

# **Ashland**

## **Hazard Mitigation**

### **Plan**

### **Update 2019**



**This Plan integrates the following:**

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

**October 24, 2019**  
**Final Plan for Formal Approval**

---

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

**By**  
**The Ashland Planning Team**

**With assistance from Mapping and Planning Solutions**

**A**  
**S**  
**H**  
**L**  
**A**  
**N**  
**D**

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

*-Dwight D. Eisenhower*

#### HAZARD MITIGATION PLAN DEFINITIONS

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

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

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



**Plan Prepared and Authored By**

June E. Garneau, Owner/Planner  
Mapping and Planning Solutions  
105 Union Street, Suite 1  
Whitefield, NH 03598  
jgarneau@mappingandplanning.com

Cover Photo: Ashland Covered Bridge  
Photo Credit: <https://www.polimenorealty.com/>

## Table of Contents

<b>ACKNOWLEDGEMENTS .....</b>	<b>5</b>
<b>EXECUTIVE SUMMARY .....</b>	<b>7</b>
<b>CHAPTER 1: HAZARD MITIGATION PLANNING PROCESS.....</b>	<b>9</b>
A. AUTHORITY & FUNDING .....	9
B. PURPOSE & HISTORY OF THE FEMA MITIGATION PLANNING PROCESS .....	9
C. JURISDICTION.....	10
D. SCOPE OF THE PLAN & FEDERAL & STATE PARTICIPATION .....	10
E. PUBLIC & STAKEHOLDER INVOLVEMENT .....	11
F. INCORPORATION OF EXISTING PLANS, STUDIES, REPORTS AND TECHNICAL INFORMATION .....	14
G. HAZARD MITIGATION PLANNING PROCESS & METHODOLOGY .....	15
H. HAZARD MITIGATION BUILDING BLOCKS & TABLES.....	16
I. HAZARD MITIGATION GOALS .....	17
J. NARRATIVE DESCRIPTION OF THE PROCESS .....	18
<b>CHAPTER 2: COMMUNITY PROFILE.....</b>	<b>27</b>
A. INTRODUCTION .....	27
B. EMERGENCY SERVICES .....	28
C. ASHLAND’S CURRENT & FUTURE DEVELOPMENT TRENDS.....	29
Table 2.1: Town Statistics .....	30
<b>CHAPTER 3: HAZARD IDENTIFICATION .....</b>	<b>35</b>
A. DESCRIPTION OF THE HAZARDS .....	35
Table 3.1: Hazard Threat Analysis .....	36
B. RISK ASSESSMENT .....	37
C. ASHLAND NATIONAL FLOOD INSURANCE PROGRAM (NFIP) STATUS .....	37
D. PROFILE OF PAST, PRESENT & POTENTIAL WILDFIRE EVENTS IN ASHLAND .....	39
E. PROBABILITY OF FUTURE POTENTIAL DISASTERS .....	40
Table 3.2: Historic Hazard Identification.....	43
<b>CHAPTER 4: CRITICAL INFRASTRUCTURE &amp; KEY RESOURCES (CIKR) .....</b>	<b>53</b>
Table 4.1 – Emergency Response Facilities (ERF) & Evacuation .....	53
Table 4.2 – Non- Emergency Response Facilities (NERF) .....	55
Table 4.3 – Facilities & Populations to Protect (FPP) .....	55
Table 4.4 – Potential Resources (PR) .....	55
<b>CHAPTER 5: HAZARD EFFECTS IN ASHLAND.....</b>	<b>57</b>
A. IDENTIFYING VULNERABLE CRITICAL INFRASTRUCTURE & KEY RESOURCES (CIKR) .....	57
B. CALCULATING THE POTENTIAL LOSS .....	58
C. NATURAL HAZARDS .....	58
D. HUMAN-CAUSED HAZARDS .....	65

<b>CHAPTER 6: CURRENT POLICIES, PLANS &amp; MUTUAL AID.....</b>	<b>69</b>
<i>Table 6.1: Current Policies, Plans &amp; Mutual Aid.....</i>	<i>69</i>
<b>CHAPTER 7: PRIOR MITIGATION ACCOMPLISHMENTS.....</b>	<b>79</b>
A. DATE OF LAST PLAN.....	79
<i>Table 7.1: Accomplishments since the Last Plan.....</i>	<i>79</i>
<b>CHAPTER 8: NEW MITIGATION STRATEGIES &amp; STAPLEE .....</b>	<b>83</b>
A. MITIGATION STRATEGIES BY TYPE.....	83
B. POTENTIAL MITIGATION STRATEGIES BY HAZARD.....	84
C. STAPLEE METHODOLOGY.....	86
D. TEAM’S UNDERSTANDING OF HAZARD MITIGATION ACTION ITEMS.....	87
<i>Table 8.1: Potential Mitigation Action Items &amp; the STAPLEE.....</i>	<i>87</i>
<b>CHAPTER 9: IMPLEMENTATION SCHEDULE FOR PRIORITIZED ACTION ITEMS.....</b>	<b>95</b>
A. PRIORITY METHODOLOGY.....	95
B. WHO, WHEN, HOW? .....	96
<i>Table 9.1: The Mitigation Action Plan .....</i>	<i>96</i>
<b>CHAPTER 10: ADOPTING, MONITORING, EVALUATING AND UPDATING THE PLAN .....</b>	<b>107</b>
A. HAZARD MITIGATION PLAN MONITORING, EVALUATION AND UPDATES.....	107
B. INTEGRATION WITH OTHER PLANS .....	107
C. PLAN APPROVAL & ADOPTION (FUTURE) .....	108
<b>CHAPTER 11: SIGNED COMMUNITY DOCUMENTS AND APPROVAL LETTERS .....</b>	<b>109</b>
A. PLANNING SCOPE OF WORK & AGREEMENT.....	109
B. APPROVED PENDING ADOPTION (APA) LETTER & FROM HSEM .....	113
C. SIGNED CERTIFICATE OF ADOPTION.....	115
D. FINAL APPROVAL LETTER FROM FEMA .....	117
E. CWPP APPROVAL LETTER FROM DNCR .....	119
F. ANNUAL REVIEW OR POST HAZARD REVIEW FORMS.....	121
<b>CHAPTER 12: APPENDICES.....</b>	<b>129</b>
APPENDIX A: BIBLIOGRAPHY.....	131
APPENDIX B: TECHNICAL & FINANCIAL ASSISTANCE FOR HAZARD MITIGATION.....	133
APPENDIX C: THE EXTENT OF HAZARDS .....	137
APPENDIX D: NH PRESIDENTIAL DISASTER & EMERGENCY DECLARATIONS .....	153
APPENDIX E: POTENTIAL MITIGATION IDEAS.....	157
APPENDIX F: ACRONYMS .....	159
APPENDIX G: MAP DOCUMENTS.....	161
<i>Map 1 – Wildfire Base Risk Analysis .....</i>	<i>163</i>
<i>Map 2 – The Wildland Urban Interface .....</i>	<i>165</i>
<i>Map 3 – The FEMA Floodzone &amp; Conservation Lands.....</i>	<i>167</i>
<i>Map 4 – Critical Infrastructure &amp; Key Resources .....</i>	<i>169</i>

## Acknowledgements

This Plan integrates elements to qualify it as a Community Wildfire Protection Plan (CWPP) according to the US Forest Service and the Department of Natural & Cultural Resources (DNCR). The Plan was created through a grant from New Hampshire 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 (NH OSI)
- Mapping and Planning Solutions (MAPS)
- NH Forests & Lands (DNCR)

**This Plan is an update to the prior Ashland Hazard Mitigation Plan, approved in 2013.**

**Approval Notification Dates for 2019 Update**

Approved Pending Adoption (APA): ..... September 26, 2019  
 Jurisdiction Adoption: ..... October 21, 2019  
 CWPP Approval: ..... \_\_\_\_\_, 2019  
 Plan Approval Date (FEMA): ..... \_\_\_\_\_, 2019  
 Plan Distribution (MAPS): ..... \_\_\_\_\_, 2019

## Town of Ashland Hazard Mitigation Planning Team

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

- Kathleen DeWolfe ..... Ashland Board of Selectmen
- Mardean Badger ..... Ashland Planning Board
- Eli Badger ..... Ashland Water & Sewer
- Susan MacLeod ..... Ashland Planning Board
- Robert Bousquet ..... Ashland Asst. FC/DEMD
- Anthony Randall ..... Ashland Police Chief (former)
- Patricia Tucker ..... Ashland Town Clerk
- Russell Cross ..... Ashland Water & Sewer
- Charles Smith ..... Ashland Town Manager
- Steve Heath ..... Ashland Fire Chief/EMD
- Daniel Titus ..... Ashland Highway Foreman
- Craig Moore ..... Ashland Public Works Director
- Steve Foley ..... Ashland Electric Department
- Aaron Heath ..... Ashland Fire Department
- Paul Hatch ..... NH HSEM
- Kayla Henderson ..... NH HSEM
- Jennifer Gilbert ... NH OSI
- June Garneau ..... MAPS
- Olin Garneau ..... MAPS

Many thanks for all the hard work and effort given by each and every one of you. This Plan would not exist without your knowledge and experience. The Town of Ashland also thanks the Federal Emergency Management Agency and NH Homeland Security & Emergency Management as the primary funding sources for this Plan.

Acronyms associated with the above list:

EMD ..... Emergency Management Director  
 Asst. FC/DEMD ..... Assistant Fire Chief/Deputy Emergency Management Director

THIS PAGE INTENTIONALLY LEFT BLANK

## Executive Summary



The Ashland Hazard Mitigation Plan Update 2019 was compiled to assist the Town of Ashland in reducing and mitigating future losses from natural or human-caused hazardous events. The Plan was developed by participants of the Town of Ashland 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 2013 Ashland Hazard Mitigation Plan. In an effort to produce an accurate and current planning document, the Planning Team used the 2013 Plan as a foundation, building upon that Plan to provide more timely information.

**This Plan addresses the following natural hazards and human-caused hazards.**

### Natural Hazards

- |   |                            |
|---|----------------------------|
| 1) Severe Winter Weather & Ice Storm                                      | 7) Hailstorm               |
| 2) Extreme Temperatures (hot & cold)                                      | 8) Drought                 |
| 3) Flooding (dam flooding, local roads, heavy rain, riverine, beaver dam) | 9) Erosion (riverine)      |
| 4) Severe Thunder & Lightning Storms                                      | 10) Earthquake             |
| 5) Tornado & Downburst  | 11) Wildfire (1+ acre)     |
| 6) Hurricane & Tropical Storm   | 12) High Winds (windstorm) |

### Human-Caused Hazards

- |   |                                     |
|---|-------------------------------------|
| 1) Hazardous Materials – Transport      | 5) Epidemic & Pandemic              |
| 2) Conflagration                        | 6) Drinking Water Contamination     |
| 3) Hazardous Materials – Fixed Location | 7) Extended Power Failure (5+ days) |
| 4) Terrorism                            |                                     |

Some hazards that are listed in the 2013 NH Hazard Mitigation Plan were not included in this Plan as the Team felt they were extremely unlikely to occur in Ashland or not applicable. Additionally, some hazards that were listed in the State of NH Multi-Hazard Mitigation Plan, Update 2018 were also discussed and not included in this Plan. These hazards along with an explanation of why they are not included in this Plan can be seen in Chapter 3, Section E.



This Plan also provides a list of Critical Infrastructure and 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). In addition, this Plan addresses the Town's involvement in the National Flood Insurance Program (NFIP).

This hazard mitigation plan was designed to include a detailed study and analysis of wildfires. The original goal was to produce separate plans but that concept produced excessive overlap and cost. To streamline the process, the Community Wildfire Protection Plan (CWPP) was fully integrated into this hazard mitigation plan as were risks from human-caused hazards.

Mitigation action items are the main focus of this Plan. Some communities, when faced with an array of natural hazards, are able to adequately cope with the impact of these hazards. For example, although Severe Winter Weather is often a common hazard in New Hampshire and more often than not considered to be the most likely to occur, 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 this type of sudden storm 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 is at times difficult. In addition, with 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 Ashland Planning Team has considered a comprehensive list of mitigation action items that could diminish the impact of hazards but 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:

Ashland Hazard Mitigation Plan Update 2019 .....	the Plan or this Plan
Ashland .....	the Town or the Community
Hazard Mitigation Planning Team.....	the Team or HMPT
Hazard Mitigation Plan .....	HMP
Emergency Operations Plan .....	EOP
Community Wildfire Protection Plan .....	CWPP
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 F: Acronyms*

**Mission Statement:**

To make Ashland 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 community of Ashland 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 Ashland Hazard Mitigation Plan Update 2019 was prepared in accordance with 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 Ashland 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). This Plan was funded by HSEM 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 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".<sup>1</sup>*

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."<sup>2</sup>*

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 or human-caused events before they occur. HSEM outlined a process whereby communities throughout the state may be eligible for grants and other assistance upon completion of this hazard mitigation plan.

The Ashland Hazard Mitigation Plan Update 2019 is a planning tool to use to reduce future losses from natural 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 new emphasis on local mitigation planning. It requires local governments to prepare and adopt jurisdiction-wide hazard mitigation plans as a condition to receiving Hazard Mitigation Grant Program (HMGP) project grants. Local governments must review this Plan yearly and update this Plan every five years to continue program eligibility.

<sup>1</sup> Disaster Mitigation Act (DMA) of 2000, Section 101, b1 & b2

<sup>2</sup> Disaster Mitigation Act (DMA) of 2000, Section 322a

### C. Jurisdiction

This Plan addresses one jurisdiction – the Town of Ashland, NH.

### D. Scope of the Plan & Federal & State Participation

A community's hazard mitigation plan often identifies a vast number of 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 and 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 (HMP) and a Community Wildfire Protection Plan (CWPP), the planning effort included participation of Homeland Security & Emergency Management (HSEM), the US Forest Service (USFS), the Department of Natural & Cultural Resources (DNCR), the NH Office of Strategic Initiatives (OSI) as well as routine notification of upcoming meetings to the state and federal entities above. Designation as a CWPP will allow a community to gain access to federal funding for hazardous fuels reduction and other mitigation projects supported by the US Forest Service. 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 give consideration to 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.<sup>3</sup>*

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 and as part of vulnerability assessment, the Plan must address the NFIP insured structures that have been repetitively damaged due to floods.

<sup>3</sup> 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](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 they could to participate in the entire planning process, including not only residents but also officials and residents from surrounding communities. The Town of Ashland understands that natural hazards do not recognize political boundaries.

There is one school in Ashland; students in grades (K-8) attend the Ashland Elementary School and students in grades (9-12) are part of Pemi-Baker Regional School District with Campton, Holderness, Plymouth, Rumney, Thornton and Wentworth. Although notification was given to both SAU 2 (Ashland Elementary School) and SAU 48 (Plymouth Regional), no one from either district attended meetings.

The Team 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 Ashland. A Press Release (see below) was posted at the Town Hall, Transfer Station and on the Town's website along with additional public notice (see following page).

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

---

**Press Release**

---

**FOR IMMEDIATE RELEASE**  
Updated: August, 2018

Contact: June Gameau  
603-837-7122

**TOWN OF ASHLAND COMMENCES  
HAZARD MITIGATION PLANNING**

The Emergency Management Director of the Town of Ashland recently met with June Gameau, of Mapping and Planning Solutions and other Team members from Ashland, to begin work on the required five-year update to the 2013 **Ashland 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 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; Ashland citizens and any interested stakeholders are invited to participate. All interested parties should contact Chief Heath, the Ashland Fire Chief Emergency Management Director, at 359-1130 if they wish to be included in the process.

The next meeting is scheduled for **Thursday, September 6** from **9:00 AM to 11:00 AM** at the Ashland Fire Station. The general public is encouraged to attend all meetings, regardless of whether they are a part of the Planning Team.

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

## Hazard Mitigation Plan Development

WHEN: September 6, 2018 @ 9:00 am

Calendar

WHERE: Ashland Fire Station  
9 Main Street  
Ashland NH

TOWN GOVERNMENT MEETINGS

Town of Ashland

20 Highland Street,  
P.O. Box 517  
Ashland NH 03217

Voice: 603.968.4432  
Fax: 603.968.3776  
Email the Town Office

## Ashland 1868 to 2018 — Celebrating 150 Years of History

### News and Notices

**Hazard Mitigation Plan** — Press Release — Work is beginning on the required five-year update of the 2013 Ashland Hazard Mitigation Plan. The next meeting is *September 6, 9:00 am, at the Fire Station*. The general public is encouraged to attend all meetings, regardless of whether they are a part of the Planning Team.

### Upcoming Events

SEP 6 Thu	9:00 am Hazard Mitigation Plan Development @ Ashland Fire Station
SEP 11 Tue	7:00 pm Library Trustees @ Ashland Town Library
SEP 11 Tue	8:00 am State Primary Election @ Elementary School Gymnasium

## Calendar

Categories	« 2017	< AUG	SEPTEMBER 2018	OCT >	2019 »	Month
Sun	Mon	Tue	Wed	Thu	Fri	Sat
						1 Supervisors of Check
2	3 HOLIDAY — Labor Day	4 Board of Selectmen 6: Water & Sewer Comm	5 Water & Sewer Comm Planning Board 6:30 p	6 Hazard Mitigation Plan	7 Library Trustees 7:00	8

## Calendar

Categories	« 2017	< SEP	OCTOBER 2018	NOV >	2019 »	Month
Sun	Mon	Tue	Wed	Thu	Fri	Sat
	1 Board of Selectmen 6: Water & Sewer Comm	2 Water & Sewer Comm Planning Board 6:30 p	3	4	5	6
7	8 HOLIDAY — Columbus Day	9 Heritage Commission: Hazard Mitigation Plan Budget Committee 6:4	10 Water & Sewer Comm	11 Slavery and the Unde	12	13

Town of Ashland

20 Highland Street,  
P.O. Box 517  
Ashland NH 03217


Voice: 603.968.4432  
Fax: 603.968.3776  
Email the Town Office

Upcoming Events

## Calendar


Categories	« 2017	< SEP	OCTOBER 2018	NOV >	2019 »	Month
Sun	Mon	Tue	Wed	Thu	Fri	Sat
	1 Board of Selectmen 6: Water & Sewer Comm	2 Water & Sewer Comm Planning Board 6:30 p	3 Heritage Commission	4	5	6
7	8 COLUMBUS DAY	9 Heritage Commission: JLM Committee 9:30 a	10 The Art of Stone Paint Hazard Mitigation Plan	11 Slavery and the Unde	12	13
		10 Budget Committee 6:4	11 Water & Sewer Comm	12 Board of Selectmen 11		
			13 Electric Commission 6	14 Planning Board 6:30 p		

Lastly, the Planner sent a monthly calendar to NH EMD's, Police and Fire Chiefs, Rangers and other state, federal and private officials throughout the State, including stake-holders for the Town (example shown below).



### Upcoming Meetings

(Highlighted by "Counties" as of February 4, 2019)



Day	Date	Time	Town/Location	Plan Type	HSEM Field Rep	County
Tuesday	2/5/19	10:00 AM	Greenfield Fire Station	HMP	Liz Gilboy	Hillsboro
Tuesday	2/5/19	4:00 PM	Groton Town Offices	HMP	Paul Hatch	Grafton
Wednesday	2/6/19	1:00 PM	Woodstock Town Offices	HMP	Paul Hatch	Grafton
Tuesday	2/12/19	9:00 AM	Ashland Fire Station	HMP	Paul Hatch	Grafton
Tuesday	2/12/19	1:00 PM	Piermont Town Hall	EOP	Paul Hatch	Grafton
Wednesday	2/13/19	4:30 PM	Sandwich Town Offices	HMP	Heidi Lawton	Carroll
Tuesday	2/19/19	10:00 AM	Greenfield Fire Station	HMP	Liz Gilboy	Hillsboro
Tuesday	2/19/19	4:00 PM	Groton Town Offices	HMP	Paul Hatch	Grafton
Wednesday	2/20/19	6:30 PM	Randolph Town Offices	HMP	Heidi Lawton	Coos
Monday	2/25/19	1:00 PM	Jackson Town Offices	HMP	Heidi Lawton	Carroll
Monday	2/25/19	7:00 PM	Landaff Town Hall	HMP	Paul Hatch	Grafton
Tuesday	2/26/19	12:30 PM	Colebrook Fire Station	HMP	Heidi Lawton	Coos
Tuesday	2/26/19	3:30 PM	Pittsburg Police Station	HMP	Heidi Lawton	Coos

It was noted that Team composition is expected to be lower in smaller communities because of the small population base and the fact that many people "wear more than one hat". It is often very difficult to attract individual citizens to participate in town government and those that do generally hold full-time jobs and work as volunteers in a variety of town positions. With small populations, the percent of interested citizens in the rural towns' planning processes is extremely small. Due to the availability of jobs and other economic factors, the Town has a relatively high elderly population and a dwindling amount of young people with interest in politics.

Ashland however had very good attendance. The Town Manager, Emergency Response and the PWD Director and the PWD Road Foreman were represented at nearly every meeting. Members of the Selectboard and the Planning Board were also active participants in meetings. Comments made by all Team members were integrated into the narrative discussion and were incorporated into the essence of the document. No private citizens attended meetings; therefore no comments from the public were incorporated into the Plan.

§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 Ashland Hazard Mitigation Plan of 2013 for updates, development changes and accomplishments. In addition, as noted in the Bibliography and in footnotes located 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 Ashland Hazard Mitigation Plan of 2013 .....	Compare & Contrast
Ashland Annual Report (2018).....	Fire Report & Development
Other Hazard Mitigation Plans (Kingston, Tamworth, Monroe) .....	Formats & Mitigation Ideas
The Ashland Subdivision Regulations .....	Development Regulations
Ashland Floodplain Development Ordinance (Zoning) .....	Floodplain Regulations
Census 2010 Data .....	Population Data
The NH DRA Summary of Inventory of Valuation MS-1 2017 for Ashland .....	Structure Evaluation
The Economic & Labor Market Information Bureau Community Response .....	Population Trends
The American Community Survey (ACS 2012-2016) .....	Population Trends
NH Forest Forests & Lands (DNCR) .....	DNCR Fire Report
NH Office of Strategic Initiatives .....	Flood Losses
The NH Department of Revenue property tax valuation by property type .....	Property Information



Other technical manuals, federal and state laws as well as 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.



**Ashland Town Hall**  
Photo Credit: Wikipedia

## G. Hazard Mitigation Planning Process & Methodology

The planning process consisted of twelve specific steps; some steps were accomplished independently while other areas were interdependent. Many factors affected the ultimate sequence of the planning process 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 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 and Orientation, Goal Identification

Step 02: Formulate Hazards List, Hazards Description and Threat Matrix

*Table 3.1 – Hazard Threat Analysis*

Step 03: Profile, List and Map Historic and Potential Hazards, Wildfire, Natural and Human-Caused

*Table 3.2 – Historic and Potential Hazards*

Step 04: Profile, List and Map Critical Infrastructure and Key Resources

*Tables 4.1 to 4.4 – Critical Infrastructure & Key Resources*

Step 05: Assess Community's Participation in National Flood Insurance Program

*Chapter 3, Section C*

Step 06: Prepare an Introduction to the Community, discuss Emergency Service Capabilities, discuss Development Trends and review the Town Statistics

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

Step 07: List Existing Mitigation Strategies & Brainstorm to Identify Potential Mitigation Strategies

*Table 6.1 – Current Plans, Policies and Mutual Aid*

Step 08: Examine the Mitigation Strategies 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 Action Plan

*Table 9.1 – The Mitigation Action Plan*

Step 11: Team Review of Plan Contents for Submission to HSEM/FEMA

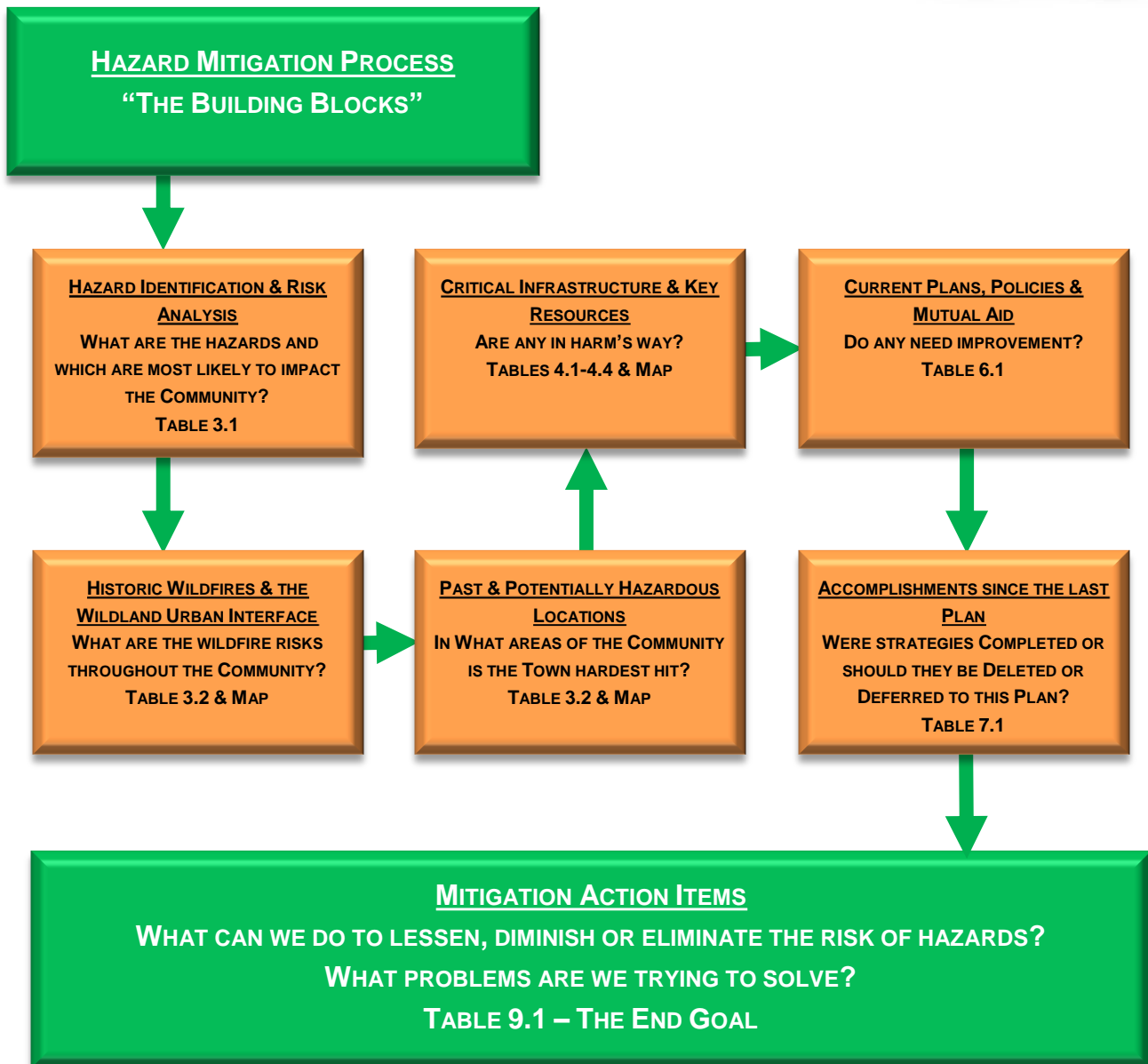
Step 12: Adopt and Monitor the Plan



## H. 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” lead to the final goal, the development of prioritized mitigation “action items” that when put into an action plan, would lessen or diminish the impact of natural hazards on the Town.



## ***I. Hazard Mitigation Goals***

Before identifying new mitigation actions, the Team established and adopted the following broad hazard mitigation goals. The goals that are in the 2013 State of New Hampshire Multi-Hazard Mitigation Plan were reviewed as were the goals that were in the 2013 Ashland Hazard Mitigation Plan. After discussing these goals, the current Ashland Hazard Mitigation Team agreed to the following goals for this Plan.

### **Community & Resource Protection**

- To improve upon the protection of the general population, the citizens of Ashland and visitors, from all natural and human-caused hazards.
- To reduce Ashland's potential exposure to risk with respect to natural and human-caused hazards.
- To minimize the damage and public expense which might be caused to public and private buildings and infrastructure due to natural and human-caused hazards.

### **Coordination & Communication**

- To improve the Town of Ashland's emergency preparedness and communication network and disaster response and recovery capability.
- To identify, introduce and implement improvements to establish and maintain a reliable communication system.
- To improve communication capabilities so that the citizens of Ashland can be notified in the most efficient manner possible.
- To ensure that regular communication occurs between various departments and with local, regional and state officials and to have up-to-date plans in place to address various emergency situations and ensure that those involved are aware of their responsibilities.

### **Outreach & Education**

- To build an awareness of public responsibility for hazard mitigation.
- To raise the awareness and acceptance of hazard mitigation opportunities through public education and outreach programs.
- To increase public awareness of the fire risk and the Town's potential liability with respect to wildfires.

### **Damage Prevention & Reduction**

- To reduce the potential impact of natural and human-caused disasters on the Town of Ashland's:
  - *Emergency Response Capability*
  - *Critical Infrastructure & Key Resources*
  - *Private property*
  - *Economy*
  - *Natural environment*
  - *Historic treasures and interests, as well as other tangible and intangible characteristics that add to the quality of life of the citizens and visitors to Ashland.*
- To identify, introduce and implement cost effective hazard mitigation measures to accomplish the Town's goals and objectives.
- To reduce the occurrence of road closures and road erosion due to localized flooding within the Town of Ashland.

## 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 an increased awareness of potential hazardous conditions in the Town.

The planning process included a complete review of the 2013 Ashland Hazard Mitigation Plan. Using the 2013 Plan as a base, each element of the old plan was examined and revised to reflect changes that had taken place in development and in the priorities of the Community. In addition, referring to the 2013 Plan, strategies from the past were reassessed and improved upon for the future.

The following narrative explains how the 2013 Ashland Hazard Mitigation Plan was used during each step of the planning process to make revisions that resulted in this Plan.

### Meeting 1, August 13, 2018

The first full meeting of the Ashland Hazard Mitigation Team was held on August 13, 2018. Meeting attendance included Kathleen DeWolfe (Board of Selectmen), Mardean Badger (Planning Board), Eli Badger (Water & Sewer Department), Susan MacLeod (Planning Board), Robert Bousquet (Deputy Fire Chief and Deputy Emergency Management Director), Anthony Randall (Police Chief-former), Patricia Tucker (Town Clerk), Russell Cross (Water & Sewer Department), Charles Smith (Town Manager), Steve Heath (Fire Chief and Emergency Management Director), Daniel Titus (Highway Department Foreman), Craig Moore (Public Works Director), Steve Foley (Electric Department Director), 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 to 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 with the exception of 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 Ashland with summer and winter homes; it was determined that there is approximately a 25% increase in population on both summer and winter weekend. Overall, the numbers from the 2010 Census and the American Community Survey (ACS, 2012-16) appeared to be fairly accurate. June also agreed to find the percent of conserved land based on GIS analysis.

#### HAZARDS MITIGATION POTENTIAL TEAM MEMBERS

##### FEDERAL

US Forest Service

##### STATE

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

##### LOCAL

Selectmen (Past/Present)  
Town Manager/Administrator  
Town Planner  
Police Chief  
Fire Chief  
Emergency Management  
Director  
Emergency Medical Services  
Fire Warden  
Health Services  
Education/School  
Recreation Directors  
Public Works Director  
Road Agent  
Water Management  
Public Utilities  
Waste Management  
Dam Operators  
Major Employers

##### 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 Threat Analysis*. After the hazards had been identified, the Team then assessed the risk severity and probability by ranking each hazard on a scale of 1-5 (5 being very high or catastrophic) based on the following:

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

The rankings were then calculated to reveal the hazards which pose the greatest risks to the Community; 12 natural hazards and seven human-caused hazards were identified. After analyzing these hazards using Table 3.1, Severe Winter Weather & Ice Storm, Extreme Temperatures (hot & cold) and Flooding (dam flooding, local roads, heavy rain, riverine and beaver dams) were designated as the primary natural concerns.

Having completed Table 3.1, the Team started working on descriptions of each hazard and how they could, or do impact the Town of Ashland specifically. In order to gain more knowledge of the impact of these hazards, June asked the Team to describe each hazard as it relates to Ashland. 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 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 steps can we take to eliminate the hazard or diminish its impact?

In addition to bringing more awareness to the hazards, these questions provided information to further analyze the impact of the hazards on the Community. June noted that these descriptions would be used in Chapter 5.

With time running out, the hazard descriptions were not completed and tabled for the next meeting. June thanked the Team for their work and assigned “homework” to Team members, including a request that the PWD Director prepare a list of road/culvert projects that would need to be completed within the next five years. June also asked the Team to think about Critical Infrastructure and Key Resources (CIKR) and past events that have affected the Town.

The next meeting was scheduled for Thursday, September 6, 2018.

#### Meeting 1 – August 13, 2018

##### 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
- e) Table 3.2, Historic Hazard Identification (time allowing)

##### 5) Homework

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

##### 6) Future Meetings

- a) \_\_\_\_\_

## Meeting 2, September 6, 2018

Meeting attendance included Kathleen DeWolfe, Mardean Badger, Eli Badger, Susan MacLeod, Robert Bousquet, Patricia Tucker, Charles Smith, Steve Heath, Daniel Titus, Craig Moore, 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* and *Table 3.1, Hazard Threat Analysis* to be certain the Team felt the statistics and hazards were accurate for the Town. Upon this review, the conservation numbers were questioned. The Team felt that the most recent GIS conservation data layer that was available from NH Granit did not encompass new conservation that had taken place in Ashland. Kathleen agreed to forward the Town's most recent conservation data to June for inclusion in Table 2.1. Also, although the order of "risk" for hazards did not change, it was determined that flooding as a result of "dam failure" was more "natural"; the decision was to keep dam failure in the flood category and eliminate it from the human-caused category.

### Meeting 2 – September 6, 2018

#### 1) Last Meeting

- a) Reviewed planning process, purpose, funding & collaboration.
- b) Reviewed of community involvement and stakeholders
- c) Worked on Table 2.1, Town Information
- d) Worked Table 3.1, Hazard Identification & Analysis
- e) Worked on Hazard Descriptions

#### 2) Today's Topics

- a) Review Table 3.1
- b) Finish Hazard Descriptions
- c) Work on Table 3.2, Historic Hazard Identification
- d) Work on Table 4.1-4.4, Critical Infrastructure & Key Resources
- e) Table 6.1, Current Plans, Policies & Mutual Aid (time allowing)
- f) 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) \_\_\_\_\_
- b) \_\_\_\_\_

Next, the Team helped June finish up the hazard descriptions, describing in detail what hazards had taken place in the Community since the prior plan. Possible mitigation action items for each hazard were also discussed. Information was provided on current development trends, noting that with the exception of the Leavitt Hill Development, development has been flat since the recession in 2008, with only a few single family and/or second homes being built. The Public Works Director indicated that there are approximately 20 miles of local roads; GIS revealed that 2.26 miles of these are gravel.

The Team then began work on *Table 3.2, Historic Hazard Identification*, a list of past and potentially hazardous locations and/or events. Prior to the meeting, June had integrated comments on hazards from the 2013 plan into Table 3.2. The Team examined the hazards from the prior plan along with the record of Presidential Disaster Declarations and Emergency Declarations that have taken place in recent years, a record that shows substantial increase over past decades. There was considerable discussion about the Squam River; this river meanders through downtown Ashland and in fact travels under a series of buildings on Mill Street. Overall however, it was felt that Ashland remains relatively safe during natural hazard events when compared to surrounding communities.

Next on the agenda were *Tables 4.1–4.4, Critical Infrastructure and Key Resources (CIKR)*. The Emergency Response Facilities, the Non-Emergency Response Facilities, the Facilities & Populations to Protect and the Potential Resources from the 2013 plan were examined as well as the evacuation routes, helicopter landing zones, dams and bridges. June agreed to map the bridges on the evacuation routes for the next meeting. With time running out, the Team decided to complete Tables 4.1-4.4 at the next meeting which was set for October 10, 2018. June reviewed what would take place at the next meeting and thanked the Team.

### Meeting 3, October 10, 2018

Meeting attendance included Kathleen DeWolfe, Mardean Badger, Susan MacLeod, Anthony Randall, Charles Smith, Steve Heath, Daniel Titus and June Garneau.

First on the agenda was a review of the last meeting, including a review of *Table 3.2, Historic Hazard Identification*. While reviewing this table, a few additional past hazard events were discussed.

While reviewing Table 3.2, June took the opportunity to explain the Wildland Urban Interface (WUI) and the Base Risk Analysis. Using GIS projection, June showed the Team *Map 1, Wildfire Base Risk Analysis*, and explained the process that was used to develop the map. June explained that slope, type of fuel (i.e., softwood or hardwood) and exposure (southwest being the most susceptible) were analyzed in GIS to determine where the high, medium and low risk areas of the Town were. It was obvious in *Map 1, Wildfire Base Risk Analysis* that there are many areas that are susceptible to wildfires; areas of note are the northwestern slopes of Hicks Hill and the sloping terrain to the southeast of Squam River.

