant	Live Hydrant
	ERFB	Bridge-Village Bridge (Rt 25) over Baker	Bridge
	ERFB	Bridge-Saunders Hill Bridge	Bridge
	ERFB	Bridge-DuFour Bridge	Bridge
	ERFB	Bridge-Rowen Town Bridge on So Branch	Bridge
	ERFB	Bridge-Evans Bridge	Bridge
	ERFB	Bridge-Matava Bridge	Bridge
	ERFB	Bridge-Smith Bridge	Bridge
	ERFB	Bridge-Nichols Hill Bridge	Bridge
	ERFB	Route 25/Turner Rd	Evac Bridge
	ERFC	Bridge-Frescoln Bridge	Bridge
	ERFH	Peterson Airport	Airport & Heli LZ
	ERFH	Hamilton Ball Field-LZ	Heli LZ
	FPP	Historial Society, 15 East Side Rd	Historical Structure to Protect
	PR	King Forest Industries	Building Materials
	PR	Shawnee's Gen. Store; 73 Mt. Moosilaukee	Retail Store



No additional CIKR were found to be in the designated FEMA floodplain, although it is expected that there may be non-CIKR structures within the flood zone. Although the floodplain is primarily along the Baker River and its territories, town officials should keep all at-risk properties in mind when a flood hazard is likely.

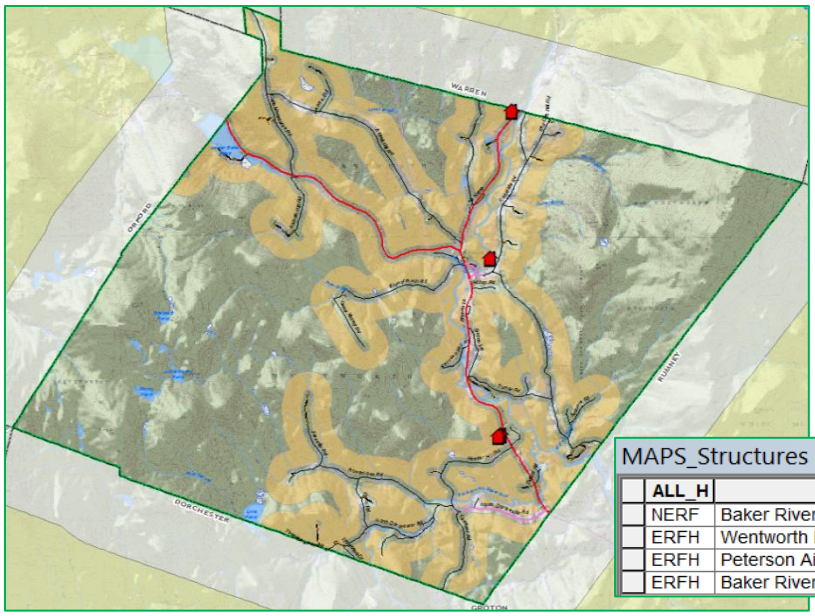
The Wildfire Risk to CIKR

CIKR falling within the Wildland Urban Interface (WUI) were reviewed and identified; identifying these facilities helped the team create and prioritize wildfire mitigation action items. It is essential to determine which Critical Infrastructure & Key Resources are most vulnerable to wildfires.

Several of Wentworth's CIKR were found in the traditional WUI. However, the town's primary CIKR were within the 300 foot WUI buffer of roadways, therefore accessible by fire apparatus and hoses (see WUI methodology in Section C, Item 7, Wildfire, in this chapter). The CIKR that were found in the WUI includes three helicopter landing zones and the Baker River Church. The Wentworth Elementary School's playing fields are among the helicopter landing

zones found in the WUI. Although both the Baker River Church and the Wentworth Elementary School are within or near the WUI, there is adequate defensible space around both facilities.

Many other Wentworth structures could be subject to wildfire, particularly in neighborhoods with limited egress and a canopy of old-growth trees. Wentworth is also heavily forested; therefore, all structures in town can be assumed to be in the WUI.



The Wildland Urban Interface (WUI) indicated by orange symbology
At risk CIKR indicated by small red houses

MAPS_Structures selection

	ALL_H	NAME	Hazmit_Type
	NERF	Baker River Church/Shelter	Religious Facility
	ERFH	Wentworth Elementary School Field	Heli LZ
	ERFH	Peterson Airport	Airport & Heli LZ
	ERFH	Baker River LZ	Heli LZ

B. Calculating the Potential Loss

It is difficult to ascertain the damage caused by hazards because the damage will depend on the hazard's extent and severity, making each hazard event somewhat unique. Therefore, we have used the assumption that hazards that impact structures could damage either 0-1% or 1-5% of the town's structures, depending on the hazard's nature and whether the hazard is localized.

MS-1 Assessed Value of All Structures			
2019-MS1	**Value**	**1% Damage**	**5% Damage**
Residential	$52,913,700	$529,137	$2,645,685
Manufactured Housing	$2,516,400	$25,164	$125,820
Commercial	$6,157,900	$61,579	$307,895
Tax Exempt	$3,014,100	$30,141	$150,705
Utilities	$8,425,200	$84,252	$421,260
Total	$73,027,300	$730,273	$3,651,365
Wentworth 2019 Town Report, MS Report, page 30			

Based on this assumption, the potential loss from any of the identified natural hazards would range from **$0 to $730,273** or **$730,273 to $3,651,365** based on the 2019 Wentworth town valuations, which lists the assessed value of all structures in Wentworth to be **$73,027,300** (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.

C. NATURAL HAZARDS

Descriptions below represent the **"local impact"** to the community for the hazards that were identified by the team. For the **"extent"** of these hazards, please refer to *Appendix C, The Extent of Hazards*. This section of the plan includes 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.

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

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

1) INLAND FLOODING

Hazard Identification & Risk Assessment (HIRA) ..... High
Probability ..... Very High
Estimated Structure Loss Value ..... $730,273 to $3,651,365

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

Riverine flooding and 100-year flood events can occur due to hurricanes, tropical and post-tropical cyclones, heavy summer and fall rains, and ice jams. Nearly every spring, the Baker River and the South Branch Baker River overflow their banks, at times causing the closure of some of the town's roads. In the past, ice jams, particularly on the South Branch Baker River, have created flooding on Rowentown Road, causing road closure and leaving livestock stranded. Flooding has also often significantly restricted accessibility for emergency responders.

Wentworth is in the middle of the Baker River Watershed; the Baker River traverses the community from the north to the southeast. Multiple tributaries converge with the Baker River in Wentworth, including South Branch Baker River, Pond Brook, Tural Brook, Atwell Brook, Currier Brook, Martins Brook and Stevens Brook. Other smaller brooks and streams also converge with the Baker River as it makes its way southeast to the Pemigewasset. Six flood control dams in Wentworth are managed by the NH Department of Environmental Services (DES) Water Division, including four high-hazard, one significant hazard and one low hazard dam. Wentworth has a history of riverine flooding and ice jam flooding dating back to 1927 (see Table 3.2). Tropical Storm Irene in 2011 brought significant flooding to the community as virtually every tributary of the Baker River overflowed its banks.

More recently, during an extraordinary rain event on July 1-2, 2017 (DR-4329), considerable flood damage occurred in Wentworth. Hamilton Field and Riverside Park were inundated, and some residents lost power for as many as five days. A large section of NH Route 25A washed out, and damage occurred on several other town roads, including Rowentown Road, Frescoln Road, North Dorchester Road, Cross Road, Beech Hill Road and Ellsworth Hill Road. The town opened the Emergency Operations Center to coordinate the emergency response; stranded campers at Camp Pemi were monitored for their safety.

Three bridges on the South Branch Baker River and its tributaries also washed out. Temporary culverting replaced the failed bridges; the town is still working on these bridges due to this storm. To assist with this storm's

impact, Wentworth called upon the NH Public Works Mutual Aid for assistance and was fortunate to welcome public works teams from Peterborough and Dunbarton. Wentworth received FEMA post-disaster assistance in the amount of $102,837.

Another significant rain event took place on October 29-30, 2017 (DR-4355). Although flooding was not as significant as during the July storm, flooding occurred along the Baker River and on most of the same roads that flooded in July. Hamilton Field and Riverside Park also flooded again. King Forest Industries, a wood products company, flooded; the team reported that lumber from the lumberyard even floated down the Baker River. One resident, whose property is on the Baker River, lost 7-10 feet of riverbank due to these two storms.

Local road flooding is often the result of rapid snowmelt and heavy spring or fall rain events. It is estimated that the town experiences some sort of stormwater problem whenever two or more inches of rain falls in a short period of time. Heavy rain from tropical downpours, hurricanes or severe thunderstorms along with rapid snowmelt often cause culverts to be overwhelmed and roads to wash out. Also, timber harvesting, undersized or aging culverts and inadequate ditching are major causes of local road flooding in Wentworth.

Many of Wentworth's roads are long and winding and subject to some of the state's most severe weather. The continuous flooding of roads and subsequent washouts makes for a daunting task of "up-keep" for the Highway Department. Fortunately, two of the town's major thoroughfares, NH Routes 25 and 25A, are the state's responsibility. The Highway Department maintains 30.66 miles of Class V roads, including 6.94 miles of paved and 23.7 miles of gravel roads. The Highway Department is also responsible for more than 300 culverts, many of which were not installed correctly and made with steel bottoms; these steel culverts are aging and rotting. The Highway Department continuously improves culverts, beginning each year with those in the direst condition. Over the past ten years, 60-70 culverts were replaced and improved from metal to plastic, with six replaced in 2019 alone.

Rowentown Road Flooding
Photo Credit: Town of Wentworth

Fortunately, Wentworth has attempted to be very proactive in the maintenance and repairs of culverts and makes every effort possible to reduce the incidence of road flooding and washouts. Several mitigation action items in this plan address flooding, aging culverts and other aging infrastructure, including bridges.

The expected loss value from flooding would be based not only on the cost to repair roadways but also on the potential cost of damage to structures. Flooding can be severe enough to take out utilities and create town areas 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 estimated to be between 1% and 5% of the total structure value.

2) High Wind Events

Hazard Identification & Risk Assessment (HIRA) ..... High
Probability ..... High
Estimated Structure Loss Value ..... $730,273 to $3,651,365

Isolated High Wind Events

Isolated high winds and downdrafts often occur in Wentworth. These wind events are unpredictable and could fall timber, which in turn could block roadways, down power lines and impair emergency response. Old-growth software is affected by these unexpected windstorms, particularly in the spring when the water table is high. As with other wind events, the emergency response could be difficult.

The town often experiences sporadic high winds due to its location in the White Mountains. Wind tends to swoop down the mountainsides forming wind tunnels through the valleys. Gusts over 30 mph are not uncommon. The town lost approximately 30 trees on Beech Hill Road in two separate incidents, once during Hurricane Sandy and another time from an isolated wind event. During one event, a tree fell into a house on Ellsworth Hill Road; another tree fell onto a roof of a residence on Pond Brook Road. The team noted that high winds seem to follow the Baker River leading to downed trees and power lines, leaving large amounts of debris on NH Route 25, which parallels the river.

NH Electric Coop and the Wentworth Highway Department have aggressively trimmed trees and brush, particularly those near power lines.

Tornadoes & Downbursts

The most significant difference between tornadoes, microbursts and macrobursts is the direction, size and location that the wind comes from, but all 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 generally lasting longer than a microburst.

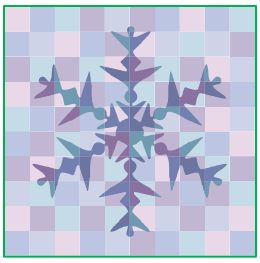
In Wentworth, a microburst would be more likely than a tornado. Microbursts are becoming more common and often result in damage. Although Wentworth did not report any tornadoes or downbursts, it is expected that high wind events in the past may have actually been microbursts, but the National Weather Service did not provide this official designation. A tornado warning was issued in Wentworth, but no tornado actually touched down.

Although the incidence of downbursts is becoming more common, damaging high wind events are rare natural hazards in New Hampshire. On average, only about six tornadoes touch down each year. Damage from high wind events largely depends on where the hazard strikes. If a high wind event were to strike a densely populated or commercial area, the impact could be significant and result in personal injury and property damage. However, due to the rareness of tornadoes and the localized nature of downbursts, the estimated loss value is between 0% and 1% of the total assessed structure value.

3) Severe Winter Weather

Hazard Identification & Risk Assessment (HIRA) ..... High
Probability ..... High
Estimated Structure Loss Value ..... $730,273 to $3,651,365

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 degrees of severity each year. Power outages, extreme cold and impacts to infrastructure are all effects of winter storms that have been felt in Wentworth in the past. These impacts are a risk to the community, including isolation, especially of the elderly (24.6% of the population) and other vulnerable populations. 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.

In March of 2008, a late-season snowstorm dumped a heavy wet snow and rain mix on Wentworth. Three residents on Rowentown Road had their roofs collapse due to the extreme weight of this snow. Although Wentworth's road crew generally handles usual snow amounts without difficulty, Wentworth's roads are often impacted by poor weather conditions. These conditions, combined with heavy traffic on NH Routes 25 and 25A, can make travel difficult. Poor road conditions may hinder fire and other emergency response.

Ice Storms

Of more concern in Wentworth than 2-4' snowstorms are ice storms, though the probability of the occurrence of a significant ice storm is lower than that of a major snowstorm. A significant ice storm can inflict several million dollars' in damage to forests and structures. Unlike typical snowstorms, which are generally handled well by the Highway Department, ice storms present significant problems. Downed power lines and fallen trees make it difficult for the Highway Department and emergency responders. School buses are also at risk.

The 1998 Ice Storm inflicted severe damage in Wentworth. The town received significant snowfall but even more damaging was the ice build-up on trees and power lines at elevations above 800'. Multiple roads were closed due to downed trees and power lines, power outages lasted for up to a week in some locations, and EMS accessibility was limited.

The 2008 Ice Storm did not impact Wentworth. However, it severely impacted other parts of the state.

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 structure value.

4) Landslide & Erosion

Hazard Identification & Risk Assessment (HIRA) ..... Medium
Probability ..... Moderate
Estimated Structure Loss Value ..... $0 to $730,273

Landslides, rockslides and mudslides are often associated with heavy rains, steep terrain and the overflow of river banks. Wentworth has been impacted by these types of events in the past, particularly along Rowentown Road and the Baker River.

High water events, as was seen during Tropical Storm Irene, produce erosion and the subsequent loss of land along the riverbank. Changes in the river's course and the undermining of nearby roads and bridges are also effects of riverbank erosion. During Tropical Storm Irene, the town lost land to the Baker River at Riverside Park and again during the rain events of 2017; as mentioned above, Section 1, Inland Flooding, one resident has lost 7-10 feet of riverbank. In another instance, a porch was lost and was later rebuilt, costing the town $80,000. Each time the Baker River floods, more land erodes from its riverbanks. Swimming holes and playing fields are often impacted. The team reported that because of changes in the river channel over time, water seems to be coming down the Baker River quicker than in the past, causing more and more erosion problems on the way.

The team reported one significant landslide; during the July 2017 storm, a hillside on the upper side of Rowentown Road slid down onto the road below. As a result, the road was closed for three days for difficult cleanup work; emergency response capabilities were limited.

Lastly, the team reported erosion of the abutments at Martins Brook Bridge on Eastside Road. This significant aging infrastructure hazard is addressed as a mitigation action item in this plan.

Although landslide and erosion are issues in Wentworth, structure damage would be somewhat predictable and likely localized. Therefore, the structure loss value was estimated to be between 0% and 1% of the total assessed structure value.

5) Tropical & Post-Tropical Cyclones

Hazard Identification & Risk Assessment (HIRA) ..... Medium
Probability ..... Low
Estimated Structure Loss Value ..... $730,273 to $3,651,365

Wind damage due to tropical and post-tropical cyclones (hurricanes) is a consideration because of the forest and valley floors in Wentworth. Like the 1938 hurricane and hurricanes, Carol and Edna in 1954, significant forest damage could occur. Although tropical and post-tropical cyclones could fit into several different categories (wind and flooding), the team considered tropical and post-tropical cyclones to be separate events. Tropical and post-tropical cyclones are rare in New Hampshire, but they should not be ruled out as potential hazards. In most cases, tropical cyclones have been down-graded to post-tropical cyclones by the time they reach central New Hampshire.

Like other parts of New Hampshire and Vermont, which received considerable damage during Tropical Storm Irene in 2011, Irene brought heavy rain to Wentworth and several road washouts. Several trees were downed, as were some power lines. There was a brief loss of power; however, some residents experienced power outages for three

to four days. The heavy rains caused the Baker River and the South Branch Baker River to overflow their banks along Wentworth's floodplain.

Road closures and washouts, power outages, and erosion on the Baker River were all caused by Irene's torrential rains. There was damage on Rowentown Road and other roads in the community; part of Frescoln Road was washed out. Even the town's tennis courts and the athletic fields (Hamilton Field) were damaged; when the water receded, a silt layer was left behind, causing considerable damage. A 10" culvert at one campground was washed away, causing campers to be temporarily stranded. Some basements were flooded, causing property damage, and one resident had to be carried out of her home.

For the most part, the town's bridges and dams held up during Irene. Washed-out roads and culverts did not hold up as well; the town spent six weeks fixing or replacing culverts and received $60,000 from FEMA (of a total of $80,000) in reimbursements for the damage that was done.

Hurricane Sandy also impacted Wentworth, but severe flooding was not an issue as it had been during Irene. The high winds of Sandy caused a dozen or more trees to fall, causing power outages, keeping many residents of the community in the dark for 3-5 days

The probability that a tropical and post-tropical cyclone would remain a Category 1 or greater in this part of the state is low. However, due to the excessive amount of rain that could fall and the confluence of so many tributaries into the Baker River, the potential flood losses from tropical storms could be quite 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

Hazard Identification & Risk Assessment (HIRA) ..... Medium
Probability ..... High
Estimated Structure Loss Value ..... $0 to $730,273

Lightning

Severe lightning resulting from summer storms or a residual effect from hurricanes and tornadoes has occurred in Wentworth. Many of the town's structures are older and historic buildings, as detailed in Table 4.3. Other vulnerable structures are surrounded by forest. Dry timber on the forest floor, some of which remains from past ice or windstorms, and the age of many buildings combined with lightning strikes can pose a significant disaster threat. Lightning could damage specific structures, injure or kill an individual, but the direct damage would not be widespread.

Although lightning is a potential problem, the town reports few occurrences, none of which were severe. The team did not recall any past lightning strikes but mentioned that both the Old Town Hall and the Town Offices could benefit from installing lightning rods.

It was noted that severe thunder and lightning storms seem to happen more often than in recent years, perhaps the result of climate change. Also concerning are the heavy rains that thunderstorms can produce and the subsequent erosion of ditches, culverts and roadways.

Hail

Although not common in Wentworth, hailstorm events resulting from significant thunder and lightning storms can occur at any time. Summer storms may produce hail large enough to damage roofs, siding and automobiles. Damage from hail could also result in failed crops, thus creating an economic impact on the local economy and individual citizens. It should be noted, however, that Wentworth is not a heavily farmed community. Overall, it was felt that a hailstorm event would be unlikely and would cause minimal damage.

Based on the localized nature of lightning strikes and the minimal damage expected from hail, the potential loss value was estimated to be 0-1% of the total assessed structure value.

7) WILDFIRES

Hazard Identification & Risk Assessment (HIRA) ..... Medium
Probability ..... Low
Estimated Structure Loss Value ..... $730,273 to $3,651,365

There are two main potential losses with a wildfire, the forest itself 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 it threatens the built-up human environment.

Any wildfire discussion must include a discussion of the Wildland Urban Interface (WUI). The WUI can be determined in various ways; however, it basically represents the area in which 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 most New Hampshire communities, entire towns are considered to be in the WUI because of the abundance of hardwood and softwood trees. In more populated areas, the WUI is often determined to be in densely populated neighborhoods where a large canopy of old-growth trees and limited access make people and structures more vulnerable. All structures within the WUI are assumed to be at some level of risk and, therefore, vulnerable to wildfire. As shown in Section A of this Chapter, a more traditional WUI analysis is devised using GIS buffers, 300' feet from the centerline of Class V roads and then another 1,320' feet from the first buffer. The second buffer represents the WUI.

The potential exists for wildfires throughout Wentworth. Currently available documentation on fires in Wentworth and New Hampshire indicates that the majority of fires are human-caused. There have been no significant wildfires in Wentworth in many years except for small brush fires of little significance. The team noted that more buildings are likely to be built in the Wildland Urban Interface (WUI), which could add to the possibility of a large damage-producing wildfire.

The team described the forests of Wentworth 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 fires 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."*[13] Burn permits are required in Wentworth, as they are throughout the state, but often, burning occurs without the proper permits. The steep terrain and heavily forested areas of the town are difficult to monitor; therefore, the occasional unauthorized burn will take place.

[13] http://www.fs.fed.us/nwacfire/home/terminology.html

Due to the abundance of slash on the forest floor left by past ice storms, logging operations, blowdowns and the mixture of hardwood and softwood trees, there is potential for fast-burning fuels and a significant wildfire. 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. Wentworth maintains and improves firefighting equipment and continuously maintains dry hydrants and fire ponds to help combat fire.

Large wildfires in New Hampshire are uncommon. However, four large fires have occurred in the past five years, the Dilly Cliff Fire in Woodstock, the Covered Bridge Fire in Albany, the Stoddard Fire in Stoddard and the Bayle Mountain Fire in Ossipee. No large fires have occurred in Wentworth; however, given the right set of conditions (drought, lightning, human interface), the potential for large wildfires is good. Because the Town of Wentworth is heavily forested, the potential loss value was estimated to be between 1% and 5% of the total assessed structure value.

8) Infectious Diseases

Hazard Identification & Risk Assessment (HIRA) ..... Medium
Probability ..... Low
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."[14]

Wentworth's unique geography of mountains, rivers and lakes provides summer and winter recreation enthusiasts many opportunities to visit the town. The community's population shows a modest increase during the summer and on weekends. Also, the town's high school students attend school at Plymouth Regional High School, along with students from the neighboring towns of Ashland, Holderness, Plymouth, Rumney, Thornton and Campton, thus enabling infection and viruses to be transmitted from elsewhere.

Because of these factors, the team decided that infectious diseases and epidemics or pandemics could threaten Wentworth. With the occurrence of world-wide pandemics such as SARS, the Zika Virus, H1N1 and Avian Flu, Wentworth could be susceptible to an epidemic and subsequent quarantine. In fact, as of this plan's writing, the entire world is coping with the COVID-19 pandemic. All non-essential businesses and schools throughout New Hampshire and most of the United States were closed during the pandemic's early months.

To help mitigate the crisis, town officials closed the Town Offices to the public during the spring of 2020; town officials still conducted business either remotely, online, or by appointment. The Town Offices reopened again during the summer of 2020 after installing mitigation measures, such as plexiglass and floor markings to promote social

[14] Infectious diseases, Overview, https://www.mayoclinic.org/diseases-conditions/infectious-diseases/symptoms-causes/syc-20351173

distancing. The Town Office remains open with strict mitigation measures in place and mandatory mask requirements. The town continues to encourage social distancing, the use of face masks and the protection of the town's most vulnerable citizens.

