

# Whitefield

## Hazard Mitigation Plan Update 2017



This Plan integrates the following:

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

July 14, 2017  
Final for Town Adoption

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

By  
The Whitefield Planning Team

With assistance from Mapping and Planning Solutions

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

*-Dwight D. Eisenhower*

### HAZARD MITIGATION PLAN DEFINITIONS

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

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

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



**Plan Prepared and Authored By**

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

Cover: *King’s Square, Whitefield*  
Photo Credit: MAPS

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## 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 Resources and Economic Development. 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)
- NH Office of Energy & Planning (NHOEP)
- Federal Emergency Management Agency (FEMA)
- Mapping and Planning Solutions (MAPS)
- NH Forests & Lands (DRED)

**This Plan is an update to the prior Whitefield Hazard Mitigation Plan, adopted July 13, 2011.**

**Approval Notification Dates for 2017 Update**

Approved Pending Adoption (APA):..... July 12, 2017  
 Jurisdiction Adoption: ..... \_\_\_\_\_, 2017  
 CWPP Approval: ..... \_\_\_\_\_, 2017  
 Plan Approval Date (FEMA):..... \_\_\_\_\_, 2017  
 Plan Distribution (MAPS): ..... \_\_\_\_\_, 2017

### Town of Whitefield Hazard Mitigation Planning Team

The Town of Whitefield 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:

- Ed Samson, III ..... Whitefield EMD & Police Chief
- Judy Ramsdell ..... Whitefield Administrative Assistant
- James Watkins ..... Whitefield Fire Chief (former)
- Shawn White ..... Whitefield Director of Public Works
- Duane Hall ..... Whitefield BOS (former)
- Mark Lufkin ..... Whitefield BOS (former)
- William Rines ..... Whitefield Public Works Department
- William Jones ..... Whitefield Citizen
- Rick Vashaw ..... SAU 36
- Joseph Cabamp ..... Whitefield Citizen
- Alan Demoramille ... Whitefield Police Department
- Peter Corey ..... Whitefield Board of Selectmen
- Al Theodhor ..... Whitefield Planning Board
- Gary Marshall ..... Whitefield Department of Public Works
- Edith Worcester ..... Whitefield Citizen
- Katie Lombardi ..... Whitefield Citizen
- Marsha Lombard ..... Whitefield Citizen
- Jennifer Gilbert ..... NH OEP
- Elizabeth Peck ..... NH HSEM (former)
- Heidi Lawton ..... NH HSEM
- 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 Whitefield also thanks the Federal Emergency Management Agency and NH Homeland Security and Emergency Management as the primary funding sources for this Plan.

Acronyms Associated with the above list:

- EMD: .....Emergency Management Director
- BOS:.....Board of Selectmen
- SAU:.....School Administrative Unit
- OEP:.....Office of Energy & Planning
- HSEM:.....Homeland Security and Emergency Management
- MAPS: .....Mapping and Planning Solutions

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## Executive Summary

The Whitefield Hazard Mitigation Plan Update 2017 was compiled to assist the Town of Whitefield in reducing and mitigating future losses from natural or human-caused hazardous events. The Plan was developed by participants of the Town of Whitefield Hazard Mitigation Planning Team, 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 2011 Whitefield Hazard Mitigation Plan. In an effort to produce an accurate and current planning document, the Planning Team used the 2011 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 Storms | 8) Hailstorms             |
| 2) Extreme Temperatures (cold & hot)  | 9) Flooding (local roads) |
| 3) Hurricanes & Tropical Storms       | 10) Wildfires             |
| 4) High Winds (windstorms)            | 11) Earthquakes           |
| 5) Tornadoes & Downbursts             | 12) Dam Failure           |
| 6) Severe Thunderstorms & Lightning   | 13) Drought               |
| 7) Flooding (ice jams)                |                           |

### Human-Caused Hazards

- |   |                           |
|---|---------------------------|
| 1) Hazardous Materials – Transport      | 4) Extended Power Failure |
| 2) Hazardous Materials – Fixed Location | 5) Terrorism              |
| 3) Recreational Hazards                 | 6) Epidemic & Pandemic    |

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 Whitefield or not applicable. These include: *Coastal Flooding, Radon, Radiological, Landslide, Fire & Hazardous Materials and Snow Avalanche*. The Team does acknowledge that radon exists but felt that mitigation for radon was the responsibility of the individual homeowner. Fire & Hazardous Materials are covered under the hazard categories of Wildfire, Hazardous Material-Transport and Hazardous Material-Fixed Location.