Staying on the subject of wildfires, June discussed the Wildland Urban Interface (WUI) and projected a map of the WUI over the Ashland base layer and topography. The WUI was determined using GIS analysis to create a 300 foot buffer from the center line of all Class V roads and then an additional 1320 foot buffer from the first buffer (see *Map 2, 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 that is most prone to the risk of wildfires. Using GIS analysis and 1-foot aerial imagery (2015), June explained how she would determine the number of CIKR in the defined WUI. It should be noted that although the “WUI” was defined for the purpose of this Plan, many rangers and firefighters believe that towns with substantial wooded land, such as Ashland, are almost entirely within the Wildland Urban Interface.

Mitigation strategies were discussed to protect structures and to educate the Town’s citizens about the risk in the high risk and WUI areas. It was determined that the Town would acquire Firewise® materials to have available at the Town Offices, continue fire education at the local schools and continue the maintenance of fire hydrants throughout the Community to increase their effectiveness.

Next on the agenda was the completion of *Tables 4.1-4.4, Critical Infrastructure & Key Resources* that was started at the previous meeting. The Team added CIKR that were either new or had moved; the Team also removed CIKR that were no longer relevant to the Town.

Next, the Team then began working on *Table 6.1, Current Plans, Policies & Mutual Aid*; like other tables, this table was also pre-populated with information from the 2013 Plan. Looking closely at the existing policies from the last plan and current mechanisms that are in place, the Team was able to determine whether the existing policies were effective or in “Need of Improvement”. It was explained to the Team that those items that needed improvement

#### Meeting 3 – October 10, 2018

##### 1) Last Meeting

- a) Reviewed Table 3.1
- b) Finished Hazard Descriptions & mitigation possibilities
- c) Worked on Table 3.2, Historic Hazard Identification
- d) Discussed development trends & roads

##### 2) Today's Topics

- a) Work on Table 4.1-4.4, Critical Infrastructure & Key Resources
- b) Table 6.1, Current Plans, Policies & Mutual Aid
- c) 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) \_\_\_\_\_
- b) \_\_\_\_\_



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*.

For Table 6.1, the Team determined if each plan, policy or mutual aid system should be designated as “No Improvements Needed” or “Improvements Needed” based on the following “Key to Effectiveness”:

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

Table 6.1 was not quite finished by the end of the meeting. June adjourned the meeting and promised to write statements to support the concepts and ideas that were expressed for Table 6.1. The next meeting was scheduled for November 28, 2018.

**Meeting 4 – November 28, 2018**

Meeting attendance included Kathleen DeWolfe, Mardean Badger, Robert Bousquet, Charles Smith, Steve Heath, Aaron Heath (Firefighter), Olin Garneau and June Garneau.

June first completed Table 6.1 from the previous meeting with the Team and then walked the Team through a complete review of the table. Having translated her notes from the last meeting into paragraphs, June reviewed each item in the table to see if the concepts and ideas of the Team remained intact and to verify the accuracy of the information. Although several strategies from the last plan were determined to be emergency preparedness and not mitigation, the Team decided to keep them in the Plan as reminders to get these important action items completed.

*Table 7.1, Accomplishments since the Last Plan*, also pre-populated with data from the 2013 Plan, was the next agenda item. June lead 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. Many of the action items from the 2013 Plan had been completed by the Town; some were to be deleted as they were felt to be no longer useful or considered to be emergency preparedness, not mitigation; others were “deferred” for consideration as new “Action Items” for this Plan.

After the completion of Table 7.1, June did mapping with the Team to ensure she had the map coordinates in the correct location. Time was running out so June explained what would take place at the next meeting and provided the Team with handouts that listed a variety of potential mitigation action items. The next meeting was set for January 15, 2019.

**Meeting 4 – November 28, 2018**

**1) Last Meeting**

- a) Worked on Table 4.1-4.4, Critical Infrastructure & Key Resources
- b) Worked on Table 6.1, Current Plans, Policies & Mutual Aid
- c) Worked on Table 7.1, Accomplishments since the prior Plan (partial)

**2) Today's Topics**

- a) Complete mapping for Table 4.1
- b) Review Table 6.1, Current Plans, Policies & Mutual Aid
- c) Work on & review Table 7.1, Accomplishments since the prior Plan
- d) Discuss process for Tables 8.1 & 9.1 (handouts)

**3) Homework**

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

**4) Future Meetings**

- a) \_\_\_\_\_



## Meeting 5 – January 15, 2019

Meeting attendance included Kathleen DeWolfe, Mardean Badger, Susan MacLeod, Robert Bousquet, Charles Smith, Steve Heath, Daniel Titus, Craig Moore, Olin Garneau and June Garneau.

First June went through an overall 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 Threat Analysis*
- *Table 3.2 – Historic Hazard Identification*
- *Tables 4.1-4.4 – Critical Infrastructure & Key Resources*
- *Table 6.1 – Current Plans, Policies & Mutual Aid*
- *Table 7.1 – Accomplishments since the Last Plan*

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*.

In addition to the action items identified in Tables 6.1 and 7.1, the Team then reviewed additional potential action items. Using the handouts that had been provided by June at the last meeting, the Team reviewed a comprehensive list of mitigation strategies that was derived from several sources, including the FEMA document “Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards, January 2013” (see Chapter 8 and Appendix E).

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 purpose of the meeting, but that they would become separate tables in the final Plan.

**Link to explore:**

**FEMA Mitigation Ideas Book**

[https://www.fema.gov/media-library-data/20130726-1904-25045-0186/fema\\_mitigation\\_ideas\\_final508.pdf](https://www.fema.gov/media-library-data/20130726-1904-25045-0186/fema_mitigation_ideas_final508.pdf)



Having pre-populated Table 9.1 with the action items that had been deferred from Tables 6.1 and 7.1, the Team looked carefully at each “Action Item” to assign responsibility, the time frame for completion, the type of funding that would be required and the estimated cost of the action.

The estimated cost was determined using the following criteria:

- **Low Cost** ..... \$0 - \$1,000 or staff time only
- **Medium Cost** ..... \$1,000-\$10,000
- **High Cost** ..... \$10,000 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**..... 2-3 years (13-36 months)
- **Long Term:** ..... 4-5 years (37-60 months)

Work on this table included the STAPLEE process. Using the handouts provided by the Planner, the Team was able to go through the STAPLEE process for the action items that had been identified. It was explained that the STAPLEE process is a systematic method used to gauge the quality of each of the action items. The Social (S), Technical (T), Administrative (A), Political (P), Legal (L), Economic (E) and Environmental (E) impact for each action item would be discussed; this 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.

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, ultimately, the Team settled on 40 “Mitigation Action Items” that they felt were achievable and that would help to diminish the impact of natural hazards in the future.

The next meeting was set for February 12, 2019.

### Meeting 6 – February 12, 2019

Meeting attendance included Kathleen DeWolfe, Susan MacLeod, Robert Bousquet, Anthony Randell, Charles Smith, Steve Heath, Daniel Titus, Craig Moore, Steve Foley, Kayla Henderson (NH Homeland Security & Emergency Management), Paul Hatch (NH Homeland Security & Emergency Management), Olin Garneau and June Garneau.

Once all of the mitigation action items had been determined and the STAPLEE was completed for each from the previous meeting, the Team was now ready for the ranking & prioritizing of the action items that had been identified. June organized the action items roughly by ongoing, short term, medium term and long term and made a handout for the Team. Using this handout the Team was able to see all of the action items clearly and to determine the correct ranking and priority.

### Meeting 5 – January 15, 2019

#### **1) Last Meeting**

- a) Reviewed and completed....
  - i) Table 6.1, Current Plans, Policies & Mutual Aid
- b) Worked on....
  - i) Table 7.1, Accomplishments since the prior Plan
  - ii) Table 9.1, Mitigation Action Items (did not finish)
  - iii) STAPLEE
- c) Mapping

#### **2) Today's Topics**

- a) Finish....
  - i) Table 9.1, Mitigation Action Items (samples and culverts)
  - ii) Ranking & Priority
  - iii) Process going forward (if last meeting)

#### **3) Homework**

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

#### **4) Future Meetings**

- a) February 12, 2018 @ 9:00 AM

### Meeting 6 – February 12, 2019

#### **1) Last Meeting**

- a) Wrapped up loose ends on....
  - i) Table 7.1, Accomplishments since the prior Plan
- b) Continued work on....
  - i) Table 9.1, Mitigation Action Items
  - ii) STAPLEE

#### **2) Today's Topics**

- a) Work on....
  - i) Ranking & Priority
  - ii) Process going forward

#### **3) Homework**

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

#### **4) Future Meetings**

- a) \_\_\_\_\_

The “ranking” of the action items was done based on the time frame, the Town’s authority to get the strategy accomplished and the STAPLEE score. This enabled the action items to be placed in four categories as shown below and in Chapter 9, Section A.

- **Category 0** was to include those items which are being done and will continue to be done in the future.
- **Category 1** was to include those items under the direct control of town officials, within the financial capability of the Town using only town funding, those already being done or planned and those that could generally be completed within one year.
- **Category 2** was to include 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** was to include those items that would take a major funding effort, those that the Town had little control over the final decision and those that would take in excess of 37 months to complete.

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 (see explanation in Chapter 9). In this fashion, the Team was able to determine which action items were the most important within their rankings and in which order the action items would be accomplished.

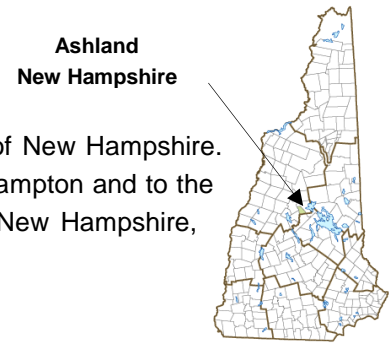
With Tables 8.1 and 9.1 completed, the Team’s work was complete, with the exception of the final review. June agreed to put the final “draft” plan together and email a copy for the Town’s review. June explained the process from this point forward and thanked the Team for their hard work. No additional meeting was scheduled.

THIS PAGE INTENTIONALLY LEFT BLANK

## Chapter 2: Community Profile

### A. Introduction

Ashland is a beautiful community located in Grafton County in the central part of New Hampshire. Ashland is bordered to the east and north by Holderness, to the south by New Hampton and to the west by Plymouth and Bridgewater. Located in the “Lakes” tourism region of New Hampshire, Ashland is surrounded by forest, rivers and beautiful lakes of New Hampshire.



### TOWN GOVERNMENT

A five-member Board of Selectmen governs the Town of Ashland. The Town’s departments include, but are not limited to Police, Fire, EMS, Highway, Planning, Zoning, Water, Sewer, Electric, Conservation and Budget. The largest employer is Freudenberg NOK.

### DEMOGRAPHICS & HOUSING

Over the last 30 years, the population of Ashland has increased; the population change from 1980 (1,807) to 2010 (2,076) showed an increase of 269 according to US Census 2010. This represents a growth rate of approximately 14.89%. Ashland’s population in 2016 was estimated to be 2,060, showing a small decrease in population.<sup>4</sup>

The American Community Survey (2012-2016) estimates a total of 1,445 housing units, most of which are single family (840). Multiple-family structures total 493 and mobile homes and other housing units number 112. The median household income is estimated to be \$44,000 and the median age is 37.8 years.<sup>5</sup> Census 2010 estimates that of the 375 vacant housing units, 267 are used for recreational, seasonal or occasional use thus confirming the presence of second home and seasonal residents.

### EDUCATION & CHILD CARE

Ashland students in grades K-8 attend Ashland Elementary School. Students in grades 9-12 attend school in the Pemi-Baker Regional School District with Campton, Holderness, Plymouth, Rumney, Thornton and Wentworth. There are no colleges, universities or childcare facilities in Ashland, but Plymouth State University is located in nearby Plymouth.

**Incorporated:** 1868

**Origin:** Once the southwest portion of Holderness known as the village section, Ashland was not incorporated until 1868. The name Ashland was in honor of the birthplace and Kentucky estate of Henry Clay, Secretary of State and Senator from Kentucky. The name was suggested by Colonel Thomas Cheney, who had been assistant Sargent-at-Arms in Congress during Clay’s service in Washington, and an active participant in the formation of the Republican Party in New Hampshire. The geographic center of New Hampshire is located three miles east of Ashland.

**Villages and Place Names:** unknown

**Population, Year of the First Census Taken:** 885 residents in 1870

**Population Trends:** Population change for Ashland totaled 587 over 56 years, from 1,473 in 1960 to 2,060 in 2016. The largest decennial percent change was a 13 percent increase between 1970 and 1980, the only decade that population increased over ten percent. The 2016 Census estimate for Ashland was 2,060 residents, which ranked 139th among New Hampshire’s incorporated cities and towns.

**Population Density and Land Area, 2016 (US Census Bureau):** 182.0 persons per square mile of land area. Ashland contains 11.3 square miles of land area and 0.5 square miles of inland water area.

*Source: Economic & Labor Market Information Bureau, NH Employment Security, March 2018; Received 6/13/17*

<sup>4</sup> Economic & Labor Market Information Bureau, NH Employment Security, March 2018. Community Response 6/13/17

<sup>5</sup> American Community Survey, 2012-2016; the Census Bureau

### **NATURAL FEATURES**

The Town of Ashland covers approximately 11.3 square miles of land area and 0.5 square miles of inland water. The Community is dominated by the mountains, hills and lakes of central New Hampshire. The highest peak is Hicks Hill at 1,386' above sea level. The lowest elevation in Town is 558' above sea level near the center of the Town.

Vegetation is typical of northern New England including both 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 Squam River, the Pemigewasset River and Little Squam Lake.

### **TRANSPORTATION**

There are three major roadways which run through Ashland; I-93, US Route 3 and NH Route 175. I-93 travels north-south along Ashland's western border from Holderness in the north to New Hampton in the South. US Route 3 travels from New Hampton in the south, through Ashland, veering north and traveling northeast into Holderness. NH Route 175 cuts off the north-east corner of Ashland, running to and from Holderness. Other smaller and less travelled roadways lend access to other areas of the Town. All roadways in Ashland are susceptible to hazards such as road flooding and high winds leading to downed trees in the roadways and potential hazardous materials spills.

## **B. Emergency Services**

### **EMERGENCY OPERATIONS CENTER & EMERGENCY MANAGEMENT DIRECTOR**

The Emergency Management Director (EMD) maintains an Emergency Operations Center (EOC) as part of the Town's emergency preparedness program. The EOC is where the EMD, department heads, government officials and volunteer agencies gather to coordinate their response to a major emergency or disaster event. In Ashland the designated EOC is the Fire Station.

### **ASHLAND FIRE DEPARTMENT & EMS**

The Ashland Fire Department is an on-call Fire Department providing quality fire services to the residents and visitors of Ashland 24 hours a day, 365 days a year. The department staffs a part-time Chief, 27 on-call firefighters and operates one station within the community. The Ashland Fire Department participates in Lakes Region Fire Mutual Aid and with area departments. Emergency Services is also handled by the Fire Department along with transportation by Plymouth Fire Department.

Ashland belongs to Central NH HazMat Team who has personnel trained in HazMat events.

### **ASHLAND POLICE DEPARTMENT**

The Police Department staffs a full-time Chief, 4 full-time and 4 part-time sworn officers. Ashland Police Officers are well-trained in the delivery of police services in an atmosphere of regional cooperation and have found value in working with other Town and regional agencies, sharing resources, training and experience to provide a superior quality of life for the residents and visitors of Ashland. The Ashland Police Department has mutual aid agreements with surrounding towns, Troop F and the Grafton County Sheriff's Department.

### ASHLAND PUBLIC WORKS DEPARTMENT (PWD)

The Ashland PWD operates on a year-round, 24-hour basis as needed. The Department staffs a full-time director, a Foreman, two full-time Laborers and a mechanic. The PWD's mission is to support the citizens of Ashland through the safe operation, proper maintenance and future development of highway, supporting infrastructure and utilities in a manner that is cost conscience without sacrificing quality. The Ashland PWD and the Water & Sewer Departments belong to NH Public Works Mutual Aid (NHPWMA).

### MEDICAL FACILITIES

Ashland's closest medical facility is Speare Memorial Hospital in Plymouth (7miles, 25 Beds).

### EMERGENCY SHELTER(S)

The primary shelter is the location to which evacuees are directed at the time of an emergency. In Ashland, the designated primary shelter is the Ashland Elementary School which offers a large sleeping area, bathrooms, and kitchen facilities. The school is equipped with an emergency generator "hookup" but does not have a permanent generator. The secondary shelter for the Town is Plymouth State University.

## C. Ashland's Current & Future Development Trends

Over the last 10 years development in Ashland has been consistent with development trends in the rest of New Hampshire. Nearly every community in New Hampshire has experienced a significant drop in new home construction since the mid-2000s. This trend is only now beginning to change in some communities.

Information provided by City-Data.com<sup>6</sup> (see right) shows this trend, however, unlike the state and the nation, building has not made a substantial comeback in recent years in Ashland. In fact, the Hazard Mitigation Planning Team indicated that although there have been a few new single family homes built since the prior hazard mitigation plan, there have been no major subdivisions and development has been "flat" since the recession of 2008.

The Planning Board Report in the 2018 Annual Report states *"In 2018, the Planning Board approved one site plan review, six waivers of full site plan review, and one home occupation."*<sup>7</sup> No large-scale development is anticipated in the near future. It was also noted that no development since the 2013 hazard mitigation plan has occurred in hazard prone areas and no development since 2013 has impacted the Town's hazard vulnerability.

#### Single-Family New House Construction Building Permits

- 1997: 3 buildings, average cost: \$148,300
- 1998: 10 buildings, average cost: \$141,300
- 1999: 10 buildings, average cost: \$214,100
- 2000: 11 buildings, average cost: \$244,100
- 2001: 12 buildings, average cost: \$244,100
- 2002: 25 buildings, average cost: \$37,100
- 2003: 18 buildings, average cost: \$233,300
- 2004: 17 buildings, average cost: \$215,700
- 2005: 22 buildings, average cost: \$310,700
- 2006: 20 buildings, average cost: \$357,100
- 2007: 7 buildings, average cost: \$311,400
- 2008: 9 buildings, average cost: \$463,700
- 2009: 4 buildings, average cost: \$537,500
- 2010: 7 buildings, average cost: \$403,400
- 2011: 3 buildings, average cost: \$386,700
- 2012: 3 buildings, average cost: \$293,300
- 2013: 8 buildings, average cost: \$383,600
- 2014: 4 buildings, average cost: \$329,700

<sup>6</sup> City-Data.com; <http://www.city-data.com/city/Ashland-New-Hampshire.html>

<sup>7</sup> Annual Financial Report, Ashland, NH, Year Ending December 31, 2018



The Ashland Planning Board and the Selectboard will monitor growth in Ashland using existing regulatory documents such as the Zoning Ordinance (Article 4.9, Flood Hazard Areas), the Subdivision Regulations and the Ashland Master Plan. Building Permits are required in Ashland and as a relatively small community, Planning Board and Selectboard members along with other town officials are generally aware of 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, but also understands the impact that hazards can have on new facilities and homes if built within hazardous areas of the Community. Town officials will continue to monitor any new growth and development, including new critical facilities, with regards to potentially hazardous events.

Town officials are acutely aware of the risks associated with potential hazards and hazardous areas. The Planning Board, the Selectboard, the Town Manager and the Public Works Department work together to ensure that new construction, development, new roads and new subdivisions make sense for the Community.

**TABLE 2.1: TOWN STATISTICS**

Table 2.1 - Town Statistics				
Census Population Data	2010	2000	1990	1980
Ashland, NH - Census Population Data	2,076	1,966	1,917	1,807
Grafton County	89,118	81,826	74,998	65,806
Estimated Population 2016 (*ACS 2012-2016)	2,060			
Elderly Population-% over 65 (*ACS 2012-2016)	19.6%			
Median Age (*ACS 2012-2016)	37.8			
Median Household Income (*ACS 2012-2016)	\$44,000			
Individuals below the poverty level (*ACS 2012-2016)	21.3%			
Change in Population - Winter %	25%			
Change in Population - Summer %	25%			
Housing Statistics (2010 Census)				
Total Housing Units	1,355			
Occupied Housing Units	980			
Owner Occupied Units	563			
Renter Occupied	417			
Vacant Housing Units	375 (267 for seasonal, recreational & occasional use)			
Assessed Structure Value (2017-MS1)*				
Structure Value Only	Value		1% Damage	5% Damage
Residential Buildings	\$122,105,300		\$6,105,265	\$6,105,265
Manufactured Housing	\$3,113,900		\$155,695	\$155,695

**Table 2.1 - Town Statistics**

<i>Commercial Buildings</i>	\$27,819,150	\$1,390,958	\$1,390,958
<i>Other Utilities</i>	\$0	\$0	\$0
<i>Tax Exempt Buildings</i>	\$22,219,600	\$1,110,980	\$1,110,980
<i>Utilities</i>	\$4,800,867	\$240,043	\$240,043
<b>Total</b>	<b>\$180,058,817</b>	<b>\$9,002,941</b>	<b>\$9,002,941</b>

*\*Chart above indicates the value of structures only and the likely loss value based on either a loss of 1% or 5% of structures.*

**Regional Coordination**

<i>County</i>	Grafton
<i>Tourism Region</i>	Lakes

**Municipal Services & Government**

<i>Town Manager</i>	Yes
<i>Board of Selectmen</i>	Yes; elected
<i>Planning Board</i>	Yes; appointed
<i>School Board</i>	Yes; elected
<i>Zoning Board of Adjustment</i>	Yes; appointed
<i>Conservation Commission</i>	Yes; appointed
<i>Master Plan</i>	Yes; 2014
<i>Emergency Operation Plan (EOP)</i>	Yes; 2016
<i>Hazard Mitigation Plan (HMP)</i>	Yes; 2013
<i>Zoning Ordinances</i>	Yes; 1985; updated in 2018
<i>Subdivisions Regulations</i>	Yes; 2014
<i>Capital Improvement Plan</i>	Yes
<i>Capital Reserve Funds</i>	Yes
<i>Building Permits Required</i>	Yes
<i>Town Web Site</i>	Yes; <a href="http://www.ashlandnh.org">www.ashlandnh.org</a>
<i>Floodplain Ordinance</i>	Yes; part of Zoning
<i>Member of NFIP</i>	2-Apr-86
<i>Flood Insurance Rate Maps (DFIRMS)</i>	20-Feb-08
<i>Flood Insurance Rate Study (FIS)</i>	20-Feb-08

**Percent of Local Assessed Valuation by Property Type (NH Department of Revenue-2016)**

<i>Residential Buildings</i>	80.8%
<i>Commercial Land &amp; Buildings</i>	17.0%
<i>Other</i>	2.2%

**Table 2.1 - Town Statistics**

<b>Emergency Services</b>	
<i>Town Emergency Warning System(s)</i>	CodeRED
<i>School Emergency Warning System(s)</i>	Honeywell Instant Alert
<i>Emergency Page</i>	No
<i>Facebook Page</i>	Police Department
<i>ListServ</i>	No
<i>Local Newspapers</i>	Record Enterprise (Meredith), Laconia Daily Sun
<i>Local TV Stations</i>	WMUR (9); PBTB Channel 3 (Plymouth)
<i>Local Radio</i>	WLNH 98.3 FM (Gilford), WPCR 91.7 FM (PSU), The Planet 100.1 FM (Franklin)
<i>Police Department</i>	Yes full-time; full-time Chief; 4 full-time sworn officers; 4 part-time sworn officers
<i>Police Dispatch</i>	Plymouth Dispatch
<i>Police Mutual Aid</i>	Surrounding towns & State Police
<i>Animal Control Officer</i>	Police Department
<i>Fire Department</i>	Yes On-Call; part-time Chief; 27 on-call
<i>Fire Dispatch</i>	Lakes Region Fire Mutual Aid
<i>Fire Mutual Aid</i>	Lakes Region Fire Mutual Aid
<i>Fire Stations</i>	One
<i>Fire Warden</i>	Yes
<i>Emergency Medical Services</i>	Yes; Fire Department
<i>EMS Dispatch</i>	Lakes Region Fire Mutual Aid
<i>Emergency Medical Transportation</i>	Plymouth Fire (primary) & Ashland Fire
<i>HazMat Team</i>	Central NH HazMat Team
<i>Established EMD</i>	Yes
<i>Established Deputy EMD</i>	Yes
<i>Public Health Network</i>	Central NH Regional Public Health Network
<i>Health Officer</i>	Yes
<i>Building Inspector</i>	Yes
<i>Established Public Information Officer (PIO)</i>	No
<i>Nearest Hospital(s)</i>	Speare Memorial Hospital, Plymouth (7 miles, 25 beds)
<i>Alternate Hospital</i>	Lakes Region General, Laconia (18 miles, 132 beds)
<i>Local Humane Society or Veterinarians</i>	Northern Lakes Veterinary Hospital; NH Humane Society
<i>Primary EOC</i>	Fire Station

**Table 2.1 - Town Statistics**

<i>Secondary EOC</i>	Main Office at Ashland Elementary School
<i>Primary Shelter</i>	Ashland Elementary School
<i>Secondary Shelter</i>	Plymouth State University
<b>Utilities</b>	
<i>Town Sewer</i>	Municipal 40% (downtown area primarily)
<i>Public Works</i>	Yes; full-time Director, 4 full-time, 4 part-time
<i>Public Works Mutual Aid</i>	Yes (Water & Sewer Department Only)
<i>Water Supply</i>	Ashland Water Department 40-50%
<i>Waste Water Treatment Plant</i>	Yes
<i>Electric Supplier</i>	Ashland Electric
<i>Natural Gas Supplier</i>	None
<i>Cellular Telephone Access</i>	Yes
<i>High Speed Internet</i>	Yes
<i>Telephone Company</i>	Consolidated Communications (formerly Fairpoint)
<b>Transportation</b>	
<i>Primary Evacuation Routes</i>	Interstate 93, US Route 3 & NH Routes 132 & 175
<i>Secondary Evacuation Routes</i>	Winona Rd., North Ashland Rd., Owl Brook Rd.
<i>Nearest Interstate</i>	I-93, Exit 24 (local access)
<i>Nearest Airstrip</i>	Plymouth Regional (2,380 ft. turf runway)
<i>Nearest Airstrip</i>	Laconia Municipal (5,286 ft. asphalt runway)
<i>Nearest Commercial Airport(s)</i>	Lebanon Municipal (52 miles)
	Manchester-Boston Regional (55 miles)
	Portland (ME) International (86 miles)
<i>Public Transportation</i>	No
<i>Railroad</i>	Hobo Railroad (State of NH)
<b>Education &amp; Childcare</b>	
<i>Elementary/Middle School (SAU 2)</i>	Ashland Elementary School (grades K-8)
<i>High School (SAU48)</i>	Grades 9-12 are part of Pemi-Baker Regional (Ashland, Campton, Holderness, Plymouth, Rumney, Thornton & Wentworth) attend Plymouth Regional
<i>Grafton County Fire Statistics 2017</i>	0 facilities, 0 capacity

**Table 2.1 - Town Statistics**

**Conserved Land as a Percent of Land in the Community (Provided by the Town)\*\***

	<b>Square Miles</b>	<b>Percent of Town Land</b>
<i>Approximate Square Miles in Community</i>	11.30	100.00%
<i>Approximate Non-Conserved</i>	7.71	68.23%
<i>Approximate Total Conserved Land</i>	3.59	31.77%
<i>Approximate Federal Owned Land</i>	0.00	0.00%
<i>Approximate State Owned Land</i>	0.54	4.78%
<i>Approximate Municipal/County Land</i>	.33	2.92%
<i>Approximate Private Land</i>	2.72	24.07%

**Fire Statistics (NH Forests & Lands Report & the Town of Ashland)**

<i>Wildfire Fire Calls 2017</i>	None over an acre for the past two years
<i>Grafton County Fire Statistics 2017</i>	3 fires; 51 acres
<i>State Forest Fires FY 2017</i>	64 fires; 107 acres

\*ACS: American Community Survey, US Census Bureau; a five year average of random long form surveys

\*\*2019 GIS Conservation Layers have been developed by UNH, Granit; Map #3 shows conserved land according to these layers which closely represent the information provided by the Town on conservation.

Information found in Table 2.1, unless otherwise noted, was derived from the Economic & Labor Market Information Bureau, NH Employment Security, March 2018. Community Response Received 6/01/2017; <http://www.nh.gov/nhes/elmi/htmlprofiles/pdfs/ashland.pdf> and from the Town of Ashland

## Chapter 3: Hazard Identification

### A. Description of the Hazards

The first step in hazard mitigation is to identify hazards. The Team determined that twelve natural hazards have potential to affect the Community. The hazards listed to the right and in Table 3.1 were classified based upon their relative threat score (as calculated in Column F in Table 3.1) and separated into three categories using Jenks' Optimization, which is also known as natural breaks classification. *"The natural breaks classification process is a method of manual data classification that seeks to partition data into classes based upon natural groups within the data distribution."*<sup>8</sup>

By using this grouping process, the Plan demonstrates each hazard's likelihood of occurrence in combination with its potential effect on the Town of Ashland. This process illustrates a comprehensive hazard statement and assists the Town with understanding which hazards should receive the most attention. Determination of the probability of occurrence is contained within Column D in Table 3.1; hazards are assessed based upon the likelihood of the hazard's manifestation within a 25 year period.

#### THE NATURAL HAZARDS

The natural hazards which are **MOST LIKELY** to affect Ashland include:

- Severe Winter Weather & Ice Storm
- Extreme Temperatures (hot & cold)
- Flooding (dam flooding, local roads, heavy rain, riverine beaver dams)

The natural hazards which **MAY AFFECT** Ashland include:

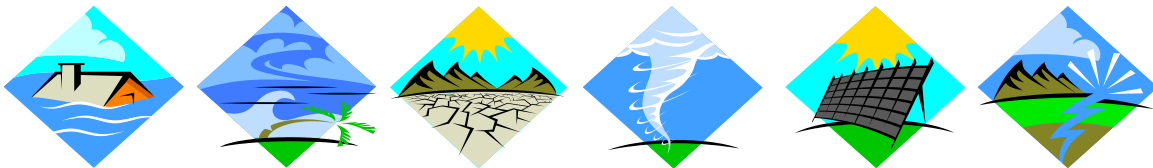
- Severe Thunder & Lightning Storms
- Tornado & Downburst
- Hurricane & Tropical Storm
- Hailstorm
- Drought

The natural hazards which are **LESS LIKELY TO AFFECT** Ashland include:

- Erosion (riverine)
- Earthquake
- Wildfire (1+ acre)
- High Winds (windstorm)

Table 3.1 provides estimates of the level of impact 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.

Based on this analysis, the most likely natural disaster threat to Ashland is Severe Winter Weather & Ice Storm. The second most likely threat is Extreme Temperatures (hot & cold) and the third is Flooding (dam flooding, local roads, heavy rain, riverine, beaver dams). Seven human-caused hazards were also discussed by the Team and are included in the Hazard Threat Analysis and in Chapter 5. Human-caused hazards include Hazardous Materials-Transport, Conflagration, Hazardous Materials-Fixed Location, Terrorism, Epidemic & Pandemic, Drinking Water Contamination and Extended Power Failure (5+ days).



<sup>8</sup> ESRI, <http://support.esri.com/en/knowledgebase/GISDictionary/term/natural%20breaks%20classification>

**TABLE 3.1: HAZARD THREAT ANALYSIS**

Table 3.1 - Hazard Threat Analysis						
Hazards which are most likely to affect the Community			A natural hazard is a source of harm or difficulty created by a meteorological, environmental or geological event.			
Hazards which may affect the Community						
Hazards which are less likely to affect the Community						
Scoring for Probability (Columns A, B, C & D)	Column A	Column B	Column C	Column D	Columns A+B+C/3	Columns D x E
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?	Probability of this occurring within 25 years	Average of Human, Property & Business Impact	Relative Threat
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) Severe Winter Weather & Ice Storm	2.0	4.0	4.0	4.0	3.3	13.3
2) Extreme Temperatures (hot & cold)	2.0	2.0	2.0	4.0	2.0	8.0
3) Flooding (dam flooding, local roads, heavy rain, riverine, beaver dams)	1.0	4.0	2.0	3.0	2.3	7.0
4) Severe Thunder & Lightning Storms	2.0	2.0	2.0	3.0	2.0	6.0
5) Tornado & Downburst	3.0	3.0	3.0	2.0	3.0	6.0
6) Hurricane & Tropical Storm	1.0	3.0	3.0	2.0	2.3	4.7
7) Hailstorm	1.0	2.0	1.0	3.0	1.3	4.0
8) Drought	1.0	2.0	1.0	3.0	1.3	4.0
9) Erosion (riverine)	1.0	2.0	1.0	2.0	1.3	2.7
10) Earthquake	1.0	3.0	3.0	1.0	2.3	2.3
11) Wildfire (1+ acres)	1.0	3.0	1.0	1.0	1.7	1.7
12) High Winds (windstorm)	1.0	2.0	1.0	1.0	1.3	1.3
Human-Caused Hazards						
1) Hazardous Materials - Transport	4.0	4.0	4.0	2.0	4.0	8.0
2) Conflagration	3.0	4.0	4.0	2.0	3.7	7.3
3) Hazardous Materials - Fixed Location	3.0	3.0	3.0	2.0	3.0	6.0
4) Terrorism	4.0	4.0	4.0	1.0	4.0	4.0
5) Epidemic & Pandemic	3.0	1.0	3.0	1.0	2.3	2.3
6) Drinking Water Contamination	2.0	1.0	3.0	1.0	2.0	2.0
7) Extended Power Failure (5+ days)	1.0	1.0	1.0	1.0	1.0	1.0



## B. Risk Assessment

The next step in hazard mitigation planning was to identify the location of past hazard events and if possible, what facilities or areas were impacted. The Team used *Table 3.1, Hazard Threat Analysis*, to identify potential threats and prioritize their threat potential. The Team then used a base map that included the 100-year floodplain, political boundaries, water bodies, the road network and aerial photos to locate many of the past hazard events on the base map. This step in the planning process serves as a stepping stone for predicting where future hazards could potentially occur. The Team identified past events in Ashland, Grafton County and the State and listed them in *Table 3.2, Historic Hazard Identification*.

To assess the fire base risk, a formula based on the following criteria was used:

- **Ignitability** – Using the 2001 NH Land Cover Assessment GIS Layer - A value between 0 and 9 was assigned based on ignitability to 23 land cover categories from open water to pitch pine forest.
- **Slope** - A value of 1-10 was assigned to various gradients of slope.
- **Aspect** - A value of 0-8 was assigned to various aspects from flat to southwest facing slopes.

These criteria were combined using a Geographic Information System (GIS) analysis and weighted equally to determine risk levels throughout the Town. Once the analysis and mapping was complete in GIS, a matrix was created showing varying risk levels: low, medium and high. Each risk level was assigned a color and was mapped over a base-map of the Town, see *Appendix G: Map Documents, Map 1: Wildfire Base Risk Analysis*.

## C. Ashland National Flood Insurance Program (NFIP) Status

Ashland has been a member of the National Flood Insurance Program since April 2, 1986. There are currently 20 NFIP policies in force for a total amount of \$2,363,700 of insurance; these policies include 15 “Single-family”, one “Other-Residential” and four “Non-Residential” properties. Overall, a total of five losses have been paid for \$118,743. According to the Office of Strategic Initiatives, Ashland has had three repetitive losses paid for a total of \$14,053 since 1978 for one single family home.<sup>9</sup>

Ashland has a relatively small floodplain with approximately 1.27 square miles of land in the 100-year floodplain<sup>10</sup>, .5 square miles of which is inland water. The floodplain areas of Ashland are primarily along the Pemigewasset and Squam Rivers and around Little Squam Lake. Although Ashland is likely to experience flooding on several roads and along most small rivers and streams, only the areas along the Pemigewasset and Squam Rivers are indicated in the most recent Digital Flood Insurance Rate Maps (FIRM). The latest Flood Insurance Rate Studies (FIRS) and DIFRMS are dated February 20, 2008. (See Appendix G, Map #3)



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/nfin-overview.isn>

<sup>9</sup> Jennifer Gilbert, NH Office of Strategic Initiatives; email dated August 23, 2018

<sup>10</sup> GIS Analysis of Grafton County DFIRM (Digital Flood Insurance Rate Map)

As part of the Ashland Zoning Ordinance, the Town has adopted Article 4, Section 4.9, Flood Hazard Areas.

Section 4.9 begins by stating *“This ordinance adopted pursuant to the authority of RSA 674:16 shall be known as the Town of Ashland Floodplain Development Ordinance. The regulations in this Ordinance shall overlay and supplement the regulations in the Town of Ashland Zoning Ordinance, and shall be considered part of the Zoning Ordinance for purposes of administration and appeals under state law...The following regulations in this ordinance shall apply to all lands designated as special flood hazards areas by the Federal Emergency management Agency (FEMA) in its Flood Insurance Rate Maps dated April 2, 1986, which are declared to be a part of this ordinance and are hereby incorporated by reference.”*<sup>11</sup>

**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>

The following sections are included in the Ashland Floodplain Development Ordinance. A brief summary of each section is provided below; items in quotes are taken directly from the Floodplain Development Ordinance.

**4.9.1:** Definition of Terms

**4.9.2:** *“All proposed development in any special flood hazard areas shall require a permit.”*

**4.9.3:** *“The Building Inspector Shall review all building permit applications for new construction or substantial improvements to determine whether proposed building sites will be reasonably safe from flooding...”* This section goes on to describe construction and design requirements to minimize flood damages.