As of December 16, 2020, NH DHHS reported suppressed data for active cases in Wentworth; this generally represents communities with 1-4 total cases. As of this date, the state reported five cumulative cases in Wentworth. The state reported 33,433 cases of COVID-19 and 625 deaths, as seen in the chart on the right.[15] Wentworth has been vigilant during the coronavirus epidemic. The town has applied for and received assistance from both the state and federal governments.

New Hampshire 2019 Novel Coronavirus (COVID-19) Summary Report

(data updated as of December 16, 2020 - 9:00 AM)

Number of Persons with COVID-19 [1]	33,433
Recovered	26,128 (78%)
Deaths Attributed to COVID-19	625 (2%)
Total Current COVID-19 Cases	6,680
Persons Who Have Been Hospitalized for COVID-19	870 (3%)
Current Hospitalizations	286

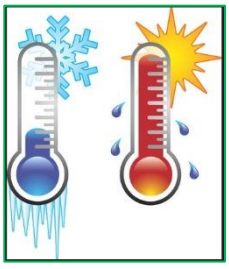
As part of our discussion about infectious disease, it makes sense to discuss the opioid epidemic affecting the state and the nation in general. According to the National Institute on Drug Abuse, *"New Hampshire has the second highest rate of opioid-related overdose deaths in the country. In 2016, there were 437 opioid-related overdose deaths…from 2013 through 2016, opioid-related deaths in New Hampshire tripled"*[16]. Like many New Hampshire communities, Wentworth has also struggled with the use of opioids. Although the availability and use of NARCAN® have helped lower the death rate in New Hampshire, opioid-related overdose deaths are still a common occurrence.

The team felt that an epidemic or pandemic, such as the pandemic we are experiencing today, will threaten the community's citizens. However, because there would be no direct impact on the town structures, the structure loss value was not estimated. Wentworth's emergency service personnel continue to maintain extensive pandemic planning to prepare for and respond to infectious diseases.

9) Extreme Temperatures

Hazard Identification & Risk Assessment (HIRA) ..... Medium
Probability ..... 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 extreme cold temperatures in the past, but most New Hampshire residents can cope with extreme cold with improved heating systems and local communications. Additionally, many New Hampshire residents have equipped their homes with generators and woodstoves. Many cities and towns offer warming centers or have established a functional needs list to check on vulnerable citizens.

Of concern today are extreme heat conditions, which seem to be more common with climate change. With temperatures over 95° for a week or more, a heatwave can substantially impact elderly and vulnerable populations. Few residents, particularly vulnerable populations, have air conditioners and are less able to cope with extreme heat.

[15] https://www.nh.gov/covid19/index.htm
[16] NH Opioid Summary, National Institute on Drug Abuse; https://www.drugabuse.gov/drugs-abuse/opioids/opioid-summaries-by-state/new-hampshire-opioid-summary

The estimated elderly population in Wentworth is 24.6%, and the estimated poverty rate is 11.52% of the total population[17]. The team noted that some swimming holes closed during the drought of 2016 due to high bacteria levels.

Extreme Temperatures combined with Long Term Utility Outage

Extreme temperatures, when combined with power failure, are of the most concern. A power failure could result in no water, heat and air conditioning for the town's most vulnerable populations. Town officials and the community as a whole should be concerned. They should look after its 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 both the Fire Facebook page and the town website.

The cost of extreme temperatures is difficult to calculate as it is not based on the loss of structures. The expected loss value would be primarily due to the economic impact and the time and cost of emergency response. Based on the assumption that damage would not occur to structures, the structure loss value due to extreme temperatures was not estimated.

10) EARTHQUAKES

Hazard Identification & Risk Assessment (HIRA) ..... Low
Probability ..... Low
Estimated Structure Loss Value ..... $0 to $730,273

Earthquakes can cause buildings and bridges to collapse, disrupt gas, electric and phone lines and are often associated with landslides and flash floods. Two earthquakes with a magnitude greater than 5.0 have occurred in New Hampshire since 1940; both occurred in Ossipee in December of 1940 (5.5-5.8). Three earthquakes with a magnitude greater than 4.0 have occurred since 1982, one in Laconia (4.0) and two in Berlin in 1988 (4.0) and 1989 (4.1). The most recent earthquake to be felt by many New Hampshire residents occurred in October 2012, with its epicenter in nearby Hollis Center, ME. The team noted that this earthquake was felt in Wentworth, but no damage occurred.

It is well documented that there are fault lines running throughout New Hampshire, but high magnitude earthquakes have not been frequent in New Hampshire history. More recently, many small earthquakes have occurred, but none of these were felt in Wentworth.

Although historically earthquakes have been rare in central New Hampshire, the potential exists, and, depending on the location, the impact could be significant. However, because there are no densely populated areas in Wentworth and no significant business districts, the potential structure loss value due to earthquakes was estimated to be between 0% and 1% of the total assessed structure value.

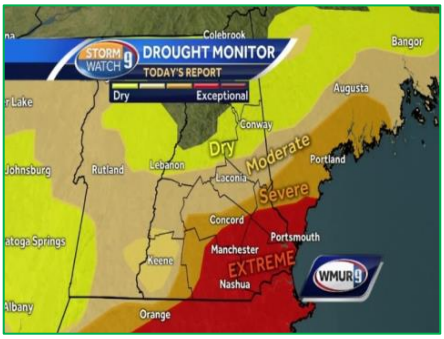
[17] US Census Bureau, American Community Survey, ACS, 2014-2018

11) DROUGHT

Hazard Identification & Risk Assessment (HIRA) ..... Low
Probability ..... Low
Estimated Structure Loss Value ..... $0 to $730,273

An extended period without precipitation or drought could elevate the risk for wildfire and blow-downs in the community's forested areas. With an extreme drought, the water supply and aquifer levels could be threatened. Most of Wentworth's residents rely on private wells, while a limited number have town water. Fortunately, significant droughts rarely occur in New Hampshire or Wentworth. According to the NH Department of Environmental Services, only seven significant droughts have occurred since 1929,[18] including the current drought.

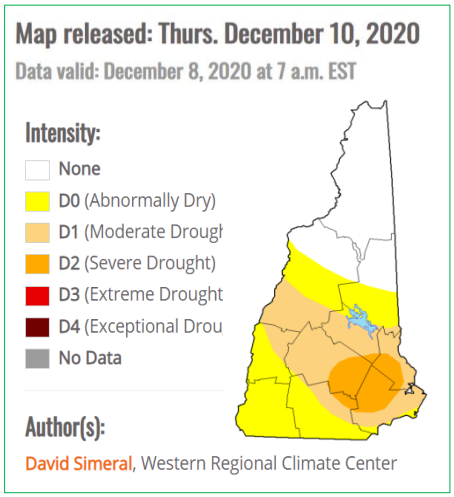
The 2016 drought in New Hampshire was significantly worse in the southern part of the state than in the northern region. The image to the right from WMUR-TV in September 2016 shows drought conditions in New Hampshire during the summer of 2016[19].



WMUR Archives; September 15, 2016

In Wentworth, the 2016 drought caused a few dug-wells to dry up; these were replaced with artesian wells. Many of Wentworth's residents took it upon themselves to conserve water. Artesian well drillers from all over the east coast remained busy for several weeks, installing new wells in southern New Hampshire. The 2016 drought continued into 2017 with dry conditions in some southern New Hampshire communities; however, the impact was not as significant as the prior year.

Drought conditions are again present in New Hampshire, as shown in the figure to the right, but they appear to be abating as the winter nears. Wentworth is currently experiencing abnormally dry conditions; however, severe drought is still being experienced in southern New Hampshire communities.



The cost of future droughts in Wentworth 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 loss value was estimated to be between 0-1% of the total assessed structure value.

[18] NH DES; http://des.nh.gov/organization/divisions/water/dam/drought/documents/historical.pdf
[19] https://www.wmur.com/article/extreme-drought-conditions-worsen-in-new-hampshire/5269231

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 nonetheless worth mentioning as real and possible hazards that could occur in Wentworth. Estimated structure loss was not determined for technological hazards.

1) LONG TERM UTILITY OUTAGE

Hazard Identification & Risk Assessment (HIRA) ..... Medium
Probability ..... Very High

Long term utility outages of five or more days have occurred in Wentworth, both due to local line damage from high winds and storms and problems with the power grid. If a significant or extended power outage occurs and lasts for more than a week, a significant hardship on individual residents could result, particularly those who are elderly, handicapped or poor.

After the 1998 ice storm, power outages lasted for up to a week, depending on the location in Wentworth. The team reported that long term power outages have diminished as a result of continued efforts by NH Electric Coop and the Wentworth Highway Department to trim trees and branches near power lines.

Long term utility outage is a concern, particularly when combined with any of the natural hazards detailed above. However, the team felt that many residents were somewhat self-sufficient as many are now equipped with generators and woodstoves. The most significant impact from an expended power failure would be the inconvenience caused by the inability to pump water; all residents I Wentworth rely on private wells. It is also noted that driving can be difficult due to weather conditions and steep terrain and that virtually all services, including pharmacies and grocers, are located out of town.

As a small, close-knit community, town officials are aware of persons who may need help during emergencies. Nonetheless, a long term utility outage causing frozen pipes and a lack of heat and water is potentially a serious hazard for the community.

2) HAZARDOUS MATERIALS

Hazard Identification & Risk Assessment (HIRA) ..... Medium
Probability ..... Low

Hazardous material in fixed locations is a concern in many of New Hampshire's communities. Manufacturers, gas stations, fuel depots, small businesses and even homes can be found to have hazardous chemicals, explosive materials or poisons on site. Breaches in the storage, use, production or disposal can affect the groundwater, aquifers, and the water supply of a community and the air we breathe.

Wentworth has two areas that were noted as susceptible to damage from a fixed hazardous material event. These include but are not limited to King Forest Industries and Precision Lumber, the only Tier II properties in Wentworth. Although no hazardous materials events have taken place at these facilities, there is potential at these locations and other unknown locations in town.

If the ignition of hazardous materials were to occur, entire buildings could be susceptible to explosion and fire; there would also likely be a disruption to local business and traffic control. The resulting losses could be substantial, not only in terms of structure loss but also loss of business revenue for local merchants.

3) Aging Infrastructure

Hazard Identification & Risk Assessment (HIRA) ..... Medium
Probability ..... Low

"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."[20]

Aging infrastructure is the continued deterioration of roads, bridges, culverts, ports, railroads, wastewater facilities, airports, dams, utilities and public water and sewage systems. The American Society of Civil Engineers gave NH a C- rating overall in its 2017 report card.[21]. The NH 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.[22]

Aging infrastructure is a concern in Wentworth as it is throughout New Hampshire and the United States. In Wentworth, of particular concern are the multiple state-owned flood control dams both in and out of the town; failures at any of these dams could cause flooding on Wentworth's roadways. Of local concern are the town-owned bridges listed for a six-ton weight limit; these bridges are older and showing signs of failure. With fire apparatus getting larger and heavier, the Fire Department may have limited access to areas of the town due to weight restrictions and the structural integrity of the bridges themselves.

4) Dam Failure

Hazard Identification & Risk Assessment (HIRA) ..... Medium
Probability ..... Low

Dam failure is a concern in Wentworth. The town has several dams in town, including Ellsworth Hill Dam, Beech Hill Dam, two earthen dams on Buffalo Road and Lower Baker Dam. Also of concern are Hildreth Dam in Warren and River Road Dam in Dorchester. The failure of any of these dams could result in flooding and structure damage. However, all of these dams are state-owned, so the town cannot mitigate any possible issues.

A breach or failure at Ellsworth Hill Dam could pose an immediate threat to at least one building and could flood Saunders Hill Road. Beaver dams have impacted Beech Hill Dam; however, there is a large enough culvert to handle any excess water created by the beavers. Failure or breach of either of the two earthen dams on Buffalo Road, caused by increased water volume in the Baker River, could create road flooding and potentially impact two houses. Finally, and possibly the most significant risk for Wentworth is the Lower Baker Dam on NH Route 25A. If this dam were to fail, the floodwaters could take out Nichols Hill Bridge, flood several residences and one business, and limit egress in and out of the town.

[20] https://www.infrastructurereportcard.org/wp-content/uploads/2016/10/2017-NH-Report-Card-hq-with-cover.pdf
[21] Ibid
[22] NH Multi-hazard Mitigation Plan, 2018, page 156

Two dams located outside of the town also can affect Wentworth; the Hildreth Dam in Warren and the River Road Dam in Dorchester. Although there have been no past occurrences of dam failure, a breach at the Hildreth Dam could send floodwaters into the Baker River and subsequently into Wentworth. The River Road Dam in Dorchester, however, has created flooding in Wentworth in the past. In one instance, NH Route 118 in Dorchester lost a large section of road due to rising floodwaters.

As stated earlier in this chapter, the four high-hazard dams in Wentworth are owned by the state and managed by the Department of Environmental Services. Subsequently, there is no mitigation that the town can take at these sites.

Although structure damage could occur with the failure of Wentworth's dams, overall, the risk related to dam failure would primarily be for minor road washouts.

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 nonetheless worth mentioning as real and possible hazards that could occur in Wentworth. Estimated structure loss was not determined for human-caused hazards.

1) CYBER EVENTS

Hazard Identification & Risk Assessment (HIRA) ..... Medium
Probability ..... Moderate

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."*[23]

With the increased use of computers and the internet, cyber events could include 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 enormous expenditures, disruption in everyday business practices, and data loss.

The Wentworth planning team reported one cyber-attack; the town website was hacked. The hackers took old town meeting minutes, and reports and some residents received spam emails from the Administrative Assistant's email account. The town was not asked to pay any money and eventually get back the data that was stolen. Several other communities in the State of New Hampshire have had their data held for ransom; some have paid a ransom while others have had to rebuild their technology infrastructure. Added security on computer networks and user education on cyber threats are essential to protect sensitive town information and data.

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

2) Terrorism & Violence

Hazard Identification & Risk Assessment (HIRA) ..... Medium
Probability ..... Low

Terrorism is a fear throughout our country and the world, but Wentworth is not host to any known soft-targets. The team did not report any terrorist activity in the town. However, they reported a domestic homicide that happened in 2015, killing one person. As with many small towns, the terrorism threat is minimal; if a terrorist incident were to occur, it would most likely be a home-grown terrorist event.

3) Mass Casualty Incidents

Hazard Identification & Risk Assessment (HIRA) ..... Medium
Probability ..... Low

A Mass Casualty Incident is when the number of casualties exceeds the emergency resources that are normally available locally. MCIs have been known to occur as a result of bus, auto, train and aircraft accidents and incidents involving large crowds. MCIs can also be a result of natural hazards such as hurricanes, floods, earthquakes and tornadoes.

In Wentworth, an MCI could happen anywhere, but more likely on NH Routes 25 and 25A. These routes are twisty, steep and busy roads that often see animal crossings and poor weather. With the influx of tourists in the summer and the winter, and tour bus activity in the fall, a Mass Casualty Incident is a genuine possibility in Wentworth.

4) Transport Accidents

Hazard Identification & Risk Assessment (HIRA) ..... Medium
Probability ..... Low

NH Routes 25 and 25A are often traveled by trucks and busses carrying goods and people to and from other parts of the state. Most of Wentworth's roads are narrow and winding and subject to severe winter weather; when affected by flooding, winter snow conditions and ice, they become treacherous. In these conditions, vehicular accidents, wildlife collisions and truck accidents involving hazardous materials are always possible. A major ice storm or another significant event can make egress and access difficult for individuals and first responders. All roadways in Wentworth are susceptible to hazards such as road flooding and high winds leading to downed trees in the roadways and potential hazardous materials spills.

The possibility of vehicular accidents involving hazardous materials is identified as a significant hazard in Wentworth. The town has two major highways, NH Routes 25 and 25A. These roads, which run through the town center, experience heavy trucks and vehicular traffic daily. Trucks carrying loads such as lumber, fuel, propane, milk, asphalt and other hazardous materials could create a significant event for the town. Factors affecting the likelihood of a vehicular accident involving hazardous material include icy roads, snow accumulation, heavy rains and other environmental factors.

Depending on the location of a hazardous material accident, the losses could be relatively high. However, losses are also expected to be localized and unlikely to happen in a densely populated part of town.

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Chapter 6: Current Policies, Plans & Mutual Aid

A. Analysis of the Effectiveness of Current Programs

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

With the knowledge of what regulations Wentworth currently had in place, creating new action items was less challenging. This process helped identify current plans and policies that were working well and those that should be addressed as a new "Action Item". The table that follows, *Table 6.1, Policies, Plans & Mutual Aid*, shows the analysis that resulted from discussion with the team.

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: Current Policies, Plans & Mutual Aid

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.

Current Program or Activity	Description	Managing Department	How Effective	Improvements Needed
Grafton County CodeRED	Grafton County CodeRED is a reverse calling warning system that uses listed phone numbers. CodeRED does not include cell and unlisted numbers or email addresses. The Wentworth Elementary Schools uses the "Power School" reverse calling system that is used for school activities and emergency notification.	Emergency Management Director	Excellent	**Improvements Needed:** Grafton County CodeRED is an excellent warning system, but it only stores hardline resident phone. 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 personal contact information. Use the website, a possible brochure at the town office, social media platforms or a sign up at Town Meeting. **Action Item #5 (also in Table 7.1)**

Current Program or Activity	Description	Managing Department	How Effective	Improvements Needed
Emergency Operation Plan (2015)	An Emergency Operations Plan identifies the response procedures and capabilities of the Town of Wentworth in the event of a natural, technological or human-caused hazard.	Emergency Management Director	Good	**Improvements Needed:** The Wentworth Emergency Operations Plan (EOP) was last updated in 2015 and is ready for an update, based on the state's 5-year recommendation. The new EOP should include an EOC Call Alert List as well as a detailed Resource Inventory List and Player Packets. This strategy is deferred to this plan to update the EOP. **Action Item #24 (also in Table 7.1)**
Master Plan (1986)	A Master Plan includes goals, objectives and expectations for the future development of the town	Planning Board	Poor	**Improvements Needed:** The Wentworth Master Plan was last updated in 1986 and is overdue for a recommended complete update. This strategy is deferred to update the Master Plan according to the state's 10-year recommendation and to include a natural hazards section, action items from this plan and a discussion on climate change in any future updates. **Action Item #34 (also in Table 7.1)**
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	Average	**Improvements Needed:** Most first responders have done NIMS & ICS training. Although this is preparedness, this strategy is deferred to this plan to continue to provide NIMS (IS-700) & ICS (ICS 100 & ICS 200) training to new first responders and to new town officials as they become elected or appointed. **Action Item #8 (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.	Fire & Police Departments	Good	**Improvements Needed:** Wentworth is currently about 80% compliant with E-911 signage. This strategy is deferred to consider ways to improve 911 signage so that emergency responders can better assist the public. Use public outreach opportunities such as the Emergency Services webpage or available social media to promote better compliance. Signs are available at the Wentworth Police Department (free) and Warren-Wentworth Ambulance ($13.00). **Action Item #12 (also in Table 7.1)**
Capital Reserve Fund (CRF)	A Capital Reserve Fund is a type of account on a town's balance sheet that is reserved for long-term capital investment projects or any other large and anticipated expense(s) that will be incurred in the future. Reserve funds are set aside to ensure adequate funding to at least partially finance future projects, equipment and other expenditures.	Select Board	Good	**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 Wentworth Capital Reserve Funds work well and are part of the town warrant at the annual Town Meeting. This strategy is deferred to revisit the security around the distribution of funds to ensure the proper checks and balances. **Action Item #15 (also in Table 7.1)**

Current Program or Activity	Description	Managing Department	How Effective	Improvements Needed
Emergency Generators	The town has emergency back-up power at one of the town's Critical Infrastructure & Key Resources (CIKR), the Elementary School. The town would benefit from permanent generators for the Town Offices/Police Station and the Fire Station.	Emergency Management Director	Poor	**Improvements Needed:** Wentworth has emergency backup power at the Wentworth Elementary School (Primary Shelter) and is aware of a generator at the Baker River Bible Church (Secondary Shelter). The town could benefit from permanent generators for the Town Office/Police Department (law enforcement/records) and the Fire Station (Primary EOC/fire suppression). This strategy is deferred to obtain and install emergency generators at these locations to improve the effectiveness of these facilities during a disaster. **Action Items #35 & #36 (also in Table 7.1)**
Subdivision Regulations (2007; amended in 2019 regarding auxiliary buildings)	The purpose of subdivision regulations is to provide for the orderly present and future development of the town by promoting public health, safety, welfare, and convenience.	Planning Board	Average	**Improvements Needed:** The Wentworth Subdivision Regulations, most recently updated in 2020, are in good shape. The Subdivision Regulations address set-backs, road frontage and size of the lot. The regulations do not address the availability of water resources for fire suppression, regulations on the steepness of driveways, building structures and roads on steep slopes or maintaining adequate stormwater flow to prevent flooding. This strategy is deferred to review the Subdivision Regulations and discuss changes that will reduce the chance for hazards in the future. **Action Item #14 & #39 (also in Table 7.1)**
Radio Communications	Radio communications are vital for the emergency response to all types of hazards. Radios should be interoperable and up-to-date with current technology.	Emergency Management Director	Average	**Improvements Needed:** All three emergency departments in Wentworth (Police/Fire/Highway Departments) have radio interoperability. Communications systems and radios are up to date with both state and federal requirements and work as intended. There are areas of town that have "dead spots". This strategy is deferred to work with Lakes Region Mutual Fire Aid (LRFMA) and other emergency responders to determine where new repeaters can be installed to eliminate dead spots. LRFMA has installed some repeaters and is currently updating their communication systems. **Action Item #37**

Current Program or Activity	Description	Managing Department	How Effective	Improvements Needed
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 appropriate resources for the scope of the emergency.	Police, Fire & Highway Departments & EMS	Good	**Improvements Needed:** The Wentworth Fire Department has a mutual aid agreement with the Lakes Region Fire Mutual Aid. The Wentworth Police Department has mutual aid agreements with Rumney, Warren, Orford and Piermont, and the NH State Police, the Grafton County Sheriff's Office and Fish & Game. The Highway Department is a member of the NH Public Works Mutual Aid Association. Warren-Wentworth Ambulance performs EMS services and provides medical transportation. All mutual aid systems in Wentworth work well. This strategy is deferred to increase multi-agency cross-training on communications, field operations and other issues. **Action Item #9**
Wentworth Hazard Mitigation Plan (2015)	A hazard mitigation plan is designed to address natural, technological and human-caused hazards and to understand the risk these pose for the community. A hazard mitigation plan aims to create action items that will make the community safer by lessening or eliminating the effects of hazards.	Emergency Management Director	Excellent	**Improvements Needed:** The Wentworth Hazard Mitigation Plan (2015) is being updated with this plan. This strategy is deferred to review this plan, the Wentworth Hazard Mitigation Plan 2021, on an annual basis and update the plan again in 2025. **Action Item #34**
Bridge Maintenance Program	There are currently no red-listed bridges in the community. Inspection and clean-up of bridges occur annually. The state inspects all bridges every other year and maintains them regularly.	Highway Department	Average	**Improvements Needed:** The Wentworth Highway Department has established a short and long-term schedule for bridge maintenance and replacement. Currently, there are no "red-listed" bridges in town; however, three roads were affected in the July and October 2017 storms: Frescoln Road, Cross Road and Rowentown Road. These roads had bridges that were washed out and now have under-performing culverts that need to be upgraded back to bridges. Other culverts in the community also need improvements. **Action Items #22, #25, #26, #27 & #38**
Dry Hydrants & other Water Resources	Wentworth Fire maintains the town's dry hydrants. There are approximately four dry hydrants in the community and multiple locations available for water drafting.	Wentworth Fire Department	Good	**Improvements Needed:** Dry hydrants and drafting sites throughout Wentworth are utilized to provide water resources for firefighting. This strategy is deferred to maintain all hydrants and other water resources in the community to help mitigate the effects of both structure fires and wildfires. **Action Item #13**

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 Environmental Services (DES) hazard classifications *(L-Low Hazard, NM-Non-menace, S-Significant hazard; H-High Hazard)* are based on the downstream damages that would result from dam failure; it is not based on the structural condition of the dam.	Department of Environmental Services (DES)	Good	**No Improvements Needed:** Within the Baker River Watershed in Wentworth, there are four DES-owned "High Hazard" dams: Baker River Site 5 (Ellsworth Hill Dam), Site 11, Site 11A and Site 6A (Beech Hill Dam) that are used for flood control. The team reported that failure at the Ellsworth Hill Dam (Site 5) and Beech Hill Dam (Site 6A) could potentially impact some structures and cause damage to Route 25. There are no mitigation activities recommended at this time; recently updated Emergency Operations Plans for these dams are available at the Fire Station, the Police Station and the EMD's office.
School Emergency Operations Plan (SEOP)	A School Emergency Operations Plan guides the response to emergencies at the school.	Police, Fire & Emergency Management Director & SAU 48	Excellent	**No Improvements Needed:** According to state requirements, SAU 48 and the Wentworth School District complete school Emergency Operations Plans annually. The Wentworth Elementary School has a current plan, which will be updated annually according to state requirements. Drills and exercises are also done annually and include the participation of the town's emergency responders as part of the town's emergency preparedness program. **(also in Table 7.1)**
Burning Index	New Hampshire Forests & Lands (DNCR) has a burning index that measures wildfires' risk and 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 it and the type of equipment that might be needed.	NH Hampshire Forests & Lands (DNCR) & Fire Department	Good	**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.
Building Code & Permits	The town has not adopted the International Building Codes (IBC) or the International Residential Codes (IRC). However, it does require builders to follow the state adopted codes for new construction so that national standards for flood, wind, fire, snow, earthquake and snow load are met.	Select Board & Planning Board	Good	**No Improvements Needed:** The Town of Wentworth does not have a Building Inspector or Code Enforcement Officer. The permitting process requires builders to abide by the International Building Codes (IBC) and the International Residential Codes (IRC), which have been adopted by the State of New Hampshire.