This Plan also provides a list of Critical Infrastructure and Key Resources (CIKR) categorized as follows: Necessary for Emergency Response Facilities (ERF), Not Necessary for 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 snow storms 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 today's economic constraints, cities and towns are less likely to have the financial ability to complete some mitigation action items, such as burying power lines. In preparing this Plan, the Whitefield 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:

Whitefield Hazard Mitigation Plan Update 2017 .....	the Plan or this Plan
Whitefield .....	the Town or the Community
Hazard Mitigation Planning Team.....	the Team
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 Whitefield 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 Whitefield 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 Whitefield Hazard Mitigation Plan Update 2017 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 Whitefield Hazard Mitigation Planning Team 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. This Plan was funded by HSEM through grants from FEMA (Federal Emergency Management Agency); 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 Whitefield Hazard Mitigation Plan Update 2017 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 Whitefield, 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 and a Community Wildfire Protection Plan (CWPP), the planning effort included participation of Homeland Security and Emergency Management, the US Forest Service, the Department of Resources and Economic Development (DRED), NH Office of Energy & Planning (OEP) 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 planning process, including not only residents but also officials and residents from surrounding communities; the Town of Whitefield understands that natural hazards do not recognize corporate boundaries.

There are two schools in Whitefield; students in grades (K-8) attend the Whitefield Elementary School and students in grades (9-12) attend the White Mountains Regional High School. The Planning Team was fortunate to have representative from SAU36 attend two of the six 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 Whitefield. A Press Release (see below) was posted on the Town's website and at the new Town Offices.

*Mapping and Planning Solutions  
P.O. Box 283  
Twin Mountain, NH 03595*

### **Press Release**

FOR IMMEDIATE RELEASE

November 13, 2015  
Contact: June Gameau  
603.846.5720

#### **TOWN OF WHITEFIELD COMMENCES HAZARD MITIGATION PLANNING**

The Emergency Management Director and other town officials met with June Gameau, Mapping and Planning Solutions, to begin work on the required five-year update to the 2011 Whitefield Hazard Mitigation Plan. As a result of this meeting the Emergency Management Director and Mapping and Planning Solutions are conducting a series of Hazard Mitigation Plan planning meetings over the next few months.

Through this series of public meetings, the Hazard Mitigation Planning Team will address issues such as flooding, hurricanes, drought, landslides and wildfires and determine efforts the Town can take 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 Planning Team will establish priorities for future mitigation projects and efforts that can be taken to increase public awareness of hazards in general.

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

The Hazard Mitigation Planning Team is currently being formed; the public and any interested stakeholders are invited to participate. All interested parties should contact the Town Office, 837-2551, if they wish to be included in the process.

The next meeting has been scheduled for Thursday, December 10 from 9-11:00 AM at the Town Office Building. The general public is encouraged to attend all meetings whether or not they are a part of the Planning Team.

For more information on the hazard mitigation planning process, please contact June Gameau at Mapping and Planning Solutions, 603.846.5720.

The Town also posted a notice for each meeting on the Whitefield website and discussed the hazard mitigation plan project at two Board of Selectmen’s meeting (see below).

Planning Board Meeting Minutes

March 1, 2016

6:30 PM

Page 2 of 2

2. **Dunn, Sara & Morton, Shane, Tax Map 219 Lot 058 - 140 Lancaster Road:** To renovate existing structure, was restaurant will be turning it into a Salon & Day Spa. The applicant doesn't feel that permits/applications are required. The Town has always had a Development Permit and since the Inventory Forms are no longer being used the Development Permit is even more essential. The State has asked that we notify them of any changes along their roads. Joyce has notified them on this change. The Board discussed what State permits would be needed. The Board had no problems with the renovations. **A motion was made by Mark Lufkin to approve the renovations and change of use contingent upon meeting the Fire Safety Codes and other State permits that may be required, seconded by Frank Lombardi. All in favor, motion carries. APPROVED**
3. **Skillin, Wayne, Tax Map 233 Lot 049 – 291 Colby Road:** Mark Lufkin will talk with him regarding permits.

**Correspondence:**

1. The Hazard Mitigation Planning Committee is looking for a member from the Planning Board- Alan Theodor will be the representative.

*Selectmen’s Meeting Minutes March 28, 2016*

*At the Selectmen’s Meeting held on Monday, March 28, 2016 at 6:30 p.m. the following people were in attendance: Mark Lufkin, Peter Corey, and Wendy Hersom. Department Heads: Shawn White, Ed Samson, Bill Thompson, Josh Welch, and Jay Watkins. There were four members of the public in attendance: Elaine Wiseman, Jeffrey Wiseman, Bob Stevens, and one other female.*

*Department Head Meeting:*

*“...On the Emergency management side we are in the process of wrapping up the Hazard Mitigation Plan, and we just applied to do the Emergency Operations Plan. It has to go through a couple of steps, and we will start on that as soon as the Hazard Mitigation Plan is upgraded. Peter Corey said he sat in on the last meeting, and told the Board that June Garneau who facilitates this process did complement the Town on what they have gotten done in addressing the issues that were addressed five years ago when the plan was last updated. She said she goes a lot of places and there has been a log of progress made here in Whitefield...”*

§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.