**4.9.4:** Describes the procedures necessary regarding water and sewer systems to provide the Building Inspector *“...with assurance that these systems will be designed to minimize or eliminate infiltration of flood waters into the systems and discharges from system into flood waters, and on-site water disposal systems will be located to avoid impairment of them or contamination from the during period of flooding.”*

**4.9.5:** Details the necessary information that must be provided to the Building Inspector regarding the *“as-built elevation of the lowest floor”*, flood proofing and certification of flood proofing.

**4.9.6:** *“The Building Inspector shall not grant a building permit until the applicant certifies that all necessary permits have been received from those government agencies from which approval is required by federal or state law, including Section 404 of the Federal Water Pollution Control Act Amendments of 1972, 33 U.S.C. 1334.”*

**4.9.7:** Describes regulations for riverine situations including notification to the Wetlands Bureau **(A)**, that the applicant shall provide *“...certification by a registered professional engineer, assuring that the flood carrying capacity of an altered or relocated watercourse can and will be maintained.”* **(B)**; that the Building Inspector shall obtain floodway data to meeting the floodway requirement **(C)**; that encroachments are allowed only if any proposed encroachment *“...would not result in any increase in flood levels in the community during the base flood discharge.”* **(D)**; that *“...no new construction, substantial improvements, or other development...be permitted...unless it is demonstrated...that the cumulative effect of the proposed*

<sup>11</sup> Town of Ashland Zoning Ordinance, Article 4, Section 4.9

*development...will not increase the water surface elevation of the base flood more than one foot at any point within the community."*

- 4.9.8:** States that "...The Building Inspector shall determine the 100-year flood elevation...according to the data available..." including the Flood Insurance Study and FIRM and other available flood elevation data. **(A)**; discusses lowest floor elevation requirements, flood proofing below the 100-year flood elevation, resistance to hydrostatic and hydrodynamic loads and buoyancy and be "*certified by a registered professional ...that the design and methods of construction are in accordance with accepted standards of practice...*" **(B)**; discusses regulations for manufactured homes **(C)**; discusses regulations for recreational vehicles **(D)**; discusses regulations for "*...fully enclosed areas below the lowest floor that are subject to flooding...*" **(E)**.
- 4.9.9:** Discusses variance and appeals, including appeals to the Zoning Board of Adjustment **(A)**, proof by the applicant that there will be not "*extraordinary public expense...no increase in flood levels...that the variance is the minimum necessary, considering the flood hazards, to afford relief.*" **(B)**; notification to the applicant by the Zoning Board of Adjustment **(C)**; the maintenance of all records related to variance actions and the provision of records to FEMA's Federal Insurance Administrator. **(D)**

As a relatively small community, the Town Manager, Building Inspector, the Selectboard, the Planning Board and the Hazard Mitigation Planning Team are most always aware of new construction and/or substantial improvements that take place in town. Although Ashland has a relatively small designated Special Flood Hazard Area, the Team felt that it is worthwhile to post flood information on the Town's website and to add a link to the NFIP to provide public education for current homeowners and potential developers.

The Town of Ashland, through its Floodplain Development Ordinance and other best practices, complies with the National Flood Insurance Program requirements. The Team understands that the benefits of the NFIP also extend to structures that are not in the 100-year floodplain. The Town will continue to work with the Office of Strategic Initiatives and will carefully monitor its continued compliance with the NFIP.

#### ***D. Profile of Past, Present & Potential Wildfire Events in Ashland***

Historic fires can serve to help residents determine where future fires may occur, understand how the landscape and land use may have changed over time and assist with determining priorities for future mitigation strategies. No significant wildfires were identified since the prior hazard mitigation plan and there is no National Forest land in Ashland.

Due to the insignificant size of wildfires in Ashland, no wildfires were mapped; however CIKR that fall within the Wildland Urban Interface are clearly designated in *Map 2, The Wildland Urban Interface*, in this Plan. The Ashland Planning Team noted that many of the Community's residences are located in the Wildland Urban Interface (WUI). It was noted that if the right conditions were in place, a large wildfire could occur. Ashland's forested lands include many of the factors associated with potential wildfire including steep terrain, a significant softwood forest and large areas where clear cuts and blow downs have occurred.

## ***E. Probability of Future Potential Disasters***

Overall, the Town of Ashland is fairly safe from the effects of natural hazards. However, due to Ashland's geographic location, forested lands, steep hills, heavy snow pack and topography, there is always a possibility of future disasters in Ashland. The Town of Ashland has been impacted in the past by natural disasters, including flooding, lightning, severe winter storms and severe wind. Fortunately, many residents have generators and/or heat with wood stoves. The top three natural hazards that are most likely to occur in Ashland, based on analysis done in *Table 3.1, Hazard Threat Analysis*, are described below.

### **SEVERE WINTER WEATHER & ICE STORM**

Severe winter weather events, particularly ice storms, are felt to pose a great risk to the people of Ashland. Fortunately with a severe winter weather occurrence, so comes a vast knowledge of how to deal with the situation. In fact, even large single-storm accumulations of snow can generally be handled by the Town's Public Works Department.

Ice storms on the other hand pose a serious threat as they are unpredictable and can create a mass amount of damage and long-lasting power outages. Areas above 1,000 feet are more susceptible to severe ice storms. Elevations in Ashland range from approximately 515 feet to the summit of Hicks Hill with an elevation of 1,386' above sea level<sup>12</sup>, therefore ice storms have a moderate probability of occurring in Ashland.

The probability that severe winter weather and ice storms will occur in Ashland is good. See Chapter 5 for more information on severe winter weather and ice storms in Ashland.

### **EXTREME TEMPERATURE (HOT & COLD)**

The probability of extreme temperatures in Ashland is very high as winter temperatures often drop below zero degrees for extended periods of time and heat waves become more prevalent with climate change. In addition, people over 65 years of age make up approximately 19.6% of the population, a relatively high percent, but typical of central NH towns. Senior citizens are almost always at a higher risk for both heat and cold related hazards than the general community. There is also a relatively high poverty level in Ashland at 21.3%. Studies show that vulnerable populations, such as the elderly or poor, are more susceptible to extreme temperatures.

As a very small and tight-knit community, town officials and the residents of Ashland do an extraordinary job taking care of their own. The probability of the occurrence of extreme temperatures is high. See Chapter 5 for more information on extreme temperatures in Clarksville.

### **FLOODING (DAM FLOODING, LOCAL ROADS, HEAVY RAIN, RIVERINE, BEAVER DAMS)**

Road flooding, washouts and closures can be significant in Ashland. With increased intensity of storms and logging operations that have affected the rate of stormwater flow down steep terrain, it is expected that future road flooding will occur. As stormwater flows into ditches, debris that is picked up along the way often jams up culverts thus causing the stormwater to find other routes, going around culverts and across roads.

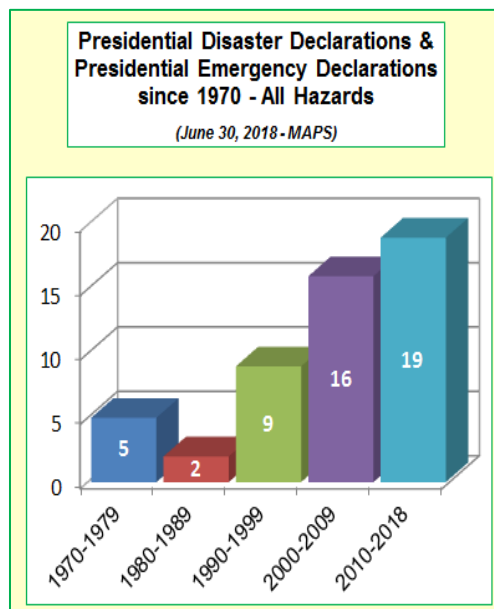
In addition to road flooding, other flooding issues also exist in Ashland including flooding from beaver dams, heavy rain, rapid snowmelt and riverine flooding. For more information on local road flooding, refer to Chapter 5.

<sup>12</sup> [https://en.wikipedia.org/wiki/Ashland,\\_New\\_Hampshire](https://en.wikipedia.org/wiki/Ashland,_New_Hampshire)

## CLIMATE CHANGE

Although not identified as a natural hazard in this Plan, no Plan can be considered complete today without some discussion of the impact that climate change has had 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<sup>13</sup>.

By including climate change in the new hazard mitigation guide for state planners, FEMA is recognizing the reality of climate change. Communities in New Hampshire, such as Ashland, should become increasingly aware of the effects of climate change on the natural hazards that are already being experienced. The chart to the right shows the increased frequency of Presidential Disaster Declarations and Presidential Emergency Declarations in the State of New Hampshire, which may be indicative of climate change.<sup>14</sup>



## STATE HAZARD MITIGATION PLAN

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

<u>State Hazard</u>	<u>Year of Plan</u>	<u>Reason for exclusion from Ashland's Plan</u>
Coastal Flooding	2013	Distance away from the sea
Radon	2013	Felt to be an individual homeowner's responsibility
Radiological	2013	Distance away from a nuclear power plant
Fire & Hazardous Materials	2013	Addressed with "Wildfire" and "Hazard Materials Transport & Fixed"
Snow Avalanche	2013	No known areas of avalanche that would impact people or structures

The determination of Ashland's hazards was made prior to the completion of the State's plan. Hazards from the State's new plan were briefly discussed. The following are not included in this Plan:

Solar Storms & Space Weather	2018	Felt to be not able to be mitigated by the Town
Landslide	2018	No known areas where landslides commonly occur
Aging Infrastructure	2018	Addressed through infrastructure discussion
Cyber Events	2018	Suggested that normal best practices were in place
Mass Casualty Incidents	2018	Addressed through Standard Operating Procedures and Guidelines for Fire, Police & EMS
Known & Emergency Contaminates	2018	Addressed through Drinking Water Contamination
Infectious Diseases	2018	Addressed as Epidemic & Pandemic

<sup>13</sup> State Mitigation Plan Review Guide, FEMA, Released March 2015, Effective March 2016, Section 3.2, page 13

<sup>14</sup> Derived from FEMA's record of disasters; categorized by decade since 1970 by the Planner



### HAZARD PROBABILITY COMBINED WITH POWER FAILURE

Any potential disaster in Ashland is particularly impactful if combined with power failure, 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. An outage during the winter months could result in frozen pipes and the lack of water and heat, a particular concern for the Town's vulnerable populations, including the elderly and the poor. In addition, winter in New England commonly brings very low temperatures, while high temperatures can be experienced in the summer.

### HAZARD PROBABILITY COMBINED TRANSPORTATION

Interstate 93 and US Route 3 serve as major north-south roadways for those travelling from southern NH to the communities in the north. NH Route 175 travels from Ashland into Holderness on the north and east sides of the Town. These three roadways carry a considerable amount of vehicular traffic and are major routes between communities.

Interstate 93 travels the entire length of Ashland running north-south from Holderness to New Hampton. I-93 is often the site of accidents as a result of poor driving conditions and wildlife collisions. I-93 is heavily travelled not only by trucks carrying hazardous materials but also by tourists who travel through Ashland on Friday and Sunday evenings going to and coming from major ski areas up north. For example, on Friday, January 2, 2015, a series of accidents occurred as a result of a sudden blinding snow squall involving over 50 cars. See Table 3.2 and Chapter 5 for more information.

Ashland's roads are often travelled by trucks and busses carrying goods and people from southern NH to other parts of the State. With the exception of I-93, many of Ashland's roads are narrow and winding and subject to severe winter weather. These roads are beautiful in the spring, fall and summer months, but 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 a possibility. A major ice storm or other significant event can make egress and access difficult for individuals and first responders.



*The Squam River as it meanders under buildings  
in Ashland  
Photo Credit: MAPS*

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



**TABLE 3.2: HISTORIC HAZARD IDENTIFICATION**

2013 HMPT = 2013 Hazard Mitigation Planning Team  
2019 HMPT = 2019 Hazard Mitigation Planning Team

DR Presidential Disaster Declarations (DR) since 1953  
EM Emergency Declarations (EM) since 1953

Table 3.2 includes the following sections:

- A. Flood Hazards
- B. Wildfire Hazards
- C. High Wind Hazards
- D. Winter Hazards
- E. Earthquake Hazards
- F. Drought Hazards
- G. Miscellaneous Hazards

Type of Event	Date of Event	Location	Description	Source
<b>A. Past Flooding Hazards including Riverine, Heavy Rainfall, Rapid Snowmelt, Ice Jam Flooding &amp; Local Road Flooding:</b> 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. Areas prone to flooding and road erosion were not mapped, however the FEMA Floodplain, which represents the most common areas of flooding, can be seen in <i>Map 3, The FEMA Floodzone &amp; Conserved Land</i> . Flood events have the potential to impact the Community on a town wide basis; no significant flooding events have taken place in Ashland since 2008, however, the Electric Department is seeking reimbursement for damage experienced in the October 2017 storm (DR-4355)				
<b>Summary of Presidential Disaster &amp; Emergency Flood Declarations in the State</b>				
<b>Flooding</b> Prior to 1970	1927, 1936, 1938, 1943 (2), 1953, 1955, 1959	State & Town Wide	Spring and fall flooding events resulting from severe storms and/or heavy snowmelt	See below
<b>Flooding</b> 1970-1979	1972 (DR-327), 1973 (DR-399), 1974 (DR-411), 1976, 1978 (DR-549), 1979 (EM-3073)			
<b>Flooding</b> 1980-1989	1986 (DR-771), 1987 (DR-789)			
<b>Flooding</b> 1990-1999	1990 (DR-876), 1991 (DR-923), 1991 (DR - 917); 1995, 1996 (DR-1077), 1996 (DR-1144), 1998 (DR-1231)			
<b>Flooding</b> 2000-2009	2003 (DR-1489), 2005 (DR-1610), 2006 (DR-1643), 2007 (DR-1695), 2008 (DR-1787), 2008 (DR-1799)			
<b>Flooding</b> 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)			

Type of Event	Date of Event	Location	Description	Source
<b>Detailed summary of Flood events in the Community</b>				
<b><u>Severe Storm</u></b> Heavy Rain & Flooding	July 11, 1973	Ashland	<b>Presidential Disaster Declaration DR-399:</b> Ashland experienced lake and river flooding; Squam River flooded, cutting access in some parts to and from some parts of the Community.	FEMA & 2019 HMPT
<b><u>Severe Storm</u></b> Heavy Rain & Flooding	January 21, 1974	Region	<b>Presidential Disaster Declaration DR-411:</b> This storm affected the neighboring town of Plymouth, but there was no significant impact in Ashland.	FEMA & 2019 HMPT
<b><u>Severe Storm</u></b> Heavy Rain & Flooding	October 7-18, 2005	Belknap, Cheshire, Grafton, Hillsborough, Merrimack & Sullivan	<b>Presidential Disaster Declaration DR-1610:</b> State and federal disaster assistance reached more than \$3 million to help residents and business owners in New Hampshire recover from losses resulting from the severe storms and flooding in October; there was no significant impact in Ashland.	FEMA & 2019 HMPT
<b><u>Severe Storm</u></b> Heavy Rain & Flooding	May 12-23, 2006	Belknap, Carroll, Grafton, Hillsborough, Merrimack, Rockingham & Strafford	<b>Presidential Disaster Declaration DR-1643:</b> Flooding in most of southern NH; May 12-23, 2006. (aka: Mother's Day Storm); there was no significant impact in Ashland.	FEMA & 2019 HMPT
<b><u>Severe Storm</u></b> Heavy Rain & Flooding	April 15-23, 2007	All Ten NH Counties	<b>Presidential Disaster Declaration DR-1695:</b> Flood damages; FEMA & SBA obligated more than \$27.9 million in disaster aid following the April nor'easter. (aka: Tax Day Storm); there was no significant impact in Ashland.	FEMA & 2019 HMPT
<b><u>Severe Storm</u></b> Heavy Rain, Flooding & Tornado	July 24-August 14, 2008	Belknap, Carroll & Grafton & Coos	<b>Presidential Disaster Declaration DR-1787:</b> Severe storms, tornado, and flooding on July 24, 2008; damages over \$3 million; on August 4, 2008 rain events caused substantial flooding and washouts in Ashland, New Hampton, Center Harbor, and Meredith; in addition to property damages, one young girl died in Ashland as a result of this storm; Ashland received FEMA funding for this storm.	FEMA & 2019 HMPT
<b><u>Severe Storm</u></b> Heavy Rain & Flooding	February 23 - March 3, 2010	Grafton, Hillsborough, Merrimack, Rockingham, Strafford & Sullivan	<b>Presidential Disaster Declaration: DR-1892:</b> Flood and wind damage to most southern NH including six counties; 330,000 homes without power; more than \$2 million obligated by June 2010; there was no significant impact in Ashland.	FEMA & 2019 HMPT
<b><u>Severe Storm</u></b> Heavy Rain & Flooding	May 26-30, 2011	Coos & Grafton County	<b>Presidential Disaster Declaration DR-4006:</b> May Flooding Event, May 26th-30th 2011 Coos & Grafton County. (aka: Memorial Day Weekend Storm); damages of \$1.8 million in state; there was no significant impact in Ashland.	FEMA & 2019 HMPT

Type of Event	Date of Event	Location	Description	Source
<u><b>Severe Storm</b></u> Flooding	July 9-10, 2013	Cheshire, Sullivan & Grafton	<b>Presidential Disaster Declaration DR-4139:</b> Severe storms, flooding, and landslides during the period of June 26 to July 3, 2013 in Cheshire, Sullivan and southern Grafton Counties; there was no significant impact in Ashland although Ashland Fire participated in the Alstead flooding during this period.	FEMA & 2019 HMPT
<u><b>Severe Storm</b></u> Heavy Rain & Flooding	July 1-2, 2017	Grafton & Coos	<b>Presidential Disaster Declaration DR-4329:</b> 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 & Coos Counties; there was no significant impact in Ashland although the Fire Department assisted with water rescues in both Plymouth & Campton.	FEMA & 2019 HMPT
<u><b>Severe Storm</b></u> Heavy Rain & Flooding	October 29-November 1, 2017	Sullivan, Grafton, Coos, Carroll, Belknap & Merrimack	<b>Presidential Disaster Declaration, DR-4355:</b> 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 the areas affected by severe storms and flooding from October 29-November 1, 2017 in five New Hampshire Counties; in Ashland trees and some power lines were down; Ashland Electric Department is in the process of seeking FEMA funding for this October storm.	FEMA & 2019 HMPT

**B. Past Wildfire Hazards:** New Hampshire is heavily forested and is therefore vulnerable to wildfire, particularly during periods of drought. The proximity of many populated areas to the State's forested land exposes these areas to the potential impact of wildfire. Wildfires were not mapped; however the Wildland Urban Interface can be seen in *Map 2, The Wildland Urban Interface*. Wildfires have the potential to impact Ashland on a town wide basis; no significant wildfire events have taken place in Ashland in recent history.

#### Wildfires

**Ashland has not experience any significant wildfires (1+ acre) since the prior hazard mitigation plan or in recent history.**

**C. Past High Wind Hazards including Hurricanes, Tropical Storms, 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 which form off the coast of Africa. New Hampshire's exposure to direct and indirect impacts from hurricanes is real, but modest, as compared to other states in New England. A hurricane that is downgraded to a Tropical Storm is more likely to have an impact in New Hampshire. These hazards were not mapped. Tornadoes and other wind events have the potential to impact the Community on a town wide basis; no significant high wind events have taken place in Ashland in recent history and although Tropical Storms Irene and Sandy brought rain to Ashland, there was no significant flooding and/or damage.

Type of Event	Date of Event	Location	Description	Source
<b>Summary of Presidential Disaster &amp; Emergency High Wind Declarations in the State</b>				
<b>Hurricanes</b>	1804; 1869; 1938, 1944, 1954 (2), 1960, 1976, 1978, 1985, 1991 ( <b>DR-917</b> ), 1999 ( <b>DR-1305</b> ), 2005 ( <b>EM-3258</b> ), 2011 ( <b>EM-3333 &amp; DR-4026</b> ), 2012 ( <b>EM-3360</b> )	State & Town Wide	Number 4 (1938), Number 7 (1944); Carol (1954), Edna (1954), Donna (1960), Belle (1976), Amelia (1978), Gloria (1985), Bob (1991), Floyd (1999), Katrina (2005), Irene (2011), Sandy (2012)	See below
<b>Detailed summary of High Wind events in the Community</b>				
<u><b>Hurricane</b></u> Great New England Hurricane	September 21, 1938	State Wide	<b>The Great New England Hurricane:</b> Statewide there were multiple deaths; damages in NH were about \$12.3 million dollars in 1938 dollars (about \$200 million now); in New England, 20,000 structures were damaged, 26,000 automobiles lost, 6,000 boats, 325,000 sugar maples were lost and 80% of the people lost power; the Ashland Team could not provide anecdotal information on this storm, but it was thought to have been significant. (Source: <a href="http://nhpr.org/post/75th-anniversary-new-englands-greatest-hurricane">http://nhpr.org/post/75th-anniversary-new-englands-greatest-hurricane</a> );	FEMA & 2019 HMPT
<u><b>Hurricane</b></u> Hurricanes Carol & Edna	August 31, 1954	State Wide	<b>Hurricanes Carol &amp; Edna:</b> Hurricane Carol resulted in an extensive amount of trees blown down and property damage; large crop loss; localized flooding; winds measured at over 100 mph; followed by Hurricane Edna just 12 days later, which caused already weakened trees to fall; the Ashland Team could not provide anecdotal information on this storm, but it was thought to have been significant. (Source: <a href="http://www.wmur.com/Timeline-History-Of-NH-Hurricanes/11861310">http://www.wmur.com/Timeline-History-Of-NH-Hurricanes/11861310</a> )	FEMA & 2019 HMPT
<u><b>Hurricane</b></u> Hurricane Bob	August 18-20, 1991	NA	<b>Presidential Disaster Declaration DR-917:</b> Hurricane Bob had no significant impact in Ashland.	FEMA & 2019 HMPT
<u><b>Tropical Storm</b></u> Tropical Storm Floyd	September 16-18, 1999	Belknap, Cheshire & Grafton	<b>Presidential Disaster Declaration DR-1305:</b> 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; Tropical Storm Floyd had no significant impact in Ashland.	FEMA & 2019 HMPT
<u><b>Hurricane</b></u> Hurricane Katrina (evacuation)	August 29-October 1, 2005	All Ten NH Counties	<b>Emergency Declaration EM-3258:</b> 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 10 counties of the State of New Hampshire; no pets or evacuees came to Ashland.	FEMA & 2019 HMPT

Type of Event	Date of Event	Location	Description	Source
<b><u>Tropical Storm</u></b> Tropical Storm Irene	August 26-September 6, 2011	<b>EM 3333:</b> All Ten NH Counties <b>DR-4026:</b> Carroll, Coos, Grafton, Merrimack, Belknap, Strafford, & Sullivan	<b>Presidential Disaster Declaration DR-4026 &amp; Emergency Declaration EM-3333:</b> Tropical Storm Irene Aug 26th- Sept 6, 2011 Carroll, Coos, Grafton, Merrimack, Belknap, Strafford, & Sullivan Counties; Emergency Declaration for all ten counties; Tropical Storm Irene caused the Pemigewasset River to crest at 21.7 feet in Plymouth, 8.7 feet above flood stage; Tropical Storm Irene had a minor impact in Ashland, primarily at the golf course.	FEMA 2019 HMPT
<b><u>Hurricane</u></b> Hurricane Sandy	October 26-November 8, 2012	Belknap, Carroll, Coos, Grafton, Rockingham & Sullivan	<b>Presidential Disaster Declaration DR-4095 &amp; Emergency Declaration EM-3360:</b> The declaration covers damage to property from the storm that spawned heavy rains, high winds, high tides and flooding over the period of October 26-November 8, 2012; Hurricane Sandy came ashore in NJ and brought high winds, power outages and heavy rain to all ten NH counties; Hurricane Sandy no significant impact in Ashland	FEMA 2019 HMPT
<b><u>High Wind Events</u></b>	The 2013 plan addressed high wind events in area towns (Plymouth, Grafton, Orange, Bridgewater & Franklin) and in the Southern Lakes Region in general. No specific high wind events that had taken place in Ashland were noted.			2013 HMPT

**D. Past Severe Winter Weather Hazards 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. These hazards were not mapped. Severe winter weather and ice storms have the potential to impact the Community on a town wide basis; no significant winter weather events have taken place in Ashland since the 2008 Ice Storm.

**Summary of Presidential Disaster & Emergency Severe Winter Storm Declarations in the State**

<b><u>Severe Winter Storms</u></b> Ice Storms	1942; 1969; 1970; 1979; 1991; 1998 ( <b>DR-1199</b> ); 2008 ( <b>DR-1812</b> )	State & Town Wide	Ice Storms: major disruptions to power; transportation; public and private utilities	FEMA
<b><u>Severe Winter Storms</u></b> Snowstorms	1920, 1929, 1940, 1950, 1952, 1958 (2), 1960, 1961, 1969, 1978, 1982, 1993 ( <b>EM-3101</b> ), 2001 ( <b>EM-3166</b> ), 2003 ( <b>EM-3177</b> ), 2003 ( <b>EM-3193</b> ), 2004, 2005 ( <b>EM-3207</b> ), 2005 ( <b>EM-3208</b> ), 2005 ( <b>EM-3211</b> ), 2008 ( <b>EM-3297</b> ), 2009, 2011 ( <b>EM-3344 &amp; DR-4049</b> ), 2013 ( <b>EM-1405</b> ), 2015 ( <b>DR-4209</b> ), 2017 ( <b>DR-4316</b> ), 2018 ( <b>DR-4371</b> )	State & Town Wide	Events marked by snowfalls exceeding 2' in parts of the State; disruptions to power and transportation	FEMA

Type of Event	Date of Event	Location	Description	Source
<b>Detailed summary of Severe Winter Storm events in the Community</b>				
<b><u>Severe Winter Storm</u></b> Snowstorm	Winter of 1968-69	Statewide	The winter of 1968-69 brought record amounts of snow to all of NH; Pinkham Notch at the base of Mount Washington recorded more than 75" of snowfall in a four day period at the end of February 1969 in addition to snow that had already fallen; all of NH experienced difficulty with snow removal because of the great depths that had fallen from December 1968 to April 1969; no significant recollection in Ashland other than heavy snow that was handled by the Public Works Department.	2019 HMPT
<b><u>Severe Winter Storm</u></b> High Winds, Tidal Surge, Coastal Flooding & Snow	February 16, 1978	Statewide	<b>Presidential Disaster Declaration DR-549:</b> Blizzard of '78; region-wide Blizzard severely affecting southern New England and leaving high accumulations throughout all of New England and New Hampshire; events accumulations to 28" in northeast New Hampshire, 25" in west central New Hampshire and 33" along coastal New Hampshire; hurricane-force winds and record-breaking snowfall made this storm one of the more intense to occur this century across parts of the northeastern United States; heavy snow fell in Ashland but it was handled by the Public Works Department.	FEMA & 2019 HMPT
<b><u>Severe Winter Storm</u></b> Ice Storm	January 7-25, 1998	Statewide	<b>Presidential Disaster Declaration DR-1199:</b> A significant ice storm struck nearly every part of the State, particularly in northern communities and in areas over 1,000 feet above sea level; heavy snow fell in Ashland but it was handled by the Public Works Department.	FEMA & 2019 HMPT
<b><u>Severe Winter Storm</u></b> Snowstorm	December 25, 2001 January 1, 2002	Ashland	The Ashland Team recalled two significant snowstorms, one 24" storm on Christmas Day 2001 followed by a 27" storm on New Year's Day 2001; heavy snow fell in Ashland but it was handled by the Public Works Department..	2019 HMPT
<b><u>Severe Winter Storm</u></b> Snowstorm	March 5-7, 2001	Cheshire, Coos, Grafton, Hillsborough, Merrimack, & Strafford	<b>Presidential Disaster Declaration EM-3166:</b> Declaration covers jurisdictions with record and near-record snowfall from the late winter storm that occurred March 2001; heavy snow fell in Ashland but it was handled by the Public Works Department.	FEMA & 2019 HMPT
<b><u>Severe Winter Storm</u></b> Snowstorm	December 6-7, 2003	Belknap, Carroll, Cheshire, Coos, Grafton, Hillsborough, Merrimack & Sullivan	<b>Presidential Disaster Declaration EM-3193:</b> The declaration covers jurisdictions with record and near-record snowfall that occurred over the period of December 6-7, 2003; heavy snow fell in Ashland but it was handled by the Public Works Department.	FEMA & 2019 HMPT



Type of Event	Date of Event	Location	Description	Source
<b><u>Severe Winter Storm</u></b> Snowstorm	January 22-23, 2005 February 10-11, 2005 March 11-12, 2005	<b>EM-3208-002</b> (Jan, Feb & Mar): All Ten NH Counties <b>EM-3207</b> (Jan): Belknap, Carroll, Cheshire, Grafton, Hillsborough, Rockingham, Merrimack, Strafford & Sullivan <b>EM-3208</b> (Feb): Carroll, Cheshire, Coos, Grafton & Sullivan <b>EM-3201</b> (Mar): Carroll, Cheshire, Hillsborough, Rockingham & Sullivan	<b>Emergency Declaration EM 3208-002:</b> 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 earlier this year, according to disaster recovery officials. Total aid for all three storms was \$6,892,023.87 (January: \$3,658,114.66; February: \$1,121,727.20; March: \$2,113,182.01); <b>Emergency Declaration EM-3207:</b> January storm; (Grafton: \$137,118.71; State of NH: \$1,107,426.59); <b>Emergency Declaration EM-3208:</b> February storm; (Grafton: \$213,539.52; State of NH: \$521,536.78); <b>Presidential Emergency Declaration EM-3211:</b> March snowstorm; (No aid in Grafton County for March 2005; State of NH: \$697,501.41); heavy snow fell in Ashland but it was handled by the Public Works Department.	FEMA & 2019 HMPT
<b><u>Severe Winter Storm</u></b> Snow & Ice Storm Long Term Utility Outage	December 11-23, 2008	All Ten NH Counties	<b>Presidential Disaster Declaration DR-1812 &amp; Emergency Declaration EM-3297:</b> Damaging ice storms to entire state including all 10 NH counties; fallen trees and large scale power outages; nearly \$15 million in federal aid had been obligated by May 2009; Leavitt Hill, Hicks Hill and Peppercorn Road were affected by this ice storm; trees fell across roads and there were minor power outages, but there was no structure damage in Ashland; snow accumulation was handled by the Public Works Department with assistance from the Ashland Fire Department.	FEMA, 2013 HMPT 2019 HMPT
<b><u>Severe Winter Storm</u></b> Snowstorm	October 29-30, 2011	<b>DR-4049:</b> Hillsborough & Rockingham <b>EM-3344:</b> All Ten NH Counties	<b>Presidential Disaster Declaration DR-4049 &amp; Emergency Declaration EM-3344:</b> Severe Storm and Snowstorm Event October 29-30, 2011 Hillsborough and Rockingham Counties; <b>EM-3344</b> , all ten NH countries. (aka: Snowtober); heavy snow fell in Ashland but it was handled by the Public Works Department.	FEMA & 2019 HMPT
<b><u>Severe Winter Storm</u></b> Snowstorm	February 8, 2013	All Ten NH Counties	<b>Presidential Disaster Declaration DR-4105:</b> Nemo; heavy snow in February 2013; heavy snow fell in Ashland but it was handled by the Public Works Department.	FEMA & 2019 HMPT

Type of Event	Date of Event	Location	Description	Source
<b><u>Severe Winter Storm</u></b> Snowstorm	March 14, 2017	Carroll & Belknap Counties	<b>Presidential Disaster Declaration DR-4316:</b> Although this declaration did not include Grafton County, the Ashland Team stated that it was significant enough to postpone Town Meeting on the evening of March 14, 2017; heavy snow fell in Ashland but it was handled by the Public Works Department.	FEMA & 2019 HMPT
<b><u>Severe Winter Storm</u></b> Snowstorm	March 13, 2018	Carroll, Stafford & Rockingham Counties	<b>Presidential Disaster Declaration DR-4371:</b> Although this declaration did not include Grafton County, the Ashland Team stated that heavy snow fell but was not significant enough to postpone Town Meeting on the evening of March 13, 2018; heavy snow fell in Ashland but it was handled by the Public Works Department.	FEMA & 2019 HMPT
<b>E. Past Earthquake Hazards:</b> According to the NH 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. These hazards were not mapped. Earthquakes have the potential to impact the Community on a town wide basis; no significant earthquakes have been felt in Ashland since the 2018 minor earthquake in Sanbornton that was felt by only part of the Community.				
Earthquake	December 20, 1940	Ossipee, NH	Magnitude 5.5	State Hazard Mitigation Plan 2013
Earthquake	December 24, 1940	Ossipee, NH	Magnitude 5.5	
Earthquake	December 28, 1947	Dover NH-Foxcroft, ME	Magnitude 4.5	
Earthquake	June 10, 1951	Kingston, RI	Magnitude 4.6	
Earthquake	April 26, 1957	Portland, ME	Magnitude 4.7	
Earthquake	April 10, 1962	Middlebury, VT	Magnitude 4.2	
Earthquake	June 15, 1973	Quebec Border / NH	Magnitude 4.8	
Earthquake	January 19, 1982	West of Laconia, NH	Magnitude 4.5	
Earthquake	June 23, 2010	Ontario-Quebec Border	Magnitude 5.0	
Earthquake	June 26, 2010	Boscawen, NH	Magnitude 3.1	
Earthquake	August 23, 2011	Virginia	Magnitude 5.8	
Earthquake	September 18, 2012	Concord, NH	Magnitude 1.2	
Earthquake	October 16, 2012	Waterboro, ME	Magnitude 4.0; felt in Ashland but no damage occurred	
Earthquake	February 15, 2015	East Kingston, NH	Magnitude 2.7; not felt in Ashland	USGS
Earthquake	March 21, 2016	Contoocook, NH	Magnitude 2.8; not felt in Ashland	
Earthquake	February 15, 2018	Sanbornton, NH	Magnitude 2.7; felt by some in Ashland but no damage occurred	Local
Earthquake	Some history was provided in the 2013 plan on earthquakes in New Hampshire stating that "since 1877, there have been 13 earthquakes with a magnitude of at least 3.0 with a 100 km (62 mi.) radius of Ashland"; no other information on earthquakes in Ashland was provided in the 2013 plan.			2013 HMPT

Type of Event	Date of Event	Location	Description	Source
<b>F. Past Drought Hazards:</b> Droughts are generally not as damaging or disruptive as floods and other hazards and they are more difficult 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. These hazards were not mapped. Droughts have the potential to impact the Community on a town wide basis; no significant droughts have occurred in Ashland since 2016.				
Drought	1929-1936	Statewide	Regional	NH Drought Historical Event - NH DES
Drought	1939-1944	Statewide	Severe in 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	Third worst drought on record;	
Drought	2016	Southern NH	Declared drought for the summer of 2016 moderating from severe in southern New Hampshire to dry in the most northern communities; drought conditions in Ashland were moderate; the drought caused a few private wells to dry up.	NH HSEM
<b>G. Miscellaneous Past or Potential Hazards:</b> Human-caused hazards and other unusual hazardous events have been noted throughout NH. Among others, one concern is the transport of hazardous material through communities by rail and tractor-trailer. These hazards were not mapped. Other natural or human-caused hazards have the potential to impact the Community on a town wide basis; no additional hazards have taken place in Ashland in recent history.				
Lightning	No structural damage or deaths due to lightning have been reported for Ashland recently, however, the potential for damage or injury exist within any of the many thunderstorms that pass overhead each year.			2013 HMPT
Conflagration	While there is no recent history of conflagration, the Committee felt that conditions exist in Ashland to warrant a moderate level of concern. With the age, construction type, and proximity of the structures in the village area, a conflagration could occur at any time.			2013 HMPT
Hazardous Material - Transport	No local incidents were identified; however the volume of traffic and proximity to state roads to vulnerable water bodies led the Committee to consider a spill of hazardous materials while in transport a very likely event. This is a particular concern on Interstate 93.			2013 HMPT
Epidemic/Pandemic	While there certainly have been minor outbreaks of flu in Ashland, no major outbreaks of this or any other infectious disease was identified during this process. The 2012-13 flu season had been much more severe in New Hampshire than in the past several years; 35 deaths have occurred statewide, the most since 1997.			2013 HMPT
Drinking Water Contamination	While no incidents of drinking water contamination have been reported, the Committee felt that the location and exposure of the town wells and infrastructure make this quite vulnerable to accidental or intentional disruption.			2013 HMPT
Terrorism	Although no local incidences of terrorism have been reported in Ashland, the Committee felt that terrorism is still a potential risk.			2013 HMPT
Mass Casualty	On January 2, 2015, a mass casualty incident (MCI) occurred as a result of a sudden blinding snow squall; over 50 cars were involved as well as 48 wreckers; mutual aid was flawless; it took 3 hours clean up; active area exists between exits 23-25.			2019 HMPT

Type of Event	Date of Event	Location	Description	Source
<b>H. Other Hazards:</b> 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. See Table 3.1, Hazard Threat Matrix and Chapter 5 for more details on these hazards. These hazards were not mapped.				
<b>Extreme Temperatures (hot &amp; cold)</b>			<p>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 town wide basis.</p> <p>See Table 3.1, Hazard Threat Analysis and Chapter 5 for more details on these hazards.</p>	
<b>Hailstorm</b>				
<b>Flooding (Dam Failure)</b>				
<b>Erosion</b>				
<b>Extended Power Failure (5+ days)</b>				