Current Program or Activity	Description	Managing Department	How Effective	Improvements Needed
Local Road Design Standards	Local road design standards are specifications for the construction of new roads in a community. The town follows state regulations for new roads.	Select Board & Highway Department	Good	**No Improvements Needed:** Local road standards have not been established. Roads are built to state standards; the town does not assume ownership of substandard roads and will not assume ownership of roads that are not built to Class V standards. Acceptance of new roads is voted at Town Meeting as a Warrant Article.
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 prepare for any public health emergency; the town is part of Central NH Public Health Network.	Central NH Public Health Network	Excellent	**No Improvements Needed:** The State Public Health Plan assists the community as part of the Central NH Public Health Network's services. The Wentworth Health Officer attends public health meetings whenever possible.
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	Good	**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.
Life Safety & Fire Codes	Life Safety and Fire Codes from the National Fire Protection Association (NFPA) guide the inspection of all buildings for life safety and fire codes	Fire Department	Excellent	**No Improvements Needed:** The National Fire Protection Association (NFPA) and the NH safety and fire codes guide the Wentworth Fire Department for the inspection of all commercial and public assembly buildings. The Wentworth Fire Department does the best it can to provide timely inspections based on available human resources and the request.
Amateur Radio Emergency Service	Amateur radio (ham radio) operators can be of great assistance to the town during emergencies as an augment to the town's own communication resources.	Emergency Management Director	Good	**No Improvements Needed:** Several ham radio operators in Wentworth are willing and able to assist emergency responders when 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.	State of NH	Good	**No Improvements Needed:** The Town of Wentworth follows the regulations detailed in the Shoreland Water Quality Protection Act. Compliance with the Act is encouraged; however, with no Building Inspector or Code Officer, enforcement may not always be optimal.

Chapter 7: Last Mitigation Plan

A. Date of Last Plan

Based on the Disaster Mitigation Act (DMA) of 2000, Wentworth has participated in developing hazard mitigation plans in the past. The most recent update was formally approved in 2015. This plan, the Wentworth Hazard Mitigation Plan Update 2021, is an update to 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:

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.

COMPLETED

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

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?
- If the strategy was not completed, should this strategy be reconsidered and included as a new action item for this plan?

Table 7.1: Accomplishments since the Last Plan, helped the team assess what had been accomplished since the last plan and determine what additional work may be needed. Items in red font were extracted word-for-word from the 2015 Hazard Mitigation Plan and do not represent a time frame for this plan. Two additional columns that are not shown here – *Responsibility or Oversight* & *Funding & Support*– can be found in the 2015 Hazard Mitigation Plan.

Table 7.1: Accomplishments since the Last Plan

Rank	New Mitigation Project	Time Frame	Completed, Deleted or Deferred
0-1	**Action Item #3:** Conduct/run drills to ensure readiness for response to school emergencies. (Table 7.1)	Annually as recommended by the State, 2015-2020	**Completed & Deleted:** The Wentworth Elementary School's Emergency Operations Plan is updated and practiced at least once a year according to state mandates. Drills and exercises are done on an annual basis and include the participation of the town's emergency responders as part of the town's emergency preparedness program; therefore, this strategy is deleted. **(also in Table 6.1)**

Rank	New Mitigation Project	Time Frame	Completed, Deleted or Deferred
0-2	**Action Item #23**: The Capital Reserve Funds should be reviewed to determine whether to change, create or update new CRFs for alternative projects; re-evaluate needs and funding allocations. **(Table 6.1)**	During the annual December budget review, 2015-2020	**Completed & Deferred:** The town's Capital Reserve Funds (CRFs) 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 Wentworth Capital Reserve Funds work well and are part of the Town Warrant at the annual Town Meeting. However, this strategy is deferred to revisit the security around the distribution of funds to ensure the proper checks and balances. **Action Item #15 (also in Table 6.1)**
0-3	**Action Item #21:** Provide public outreach about CodeRED to encourage residents to register with Grafton County Code RED to add cell numbers, email, unlisted numbers and to verify information; invite the Grafton County Sheriff's Department to come to an open Town meeting to explain CodeRED to the public; use an emergency page on the Town's website or other means of outreach to continuously remind the public of the importance of CodeRED to improve household disaster preparedness (**MU15). (Tables 6.1 & Table 7.1)**	Maintain a continuous campaign to have residents register with CodeRED, 2015-2020	**Completed & Deferred:** Grafton County CodeRED is an excellent warning system, but it only stores resident hardline 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 to verify personal information. Use the website, a possible brochure at the town office, social media platforms or a sign up at Town Meeting. **Action Item #5 (also in Table 6.1)**
0-4	**Action Item #31:** Prepare a stormwater drainage plan to assess ditch capacity in Town and seek funding to repair ditches that are not adequately directing the flow of rainwater and snowmelt; various areas of town. **(F5)**	Program to be reviewed annually and ditch repairs made as needed, 2015-2020	**Completed & Deferred:** Although the Wentworth Highway Department maintains and repairs drainage basins and culverts, a written Culvert & Stormwater Maintenance Plan should be developed to ensure continuity of actions and efficient stormwater management. This strategy is deferred for continued maintenance and developing a written Culvert & Stormwater Maintenance Plan detailing such items as the size, material, date of installation, recommended date for improvement, GPS location and any problems associated with the location (i.e., flooding). Also, several culverts and drainage systems in town need improvement. **Action Item #40**
0-5	**Action Item #5:** Continue to provide HazMat and other appropriate training for emergency personnel through Lakes Region Fire Mutual Aid and the Fire Academy to ensure the best possible response at the time of a HazMat incident. **(Table 7.1)**	Continuing education as recommended and as there are new hires, 2015-2020	**Completed & Deferred:** Although Wentworth 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 Wentworth Fire Chief would most likely call dispatch, who would then contact the Central NH HazMat Team. Although this is preparedness, this is deferred to this plan to continue HazMat training for the Wentworth Fire Department members. **Action Item #6**
0-6	**Action Item #10:** NIMS & ICS Training for Town Officials in order to have better trained individuals handling disaster events so that the effects of the event can be mitigated. (ICS 100 & 200; NIMS 700). **(Tables 6.1 & Table 7.1)**	Continuing and as recommended and as there are new hires or elected officials, 2015-2020	**Completed & Deferred:** Most first responders have completed the basic NIMS & ICS training. Although this is preparedness, this strategy is deferred to this plan to continue to provide NIMS (IS-700) & ICS (ICS 100 & ICS 200) training to new first responders and to new town officials as they become elected or appointed. **Action Item #8 (also in Table 6.1)**

Rank	New Mitigation Project	Time Frame	Completed, Deleted or Deferred
0-7	**Action Item #4:** Implement program to provide training to fire personnel on wildland fire suppression, dry hydrant design and site evaluations of water resources. **(Table 7.1)**	Continuing education as recommended and as there are new hires, 2015-2020	**Completed & Deferred:** Training of all fire responders is coordinated by the Fire Chief and includes many emergency response aspects, including fire suppression. Training is done through the Lakes Region Fire Mutual Aid District, the State of New Hampshire Fire & EMS Training Facility in Bethlehem (Trudeau Road) and the Fire Academy. This strategy is deferred for continued training through the life of the plan. **Action Item #7**
0-8	**Action Item #8:** Develop and maintain program to cut tree and limbs near power lines and homes in an effort to lessen the impact of high wind events and to allow better access by emergency response vehicles. **(Table 7.1)**	Program to be reviewed annually and trim trimming to be done as needed, 2015-2020	**Completed & Deferred:** The town has been proactively trimming trees in the community since the prior plan. As trees become damaged and threaten power lines and structures on town roads, the Highway Department removes them. The NH DOT and NH Electric Coop do this for state and town roads as needed. This strategy is deferred to continue local tree and brush removal efforts to mitigate the effects of high wind events, ice storms, wildfires and other natural hazards. **Action Item #11**
0-9	**Action Item #7:** During the next update of the Subdivision Regulation, review and incorporate concepts from this Hazard Mitigation Plan and from the Rural Fire Water Resource Plan. **(WF2)**; encourage referral to the Rural Fire Water Resource Plan when reviewing subdivision proposals; obtain a copy of the Plan from NCRC&D. **(Table 7.1)**	By the Planning Board whenever there is a review if the Subdivision Regulations and new subdivision proposals, 2015-2020	**Completed & Deferred:** Town officials and the Fire Chief have used the Rural Fire Water Resource Plan (WRP) that was developed in 2008 in the past. This strategy is deferred to continue to refer to the WRP and to review this document when new subdivision proposals are submitted. **Action Item #14**
1-1	**Action Item #32:** Join NH Municipal Mutual Aid for Public Works.	12/31/2014	**Completed & Deleted:** The Town of Wentworth's Highway Department has joined the NH Public Works Mutual Aid Association; therefore, this action item from the last plan is deleted.
1-2	**Action Item #11:** Complete the replacement of Evans Bridge using state and local funding to allow this bridge to be used for evacuation and so that it can withstand the effects of flooding. **(MU13) (Table 7.1)**	5/9/2015	**Completed & Deleted:** Using local and state funding, the Evans Bridge was replaced. This strategy is deleted as the project is complete.
1-3	**Action Item #1:** Obtain one town-wide frequency for all departments. **(Table 7.1)**	5/9/2015	**Completed & Deferred:** The town has obtained one town-wide frequency for all three agencies (FD, PD & HD) who can talk to each other on one frequency. Deferred to provide training on the best use of the radio frequencies and the correct applications for use. **Action Item #10**
1-4	**Action Item #24:** Complete the review and update of the School Emergency Response Plan. **(Table 6.1)**	12/31/2014	**Completed & Deleted:** According to state requirements, SAU 48 and the Wentworth School District complete school Emergency Operations Plans annually. The Wentworth Elementary School has a current plan, which will be updated in the future according to the state's requirements. Drills and exercises are done on an annual basis and include the participation of the town's emergency responders. Deleted as this is part of an ongoing preparedness program, not mitigation. **(also in Table 6.1)**

Rank	New Mitigation Project	Time Frame	Completed, Deleted or Deferred
1-5	**Action Item #25:** The Town should issue a flyer, make announcements at Select Board meetings, post notice on the Town's website and/or solicit the help of special groups such as the Boy Scouts to get additional E-911 signage complete in an effort to provide information on all types of preparedness. **(MU14). (Table 6.1)**	7/15/2015	**Completed & Deferred:** Wentworth has done a good job promoting E-911 house signage and is currently about 80% compliant. This strategy is deferred to consider ways to improve signage further so that emergency responders can better assist the public. Use public outreach opportunities such as an Emergency Services webpage or available social media to promote better compliance and develop other means of increasing compliance. Signs are available at the Wentworth Police Department and Warren-Wentworth Ambulance **Action Item #12 (also in Table 6.1)**
1-6	**Action Item #18:** Review and discuss the possibility of revising the current subdivision regulations to consider onsite water storage, minimum fire flow and fire breaks in WUI. **(WF2) (Table 7.1)**	8/15/2015	**Completed & Deferred:** The Wentworth Subdivision Regulations, most recently updated in 2020, are in good shape. The Subdivision Regulations address set-backs, road frontage and size of the lot. The regulations do not address the availability of water resources for fire suppression, regulations on the steepness of driveways, building structures on steep slopes and roads or maintaining adequate stormwater flow to prevent flooding. This strategy is deferred to review the Subdivision Regulations and discuss changes that will reduce the chance for hazards in the future. **Action Item #14 (also in Table 6.1)**
1-7	**Action Item #27:** Advise the public about the local flood hazard, flood insurance and flood protection measures **(F10)** by obtaining and keeping on hand a supply of NFIP brochures to have available 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 and provide appropriate links to the NFIP and Ready.gov on the Town's website.	6/30/2015	**Completed & Deleted:** See Action Item #29 in this table; two action items were combined.
1-8	**Action Item #28:** Obtain and have available "Firewise" brochures to educate homeowners on methods to reduce fire risk around their homes **(WF10)**; provide "Firewise" brochures to those residents seeking burn permits; advise residents of the importance of maintaining defensible space, the safe disposal of yard and household water and the removal of deal or dry leaves, needles, twigs and combustible materials from roofs, decks, eaves, porches and yards. **(WF12)**	3/31/2014	**Completed & Deferred:** Although the town has done a good job promoting fire safety, more can be done to advise residents about the steps they can take to reduce fire risk at their homes. Obtain and have available Firewise® brochures to educate homeowners on methods to reduce fire risk around their homes and provide a link to Firewise® on the town's website's Emergency Services webpage. Advise residents of the importance of maintaining defensible space, the safe disposal of yard and household waste, and removing dead or dry leaves, needles, twigs, and combustible materials from roofs, decks, eaves, porches and yards. **Action Item #4**

Rank	New Mitigation Project	Time Frame	Completed, Deleted or Deferred
1-9	**Action Item #26:** Develop an emergency information brochure and add an emergency page to the Town's website; Establish an interactive webpage for educating the public on hazard mitigation and preparedness measures (**MU14)** by adding a page to the Town's recently enhanced website that will include such information as emergency contacts, shelter locations, evacuation routes (**SW7, WF11 & T3)**, methods of emergency alerting, 911 compliance, water saving techniques **(D9)**, earthquake risk and mitigation activities that can be taken in residents' homes **(EQ7)**, steps homeowners can take to protect themselves and their properties when extreme temperatures occur **(ET1 & ET4)**, safety measures that can be taken during hail (HA3) and lightning storms **(L2)**, mitigation techniques for property protection and links to available sources; educate homeowners regarding the risks of building in hazard zones and encourage homeowners to install carbon monoxide monitors and alarms **(WW5)**.	6/30/2015	**Completed & Deferred:** The town has an emergency services webpage with some emergency-related links; however, more information could be provided. An emergency webpage is a great way to provide outreach to residents on emergency preparedness and mitigation techniques property owners can use to reduce or eliminate the impact of natural hazards. This strategy is deferred to this plan to further develop and provide robust information and links on the existing Emergency Service" webpage to educate the public on general and seasonal mitigation techniques. The town also can get information out via social media platforms (see Table 2.1). **Action Item #1**
1-10	**Action Item #9:** Update the Wentworth Emergency Operations Plan, identify the Emergency Operations Center and include annexes for dam failure and dam sites in Town. **(Tables 6.1 & Table 7.1)**	12/31/2014	**Completed & Deferred:** The Wentworth Emergency Operations Plan (EOP) was last updated in 2015 and is ready for an update, based on the state's 5-year recommendation. The new EOP should include an EOC Call Alert List as well as a detailed Resource Inventory List and Player Packets. This strategy is deferred to this plan to update the EOP. **Action Item #24 (also in Table 6.1)**
1-11	**Action Item #30:** Advise residents who live on private roads of the importance of maintaining their roads for first responders; add information to the Town's website. (**WF8)**	6/30/2015	**Completed & Deferred:** Residents may not be aware of the importance of maintaining their private roads to allow access for emergency responders and to prevent wildfire. This strategy is deferred to provide public outreach to the citizens of Wentworth on the importance of maintaining private roads to allow for safe access for fire apparatus into wildland-urban interface neighborhoods and properties. This action will help to ensure accessibility for emergency response and decrease the risk for wildfire. **Action Item #2**

Rank	New Mitigation Project	Time Frame	Completed, Deleted or Deferred
1-12	**Action Item #2:** Get this Hazard Mitigation Plan approved as a Community Wildfire Protection Plan through DRED (now DNCR) so that the Town may be able to work with the State and Federal governments on future wildfire mitigation projects such as the clearing of slash on the forest floor and the clearing of dangerous fuel loads. **(WF9) (Table 7.1)**	3/31/2015	**Completed & Deferred:** Wentworth's last hazard mitigation plan was approved as a Community Wildfire Protection Plan (CWPP). This strategy is deferred to obtain this plan's approval, the Wentworth Hazard Mitigation Plan Update 2021 as a Community Wildfire Protection Plan (CWPP). **Action Item #17**
1-13	**Action Item #22:** Contact the White Mountain National Forest to discuss the method of departure from logging sites so that temporary culverts can remain in place thus allowing better access to forested lands for firefighting. **(Table 6.1)**	6/30/2015	**Completed & Deleted:** 1/4 of the town is controlled by the White Mountain National Forest (WMNF); the WMNF has done major cuts in parts of town, removing temporary culverts when projects are complete, thus disabling access to the logging roads. Although it would be advantageous to have access to these logging roads for fire suppression, the WMNF advises timber companies to take everything with them when they leave so that the forest can go back to its natural state. There is little or no mitigation potential for the town; therefore, this strategy from the prior plan is deleted.
1-14	**Action Item #33:** Mail or distribute "courtesy notifications" to resources that are mentioned in this plan as determined by the EMD.	3/31/2015	**Deferred:** There is no recollection of courtesy notices being sent since the prior hazard mitigation plan. This strategy is deferred to send courtesy notifications to people and entities mentioned in this plan so that they are aware of their potential responsibilities should a major disaster occur. **Action Item #21**
1-15	**Action Item #29:** Through Public Outreach and the Town's website, educate homeowners regarding the risks of building in the flood zone and measures that can be taken to reduce the chance of flooding; include information regarding the risks of driving on flooded roads, securing debris and keeping storm drains clear. **(F22 & F23)**	6/30/2015	**Completed & Deferred:** The town developed a flood ordinance and became a member of the National Flood Insurance Program (NFIP) on April 18, 1983. 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 revised in 2007. This strategy is deferred to this plan to continue compliance with the NFIP, obtain NFIP brochures to have available at the Town Office and provide public outreach regarding the benefits of membership 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 using the town's website or social media pages. Provide links to the NFIP, Ready.gov and other pertinent websites. **Action Item #3** (two action items from the last plan)
2-1	**Action Item #12**: To insure the safe passage of vehicular traffic including emergency response, upgrade, replace or retrofit Dufour Bridge using state and local funding. **(MU13) (Table 7.1)**	9/1/2015	**Completed & Deleted:** Using local and state funding, the Dufour Bridge was replaced. This strategy is deleted as the project is complete.