\*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>

## Chapter 4: Critical Infrastructure & Key Resources (CIKR)

With Team discussion and brainstorming, Critical Infrastructure and Key Resources (CIKR) within Ashland were identified and mapped for this Plan. The “ID” number in the following lists is also represented as a CIKR in *Appendix G: Map Documents, Map 4: Critical Infrastructure and Key Resources*. Facilities located in adjacent towns were not mapped (NM). 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 immediately needed during an emergency response.				
Map ID	Facility	Expected use of the Facility	Hazard Risk	
1	Fire Station (generator)	Primary EOC Fire Fighting EMS COOP Site for Town Offices	All Hazards & Conflagration	2
2	Town Offices Police Department (no generator)	Town Government Record keeping Law Enforcement	All Hazards	1
3	Ashland Electric Department Public Works Department (no generator; portable only)	Heavy Equipment Salt Sand & Gravel Electric Supply	All Hazards & Hazardous Materials	1
4	Ashland Elementary School (K-8) (mobile generator)	Primary Shelter Secondary EOC (Main Office)	All Hazards	1
5	Tirone Gymnasium (no generator)	Pet Shelter	All Hazards	1
Helicopter Landing Zones (shown in Map #4 without labels)				
6	L.W. Packard Ballfield	Helicopter Landing Zone	All Hazards	1
7	Ashland Elementary Fields	Helicopter Landing Zone	All Hazards	1
Major Bridges (shown in Map #4 without labels; smaller bridges & culverts were not mapped)				
8	North Ashland Road @ Spring Brook	Bridge on Evac Route	All Hazards	1
9	Scenic View Road @ Owl Brook	Bridge on Evac Route	All Hazards	1
10	Main Street @ Squam River	Bridge on Evac Route	All Hazards & Dam Failure	2
11	Depot Street @ Ames Brook	Bridge on Evac Route	All Hazards & Flooding	2
12	I-93 North @ Squam River	Bridge on Evac Route	All Hazards	1
13	I-93 South @ Squam River	Bridge on Evac Route	All Hazards	1
14	I-93 North @ Railroad Track	Bridge on Evac Route	All Hazards	1

Emergency Response Facilities (ERF)				
15	I-93 South @ Railroad Track	Bridge on Evac Route	All Hazards	1
16	I-93 North @ US Route 3	Bridge on Evac Route	All Hazards	1
17	I-93 South @ US Route 3	Bridge on Evac Route	All Hazards	1
18	North Ashland Road @ I93N	Bridge on Evac Route	All Hazards	1
19	North Ashland Road @ I93S	Bridge on Evac Route	All Hazards	1
20	Collins Street @ Squam River	Bridge (not on Evac Route)	All Hazards & Flooding	3
21	Winter Street @ Squam River	Bridge (not on Evac Route)	All Hazards & Flooding	2
Dams (shown in Map #4 with labels)				
22	Squam Lake Dam @ Squam River (River Street & Route 3)	High Hazard Dam(State, rest private)	All Hazards & Dam Breach Flooding	3
23	Grist Mill Pond Dam @ Squam River (20 Main Street)	High Hazard Dam	All Hazards & Dam Breach Flooding	3
24	Squam River Hydro (6 Mill Street)	Dam	All Hazards & Dam Breach Flooding	3
25	Northwood Renewable (Mill Pond Lane)	Dam	All Hazards & Dam Breach Flooding	3
26	Ashland Sewage Lagoon Dam (Collins Street)	Significant Hazard Dam	All Hazards & Dam Breach Flooding	3
27	Pettit Dam @ Unnamed stream (Sanborn Road)	Low Hazard Dam (Private Dam)	All Hazards & Dam Breach Flooding	2
28	Cold Spring Brook Dam @ Cold Spring Brook (between Interstate and North Ashland Road)	Non-Menace Dam (Private Dam)	All Hazards & Dam Breach Flooding	1
29	Preston Dam (runoff) (off Lambert Road)	Non-Menace Dam (Private Dam)	All Hazards & Dam Breach Flooding	1
Evacuation Routes (shown in Map #4)				
Interstate 93		Primary Evacuation Route	All Hazards	1
US Route 3		Primary Evacuation Route	All Hazards	1
NH Route 132		Primary Evacuation Route	All Hazards & Flooding	2
NH Route 175		Primary Evacuation Route	All Hazards	1
Winona Road		Secondary Evacuation Route	All Hazards	1
North Ashland Road		Secondary Evacuation Route	All Hazards	1
Owl Brook Road		Secondary Evacuation Route	All Hazards	1

**TABLE 4.2 – NON- EMERGENCY RESPONSE FACILITIES (NERF)**

Non-Emergency Response Facilities (NERF)				
NERFs are facilities, that although they are critical, they are not necessary for the immediate emergency response efforts; this includes facilities to protect public health and safety, utilities, and provide backup to emergency facilities.				
Map ID	Facility	Expected use of the Facility	Hazard Risk	
30	Squam River Power (Scribner Building)	Penstock	All Hazards	1
31	Ashland Well Head	Water Supply	All Hazards	1
32	Ashland Water Tower	Water Supply	All Hazards	1
33	Ashland Water Treatment Facility	Waste Water Treatment	All Hazards & Flooding	2
34	Pumping Station (Riverside Drive)	Water Supply	All Hazards & Flooding	2
35	Pumping Station (148 River Street)	Water Supply	All Hazards & Flooding	2
36	Pumping Station (242 River Street)	Water Supply	All Hazards & Flooding	2
37	Verizon Wireless Cell Tower	Communications	All Hazards	1
38	Radio Repeater (off Peppercorn)	Communications	All Hazards & Wildfire	2
39	Transfer Station	Transfer Station Hazardous Materials Disposal	All Hazards	1
40	Eversource Facility	Electric Supply	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 hazard event.				
Map ID	Facility	Expected use of the Facility	Hazard Risk	
41	Common Man Commons	Elderly Housing	All Hazard & Hazardous Material - Transport	2
42	White Mountain Court	Elderly Housing	All Hazards	1
4	Ashland Elementary School	School	All Hazards	1
43	Ashland Community Center	Gathering of People	All Hazards	1

**TABLE 4.4 – POTENTIAL RESOURCES (PR)**

Potential Resources (PRs)	
PRs are potential resources that could be helpful for emergency response in the case of a hazard event.	
For a complete Resource Inventory List, please refer to the Town's Emergency Operations Plan (EOP)	



THIS PAGE INTENTIONALLY LEFT BLANK

## Chapter 5: Hazard Effects in Ashland

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

Because damages from floods and wildfires are more predictable than damages from other disasters, it is important to identify the Critical Facilities and Key Resources (CIKR) and that are most likely to be damaged by these events. Using Geographic Information System (GIS) analysis and aerial imagery, at-risk CIKR were identified throughout the Town.

All CIKR in Ashland were identified in GIS; this list was then narrowed by those CIKR that were located in the FEMA floodplain. Thirteen CIKR were found in the FEMA flood zone as shown in the chart to the right. All of these CIKR are expected to be in or near water and are therefore only a threat in times of very significant flooding. No other CIKR were found to be in the designated FEMA floodplain although it is expected that many non-CIKR buildings and private homes are within the FEMA floodplain. Town officials should keep residences, businesses and CIKR in mind when a flood hazard is likely, particularly along the Squam River.

ID	ALL_H	NAME	Hazmit_Type
9	ERFB	Scenic View Rd @ Owl Brook	Evac Bridge
10	ERFB	Main St @ Squam River	Evac Bridge
11	ERFB	Depot St @ Ames Brook	Evac Bridge
12	ERFB	I93N @ Squam River	Evac Bridge
13	ERFB	I93S @ Squam River	Evac Bridge
20	ERFB	Collins @ Squam River	Important Bridge
21	ERFB	Winter St @ Squam River	Important Bridge
22	ERFD	Squam Lake Dam	Dam
23	ERFD	Grist Mill Pond Dam	Dam
24	ERFD	Squam River Hydro	Dam
25	ERFD	Northwood Renewable	Dam
28	ERFD	Cold Spring Brook Dam	Dam
30	ERFD	Penstock	Dam; Penstock

Using the same methodology that was used for flooding, CIKR falling within the Wildland Urban Interface (WUI) were reviewed. Identifying these facilities assists the Team in creating wildfire mitigation action items and prioritizing those action items. It is important to determine which Critical Infrastructure and Key Resources are most vulnerable to wildfires.

Many structures were found to be in the traditional WUI, however, only 13 CIKR were found in the WUI as seen in the chart to the right and in *Map #2, The Wildland Urban Interface*. An analysis of these CIKR reveals the importance of these facilities and the need to ensure defensible space wherever possible.

ID	ALL_HA	NAME	Hazmit_Type
4	ERF	Ashland Elementary School	Primary Shelter
7	ERFH	Elementary Field	Heli LZ
14	ERFB	I93N @ Railroad Track	Evac Bridge
15	ERFB	I93S @ Railroad Track	Evac Bridge
16	ERFB	I93N @ US Route 3	Evac Bridge
17	ERFB	I93S @ US Route 3	Evac Bridge
25	ERFD	Northwood Renewable	Dam
26	ERFD	Sewage Lagoon Dam	Sewage Lagoon Dam
28	ERFD	Cold Spring Brook Dam	Dam
31	NERF	Ashland Wellhead	Water Supply
32	NERF	Water Tower	Water Supply
37	NERF	Verizon Cell Tower	Cell Tower
40	NERF	Eversource	Electric Supply

The rest of the Town's Critical Infrastructure & Key Resources were found to be within the 300 foot WUI buffer, therefore accessible by fire apparatus and hoses. However, as stated elsewhere in this Plan, the entire Town of Ashland, including many structures, is thought to be in the WUI because it is so heavily forested; therefore, all structures in Town can be assumed to be in the WUI.

**Table 3.1, The Hazard Threat Analysis, is used to evaluate the probability and the potential impact of all hazards.**

## B. Calculating the Potential Loss

It is difficult to ascertain the amount of damage that could be caused by a natural or human-caused hazard 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 result in damage to either 0-1% or 1-5% of Ashland's structures, depending on the nature of the hazard and whether or not the hazard is localized.

MS-1 Assessed Value of All Structures			
2017 MS1 Structures Only	Value	1% Damage	5% Damage
Residential	\$122,105,300	\$1,221,053	\$6,105,265
Manufactured Housing	\$3,113,900	\$31,139	\$155,695
Commercial	\$27,819,150	\$278,192	\$1,390,958
Other Utilities	\$0	\$0	\$0
Tax Exempt	\$22,219,600	\$222,196	\$1,110,980
Utilities	\$4,800,867	\$48,009	\$240,043
Total	\$180,058,817	\$1,800,588	\$9,002,941
Provided by the Town, 8/14/18			

Based on this assumption, the potential loss from any of the identified hazards would range from **\$0 to \$1,800,588** or **\$1,800,588 to \$9,002,941** based on the 2017 Ashland town valuations which lists the assessed value of all structures in Ashland to be **\$180,058,817** (see chart above).

Human loss of life was not included in the potential loss estimates but could be expected to occur, depending on the severity and type of the hazard.

## 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*, which 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. The numbers preceding the hazard name in this section, correspond to the numbers in *Table 3.1, Hazard Threat Analysis*.

### 1) Severe Winter Weather & Ice Storm ..... \$1,800,588 to \$9,002,941



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 Ashland in the past. The ability to get in and out of town and emergency service access can be hindered.

All of these impacts are a risk to the Community, including isolation, particularly of the vulnerable populations, and increased traffic accidents. 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. Storms with accumulation of three or more feet have occurred; blizzards of this type could diminish food supplies within two days. With the common occurrence of snowstorms comes the knowledge of how to handle them. The Ashland Public Works Department does an excellent job clearing roads and keeping the Community safe. No significant snow events have happened in Ashland in the past five years.

Of more concern in Ashland than 2-4' snowstorms are ice storms, though the probability of the occurrence of a major ice storm is lower than that of a major snowstorm. A significant ice storm can inflict several million dollars' worth of damage to forests and structures.

Luckily, the 1998 Ice Storm was not as impactful in Ashland as it was in other parts of the state. In Ashland, trees and power lines were down at elevations over 1,000 feet and there were short-term power outages; Peppercorn and Hicks Hill Roads experienced trees down and a short-term power outages. The 2008 Ice Storm was also not as impactful as elsewhere in the state. In Ashland some trees and power lines were affected, however power loss was minimal and there was no significant damage to property. Between efforts by the Ashland Electric Company and the Public Works Department, the Town does a great job preparing for and cleaning up after significant winter storms. The Team reported that there have been no crippling winter events for at least ten years.

Future snow and ice storms in Ashland could be expected to cause damage ranging from a few thousand dollars to several million, depending on the severity of the storm. Due to the widespread nature of severe winter storms, particularly ice storms, the potential loss value is estimated to be between 1% and 5% of the total assessed value of all structures in town.

## 2) Extreme Temperatures (hot & cold)..... Structure loss value was not estimated

For those who are familiar with Northern New England weather, it is obvious that temperature extremes are very common. Winter temperatures can fall below -30°F and summer temperatures, laden with high humidity can soar to nearly 100°F; it is not unusual for the temperature to be below zero for as many as 30 days in a single winter season. In the past, there was more concern about extreme cold temperatures, but with improved heating systems and local communications, most New Hampshire residents are able to cope with extreme cold.



Also of concern today are extreme heat conditions. Few residents, particularly the elderly and vulnerable populations, have air conditioners and are less able to cope with extreme heat. The estimated elderly population in Ashland is 19.6% and the poverty rate is 21.3% of the total population according to the American Community Survey, 2012-2016.

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

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 on the economic impact on the Community 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.

**3) Flooding (dam flooding, local roads, heavy rain, riverine, beaver dams) ..... \$1,800,588 to \$9,002,941**

Ashland is subject to flooding, particularly along the banks of the Squam and Pemigewasset Rivers, although there are other locations in Town that also flood. Flooding is often associated with hurricanes, heavy rains, ice jams, beaver dams, dam failure and rapid snowmelt in the spring.

**Dam Failure (Flooding)**

Flooding potential as a result of dam failure is a serious concern in Ashland. There are a total of eight dams in Ashland (see Table 4.1) two of which are considered “High Hazard” dams, the Squam Lake Dam and the Grist Mill Pond Dam. The concern is that a failure of the dams above the Grist Mill Dam on the Squam River, and including the Grist Mill Dam, could cause a cascading effect taking out dams further downstream, thus threatening the Mill, Collins Street, River Street and properties along the river. In addition, failure of the Northwoods Renewable Dam on Mill Pond Lane has the potential to affect homes below it. Lastly, although not a dam, the Team mentioned the Town’s one million gallon water tank; the water tank sits upon a knoll and its failure could cause flooding for multiple homes below. The Team has no historical recollection of dam failures in the past.

The Squam Lake Dam is owned by the state; all other dams in Ashland are privately owned. The Team has added a mitigation action item to obtain dam plans for all dams in the Community that could potentially cause flooding should a failure occur. The Town will continue to monitor and exercise plans for any hazardous dams in the Community.

**Local Road Flooding**

Heavy rain, rapid snowmelt and stream flooding can 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 and the subsequent erosion of Ashland’s roadways is a concern. The Ashland PWD maintains approximately 20.2 miles of paved roadways and 2.2 miles of gravel roadways.<sup>15</sup> Heavy rains on gravel roads create muddy and impassable roadways, thus creating accessibility issues for first responders.

The heavy rains of Tropical Storm Irene and Sandy had little effect in Ashland although other areas of the state received considerable flood damage. Tropical Storm Irene caused minor golf course flooding in Ashland, however no structures were flooded.

In more recent years, the rain events of July and October 2017 brought heavy rain to Ashland. The July 2017 storm significantly impacted Plymouth and Campton along the Pemigewasset and Mad Rivers; Ashland emergency responders assisted in both Plymouth and Campton with water rescues. The October 2017 storm brought down some trees and power lines in Ashland and damage occurred at the Electric/Highway Garage. The Ashland Electric Department has requested FEMA funding for the October storm.

<sup>15</sup> Miles of roads provided by the Town; gravel roads determined through GIS

## Riverine Flooding & Heavy Rain

Based on the Grafton County Floodplain Map, Ashland has a relatively small 100-year floodplain primarily along the banks of the Pemigewasset River, the Squam River, Little Squam Lake and Ames Brook.

The Squam River and the Pemigewasset River have potential to flood as a result of heavy spring rain, rapid snowmelt and 100-year flood events. However, as indicated in Table 3.2, riverine flooding has not caused issues since the prior hazard mitigation plan was completed. The height of the land along the riverbanks of these rivers seems to serve as a buffer for the type of extreme flooding that is often seen in Plymouth and other nearby communities.

## Beaver Dam Flooding

Frozen or blocked culverts and several large beaver dams on some of the Town's smaller brooks and streams, add to the localized flooding problem. Beaver dams have caused flooding along several roadways in Ashland. Beaver dams are a constant problem in the rural communities of New Hampshire. Towns must use best practices and available resources to rid the Community of beaver dams that could cause potential flooding along the Town's roadways.

It is difficult to estimate the cost of flooding as both structures and roadways are generally involved. There are significant costs to repairing and maintaining roads that are so often affected by stormwater flooding. In addition, there are significant life safety issues; residents are often completely cut off because of road closures. The expected loss value from flooding would be based primarily on the economic impact on the Community, the loss of accessibility and the time and cost of road repair. Often factors affecting the estimated loss value include structure damage. Therefore, the estimated loss value due to flooding in general was determined to be between 1% and 5% of the total structure.

## 4) Severe Thunder & Lightning Storms ..... \$0 to \$1,800,588

Severe lightning as a result of summer and mountain storms or as a residual effect from hurricanes and tornadoes has occurred in Ashland. Some of the Town's structures are older buildings and many structures are surrounded by forest. Dry timber on the forest floor and the age of many buildings and out-buildings combined with lightning strikes can pose a significant disaster threat. Lightning could do damage to specific structures or injure or kill an individual, but the direct damage would not be widespread.

The Team noted that summer storms are often more damaging than spring snowmelt and that it appears that severe thunder and lightning storms are happening more often with climate change. The Team also noted that the golf course in town could be potentially hazardous to people who ignore lightning warnings.

Lightning is a potential problem, but one who's affects would be localized. The Team also noted that there have been no recorded lightning strikes in the past five years. Based on the localized nature of lightning strikes, the potential loss value was determined to be 0-1% of the total assessed structure value in Town.

**5) Tornado & Downburst ..... \$0 to \$1,800,588**

A tornado generally covers a large area, perhaps even several miles. It has winds that blow in a circular fashion leaving behind downed trees that lie in a swirling pattern. Straight-line winds and winds that burst downward are indicative of a microburst; the fallen trees that are 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 that is greater than 2.5 miles wide and generally lasts longer than a microburst.



The team did not have any tornados or downbursts to report on since the prior hazard mitigation plan, however it was noted that due to climate change severe weather events such as tornados and downbursts are happening more frequently and with more severity. It is expected that Ashland will experience some sort of downburst or even a tornado at some point. Multiple occurrences of downbursts and tornados have been reported in nearby towns and throughout NH.

Due to the rareness of these events in New Hampshire, the likelihood of a tornado or downburst is low and the affects would be localized. Therefore, the potential loss value was determined to be between 0% and 1% for both downbursts and tornadoes.

**6) Hurricane & Tropical Storm ..... \$0 to \$1,800,588**

Wind damage due to hurricanes is a consideration because of the forest and valley floors in Ashland. Like the 1938 hurricane and hurricane Carol in 1954, major forest damage could occur. Although hurricanes could fit into several different categories (wind and flooding), the Team considered hurricanes to be separate events.

Hurricanes are rare in New Hampshire, but they should not be ruled out as potential hazards. In most cases, hurricanes have been down-graded to tropical storms by the time they reach northern New Hampshire. Tropical Storms Irene and Sandy brought heavy rain to Ashland, but caused little damage. Ashland's emergency responders responded to requests from surrounding towns during Tropical Storm Irene. The Team also noted that the golf course in town flooded, but that is a common occurrence every spring with snow melt and heavy rains.

The probability that a hurricane would remain a Category 1 or greater in this part of the State is low. Therefore, the potential loss value due to hurricanes was determined to be between 0% and 1% of the total assessed structure value.

**7) Hailstorm ..... \$0 to \$1,800,588**

Hailstorm events, although not common in Ashland, can occur at any time and cause significant damage. Damage from hail could result in failed crops and structure and vehicular damage, thus creating an economic impact for individual citizens. It should be noted however, that Ashland is not a heavily farmed community.

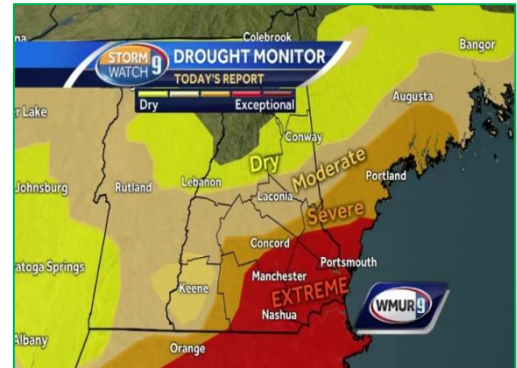
Overall, the Team concurred that a hailstorm event would be uncommon and would cause minimal damage; therefore the assessed damage to structures was determined to be between 0% and 1% of the total assessed structure value.



**8) Drought ..... \$0 to \$1,800,588**

The cost of drought in Ashland is difficult to calculate as any cost would primarily result from an associated fire risk, crop loss and diminished water supply which, in Ashland, is supplied by Ashland Water Department and from private wells. An extended period without precipitation could elevate the risk for wildfire and blow-downs in the forest and with an extreme drought, the water supply and aquifer levels could be threatened.

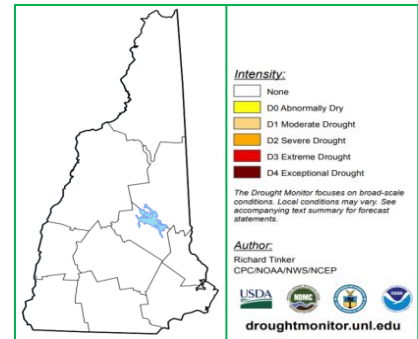
Fortunately, significant droughts rarely occur in New Hampshire or Ashland. 2016 brought extreme and severe drought conditions to southern New Hampshire, but Ashland was considered “moderate” for most of the year. The Team noted that a few dug wells may have been affected by the 2016 drought.



WMUR Archives; September 15, 2016

Extreme droughts in New Hampshire are particularly rare and have no significant effect on structures, unless wildfire events occur. According to the NH Department of Environmental Services, five significant droughts have occurred since 1929<sup>16</sup>, not including the 2016 drought.

The chart to the right shows current drought conditions in the State and indicates that there are no areas of the State that are currently experiencing drought.<sup>17</sup>



If it were to occur, a significant drought in Ashland would not only impact the forested lands of the Town, but also agricultural land, the local economy, the water supply and the aquifer. Based on these factors, the potential loss value due to drought was determined to be between 0% and 1% of the total assessed structure value.

**9) Erosion (riverine) ..... \$0 to \$1,800,588**

Erosion, landslides and mudslides are often associated with heavy rains, steep terrain and the overflow of river banks. Ashland has been minimally impacted by erosion in the past, particularly in the northern part of the Town. Erosion and the subsequent loss of land along the river banks, road washouts, overburdened culverts, and changes in the course of rivers and have been some of the effects of this type of erosion in Ashland.

Lack of planning, improper road design and undersized culverts add to the risk of erosion along Ashland’s roadways. In addition, hillside erosion could result from clear cuts, new development, deforestation and improper land conservation.

<sup>16</sup> NH DES; <http://des.nh.gov/organization/divisions/water/dam/drought/documents/historical.pdf>

<sup>17</sup> US Drought Monitor-New Hampshire, [https://droughtmonitor.unl.edu/data/pdf/20190806/20190806\\_NH\\_text.pdf](https://droughtmonitor.unl.edu/data/pdf/20190806/20190806_NH_text.pdf)

Although erosion is an issue, no structures appear to be in harm's way at this time. In the unlikelihood that structure loss would be experienced, it would be "localized"; therefore the structure loss value was estimated to be between 0% and 1% of the total assessed structure value.

**10) Earthquake ..... \$1,800,588 to \$9,002,941**

Earthquakes can cause buildings and bridges to collapse, disrupt gas, electric and phone lines and are often associated with landslides and flash floods. 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 there are fault lines running throughout New Hampshire, but high magnitude earthquakes have not been frequent in New Hampshire history.

In October 2012, an earthquake with its epicenter in Hollis, ME and a magnitude of 4.6 on the Richter scale occurred. The tremor was felt through most of New England and in Ashland however there was no damage. The Team also noted an earthquake in Sanbornton within the past year that was felt in Ashland, again no damage occurred.

Although historically earthquakes have been rare in New Hampshire, the potential does exist and depending on the location, the impact could be significant. The potential structure loss value due to earthquakes was determined to be between 1% and 5% of the total assessed structure value.

**11) Wildfire (1+ acre)..... \$1,800,588 to \$9,002,941**

Due to the abundance of slash on the forest floor left by logging operations, blow downs and storms, there is potential for fast burning fuels. In addition, the recreational use of woods-trails by OHRV riders, campers and other outdoor enthusiasts creates an opportunity for sparks and out-of-control fires to ignite Ashland's forested areas.

The Team described the forests of Ashland as consisting of primarily 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."*<sup>18</sup>

Burn permits are required in Ashland, as they are throughout the State, but often burning takes place without the proper permits. Currently available documentation on fires in Ashland indicates that the majority of fires are human-caused; however no significant wildfires have occurred in Ashland in many years.

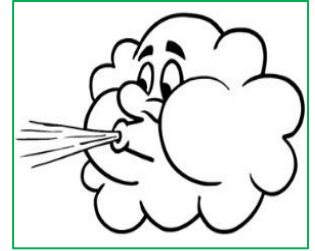
In the mid-2000s, the Wildland Urban Interface (WUI) was determined in collaboration with the NH Division of Forests & Lands and the US Forest Service; the WUI represents the area in which the forest and human habitation intersect. It was defined to be a 1/4 mile buffer located 300 feet off the centerline of Class V roads. All structures within the WUI are generally assumed to be at some level of risk and therefore, vulnerable to wildfire. It should be noted that in communities that are heavily forested, like Ashland, many Rangers feel that the entire community is in the WUI and therefore the extent of a wildfire could potentially be the entire community.

Large wildfires in New Hampshire are uncommon; however, given the right set of conditions (drought, lightning, human interface), the potential for large wildfires is good. Because the Town of Ashland is heavily forested, the potential loss value was determined to be between 1% and 5% of the total assessed structure value.

<sup>18</sup> <http://www.fs.fed.us/nwacfire/home/terminology.html>

**12) High Winds (windstorm) ..... \$0 to \$1,800,588**

Due to the location of Ashland, the Town's proximity to some of New Hampshire's high peaks and the effect of wind in the river valleys, isolated high winds and down drafts often occur. These wind events are unpredictable; winds of this magnitude could fall timber, which in turn could block roadways, down power lines and impair emergency response. The Team noted that there are no specific areas that are constant wind tunnels, but that the entire town is susceptible to high winds quite frequently. These winds might not cause damage every time they happen, but certainly have the potential to cause significant damage.



The effect of isolated high winds would most likely be localized in nature; therefore, the potential loss value due to hazards of this type was determined to be between 0% and 1% of the total assessed structure value.

***D. 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 Ashland.

**1) Hazardous Materials - Transport**

The possibility of vehicular accidents involving hazardous materials is identified as a serious hazard in Ashland. The Town's major routes, Interstate 93, US Route 3 and NH Route 175, are very heavily travelled both by large and small vehicles; the contents of these vehicles are rarely known. Each of these roadways carries a substantial volume of vehicular and truck traffic



Although have been no HazMat accidents in more than five years, I-93, which runs north-south for the length of the Town is a serious concern. Trucks travelling this major New England interstate are often loaded with chemicals and other dangerous substances. The contents of many of these vehicles are unknown while other vehicles, such as trucks hauling fuel and propane are common. Potential causes of hazardous materials accidents on I-93 include weather conditions, wildlife crossings, driver fatigue and speed. Impacts could include fires, contamination of the water supply, toxic plumes and more.

US Route 3 (which is also US Route 25), is a busy crossroads in the State. Where Route 3 becomes Main Street in Ashland, there is a high density of structures, many of which are older buildings. This busy crossroads sees an extraordinary amount of traffic through the winding streets of the village center. Trucks of all sizes as well as student and tour busses, are common sites on Route 3. In addition, large and small vehicles make deliveries to the Town's citizens often through the village.

## 2) Conflagration

A conflagration is defined as a large and destructive fire that threatens human life, animal life, health, and/or property. A conflagration can begin accidentally, be naturally caused (wildfire), or intentionally created (arson).

In Ashland there is a potential for a conflagration on Main Street and in the Mill Area. Many of the buildings in these areas are older buildings and in close proximity to one another creating the opportunity for a fire to move from building to building with ease.



*Main Street, Ashland NH*

*Photo Credit: Alpine Lakes Real Estate*

## 3) Hazardous Materials – Fixed Location

Hazardous Material-Fixed Location 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 water supply of a community as well as the air we breathe.

Of particular concern in Ashland are several businesses that use and store chemicals for their daily use. These businesses include; Freudenberg NOK (solvents), Ashland Lumber, Mobil & Irving Gas Stations (underground gas tanks), Ashland Water Department (caustic soda and chlorine) and Consolidated Communications Station (battery supply).



The Ashland Fire Department is well aware of facilities in Town that either store or carry hazardous materials. In combination with Tier II reporting, the Fire Department inspects these properties annually.

## 4) Terrorism

Terrorism is a fear throughout our country and although Ashland is not home to any substantial "targets" there is always a potential for a terrorism event. The deliberate destruction to the Town's dams, bridges, water supply, CIKR, and major roadways are just a few possible events that could be thought of as terrorism. Interstate 93 and US Route 3 also provide access to the rest of New England and Canada, and as such could be used as primary routes for terrorists. 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.

## 5) Epidemic & Pandemic (Infectious Disease, 2018 State HMP)

*“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.”<sup>19</sup>*

Ashland’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 approximately a 25% increase during the summer and winters. In addition, the Town’s high school students attend school at the Plymouth Regional High School along with students from the neighboring towns, thus enabling infection and viruses to be transmitted from elsewhere. In addition senior rehabilitation and nursing facilities attract visitors from elsewhere in the State.

Because of these factors, the Team decided that infectious diseases and epidemics or pandemics could present a possible threat to Ashland. With the occurrence of world-wide pandemics such as SARS, the Zika Virus, H1N1 and Avian Flu, Ashland could be susceptible to an epidemic and subsequent quarantine.

As part of our discussion about infectious disease, it makes sense to discuss the opioid epidemic that is 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”<sup>20</sup>*. Like many New Hampshire communities, Ashland has also struggled with the use of opioids. Although the availability and use of NARCAN<sup>®</sup> has helped lower the death rate in New Hampshire, opioid-related overdose deaths are still a common occurrence.

Because of these factors and those described above, the Team decided that an epidemic or pandemic could present a possible threat to Ashland. With the occurrence of world-wide pandemics such as SARS, the Zika Virus, H1N1 and Avian Flu, Ashland could be susceptible to an epidemic and subsequent quarantine.

## 6) Drinking Water Contamination

Contamination of the Town’s drinking water could happen either accidentally or intentionally. An accident involving hazardous materials (i.e. fuel, propane, etc.) could occur on any of Ashland’s roads and could seep into the ground and contaminate both the Town’s water supply and private wells. It was noted that the well field is below I-93 and Route 3. The deliberate contamination of the Town’s water supply could also occur by an individual(s) looking to cause harm to others. Fortunately, the Town has taken the precaution of fencing in the Town’s water pump house which adds great protection to the water supply.

<sup>19</sup> Infectious diseases, Overview, <https://www.mayoclinic.org/diseases-conditions/infectious-diseases/symptoms-causes/syc-20351173>

<sup>20</sup> NH Opioid Summary, National Institute on Drug Abuse; <https://www.drugabuse.gov/drugs-abuse/opioids/opioid-summaries-by-state/new-hampshire-opioid-summary>

**7) Extended Power Failure (5+ days)**

Extended power failure is a concern, particularly when combined with any of the natural hazards detailed above. Extended power outages of several days have occurred in Ashland, both as a result of local line damage from high winds and storms and problems with the power grid. However, no extended periods (5+ days) without power were reported to have taken place since the last hazard mitigation plan. The Team reported that long term power outages have diminished as a result of continued efforts by Ashland Electric and public utility companies to trim trees and branches near power lines.

If a major and/or extended power outage occurs and lasts for more than a week, a significant hardship on individual residents could result, particularly those citizens who are elderly, poor or handicapped. The Team felt that many residents were somewhat self-sufficient and that many residences are equipped with generators and many others have woodstoves. The biggest impact from an extended power failure would be the inconvenience caused by the inability to pump water for residents who rely on wells.



## Chapter 6: Current Policies, Plans & Mutual Aid

After researching historic hazards, identifying CIKR and determining potential hazards, the Team determined what is already being done in Town to protect its citizens and structures. Once identified, the Team addressed each current policy or plan to determine its effectiveness and to determine whether or not 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 Ashland currently had in place, creating new action items was less difficult. This process was helpful in identifying current plans and policies that were working well and those that should be addressed as a new “action item” as well as the responsible departments. 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 and/or does not meet its goals.

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

Current Program or Activity	Description	Area of Town	Responsible Department	Effectiveness	Improvements Needed or Not Needed
Dams	All but one dam (State) in Ashland are privately owned. Dams are inspected regularly by the NH Department of Environmental Services	Town Wide	Emergency Management Director	Good	<b>Improvements Needed:</b> The Fire Department has copies of the dam EOP for the Grist Mill Dam and the River Street Dam. This is deferred to call owners of other dams to inquire about the safety of dams and to acquire dam plans if available. <b>Action Item #19 (also in Table 7.1)</b>
Master Plan (2014)	The Master Plan serves as the guiding document for future development and serves as the guiding document to assist the Planning Board.	Town Wide	Planning Board	Good	<b>Improvements Needed:</b> The Ashland Master Plan was updated in 2014 and is not due for the recommended 10-year update until 2024. This is deferred to this Plan to incorporate a Natural Hazards section and mitigation action items from this Plan if warranted whenever a review or update of the Master Plan takes place. <b>Action Item #13 (also in Table 7.1)</b>

Current Program or Activity	Description	Area of Town	Responsible Department	Effectiveness	Improvements Needed or Not Needed
Public Education & Awareness	The Town of Ashland is well situated to provide public information and outreach to its citizens through a variety of means.	Town Wide	Emergency Management Director & Other Departments	Average	<b>Improvements Needed:</b> The Town has not created an Emergency Webpage which is great way to provide outreach to residents on not only emergency preparedness but also mitigation techniques property owners can use to reduce or eliminate the impact of natural hazards. This is deferred to develop an emergency webpage and to provide robust information and links to sites such as Ready.gov to educate the public on general and seasonal mitigation techniques. <b>Action Item #1 (also in Table 7.1)</b>
Emergency Generators	Permanent generators are located at several CIKR (see Table 4.1) and a portable generator from the Electric Department is available to use at the Elementary School. Residents registered with the Electric Department may have access to a small portable generator and prioritized reconnection. The School, Electric/Highway Department Facility, and the Town Hall/Police Department need permanent generators.	Ashland Elementary School, Electric Highway Department & Town Hall Police Department	Emergency Management Director	Average	<b>Improvements Needed:</b> Sufficient generators have been established at the Fire Station and at the Sewer & Water Facility. This is deferred to obtain funding and install generators at the Ashland Elementary School (primary shelter & secondary EOC), the Electric/Highway Department Facility and at the Town Hall/Police Station. <b>Action Items #37, #17 and #18 (also in Table 7.1)</b>
Grafton County Code Red	County-wide warning system using phones and cell phones to notify citizens of pending or actual emergency.	Town Wide	Emergency Management Director	Excellent	<b>Improvements Needed:</b> CodeRED has been established and is an excellent warning system but it only stores resident phone numbers that are listed in the phone book. The Town has continuously provided information to residents on CodeRED, but it should continue to provide public outreach to encourage all residents to contact CodeRED to add cell numbers, emails, unlisted numbers and to verify information; use the website or a possible brochure or a sign up at Town Meeting. <b>Action Item #2</b>
Emergency Operations Plan (2016)	This plan offers all members of the emergency management team a better understanding of procedures in case of a disaster. Addresses 15 Emergency Support Functions (ESFs).	Town Wide	Emergency Management Director	Excellent	<b>Improvements Needed:</b> The Ashland Emergency Operations Plan (EOP) was adopted in 2016. This is deferred to this Plan to update the EOP according to the HSEM five-year recommendation in 2021. <b>Action Item #40</b>

Current Program or Activity	Description	Area of Town	Responsible Department	Effectiveness	Improvements Needed or Not Needed
NIMS & ICS Training	Ensure effective command, control, and communications during emergencies.	Town Wide	Emergency Management Director	Average	<b>Improvements Needed:</b> NIMS & ICS training has been done by most first responders. Although this is preparedness, this is deferred to this plan to continue to provide NIMS (IS-700) & ICS (ICS 100 & ICS 200) training to new first responders and to Town officials as they become elected and/or appointed. <b>Action Item #9</b>
National Flood Insurance Program (NFIP)	The Town of Ashland first entered the NFIP in June 1975 due to an emergency situation and became a full member in April 2, 1986; the current Flood Insurance Rate Maps (DFIRMS) and the Flood Insurance Rate Study (FIS) were updated on February 20, 2008; Article 4.9 in the Town's Zoning Ordinance and in Section 2.7 of the Town's Subdivision Regulations.	Floodplain	Planning Board	Average	<b>Improvements Needed:</b> Although current zoning and subdivision regulations do a good job preventing the development of structures in the FEMA flood zone, this is deferred to educate the public regarding the risks of building in flood prone areas and the steps residents can take to lessen or eliminate the risk from flooding, whether they reside in the floodplain or not. <b>Action Item #3</b>
Multi-Hazard Mitigation Plan (2013)	Addresses all potential hazards, natural, man-made and wildland fires	Town Wide	Emergency Management Director	Good	<b>Improvements Needed:</b> The Ashland Hazard Mitigation Plan (2013) is being updated with this Plan. This is deferred to review the Hazard Mitigation Plan on an annual basis and to update the Plan again in 2024. <b>Action Item #16</b>
E-911	A system that complies with recommended signage size, location and visibility to ensure identification by emergency responders. This system includes markers at driveway entrances that identify residence locations in conjunction with the E-911 alerting system.	Town Wide	Emergency Management Director	Average	<b>Improvements Needed:</b> The Town is approximately 50% compliant with E-911 signage at individual homes. This is deferred to this Plan to continue to address the problem of inadequate 911 signage to assist emergency response and to continue to provide continued public education on this important issue. <b>Action Item #8</b>

Current Program or Activity	Description	Area of Town	Responsible Department	Effectiveness	Improvements Needed or Not Needed
Tree Maintenance Program	Ashland Electric has a tree maintenance program to remove trees and tree limbs from around the power lines; the Electric Department maintains tree-trimming projects to protect power lines and it was noted that the downtown power lines are of a higher grade to prevent breakage.	Town Wide	Department of Public Works	Average	<b>Improvements Needed:</b> Although the current Tree Maintenance Program is good, this is deferred to this Plan to continue these efforts into the future to ensure access for emergency responders and to reduce the level of damage that can occur during windstorms, ice storms and other natural hazard events. <b>Action Item #11</b>
Subdivision Regulations (2014)	The purpose of Ashland's subdivision regulations is to provide for the orderly present and future development of the Town by promoting the public health, safety, convenience and welfare of the Town's residents.	Town Wide	Planning Board	Good	<b>Improvements Needed:</b> The Subdivision Regulations, most recently updated in 2014, are in good shape. These regulations address many issues that help eliminate or diminish the impact from natural hazards and include floodplain regulations, some erosion control requirements and also address the potential need for water resources in new subdivisions. This is deferred to complete a comprehensive review of the regulations upon completion of this Plan. <b>Action Item #39</b>
Capital Improvement Plan (CIP)	A phased deposit of funds for town buildings, equipment & town roads, etc. to minimize any single year appropriations.	Town Wide	Town Manager	Good	<b>Improvements Needed:</b> The Town maintains, reviews and updates a Capital Improvement Plan (CIP). This is deferred to provide a comprehensive review and revitalization of the CIP to make it more effective upon completion of this Plan. <b>Action Item #24</b>
Emergency Operations Center (EOC)	The Ashland Fire Station is the designated Emergency Operations Center and is the location where emergency responders gather to receive important emergency-related information and guidance.	Ashland Fire Station	Emergency Management Director	Good	<b>Improvements Needed:</b> The Ashland EOC is well-equipped and ready to be activated. This is deferred to provide Table Top Exercises (TTX) and/or full-scale drills to better prepare Town Officials and emergency responders for hazardous or emergency events. <b>Action Item #38</b>

Current Program or Activity	Description	Area of Town	Responsible Department	Effectiveness	Improvements Needed or Not Needed
Hydrants	A system of pressurized hydrants in the Village Center and dry hydrants in locations where water resources are limited.	Town Wide	Fire Chief	Good	<b>Improvements Needed:</b> Hydrants, both pressurized and dry are important for the mitigation of fires. This is deferred to develop a written plan for the maintenance, replacement and upgrades of all hydrants within the Community <b>Action Item #10</b>
State Fire Codes & National Fire Protection Association (NFPA)	State regulations to ensure fire safety in new and existing properties. Builders are required to meet national standards for fire safety and to follow the NH and NPFA fire codes in new construction. Fire inspection is done for all commercial and rental properties and wood stove installations by the Fire Department and residential properties are inspected on a voluntary basis.	Town Wide	Fire Chief & Planning Board	Good	<b>Improvements Needed:</b> Education on state fire and building codes is done as needed. This is deferred to this Plan to continue to educate the Town's residents about the risks associated with fire safety and to use the Town's website to provide general fire mitigation techniques and links to Firewise®. <b>Action Item #4</b>
Building Permits & Building Codes	The International Building Codes (IBC) and International Residential Codes (IRC) have been adopted by the State of NH. Building permits are required and contractors are required to follow the IBC/IRC codes for new construction to meet national standards for flood, wind, earthquake, fire and snow load as part of the Building Regulations.	Town Wide	Planning Board & Code Enforcement Officer	Average	<b>Improvements Needed:</b> The Town of Ashland has a part-time Building Inspector and the building notification 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. This is deferred to continue to educate the Town's residents about the need to obtain building permits and the risks associated with inadequate building. Add a link to the Town's website to the State's adopted codes. <b>Action Item #6</b>

Current Program or Activity	Description	Area of Town	Responsible Department	Effectiveness	Improvements Needed or Not Needed
Shelters	The Ashland Elementary School is the designated Primary Shelter (Red Cross Partner Managed) and Plymouth State University is the designated Secondary Shelter. A Pet Shelter policy has been established and the Central NH Public Health Network; the Towns of Lincoln & Hebron have shelter trailers.	Town Wide	Emergency Management Director	Good	<b>Improvements Needed:</b> Although a Primary Shelter has been designated at the Ashland Elementary School (ARC Partner managed) and a Shelter Management Plan has been developed, shelter training has not been done. This is deferred to assign personnel for the development of a Shelter Management Team and to schedule shelter training. <b>Action Item #21</b>
Ashland Water & Sewer	Provides water for the Village District which includes approximately 500 homes & businesses. There is progressively less water pressure as the system extends beyond the Main Street area. This area is not likely to flood except in extreme conditions as the lagoons are 4-feet above flood stage.	Town Wide	Town Manager, Ashland Water & Sewer & the Selectboard	Average	<b>Improvements Needed:</b> The Ashland Water & Sewer Department is working with the State to upgrade identified areas of the system. The estimated 6.5 million dollar plan includes building an all new Septage Receiving Plant at the lagoons. DES permits have been received and state and federal funding is in place. This is deferred to complete the Septage Receiving Plant and to continue to explore and prioritize spending for other water and sewer projects. <b>Action Item #22</b>
Storm Drain / Culvert Maintenance	The Public Works Department (PWD) and the State DOT clean the drainage basins once a year and after major flooding events. Culverts are repaired as needed. The PWD has developed a stormwater maintenance program in coordination with the LRPC* using the SADES_ID system**. Every culvert in the Community is labelled with this identification system and reported to LRPC and to the State as required.	Town Wide	Department of Public Works	Good	<b>Improvements Needed:</b> The Ashland Public Works Department does a good job cleaning and repairing drainage basins and culverts and has developed a stormwater maintenance program in coordination with the Lakes Region Planning Commission. This is deferred for the continued maintenance of all drainage and culverts systems, ongoing communication with the LRPC and the State and for the improvement of several culverts in the Community. <b>Action Items #12, #14, #15, #16, #17 and #25-#36</b>



Current Program or Activity	Description	Area of Town	Responsible Department	Effectiveness	Improvements Needed or Not Needed
Zoning Ordinance (2017)	The Zoning Ordinance details requirements within each of six zones: Commercial, Industrial, Village Residential, Rural Residential, Pemigewasset Overlay District and Little Squam Lake & Squam River Overlay Districts.	Town Wide	Planning Board	Good	<b>No Improvements Needed:</b> The Zoning Ordinance was recently updated (2017) to address wellhead protection; zoning also addresses building on steep slopes, the slope and design of driveways, cell towers and turbines among other items; the Ashland Zoning Ordinance works well.
Mutual Aid Agreements (Fire, Police & EMS)	Mutual Aid agreements provide communications capabilities and cooperative assistance between area cities and towns; mutual aid provides access to resources that are appropriate to the scope of the emergency.	Town Wide	Emergency Management Director, Fire, Police, EMS & Highway	Excellent	<b>No Improvements Needed:</b> The Fire Department has a mutual aid agreement with the Lakes Region Fire Mutual Aid Association (LRFMAA); the Police Department has agreements with neighboring towns and with the NH State Police; the Ashland Fire Department provides EMS and works within a network of EMS providers; medical transportation is provided by Plymouth Fire and Ashland Fire (secondary); the Highway Department, the Ashland Water and the Sewer Department are members of the NH Public Works Mutual Aid Program; all mutual aid systems in Ashland work very well.
State Division of Forest and Lands/Fire Permits	NH Forest and Lands (DNCR) requires fire permits for open burning per state regulations.	Town Wide	Local Fire Wardens	Excellent	<b>No Improvements Needed:</b> System that is in place with NH Forest and Lands (DNCR) and the local fire warden works well; public is aware of fire permitting requirements.
Fire Department Training	Fire Department personnel training on all aspects of fire suppression.	Town Wide	Fire Chief	Excellent	<b>No Improvements Needed:</b> Continuous fire training has been and is being done by the Ashland Fire Department in conjunction with the Lakes Regional Fire Mutual Aid Association (LRFMA), the state Fire Academy and other state agencies.
Hazardous Materials Response Training	Hazmat training to ensure proper response to a hazardous materials event.	Town Wide	Fire Chief	Good	<b>No Improvements Needed:</b> Hazardous materials response training has been and continues to be done by the Ashland Fire Department; training is ongoing as available and includes awareness training, defensive postures and HazMit operational levels.

Current Program or Activity	Description	Area of Town	Responsible Department	Effectiveness	Improvements Needed or Not Needed
Comprehensive Shoreland Protection Act	Establishes minimum standards for the subdivision, use and development of shoreland adjacent to the state's public water bodies.	Shoreland adjacent to NH public waters	Planning Board	Excellent	<b>No Improvements Needed:</b> The Town of Ashland complies with the New Hampshire Comprehensive Shoreland Protection Act which was created to protect the integrity of public waters. This act regulates development within 250 feet of public waterways in the State.
Burning Index	New Hampshire Forests & Lands (DNCR) has a burning index, which measures the risk for wildfires; how likely they are to start on a given day. It also evaluates the potential damages wildfires can create, the number of people that will be needed to fight it and the type of equipment that might be needed as well.	Town Wide	DNCR	Excellent	<b>No Improvements Needed:</b> The Fire Department receives regular notification of the burning index via fax and email from NH Forests & Lands (DNCR); this notification is made daily during the fire danger season; burning notices to people with burn permits on high danger days; give out standard state brochures when getting permits
State Health Department Public Health Plan	State plan, "Influenza, Pandemic, Public Health Preparedness and Response Plan" written by state health department to be prepared for any public health emergency; the Town is part of Central NH Public Health Network.	Town Wide	Central NH Public Health Network	Excellent	<b>No Improvements Needed:</b> The Public Health Plan does what it is meant to do; the Town participates in regional public health meetings whenever possible; in addition, the Ashland Fire Station is a Multi-Agency Coordinating Entity (MACE) facility.
Road Design Standards	Ashland Subdivision Regulations include road design standards that control the amount and retention of stormwater runoff; the Town's standards comply with the State standards.	Town Wide	Planning Board & Department of Public Works	Excellent	<b>No Improvements Needed:</b> Road design standards are detailed within the Town's planning mechanisms (Subdivision Regulations) and adhere to State standards; new roads cannot be accepted as "town" roads unless approved by the Community at Town Meeting, however, the Selectboard can approve a new road as a town road through a public hearing.

Current Program or Activity	Description	Area of Town	Responsible Department	Effectiveness	Improvements Needed or Not Needed
School Emergency Response Plan	Required plan that ensures preparedness and response for school personnel and town emergency personnel in the instance of a major disaster at the school. Efforts are coordinated with the fire and police departments.	Ashland Elementary School & Plymouth Regional MS/HS	Superintendent of Schools & Emergency Responders	Excellent	<b>No Improvements Needed:</b> School Emergency Plans are updated on an annual basis as required by the State.
Capital Reserve Fund (CRF)	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 set aside to ensure adequate funding to at least partially finance future projects, equipment and other expenditures.	Town Wide	Selectboard & Town Departments	Good	<b>No Improvements Needed:</b> The Town's Capital Reserve Funds set funds aside each year at budget time to assist the Town's departments with planned purchases of equipment and supplies or in emergency situations; the Ashland Capital Reserve Funds continue to work well.

\*LRPC = Lakes Region Planning Commission

\*\*SADES = Statewide Asset Data Exchange System identification system (SADES\_ID).

THIS PAGE INTENTIONALLY LEFT BLANK

## Chapter 7: Prior Mitigation Accomplishments

### A. Date of Last Plan

Ashland has participated in the development of hazard mitigation plans in the past, based on the Disaster Mitigation Act (DMA) of 2000. The most recent update was formally approved in 2013. This Plan, the “Ashland Hazard Mitigation Plan Update 2019” is an update to the 2013 Plan.

Below are the action items that were identified in the 2013 Plan. The Team identified the current status of each strategy based on three sets of questions:

#### Completed

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

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

#### Deleted

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

#### Deferred

- Should the strategy be deferred for consideration in this Plan?
- 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**

**NOTE:** Items in **red** were extracted word-for-word from the 2013 Hazard Mitigation Plan and do not represent a time frame for this Plan. Although there was a Town Administrator position held during the 2013 plan development, as of March 2019, there is now a Town Manager in Ashland.

Priority	Project	Responsibility Oversight	Funding Support	Time Frame	Completed, Deleted, Deferred
A	Further educate the public regarding the Hazard Mitigation Plan through town communications such as the website and town bulletin	Town Administrator, Selectmen	Operating Budget	2013	<b>Partially Completed &amp; Deferred:</b> Ashland has provided some information in the past to residents about hazard mitigation. This is deferred to this Plan to further educate the public about this Hazard Mitigation Plan and potential mitigation action items residents can take to protect their own properties using the website and available social media platforms. <b>Action Item #1 (also in Table 6.1; see also D, E &amp; L as well)</b>
B	Include the Hazard Mitigation Plan in the Master Plan as outlined in RSA 764:2	Town Administrator, Selectmen	Operating Budget	2013	<b>Completed &amp; Deferred:</b> The Ashland Master Plan was updated in 2014 and is not due for the recommended 10-year update until 2024. This is deferred to this Plan to incorporate a natural hazards section and mitigation action items from this Plan, if warranted, whenever a review or update of the Master Plan takes place. <b>Action Item #13 (also in Table 6.1)</b>

Priority	Project	Responsibility Oversight	Funding Support	Time Frame	Completed, Deleted, Deferred
C	Expand the local CERT Team	EMD	Operating Budget	2013	<b>Deleted:</b> The expansion of a CERT Team in Ashland has not been done as these services can be accessed through Central NH Public Health, the MRC and their CERT. This is deleted as this is felt to be no longer necessary and is preparedness, not mitigation.
D	Purchase and distribute an emergency preparedness guide for all hazards	EMD	EMD Budget	2013	<b>Completed &amp; Deferred:</b> The Ashland Fire Department hands out preparedness information during fire protection week and provides weather alerts to departments who then post necessary information on their respective webpages. DHHS also offers preparedness guidance. This is deferred to continue to provide preparedness information and to utilize an emergency webpage to add additional preparedness and hazard mitigation information. <b>Action Item #1 (also in Table 6.1; see A, E &amp; L as well)</b>
E	Provide education on all hazards via the town website	EMD, Town Admin.	Operating Budget	2013	<b>Partially Completed &amp; Deferred:</b> The Town does not have an emergency webpage. An emergency webpage is great way to provide outreach to residents on not only emergency preparedness but also mitigation techniques property owners can use to reduce or eliminate the impact of natural hazards. This is deferred to this Plan to develop and provide robust information and links on an "Emergency Webpage" to educate the public on general and seasonal mitigation techniques. The Town also has the ability to get information out via the Police Department Facebook page as well. <b>Action Item #1 (also in Table 6.1; see A, D &amp; L as well)</b>
F	Conduct engineering study of the river side of River Street	Ashland Electric Department	Operating Budget	2013	<b>Deleted:</b> The river side of River Street is now owned by the state; the Town gave the dam to the state. The town is not aware of any engineering study that may be being done at this time by the state. This is deleted as this is no longer the responsibility of the Town.
G	Get on the FEMA and US Army Corps of Engineers list for determining the base flood elevation on the Squam River	Town Administrator, Selectmen	Operating Budget	2013	<b>Completed:</b> The Town has been in contact with FEMA and the Army Corp of Engineers (USACE) and new flood maps are being done by FEMA. The river runs through the mill area; the Town is working with FEMA to provide information on areas critical for flooding.
H	Install narrow band digital radio communications in the Ashland Elementary School	EMD, Ashland Electric Department	Ashland Electric Department (noted in CIP)	2014	<b>Deleted:</b> Narrow band radio communications have not been established between the School and the Ashland Emergency Responders although the school does have a radio system for internal use. This is deleted as this is preparedness, not mitigation.



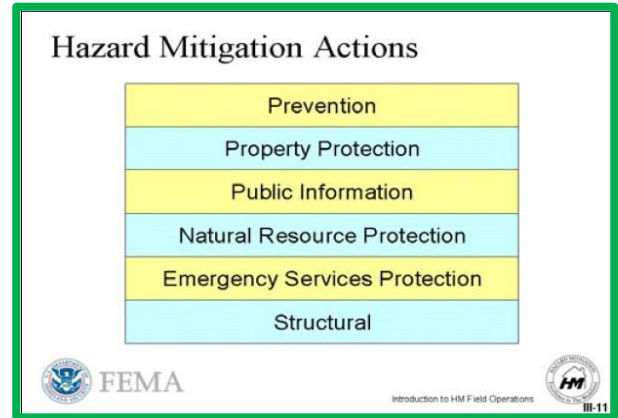
Priority	Project	Responsibility Oversight	Funding Support	Time Frame	Completed, Deleted, Deferred
I	Update and coordinate with the Sewer Commission regarding flood exposure at sewer lagoons from flooding and spillage on the Squam and Pemigewasset Rivers	EMD	Operating Budget	2014	<b>Completed &amp; Deleted:</b> The Town works with DES to determine the exposure at the lagoons. This is deleted as this is being done.
J	Add more regular sized sandbags to the town's supply for flooding.	EMD	Operating Budget	2014	<b>Completed &amp; Deferred:</b> The Town currently has a small supply of sandbags. Although this strategy from the prior plan is preparedness, not mitigation, it is deferred to this Plan to obtain more sandbags to have on hand, particularly in the event of a failure of Squam Lake Dam. <b>Action Item #23</b>
K	Coordinate the storage and availability of Dam Emergency Action Plan files together so that can be accessed at the EOC	EMD	Operating Budget, Grant	2014	<b>Partially Completed &amp; Deferred:</b> The Fire Department has copies of the dam EOP for the Grist Mill Dam and the River Street Dam. This is deferred to call owners of other dams to inquire about the safety of dams and to acquire dam plans if available. <b>Action Item #19 (also in Table 6.1)</b>
L	Include Hazard Mitigation Plan information in the Town Report	Town Administrator, Selectmen	Operating Budget	2014	<b>Completed &amp; Deferred:</b> The Town has provided some hazard mitigation information in past Town Reports and will continue to do so as applicable. This is deferred to continue to educate residents about mitigation techniques that can be taken to protect private residences. <b>Action Item #1 (also in Table 6.1, see A, D and E as well)</b>
M	Establish secondary shelter arrangements at the American Legion Building	EMD	Operating Budget	2014	<b>Completed &amp; Deferred:</b> Although a primary shelter has been established at the Ashland Elementary School and a secondary shelter is identified at Plymouth State University, there is no identified secondary shelter within the Town of Ashland. Research and consider locations that can be utilized as a secondary in-town shelter <b>Action Item #20</b>
N	Upgrade Highway, Electric, and Water/Sewer departments to narrow band radios	EMD	Grant, Operating Budget	2014	<b>Completed &amp; Deleted:</b> The Town has complied with narrow band requirements and will upgrade equipment as needed. This is deleted as this is preparedness not mitigation.
O	Work with the owner of the repetitive loss property to mitigate future flood damage	EMD	Grant, Operating Budget	2014	<b>Deleted:</b> To date, nothing has been done with regards to the repetitive loss property in Ashland. The structure is within feet of river however there is no property mitigation that can be done. Buying the home and relocating the owner is the only good mitigation, however, this is not on the radar for the Town for the foreseeable future, and therefore this strategy from the prior plan is deleted.

Priority	Project	Responsibility Oversight	Funding Support	Time Frame	Completed, Deleted, Deferred
P	Install a generator at repeater on Peppercorn Road	EMD	Grant, Operating Budget	2015	<b>Deleted:</b> The repeater on Peppercorn Road runs on car battery that is replaced periodically and is used by Electric, Highway & Police Departments. It was determined that a generator at the repeater is not necessary; therefore this strategy from the prior plan is deleted.
Q	Install backup power at the police station/town office	Budget Comm., Town Admin, Select	EMPG	2015	<b>Deferred:</b> Although recommended in the prior hazard mitigation plan, a permanent generator was not installed at the Town Office/Police Station due to lack of funding and changes in priorities. This is deferred to obtain funding and install a permanent generator at the Town Office/Police Station facility, a critical facility for law enforcement and continuity of government, particularly during emergency response. <b>Action Item #18 (also in Table 6.1)</b>
R	Install a generator at the Town Garage	EMD	Grant, Operating Budget	2017	<b>Deferred:</b> Although recommended in the prior hazard mitigation plan, a permanent generator was not installed at the Town Garage/Electric Department facility due to lack of funding and changes in priorities. This is deferred to obtain funding and install a permanent generator at the Town Garage/Electric Department facility, a critical facility which houses two important departments that are needed for emergency response. <b>Action Item #17 (also in Table 6.1)</b>
S	Address Thompson Street drainage through ditching, catch basins, and increased driveway culvert sizes	Town Administrator, PWD	Operating Budget, HMPG	2017	<b>Partially Completely &amp; Deferred:</b> Improvements on Thompson Street have not been done. A bond was needed to do this project but it lost by two votes at the 2018 Town Meeting; it was expected to be included in on the warrant for 2019. Two areas of Thompson Street are being addressed in this Plan which will accomplish much of what was intended in the prior plan. <b>Action Items #26 &amp; #27</b>
T	Coordinate with FEMA and US Army Corps of Engineers to determine the base flood elevation on the Squam River	EMD	Federal	2018	<b>See above, G</b>
U	Address flooding concerns on the Collins Street Bridge to mitigate flood hazard	Town Administrator, PWD	Operating Budget, HMPG, Sewer	2018	<b>Partially Completed &amp; Deleted:</b> The bridge decking and the removal of some trees have been done to mitigate ice jams and flooding at the Collins Street Bridge. Although flooding on the Pemigewasset River is always a possibility, there is no mitigation possible at this time; therefore, this strategy from the prior plan is deleted.

## 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 a number of 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 a 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
- Flood proofing
- 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 and/or realignment

## B. Potential Mitigation Strategies by Hazard

In order to further promote the concept of mitigation, the Town was provided with a flier that was developed by Mapping and Planning Solutions and used to determine what additional mitigation action items might be appropriate for the Town. The mitigation action items from that flier are listed below and on the following page; each item from this comprehensive list of possible mitigation action items was considered by the Planning Team to determine if any of these action items could be put in place for Ashland with special emphasis on new and existing buildings and infrastructure.

<u>Strategies that may apply to more than one hazard</u>	<u>Type of Project</u>
• 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
<u>Flood Mitigation Ideas</u>	<u>Type of Project</u>
• 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 and wildfires mitigation action items as well as the results of the STAPLEE evaluation as explained below. It should also be noted that although some areas are identified as “All Hazards”, many of these would apply indirectly to wildfire response and capabilities. 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 the effectiveness of each mitigation action item in accomplishing this goal, a set of criteria that was developed by FEMA, the STAPLEE method, was applied to each proposed action item.

The STAPLEE method analyzes the Social, Technical, Addministrative, Political, Legal, Economic and Environmental aspects of a project and 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:

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

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 prior to 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 Selectboard 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 properly 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.

Also, it should be noted that the Town understands that the “Mitigation Action Items” for a town of 200 are not the same as the “Mitigation Action Items” for a town of 30,000. In addition, the “Mitigation Action Items” for a town in the middle of predominantly hardwood forests, are not the same as the “Mitigation Action Items” for a town on the Jersey Shore. Therefore the Town of Ashland 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 and hereby 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.

#### **TABLE 8.1: POTENTIAL MITIGATION ACTION ITEMS & THE STAPLEE**

- 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.

Action Items are listed in numerical order.

Proposed Mitigation Action Items	Affected Location	Type of Activity	TTL	S	T	A	P	L	E	E
<b>Action Item #1:</b> Provide robust information on an Emergency Webpage on the Town's website for educating the public on hazard mitigation and preparedness measures (MU14) by adding to the Town's website a webpage 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). Provide homeowners with information on how to protect their homes from power outage (WW3). Develop ways to provide notification to citizens. (Tables 6.1 & 7.1)	Town Wide	<ul style="list-style-type: none"> <li>•Prevention</li> <li>•Public Education &amp; Awareness</li> </ul>	21	3	3	3	3	3	3	3
No apparent difficulty with this action item										
<b>Action Item #2:</b> Provide public outreach to encourage all residents to contact CodeRED to add cell numbers, unlisted numbers, emails and to verify information using the website, a possible brochure or a sign up at Town Meeting and/or available social media. (MU14) (Table 6.1)	Town Wide	<ul style="list-style-type: none"> <li>•Prevention</li> <li>•Public Education &amp; Awareness</li> </ul>	21	3	3	3	3	3	3	3
No apparent difficulty with this action item										
<b>Action Item #3:</b> Through Public Outreach and the Town's website, educate homeowners regarding the risks of building in flood zone and measures that can be taken to reduce the chance of flooding, such as securing debris, propane tanks, yard items or stored objects that may otherwise be swept away, damaged, or pose a hazard if picked up and washed away by floodwaters. Add links and information to the website and actively work with residents to ensure they are in compliance with the Town's Floodplain Ordinance. (F22 & F23) (Table 6.1)	Town Wide	<ul style="list-style-type: none"> <li>•Prevention</li> <li>•Public Education &amp; Awareness</li> <li>•Property Protection</li> </ul>	21	3	3	3	3	3	3	3
No apparent difficulty with this action item										

Proposed Mitigation Action Items	Affected Location	Type of Activity	TTL	S	T	A	P	L	E	E
<b>Action Item #4:</b> Provide public outreach to the citizens of Ashland regarding fire safety, the Firewise® program and mitigation techniques that can be used to protect homes from wildfires using an Emergency Webpage on the Town's website. Post important information and notices of red flag burning days through mailings and 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 and advise residents of the importance of maintaining defensible space, the safe disposal of yard and household waste and the removal of dead or dry leaves, needles, twigs, and combustible materials from roofs, decks, eaves, porches and yards. (WF12) (Table 6.1)	Town Wide	<ul style="list-style-type: none"> <li>•Prevention</li> <li>•Public Education &amp; Awareness</li> <li>•Property Protection</li> <li>•Natural Resource Protection</li> </ul>	21	3	3	3	3	3	3	3
				No apparent difficulty with this action item						
<b>Action Item #5:</b> Provide reminders to residents using multiple sources including a Town Emergency Webpage, to maintain private and Class VI roads to allow for emergency vehicular access. (WF12 & MU15)	Town Wide	<ul style="list-style-type: none"> <li>•Public Education &amp; Awareness</li> <li>•Emergency Service Protection</li> <li>•Property Protection</li> <li>•Natural Resource Protection</li> </ul>	21	3	3	3	3	3	3	3
				No apparent difficulty with this action item						
<b>Action Item #6:</b> Educate the Town's residents about the need to obtain building permits and the risks associated with inadequate building. Add a link to the Town's website to the State's adopted codes. (MU14) (Table 6.1)	Town Wide	<ul style="list-style-type: none"> <li>•Prevention</li> <li>•Public Education &amp; Awareness</li> <li>•Emergency Service Protection</li> <li>•Property Protection</li> <li>•Natural Resource Protection</li> </ul>	21	3	3	3	3	3	3	3
				No apparent difficulty with this action item						
<b>Action Item #7:</b> Develop and maintain a functional needs population list with the Electric Department to serve as an effective tool during an emergency. (ET3 & WW6)	Town Wide	<ul style="list-style-type: none"> <li>•Prevention</li> </ul>	21	3	3	3	3	3	3	3
				No apparent difficulty with this action item						

Proposed Mitigation Action Items	Affected Location	Type of Activity	TTL	S	T	A	P	L	E	E
<b>Action Item #8:</b> Consider ways to improve 911 signage compliance so that emergency responders can better assist the public at the time of need perhaps through the purchase of signs by the Town and/or through continued public outreach. <b>(MU14) (Table 6.1)</b>	Town Wide	<ul style="list-style-type: none"> <li>•Prevention</li> <li>•Public Education &amp; Awareness</li> <li>•Property Protection</li> <li>•Natural Resource Protection</li> </ul>	20	3	3	3	2	3	3	3
				<b>Political:</b> Some may not want a sign on their property						
<b>Action Item #9:</b> The Emergency Management Director to encourage all town officials and new hires to provide NIMS (IS-700) & ICS (ICS 100 & ICS 200) training to new first responders and to new Town officials as they become elected and/or appointed. <b>(Table 6.1)</b>	Town Wide	<ul style="list-style-type: none"> <li>•Prevention</li> <li>•Public Education &amp; Awareness</li> <li>•Emergency Service Protection</li> </ul>	20	3	3	2	3	3	3	3
				<b>Administrative:</b> Some town officials may find it difficult to find the time						
<b>Action Item #10:</b> Routinely inspect the functionality of all fire hydrants and maintain and repair all hydrants and other water resources in Ashland. Consider other areas of the Community that have limited water resources and address these issues by installing new hydrants, fire ponds and/or cisterns. <b>(WF8) (Table 6.1)</b>	Town Wide	<ul style="list-style-type: none"> <li>•Prevention</li> <li>•Emergency Service Protection</li> <li>•Property Protection</li> <li>•Natural Resource Protection</li> </ul>	18	3	3	3	3	2	2	2
				<b>Legal:</b> Some locations for new water resources may be on private property <b>Economical:</b> Budget constraints <b>Environmental:</b> Could require DES approvals						
<b>Action Item #11:</b> In addition to work that is done by and with local utility companies, continue to monitor and maintain brush cutting, drainage system maintenance and tree removal as part of a tree maintenance program and create defensible space around power lines, oil and gas lines and other infrastructure. Work to reduce wildfire risk by clearing dead vegetation, cutting high grass and other fuel loads in the Community. <b>(SW4, WF7, WF9 &amp; F14) (Table 6.1)</b>	Town Wide	<ul style="list-style-type: none"> <li>•Preventive</li> <li>•Emergency Service Protection</li> <li>•Property Protection</li> <li>•Natural Resource Protection</li> </ul>	14	1	3	3	1	1	2	3
				<b>Social:</b> Some will not want trees cut on their properties <b>Political:</b> Two scenic roads with specific regulations <b>Legal:</b> Some hazardous trees may be on private property that would require permission from the land owner <b>Economical:</b> Budget constraints						
<b>Action Item #12:</b> Maintain drainage and culverts systems, participate in the stormwater program with the LRPC and the State and improve culverts as needed in the Community. <b>(F5 &amp; F14) (Table 6.1)</b>	Town Wide	<ul style="list-style-type: none"> <li>•Prevention</li> <li>•Property Protection</li> <li>•Natural Resource Protection</li> <li>•Structural Project</li> </ul>	21	3	3	3	3	3	3	3
				No apparent difficulty with this action item						
<b>Action Item #13:</b> When updating or reviewing the Master Plan, incorporate a Natural Hazards section and mitigation action items from this Plan. <b>(MU6) (Tables 6.1 &amp; 7.1)</b>	Town Wide	<ul style="list-style-type: none"> <li>•Prevention</li> </ul>	20	3	3	3	2	3	3	3
				<b>Political:</b> Input from the public minimal						

Proposed Mitigation Action Items	Affected Location	Type of Activity	TTL	S	T	A	P	L	E	E
<b>Action Item #14:</b> Maintain the flow of stormwater on Owl Brook Road #1 with annual spring maintenance and cleaning to ensure the unobstructed flow of stormwater. (F13) (SADES_ID #8579)	Owl Brook Road #1 SADES_ID #8579	•Prevention	21	3	3	3	3	3	3	3
				No apparent difficulty with this action item						
<b>Action Item #15:</b> Maintain the flow of stormwater on Owl Brook Road #2 with annual spring maintenance and cleaning to ensure the unobstructed flow of stormwater. (F13) (SADES_ID #8580)	Owl Brook Road #2 SADES_ID #8580	•Prevention	21	3	3	3	3	3	3	3
				No apparent difficulty with this action item						
<b>Action Item #16:</b> Provide an annual review of the Ashland Hazard Mitigation Plan Update 2019. Include a review of the status of "Action Items" listed in this Plan to encourage completion and get approval from the local elected body on an annual basis. (MU11) (Table 6.1)	Town Wide	•Prevention •Public Education & Awareness	21	3	3	3	3	3	3	3
				No apparent difficulty with this action item						
<b>Action Item #17:</b> Obtain funding and install a generator at the Electric/Highway Department, a critical facility, to ensure its availability and usage during an emergency. (Tables 6.1 & 7.1)	Electric & Highway Department Building	•Prevention •Emergency Service Protection •Property Protection •Structural Project	17	3	3	1	3	3	1	3
				<b>Administrative:</b> Town, Utility Offices & DPW must agree <b>Economical:</b> Budget Constraints (3 budgets involved)						
<b>Action Item #18:</b> Obtain funding and install a generator at the Town Hall/Police Department, a critical facility important for the continuity of government and law enforcement, to ensure its availability and usage during an emergency. (Tables 6.1 & 7.1)	Town Hall/Police Department Building	•Prevention •Emergency Service Protection •Property Protection •Structural Project	21	3	3	3	3	3	3	3
				No apparent difficulty with this action item						
<b>Action Item #19:</b> Contact the owners of other dams (with the exception of the Grist Mill Dam and River Street Dam) to inquire about the safety of dams and to acquire dam plans if available. (Tables 6.1 & 7.1)	Dams in Town	•Prevention •Emergency Service Protection •Property Protection •Natural Resource Protection	21	3	3	3	3	3	3	3
				No apparent difficulty with this action item						
<b>Action Item #20:</b> Research and consider locations that can be utilized as a secondary in-town shelter, such as the American Legion Building or the Booster Club. (Table 7.1)	American Legion Building or Booster Club	•Prevention	21	3	3	3	3	3	3	3
				No apparent difficulty with this action item						

Proposed Mitigation Action Items	Affected Location	Type of Activity	TTL	S	T	A	P	L	E	E
<b>Action Item #21:</b> Assign personnel for the development of a Shelter Management Team and schedule shelter training to ensure readiness. <i>(Table 6.1)</i>	Town Wide	<ul style="list-style-type: none"> <li>•Prevention</li> <li>•Emergency Service Protection</li> </ul>	21	3	3	3	3	3	3	3
				No apparent difficulty with this action item						
<b>Action Item #22:</b> Complete the work required for the Septage Receiving Plant and explore and prioritize spending for other water and sewer projects. <i>(Table 6.1)</i>	Septage Receiving Plant	<ul style="list-style-type: none"> <li>•Prevention</li> <li>•Structural Project</li> </ul>	12	3	3	2	1	1	1	1
				<b>Administrative:</b> Technical and time consuming process <b>Political:</b> Expenditures may not seem reasonable to some residents <b>Legal:</b> There could be easement and right-of-way issues <b>Economical:</b> Budget constraints (large project) <b>Environmental:</b> DES and other permits are required						
<b>Action Item #23:</b> Obtain more sandbags for use in future flood emergencies and to have on-hand particular should a failure of Squam Lake Dam occur.	Town Wide	<ul style="list-style-type: none"> <li>•Prevention</li> <li>•Emergency Service Protection</li> <li>•Property Protection</li> <li>•Natural Resource Protection</li> </ul>	21	3	3	3	3	3	3	3
				No apparent difficulty with this action item						
<b>Action Item #24:</b> Using this Hazard Mitigation Plan and other town documents, complete a comprehensive review and revitalization of the Capital Improvement Plan (CIP) to make it more effective. Also, reactivate the CIP. <i>(Table 6.1)</i>	Town Wide	<ul style="list-style-type: none"> <li>•Prevention</li> <li>•Public Education &amp; Awareness</li> </ul>	17	3	3	1	1	3	3	3
				<b>Administrative:</b> Difficulty with an appropriate level of involvement <b>Political:</b> Difficulty with an appropriate level of involvement						
<b>Action Item #25:</b> Improve the flow of stormwater in 2019 on Libby Lane by upgrading the aging 45' steel-corrugated round culvert with a 15" x 45' smooth bore plastic culvert. <b>(F13) (SADES_ID #8206)</b>	Libby Lane SADES_ID #8206	<ul style="list-style-type: none"> <li>•Prevention</li> <li>•Structural Project</li> </ul>	21	3	3	3	3	3	3	3
				No apparent difficulty with this action item						
<b>Action Item #26:</b> A warrant article is in place to rebuild the infrastructure on Thompson Street (#1); this will include rebuilding/replacing all catch basins and culverts while also improving water and sewer; engineering for the project has been completed; if this passes at Town Meeting 2019, the 45' corrugated aluminum culvert will be replaced to improve the flow of stormwater. <b>(F13) (SADES_ID #8396)</b>	Thompson Street #1 SADES_ID #8396	<ul style="list-style-type: none"> <li>•Prevention</li> <li>•Structural Project</li> </ul>	21	3	3	3	3	3	3	3
				No apparent difficulty with this action item						