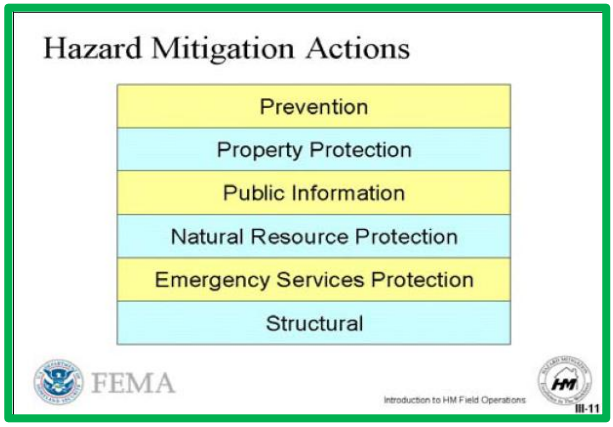
Rank	New Mitigation Project	Time Frame	Completed, Deleted or Deferred
2-2	**Action Item #14:** Obtain and install a generator at the Wentworth Elementary School for the protection of this critical facility as this is the designated Primary Shelter. **(MU13) (Tables 6.1 & Table 7.1)**	7/31/2016	**Completed & Deleted:** A permanent generator has been installed at the Wentworth Elementary School; therefore, this action item from the last plan is deleted. **(also in Table 6.1)**
2-3	**Action Item #13:** Obtain and install a generator at the Wentworth Town Office/Police Station for the protection of this critical facility that is not only the Police Station but also the secondary EOC and important for continuity of government. **(MU13) (Tables 6.1 & Table 7.1)**	6/30/2016	**Deferred:** A generator was not installed at the Town Office/Police Station due to funding and oversight. This strategy is deferred to obtain and install a permanent generator at the Wentworth Town Office/Police Station for the protection of this critical facility that is not only the Police Station but also important for continuity of government. **Action Item #35 (also in Table 6.1)**
3-1	**Action Item #17:** Update the Master Plan to reflect changing needs of the Community and to maintain public health and safety; include elements from this Hazard Mitigation Plan in the Master Plan update; next update planned to be completed by 2018. **(Tables 6.1 & Table 7.1)**	12/31/2018	**Deferred:** The Wentworth Master Plan was last updated in 1986 and is overdue for a recommended complete update. This strategy is deferred to update the Master Plan and to include a natural hazards section, action items from this plan and a discussion on climate change in any future updates. **Action Item #34 (also in Table 6.1)**
3-2	**Action Item #20:** Site and construct a cistern =/<30,000 gallons at the Wentworth Elementary School which is the designated primary shelter to improve firefighting capabilities. **(WF6) (Table 7.1)**	7/31/2016	**Deferred:** A cistern was not constructed at the Elementary School due to funding, priorities and oversight. This strategy is deferred again to construct a cistern (20,000-30,000 gallons) at the Wentworth Elementary School to increase the town's fire suppression capabilities in that location. **Action Item #33**
3-3	**Action Item #15:** Build a new Fire Station to improve the Town's capability to respond to wildfires and other hazardous events.	7/31/2017	**Deferred:** A new fire station has not been built due to time, funding and oversight. This strategy is deferred to locate a site and build a new fire station that will be more compliant with a modern fire station's needs. **Action Item #41**
3-4	**Action Item #16:** Obtain and install a generator for the protection of this critical facility that is not only a Fire Station but also the designated Primary EOC; this would be for the new Wentworth Fire House when and if it is completed. **(MU13) (Tables 6.1 & Table 7.1)**	7/31/2017	**Deferred:** A generator was not installed at the Wentworth Fire Station due to funding and oversight and because the current fire station needs replacement. Until a time at which a new station is constructed, this is deferred to obtain and install at least a temporary generator at the current fire station to protect this critical facility, which is not only the EOC but also important for fire suppression. **Action Item #36 (also in Table 6.1)**

Rank	New Mitigation Project	Time Frame	Completed, Deleted or Deferred
3-5	**Action Item #19:** Upgrade the two culverts on Rowentown Road at Smith Bridge with a new bridge or a single larger culvert in order to improve storm water management and to mitigate flooding. **(F13) (Table 7.1)**	4/30/2018	**Completed & Deferred:** The two culverts on Rowentown Road at Smith Bridge have not been replaced due to a change in priorities. However, these culverts were further damaged during the 2017 July and October rain events. The town is currently exploring the possibility of improving the Rowentown Road culverts with one larger culvert or a double-wide span bridge based on hydrology studies; Frescoln Road improvements may also impact this area. This strategy is deferred to improve stormwater flow by upgrading the current culvert with a large culvert or a double-wide span bridge. **Action Item #38**
3-6	**Action Item #6:** Gather information relevant for hydrant construction (seasonal water level, area available for apparatus, static lift). Site WE 020. **(Rural Fire Water Resource Plan & Table 7.1)**	5/9/2018	**Deferred:** A hydrant for Site WE020 from the 2008 Rural Fire Water Resource Plan (WRP) has not been installed; this site is a fire pond at King Forest Private Way. This strategy is deferred to review the WRP and consider installing a dry hydrant at this site. **Action Item #32**

Chapter 8: New Mitigation Strategies & STAPLEE

A. Mitigation Strategies by Type

The following list of mitigation categories and comprehensive possible strategy ideas was compiled from many sources, including the USFS, FEMA, other planners and past hazard mitigation plans. This list was used during a brainstorming session to discuss what issues there may be 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
- NFIP awareness
- 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
- Wetlands development regulations
- 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 mitigation, the town was provided with a handout developed by Mapping and Planning Solutions 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 Wentworth, emphasizing new and existing buildings and infrastructure.

Strategies that may apply to more than one hazard	Type of Project
Community Outreach and Education	*Public Awareness*
Changes to Zoning Regulations	*Prevention*
Changes to Subdivision Regulations	*Prevention*
Steep Slopes Ordinance	*Prevention*
Density Controls	*Prevention*
Driveway Standards	*Prevention*
Emergency Website Creation	*Public Awareness*
Critical Infrastructure & Key Resources	*Emergency Service Protection*
Emergency Training for Town Officials	*Emergency Service Protection*
High Risk Notification to Homeowners	*Property Protection*
Master Plan Update or Development	*Prevention*
Capital Improvement Plan	*Prevention*

Flood Mitigation Ideas	Type of Project
Stormwater Management Ordinances	*Prevention*
Floodplain Ordinances	*Prevention*
Updated Floodplain Mapping	*Prevention*
Watershed Management	*Natural Resource Protection*
Drainage Easements	*Prevention*
Purchase of Easements	*Prevention*
Wetland Protection	*Natural Resource Protection*
Structural Flood Control Measures	*Prevention*
Bridge Replacement	*Structural Project*
Dam Removal	*Structural Project*
NFIP Compliance	*Prevention*
Acquisition, Demolition & Relocation	*Structural Project*
Structure Elevation	*Structural Project*
Flood Proofing	*Property Protection*
Erosion Control	*Natural Resource Protection*
Floodplain/Coastal Zone Management	*Prevention*
Building Codes Adoption or Amendments	*Prevention*
Culvert & Hydrant Maintenance	*Prevention*
Culvert & Drainage Improvements	*Structural Protection*
Transfer of Development Rights	*Property Protection*

Natural Hazard Mitigation Ideas	Type of Project

Landslide

- *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*

Thunderstorms & Lightning

- *Building Construction* ..... *Property Protection*

Tornado & Severe Wind

- *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*

Winter Weather Snowstorms

- *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 STAPLEE evaluation results (explained below). It is noted that some action items are identified as "All Hazards"; many of these could apply to wildfire mitigation. Many of these potential mitigation action items overlap.

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

The STAPLEE method analyzes the **S**ocial, **T**echnical, **A**dministrative, **P**olitical, **L**egal, **E**conomic and **E**nvironmental aspects of a project. It is commonly used by public administration officials and planners for making 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 to 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 likely benefits?

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

Each proposed mitigation action item was then evaluated and assigned a score 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 in large part 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 was aware that some of these action items are more appropriately identified as preparedness or readiness issues. As there are no other established planning mechanisms that 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 action items for a town of 200 are not the same as action items for a town of 30,000. Also, the action items for a town in the middle of predominantly hardwood forests are not the same as the action items for a town on the Jersey Shore. Therefore, the Town of Wentworth 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. The town indicates that having carefully considered a comprehensive list of other possible mitigation action items (see sections A & B of this chapter) for this plan, there are no additional "Mitigation Action Items" to add at this time.

Potential mitigation action items in Table 8.1 on the following page 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 E: Potential Mitigation Ideas*, for more information.

Table 8.1: Potential Mitigation Action Items & the STAPLEE

Action Items are listed in numerical order.

Proposed Mitigation Action Items	Type of Activity	S	T	A	P	L	E	E	TTL
		3	3	3	3	3	3	3	21
Action Item #1: Action Item #1: Further develop robust information on the town's emergency services webpage and other available social media platforms to educate the public on preparedness measures, such as emergency alerting and 911 compliance, and hazard mitigation techniques, such as water-saving techniques, how to protect themselves and their properties during extreme temperatures, earthquakes, hail and lightning storms and other natural hazard events. Encourage homeowners to install carbon monoxide monitors and provide public information regarding infectious diseases. Add links to available resources. **(MU14, SW7, WF11, T3, WW5, D9, EQ7, ET1, ET4, HA3 & L2)** ***(Table 7.1)***	**Affected Location** -Townwide **Type of Activity** -Prevention -Public Education & Awareness -Property Protection	*No apparent difficulty with this action item*							

Proposed Mitigation Action Items	Type of Activity	S	T	A	P	L	E	E	TTL
Action Item #2: Promote private mitigation efforts and provide public outreach to Wentworth's citizens on the importance of maintaining private roads to allow for safe access for fire apparatus into wildland-urban interface neighborhoods and properties. This outreach will help to ensure accessibility for emergency response and decrease the risk for wildfire. **(MU16)** ***(Table 7.1)***	**Affected Location** -Private Roads **Type of Activity** -Prevention -Public Education & Awareness -Emergency Service Protection -Property Protection -Natural Resource Protection	3	3	3	3	3	3	3	21
		No apparent difficulty with this action item							
Action Item #3: Advise the public about the local flood hazard, flood insurance and flood protection measures by obtaining a supply of National Flood Insurance (NFIP) brochures to have available 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, whether or not they are in the flood zone. 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 and Ready.gov to the town's emergency services webpage, available social media platforms and local newsletters. Work with residents to ensure they comply with the floodplain ordinance. **(F22, F10, F23)** ***(Table 7.1)***	**Affected Location** -Areas prone to flooding **Type of Activity** -Prevention -Public Education & Awareness -Property Protection	3	3	3	3	3	3	3	21
		No apparent difficulty with this action item							
Action Item #4: Post important information on the town's emergency services webpage and other social media platforms 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 and provide a link to Firewise® on the Emergency Services webpage. Provide Firewise® brochures to those residents seeking burn permits; advise residents of the importance of maintaining defensible space and the safe disposal of yard and household waste. Advise residents to remove dead or dry leaves, needles, twigs, and combustible materials from roofs, decks, eaves and porches. **(WF12 & WF10)** ***(Table 7.1)***	**Affected Location** -Townwide **Type of Activity** -Prevention -Public Education & Awareness -Emergency Service Protection -Property Protection -Natural Resource Protection	3	3	3	3	3	3	3	21
		No apparent difficulty with this action item							
Action Item #5: Provide public outreach to encourage all residents to contact CodeRED to add cell numbers, unlisted numbers and emails, and verify their information. Use the community website, a possible brochure, available social media platforms and local newsletters or a sign up at Town Meeting. **(MU14)** ***(Tables 6.1 & 7.1)***	**Affected Location** -Townwide **Type of Activity** -Prevention -Public Education & Awareness -Emergency Service Protection	3	3	3	3	3	3	3	21
		No apparent difficulty with this action item							

Proposed Mitigation Action Items	Type of Activity	S	T	A	P	L	E	E	TTL
Action Item #6: Continue HazMat training for the members of the Wentworth Fire Department. ***(Table 7.1)***	**Affected Location** -Fire Station **Type of Activity** -Prevention -Emergency Service Protection	3	3	3	3	3	3	3	21
		No apparent difficulty with this action item							
Action Item #7: The Fire Chief to provide ongoing training for all fire responders, including the many aspects of emergency response. Training is done through the Lake Region Fire Mutual Aid District, the State of New Hampshire Fire & EMS Training Facility in Bethlehem (Trudeau Road) and the Fire Academy. ***(Table 7.1)***	**Affected Location** -Townwide **Type of Activity** -Prevention -Emergency Service Protection	3	3	3	3	3	3	3	21
		No apparent difficulty with this action item							
Action Item #8: 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. ***(Tables 6.1 & 7.1)***	**Affected Location** -Townwide **Type of Activity** -Prevention -Emergency Service Protection	3	3	3	3	3	3	3	21
		No apparent difficulty with this action item							
Action Item #9: Work with local mutual aid associations and with area communities to improve multi-agency cross-training on communications, field operations and other issues that arise. ***(Table 6.1)***	**Affected Location** -Townwide **Type of Activity** -Prevention -Emergency Service Protection	3	3	3	3	3	3	3	21
		No apparent difficulty with this action item							
Action Item #10: Provide training for all emergency responders on the best use of the current radio frequency, other frequencies that can be used and the correct applications for the use of frequencies. ***(Table 7.1)***	**Affected Location** -Townwide **Type of Activity** -Prevention -Emergency Service Protection	3	3	3	3	3	3	3	21
		No apparent difficulty with this action item							
Action Item #11: 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 (unless it affects tree farmers), oil and gas lines and other infrastructure and work to reduce wildfire risk by clearing dead vegetation, cutting high grass and other fuel loads in the community. **(SW4, WF7, WF9 & F14)** ***(Table 7.1)***	**Affected Location** -Townwide **Type of Activity** -Prevention -Emergency Service Protection -Property Protection -Natural Resource Protection	3	3	3	2	2	3	3	19
		Political: *Some people will not want trees cut on or near their properties* ***Legal:*** *Must stay in the right-of-way or gain permission from the landowner if necessary*							
Action Item #12: Improve "911" signage compliance so that emergency responders can better assist the public at the time of need. Use all available public outreach opportunities, including the town's website, the Emergency Services webpage, a possible brochure, available social media platforms and local newsletters. Advise residents that the appropriate signage is available at the Wentworth Police Department and the Warren-Wentworth Ambulance (fee charged). **(MU14)** ***(Tables 6.1 & 7.1)***	**Affected Location** -Townwide **Type of Activity** -Prevention -Public Education & Awareness -Emergency Service Protection -Property Protection -Natural Resource Protection	3	3	3	2	2	3	3	19
		Political: *A small portion of the population may not want a 911 sign on their property* ***Legal:*** *Homeowners will have to install*							

Proposed Mitigation Action Items	Type of Activity	S	T	A	P	L	E	E	TTL
Action Item #13: Inspect the functionality of all hydrants and maintain and repair all hydrants and other water resources in Wentworth. Consider other areas of the community with limited water resources and address these issues by installing new hydrants, fire ponds, or cisterns. **(WF8)** ***(Table 6.1)***	**Affected Location** -Dry Hydrants -Water resources & drafting sites **Type of Activity** -Prevention -Emergency Service Protection -Property Protection -Natural Resource Protection	3	3	3	3	3	3	3	21
		No apparent difficulty with this action item							
Action Item #14: Refer to the Wentworth Rural Fire Water Resource Plan (WRP) when making decisions on new subdivision proposals or new water resource needs within the community. **(MU6)** ***(Table 7.1)***	**Affected Location** -Townwide **Type of Activity** -Prevention -Public Education & Awareness	3	3	3	3	3	3	3	21
		No apparent difficulty with this action item							
Action Item #15: Revisit the security around the distribution of the town's Capital Reserve Funds program to ensure the proper checks and balances. **(MU6)** ***(Tables 6.1 & 7.1)***	**Affected Location** -Townwide **Type of Activity** -Prevention -Emergency Service Protection	3	3	3	3	3	3	3	21
		No apparent difficulty with this action item							
Action Item #16: Provide an annual review of the Wentworth Hazard Mitigation Plan Update 2021, including a review of the status of "Action Items" listed in this plan to encourage completion. Obtain approval from the local elected body annually and provide a complete update of the plan in five years. **(MU11)** ***(Table 6.1)***	**Affected Location** -Townwide **Type of Activity** -Prevention	3	3	3	3	3	3	3	21
		No apparent difficulty with this action item							
Action Item #17: 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)**	**Affected Location** -Townwide **Type of Activity** -Prevention	3	3	3	3	3	3	3	21
		No apparent difficulty with this action item							
Action Item #18: Improve the flow of stormwater on Cheever Road by upgrading the existing 15" metal culvert with an 18" High-Density Polyethylene (HDPE) culvert. **(F13)** ***(Table 6.1)***	**Affected Location** -Culvert on Cheever Road **Type of Activity** -Prevention -Emergency Service Protection -Property Protection -Natural Resource Protection -Structural Project	3	3	3	3	3	3	3	21
		No apparent difficulty with this action item							
Action Item #19: Improve the flow of stormwater on Currier Hill Road at the intersection of Eastside Road by upgrading the existing and underperforming 12" metal and plastic culvert with one 15" High-Density Polyethylene (HDPE) culvert. Dig out the drainage ditch alongside East Side Road by 18" to ensure proper drainage. **(F13)** ***(Table 6.1)***	**Affected Location** -Culvert at Currier Hill Road & East Road **Type of Activity** -Prevention -Emergency Service Protection -Property Protection -Natural Resource Protection -Structural Project	3	3	3	3	3	3	3	21
		No apparent difficulty with this action item							

Proposed Mitigation Action Items	Type of Activity	S	T	A	P	L	E	E	TTL
Action Item #20: Obtain funding to improve North Dorchester Road by installing two 18-24" culverts, regrading, and repaving the road to improve stormwater flow.	**Affected Location** -North Dorchester Road **Type of Activity** -Prevention -Emergency Service Protection -Property Protection -Natural Resource Protection -Structural Project	2	3	3	3	3	2	2	18
		Social: *Some residents may be inconvenienced for some time* ***Economical:*** *Budget constraints* ***Environmental:*** *D ES approvals may be needed*							
Action Item #21: Send "courtesy notifications" to people or entities mentioned in this plan so that they are aware of their potential responsibilities should a major disaster occur. **(MU14)** ***(Table 7.1)***	**Affected Location** -Townwide **Type of Activity** -Prevention -Public Education & Awareness -Emergency Service Protection	3	3	3	3	3	3	3	21
		No apparent difficulty with this action item							
Action Item #22: Prepare a bridge study to determine which bridges in town should be improved to allow modern fire apparatus to pass over them. This study will help the Fire Department determine the type of new equipment that should be purchased and ensure its firefighting capabilities. **(WF8)**	**Affected Location** -Bridges - townwide **Type of Activity** -Prevention -Emergency Service Protection	3	3	3	3	3	3	3	21
		No apparent difficulty with this action item							
Action Item #23: Lobby the state to mitigate the brush and visibility problems at the intersection of NH Route 25 and the Village Common Road, all the way to East Side Road by cleaning the brush in the state's right-of-way alongside the roads.	**Affected Location** -Townwide **Type of Activity** -Prevention -Emergency Service Protection -Property Protection -Natural Resource Protection	3	3	3	3	3	3	3	21
		No apparent difficulty with this action item							
Action Item #24: Update the Wentworth Emergency Operations Plan to coincide with the 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 as well as a detailed Resource Inventory List and Player Packets. **(MU6)** ***(Tables 6.1 & 7.1)***	**Affected Location** -Townwide **Type of Activity** -Prevention -Emergency Service Protection	3	3	3	3	3	3	3	21
		No apparent difficulty with this action item							
Action Item #25: Obtain funding and replace the Martin's Brook bridge on East Side Road with a brand new bridge based on engineering studies. This 22' I-beam bridge with 4x6 wood decking has aged considerably and is a current danger for traffic and for potential flooding. Scouring of the concrete abutments requires a complete replacement and possibly elevation of the roadway. A new bridge should be at least the same length and could possibly be a box culvert (engineering to determine). **(F13 & MU13)**	**Affected Location** -Bridge over Martin's Brook **Type of Activity** -Prevention -Emergency Service Protection -Property Protection -Structural Project	1	3	2	3	3	1	1	14
		Social: *A part of the community will be inconvenienced for several months* ***Administrative:*** *The town will need to hire outside contractors* ***Economical:*** *Budget constraints* ***Environmental:*** *DES permitting will be required*							

Proposed Mitigation Action Items	Type of Activity	S	T	A	P	L	E	E	TTL
		2	3	2	3	2	2	1	15
Action Item #26: Replace the existing culverts on Frescoln road with a single-span bridge to improve stormwater flow and decrease the incidence of flooding. (F13) ***(Table 6.1)***	**Affected Location** -Culverts on Frescoln Road **Type of Activity** -Prevention -Emergency Service Protection -Property Protection -Natural Resource Protection -Structural Project	***Social:*** *Some may have limited or temporary access during construction* ***Administrative:*** *The BOS will subcontract this* ***Legal:*** *Some landowner permissions may be needed* ***Economical:*** *Budget constraints; grants are required* ***Environmental:*** *DES and Wetlands permitting is needed*							
		3	3	2	3	2	2	1	16
Action Item #27: Replace the existing culverts on Cross Road, possibly with a single-span two-lane bridge (as approved by the BOS) to improve the flow of stormwater and decrease the incidence of flooding. (F13) ***(Table 6.1)***	**Affected Location** -Culverts on Cross Road **Type of Activity** -Prevention -Emergency Service Protection -Property Protection -Natural Resource Protection -Structural Project	***Administrative:*** *The BOS will subcontract this* ***Legal:*** *Some landowner permissions may be needed* ***Economical:*** *Budget constraints; grants are required* ***Environmental:*** *DES and Wetlands permitting is needed*							
		3	3	3	3	3	3	3	21
Action Item #28: Improve the flow of stormwater on North Dorchester Road by upgrading the two existing and underperforming 18" (metal and plastic) culverts with one 36" plastic culvert. (F13) ***(Table 6.1)***	**Affected Location** -Culverts on North Dorchester Road **Type of Activity** -Prevention -Emergency Service Protection -Property Protection -Natural Resource Protection -Structural Project	*No apparent difficulty with this action item*							
		3	3	3	3	3	3	3	21
Action Item #29: Improve the flow of stormwater on Atwell Hill Road by upgrading the three existing and underperforming 15-18" metal culverts with three 15" High-Density Polyethylene (HDPE) culverts (exact size to be determined). (F13) ***(Table 6.1)***	**Affected Location** -Culverts on Atwell Hill Road **Type of Activity** -Prevention -Emergency Service Protection -Property Protection -Natural Resource Protection -Structural Project	*No apparent difficulty with this action item*							
		3	3	3	3	3	3	3	21
Action Item #30: Improve the flow of stormwater on Cape Moonshine Road by upgrading the 18"-24" existing and underperforming half plastic & half metal culverts with a minimum 24" High-Density Polyethylene (HDPE) culvert. (F13) ***(Table 6.1)***	**Affected Location** -Culverts on Cape Moonshine Road **Type of Activity** -Prevention -Emergency Service Protection -Property Protection -Natural Resource Protection -Structural Project	*No apparent difficulty with this action item*							

Proposed Mitigation Action Items	Type of Activity	S	T	A	P	L	E	E	TTL
Action Item #31: Obtain funding and install a 24" HPDE culvert to replace the old l culvert currently in place on Gove Lane to improve stormwater flow. **(F13))**	**Affected Location** -Gove Lane **Type of Activity** -Prevention -Emergency Service Protection -Property Protection -Natural Resource Protection -Structural Project	3	3	3	3	3	3	3	21
		No apparent difficulty with this action item							
Action Item #32: In cooperation with King Forest Industries, install a dry hydrant at Site WE 020 (the fire pond on King Forest private way) as suggested in the 2008 Rural Fire Water Resource Plan. A dry hydrant in this location will provide better fire protection for this area of Wentworth and this important town business. **(WF8)** *(Table 7.1)*	**Affected Location** -Site WE 0202 (WRP) **Type of Activity** -Prevention -Emergency Service Protection -Property Protection -Natural Resource Protection -Structural Project	3	3	3	3	3	3	3	21
		No apparent difficulty with this action item							
Action Item #33: Obtain a dedicated cistern with an aggregate total of 20-30,000 gallons to increase the town's fire suppression capabilities at the Wentworth Elementary School. **(WF6)** ***(Table 7.1)***	**Affected Location** -Wentworth Elementary School **Type of Activity** -Prevention -Emergency Service Protection -Property Protection -Natural Resource Protection -Structural Project	3	3	3	1	2	1	3	16
		Political: *There may be a problem with priorities with other school needs; some citizens may not see the need for this* ***Legal:*** *SAU 48 and the School Board would need to step in to assist in getting the project done* ***Economical:*** *Budget constraints*							
Action Item #34: Review this plan, the Wentworth Hazard Mitigation Plan Update 2021, whenever an update or 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)** ***(Tables 6.1 & 7.1)***	**Affected Location** -Townwide **Type of Activity** -Prevention	3	3	2	3	3	1	3	18
		Administrative: *There may a need to hire a private contractor* ***Economical:*** *Budget constraints (if outside contractor hired)*							
Action Item #35: Obtain and install a permanent generator at the Wentworth Town Office to protect this critical facility that is not only the Police Station but also important for government continuity. **(MU13)** ***(Tables 6.1 & 7.1)***	**Affected Location** -Wentworth Town Office / Police Station **Type of Activity** -Prevention -Emergency Service Protection	3	3	2	3	3	1	3	18
		Administrative: *A grant will be needed for this project* ***Economical:*** *Budget constraints*							
Action Item #36: Until a time at which a new station is constructed, this is deferred to obtain and install at least a temporary generator at the current fire station to protect this critical facility, which is not only the EOC but also important for fire suppression. **(MU13)** ***(Tables 6.1 & 7.1)***	**Affected Location** -Wentworth Fire Station **Type of Activity** -Prevention -Emergency Service Protection	3	3	2	3	3	1	3	18
		Administrative: *A grant will be needed for this project* ***Economical:*** *Budget constraints*							