Proposed Mitigation Action Items	Affected Location	Type of Activity	TTL	S	T	A	P	L	E	E
<b>Action Item #27:</b> A warrant article is in place to rebuild the infrastructure on Thompson Street (#2); this will include rebuilding/replacing all catch basins and a culverts while also improving water and sewer; engineering for the project has been completed; if this passes at Town Meeting 2019, the 40' corrugated steel culvert will be replaced to improve the flow of stormwater. <b>(F13) (SADES_ID #8397)</b>	Thompson Street #2 SADES_ID #8397	•Prevention •Structural Project	20	3	3	3	1	3	3	3
				<i>Political: There may be some residents who will not want to approve this warrant.</i>						
<b>Action Item #28:</b> Improve the flow of stormwater on Highland Street by upgrading the 50' corrugated steel round culvert with a 15" x 50' smooth bore plastic culvert; build new head walls and excavate the entrance and exit to improve the flow of stormwater. <b>(F13) (SADES_ID #8480)</b>	Highland Street SADES_ID #8480	•Prevention •Structural Project	21	3	3	3	3	3	3	3
				<i>No apparent difficulty with this action item</i>						
<b>Action Item #29:</b> Improve the flow of stormwater on Sanborn Road #1 by cleaning and flushing the 34.7' concrete culvert at this location and excavating the entrance to improve drainage. <b>(F13) (SADES_ID #8302)</b>	Sanborn Road #1 SADES_ID #8302	•Prevention •Structural Project	21	3	3	3	3	3	3	3
				<i>No apparent difficulty with this action item</i>						
<b>Action Item #30:</b> Improve the flow of stormwater on Sanborn Road #2 by cleaning and flushing the 38.9' smooth plastic culvert at this location and excavating the entrance to improve drainage. <b>(F13) (SADES_ID #8304)</b>	Sanborn Road #2 SADES_ID #8304	•Prevention •Structural Project	21	3	3	3	3	3	3	3
				<i>No apparent difficulty with this action item</i>						
<b>Action Item #31:</b> Improve the flow of stormwater on Sanborn Road #3 by cleaning and flushing the 24' corrugated steel culvert at this location and excavating the entrance to improve drainage. <b>(F13) (SADES_ID #8307)</b>	Sanborn Road #3 SADES_ID #8307	•Prevention •Structural Project	21	3	3	3	3	3	3	3
				<i>No apparent difficulty with this action item</i>						
<b>Action Item #32:</b> Improve the flow of stormwater on Sanborn Road #4 by cleaning and flushing the 26' corrugated steel culvert at this location and excavating the entrance to improve drainage. <b>(F13) (SADES_ID #8309)</b>	Sanborn Road #4 SADES_ID #8309	•Prevention •Structural Project	21	3	3	3	3	3	3	3
				<i>No apparent difficulty with this action item</i>						
<b>Action Item #33:</b> Improve the flow of stormwater on North Ashland Road #1 by flushing the 50' concrete round culvert and excavating the entrance and exit to remove debris and increase the flow of stormwater. <b>(F13) (SADES_ID #8541)</b>	North Ashland Road #1 SADES_ID #8541	•Prevention •Structural Project	21	3	3	3	3	3	3	3
				<i>No apparent difficulty with this action item</i>						
<b>Action Item #34:</b> Improve the flow of stormwater on North Ashland Road #2 by flushing the 41' concrete round culvert and excavating the entrance and exit to remove debris and increase the flow of stormwater. <b>(F13) (SADES_ID #8542)</b>	North Ashland Road #2 SADES_ID #8542	•Prevention •Structural Project	21	3	3	3	3	3	3	3
				<i>No apparent difficulty with this action item</i>						



Proposed Mitigation Action Items	Affected Location	Type of Activity	TTL	S	T	A	P	L	E	E
<b>Action Item #35:</b> Improve the flow of stormwater on Wadleigh Road by upgrading the 40' corrugated steel round culvert with a 15" x 40' smooth bore plastic culvert; build new head walls and excavate the entrance and exit to improve the flow of stormwater. (F13) (SADES_ID #8576)	Wadleigh Road SADES_ID #8576	<ul style="list-style-type: none"> <li>•Prevention</li> <li>•Structural Project</li> </ul>	21	3	3	3	3	3	3	3
				No apparent difficulty with this action item						
<b>Action Item #36:</b> Improve the flow of stormwater on North Ashland Road #3 by upgrading the 40.7' concrete round culvert with a 15" smooth bore plastic culvert. Build new head walls and excavate the entrance and exit to improve the flow of stormwater. (F13) (SADES_ID #8558)	North Ashland Road #4 SADES_ID #8558	<ul style="list-style-type: none"> <li>•Prevention</li> <li>•Structural Project</li> </ul>	21	3	3	3	3	3	3	3
				No apparent difficulty with this action item						
<b>Action Item #37:</b> Obtain funding and install a generator at the Ashland Elementary School (primary shelter & secondary EOC) to ensure its availability and usage during an emergency. (Tables 6.1 & 7.1)	Ashland Elementary School	<ul style="list-style-type: none"> <li>•Prevention</li> <li>•Emergency Service Protection</li> <li>•Property Protection</li> <li>•Structural Project</li> </ul>	16	3	3	2	2	2	1	3
				<b>Administrative:</b> Will need participation from the SAU <b>Political:</b> Some may not want to spend money on this project <b>Legal:</b> Must be done in cooperation with the SAU <b>Economical:</b> Budget Constraints						
<b>Action Item #38:</b> Using the 2016 Emergency Operations Plan and available resources at the EOC, plan and hold additional Table Top Exercises (TTX) and/or full-scale drills to prepare for and improve the emergency response. (Table 6.1)	Town Wide	<ul style="list-style-type: none"> <li>•Prevention</li> <li>•Emergency Service Protection</li> </ul>	19	3	3	1	3	3	3	3
				<b>Administrative:</b> Staff availability is a challenge						
<b>Action Item #39:</b> Using this Hazard Mitigation Plan as a guide and other town documents complete a comprehensive review of the current subdivision regulations and recommend changes to decrease the potential for future hazards. (WF2, MU4, MU6) (Table 6.1)	Town Wide	<ul style="list-style-type: none"> <li>•Prevention</li> <li>•Public Education &amp; Awareness</li> </ul>	19	3	3	2	3	2	3	3
				<b>Administrative:</b> Will need to hold a public hearing <b>Legal:</b> New regulations will need legal review						
<b>Action Item #40:</b> Update the Ashland Emergency Operations Plan and include "Player Packets" for Lead Agencies and an analysis of the impact of natural hazards on Critical Infrastructure and Key Resources that may be needed during an emergency. (Tables 6.1)	Town Wide	<ul style="list-style-type: none"> <li>•Prevention</li> <li>•Emergency Service Protection</li> </ul>	21	3	3	3	3	3	3	3
				No apparent difficulty with this action item						

## 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** was to include those items which are being done and will continue to be done in the future.
- **Category 1** was to include those items under the direct control of town officials, within the financial capability of the Town using only town funding, those already being done or planned and those that could generally be completed within one year.
- **Category 2** was to include 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** was to include those items that would take a major funding effort, those that the Town had little control over the final decision and those that would take in excess of 37 months to complete.

Each potential mitigation action item was placed in one of these four categories and 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, although using the STAPLEE process along with the methodology detailed above and a Low-High estimate (see following page) the Team was able to come up with a general consensus on 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 Team seriously evaluate the new hazard mitigation action items that they had brainstormed throughout the hazard mitigation planning process. While all actions would help 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 that outlined who is responsible for implementing each action item, as well as when and how the actions will be implemented. The following questions were asked in order 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 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*, located on the next page, includes Problem Statements that were 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:

- **Low Cost** ..... \$0 - \$1,000 or staff time only
- **Medium Cost** ..... \$1,000-\$10,000
- **High Cost** ..... \$10,000 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** ..... 2-3 years (13-36 months)
- **Long Term:** ..... 4-5 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.*

Problem Statement New Mitigation Action Item	Type of Hazard	Responsible Department	Funding or Support	Time Frame	Est. Cost	TTL
<p><b>Problem Statement:</b> <i>Although the Town has made a great effort in providing public education, more can be done to provide not only emergency preparedness but also hazard mitigation techniques that residents can take to protect their homes and properties.</i></p> <p><b>Action Item #1:</b> Provide robust information on an Emergency Webpage on the Town's website for educating the public on hazard mitigation and preparedness measures (MU14) by adding to the Town's website a webpage that will include such information as emergency contacts, shelter locations, evacuation routes (SW7, WF11 &amp; 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 &amp; 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). Provide homeowners with information on how to protect their homes from power outage (WW3). Develop ways to provide notification to citizens. (Tables 6.1 &amp; 7.1)</p>	<p>All Hazards including: Severe Wind, Drought, Earthquake, Extreme Temperatures, Hail, Lightning, Severe Winter Weather, Tornado &amp; Wildfire</p>	<p>Webmaster, Town Departments &amp; Selectboard</p>	<p>Local</p>	<p><b>Short Term Ongoing</b> (For the life of the Plan)</p>	<p><b>Low Cost</b> (\$0 - \$1,000 or staff time only)</p>	<p>21</p>
<p><b>Problem Statement:</b> <i>CodeRED is an excellent warning system but it only stores resident phone numbers that are listed in the phone book. Residents may not be aware that they can add cell numbers, emails and unlisted numbers.</i></p> <p><b>Action Item #2:</b> Provide public outreach to encourage all residents to contact CodeRED to add cell numbers, unlisted numbers, emails and to verify information using the website, a possible brochure or a sign up at Town Meeting and/or available social media. (MU14) (Table 6.1)</p>	<p>All Hazards</p>	<p>Emergency Management Director</p>	<p>Local</p>	<p><b>Short Term Ongoing</b> (For the life of the Plan)</p>	<p><b>Low Cost</b> (\$0 - \$1,000 or staff time only)</p>	<p>21</p>

Problem Statement New Mitigation Action Item	Type of Hazard	Responsible Department	Funding or Support	Time Frame	Est. Cost	TTL
<p><b>Problem Statement:</b> Residents may not be aware of the risk of building in the floodplain and the steps they can take to reduce flooding.</p> <p><b>Action Item #3:</b> Through Public Outreach and the Town's website, educate homeowners regarding the risks of building in flood zone and measures that can be taken to reduce the chance of flooding, such as securing debris, propane tanks, yard items or stored objects that may otherwise be swept away, damaged, or pose a hazard if picked up and washed away by floodwaters. Add links and information to the website and actively work with residents to ensure they are in compliance with the Town's Floodplain Ordinance. <b>(F22 &amp; F23) (Table 6.1)</b></p>	Flooding	Town Manager & Selectboard	Local	<b>Short Term Ongoing</b> (For the life of the Plan)	<b>Low Cost</b> (\$0 - \$1,000 or staff time only)	<b>21</b>
<p><b>Problem Statement:</b> Although some homeowner education has been done in the past, public outreach to the citizens of Ashland regarding fire safety, the Firewise® program and mitigation techniques that can be used to protect homes from wildfires needs to continue into the future.</p> <p><b>Action Item #4:</b> Provide public outreach to the citizens of Ashland regarding fire safety, the Firewise® program and mitigation techniques that can be used to protect homes from wildfires using an Emergency Webpage on the Town's website. Post important information and notices of red flag burning days through mailings and obtain and have available Firewise® brochures to educate homeowners on methods to reduce fire risk around their homes <b>(WF10)</b>. Provide Firewise® brochures to those residents seeking burn permits and advise residents of the importance of maintaining defensible space, the safe disposal of yard and household waste and the removal of dead or dry leaves, needles, twigs, and combustible materials from roofs, decks, eaves, porches and yards. <b>(WF12) (Table 6.1)</b></p>	Wildfire	Fire Chief	Local	<b>Short Term Ongoing</b> (For the life of the Plan)	<b>Low Cost</b> (\$0 - \$1,000 or staff time only)	<b>21</b>
<p><b>Problem Statement:</b> Some private and Class VI roads are not maintained to provide access for emergency response vehicles.</p> <p><b>Action Item #5:</b> Provide reminders to residents using multiple sources including a town emergency webpage, to maintain private and Class VI roads to allow for emergency vehicular access. <b>(WF12 &amp; MU15)</b></p>	All Hazards & Wildfire	Selectboard & Fire Chief	Local	<b>Short Term Ongoing</b> (For the life of the Plan)	<b>Low Cost</b> (\$0 - \$1,000 or staff time only)	<b>21</b>

Problem Statement New Mitigation Action Item	Type of Hazard	Responsible Department	Funding or Support	Time Frame	Est. Cost	TTL
<p><b>Problem Statement:</b> <i>Some residents may not be aware of the International Building Codes (IBC) and the International Residential Codes (IRC) which have been adopted by the State of New Hampshire.</i></p> <p><b>Action Item #6:</b> Educate the Town's residents about the need to obtain building permits and the risks associated with inadequate building. Add a link to the Town's website to the State's adopted codes. <b>(MU14) (Table 6.1)</b></p>	All Hazards	Webmaster & Selectboard	Local	<b>Short Term Ongoing</b> (For the life of the Plan)	<b>Low Cost</b> (\$0 - \$1,000 or staff time only)	<b>21</b>
<p><b>Problem Statement:</b> <i>The Ashland Electric Department has a functional needs population list available for use by emergency responders; this list needs to be updated and maintained.</i></p> <p><b>Action Item #7:</b> Develop and maintain a functional needs population list with the Electric Department to serve as an effective tool during an emergency. <b>(ET3 &amp; WW6)</b></p>	All Hazards & Extreme Temperatures & Severe Winter Weather	Emergency Management Director & Electric Department	Local	<b>Short Term Ongoing</b> (For the life of the Plan)	<b>Low Cost</b> (\$0 - \$1,000 or staff time only)	<b>21</b>
<p><b>Problem Statement:</b> <i>The Town has continuously used public outreach to advise residents of the need for proper 911 signage. However, the Town is currently only about 50% compliant with the proper 911 signage.</i></p> <p><b>Action Item #8:</b> Consider ways to improve 911 signage compliance so that emergency responders can better assist the public at the time of need perhaps through the purchase of signs by the Town and/or through continued public outreach. <b>(MU14) (Table 6.1)</b></p>	All Hazards	Emergency Management Director, Town Manager & Selectboard	Local	<b>Short Term Ongoing</b> (For the life of the Plan)	<b>Low Cost</b> (\$0 - \$1,000 or staff time only)	<b>20</b>
<p><b>Problem Statement:</b> <i>Although most police officers and firefighters have received NIMS &amp; ICS trainings, not all of Ashland's town officials have.</i></p> <p><b>Action Item #9:</b> The Emergency Management Director to encourage all town officials and new hires to provide NIMS (IS-700) &amp; ICS (ICS 100 &amp; ICS 200) training to new first responders and to new Town officials as they become elected and/or appointed. <b>(Table 6.1)</b></p>	All Hazards	Emergency Management Director	Local	<b>Short Term Ongoing</b> (For the life of the Plan)	<b>Low Cost</b> (\$0 - \$1,000 or staff time only)	<b>20</b>

Problem Statement New Mitigation Action Item	Type of Hazard	Responsible Department	Funding or Support	Time Frame	Est. Cost	TTL
<p><b>Problem Statement:</b> Hydrants, both pressurized and dry, are important for the mitigation of fires but they need to be consistently maintained and replaced to remain effective.</p> <p><b>Action Item #10:</b> Routinely inspect the functionality of all fire hydrants and maintain and repair all hydrants and other water resources in Ashland. Consider other areas of the Community that have limited water resources and address these issues by installing new hydrants, fire ponds and/or cisterns. (WF8) (Table 6.1)</p>	Wildfire	Water Department (maintenance) & Fire Department	Local & Grants (for purchase)	Short Term Ongoing (For the life of the Plan)	Medium Cost (\$1,000 - \$10,000) (depending on actions taken)	18
<p><b>Problem Statement:</b> As tree limbs fall in and onto roads and water systems and as vegetation grows around utilities, there is a need to continue to work to keep this hazard to a minimum.</p> <p><b>Action Item #11:</b> In addition to work that is done by and with local utility companies, continue to monitor and maintain brush cutting, drainage system maintenance and tree removal as part of a tree maintenance program and create defensible space around power lines, oil and gas lines and other infrastructure. Work to reduce wildfire risk by clearing dead vegetation, cutting high grass and other fuel loads in the Community. (SW4, WF7, WF9 &amp; F14) (Table 6.1)</p>	Severe Winter Weather & Ice Storms; High Winds (windstorms); Wildfire; Flooding; Tornado & Downbursts; Hurricane & Tropical Storm	Highway & Electric Departments	Local	Short Term Ongoing (For the life of the Plan)	High Cost (\$10,000 or more; depending on work requirements)	14
<p><b>Problem Statement:</b> The Ashland Public Works Department does a good job cleaning and repairing drainage basins and culverts and has developed a stormwater maintenance program in coordination with the Lakes Region Planning Commission. Culvert and drainage maintenance needs to continue to ensure efficient stormwater management.</p> <p><b>Action Item #12:</b> Maintain drainage and culverts systems, participate in the stormwater program with the LRPC and the State and improve culverts as needed in the Community. (F5 &amp; F14) (Table 6.1)</p>	Flooding	Public Works Department	Local	Short Term Ongoing (For the life of the Plan)	Low Cost (\$0 - \$1,000 or staff time only)	21
<p><b>Problem Statement:</b> The Ashland Master Plan was updated in 2014 and is not due for the recommended 10-year update until 2024. This is deferred to incorporate a Natural Hazards section and mitigation action items from this Plan, if warranted, whenever a review or update of the Master Plan takes place.</p> <p><b>Action Item #13:</b> When updating or reviewing the Master Plan, incorporate a Natural Hazards section and mitigation action items from this Plan. (MU6) (Tables 6.1 &amp; 7.1)</p>	All Hazards	Planning Board	Local	Short Term Ongoing (For the life of the Plan; updated annually)	High Cost (\$10,000 or more)	20



Problem Statement New Mitigation Action Item	Type of Hazard	Responsible Department	Funding or Support	Time Frame	Est. Cost	TTL
<p><b>Problem Statement:</b> The inlet on Owl Brook Road (#1) is a storm drain; although the culvert in this location is currently operating as expected, continued maintenance is required.</p> <p><b>Action Item #14:</b> Maintain the flow of stormwater on Owl Brook Road #1 with annual spring maintenance and cleaning to ensure the unobstructed flow of stormwater. (F13) (SADES_ID #8579)</p>	Flooding	Public Works Department	Local & Grants	Short Term Ongoing (For the life of the Plan)	Low Cost (\$0 - \$1,000 or staff time only)	21
<p><b>Problem Statement:</b> The inlet on Owl Brook Road (#2) is a storm drain; although the culvert in this location is currently operating as expected, the continued maintenance is required.</p> <p><b>Action Item #15:</b> Maintain the flow of stormwater on Owl Brook Road #2 with annual spring maintenance and cleaning to ensure the unobstructed flow of stormwater. (F13) (SADES_ID #8580)</p>	Flooding	Public Works Department	Local & Grants	Short Term Ongoing (For the life of the Plan)	Low Cost (\$0 - \$1,000 or staff time only)	21
<p><b>Problem Statement:</b> This Plan, the Ashland Hazard Mitigation Plan Update 2019, will require an annual review and a complete update in five years.</p> <p><b>Action Item #16:</b> Provide an annual review of the Ashland Hazard Mitigation Plan Update 2019. Include a review of the status of "Action Items" listed in this Plan to encourage completion and get approval from the local elected body on an annual basis. (MU11) (Table 6.1)</p>	All Hazards	Emergency Management Director, Town Manager & Selectboard	Local	Short Term Ongoing (For the life of the Plan; updated annually)	Low Cost (\$0 - \$1,000 or staff time only)	21
<p><b>Problem Statement:</b> Sufficient generators have been established at the Fire Station and at the Sewer &amp; Water Facility but there is no permanent generator at the Electric/Highway Department Facility which is critically important for emergency response.</p> <p><b>Action Item #17:</b> Obtain funding and install a generator at the Electric/Highway Department, a critical facility, to ensure its availability and usage during an emergency. (Tables 6.1 &amp; 7.1)</p>	All Hazards	Emergency Management Director & Selectboard	Local & Grants	Short Term (1 year or less: 0-12 months)	Medium Cost (\$1,000 - \$10,000)	17
<p><b>Problem Statement:</b> Sufficient generators have been established at the Fire Station and at the Sewer &amp; Water Facility but there is no permanent generator at the Town Hall/Police Department building which is critically important for emergency response.</p> <p><b>Action Item #18:</b> Obtain funding and install a generator at the Town Hall/Police Department, a critical facility important for the continuity of government and law enforcement, to ensure its availability and usage during an emergency. (Tables 6.1 &amp; 7.1)</p>	All Hazards	Emergency Management Director & Selectboard	Local & Grants	Short Term (1 year or less: 0-12 months)	Medium Cost (\$1,000 - \$10,000)	21

Problem Statement New Mitigation Action Item	Type of Hazard	Responsible Department	Funding or Support	Time Frame	Est. Cost	TTL
<p><b>Problem Statement:</b> The Fire Department has copies of the dam EOP for the Grist Mill Dam and the River Street Dam but does not have adequate information on safety and emergency plans for other dams in Town.</p> <p><b>Action Item #19:</b> Contact the owners of other dams (with the exception of the Grist Mill Dam and River Street Dam) to inquire about the safety of dams and to acquire dam plans if available. (Tables 6.1 &amp; 7.1)</p>	Flooding	Emergency Management Director	Local	Short Term (1 year or less: 0-12 months)	Low Cost (\$0 - \$1,000 or staff time only)	21
<p><b>Problem Statement:</b> Although a primary shelter has been established at the Ashland Elementary School and a secondary shelter is identified at Plymouth State University, there is no identified secondary shelter within the Town of Ashland.</p> <p><b>Action Item #20:</b> Research and consider locations that can be utilized as a secondary in-town shelter, such as the American Legion Building or the Booster Club. (Table 7.1)</p>	All Hazards	Emergency Management Director & Health Officer	Local	Short Term (1 year or less: 0-12 months)	Low Cost (\$0 - \$1,000 or staff time only)	21
<p><b>Problem Statement:</b> Although a Primary Shelter has been designated at the Ashland Elementary School (ARC Partner managed) and a Shelter Management Plan has been developed, a Shelter Management Team and shelter training have not been done.</p> <p><b>Action Item #21:</b> Assign personnel for the development of a Shelter Management Team and schedule shelter training to ensure readiness. (Table 6.1)</p>	All Hazards	Emergency Management Director	Local	Short Term (1 year or less: 0-12 months)	Low Cost (\$0 - \$1,000 or staff time only)	21
<p><b>Problem Statement:</b> The Ashland Water &amp; Sewer Department is working with the State to upgrade identified areas of the system. The estimated 6.5 million dollar plan includes building an all new Septage Receiving Plant at the lagoons. DES permits have been received and state and federal funding is in place. This is deferred for completion and continued exploration and prioritization of spending for other water and sewer projects.</p> <p><b>Action Item #22:</b> Complete the work required for the Septage Receiving Plant and explore and prioritize spending for other water and sewer projects. (Table 6.1)</p>	All Hazards	Water & Sewer Department	Local & Grants	Short Term (1 year or less: 0-12 months) (Septage Receiving Plant) --- Ongoing for prioritization	High Cost (\$10,000 or more)	12

Problem Statement New Mitigation Action Item	Type of Hazard	Responsible Department	Funding or Support	Time Frame	Est. Cost	TTL
<p><b>Problem Statement:</b> <i>The Town currently has a small supply of sandbags, but more are needed.</i></p> <p><b>Action Item #23:</b> Obtain more sandbags for use in future flood emergencies and to have on-hand particular should a failure of Squam Lake Dam occur.</p>	Flooding	Emergency Management Director	Local & Grants	<b>Short Term</b> (1 year or less: 0-12 months)	<b>Low Cost</b> (\$0 - \$1,000 or staff time only)	<b>21</b>
<p><b>Problem Statement:</b> <i>The Town maintains, reviews and updates a Capital Improvement Plan (CIP). However a comprehensive review and revitalization of the CIP to make it more effective is needed.</i></p> <p><b>Action Item #24:</b> Using this Hazard Mitigation Plan and other town documents, complete a comprehensive review and revitalization of the CIP to make it more effective. Also, reactivate the CIP. <b>(Table 6.1)</b></p>	All Hazards	Town Manager	Local	<b>Short Term</b> (1 year or less: 0-12 months)	<b>Low Cost</b> (\$0 - \$1,000 or staff time only)	<b>17</b>
<p><b>Problem Statement:</b> <i>The pavement is cracking along the length of the 45' culvert on Libby Lane; the pipe is completely rusted and gone at the bottom; undermining the integrity of the road is a concern.</i></p> <p><b>Action Item #25:</b> Improve the flow of stormwater in 2019 on Libby Lane by upgrading the aging 45' steel-corrugated round culvert with a 15" x 45' smooth bore plastic culvert. <b>(F13) (SADES ID #8206)</b></p>	Flooding	Public Works Department	Local & Grants	<b>Short Term</b> (1 year or less: 0-12 months)	<b>Low Cost</b> (\$0 - \$1,000 or staff time only)	<b>21</b>
<p><b>Problem Statement:</b> <i>A culvert on Thompson Street (#1) may be collapsing in the middle and a rock is blocking the inlet; daylight cannot be seen through the length of the culvert and the culvert does not drain appropriately.</i></p> <p><b>Action Item #26:</b> A warrant article is in place to rebuild the infrastructure on Thompson Street (#1); this will include rebuilding/replacing all catch basins and culverts while also improving water and sewer; engineering for the project has been completed; if this passes at Town Meeting 2019, the 45' corrugated aluminum culvert will be replaced to improve the flow of stormwater. <b>(F13) (SADES ID #8396)</b></p>	Flooding	Public Works Department	Local & Grants	<b>Short Term</b> (1 year or less: 0-12 months)	<b>Medium Cost</b> (\$1,000 - \$10,000)	<b>21</b>
<p><b>Problem Statement:</b> <i>A second culvert on Thompson Street (#2) is not sufficiently handling stormwater.</i></p> <p><b>Action Item #27:</b> A warrant article is in place to rebuild the infrastructure on Thompson Street (#2); this will include rebuilding/replacing all catch basins and a culverts while also improving water and sewer; engineering for the project has been completed; if this passes at Town Meeting 2019, the 40' corrugated steel culvert will be replaced to improve the flow of stormwater. <b>(F13) (SADES ID #8397)</b></p>	Flooding	Public Works Department	Local & Grants	<b>Short Term</b> (1 year or less: 0-12 months)	<b>Medium Cost</b> (\$1,000 - \$10,000)	<b>21</b>

Problem Statement New Mitigation Action Item	Type of Hazard	Responsible Department	Funding or Support	Time Frame	Est. Cost	TTL
<p><b>Problem Statement:</b> <i>The 50' culvert on Highland Street has potential to undermine the road and is in need of replacement.</i></p> <p><b>Action Item #28:</b> Improve the flow of stormwater on Highland Street by upgrading the 50' corrugated steel round culvert with a 15" x 50' smooth bore plastic culvert; build new head walls and excavate the entrance and exit to improve the flow of stormwater. <b>(F13) (SADES_ID #8480)</b></p>	Flooding	Public Works Department	Local & Grants	<b>Short Term</b> (1 year or less: 0-12 months)	<b>Medium Cost</b> (\$1,000 - \$10,000)	21
<p><b>Problem Statement:</b> <i>Resident informed the Town that this culvert on Sanborn Road (#1) has not been maintained in many years.</i></p> <p><b>Action Item #29:</b> Improve the flow of stormwater on Sanborn Road #1 by cleaning and flushing the 34.7' concrete culvert at this location and excavating the entrance to improve drainage. <b>(F13) (SADES_ID #8302)</b></p>	Flooding	Public Works Department	Local & Grants	<b>Short Term</b> (1 year or less: 0-12 months)	<b>Low Cost</b> (\$0 - \$1,000 or staff time only)	21
<p><b>Problem Statement:</b> <i>A second culvert on Sanborn Road (#2) is completely full and water is backed up.</i></p> <p><b>Action Item #30:</b> Improve the flow of stormwater on Sanborn Road #2 by cleaning and flushing the 38.9' smooth plastic culvert at this location and excavating the entrance to improve drainage. <b>(F13) (SADES_ID #8304)</b></p>	Flooding	Public Works Department	Local & Grants	<b>Short Term</b> (1 year or less: 0-12 months)	<b>Low Cost</b> (\$0 - \$1,000 or staff time only)	21
<p><b>Problem Statement:</b> <i>A third culvert on Sanborn Road (#3) is not sufficiently handling drainage.</i></p> <p><b>Action Item #31:</b> Improve the flow of stormwater on Sanborn Road #3 by cleaning and flushing the 24' corrugated steel culvert at this location and excavating the entrance to improve drainage. <b>(F13) (SADES_ID #8307)</b></p>	Flooding	Public Works Department	Local & Grants	<b>Short Term</b> (1 year or less: 0-12 months)	<b>Low Cost</b> (\$0 - \$1,000 or staff time only)	21
<p><b>Problem Statement:</b> <i>A fourth culvert on Sanborn Road (#4) is not sufficiently handling drainage and is partially blocked up with debris and silt.</i></p> <p><b>Action Item #32:</b> Improve the flow of stormwater on Sanborn Road #4 by cleaning and flushing the 26' corrugated steel culvert at this location and excavating the entrance to improve drainage. <b>(F13) (SADES_ID #8309)</b></p>	Flooding	Public Works Department	Local & Grants	<b>Short Term</b> (1 year or less: 0-12 months)	<b>Low Cost</b> (\$0 - \$1,000 or staff time only)	21

Problem Statement New Mitigation Action Item	Type of Hazard	Responsible Department	Funding or Support	Time Frame	Est. Cost	TTL
<p><b>Problem Statement:</b> <i>The 50' concrete culvert on North Ashland Road (#1) is not sufficiently handling the flow of stormwater.</i></p> <p><b>Action Item #33:</b> Improve the flow of stormwater on North Ashland Road #1 by flushing the 50' concrete round culvert and excavating the entrance and exit to remove debris and increase the flow of stormwater. <b>(F13)</b> (SADES_ID #8541)</p>	Flooding	Public Works Department	Local & Grants	<b>Short Term</b> (1 year or less: 0-12 months)	<b>Low Cost</b> (\$0 - \$1,000 or staff time only)	21
<p><b>Problem Statement:</b> <i>The 41' concrete culvert on North Ashland Road (#2) is not sufficiently handling the flow of stormwater.</i></p> <p><b>Action Item #34:</b> Improve the flow of stormwater on North Ashland Road #2 by flushing the 41' concrete round culvert and excavating the entrance and exit to remove debris and increase the flow of stormwater. <b>(F13)</b> (SADES_ID #8542)</p>	Flooding	Public Works Department	Local & Grants	<b>Short Term</b> (1 year or less: 0-12 months)	<b>Low Cost</b> (\$0 - \$1,000 or staff time only)	21
<p><b>Problem Statement:</b> <i>The 40' culvert on Wadleigh Road has potential to undermine the road and is in need of replacement.</i></p> <p><b>Action Item #35:</b> Improve the flow of stormwater on Wadleigh Road by upgrading the 40' corrugated steel round culvert with a 15" x 40' smooth bore plastic culvert; build new head walls and excavate the entrance and exit to improve the flow of stormwater. <b>(F13)</b> (SADES_ID #8576)</p>	Flooding	Public Works Department	Local & Grants	<b>Short Term</b> (1 year or less: 0-12 months)	<b>Medium Cost</b> (\$1,000 - \$10,000)	21
<p><b>Problem Statement:</b> <i>An aging culvert on North Ashland Road, originally installed to direct stormwater has "deviated" (sections slipping) and could create potential problems with drainage in the future.</i></p> <p><b>Action Item #36:</b> Improve the flow of stormwater on North Ashland Road #3 by upgrading the 40.7' concrete round culvert with a 15" smooth bore plastic culvert. Build new head walls and excavate the entrance and exit to improve the flow of stormwater. <b>(F13)</b> (SADES_ID #8558)</p>	Flooding	Public Works Department	Local & Grants	<b>Short Term</b> (1 year or less: 0-12 months)	<b>Low Cost</b> (\$0 - \$1,000 or staff time only)	21

Problem Statement New Mitigation Action Item	Type of Hazard	Responsible Department	Funding or Support	Time Frame	Est. Cost	TTL
<p><b>Problem Statement:</b> Sufficient generators have been established at the Fire Station and at the Sewer &amp; Water Facility but there is no permanent generator at the Ashland Elementary School which is the designated Primary Shelter and Secondary EOC.</p> <p><b>Action Item #37:</b> Obtain funding and install a permanent generator at the Ashland Elementary School (primary shelter &amp; secondary EOC) to ensure its availability and usage during an emergency. (Tables 6.1 &amp; 7.1)</p>	All Hazards	Emergency Management Director & School Safety Committee	Local & Grants	Medium Term (2-3 years: 13-36 months)	High Cost (\$10,000 or more)	16
<p><b>Problem Statement:</b> The Ashland EOC is well-equipped and ready to be activated, however additional Table Top Exercises (TTX) and/or full-scale drills are needed to better prepare Town Officials and emergency responders for hazardous or emergency events.</p> <p><b>Action Item #38:</b> Using the 2016 Emergency Operations Plan and available resources at the EOC, plan and hold additional Table Top Exercises (TTX) and/or full-scale drills to prepare for and improve the emergency response. (Table 6.1)</p>	All Hazards	Emergency Management Director & other Town Departments	Local	Medium Term (2-3 years: 13-36 months)	Medium Cost (\$1,000 - \$10,000)	19
<p><b>Problem Statement:</b> The Subdivision Regulations, most recently updated in 2014, are in good shape. These regulations address many issues that help eliminate or diminish the impact from natural hazards and include floodplain regulations, some erosion control requirements and also address the potential need for water resources in new subdivisions. However, a comprehensive five-year review of the regulations is needed.</p> <p><b>Action Item #39:</b> Using this Hazard Mitigation Plan as a guide and other town documents complete a comprehensive review of the current subdivision regulations and recommend changes to decrease the potential for future hazards. (WF2, MU4, MU6) (Table 6.1)</p>	All Hazards	Planning Board	Local	Medium Term (2-3 years: 13-36 months)	Low Cost (\$0 - \$1,000 or staff time only)	19
<p><b>Problem Statement:</b> The Ashland Emergency Operations Plan was updated in 2016 and will need a recommended update again in 2021.</p> <p><b>Action Item #40:</b> Update the Ashland Emergency Operations Plan and include "Player Packets" for Lead Agencies and an analysis of the impact of natural hazards on Critical Infrastructure and Key Resources that may be needed during an emergency. (Tables 6.1)</p>	All Hazards	Emergency Management Director	Local & Grants	Long Term (3-5 years: 37-60 months)	Medium Cost (\$1,000 - \$10,000)	21



## 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, particularly since communities may suffer budget cuts or experience personnel turnover during both the planning and implementation stages. A good plan will incorporate periodic monitoring and evaluation mechanisms to allow for review of successes and failures or even just simple updates. 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.

The Ashland Hazard Mitigation Plan Update 2019 is considered a work in progress. There are three situations which will prompt revisiting this Plan:

- First, as a minimum, it will be reviewed annually or after any emergency event to assess whether the existing and suggested mitigation action items were successful. This review will focus on the assessment of the Plan's effectiveness, accuracy and completeness in monitoring of the implementation 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 any and 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, posting meeting information on the Town website and at the Town Offices, sending letters to federal, state and local organizations impacted by the Plan and posting notices in public places in the Town. This will ensure that all comments and revisions from the public and stakeholders will be considered. The Emergency Management Director ensures that these actions will be done.

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 the development of this Plan. Forms are available for years 1-4, with 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. Ashland completed its last hazard mitigation plan in 2013 and has completed some of projects from that Plan. Examples of these can be found in Table 7.1 and include items such as providing public outreach on hazard mitigation and completing mitigation actions to address flooding concerns on the Collins Street Bridge. 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:

#### **Ashland Master Plan (2014)**

Traditionally, Master Plans are updated every 5 to 10 years. Ashland last completed a Master Plan in 2014 and is expected to do a full update in 2024. An action item has been created to review the Master Plan and consider adding a Natural Hazards section and the integration of concepts, ideas and action items from this Hazard Mitigation Plan. **(Action Item #13)**

#### **Ashland Emergency Operations Plan 2016 (EOP)**

The EOP is designed to allow the Town to respond more effectively to disasters as well as mitigate the risk to people and property; EOPs are generally reviewed after each hazardous event and updated on a five-year basis. The last Ashland EOP was completed in 2016; an update for the Emergency Operations Plan is expected to be updated with completion expected in 2021. The new EOP will include elements from this hazard mitigation plan. **(Action Item #40)**

Adoption by the local governing body demonstrates the jurisdiction's commitment to fulfilling the mitigation goals and objectives outlined in the Plan. Adoption legitimizes the Plan and authorizes responsible agencies to execute their responsibilities. The Plan shall include documentation of the resolution adopting the Plan as per requirement §201.6(c)(5).