Proposed Mitigation Action Items	Type of Activity	S	T	A	P	L	E	E	TTL
Action Item #37: Work with Lakes Region Mutual Fire Aid (currently updating their communication systems) and emergency responders to determine where new repeaters can be installed to eliminate dead spots. ***(Table 6.1)***	**Affected Location** -Townwide **Type of Activity** -Prevention -Emergency Service Protection	3	3	3	3	3	1	3	19
		Economical: *Budget constraints*							
Action Item #38: Replace the existing culverts on Rowentown Road with a single or double-span bridge to improve the flow of stormwater and decrease the incidence of flooding. **(F13)** ***(Table 6.1)***	**Affected Location** -Culvert on Rowentown Road **Type of Activity** -Prevention -Emergency Service Protection -Property Protection -Natural Resource Protection -Structural Project	1	3	2	2	3	1	1	13
		Social: *Some families may be temporarily displaced* ***Administrative:*** *Outside contract help would be needed* ***Political:*** *Some people may not support this project* ***Economical:*** *Budget constraints* ***Environmental:*** *DES approvals will be needed*							
Action Item #39: Review the Subdivision Regulations and discuss changes that will reduce the chance for hazards in the future. Include discussions on water resources fire suppression in new developments, regulations that address the steepness of driveways and building structures on steep slopes. Consider requiring subdivisions to provide adequate stormwater flow to prevent flooding. **(WF2, F1 & MU6)** ***(Tables 6.1 & 7.1)***	**Affected Location** -Townwide **Type of Activity** -Prevention -Emergency Service Protection -Property Protection -Natural Resource Protection	3	3	3	1	3	3	3	19
		Political: *There will be push back on any new regulations*							
Action Item #40: Maintain culverts and ditches in the community and develop and maintain a written stormwater maintenance plan to ensure more efficient stormwater management. This plan or "inventory" should include the location, date of installation, GPS coordinates, material, type, size, age and expected replacement date of all culverts, catch basins, and drainage ditches in the community. **(F5)** ***(Table 7.1)***	**Affected Location** -Culverts & Ditches **Type of Activity** -Prevention -Emergency Service Protection -Property Protection -Natural Resource Protection	3	3	3	3	3	3	3	21
		No apparent difficulty with this action item							
Action Item #41: Determine a location and funding opportunities for the building of a new and modern fire station so that the Fire Department can better respond to the needs of the community and region. **(MU13)** **(Table 7.1)**	**Affected Location** -Site for new Fire Station **Type of Activity** -Prevention -Emergency Service Protection -Property Protection -Natural Resource Protection -Structural Project	3	3	3	2	3	1	2	17
		Political: *Some citizens of the community may not see the need for a new fire station* ***Economical:*** *Budget constraints* ***Environmental:*** *DES approvals may be needed depending on the site that is chosen*							
Action Item #42: Improve the 20' x 36" reinforced concrete pipe on Hooper Hill Road by replacing it with a 40' x 48" High Density Polyethylene (HDPE) culvert. This effort will improve the aging infrastructure, prevent future flooding and allow the town to widen this vital emergency lane. **(F13)**	**Affected Location** -Culvert Hooper Hill Road **Type of Activity** -Prevention -Emergency Service Protection -Property Protection -Natural Resource Protection -Structural Project	3	3	2	2	3	3	1	17
		Administrative*: This will likely be subcontracted* ***Political:*** *There may be some residents who will not see the importance of this project* ***Environmental:*** *DES approvals may be needed depending on the site that is chosen*							

Chapter 9: Implementation Schedule for Prioritized Action Items

A. Priority Methodology

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

Category 0

Category 0 includes those items which are being done and will continue to be done in the future.

Category 1

Category 1 includes those items under the direct control of town officials, within the town's financial capability, using only town funding, those already being done or planned, and those that could generally be completed within one year.

Category 2

Category 2 includes those items that the town did 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 3

Category 3 includes those items that would take a significant funding effort, those that the town had 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, using the STAPLEE process, the methodology detailed above, and a Low-High estimate (see the following page), the team could develop a consensus on the cost-benefit for each proposed action item.

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 seriously 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 outlining the responsible party, when the action item should be completed and how it will be funded. 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 in order of priority and indicate if they were derived from prior tables in this plan.

The estimated cost was determined using the following criteria:

- **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

The time frame was determined using the following criteria:

- **Short Term** ..... Ongoing for the life of the plan
- **Short Term** ..... Less than 1 year (0-12 months)
- **Medium Term** ..... 1-3 years (13-36 months)
- **Long-term:** ..... 3-5 years (37-60 months)

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 E: Potential Mitigation Ideas*, for more information**.**

Mitigation Action Items are listed in order of priority.

Rank-Priority	Problem Statement New Mitigation Action Item	Type of Hazard	Managing Department	Funding or Support	Time Frame	Est. Cost
0-1	***Problem Statement:*** *Although the town has established an emergency services webpage with some emergency-related links, more information can be provided to Wentworth's citizens on emergency preparedness and mitigation efforts residents can take at their own homes.* **Action Item #1:** Further develop robust information on the town's emergency services webpage and other available social media platforms to educate the public on preparedness measures, such as emergency alerting and 911 compliance, and hazard mitigation techniques, such as water-saving techniques, how to protect themselves and their properties during extreme temperatures, earthquakes, hail and lightning storms and other natural hazard events. Encourage homeowners to install carbon monoxide monitors and provide public information regarding infectious diseases. Add links to available resources. **(MU14, SW7, WF11, T3, WW5, D9, EQ7, ET1, ET4, HA3 & L2)** ***(Table 7.1)***	All Hazards including Severe Wind, Drought, Earthquake, Extreme Temperatures, Hail, Lightning, Severe Winter Weather, Tornado, Wildfire & Infectious Disease	Select Board & Emergency Management Director & other Department Heads	Local	**Short Term Ongoing** (For the life of the plan)	**Very Low Cost** ($0 - $1,000 or staff time only)
0-2	***Problem Statement:*** *Residents may not be aware of the importance of maintaining their private roads to allow access for emergency responders and to prevent wildfires.* **Action Item #2:** Promote private mitigation efforts and provide public outreach to Wentworth's citizens on the importance of maintaining private roads to allow for safe access for fire apparatus into wildland-urban interface neighborhoods and properties. This outreach will help to ensure accessibility for emergency response and decrease the risk for wildfire. **(MU16)** ***(Table 7.1)***	Wildfire	Select Board, Planning Board & Emergency Management Director	Local	**Short Term Ongoing** (For the life of the plan)	**Very Low Cost** ($0 - $1,000 or staff time only)

Rank-Priority	Problem Statement New Mitigation Action Item	Type of Hazard	Managing Department	Funding or Support	Time Frame	Est. Cost
0-3	***Problem Statement:*** *Residents and builders may not be aware of flood regulations & the availability of flood insurance through the National Flood Insurance Program (NFIP). They may not be aware of the risk of building in the floodplain and the steps they can take to reduce flooding.* **Action Item #3:** Advise the public about the local flood hazard, flood insurance and flood protection measures. Obtain a supply of National Flood Insurance (NFIP). Provide flood mitigation materials to homeowners and builders when proposing new development or substantial improvements. Encourage the purchase flood insurance, whether or not properties are in the flood zone. Educate the public on measures that can be taken to reduce the change of flooding. Add links to the NFIP and Ready.gov to the town's emergency services webpage and other available social media platforms. Work with residents to ensure they comply with the floodplain ordinance. **(F22, F10, F23)** ***(Table 7.1)***	Inland Flooding	Select Board, Planning Board & Emergency Management Director	Local	**Short Term Ongoing** (For the life of the plan)	**Very Low Cost** ($0 - $1,000 or staff time only)
0-4	***Problem Statement:*** *Although the town does a great job using its emergency service webpage to promote preparedness, residents may not be aware of the steps they can take to reduce fire risk at their homes.* **Action Item #4:** Post important information on the town's emergency services webpage and other social media platforms 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 and provide a link to Firewise® on the Emergency Services webpage. Provide Firewise® brochures to those residents seeking burn permits; advise residents of the importance of maintaining defensible space and other wildfire mitigation techniques. **(WF12 & WF10)** ***(Table 7.1)***	Wildfire	Select Board, Planning Board, Emergency Management Director & the Fire Chief	Local	**Short Term Ongoing** (For the life of the plan)	**Very Low Cost** ($0 - $1,000 or staff time only)
0-5	***Problem Statement:*** *CodeRED is an excellent warning system, but it only stores resident hardline phone numbers. Residents may not be aware that they can add cell numbers, emails and unlisted numbers.* **Action Item #5:** Provide public outreach to encourage all residents to contact CodeRED to add cell numbers, unlisted numbers and emails, and verify their information. Use the community website, a possible brochure, available social media platforms and local newsletters or a sign up at Town Meeting. **(MU14)** ***(Tables 6.1 & 7.1)***	All Hazards	Select Board & Emergency Management Director	Local	**Short Term Ongoing** (For the life of the plan)	**Very Low Cost** ($0 - $1,000 or staff time only)

Rank-Priority	Problem Statement New Mitigation Action Item	Type of Hazard	Managing Department	Funding or Support	Time Frame	Est. Cost
0-6	***Problem Statement:*** *Although Wentworth 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 Wentworth Fire Chief or EMD would most likely call dispatch, who would contact the Central NH HazMat Team or the State Fire Marshal's Office (FMO) to request an available HazMat Response Team. HazMat training needs to continue.* **Action Item #6:** Continue HazMat training for the members of the Wentworth Fire Department. ***(Table 7.1)***	Hazardous Materials	Fire Chief	Local	**Short Term Ongoing** (For the life of the plan)	**Very Low Cost** ($0 - $1,000 or staff time only)
0-7	***Problem Statement:*** *Training of all fire responders is coordinated by the Fire Chief and includes the many aspects of emergency response. This training needs to continue.* **Action Item #7:** The Fire Chief to provide ongoing training for all fire responders, including the many aspects of emergency response. Training is done through the Lake Region Fire Mutual Aid District, the State of New Hampshire Fire & EMS Training Facility in Bethlehem (Trudeau Road) and the Fire Academy. ***(Table 7.1)***	Wildfire	Fire Chief	Local	**Short Term Ongoing** (For the life of the plan)	**Very Low Cost** ($0 - $1,000 or staff time only)
0-8	***Problem Statement:*** *Although first responders, including firefighters, have received NIMS & ICS training, not all of Wentworth's town officials have.* **Action Item #8:** 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. ***(Tables 6.1 & 7.1)***	All Hazards	Emergency Management Director	Local	**Short Term Ongoing** (For the life of the plan)	**Very Low Cost** ($0 - $1,000 or staff time only)
0-9	***Problem Statement:*** *Although all mutual aid systems in Wentworth work very well, multi-agency cross-training on communications, field operations and other issues can be improved.* **Action Item #9:** Work with local mutual aid associations and with area communities to improve multi-agency cross-training on communications, field operations and other issues that arise. ***(Table 6.1)***	All Hazards	Fire Chief, Police Chief, Road Agent	Local	**Short Term Ongoing** (For the life of the plan)	**Very Low Cost** ($0 - $1,000 or staff time only)

Rank-Priority	Problem Statement New Mitigation Action Item	Type of Hazard	Managing Department	Funding or Support	Time Frame	Est. Cost
0-10	***Problem Statement:*** *The town has obtained one townwide frequency for all three agencies (FD, PD & HD) to talk to each other on a single frequency. Training needs to be provided on the best use of the radio frequencies and the correct applications.* **Action Item #10:** Provide training for all emergency responders on the best use of the current radio frequency, other frequencies that can be used and the correct applications for the use of frequencies. ***(Table 7.1)***	All Hazards	Emergency Management Director & each Department Head	Local	**Short Term Ongoing** (For the life of the plan)	**Very Low Cost** ($0 - $1,000 or staff time only)
0-11	***Problem Statement:*** *As trees become damaged and threaten power lines and structures on town roads, the Highway Department removes them. NH DOT does this for state roads along with NH Electric Coop, as needed. There is a need to continue to work to keep this hazard to a minimum.* **Action Item #11:** 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 (unless it affects tree farmers), oil and gas lines and other infrastructure and work to reduce wildfire risk by clearing dead vegetation, cutting high grass and other fuel loads in the community. **(SW4, WF7, WF9 & F14)** ***(Table 7.1)***	High Wind Events, Wildfire, Severe Winter Weather-Ice Storms & Inland Flooding	Highway Department	Local	**Short Term Ongoing** (For the life of the plan, based on the town's budget)	**Low Cost** ($1,000-$20,000)
0-12	***Problem Statement:*** *Wentworth has done an excellent job promoting E-911 house signage and is currently about 80% compliant. There is still room for improvement.* **Action Item #12:** Improve "911" signage compliance so that emergency responders can better assist the public at the time of need. Use all available public outreach opportunities, including the town's website, the Emergency Services webpage, a possible brochure, available social media platforms and local newsletters. Advise residents that the appropriate signage is available at the Wentworth Police Department and the Warren-Wentworth Ambulance (fee charged). **(MU14)** ***(Tables 6.1 & 7.1)***	All Hazards	Police Chief	Local	**Short Term Ongoing** (For the life of the plan)	**Very Low Cost** ($0 - $1,000 or staff time only)

Rank-Priority	Problem Statement New Mitigation Action Item	Type of Hazard	Managing Department	Funding or Support	Time Frame	Est. Cost
0-13	***Problem Statement:*** *The Fire Department tests and maintains five dry hydrants and drafting sites throughout the community. Hydrant maintenance needs to continue to ensure water availability while fighting wildfires.* **Action Item #13:** Inspect the functionality of all hydrants and maintain and repair all hydrants and other water resources in Wentworth. Consider other areas of the community with limited water resources and address these issues by installing new hydrants, fire ponds, or cisterns. **(WF8)** ***(Table 6.1)***	Wildfire	Fire Chief	Local	**Short Term Ongoing** (For the life of the plan)	**Very Low Cost** ($0 - $1,000 or staff time only)
0-14	***Problem Statement:*** *The Wentworth Rural Fire Water Resource Plan (WRP), which was completed in 2008, remains an important document for planning purposes.* **Action Item #14:** Refer to the Wentworth Rural Fire Water Resource Plan (WRP) when making decisions on new subdivision proposals or new water resource needs within the community. **(MU6)** ***(Table 7.1)***	Wildfire	Planning Board	Local	**Short Term Ongoing** (For the life of the plan)	**Very Low Cost** ($0 - $1,000 or staff time only)
0-15	***Problem Statement:*** *Although the town's Capital Reserve Funds (CRFs) are set aside each year at budget time, improvements are needed to ensure the proper checks and balances.* **Action Item #15:** Revisit the security around the distribution of the town's Capital Reserve Funds program to ensure the proper checks and balances. **(MU6)** ***(Tables 6.1 & 7.1)***	All Hazards	Trustees of the Trust Funds	Local	**Short Term Ongoing** (For the life of the plan)	**Very Low Cost** ($0 - $1,000 or staff time only)
1-1	***Problem Statement:*** *This plan, the Wentworth Hazard Mitigation Plan Update 2021, will require an annual review and a complete update in five years.* **Action Item #16:** Provide an annual review of the Wentworth Hazard Mitigation Plan Update 2021, including a review of the status of "Action Items" listed in this plan to encourage completion. Obtain approval from the local elected body annually and provide a complete update of the plan in five years. **(MU11)** ***(Table 6.1)***	All Hazards	Select Board, Planning Board & Emergency Management Director	Local	**Short Term** (1 year or less: 0-12 months)	**Very Low Cost** ($0 - $1,000 or staff time only)

Rank-Priority	Problem Statement New Mitigation Action Item	Type of Hazard	Managing Department	Funding or Support	Time Frame	Est. Cost
1-2	***Problem Statement:*** *This plan, the Wentworth Hazard Mitigation Plan Update, 2021, will need to be approved again as a Community Wildfire Protection Plan (CWPP).* **Action Item #17:** 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)**	Wildfire	Mapping & Planning Solutions	Local	**Short Term** (1 year or less: 0-12 months)	**Very Low Cost** ($0 - $1,000 or staff time only)
1-3	***Problem Statement:*** *One culvert on Cheever Road is aging; old metal culverts will bottom that have rotted away, thus contributing to stormwater problems.* **Action Item #18:** Improve the flow of stormwater on Cheever Road by upgrading the existing 15" metal culvert with an 18" High-Density Polyethylene (HDPE) culvert. **(F13)** ***(Table 6.1)***	Inland Flooding	Highway Department	Local & Grants	**Short Term** (1 year or less: 0-12 months)	**Low Cost** ($1,000-$20,000)
1-4	***Problem Statement:*** *The single culvert on Currier Hill Road at the intersection of Eastside Road has become rotted and impassable and is too high for stormwater to drain.* **Action Item #19:** Improve the flow of stormwater on Currier Hill Road at the intersection of Eastside Road by upgrading the existing and underperforming 12" metal and plastic culvert with one 15" High-Density Polyethylene (HDPE) culvert. Dig out the drainage ditch alongside East Side Road by 18" to ensure proper drainage. **(F13)** ***(Table 6.1)***	Inland Flooding	Highway Department	Local & Grants	**Short Term** (1 year or less: 0-12 months)	**Low Cost** ($1,000-$20,000)
1-5	***Problem Statement:*** *Heavy rain causes flooding on North Dorchester Road near #632. Although this road is paved, it needs, at a minimum, more cross culverts to prevent flooding. There is currently only a ditch line that leads to one culvert that cannot handle heavy rain.* **Action Item #20:** Obtain funding to improve North Dorchester Road by installing two 18-24" culverts, regrading, and repaving the road to improve stormwater flow	Aging Infrastructure & Inland Flooding	Highway Department	Local & Grants	**Short Term** (1 year or less: 0-12 months)	**High Cost** ($100,000 or more)

Rank-Priority	Problem Statement New Mitigation Action Item	Type of Hazard	Managing Department	Funding or Support	Time Frame	Est. Cost
1-6	***Problem Statement:*** *Several people or entities are mentioned in this plan; these people or entities should be aware of their potential responsibilities outlined in this plan.* **Action Item #21:** Send "courtesy notifications" to people or entities mentioned in this plan so that they are aware of their potential responsibilities should a major disaster occur. **(MU14)** ***(Table 7.1)***	All Hazards	Emergency Management Director	Local	**Short Term** (1 year or less: 0-12 months)	**Very Low Cost** ($0 - $1,000 or staff time only)
1-7	***Problem Statement:*** *Some of Wentworth's bridges may not support modern fire apparatuses' weight and width. The purchase of new fire equipment is dependent on the ability to cross over these bridges.* **Action Item #22:** Prepare a bridge study to determine which bridges in town should be improved to allow modern fire apparatus to pass over them. This study will help the Fire Department determine the type of new equipment that should be purchased and ensure its firefighting capabilities. **(WF8)**	Aging Infrastructure & Wildfires	Fire Department	Local	**Short Term** (1 year or less: 0-12 months)	**Very Low Cost** ($0 - $1,000 or staff time only)
1-8	***Problem Statement:*** *NH Route 25 at Town Common needs brush cleaning for road and traffic safety as the brush limits visibility.* **Action Item #23:** Lobby the state to mitigate the brush and visibility problems at the intersection of NH Route 25 and the Village Common Road, all the way to East Side Road by cleaning the brush in the state's right-of-way alongside the roads.	All Hazards	Select Board & Executive Counselor	Local	**Short Term** (1 year or less: 0-12 months)	**Very Low Cost** ($0 - $1,000 or staff time only)
2-1	***Problem Statement:*** *The Wentworth Emergency Operations Plan (EOP) was last updated in 2015 and is ready for an update, based on the state's 5-year recommendation.* **Action Item #24:** Update the Wentworth Emergency Operations Plan to coincide with the 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 as well as a detailed Resource Inventory List and Player Packets. **(MU6)** ***(Tables 6.1 & 7.1)***	All Hazards	Select Board, Planning Board & Emergency Management Director	Local & Grants	**Medium Term** (1-3 years: 13-36 months)	**Low Cost** ($1,000-$20,000)

Rank-Priority	Problem Statement New Mitigation Action Item	Type of Hazard	Managing Department	Funding or Support	Time Frame	Est. Cost
2-2	***Problem Statement:*** *Although not red-listed, the bridge over Martin's Brook has aged and needs a complete replacement. The bridge abutments have experienced decay, and the stringers on the bridge have rotted. Flooding could also occur at this site.* **Action Item #25:** Obtain funding and replace the Martin's Brook bridge on East Side Road with a brand new bridge based on engineering studies. This 22' I-beam bridge with 4x6 wood decking has aged considerably and is a current danger for traffic and for potential flooding. Scouring of the concrete abutments requires a complete replacement and possibly elevation of the roadway. A new bridge should be at least the same length and could possibly be a box culvert (engineering to determine). **(F13 & MU13)**	Aging Infrastructure & Inland Flooding	Highway Department	Local & Grants	**Medium Term** (1-3 years: 13-36 months)	**High Cost** ($100,000 or more; multiple communities share costs)
2-3	***Problem Statement:*** *There are no "red-listed" bridges in town; however, three roads were affected in the July and October 2017 heavy rainstorms and now have under-performing culverts. The first of these bridges on Frescoln Road is insufficient for the water volume that flows through it and needs to be upgraded to prevent flooding.* **Action Item #26:** Replace the existing culverts on Frescoln road with a single-span bridge to improve stormwater flow and decrease the incidence of flooding. **(F13)** ***(Table 6.1)***	Inland Flooding	Highway Department	Local & Grants	**Medium Term** (1-3 years: 13-36 months)	**High Cost** ($100,000 or more)
2-4	***Problem Statement:*** *There are no "red-listed" bridges in town; however, three roads were affected in the July and October 2017 heavy rainstorms and now have under-performing culverts. The second of these bridges on Cross Road is insufficient for the volume of water that flows through it and needs to be upgraded to prevent flooding.* **Action Item #27:** Replace the existing culverts on Cross Road, possibly with a single-span two-lane bridge (as approved by the BOS) to improve the flow of stormwater and decrease the incidence of flooding. **(F13)** ***(Table 6.1)***	Inland Flooding	Highway Department	Local & Grants	**Medium Term** (1-3 years: 13-36 months)	**High Cost** ($100,000 or more)

Rank-Priority	Problem Statement New Mitigation Action Item	Type of Hazard	Managing Department	Funding or Support	Time Frame	Est. Cost
2-5	***Problem Statement:*** *The single culvert on North Dorchester Road is not large enough to handle the stormwater flow and often causes flooding.* **Action Item #28:** Improve the flow of stormwater on North Dorchester Road by upgrading the two existing and underperforming 18" (metal and plastic) culverts with one 36" plastic culvert. **(F13)** ***(Table 6.1)***	Inland Flooding	Highway Department	Local & Grants	**Medium Term** (1-3 years: 13-36	**Low Cost** ($1,000-$20,000)
2-6	***Problem Statement:*** *Three aging culverts on Atwell Hill Road need replacing; the bottoms of these culverts have rusted out, causing mud and silt to go into ditches.* **Action Item #29:** Improve the flow of stormwater on Atwell Hill Road by upgrading the three existing and underperforming 15-18" metal culverts with three 15" High-Density Polyethylene (HDPE) culverts (exact size to be determined). **(F13)** ***(Table 6.1)***	Inland Flooding	Highway Department	Local & Grants	**Medium Term** (1-3 years: 13-36	**Low Cost** ($1,000-$20,000)
2-7	***Problem Statement:*** *The aging culvert on Cape Moonshine Road needs replacing; the bottoms of the culverts have rusted out and are no longer able to handle the flow of stormwater.* **Action Item #30:** Improve the flow of stormwater on Cape Moonshine Road by upgrading the 18"-24" existing and underperforming half plastic & half metal culverts with a minimum 24" High-Density Polyethylene (HDPE) culvert. **(F13)** ***(Table 6.1)***	Inland Flooding	Highway Department	Local & Grants	**Medium Term** (1-3 years: 13-36	**Low Cost** ($1,000-$20,000)
2-8	***Problem Statement:*** *An improperly installed culvert on Gove Lane could cause flooding. There is water in the culvert, reducing its effectiveness.* **Action Item #31:** Obtain funding and install a 24" HPDE culvert to replace the old l culvert currently in place on Gove Lane to improve stormwater flow. **(F13)**	Aging Infrastructure & Inland Flooding	Highway Department	Local & Grants	**Medium Term** (1-3 years: 13-36 months)	**Low Cost** ($1,000-$20,000)

Rank-Priority	Problem Statement New Mitigation Action Item	Type of Hazard	Managing Department	Funding or Support	Time Frame	Est. Cost
2-9	***Problem Statement:*** *There are inadequate water resources at Site WE 020 (fire pond on King Forest private way).* **Action Item #32:** In cooperation with King Forest Industries, install a dry hydrant at Site WE 020 (the fire pond on King Forest private way) as suggested in the 2008 Rural Fire Water Resource Plan. A dry hydrant in this location will provide better fire protection for this area of Wentworth and this important town business. **(WF8)** ***(Table 7.1)***	Wildfire	Fire Department	Local & Grants	**Medium Term** (1-3 years: 13-36 months)	**Medium Cost** ($20,000-$100,000)
2-10	***Problem Statement:*** *There are limited water resources at the Wentworth Elementary School* **Action Item #33:** Obtain a dedicated cistern with an aggregate total of 20-30,000 gallons to increase the town's fire suppression capabilities at the Wentworth Elementary School. **(WF6)** ***(Table 7.1)***	Wildfire	Emergency Management Director & Fire Department	Local & Grants	**Medium Term** (1-3 years: 13-36 months)	**Medium Cost** ($20,000-$100,000)
2-11	***Problem Statement:*** *The Wentworth Master Plan was last updated in 1986 and is overdue for a recommended complete update.* **Action Item #34:** Review this plan, the Wentworth Hazard Mitigation Plan Update 2021, whenever an update or 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)** ***(Tables 6.1 & 7.1)***	All Hazards	Planning Board	Local	**Medium Term** (1-3 years: 13-36 months)	**Low Cost** ($1,000-$20,000)
2-12	***Problem Statement:*** *The Wentworth Town Office / Police Station does not have a permanent generator.* **Action Item #35:** Obtain and install a permanent generator at the Wentworth Town Office to protect this critical facility that is not only the Police Station but also important for government continuity. **(MU13)** ***(Tables 6.1 & 7.1)***	All Hazards	Select Board & Emergency Management Director	Local & Grants	**Medium Term** (1-3 years: 13-36 months)	**Low Cost** ($1,000-$20,000)
2-13	***Problem Statement:*** *The Wentworth Fire Station does not have a permanent generator.* **Action Item #36:** Until a time at which a new station is constructed, this is deferred to obtain and install at least a temporary generator at the current fire station to protect this critical facility, which is not only the EOC but also important for fire suppression. **(MU13)** ***(Tables 6.1 & 7.1)***	All Hazards	Select Board & Emergency Management Director	Local & Grants	**Medium Term** (1-3 years: 13-36 months)	**Low Cost** ($1,000-$20,000)

Rank-Priority	Problem Statement New Mitigation Action Item	Type of Hazard	Managing Department	Funding or Support	Time Frame	Est. Cost
2-14	***Problem Statement:*** *Although some repeaters are currently being installed, there are "dead spots" in Wentworth that hinder the emergency communications system.* **Action Item #37:** Work with Lakes Region Mutual Fire Aid (currently updating their communication systems) and emergency responders to determine where new repeaters can be installed to eliminate dead spots. ***(Table 6.1)***	All Hazards	Fire, Road Agent, Police Department & Emergency Management Director	Local & Grants	**Medium Term** (1-3 years: 13-36 months)	**High Cost** ($100,000 or more; multiple communities share costs)
3-1	***Problem Statement:*** *There are no "red-listed" bridges in town; however, three roads were affected in the July and October 2017 heavy rainstorms and now have under-performing culverts. The third of these bridges on Rowentown Road is insufficient for the volume of water that flows through it and needs to be upgraded to prevent flooding. This improvement may become a priority if done after replacing the Frescoln Road bridge, as there is an expected increase in water flow.* **Action Item #38:** Replace the existing culverts on Rowentow Road with a single or double-span bridge to improve the flow of stormwater and decrease the incidence of flooding. **(F13)** ***(Table 6.1)***	Inland Flooding	Highway Department	Local & Grants	**Long Term** (3-5 years: 37-60 months)	**High Cost** ($100,000 or more)
3-2	***Problem Statement:*** *The Wentworth Subdivision Regulations, most recently fully updated in 2007 and amended in 2020, are in good shape, but they do not address several mitigation strategies such as the availability of water resources for fire suppression, regulations on the steepness of driveways, building structures on steep slopes and roads, or maintaining adequate stormwater flow to prevent flooding.* **Action Item #39:** Review the Subdivision Regulations and discuss changes that will reduce the chance for hazards in the future. Include discussions on water resources fire suppression in new developments, regulations that address the steepness of driveways and building structures on steep slopes. Consider requiring subdivisions to provide adequate stormwater flow to prevent flooding. **(WF2, F1 & MU6)** ***(Tables 6.1 & 7.1)***	Wildfire & Inland Flooding	Planning Board	Local	**Long Term** (3-5 years: 37-60 months)	**Very Low Cost** ($0 - $1,000 or staff time only)

Rank-Priority	Problem Statement New Mitigation Action Item	Type of Hazard	Managing Department	Funding or Support	Time Frame	Est. Cost
3-3	***Problem Statement:*** *Although the Wentworth Highway Department works to clean and repair drainage basins and culverts, a written stormwater maintenance plan should be developed to ensure continuity of actions and efficient stormwater management.* **Action Item #40:** Maintain culverts and ditches in the community and develop and maintain a written stormwater maintenance plan to ensure more efficient stormwater management. This plan or "inventory" should include the location, date of installation, GPS coordinates, material, type, size, age and expected replacement date of all culverts, catch basins, and drainage ditches in the community. **(F5)** ***(Table 7.1)***	Inland Flooding	Highway Department	Local	**Long Term** (3-5 years: 37-60 months)	**Very Low Cost** ($0 - $1,000 or staff time only)
3-4	***Problem Statement:*** *The Town of Wentworth would be well-served with a new Fire Station that complies with state regulations, can better handle today's apparatus and meets the needs of a modern fire station.* **Action Item #41:** Determine a location and funding opportunities for building a new and modern fire station so that the Fire Department can better respond to the needs of the community and region. **(MU13)** ***(Table 7.1)***	Wildfire	Select Board, Fire Chief & Emergency Management Director	Local & Grants	**Long Term** (3-5 years: 37-60 months)	**High Cost** ($100,000 or more)
3-5	***Problem Statement:*** *The aging culvert on Hooper Hill Road is too small in both length and diameter to handle the stormwater flow. It also has potential to collapse and, due to its construction, causes a significant narrowing of this vital emergency lane.* **Action Item #42:** Improve the 20' x 36" reinforced concrete pipe on Hooper Hill Road by replacing it with a 40' x 48" High Density Polyethylene (HDPE) culvert. This effort will improve the aging infrastructure, prevent future flooding and allow the town to widen this vital emergency lane.	Inland Flooding & Aging Infrastructure	Highway Department	Local & Grants	**Long Term** (3-5 years: 37-60 months)	**Low Cost** ($1,000 to 20,000)

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

A. Hazard Mitigation Plan Monitoring, Evaluation and Updates

A good mitigation plan must allow for updates where and when necessary. It will incorporate periodic monitoring and evaluation mechanisms to review successes and failures or even just simple updates.

The Wentworth Hazard Mitigation Plan Update, 2021, is considered a work in progress. Three situations will prompt revisiting this plan:

- *First, as a minimum, it will be reviewed annually or after an emergency to assess whether the existing and suggested mitigation action items were successful. This review will assess the plan's effectiveness, accuracy, and completeness in monitoring the implementation of action items. The review will also address recommended improvements to the plan as contained in the FEMA plan review checklist and address any weaknesses the town identified that the plan did not adequately address.*

- *Second, the plan will be thoroughly updated every five years.*

- *Third, if the town adopts any major modifications to its land-use planning documents, the jurisdiction will conduct a plan review and make changes as applicable.*

In keeping with the process of adopting this hazard mitigation plan, the public and stakeholders will have the opportunity for future involvement as they will be invited to participate in all future reviews or updates of this plan. Public notice before any review or update will be given by such means as press releases in local papers, social media postings, posting meeting information on the town website, sending letters to federal, state and local organizations impacted by the plan and posting notices in public places. This notification will ensure that all comments and revisions from the public and stakeholders will be considered. The Emergency Management Director is responsible for initiating plan reviews and will consult with members of the hazard mitigation planning team identified in this plan.

Concurrence forms to be used for post-hazard or annual reviews are available in Chapter 11 of this plan. The town is encouraged to use these forms to document any changes and accomplishments since developing this plan. Forms are available for years 1-4, with the expectation that the five-year annual update will be in process during the fifth year.

B. Integration with Other Plans

This plan will only enhance mitigation if balanced with all other town plans. Wentworth 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 such items as providing ongoing fire and flood education, installing a generator at the Wentworth Elementary School, replacing Evans Bridge and establishing an emergency webpage. 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:

WENTWORTH MASTER PLAN

Traditionally, Master Plans are updated every 5 to 10 years and detail the use of capital reserves funds and capital improvements within the town. A complete update of the Wentworth's Master Plan was completed in 1986 and is overdue for a recommended update. Wentworth is in the process of requesting contractor bids to facilitate the writing of a new Master Plan. Future updates of the Master Plan should 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 #34)**

WENTWORTH EMERGENCY OPERATIONS PLAN 2015 (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 annually and after each hazardous event. The State of New Hampshire recommends that EOPs and updated every five years. The last Wentworth EOP was completed in 2015. An update for the Emergency Operations Plan is expected to be completed in 2021 or 2022. The new EOP will include elements from this hazard mitigation plan. **(Action Items #24)**

TOWN BUDGET & CAPITAL RESERVE FUNDS

The Town of Wentworth maintains Capital Reserve Funds (CRF) for major expenditures. The Capital Reserve Fund is adjusted annually in coordination 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 those Action Items that require local money or match money or address the CRF.**

THE WENTWORTH ORDINANCES & SUBDIVISION REGULATIONS

As time goes by and the town's needs change, its planning mechanisms will be reviewed and updated. In coordination with these actions, the Planning Board will review this plan and incorporate any changes that help mitigate the susceptibility to the dangers of natural, technical or human-caused disasters. Examples of this integration can be seen in this plan's mitigation action items. **(Action Items #14 & #39)**

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

C. PLAN APPROVAL & ADOPTION

This plan was completed in a series of open meetings beginning on October 21, 2019. The plan was presented to the town for review, submitted to HSEM for Conditional Approval *(APA, Approved Pending Adoption)*, formally adopted by the Select Board and resubmitted to HSEM 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 both digital and paper format.

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 — **Current Plan Expiration: 1/13/20**

Town of Wentworth, NH — **PDM17 Grant Expiration: 1/30/2021**

This agreement between the Town of Wentworth (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 2020 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 is received from 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. Additionally, all adopted plans should address mitigation strategies for reducing the risk of natural, man-made, and wildfire disasters on life and property and written so that 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 conditional approval. Upon conditional approval by HSEM, MAPS will assist the planning team as needed with presentation of the plan to the Wentworth Select Board and 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 Wentworth Hazard Mitigation Plan.

- After final approval is received from HSEM, 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, NH Homeland Security (HSEM), the Department of Natural & Cultural Resources and FEMA.

- MAPS will provide plan maintenance reminders and assistance on an annual basis leading up to the next five-year plan update at no cost to the town, if requested by the town.

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

- The town shall insure 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 Select Board 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 Select Board for consideration and adoption.

- After adoption and final approval from both HSEM and FEMA is 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 $6,999.75; 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 $3,500.00
  - 2. Second payment upon plan submittal to FEMA for Conditional Approval $3,300.00
  - 3. Final payment upon project completion and receipt of final plan copy $199.75

  Total Fees.....$6,999.75

- **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 Town of Wentworth will be responsible to provide and document any and all resources to be used to meet the FEMA required matching funds in the amount of $2,333.25. Matching funds are the responsibility of the Town of Wentworth, not MAPS. 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 to seven two-hour meetings will be required to gather the necessary information to create the updated the plan.

  The grant provided for this project is funded through PDM17; per the grant agreement between the town and HSEM, all work must be completed by January 30, 2021. It is expected that this project will be completed long before the grant expiration date of January 30, 2021.

- **Ownership of Material:** All maps, 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 Wentworth. 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 FEMA, relieve MAPS of content liability. Mapping and Planning Solutions carries annual general liability insurance.

- **Amendments**: Changes, alterations or additions to this agreement may be made if agreed to in writing between both the Town of Wentworth 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 sixty Hazard Mitigation Plans, more than sixty-five Emergency Operations Plans and has completed the following courses in Emergency 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
105 Union Street
Whitefield, NH 03598
jgarneau@mappingandplanning.com
(603) 837-7122; (603) 991-9664 (cell)

For the Town

Jeff Ames, Fire Chief & EMD
Town of Wentworth
Wentworth Town Hall
7 Atwell Hill Road, PO Box 2
Wentworth, NH 03282-0002
jlredbones@yahoo.com
(603) 764-9982

Signature below indicates acceptance of and agreement to details outlined in this agreement

FOR THE TOWN OF WENTWORTH, NH

_____
Signature

_____
Printed Name/Title

_____
Date

FOR MAPPING AND PLANNING SOLUTIONS

June E. Garneau
_____
Signature
June Garneau, Owner
October 24, 2019

Signatures are scanned facsimiles; original signatures are on file

B. Approved Pending Adoption (APA) & Formal Approval Emails from HSEM

APA from HSEM

Wentworth, NH - Local Hazard Mitigation Plan - Approvable Pending Adoption Inbox ×

DOS: Hazard Mitigation Planning Mar 4, 2021, 12:12 PM (23 hours ago)
to me, jredbone@yahoo.com, townofwentworth@wentworth-nh.org, Olivia, Meghan, Paul

Good afternoon,

The Department of Safety, Division of Homeland Security & Emergency Management (HSEM) has completed its review of the Wentworth, NH Hazard Mitigation Plan and found it approvable pending adoption. Congratulations on a job well done!

With this approval, the jurisdiction meets the local mitigation planning requirements under 44 CFR 201 **pending HSEM's receipt of electronic copies of the adoption documentation and the final plan**.
Acceptable electronic formats include Word or PDF files and must be submitted to us via email at HazardMitigationPlanning@dos.nh.gov. Upon HSEM's receipt of these documents, notification of formal approval will be issued, along with the final Checklist and Assessment.

The approved plan will be submitted to FEMA on the same day the community receives the formal approval notification from HSEM. FEMA will then issue a Letter of Formal Approval to HSEM for dissemination that will confirm the jurisdiction's eligibility to apply for mitigation grants administered by FEMA and identify related issues affecting eligibility, if any. If the plan is not adopted within one calendar year of HSEM's Approval Pending Adoption, the jurisdiction must update the entire plan and resubmit it for HSEM review.

If you have questions or wish to discuss this determination further, please contact me at Kayla.Henderson@dos.nh.gov or 603-223-3650.

Thank you for submitting the Wentworth, NH Hazard Mitigation Plan and again, congratulations on your successful community planning efforts.

Sincerely,

Kayla J. Henderson

Hazard Mitigation Planning

State of New Hampshire, Department of Safety
Division of Homeland Security & Emergency Management
Meghan Wells, State Hazard Mitigation Officer / Meghan.K.Wells@dos.nh.gov/ (603) 223-4395
Kayla Henderson, State Hazard Mitigation Planner / Kayla.J.Henderson@dos.nh.gov / (603) 223 3650
Olivia Barnhart, Assistant Chief of Planning / Olivia.W.Barnhart@dos.nh.gov / (603) 223-3639

Signatures are scanned facsimiles; original signatures are on file

FORMAL APPROVAL FROM HSEM

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Signatures are scanned facsimiles; original signatures are on file

C. Signed Certificate of Adoption

CERTIFICATE OF ADOPTION

Wentworth, NH

Select Board

A Resolution Adopting the Town of Wentworth Hazard Mitigation Plan Update 2021

WHEREAS, the Town of Wentworth 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 Wentworth has developed and received conditional approval from the Homeland Security & Emergency Management (HSEM) for its Hazard Mitigation Plan Update 2021 under the requirements of 44 CFR 201.6; and

WHEREAS, public and committee meetings were held between October 21, 2019, and June 1, 2020, regarding the development and review of the Hazard Mitigation Plan Update 2021 and

WHEREAS, the plan specifically addresses hazard mitigation strategies and plan maintenance procedures for the Town of Wentworth; and

WHEREAS, the plan recommends several hazard mitigation actions that will provide mitigation for specific natural hazards that impact the Town of Wentworth 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 Wentworth 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 Wentworth;
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;

Wentworth, 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 a period of five (5) years from the date of this resolution;

4. An annual report on the progress of the plan's implementation elements shall be presented to the Select Board by the Emergency Management Director.

Adopted this day, the 13th **of** March, **2021**

Chairman of the Select Board

Signature

A D Sanborn

Print Name

Member of the Select Board

Signature

Jordan King

Print Name

Member of the Select Board

Signature

Omer C. Ahern, Jr.

Print Name

Emergency Management Director

Signature

Jeffrey Ames

Print Name

IN WITNESS WHEREOF, the undersigned has affixed his/her signature and the corporate seal of the Town of Wentworth on this day, 3/13, 2021

Deborah L. VLK

Notary

DEBORAH L. VLK
Notary Public, State of New Hampshire
My Commission Expires September 7, 2021

Sept 7, 2021

Expiration

March 13, 2021

Date

Signatures are scanned facsimiles; original signatures are on file

D. Formal Approval Letter FEMA

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Signatures are scanned facsimiles; original signatures are on file

E. CWPP Approval Letter from DNCR

Wentworth, NH
A Resolution Approving the
Wentworth Hazard Mitigation Plan Update 2021
As a Community Wildfire Protection Plan

Several public meetings and committee meetings were held between October 21, 2019 and June 1, 2020 regarding the development and review of the Wentworth Hazard Mitigation Plan Update 2021. The Wentworth Hazard Mitigation Plan Update 2021 contains potential future projects to mitigate hazard and wildfire damage in the Town of Wentworth.

The Fire Chief/Emergency Management Director and the Select Board desire that this plan and 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 Wentworth Hazard Mitigation Plan Update 2021 and understand that with approval by DNCR, this plan will also serve as a Community Wildfire Protection Plan.

For the Town of Wentworth

APPROVED and SIGNED this day, 13 March, 2021.

A D Schuller
Chairman of the Select Board

Arnold D Schuller
Printed Name

Jeffry W Ames
Fire Chief

Jeffry Ames
Printed Name

Jeffry Ames
Emergency Management Director

Jeffry Ames
Printed Name

For the Department of Natural & Cultural Resources (DNCR)

APPROVED and SIGNED this day, _____, 2021.

_____
Forest Ranger – NH Division of Forest and Lands, DNCR

APPROVED and SIGNED this day, _____, 2021.

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

Signatures are scanned facsimiles; original signatures are on file

F. Annual Review or Post Hazard Concurrence Forms

YEAR ONE

CHECK ALL THAT APPLY

☐ Annual Review & Concurrence - **Year One**: _____ (Date)

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

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

The town's governing body and the town's designated Emergency Management Director shall execute this page annually after inviting the public to attend hearings that pertain to the annual or post-hazard review. This notice will be given by means such as press releases in local papers, posting meeting information on the town website and at the Town Office, sending letters to federal, state, and local organizations impacted by the plan or posting notices in public places in town.

Wentworth, 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 2021 Hazard Mitigation Plan Update

_____

_____

_____

_____

Please use the reverse side for additional notes ➡

Additional Notes – Year One:

YEAR TWO

CHECK ALL THAT APPLY

☐ Annual Review & Concurrence - **Year Two**: _____ (Date)

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

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

The town's governing body and the town's designated Emergency Management Director shall execute this page annually after inviting the public to attend hearings that pertain to the annual or post-hazard review. This notice will be given by means such as press releases in local papers, posting meeting information on the town website and at the Town Office, sending letters to federal, state, and local organizations impacted by the plan or posting notices in public places in town.

Wentworth, 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 2021 Hazard Mitigation Plan Update

_____

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_____

Please use the reverse side for additional notes ➡

Additional Notes – Year Two:

YEAR THREE

CHECK ALL THAT APPLY

☐ Annual Review & Concurrence - **Year Three**: _____ (Date)

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

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

The town's governing body and the town's designated Emergency Management Director shall execute this page annually after inviting the public to attend hearings that pertain to the annual or post-hazard review. This notice will be given by means such as press releases in local papers, posting meeting information on the town website and at the Town Office, sending letters to federal, state, and local organizations impacted by the plan or posting notices in public places in town.