#### **Town Budget & Capital Reserve Funds (annual)**

The Town of Ashland maintains Capital Reserve Funds. Capital Reserve Funds are adjusted annually in coordination with the Selectboard 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 (multiple Action Items).**

#### **Ashland Ordinances, Subdivision Regulations (2014) & Capital Improvement Plan (annual)**

As time the needs of the Town change, the Town's planning mechanisms will be reviewed and updated. In coordination with these actions, the applicable Board will review this Hazard Mitigation Plan and incorporate any changes that help mitigate the impact of natural or human-caused disasters. An example of this integration can be seen in this Plan's Mitigation Action Plan. **(Action Items #24 & 39)**

The local governments will modify other plans and actions as necessary to incorporate hazard and/or wildfire issues; the Selectboard ensures this process will be followed in the future. In addition, the Town will review and make note of instances when this has been done and include it as part of their annual review of the Plan.

### **C. Plan Approval & Adoption (future)**

This Plan was completed in a series of open meetings beginning on August 13, 2018. The Plan was presented to the Town for review, submitted to HSEM for Conditional Approval (*APA, Approved Pending Adoption*), formally adopted by the Selectboard and resubmitted to HSEM for Final Approval. Once Final Approval from HSEM was met, copies of the Plan were distributed to the Town, HSEM, 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

#### **PARTIES TO THE AGREEMENT**

Mapping and Planning Solutions  
Town of Ashland, NH

Current Plan Expiration: 12/13/18  
HMPG Grant Expiration: 6/1/21

This Agreement between the Town of Ashland (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 2019 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 FEMA. 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 FEMA for conditional approval. Upon conditional approval by FEMA, MAPS will assist the planning team as needed with presentation of the Plan to the Ashland Board of Selectmen and/or Planning 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 Ashland Hazard Mitigation Plan.
- After final approval is received from FEMA, MAPS will provide the Town with a two copies of the Plan containing all signed documents, approvals and GIS maps 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) 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 ensure that the Planning Team includes members who are able to support the planning process by identifying available Town resources including people who will have access to and can provide pertinent data. The planning team should include, but not be limited to, such Town members as the local Emergency Management Director, the Fire, Ambulance and Police Chiefs, members of the Board of Selectmen 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 Board of Selectmen and/or Planning Board for consideration and adoption.
- After adoption and final approval from 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 \$6,000; 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 ..... \$3,000
- 2. Second payment upon Plan submittal to FEMA for Conditional Approval..... \$2,800
- 3. Final payment upon project completion and receipt of final Plan copy ..... \$200
- Total Fees..... \$6,000

- **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 Ashland 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 \$2,000. Matching funds are the responsibility of the Town of Ashland, 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 five or six two-hour meetings will be required to gather the necessary information to create the updated the Plan.

The grant provided for this project is an HMPG Grant; per the grant agreement between the Town and HSEM, all work must be completed by June 1, 2021. It is expected that this project will be completed long before the grant expiration date of June 1, 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 Ashland. 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 Ashland 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 forty Hazard Mitigation Plans, more than forty five Emergency Operations Plans and has completed the following FEMA 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

➤ **Contacts:**

**For Mapping & Planning Solutions**

June Garneau  
Mapping and Planning Solutions  
105 Union Street  
Whitefield, NH 03598  
jgarneau@mappingandplanning.com

**For the Town**

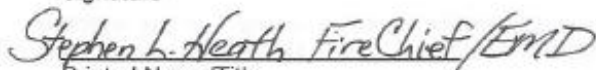
Stephen L. Heath, Fire Chief & EMD  
PO Box 856  
Ashland, NH 03217  
firechief@ashland.nh.gov

**Signature below indicates acceptance of and Agreement to details outlined in this Agreement**

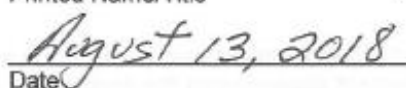
**FOR THE TOWN OF ASHLAND, NH**



Signature

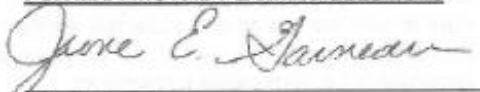
  
Stephen L. Heath, Fire Chief/EMD

Printed Name/Title

  
August 13, 2018

Date

**FOR MAPPING AND PLANNING SOLUTIONS**



Signature

June Garneau, Owner  
August 8, 2018

August 8, 2018

**Signatures are scanned facsimiles; original signatures are on file.**

**B. Approved Pending Adoption (APA) Letter & from HSEM****APPROVED PENDING ADOPTION (APA) FROM HSEM****Ashland, NH - Approvable Pending Adoption**

Hazard Mitigation Planning &lt;HazardMitigationPlanning@dos.nh.gov&gt;

Sent: Thu 9/26/2019 1:33 PM

To: June Garneau; 'fnewton@ashland.nh.gov'; 'Steve Heath'

Good afternoon,

The Department of Safety, Division of Homeland Security & Emergency Management (HSEM) has completed its review of the Ashland, 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](mailto: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](mailto:Kayla.Henderson@dos.nh.gov) or 603-223-3650.

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

Sincerely,

Kayla J. Henderson

**NH Department of Safety – Division of Homeland Security & Emergency Management**  
**Hazard Mitigation Planning**

**Hazard Mitigation Staff:**

Alexx Monastiero, State Hazard Mitigation Officer / [Alexxandre.Monastiero@dos.nh.gov](mailto:Alexxandre.Monastiero@dos.nh.gov) / (603) 223-3627

Kayla Henderson, State Hazard Mitigation Planner / [Kayla.Henderson@dos.nh.gov](mailto:Kayla.Henderson@dos.nh.gov) / (603) 223 3650

**APPROVED PENDING ADOPTION (APA) FROM HSEM**

*Signature is a scanned facsimile; original signatures are on file.*

THIS PAGE INTENTIONALLY LEFT BLANK



***C. Signed Certificate of Adoption***

**CERTIFICATE OF ADOPTION**

**ASHLAND, NH**

**SELECTBOARD**

**A RESOLUTION ADOPTING THE TOWN OF ASHLAND HAZARD MITIGATION PLAN UPDATE 2019**

WHEREAS, the Town of Ashland 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 Ashland has developed and received conditional approval from the Homeland Security and Emergency Management (HSEM) for its Hazard Mitigation Plan Update 2019 under the requirements of 44 CFR 201.6; and

WHEREAS, public and committee meetings were held between August 13, 2018 and February 12, 2019 regarding the development and review of the Hazard Mitigation Plan Update 2019 and

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

WHEREAS, the Plan recommends several hazard mitigation actions/projects that will provide mitigation for specific natural hazards that impact the Town of Ashland 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 Ashland eligible for funding to alleviate the impacts of future hazards; now therefore be it

RESOLVED by the Selectboard:

1. The Plan is hereby adopted as an official plan of the Town of Ashland;
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;

**Ashland, 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 implementation elements of the Plan shall be presented to the Selectboard by the Emergency Management Director.

Adopted this day, the 21 of October, 2019

**Chairman of the Selectboard**

Frances Newton  
Signature

Frances Newton  
Print Name

**Member of the Selectboard**

Eli Snodgrass  
Signature

Eli Snodgrass  
Print Name

**Member of the Selectboard**

Kathleen Delwale  
Signature

Kathleen Delwale  
Print Name

**Emergency Management Director**

Stephen L. Heath  
Signature

Stephen L. Heath  
Print Name

**IN WITNESS WHEREOF**, the undersigned has affixed his/her signature and the corporate seal of the Town of Ashland on this day, October 21, 2019

Charles Smith  
Notary

February 10, 2021  
Expiration

10-21-2019  
Date



**Signatures are scanned facsimile; original signatures are on file.**

***D. Final Approval Letter from FEMA***

PAGE LEFT INTENTIONALLY BLANK FOR  
INSERTION OF FINAL APPROVAL LETTER FROM  
FEMA WHEN RECEIVED.

PAGE LEFT INTENTIONALLY BLANK FOR  
INSERTION OF FINAL APPROVAL LETTER  
(PAGE 2) FROM FEMA WHEN RECEIVED.

*Signatures are scanned facsimile; original signatures are on file.*

**E. CWPP Approval Letter from DNCR**

**Ashland, NH  
A Resolution Approving the  
Ashland Hazard Mitigation Plan Update 2019  
As a Community Wildfire Protection Plan**

Several public meetings and committee meetings were held between August 13, 2018 and February 12, 2019 regarding the development and review of the Ashland Hazard Mitigation Plan Update 2019. The Ashland Hazard Mitigation Plan Update 2019 contains potential future projects to mitigate hazard and wildfire damage in the Town of Ashland.

The Fire Chief along with the Selectboard and the Emergency Management Director 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 Selectboard, the Emergency Management Director and the Fire Chief approve the Ashland Hazard Mitigation Plan Update 2019 and understand that with approval by DNCR, this Plan will also serve as a Community Wildfire Protection Plan.

For the Town of Ashland

APPROVED and SIGNED this day, October 21, 2019.

 Chairman of the Selectboard	 Printed Name
 Fire Chief	 Printed Name
 Emergency Management Director	 Printed Name

**For the Department of Natural & Cultural Resources (DNCR)**

APPROVED and SIGNED this day, \_\_\_\_\_, 2019.

\_\_\_\_\_  
Forest Ranger – NH Division of Forest and Lands, DNCR

APPROVED and SIGNED this day, \_\_\_\_\_, 2019.

\_\_\_\_\_  
Director – NH Division of Forest and Lands, DNCR

***Signature is a scanned facsimile; original signatures are on file.***

THIS PAGE INTENTIONALLY LEFT BLANK

**F. Annual Review or Post Hazard Review 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 of Ashland, NH shall execute this page annually by the members of the Town's governing body and the Town's designated Emergency Management Director after inviting the public to attend any and all hearings that pertain to this annual and/or post hazard review and/or update by means such as press releases in local papers, posting meeting information on the Town website and at the Town Offices, sending letters to federal, state local organizations impacted by the Plan posting notices in public places in the Town.

Ashland, 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 2019 Hazard Mitigation Plan Update

---

---

---

---

---

**Please use reverse side for additional notes** 



### Additional Notes – Year One:

[illegible]

**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 of Ashland, NH shall execute this page annually by the members of the Town's governing body and the Town's designated Emergency Management Director after inviting the public to attend any and all hearings that pertain to this annual and/or post hazard review and/or update by means such as press releases in local papers, posting meeting information on the Town website and at the Town Offices, sending letters to federal, state local organizations impacted by the Plan posting notices in public places in the Town.

Ashland, 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 2019 Hazard Mitigation Plan Update

---

---

---

---

---

---

---

---

**Please use reverse side for additional notes** 

### Additional Notes – Year Two:

[illegible]

**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 of Ashland, NH shall execute this page annually by the members of the Town's governing body and the Town's designated Emergency Management Director after inviting the public to attend any and all hearings that pertain to this annual and/or post hazard review and/or update by means such as press releases in local papers, posting meeting information on the Town website and at the Town Offices, sending letters to federal, state local organizations impacted by the Plan posting notices in public places in the Town.

Ashland, 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 2019 Hazard Mitigation Plan Update

---

---

---

---

---

---

---

---

**Please use reverse side for additional notes** 

### Additional Notes – Year Three:

[illegible]

**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 of Ashland, NH shall execute this page annually by the members of the Town's governing body and the Town's designated Emergency Management Director after inviting the public to attend any and all hearings that pertain to this annual and/or post hazard review and/or update by means such as press releases in local papers, posting meeting information on the Town website and at the Town Offices, sending letters to federal, state local organizations impacted by the Plan posting notices in public places in the Town.

Ashland, 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 2019 Hazard Mitigation Plan Update

---

---

---

---

---

---

---

---

**Please use reverse side for additional notes** 

### Additional Notes – Year Four:

[illegible]



## 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: PRESIDENTIAL DISASTER & EMERGENCY DECLARATIONS
- APPENDIX E: POTENTIAL MITIGATION IDEAS
- APPENDIX F: ACRONYMS
- APPENDIX G: MAP DOCUMENTS

THIS PAGE INTENTIONALLY LEFT BLANK

## 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**
  - Ashland Hazard Mitigation Plan, 2013
  - Kingston Hazard Mitigation Plan Update, 2019
  - Tamworth Hazard Mitigation Plan Update 2019
  - Monroe Hazard Mitigation Plan Update, 2019
- **NH State Multi-Hazard Mitigation Plan**, 2013
  - <http://www.nh.gov/safety/divisions/hsem/HazardMitigation/documents/hazard-mitigation-plan.pdf>
- **NH Division of Forests and Lands Quarterly Update**
  - <http://www.nhdf.org/fire-control-and-law-enforcement/fire-statistics.aspx>
- **Disaster Mitigation Act (DMA) of 2000**, Section 101, b1 & b2 and Section 322a
  - <http://www.fema.gov/library/viewRecord.do?id=1935>
- **Economic & Labor Market Information Bureau**, NH Employment Security, March 2018; Community Response for Ashland, Received, 6/01/17, Census 2000 and Revenue Information derived from this site; <https://www.nhes.nh.gov/elmi/products/cp/profiles-pdf/Ashland.pdf>

**Photos:** Photos taken by MAPS unless otherwise noted.

### Additional Websites

- **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](http://www.fireadapted.org)
  - Wildfire Preparedness Guide to Forest Wardens; [www.quickseries.com](http://www.quickseries.com)
  - Ready Set Go; [www.wildlandfires.org](http://www.wildlandfires.org)
  - Fire education for children; [www.smokeybear.com](http://www.smokeybear.com)
- 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](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](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; <https://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](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

FEMA's Hazard Mitigation Assistance (HMA) grant programs provide funding FEMA's Hazard Mitigation Assistance (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<sup>21</sup>:

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

### Did You Know?



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

FEMA'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](http://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 Presidential 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
<b>1. Mitigation Projects</b>	✓	✓	✓
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 <sup>(1)</sup>	✓	✓	✓
<b>2. Hazard Mitigation Planning</b>	✓	✓	✓
Planning Related Activities	✓		
<b>3. Technical Assistance</b>			✓
<b>4. Management Cost</b>	✓	✓	✓

<sup>(1)</sup> 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

<sup>21</sup> 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](http://www.fema.gov/media-library-data/1424983165449-38f5dfc69c0bd4ea8a161e8bb7b79553/HMA_Guidance_022715_508.pdf)

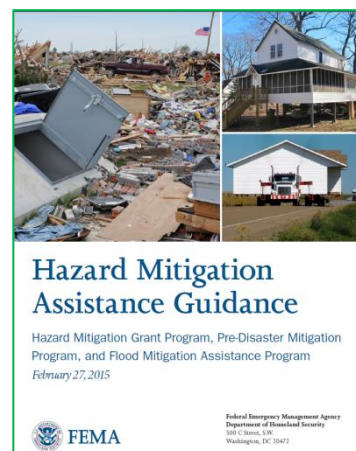
### What is the Hazard Mitigation Grant Program?

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](http://www.fema.gov/media-library-data/1424983165449-38f5dfc69c0bd4ea8a161e8bb7b79553/HMA_Guidance_022715_508.pdf)**

## Appendix C: The Extent of Hazards

Hazards indicated with an asterisk \* are included in this Plan.

### \*DAM FAILURE

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<sup>[1]</sup>. A dam failure occurs when water overtops the dam, or there is structural failure of the dam which causes there to be a breach and an unintentional release of water. Dams are classified in the following manner<sup>22</sup>:

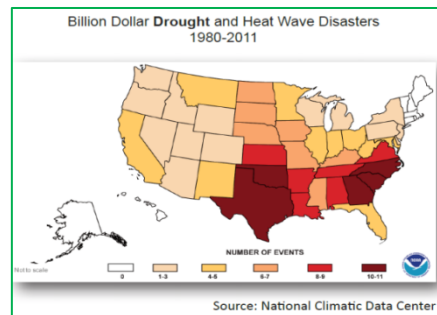
Classification	Description	Inspection Intervals
<b>Non-Menace</b>	A dam that is not a menace because it is in a location and of a size that failure or misoperation of the dam would not result in probable loss of life or loss to property. The dam must be less than six feet in height if the storage capacity 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
<b>Low Hazard</b>	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 water course, and/or reversible environmental losses to environmentally-sensitive sites.	Every 6 years
<b>Significant Hazard</b>	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 or 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
<b>High Hazard</b>	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

<sup>[1]</sup> NH DES [http://des.nh.gov/organization/divisions/water/dwgb/wrpp/documents/primer\\_chapter11.pdf](http://des.nh.gov/organization/divisions/water/dwgb/wrpp/documents/primer_chapter11.pdf)

<sup>22</sup> <http://des.nh.gov/organization/commissioner/pip/factsheets/db/documents/db-15.pdf>

## \*DROUGHT

A drought is defined as a long period of abnormally low precipitation, especially one that adversely affects the growing season or 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 stream flow.



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 stream flow. Low stream flow also correlates with low groundwater levels because groundwater discharge to streams and rivers maintains stream flow during extended dry periods. Low stream flow and low groundwater levels commonly cause diminished water supply.

### NEW HAMPSHIRE DROUGHT HISTORY

Dates	Area Affected	Recurrence Interval Yrs	Remarks
1929-1936	Statewide	10 to > 25	Regional
1939-1944	Statewide	10 to > 25	Severe in southeast and moderate elsewhere
1947-1950	Statewide	10 to 25	Moderate
1960-1969	Statewide	> 25	Regional longest recorded continuous spell of less than normal precipitation
2001-2002	Statewide	Not yet determined	Third worst drought on record, exceeded only by the drought of 1956-1966 and 1941-1942

NH DES; <http://des.nh.gov/organization/divisions/water/dam/drought/documents/historical.pdf>

## \*EARTHQUAKE

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 magnitude and intensity of an earthquake is widely determined by the use of two scales, 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 1 as the lowest with each successive unit being about 10 times stronger and more severe than the previous one.<sup>23</sup>

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 there are fault lines running throughout New Hampshire, but high magnitude earthquakes have not been frequent in New Hampshire history.

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

<sup>23</sup> Modified Mercalli Scale/Richter Scale Chart; MO DNR, [http://www.dnr.mo.gov/geology/geosrv/geores/richt\\_mercalli\\_relation.htm](http://www.dnr.mo.gov/geology/geosrv/geores/richt_mercalli_relation.htm)

## \*EROSION, MUDSLIDE & LANDSLIDE

Erosion is the wearing away of land, such as loss of riverbank, beach, shoreline or dune material. It is measured as the rate of change in the position or displacement of a riverbank or shoreline over a period of time. Short-term erosion typically results from periodic natural events, such as flooding, hurricanes, storm surge and windstorms but may be intensified by human activities. Long-term erosion is a result of 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.<sup>24</sup>

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

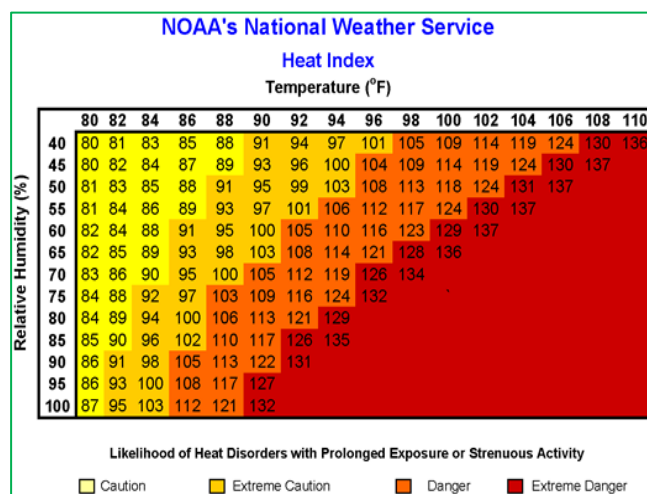
Like flooding, landslides are unique in how they affect different geographic, topographic, and geologic areas. Therefore, consideration of a multitude of measurements is required to determine the severity of the landslide event.<sup>25</sup>

## \*EXTREME TEMPERATURES

### EXTREME HEAT

A Heat Wave 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 his or her age and physical condition. Older adults, young children and those who are sick or overweight are more likely to succumb to extreme heat.



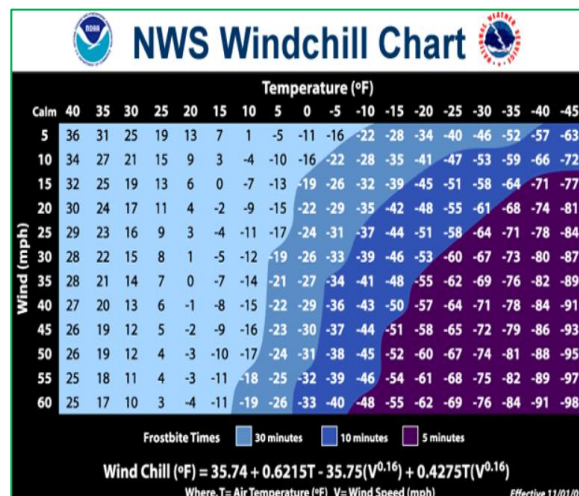
<sup>24</sup>Mitigation Ideas, A Resource for Reducing Risk to Natural Hazards, FEMA, January 2013

<sup>25</sup> State of New Hampshire Multi-Hazard Mitigation Plan Update 2018 & <https://oas.org/dsd/publications/Unit/oea66e/ch10.htm>

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 heat wave than those living in rural areas. Also, asphalt and concrete store heat longer and gradually release heat at night, which can produce higher nighttime temperatures known as the "urban heat island effect."<sup>26</sup> The chart above explains the likelihood of heat disorders that may result from high heat.<sup>27</sup>

### 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 leave your body more rapidly; these weather related conditions may lead to serious health problems. Extreme cold is a dangerous situation that can bring on health emergencies in susceptible people without shelter or who are stranded, or who live in a home that is poorly insulated or without heat.<sup>28</sup> The National Weather Service Chart (previous page) shows windchill as a result of wind and temperature.<sup>29</sup>

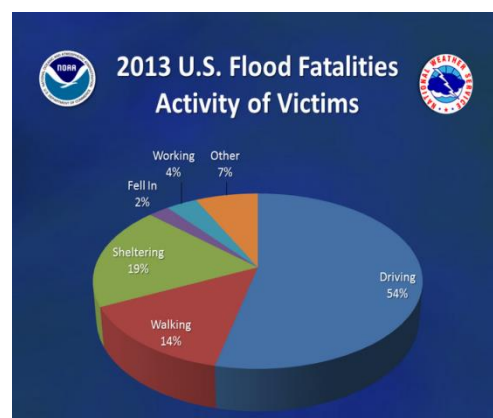


### \*FLOODING

#### GENERAL FLOODING CONDITIONS

Floods are defined as a temporary overflow of water onto lands that are not normally covered by water. Flooding results from the overflow of major rivers and tributaries, storm surges and/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 melting of snow; however, floods can occur at any time of the year. 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 conditions for flooding. In addition, rising waters in early spring often breaks ice into chunks that float downstream and pile up, causing flooding behind them. Small rivers and streams pose special flooding risks because they are easily blocked by jams. Ice in riverbeds and against structures presents a significant flooding threat to bridges, roads and the surrounding lands.



<sup>26</sup> NOAA, Index/Heat Disorders; <http://www.srh.noaa.gov/ssd/html/heatwv.htm>

<sup>27</sup> NOAA; <http://www.nws.noaa.gov/os/heat/index.shtml>

<sup>28</sup> CDC; <http://www.bt.cdc.gov/disasters/winter/guide.asp>

<sup>29</sup> National Weather Service; <http://www.nws.noaa.gov/om/windchill/>



### 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 and flood on a regular basis. The term 100-year flood does not mean that flood 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". What this means is that there is a 1% chance of a flood of that size happening in any year. Flooding is often associated with hurricanes, heavy rains, ice jams and rapid snowmelt in the spring.

### FLOODING (DAM FAILURE)

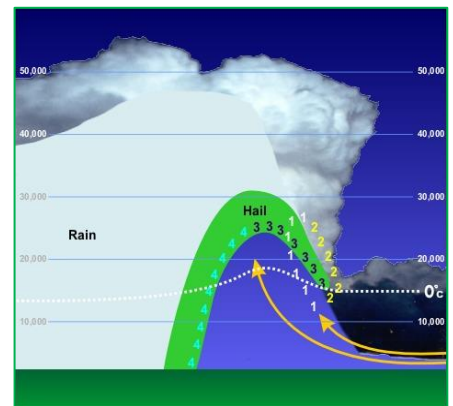
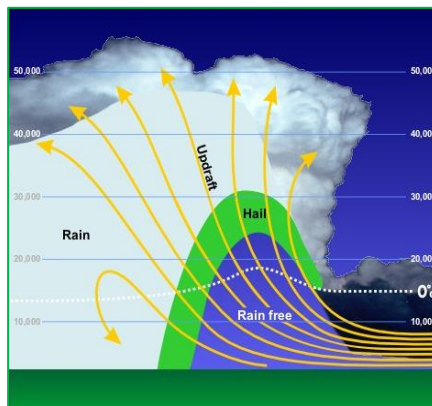
Flooding as a result of dam failure can be small enough to only affect the immediate area of the dam, or large enough to cause catastrophic results to cities, towns and human life that is below the dam. The extent of flooding depends largely on the size of the dam, the amount of water that is being held 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.

### **\*HAILSTORM**

Hailstones are balls of ice that grow as they're 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 inches. It weighed 1 lb. 15 oz."<sup>30</sup>

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.<sup>31</sup> The charts to the right show how hail is formed.<sup>32</sup>



<sup>30</sup> NOAA National Severe Storms Laboratory; <https://www.nssl.noaa.gov/education/svrwx101/hail/>

<sup>31</sup> <http://www.pinterest.com/pin/126171227030590678/>

<sup>32</sup> <http://oceanservice.noaa.gov/education/yos/resource/JetStream/tstorms/hail.htm#hail>

## \*HIGH WIND EVENTS

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. Those pressures which are higher at one place than another place set up a force pushing from the high pressure toward the low pressure; the greater the difference in pressures, the stronger the force. The distance between the area of high pressure and the area of low pressure also determines how fast the moving air is accelerated. Meteorologists refer to the force that starts the wind flowing as the “pressure gradient force.” High and low pressures are relative. There’s no set number that divides high and low pressure. Wind is used to describe the prevailing direction from which the wind is blowing with the speed given usually in miles per hour or knots.” In addition, NOAA’s issuance of a Wind Advisory takes place when sustained winds reach 25 to 39 mph and/or gusts to 57 mph.<sup>33</sup>

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.<sup>34</sup>

Force	Wind (Knots)	WMO Classification	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, foam 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	

<sup>33</sup> NOAA; <http://www.nws.noaa.gov/glossary/index.php?letter=w>

<sup>34</sup> NOAA, Storm Prediction Center, <http://www.spc.noaa.gov/faq/tornado/beaufort.html>



## \*HURRICANE & TROPICAL STORM

### HURRICANES

A hurricane is a tropical cyclone in which winds reach speeds of 74 miles per hour or more and blow in a large spiral around a relatively calm center. The eye of the storm 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" (to the right<sup>35</sup>) 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, however and require preventative measures. In the western North Pacific, the term "super typhoon" is used for tropical cyclones with sustained winds exceeding 150 mph.<sup>36</sup>

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

Category	Sustained Winds	Types of Damage Due to Hurricane Winds
1	74-95 mph 64-82 kt. 119-153 km/h	<b>Very dangerous winds will produce some damage:</b> Well-constructed frame homes could have damage to roof, shingles, vinyl siding and gutters. Large branches of trees will snap and shallowly rooted trees may be toppled. Extensive damage to power lines and poles likely will result in power outages that could last a few to several days.
2	96-110 mph 83-95 kt. 154-177 km/h	<b>Extremely dangerous winds will cause extensive damage:</b> 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	<b>Devastating damage will occur:</b> 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	<b>Catastrophic damage will occur:</b> 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	<b>Catastrophic damage will occur:</b> 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.

### TROPICAL STORMS

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.

Rainfall from tropical storms has been reported at rates of up to 6 inches per hour; 43 inches of rain in a 24 hour period was reported in Alvin, TX as a result of Tropical Storm Claudette.<sup>37</sup>

<sup>35</sup> National Hurricane Center; <http://www.nhc.noaa.gov/aboutsshws.php>

<sup>36</sup> National Hurricane Center, NOAA; <http://www.nhc.noaa.gov/aboutsshws.php>

<sup>37</sup> [http://www.wpc.ncep.noaa.gov/research/mcs\\_web\\_test\\_test\\_files/Page1637.htm](http://www.wpc.ncep.noaa.gov/research/mcs_web_test_test_files/Page1637.htm)

## \*INFECTIOUS DISEASES (EPIDEMIC & PANDEMIC)

### BACTERIAL & VIRAL INFECTIONS

There are many organisms that live inside our bodies and on our skin. These organisms are generally harmless and sometimes may even be helpful, 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.<sup>38</sup>

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.<sup>39</sup>

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

*Bacterial and viral infections can cause similar symptoms such as coughing and sneezing, fever, inflammation, vomiting, diarrhea, fatigue, and cramping – all of which are ways the immune system tries to rid the body of infectious organisms. But bacterial and viral infections are dissimilar in many other important respects, most of them due to the organisms’ structural differences and the way they respond to medications.”<sup>40</sup>*

The extent of infectious diseases is generally described by the level and occurrence of a particular disease as follows<sup>41</sup>:

- Endemic ..... The amount of disease that is usually present
- Sporadic ..... Disease that occurs infrequently and irregularly
- Endemic ..... Disease with a constant presence or usual prevalence in a population within a geographic area
- 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

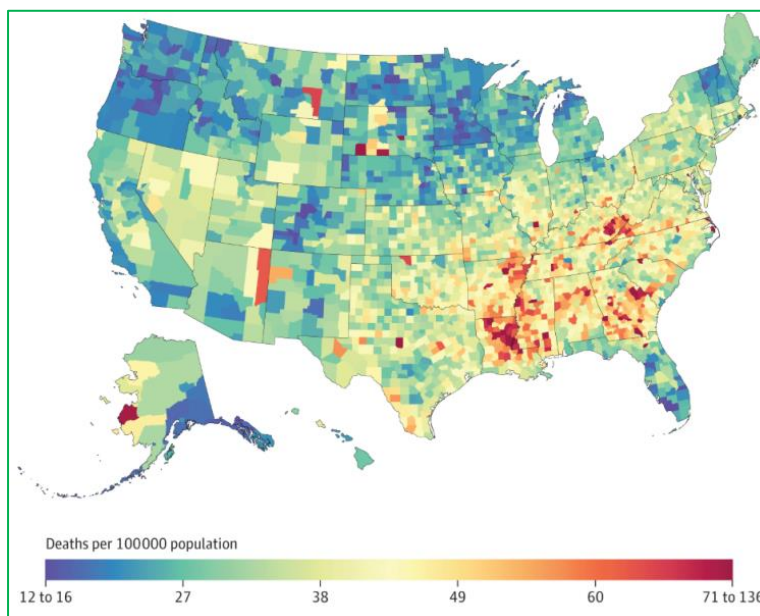
<sup>38</sup> <https://www.mayoclinic.org/diseases-conditions/infectious-diseases/symptoms-causes/syc-20351173>

<sup>39</sup> <https://www.dhhs.nh.gov/dphs/cdcs/index.htm>

<sup>40</sup> <https://www.webmd.com/a-to-z-guides/bacterial-and-viral-infections#1>

<sup>41</sup> <https://www.cdc.gov/ophs/csels/dsepd/ss1978/lesson1/section11.html>

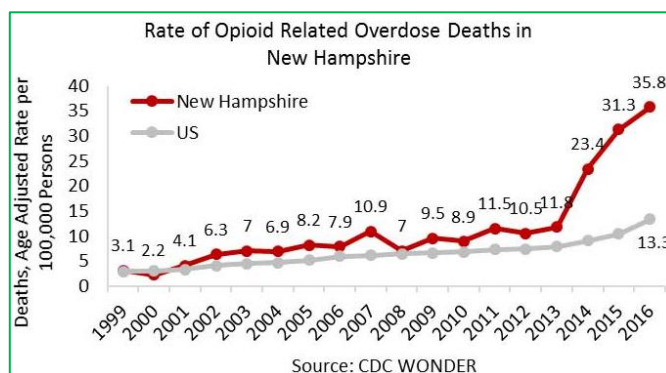
The map below shows the age-standardized mortality rate from all infectious diseases, both sexes, in 2014.<sup>42</sup>



## OPIOID CRISIS

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

According to the National Institute on Drug Abuse, “New Hampshire has the second highest rate of opioid-related overdose deaths – a rate of 35.8 deaths per 100,000 persons – nearly 3 times higher than the national rate of 13.2 deaths per 100,000. From 2013 through 2016, opioid-related deaths in New Hampshire tripled. This increase was mainly driven by the number of deaths related to synthetic opioids (predominately fentanyl), which increased more than tenfold, from 30 to 363 deaths, during this time.”<sup>43</sup> The chart to the right shows the increase in opioid-related overdose deaths in New Hampshire compared to those in the US overall.<sup>44</sup>



<sup>42</sup> <https://jamanetwork.com/journals/jama/fullarticle/2676111>

<sup>43</sup> <https://www.drugabuse.gov/drugs-abuse/opioids/opioid-summaries-by-state/new-hampshire-opioid-summary>

<sup>44</sup> Ibid

### \*SEVERE THUNDER & LIGHTNING STORM

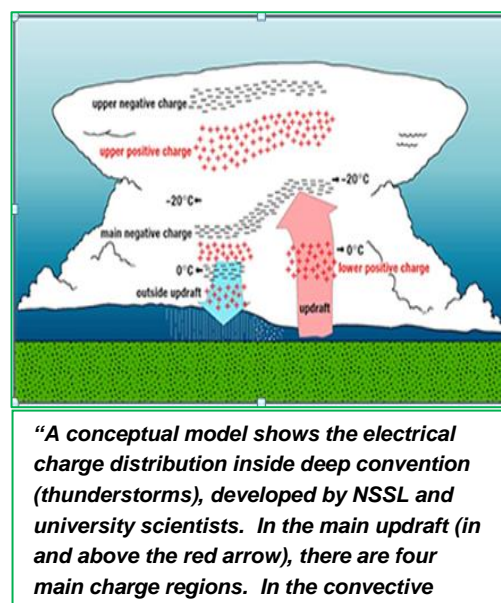
As stated by the NOAA National Severe Storms Laboratory (NSSL) “Lightning is a giant spark of electricity in the atmosphere between clouds, the air, or the ground. In the early stages of development, air acts as an insulator between the positive and negative charges in the cloud and between the cloud 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.”<sup>45</sup>

Thunder, a result of lightning, is created when the “lightning channel heats the air to around 18,000 degrees Fahrenheit...”<sup>46</sup> 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 that is associated with the thunder can not only strike people but also strike homes, out-buildings, grass and trees sparking disaster. Wildfires and structure loss are at a 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.

“Lightning strikes the ground somewhere in the U.S. nearly every day of the year. Thunderstorms and lightning occur most commonly in moist warm climates. Data from the National Lightning Detection Network shows that over the continental U.S. 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 U.S. 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 a large moisture content in the atmosphere at low levels (below 5,000 feet), as well as high surface temperatures that produce strong sea breezes along the Florida coasts. The western mountains of the U.S. also produce strong upward motions and contribute to frequent cloud-to-ground lightning. There are also high frequencies along the Gulf of Mexico coast, the Atlantic coast and in the southeast United States. US Regions along the Pacific west coast have the least cloud-to-ground lightning.”<sup>47</sup>



*“A conceptual model shows the electrical charge distribution inside deep convection (thunderstorms), developed by NSSL and university scientists. In the main updraft (in and above the red arrow), there are four main charge regions. In the convective*

<sup>45</sup> NOAA National Severe Storms Laboratory, <https://www.nssl.noaa.gov/education/svrwx101/lightning>

<sup>46</sup> Ibid

<sup>47</sup> Ibid

### 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>

### \*SEVERE WINTER SNOW & ICE STORM

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

#### SNOWSTORMS

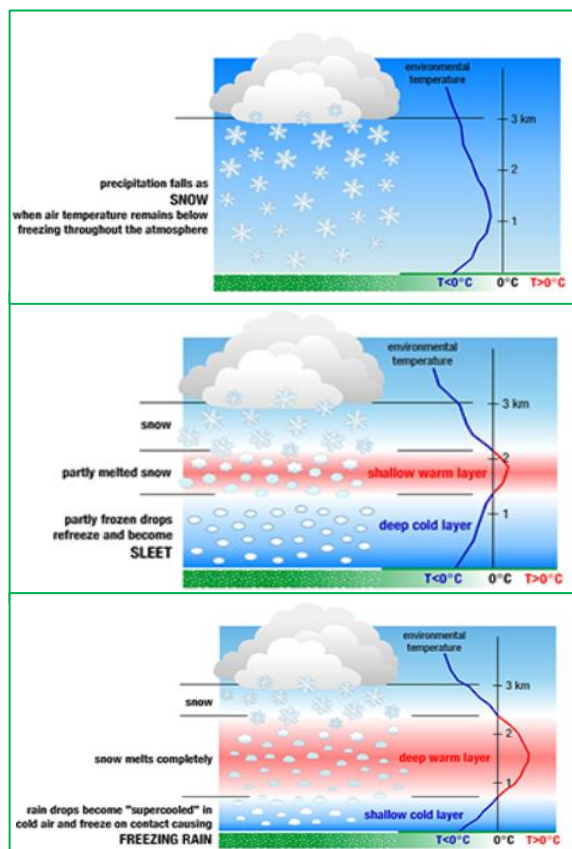
A winter storm can range from moderate snow to blizzard conditions. Blizzard conditions are considered blinding wind-driven snow over 35 mph that lasts several days. A severe winter storm deposits four or more inches of snow during a 12-hour period or six inches of snow during a 24-hour period.