Wentworth, 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 2021 Hazard Mitigation Plan Update

_____

_____

_____

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Please use the reverse side for additional notes ➡

Additional Notes – Year Three:

YEAR FOUR

CHECK ALL THAT APPLY

☐ Annual Review & Concurrence - **Year Four**: _____ (Date)

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

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

The town's governing body and the town's designated Emergency Management Director shall execute this page annually after inviting the public to attend hearings that pertain to the annual or post-hazard review. This notice will be given by means such as press releases in local papers, posting meeting information on the town website and at the Town Office, sending letters to federal, state, and local organizations impacted by the plan or posting notices in public places in town.

Wentworth, 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 2021 Hazard Mitigation Plan Update

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_____

Please use the reverse side for additional notes →

Additional Notes – Year One:

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**
    - Wentworth Hazard Mitigation Plan, 2015
    - Groton Hazard Mitigation Plan, 2020
    - Landaff Hazard Mitigation Plan, 2020
    - Lyme Hazard Mitigation Plan, 2017
- **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.nhdfl.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, March 2020; Community Response for Wentworth, Received, 6/14/18, Census 2000 and Revenue Information derived from this site;
    - *http://www.nhes.nh.gov/elmi/products/cp/profiles-htm/Wentworth.htm*

Photos

- Photos are taken by MAPS unless otherwise noted.

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 Office Strategic Initiatives; *http://www.nh.gov/osi/*
- 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

(HMA) grant programs provide funding for eligible mitigation activities that reduce disaster losses and protect life and property from future disaster damages. Currently, FEMA administers the following HMA grant programs[24]:

- Hazard Mitigation Grant Program (HMGP)
- Pre-Disaster Mitigation (PDM)
- Flood Mitigation Assistance (FMA)
- Repetitive Flood Claims (RFC)
- Severe Repetitive Loss (SRL)

FEMA's HMA grants are provided to eligible applicants (states/tribes/territories) that, in turn, provide sub-grants to local governments and communities. The applicant selects and prioritizes subapplications developed and submitted to them by subapplicants. These subapplications are submitted to FEMA for consideration of funding.

Prospective subapplicants should consult the office designated as their applicant for further information regarding specific program and application requirements. Contact information for the FEMA Regional Offices and State Hazard Mitigation Officers is available on the FEMA website, www.fema.gov.

HMA Grant Programs

The HMA grant programs provide funding opportunities for pre- and post-disaster mitigation. While the statutory origins of the programs differ, all share the common goal of reducing the risk of loss of life and property due to natural hazards. Brief descriptions of the HMA grant programs can be found below.

A. Hazard Mitigation Grant Program (HMGP)

HMGP assists in implementing long-term hazard mitigation measures following Major Disaster Declarations. Funding is available to implement projects in accordance with state, tribal and local priorities.

Table 3: Eligible Activities by Program

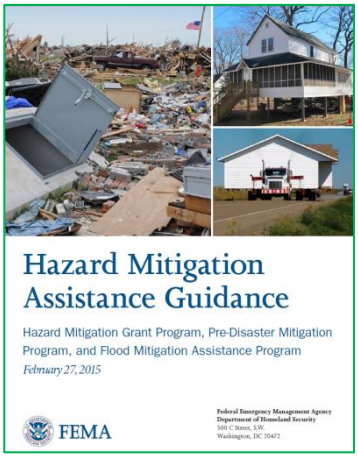
Eligible Activities	HMGP	PDM	FMA
1. Mitigation Projects	✓	✓	✓
Property Acquisition and Structure Demolition	✓	✓	✓
Property Acquisition and Structure Relocation	✓	✓	✓
Structure Elevation	✓	✓	✓
Mitigation Reconstruction	✓	✓	✓
Dry Floodproofing of Historic Residential Structures	✓	✓	✓
Dry Floodproofing of Non-residential Structures	✓	✓	✓
Generators	✓	✓	
Localized Flood Risk Reduction Projects	✓	✓	✓
Non-localized Flood Risk Reduction Projects	✓	✓	
Structural Retrofitting of Existing Buildings	✓	✓	✓
Non-structural Retrofitting of Existing Buildings and Facilities	✓	✓	✓
Safe Room Construction	✓	✓	
Wind Retrofit for One- and Two-Family Residences	✓	✓	
Infrastructure Retrofit	✓	✓	✓
Soil Stabilization	✓	✓	✓
Wildfire Mitigation	✓	✓	
Post-Disaster Code Enforcement	✓		
Advance Assistance	✓		
5 Percent Initiative Projects	✓		
Miscellaneous/Other[(1)]	✓	✓	✓
2. Hazard Mitigation Planning	✓	✓	✓
Planning Related Activities	✓		
3. Technical Assistance			✓
4. Management Cost	✓	✓	✓

[(1)] Miscellaneous/Other indicates that any proposed action will be evaluated on its own merit against program requirements. Eligible projects will be approved provided funding is available.

Eligibility Chart taken from Hazard Mitigation Assistance Guidance, February 27, 2015

[24] Information in Appendix B is taken from the following website and links to specific programs unless otherwise noted http://www.fema.gov/media-library-data/1424983165449-38f5dfc69c0bd4ea8a161e8bb7b79553/HMA_Guidance_022715_508.pdf

What is the Hazard Mitigation Grant Program?



The Hazard Mitigation Grant Program (HMGP) provides grants to states and local governments to implement long-term hazard mitigation measures after a major disaster declaration. Authorized under Section 404 of the Stafford Act and administered by FEMA, HMGP was created to reduce the loss of life and property due to natural disasters. The program enables mitigation measures to be implemented during the immediate recovery from a disaster.

Who is eligible to apply?

Hazard Mitigation Grant Program funding is only available to applicants that reside within a presidentially declared disaster area. Eligible applicants are

- State and local governments
- Indian tribes or other tribal organizations
- Certain non-profit organizations

Individual homeowners and businesses may not apply directly to the program; however, a community may apply on their behalf.

How are potential projects selected and identified?

The state's administrative plan governs how projects are selected for funding. However, proposed projects must meet certain minimum criteria. These criteria are designed to ensure that the most cost-effective and appropriate projects are selected for funding. Both the law and the regulations require that the projects are part of an overall mitigation strategy for the disaster area.

The state prioritizes and selects project applications developed and submitted by local jurisdictions. The state forwards applications consistent with state mitigation planning objectives to FEMA for eligibility review. Funding for this grant program is limited and states and local communities must make difficult decisions as to the most effective use of grant funds.

B. Pre-Disaster Mitigation (PDM)

PDM provides funds on an annual basis for hazard mitigation planning and the implementation of mitigation projects prior to a disaster. The goal of the PDM program is to reduce overall risk to the population and structures, while at the same time, also reducing reliance on federal funding from actual disaster declarations.

Program Overview

The Pre-Disaster Mitigation (PDM) program provides funds to states, territories, Indian tribal governments, communities and universities for hazard mitigation planning and the implementation of mitigation projects prior to a disaster event.

Funding these plans and projects reduces overall risks to the population and structures, while also reducing reliance on funding from actual disaster declarations. PDM grants are to be awarded on a competitive basis and without reference to state allocations, quotas, or other formula-based allocation of funds.

C. Flood Mitigation Assistance (FMA)

FMA provides funds on an annual basis so that measures can be taken to reduce or eliminate risk of flood damage to buildings insured under the National Flood Insurance Program.

Program Overview

The FMA program was created as part of the National Flood Insurance Reform Act (NFIRA) of 1994 (42 U.S.C. 4101) with the goal of reducing or eliminating claims under the National Flood Insurance Program (NFIP).

FEMA provides FMA funds to assist states and communities implement measures that reduce or eliminate the long-term risk of flood damage to buildings, manufactured homes and other structures insurable under the National Flood Insurance Program.

Types of FMA Grants

Three types of FMA grants are available to states and communities:

Planning Grants to prepare Flood Mitigation Plans. Only NFIP-participating communities with approved Flood Mitigation Plans can apply for FMA Project grants.

Project Grants to implement measures to reduce flood losses, such as elevation, acquisition, or relocation of NFIP-insured structures. States are encouraged to prioritize FMA funds for applications that include repetitive loss properties; these include structures with 2 or more losses each with a claim of at least $1,000 within any ten-year period since 1978.

Technical Assistance Grants for the state to help administer the FMA program and activities. Up to ten percent (10%) of project grants may be awarded to states for Technical Assistance Grants

D. Repetitive Flood Claims (RFC)

RFC provides funds on an annual basis to reduce the risk of flood damage to individual properties insured under the NFIP that have had one or more claim payments for flood damages. RFC provides up to 100% federal funding for projects in communities that meet the reduced capacity requirements.

Program Overview

The Repetitive Flood Claims (RFC) grant program was authorized by the Bunning-Bereuter-Blumenauer Flood Insurance Reform Act of 2004 (P.L. 108–264), which amended the National Flood Insurance Act (NFIA) of 1968 (42 U.S.C. 4001, et al).

Up to $10 million is available annually for FEMA to provide RFC funds to assist states and communities reduce flood damages to insured properties that have had one or more claims to the National Flood Insurance Program (NFIP).

Federal / Non-Federal Cost Share

FEMA may contribute up to 100 percent of the total amount approved under the RFC grant award to implement approved activities, if the applicant has demonstrated that the proposed activities cannot be funded under the Flood Mitigation Assistance (FMA) program.

E. Severe Repetitive Loss (SRL)

SRL provides funds on an annual basis to reduce the risk of flood damage to residential structures insured under the NFIP that are qualified as severe repetitive loss structures. SRL provides up to 90% federal funding for eligible projects.

Program Overview

The Severe Repetitive Loss (SRL) grant program was authorized by the Bunning-Bereuter-Blumenauer Flood Insurance Reform Act of 2004, which amended the National Flood Insurance Act of 1968 to provide funding to reduce or eliminate the long-term risk of flood damage to severe repetitive loss (SRL) structures insured under the National Flood Insurance Program (NFIP).

Definition

The definition of severe repetitive loss as applied to this program was established in section 1361A of the National Flood Insurance Act, as amended (NFIA), 42 U.S.C. 4102a. An SRL property is defined as a **residential property** that is covered under an NFIP flood insurance policy and:

(a) That has at least four NFIP claim payments (including building and contents) over $5,000 each and the cumulative amount of such claims payments exceeds $20,000; or

(b) For which at least two separate claims payments (building payments only) have been made with the cumulative amount of the building portion of such claims exceeding the market value of the building.

For both (a) and (b) above, at least two of the referenced claims must have occurred within any ten-year period and must be greater than 10 days apart.

Purpose

To reduce or eliminate claims under the NFIP through project activities that will result in the greatest savings to the National Flood Insurance Fund (NFIF).

Federal / Non-Federal cost share

75/25%; up to 90% federal cost-share funding for projects approved in states, territories and federally-recognized Indian tribes with FEMA-approved Standard or Enhanced Mitigation Plans or Indian tribal plans that include a strategy for mitigating existing and future SRL properties.

For further information all of these programs, please refer to the new FEMA Hazard Mitigation Assistance Guidance:

http://www.fema.gov/media-library-data/1424983165449-38f5dfc69c0bd4ea8a161e8bb7b79553/HMA_Guidance_022715_508.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

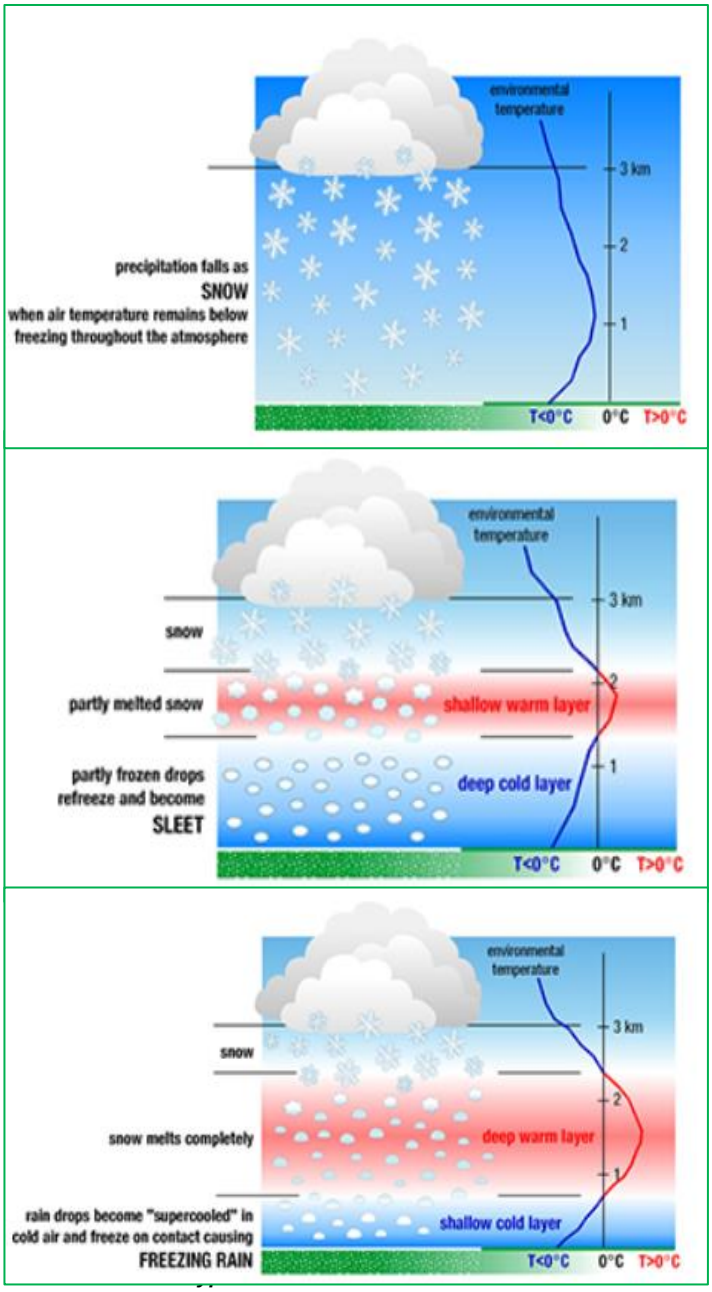
A winter storm can range from moderate snow to blizzard conditions. Blizzard conditions are considered blinding wind-driven snow over 35 mph that lasts several days. A severe winter storm deposits four or more inches of snow for 12 hours or six inches of snow for 24 hours.

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 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 accumulations of ice on roads, trees, utility lines and other objects resulting in what we think of as an “ice storm”. “Ice coating at least one-fourth inch in thickness is heavy enough to damage trees, overhead wires and similar objects.”[25]



NOAA – National Severe Storms Laboratory

[25] 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.[26]

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

ICE DAMAGE INDEX	* AVERAGE NWS ICE AMOUNT (in inches) *Revised-October, 2011	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	

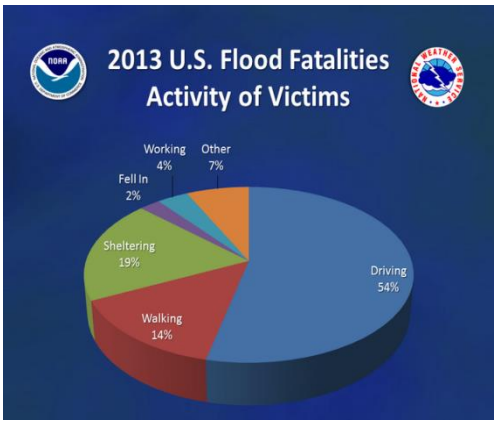
(Categories of damage are based upon combinations of precipitation totals, temperatures and wind speeds/directions.)

*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 increase in rainfall and snowmelt; however, floods can occur at any time. A sudden thaw in the winter or a major downpour in the summer can cause flooding because there is suddenly a lot of 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.



[26] The Weather Channel, http://www.weather.com/news/weather-winter/rating-ice-storms-damage-sperry-piltz-20131202

Flooding (Dam Failure)

Flooding as a result of dam failure can be small enough only to affect the immediate area of the dam or large enough to cause catastrophic results to cities, towns and human life below the dam. The amount of flooding depends mainly on the size of the dam and the amount of water that is being held by the dam. The size of the breach, the amount of water flow from the dam and the amount of human habitation that is downstream are also factors

A "Dam" means any artificial barrier, including appurtenant works, which impounds or diverts water, and which has a height of 4 feet or more, or a storage capacity of 2 acre-feet or more, or is located at the outlet of a great pond[27]. A dam failure occurs when water overtops the dam, or there structural failure, which causes a breach and an unintentional release of water. Dams are classified in the following manner[28]:

Classification	Description	Inspection Intervals
Non-Menace	A dam that is not a menace because it is in a location and of a size that failure or misoperation of the dam would not result in probable loss of life or loss to property. 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 6 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 6 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 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 2 acre-feet or more; or damage to an environmentally-sensitive site that does not meet the definition of reversible environmental losses.	Every 4 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 2 years

[27] NH DES http://des.nh.gov/organization/divisions/water/dwgb/wrpp/documents/primer_chapter11.pdf
[28] http://des.nh.gov/organization/commissioner/pip/factsheets/db/documents/db-15.pdf

Flooding (local, road erosion)

Heavy rain, rapid snowmelt and stream flooding often cause culverts to be overwhelmed and roads to wash out. Today, with changes in land use, aging roads, designs that are no longer effective and undersized culverts, the risk of flooding is a serious concern. Inadequate and aging stormwater drainage systems create local flooding on both 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. It is more accurate to use the phrase "1% annual chance flood". Flooding is often associated with hurricanes, heavy rains, ice jams and rapid snowmelt in the spring.

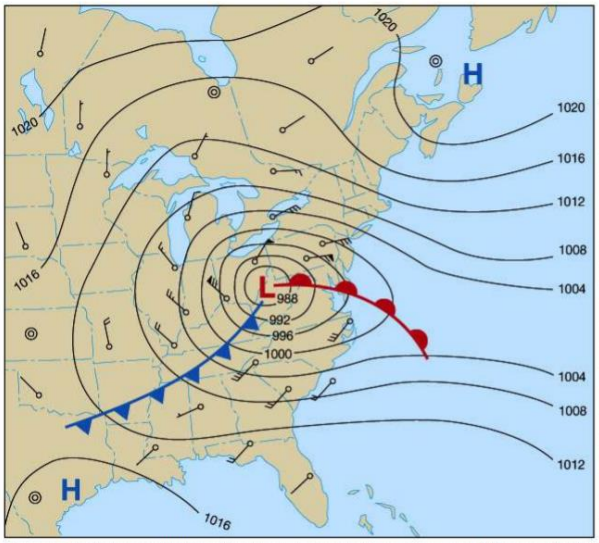
***HIGH WIND EVENTS**

Windstorm

As stated by NOAA (National Oceanic & Atmospheric Administration), 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 place 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 pressure and low-pressure areas 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.[29] [30]

Pressure Gradient Force, PGF

The Pressure Gradient Force (PGF) is the direct result of different air pressures. As we have done for temperature by drawing isothermal maps, we can do for pressure and draw isobaric maps. Lines on these maps connect points of equal pressure.



Pressure Gradient Force (PGF) resulting in winds generated between pressure differences. Solid lines are isobars - lines of constant pressure.

Figure 6.9 in *The Atmosphere, 8th edition*, Lutgens and Tarbuck, 8th edition, 2001.

[29] NOAA; *http://www.nws.noaa.gov/glossary/index.php?letter=w*

[30] 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. Tornadoes develop when cold air overrides a warm air layer, causing the warm air to rise rapidly. 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. Most tornadoes remain suspended in the atmosphere, but they 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. In comparison to a hurricane, a tornado covers a much smaller area 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 the introduction of the Fujita Scale in 1971. The new scale identifies 28 different free standing structures most affected by tornadoes taking into account 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."[31] 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 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 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 the maximum wind speed in excess of EF5 occur, the extent and types of damage may not be conceived. A number of missiles such as iceboxes, water heaters, storage tanks, automobiles, etc. will create serious secondary damage on structures.

[31] 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 downburst, the term "microburst" describes the size of the downburst. A comparison of 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 lasting 5 to 30 minutes. Damaging winds, causing widespread, tornado-like damage, could be as high as 134 MPH.[32]

Below is the Beaufort Wind Scale, showing expected damage based on wind (knots), developed in 1805 by Sir Francis Beaufort of England and posted on NOAA's Storm Prediction Center website.[33]

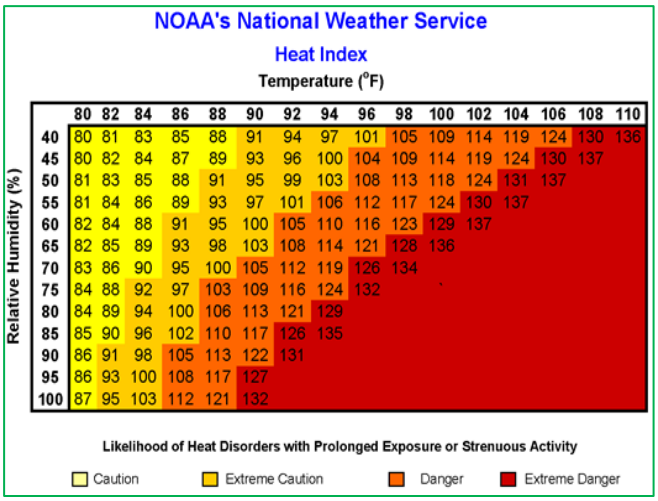
Force	Wind (Knots)	WMO Classification	The appearance of Wind Effects	
			On the Water	On Land
0	Less than 1	Calm	Sea surface smooth and mirror-like	Calm, smoke rises vertically
1	1-3	Light Air	Scaly ripples, no foam crests	Smoke drift indicates wind direction, still wind vanes
2	4-6	Light Breeze	Small 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 in leaf 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 wind
8	34-40	Gale	Moderately high (13-20 ft.) waves of greater length, edges of crests begin to break into spindrift, forum blown in streaks	Whole trees in motion, resistance felt walking against wind
9	41-47	Strong Gale	High waves (20 ft.), sea begins to roll, dense streaks of foam, 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 sea, visibility more reduced	
12	64+	Hurricane	Air-filled with foam, waves over 45 ft., sea completely white with driving spray, visibility greatly reduced	

[32] NOAA - http://www.srh.noaa.gov/jetstream/tstorms/wind.html
[33] 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.