#### 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 rain drops then fall to the ground as "sleet".

#### FREEZING RAIN & ICE STORMS

Snowflakes melt completely 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 that is 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."<sup>48</sup>



*Types of Severe Winter Weather  
NOAA – National Severe Storms Laboratory*

<sup>48</sup> 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.<sup>49</sup>

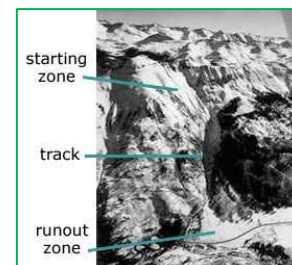
**The Sperry-Piltz Ice Accumulation Index, or "SPIA Index" – Copyright, February, 2009**

ICE DAMAGE INDEX	* AVERAGE NWS ICE AMOUNT (in inches) <small>* Revised-October, 2011</small>	WIND (mph)	DAMAGE AND IMPACT DESCRIPTIONS
<b>0</b>	< 0.25	< 15	Minimal risk of damage to exposed utility systems; no alerts or advisories needed for crews, few outages.
<b>1</b>	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	
<b>2</b>	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	
<b>3</b>	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	
<b>4</b>	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	
<b>5</b>	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.)

## SNOW AVALANCHE

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.”<sup>50</sup>



“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.”

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.”<sup>51</sup>

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.

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





<sup>50</sup> Copyright Richard Armstrong, NSIDC, <http://nsidc.org/cryosphere/snow/science/avalanches.html>

<sup>51</sup> NSIDC, <http://nsidc.org/cryosphere/snow/science/avalanches.html>; image credit: Betsy Armstrong

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 pile of snow and debris.

“Several factors may affect the likelihood of an avalanche, including weather, temperature, slope steepness, slope orientation (whether the slope is facing north or south), wind direction, terrain, vegetation and general snowpack conditions. Different combinations of these factors can create low, moderate, or extreme avalanche conditions. Some of these conditions, such as temperature and snowpack, can change on a daily or hourly basis.”<sup>52</sup>

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 the development of avalanches. The chart below shows avalanche danger as determined by likelihood, size & distribution.<sup>53</sup>

<b>North American Public Avalanche Danger Scale</b> Avalanche danger is determined by the likelihood, size and distribution of avalanches.				
Danger Level		Travel Advice	Likelihood of Avalanches	Avalanche Size and Distribution
<b>5 Extreme</b>		Avoid all avalanche terrain.	Natural and human-triggered avalanches certain.	Large to very large avalanches in many areas.
<b>4 High</b>		Very dangerous avalanche conditions. Travel in avalanche terrain <u>not</u> recommended.	Natural avalanches likely; human-triggered avalanches very likely.	Large avalanches in many areas; or very large avalanches in specific areas.
<b>3 Considerable</b>		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.
<b>2 Moderate</b>		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.
<b>1 Low</b>		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.				

<sup>52</sup> Copyright Richard Armstrong, NSIDC, <http://nsidc.org/cryosphere/snow/science/avalanches.html>

<sup>53</sup> [http://www.avalanche.org/danger\\_card.php](http://www.avalanche.org/danger_card.php)



## \*TORNADO & DOWNBURST

### TORNADO

A tornado is a violent windstorm characterized by a twisting, funnel shaped cloud. Tornadoes develop when cool air overrides a layer of warm air, causing the warm air to rise rapidly. The atmospheric conditions required for the formation of a tornado include great 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 if they touch down they become a force of destruction.

Tornadoes produce the most violent winds on earth, at speeds of 280 mph or more. In addition, tornadoes can travel at a forward speed of up to 70 mph. Damage paths can be in excess of 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."<sup>54</sup> The chart (above), adapted from wunderground.com, shows a comparison of the Fujita Scale to the Enhanced Fujita Scale.

Tornadoes are relatively uncommon natural hazards in New Hampshire; on average, about six tornadoes touch down each year. Damage largely depends on where the tornado strikes. If it were to strike an inhabited area, the impact could be severe.

EF SCALE	OLD F-SCALE	TYPICAL DAMAGE
<b>EF-0</b> (65-85mph)	<b>F0</b> (65-73 mph)	<b>Light damage.</b> Peels surface off some roofs; some damage to gutters or siding; branches broken off trees; shallow-rooted trees pushed over.
<b>EF-1</b> (86-110 mph)	<b>F1</b> (74-112 mph)	<b>Moderate damage.</b> Roofs severely stripped; mobile homes overturned or badly damaged; loss of exterior doors; windows and other glass broken.
<b>EF-2</b> (111-135 mph)	<b>F2</b> (113-157 mph)	<b>Considerable damage.</b> 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
<b>EF-3</b> (136-165 mph)	<b>F3</b> (158-206 mph)	<b>Severe damage.</b> 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.
<b>EF-4</b> (166-200 mph)	<b>F4</b> (207-260 mph)	<b>Devastating damage.</b> Well-constructed houses and whole frame houses completely leveled; cars through and small missiles generated.
<b>EF-5</b> (> 200 mph)	<b>F5</b> (261-318 mph)	<b>Incredible damage.</b> 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	<b>F6-F12</b> (319 mph to speed of sound)	<b>Inconceivable damage.</b> 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.

<sup>54</sup> Enhance Fujita Scale, [http://www.wunderground.com/resources/severe/fujita\\_scale.asp](http://www.wunderground.com/resources/severe/fujita_scale.asp)

## DOWNBURST

A downburst is a strong downdraft which causes damaging winds on or near the ground according to NOAA. 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.<sup>55</sup>

## **\*WILDFIRE**

As stated by the National Wildfire Coordinating Group (NWCG), wildfires are designated in seven categories as seen in the top chart to the right.<sup>56</sup> For the purpose of statistical analysis, the US Forest Service recognizes the cause of fires according to the bottom chart to the right.<sup>57</sup>

The definition according to the International Wildland-Urban Interface Code of wildfire is "an uncontrolled fire spreading through vegetative fuels exposing and possibly consuming structures". In addition, 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."<sup>58</sup>

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. Therefore, the loss to the forest itself will not be a factor in our loss calculation analysis.

Class	Acres 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

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

<sup>56</sup> <http://www.nwcg.gov/pms/pubs/glossary/s.htm>

<sup>57</sup> [https://www.fs.fed.us/cgi-bin/Directives/get\\_dirs/fsh?5109.14](https://www.fs.fed.us/cgi-bin/Directives/get_dirs/fsh?5109.14)

<sup>58</sup> International Wildland-Urban Interface Code, 2012, International Code Council, Inc.

THIS PAGE INTENTIONALLY LEFT BLANK

## Appendix D: NH Presidential Disaster & Emergency Declarations

### Presidential Disaster Declarations

Number	Description	Date of Event	Counties	Description
DR-4371	Severe Winter Storm & Snowstorm	March 13-14, 2018	Carroll, Strafford & Rockingham	<b>Presidential Declaration, DR 4371:</b> 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	<b>Presidential Declaration, DR 4370:</b> 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	<b>Presidential Declaration, DR-4355:</b> 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 October 29-November 1, 2017 in five New Hampshire Counties.
DR-4329	Severe Storms, Flooding	July 1-2, 2017	Grafton & Coos	<b>Presidential Disaster Declaration DR-4329:</b> 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 & Coos Counties
DR-4316	Severe Winter Storm and Snowstorm	March 14-15, 2017	Belknap & Carroll	<b>Presidential Emergency Declaration DR-4316:</b> Severe winter storm and snowstorm in Belknap & Carroll Counties; disaster aid to supplement state and local recovery efforts.
DR-4209	Severe Winter Storm and Snowstorm	January 26-28, 2015	Hillsborough, Rockingham & Stafford	<b>Presidential Emergency Declaration DR-4206:</b> Severe winter storm and snowstorm in Hillsborough, Rockingham and Strafford Counties; disaster aid to supplement state and local recovery efforts.
DR-4139	Severe Storms, Flooding	July 9-10, 2013	Cheshire, Sullivan & Grafton	<b>Presidential Emergency Declaration DR-4139:</b> 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	8-Feb-13	All Ten NH Counties	<b>Presidential Emergency Declaration DR-4105:</b> Nemo; heavy snow in February 2013.
DR-4095	Hurricane Sandy	October 26-November 8, 2012	Belknap, Carroll, Coos, Grafton & Sullivan	<b>Presidential Disaster Declaration DR-4095:</b> The declaration covers damage to property from the storm that spawned heavy rains, high winds, high tides and flooding over the period of October 26-November 8, 2012.
DR-4065	Severe Storm & Flooding	May 29-31, 2012	Cheshire	<b>Presidential Disaster Declaration DR-4065:</b> Severe Storm and Flood Event May 29-31, 2012 Cheshire County.
DR-4049	Severe Storm & Snowstorm	October 29-30, 2011	Hillsborough & Rockingham	<b>Presidential Disaster Declaration DR-4049:</b> Severe Storm and Snowstorm Event October 29-30, 2011 Hillsborough and Rockingham Counties.
DR-4026	Tropical Storm Irene	August 26-September 6, 2011	Carroll, Coos, Grafton, Merrimack, Belknap, Strafford, & Sullivan	<b>Presidential Disaster Declaration DR-4026:</b> Tropical Storm Irene Aug 26th- Sept 6, 2011 Carroll, Coos, Grafton, Merrimack, Belknap, Strafford, & Sullivan Counties.

Number	Description	Date of Event	Counties	Description
DR-4006	Severe Storms & Flooding	May 26-30, 2011	Coos & Grafton County	<b>Presidential Disaster Declaration DR-4006:</b> May Flooding Event, May 26th-30th 2011 Coos & Grafton County. (aka: Memorial Day Weekend Storm)
DR-1913	Severe Storms & Flooding	March 14-31, 2010	Hillsborough & Rockingham	<b>Presidential Disaster Declaration DR-1913:</b> 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	<b>Presidential Disaster Declaration: DR-1892:</b> Flood and wind damage to most 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	<b>Presidential Declaration DR-1812:</b> Damaging ice storms to 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.
DR-1799	Severe Storms & Flooding	September 6-7, 2008	Hillsborough	<b>Presidential Declaration: DR-1799:</b> Severe storms and flooding beginning on September 6-7, 2008.
DR-1787	Severe Storms & Flooding	July 24-August 14, 2008	Belknap, Carroll & Grafton & Coos	<b>Presidential Declaration DR-1787:</b> Severe storms, tornado, and flooding on July 24, 2008.
DR-1782	Severe Storms, Tornado, & Flooding	24-Jul-08	Belknap, Carroll, Merrimack, Strafford & Rockingham	<b>Presidential Declaration DR-1782:</b> Tornado damage to several NH counties.
DR-1695	Nor'easter, Severe Storms & Flooding	April 15-23, 2007	All Ten NH Counties	<b>Presidential Disaster Declaration DR-1695:</b> Flood damages; FEMA & SBA obligated more than \$27.9 million in disaster aid following the April nor'easter. (aka: Tax Day Storm)
DR-1643	Severe Storms & Flooding	May 12-23, 2006	Belknap, Carroll, Grafton, Hillsborough, Merrimack, Rockingham & Strafford	<b>Presidential Disaster Declaration DR-1643:</b> 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	<b>Presidential Disaster Declaration DR-1610:</b> 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.
DR-1489	Severe Storms & Flooding	July 21-August 18, 2003	Cheshire & Sullivan	<b>Presidential Disaster Declaration DR-1489:</b> 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.
DR-1305	Tropical Storm Floyd	September 16-18, 1999	Belknap, Cheshire & Grafton	<b>Presidential Disaster Declaration DR-1305:</b> 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	NA	<b>Presidential Disaster Declaration DR-1231:</b>

Number	Description	Date of Event	Counties	Description
DR-1199	Ice Storms	January 7-25, 1998	NA	Presidential Disaster Declaration DR-1199:
DR-1144	Severe Storms/Flooding	October 20-23, 1996	NA	Presidential Disaster Declaration DR-1144:
DR-1077	Storms/Floods	October 20-November 15, 1995	NA	Presidential Disaster Declaration DR-1077:
DR-923	Severe Coastal Storm	October 30-31, 1991	NA	Presidential Disaster Declaration DR-923:
DR-917	Hurricane Bob, Severe Storm	August 18-20, 1991	NA	Presidential Disaster Declaration DR-917:
DR-876	Flooding, Severe Storm	August 7-11, 1990	NA	Presidential Disaster Declaration DR-876:
DR-789	Severe Storms & Flooding	March 30-April 11, 1987	NA	Presidential Disaster Declaration DR-789
DR-771	Severe Storms & Flooding	July 29-August 10, 1986	NA	Presidential Disaster Declaration DR-771:
DR-549	High Winds, Tidal Surge, Coastal Flooding & Snow	16-Feb-78	NA	Presidential Disaster Declaration DR-549: Blizzard of 1978
DR-411	Heavy Rains, Flooding	21-Jan-74	NA	Presidential Disaster Declaration DR-411:
DR-399	Severe Storms & Flooding	11-Jul-73	NA	Presidential Disaster Declaration DR-399:
DR-327	Coastal Storms	18-Mar-72	NA	Presidential Disaster Declaration DR-327:
DR-11	Forest Fire	2-Jul-53	NA	Presidential Disaster Declaration DR-11:

### Emergency Disaster Declarations

Number	Description	Date of Event	Counties	Description
EM-3360	Hurricane Sandy	October 26-31, 2012	All Ten NH Counties	<b>Presidential Emergency Declaration EM-3360:</b> Hurricane Sandy came ashore in NJ and brought high winds, power outages and heavy rain to NH- All ten counties in the State of New Hampshire.
EM-3344	Severe Snowstorm	October 29-30, 2011	All Ten NH Counties	<b>Presidential Emergency Declaration EM-3344:</b> Severe storm during the period of October 29-30, 2011; all ten counties in the State of New Hampshire. (aka: Snowtober)
EM-3333	Hurricane Irene	August 26-September 6, 2011	All Ten NH Counties	<b>Presidential Emergency Declaration EM-3333:</b> Emergency Declaration for Tropical Storm Irene for in all ten counties.
EM-3297	Severe Winter Storm	11-Dec-08	All Ten NH Counties	<b>Presidential Emergency Declaration EM-3297:</b> Severe winter storm beginning on December 11, 2008.

Number	Description	Date of Event	Counties	Description
EM-3258	Hurricane Katrina Evacuation	August 29-October 1, 2005	All Ten NH Counties	<b>Presidential Emergency Declaration EM-3258:</b> 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 10 counties of the State of New Hampshire.
EM-3211	Snow	March 11-12, 2005	Carroll, Cheshire, Hillsborough, Rockingham & Sullivan	<b>Presidential Emergency Declaration EM-3211:</b> 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 <b>\$2,112,182.01</b> (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	<b>Presidential Emergency Declaration EM-3208:</b> 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 <b>\$1,121,727.20</b> (Carroll: \$91,832.72; Cheshire: \$11,002.18; Coos: \$11,6508.10; Grafton: \$213,539.52; Sullivan: \$68,288.90; State of NH: \$521,536.78) <b>EM 3208-002:</b> 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, 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	<b>Presidential Emergency Declaration EM-3207:</b> JANUARY STORM DAMAGE: 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 <b>\$3,658,114.66</b> (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	<b>Presidential Emergency Declaration EM-3193:</b> The declaration covers jurisdictions with record and near-record snowfall that occurred over the period of December 6-7, 2003
EM-3177	Snowstorm	February 17-18, 2003	Cheshire, Hillsborough, Merrimack, Rockingham & Strafford	<b>Presidential Emergency Declaration EM-3177:</b> Declaration covers jurisdictions with record and near-record snowfall from the snowstorm that occurred February 17-18, 2003
EM-3166	Snowstorm	March 5-7, 2001	Cheshire, Coos, Grafton, Hillsborough, Merrimack, & Strafford	<b>Presidential Emergency Declaration EM-3166:</b> Declaration covers jurisdictions with record and near-record snowfall from the late winter storm that occurred March 2001
EM-3101	High Winds & Record Snowfall	March 13-17, 1994	NA	<b>Presidential Emergency Declaration EM-3101:</b>
EM-3073	Flooding	15-Mar-79	NA	<b>Presidential Emergency Declaration EM-3073:</b>

**Source:**

Disaster Declarations for New Hampshire

[http://www.fema.gov/disasters/grid/state-tribal-government/33?field\\_disaster\\_type\\_term\\_tid\\_1=All](http://www.fema.gov/disasters/grid/state-tribal-government/33?field_disaster_type_term_tid_1=All)



## Appendix E: Potential Mitigation Ideas<sup>59</sup>

### Drought

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

### Earthquake

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

### Erosion

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

### Extreme Temperatures

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

### Hailstorm

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

### Landslide

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

### Lightning

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

### Flood

- F1 ..... Incorporate Flood Mitigation in Local Planning
- F2 ..... Form Partnerships to Support Floodplain Management
- F3 ..... Limit or Restrict Development in Floodplain Areas
- F4 ..... Adopt & Enforce Building Codes and Development Standards
- F5 ..... Improve Stormwater Management Planning
- F6 ..... Adopt Policies to Reduce Stormwater Runoff
- F7 ..... Improve Flood Risk Assessment
- F8 ..... Join or Improve Compliance with NFIP
- F9 ..... Manage the Floodplain beyond Minimum Requirements
- F10 .... Participate in the CRS
- F11 .... Establish Local Funding Mechanism for Flood Mitigation
- F12 .... Remove Existing Structures from Flood Hazard Areas
- F13 .... Improve Stormwater Drainage System Capacity
- F14 .... Conduct Regular Maintenance for Drainage Systems & Flood Control Structures
- F15 .... Elevate or Retrofit Structures & Utilities
- F16 .... 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

<sup>59</sup> Mitigation Ideas, A Resource for Reducing Risk to Natural Hazards, FEMA, January 2013

**Wildfire**

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

**Multi-Hazards**

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

## Appendix F: Acronyms

### Hazard Mitigation Planning List of Acronyms

ACS.....	American Community Survey (Census)
BFE .....	Base Flood Elevation
BOCA .....	Building Officials and Code Administrators International
CIKR .....	Critical Infrastructure & Key Resources
CIP .....	Capital Improvements Program
CWPP .....	Community Wildfire Protection Plan
EMD .....	Emergency Management Director
EMS .....	Emergency Medical Services
EOC .....	Emergency Operations Center
ERF .....	Emergency Response Facility
FEMA .....	Federal Emergency Management Agency
FIRM .....	Flood Insurance Rate Map
FPP .....	Facilities & Populations to Protect
GIS.....	Geographic Information System
HFRA .....	Healthy Forest Restoration Act
HMGP .....	Hazard Mitigation Grant Program
HSEM.....	Homeland Security & Emergency Management (NH)
ICS .....	Incident Command System
LEOP .....	Local Emergency Operations Plan
MOU.....	Memorandum of Understanding
NOAA.....	National Oceanic and Atmospheric Association
NSSL.....	National Severe Storms Laboratory (NOAA)
MAPS.....	Mapping and Planning Solutions
NERF .....	Non-Emergency Response Facility
NFIP.....	National Flood Insurance Program
NGVD.....	National Geodetic Vertical Datum of 1929
NHDOT .....	NH Department of Transportation
NHDNCR .....	Department of Natural & Cultural Resources (formerly DRED)
NHOSI.....	NH Office of Strategic Initiatives (formerly OEP)
NIMS .....	National Incident Management System
NWS.....	National Weather Service
PR .....	Potential Resources
SPNHF.....	Society for the Protection of New Hampshire Forests
USDA .....	US Department of Agriculture
USDA-FS .....	USDA-Forest Service
USGS.....	United States Geological Society
WMNF.....	White Mountain National Forest
WUI.....	Wildland Urban Interface

THIS PAGE INTENTIONALLY LEFT BLANK

## **Appendix G: Map Documents**

The following 11" x 17" maps are included in hard copy plans:

*Map 1 – Wildfire Base Risk Analysis*

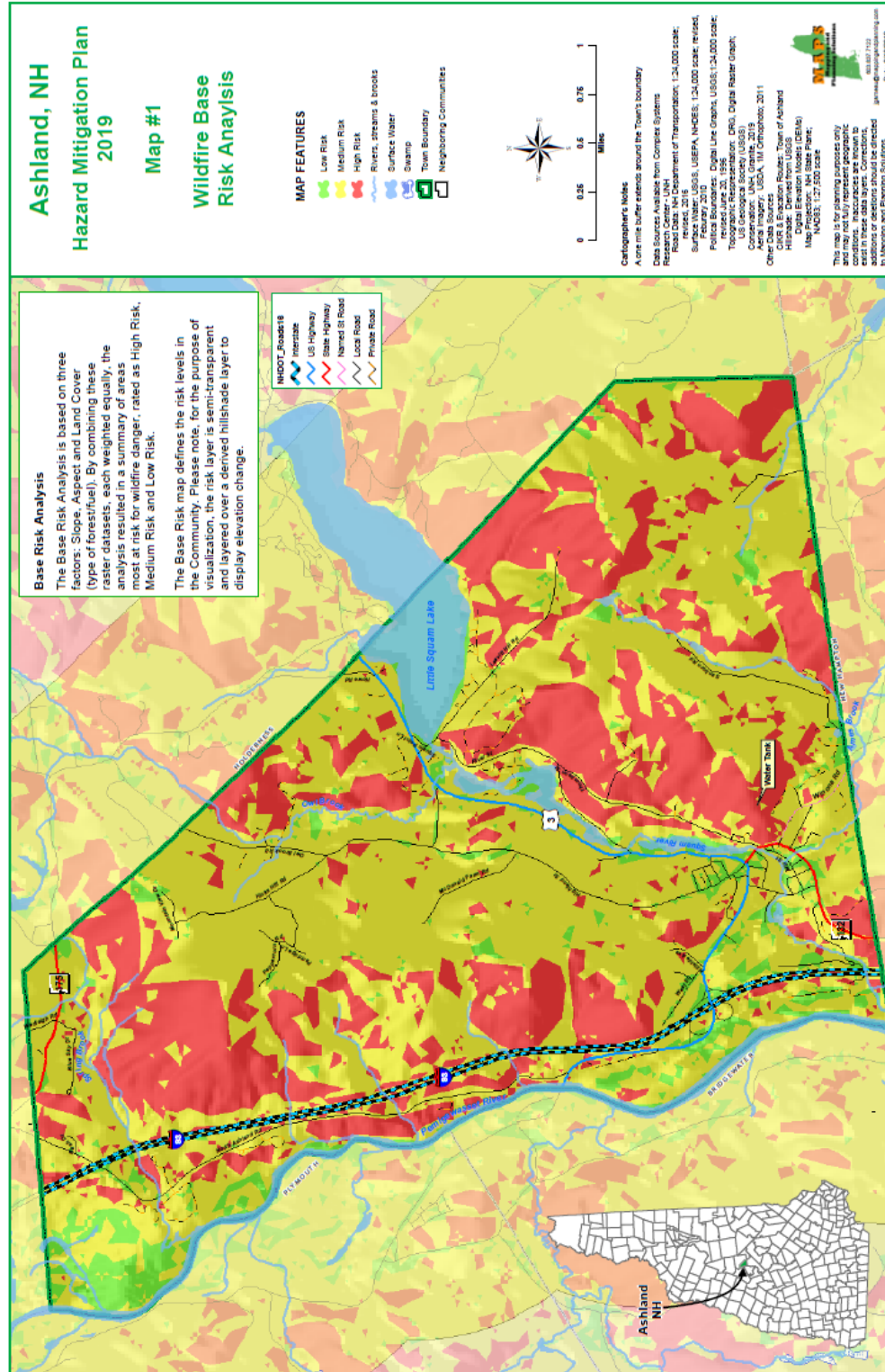
*Map 2 – The Wildland Urban Interface (WUI)*

*Map 3 – The FEMA Floodzone & Conservation Lands*

*Map 4 – Critical Infrastructure & Key Resources (CIKR)*

THIS PAGE INTENTIONALLY LEFT BLANK

**To be replaced with 11" x 17" map in final hard copy.**

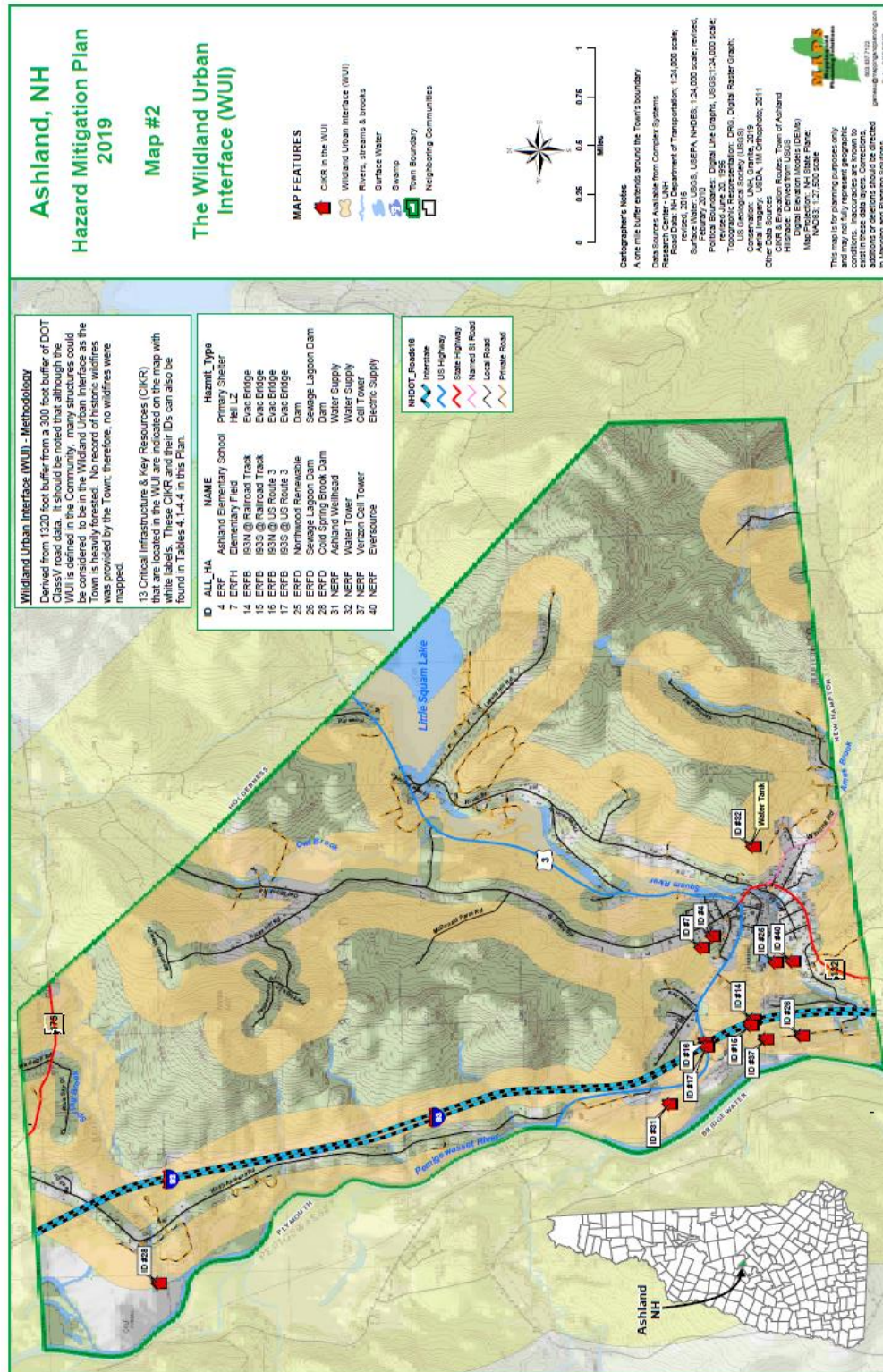




PLACE HOLDER FOR MAP 1

## MAP 2 – THE WILDLAND URBAN INTERFACE

**To be replaced with 11" x 17" map in final hard copy.**

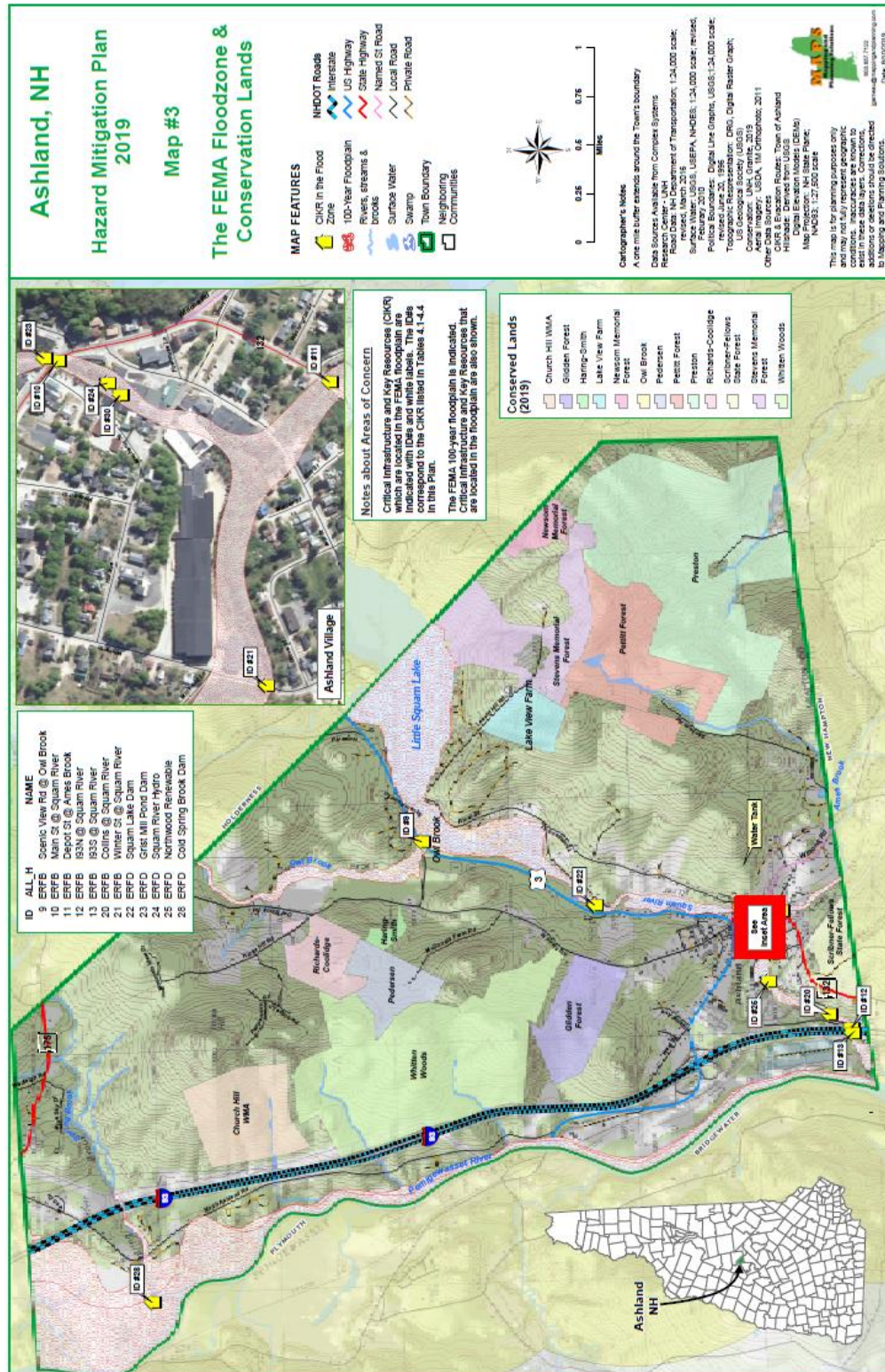


PLACE HOLDER FOR MAP 2



## MAP 3 – THE FEMA FLOODZONE & CONSERVATION LANDS

To be replaced with 11" x 17" map in final hard copy.

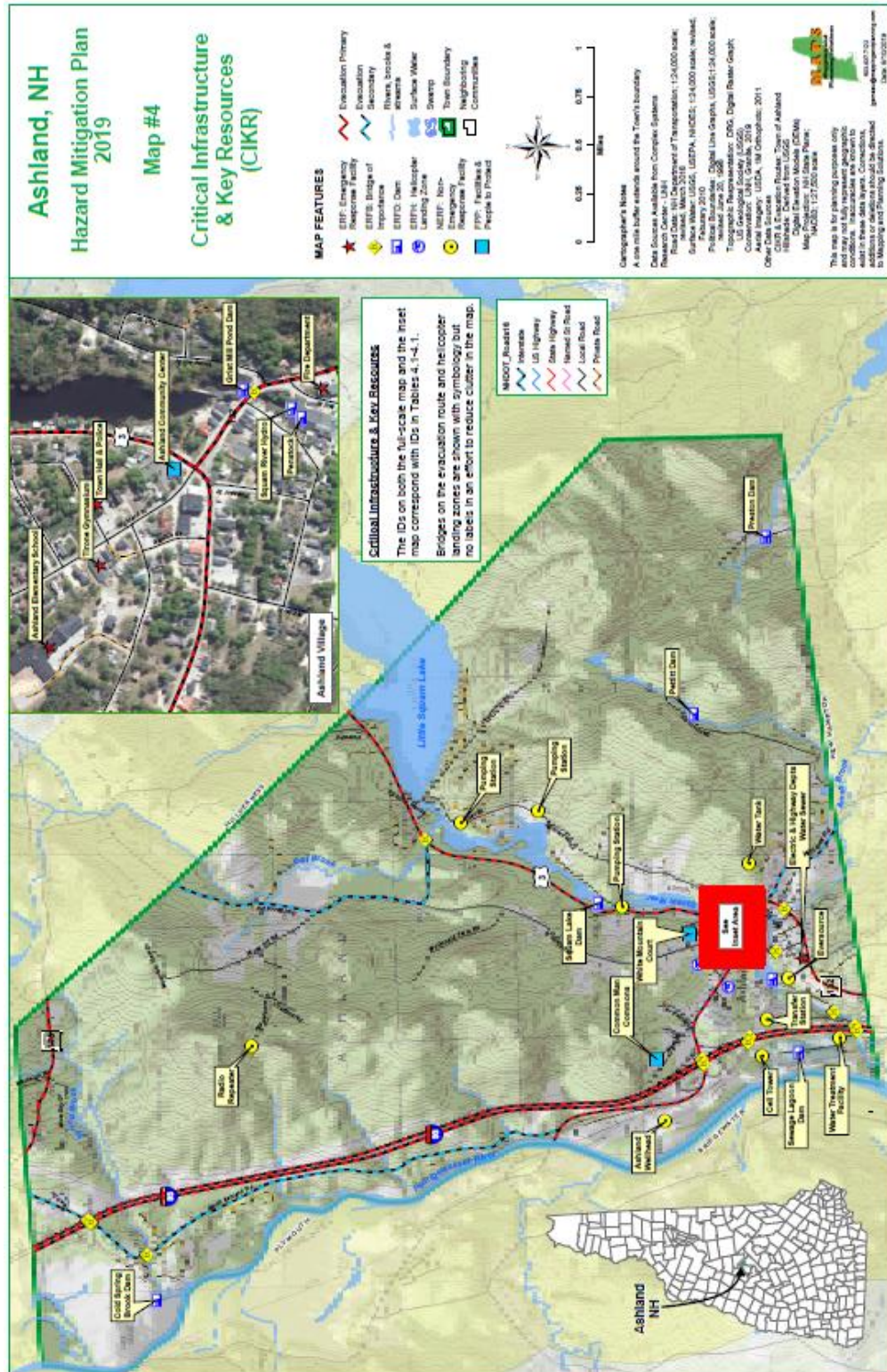


PLACE HOLDER FOR MAP 3



## MAP 4 – CRITICAL INFRASTRUCTURE & KEY RESOURCES

To be replaced with 11" x 17" map in final hard copy.



PLACE HOLDER FOR MAP 4



THIS PAGE INTENTIONALLY LEFT BLANK

**The Town of Ashland**

Stephen L. Heath  
Fire Chief & EMD  
PO Box 856  
Ashland, NH 03217  
firechief@ashland.nh.gov  
(603) 968-7772



*Ashland Fire Department*

*Photo Credit: <https://www.firenews.org/nh/a/ashland/ashlandnh.html>*

**Mapping and Planning Solutions**

June Garneau  
Owner/Planner  
105 Union Street, Suite 1  
Whitefield, NH 03598  
jgarneau@mappingandplanning.com  
(603) 837-7122