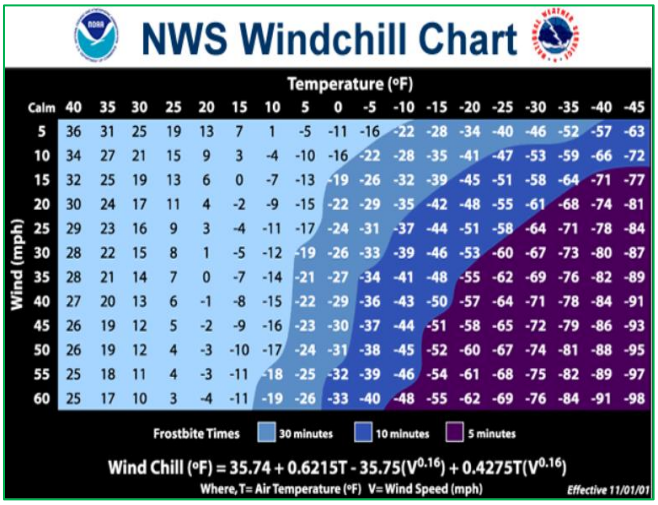


Most heat disorders occur because the victim has been overexposed to heat or has over-exercised for their age and physical condition. Older adults, young children and those who are sick or overweight are more likely to succumb to extreme heat.

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 the effects of a prolonged heatwave 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."[34] The chart above explains the likelihood of heat disorders that may result from high heat.[35]

Extreme Cold

What constitutes extreme cold and its effects can vary across different areas of the country. In regions relatively unaccustomed to winter weather, near-freezing temperatures are considered "extreme cold." Whenever temperatures drop decidedly below normal and as wind speed increases, heat can more rapidly leave your body; 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 or who are stranded, or who live in a home that is poorly insulated or without heat.[36] The National Weather Service Chart (to the right) shows windchill due to wind and temperature.[37]

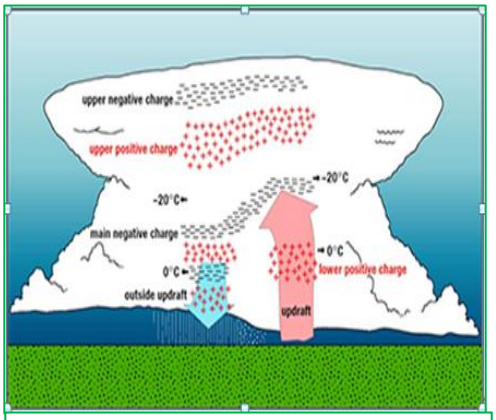


[34] NOAA, Index/Heat Disorders; http://www.srh.noaa.gov/ssd/html/heatwv.htm
[35] NOAA; http://www.nws.noaa.gov/os/heat/index.shtml
[36] CDC; http://www.bt.cdc.gov/disasters/winter/guide.asp f
[37] National Weather Service; http://www.nws.noaa.gov/om/windchill/

*LIGHTNING

Lightning

As stated by the NOAA National Severe Storms Laboratory (NSSL), "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."[38]



"A conceptual model shows the electrical charge distribution inside deep convention (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

Thunder, a result of lightning, is created when the "lightning channel heats the air to around 18,000 degrees Fahrenheit..."[39] thus causing the rapid expansion of the air and the sounds we hear as thunder. Although thunder that is heard during a storm cannot hurt you, the lightning associated with the thunder can strike people and strike homes, out-buildings, grass and trees, sparking disaster. Wildfires and structure loss are at high risk during severe lightning events.

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 and during the late afternoon or early evening hours; they may even occur during a winter snowstorm. Trees, tall buildings and mountains are often the targets of lightning 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 over the continental US, an average of 20,000,000 cloud-to-ground flashes occur every year. 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 is due to the presence, on many days during the year, of large 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."[40]

[38] NOAA National Severe Storms Laboratory, https://www.nssl.noaa.gov/education/svrwx101/lightning
[39] Ibid
[40] Ibid

Hailstorm

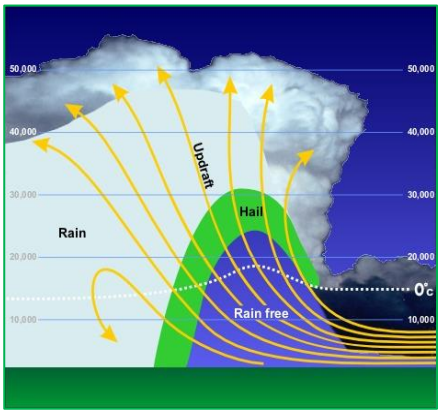
Lightning Activity Level (LAL) Grid		
The lightning activity level is a common parameter that is part of fire weather forecasts nationwide. LAL is a measure of the amount of lightning activity using values 1 to 6 where:		
LAL	**Cloud & Storm Development**	**Lightning Strikes 15 Minutes**
1	No thunderstorms	**-**
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.	

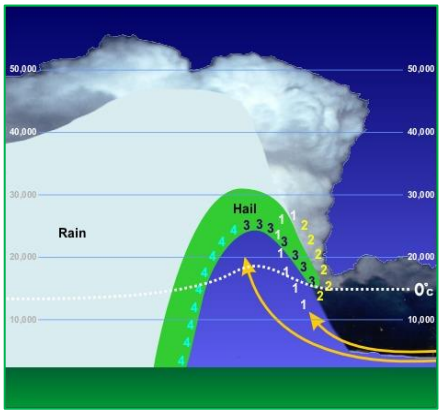
http://www.prh.noaa.gov/hnl/pages/LAL.php

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 balls of ice 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 includes. It weighed 1 lb. 15 oz."[41]

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

Details of how hailstones grow are 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.[42] The charts to the right show how hail is formed.[43]





[41] NOAA National Severe Storms Laboratory; https://www.nssl.noaa.gov/education/svrwx101/hail/
[42] http://www.pinterest.com/pin/126171227030590678/
[43] http://oceanservice.noaa.gov/education/yos/resource/JetStream/tstorms/hail.htm#hail

*WILDFIRES

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

As stated by the National Wildfire Coordinating Group (NWCG), wildfires are designated in seven categories as seen in the top chart to the right:[44] For statistical analysis, the US Forest Service recognizes the cause of fires according to the bottom chart to the right:[45]

According to the International Wildland-Urban Interface Code, the definition of wildfire is “an uncontrolled fire spreading through vegetative fuels exposing and possibly consuming structures”. Also, the IWUIC goes on to define the wildland urban interface area as “that geographical area where structures and other human development meets or intermingles with wildland or vegetative fuels.[46]

There are two main potential losses with a wildfire: the forest itself and the threat to the built-up human environment (the structures within the WUI). 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 speeds of 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 page[47]) 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.”[48]

Flooding is often caused by coastal storm surge 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 winds of less than 74 miles per hour, like hurricanes, they can do significant damage. The damage most felt by tropical storms is from the torrential rains they produce, which cause rivers and streams to flood and overflow their banks.

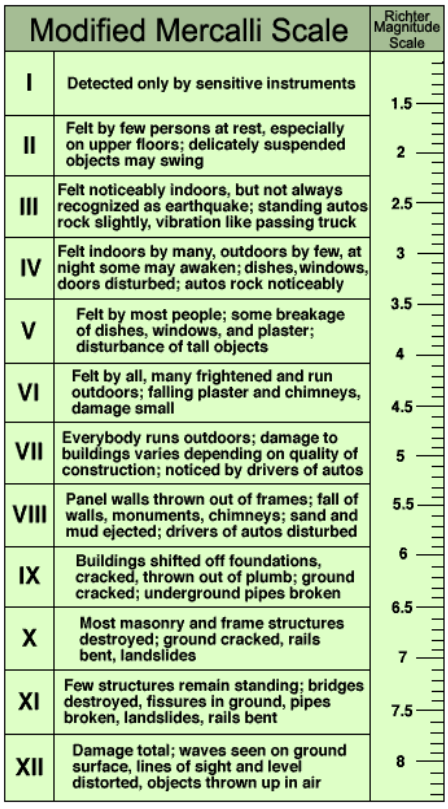
[44] http://www.nwcg.gov/pms/pubs/glossary/s.htm
[45] https://www.fs.fed.us/cgi-bin/Directives/get_dirs/fsh?5109.14
[46] International Wildland-Urban Interface Code, 2012, International Code Council, Inc.
[47] National Hurricane Center; http://www.nhc.noaa.gov/aboutsshws.php
[48] National Hurricane Center, NOAA; http://www.nhc.noaa.gov/aboutsshws.php

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.[49]

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 roof, shingles, and 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 major roof and siding damage. Many shallowly rooted trees will be snapped or uprooted and block numerous roads. Near-total power loss is expected with outages that could last from several days to weeks.
3 (major)	111-129 mph 96-112 kt. 178-208 km/h	**Devastating damage will occur:** Well-built frame homes may incur major damage or removal of roof decking and gable ends. Many trees will be snapped or uprooted, blocking numerous roads. Electricity and water will be unavailable for several days to weeks after the storm passes.
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 loss of most of the roof structure and/or some exterior walls. Most trees will be snapped or uprooted and power poles downed. Fallen trees and power poles will isolate residential areas. Power outages will last weeks to possibly months. Most of the area will be uninhabitable for weeks or months.
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. Larger 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. The underground point of origin of an earthquake is called its focus; the point on the surface directly above the focus is the epicenter. The use of two scales widely determines an earthquake's magnitude and intensity; 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.[50]

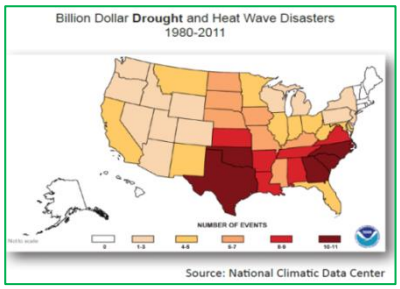


Four earthquakes occurred in New Hampshire between 1924-1989, having a magnitude of 4.2 or more. Two of these occurred in Ossipee, one west of Laconia and one near the Quebec border. It is well documented that fault lines run throughout New Hampshire, but high magnitude earthquakes have not been frequent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

[49] http://www.wpc.ncep.noaa.gov/research/mcs_web_test_test_files/Page1637.htm

[50] Modified Mercalli Scale/Richter Scale Chart; MO DNR, http://www.dnr.mo.gov/geology/geosrv/geores/richt_mercali_relation.htm

*DROUGHT



A drought is defined as a long period of abnormally low precipitation, especially one that adversely affects the growing season or the living conditions of plants and animals. Droughts are rare in New Hampshire. They generally are not as damaging and disruptive as 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 start was in Category D3 or Extreme Drought.

			Ranges				
Category	Description	Possible Impacts	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	Going into drought: ▪ short-term dryness slowing planting, growth of crops or pastures Coming out of drought: ▪ some lingering water deficits ▪ pastures or crops not fully recovered	-1.0 to -1.9	21 to 30	21 to 30	-0.5 to -0.7	21 to 30
D1	Moderate Drought	▪ 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	▪ 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	▪ 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	▪ 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 the loss of riverbanks, beaches, shorelines 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, it can destroy buildings and infrastructure.[51]

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 a multitude of measurements is required to determine the severity of the landslide event.[52]

*Infectious Diseases

Bacterial & Viral Infections

Many organisms live inside our bodies and on our skin. These organisms are generally harmless and sometimes may even be helpful; other times, they can cause illnesses. Infectious diseases can be transmitted from one person to another, by bites from animals or insects (zoonotic), from the environment or by consuming food or water that has been contaminated. Infectious diseases may be caused by bacteria, viruses, fungi and parasites.[53]

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.[54]
"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

[51] Mitigation Ideas, A Resource for Reducing Risk to Natural Hazards, FEMA, January 2013
[52] State of New Hampshire Multi-Hazard Mitigation Plan Update 2018 & https://oas.org/dsd/publications/Unit/oea66e/ch10.htm
[53] https://www.mayoclinic.org/diseases-conditions/infectious-diseases/symptoms-causes/syc-20351173
[54] https://www.dhhs.nh.gov/dphs/cdcs/index.htm

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."[55]

In early 2020, a novel coronavirus emerged in China, which then spread worldwide to become the worst pandemic since the 1918 Spanish Flu. Known as COVID-19, this novel coronavirus had infected 73,627,952 people and caused the deaths of 1,638,842 individuals worldwide as of December 16, 2020. Confirmed cases in the US as of this date was reported to be 1,638,842 with 303,872 deaths.[56] The majority of US residents had been advised to "stay-at-home" by State Governors during the early months of the virus and again during a significant increase in numbers in the fall. Businesses have been closed to "flatten" the rising curve of confirmed cases through mitigation. Stay-at-home orders were lifted in most states by the summer of 2020, but they are now back in place in the hardest-hit parts of the country. Mitigation efforts are being encouraged in all areas. COVID-19 is an evolving worldwide crisis, affecting millions of workers in the United States and abroad. The resulting economic impact of lost jobs and businesses will be felt worldwide for many months or even years. Although most people confirmed with COVID-19 eventually recover, the virus has significantly 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 follows[57]:

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 of 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

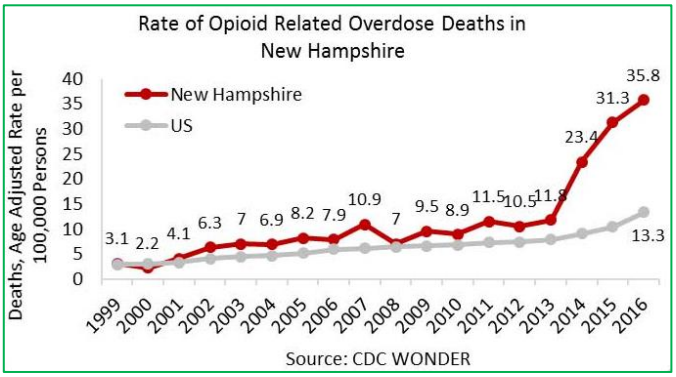
Opioid Crisis

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,*

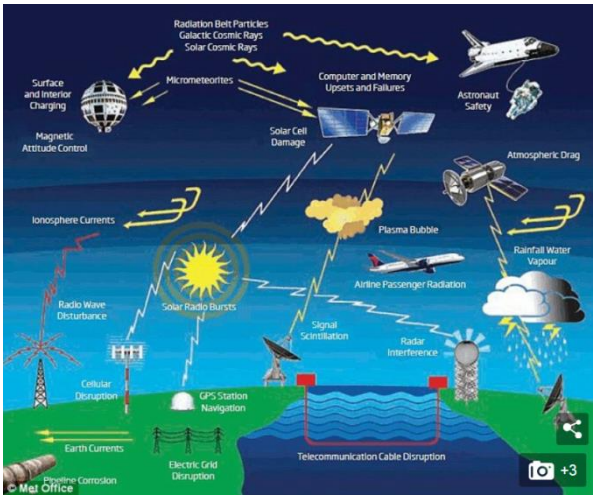
[55] https://www.webmd.com/a-to-z-guides/bacterial-and-viral-infections#1
[56] Johns Hopkins University, https://coronavirus.jhu.edu/map.html
[57] https://www.cdc.gov/ophss/csels/dsepd/ss1978/lesson1/section11.html

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."*[58] The chart to the right shows the increase in opioid-related overdose deaths in New Hampshire compared to those in the US overall.[59]



*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. At times, this magnetic energy 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 participles can produce a magnetic field that can disrupt navigation and communication systems and GPS satellites and potentially produce Geomagnetic Induced Currents (GICs). GICs can affect the power grid and pipelines. An electromagnetic surge from a solar storm has the potential to produce an Electromagnetic Pulse (EMP), which 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.[60]

[58] https://www.drugabuse.gov/drugs-abuse/opioids/opioid-summaries-by-state/new-hampshire-opioid-summary
[59] Ibid
[60] 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 Extent[61]

Geomagnetic Storms				
Scale	**Description**	**Effect**	**Physical Measure**	**Average Frequency (1 cycle = 11 years)**
G 5	Extreme	**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. **Spacecraft operations**: May experience extensive surface charging, problems with orientation, uplink/downlink and tracking satellites. **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.).	Kp = 9	4 per cycle (4 days per cycle)
G 4	Severe	**Power systems:** Possible widespread voltage control problems and some protective systems will mistakenly trip out key assets from the grid. **Spacecraft operations:** May experience surface charging and tracking problems, corrections may be needed for orientation problems. **Other systems:** Induced pipeline currents affect preventive measures, HF radio propagation sporadic, satellite navigation degraded for hours, low-frequency radio navigation disrupted, and aurora has been seen as low as Alabama and northern California (typically 45° geomagnetic lat.).	Kp = 8, including a 9-	100 per cycle (60 days per cycle)
G 3	Strong	**Power systems:** Voltage corrections may be required; false alarms triggered on some protection devices. **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. **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.).	Kp = 7	200 per cycle (130 days per cycle)
G 2	Moderate	**Power systems:** High-latitude power systems may experience voltage alarms; long-duration storms may cause transformer damage. **Spacecraft operations**: Corrective actions to orientation may be required by ground control; possible changes in drag affect orbit predictions. **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.).	Kp = 6	600 per cycle (360 days per cycle)
G 1	Minor	**Power systems:** Weak power grid fluctuations can occur. **Spacecraft operations:** Minor impact on satellite operations possible. **Other systems:** Migratory animals are affected at this and higher levels; aurora is commonly visible at high latitudes (northern Michigan and Maine).	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	**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.**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 possible.**Other systems:** Complete blackout of HF (high frequency) communications possible through the polar regions, and position errors make navigation operations extremely difficult.	10^{5}	Fewer than 1 per cycle
S 4	Severe	**Biological:** Unavoidable radiation hazard to astronauts on EVA; passengers and crew in high-flying aircraft at high latitudes may be exposed to radiation risk. **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. **Other systems:** Blackout of HF radio communications through the polar regions and increased navigation errors over several days are likely.	10^{4}	3 per cycle

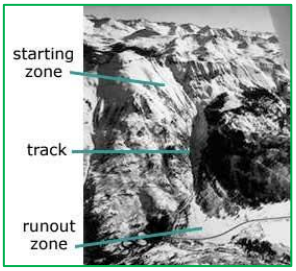
[61] Extent charts taken from https://www.weather.gov/akq/SpaceWeather

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

Radio Blackout				
Scale	**Description**	**Effect**	**Physical Measure**	**Average Frequency (1 cycle = 11 years)**
R 5	Extreme	**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. **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.	X20 (2×10^{-3})	Less than 1 per cycle
R 4	Severe	**HF Radio:** HF radio communication blackout on most of the sunlit side of Earth for one to two hours. HF radio contact lost during this time. **Navigation:** Outages of low-frequency navigation signals cause increased error in positioning for one to two hours. Minor disruptions of satellite navigation possible on the sunlit side of Earth.	X10 (10^{-3})	8 per cycle (8 days per cycle)
R 3	Strong	**HF Radio:** Wide area blackout of HF radio communication, loss of radio contact for about an hour on sunlit side of Earth. **Navigation:** Low-frequency navigation signals degraded for about an hour.	X1 (10^{-4})	175 per cycle (140 days per cycle)
R 2	Moderate	**HF Radio:** Limited blackout of HF radio communication on sunlit side, loss of radio contact for tens of minutes. **Navigation:** Degradation of low-frequency navigation signals for tens of minutes.	M5 (5×10^{-5})	350 per cycle (300 days per cycle)
R 1	Minor	**HF Radio:** Weak or minor degradation of HF radio communication on sunlit side, occasional loss of radio contact. **Navigation:** Low-frequency navigation signals degraded for brief intervals.	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 certain locations are naturally more dangerous than others. Wintertime, particularly from December to April, is when most avalanches tend to happen. However, avalanche fatalities have been recorded for every month of the year."[62]



"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 begin to fail. Skiers and recreationalists 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 not 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.

There are three main parts to an avalanche (see 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."[63]

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 runout zone is where the avalanche has come to a stop and left the largest and highest snow and debris pile.

"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. Some of these conditions, such as temperature and snowpack, can change on a daily or hourly basis."[64]

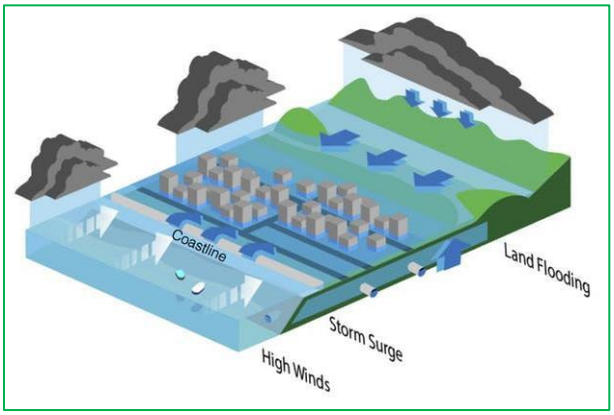
[62] Copyright Richard Armstrong, NSIDC, http://nsidc.org/cryosphere/snow/science/avalanches.html
[63] NSIDC, http://nsidc.org/cryosphere/snow/science/avalanches.html; image credit: Betsy Armstrong
[64] Copyright Richard Armstrong, NSIDC, http://nsidc.org/cryosphere/snow/science/avalanches.html

When the possibility of an avalanche is evident, an "avalanche advisory" is issued; this preliminary notification warns hikers, skiers, snowmobilers and responders that conditions may be favorable for developing avalanches. The chart above shows avalanche danger as determined by likelihood, size & distribution.[65]

COASTAL FLOODING

Coastal areas are particularly susceptible to hazards such as flooding, erosion, storm surge and sea-level rise as a result of tropical and post-tropical cyclones, heavy rain events and 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."*[66]

The severity of 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."*[67] As shown in the image below, not only storm surge but also inland flooding can affect the severity of flooding along the shore.[68]



[65] http://www.avalanche.org/danger_card.php
[66] NH Multi-hazard Mitigation Plan-2018, page 55
[67] Ibid
[68] 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-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 provide assistance to 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:** 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 & Snowstorm	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 is available to the State of New Hampshire 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.
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 and Snowstorm	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 and Snowstorm	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.

Number	Hazard	Date of Event	Counties	Description
DR-4139	Severe Storms, Flooding	July 9-10, 2013	Cheshire, Sullivan & Grafton	**Major Disaster Declaration DR-4139:** Severe storms, flooding, and landslides during the period of 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 property damage from the storm that spawned heavy rains, high winds, high tides and flooding over the period of 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 high winds, power outages and heavy rain to NH. It was declared in all ten counties in the State of 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; all ten counties in the State of 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 for 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.
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 pummeled the region, nearly $15 million in federal aid had been obligated by May 2009.
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 beginning 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, 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.

Number	Hazard	Date of Event	Counties	Description
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:** To date, state and federal disaster assistance has 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 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 makes Federal funding available to the state and all ten counties of the State of New Hampshire.
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)
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 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 a record and near-record snowfall that occurred on December 6-7, 2003

Number	Hazard	Date of Event	Counties	Description
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 that caused damage to public property occurring over the period of July 21 through August 18, 2003.
EM-3177	Snowstorm	February 17-18, 2003	Cheshire, Hillsborough, Merrimack, Rockingham & Strafford	**Emergency Declaration EM-3177:** Declaration covers jurisdictions with a 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:** Declaration covers jurisdictions with a 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 over the period of 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:**
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:**

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

APPENDIX F: POTENTIAL MITIGATION IDEAS[69]

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 Colds 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 of Retrofit Structures & Utilities
F16 .... Flood proof 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

[69] 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

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Ice Jam on South Branch Baker River
Photo Credit: MAPS

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