Lastly, the Planner sent a monthly calendar to NH EMD's, Police Chiefs, Fire Chiefs, Rangers and other State, Federal and Private Officials throughout the State, including stake-holders for the Town.



MAPS EOP & Hazard Mitigation Meetings | 2016



New or changed Emergency Operations, Hazard Mitigation or Master Plan meetings; highlighted by "Counties".

Status update: 4/8/16

Day	Date	Time	Town/Location	Plan Type	HSEM Field Rep	County
Tuesday	Apr 12	9:00 AM	Ashland Fire Station	EOP	Paul Hatch	Grafton
Tuesday	Apr 12	1:30 PM	Brentwood Town Offices	EOP	Heidi Lawton	Rockingham
Wednesday	Apr 13	5:00 PM	Dummer Town Hall	HMP	Heidi Lawton	Coos
Thursday	Apr 14	9:30 AM	Whitefield Town Offices	HMP	Heidi Lawton	Coos
Monday	Apr 18	8:00 AM	Lancaster Ambulance Bay	HMP	Heidi Lawton	Coos
Tuesday	Apr 19	12:00 PM	Lyme Fire Station	HMP	Paul Hatch	Grafton
Wednesday	Apr 20	12:00 PM	Lyman Town Hall	EOP	Paul Hatch	Grafton
Thursday	Apr 21	6:00 PM	Albany Town Hall	HMP	Heidi Lawton	Carroll
Monday	Apr 25	6:00 PM	Stark Fire Station	HMP	Heidi Lawton	Coos
Tuesday	Apr 26	1:30 PM	Brentwood Town Offices	EOP	Heidi Lawton	Rockingham
Wednesday	Apr 27	1:00 PM	Canaan Public Safety Building	HMP	Paul Hatch	Grafton
Wednesday	Apr 27	6:00 PM	Bethlehem Library	MP	N/A	Grafton
Tuesday	May 3	6:30 PM	Shelburne Town Offices	MP	N/A	Coos
Wednesday	May 4	9:00 AM	Lincoln Town Offices	EOP	Paul Hatch	Grafton
Wednesday	May 11	10:00 AM	Wakefield Public Safety Building	HMP	Heidi Lawton	Carroll
Monday	May 16	5:30 PM	Ellsworth Town House	HMP	Paul Hatch	Grafton
Wednesday	May 18	9:00 AM	Lincoln Town Offices	EOP	Paul Hatch	Grafton
Wednesday	May 25	6:00 PM	Bethlehem Library	MP	N/A	Grafton
Thursday	May 26	1:30 PM	Jackson Town Offices	EOP	Heidi Lawton	Carroll
Wednesday	Jun 1	9:00 AM	Lincoln Town Offices	EOP	Paul Hatch	Grafton
Wednesday	Jun 1	1:00 PM	Canaan Public Safety Building	HMP	Paul Hatch	Grafton
Wednesday	Jun 8	9:00 AM	Lincoln Town Offices	EOP	Paul Hatch	Grafton
Wednesday	Jun 22	6:00 PM	Bethlehem Library	MP	N/A	Grafton

*Notice of one of the six hazard mitigation planning meetings in Whitefield.*

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 very 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.

Whitefield however had very good attendance; emergency services and the Public Works Department were represented at each meeting. Members of the Board of Selectmen and the Planning Board as well as the Administrative Assistant were active participants in meetings. Lastly, in addition to a representative from SAU 36, several interested citizens took the opportunity to attend a few meetings. Comments made by all Team members including the citizens of the Community who attended were integrated into the narrative discussion and were incorporated into the essence of the document.

**F. Incorporation of existing plans, studies, reports and technical information**

The planning process included a complete review of the Whitefield Hazard Mitigation Plan of 2011 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 Whitefield Hazard Mitigation Plan of 2011.....	Compare & Contrast
Whitefield Comprehensive Development Guide.....	Community Information
Whitefield Annual Report, 2016.....	Fire Report & Development
Area Hazard Mitigation Plans (Conway, Carroll, Columbia).....	Formats & Mitigation Ideas
The Whitefield Subdivision Regulations.....	New Development Regulations
Floodplain Development Criteria (part of Development Guide).....	Floodplain Regulations
Census 2010 Data.....	Population Data
The NH DRA Summary of Inventory of Valuation MS-1 2015 for Whitefield.....	Structure Evaluation
The Economic & Labor Market Information Bureau Community Response.....	Population Trends
The American Community Survey (ACS 2010-2014).....	Population Trends
NH Forest Forests & Lands (DRED).....	DRED Fire Report
NH Office of Energy & Planning.....	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.



*The Mountain View Grand  
Photo Credit: MAPS*

## 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 Risk 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 prior plan

*Table 7.1 – Accomplishments since the Prior Plan Approval*

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*

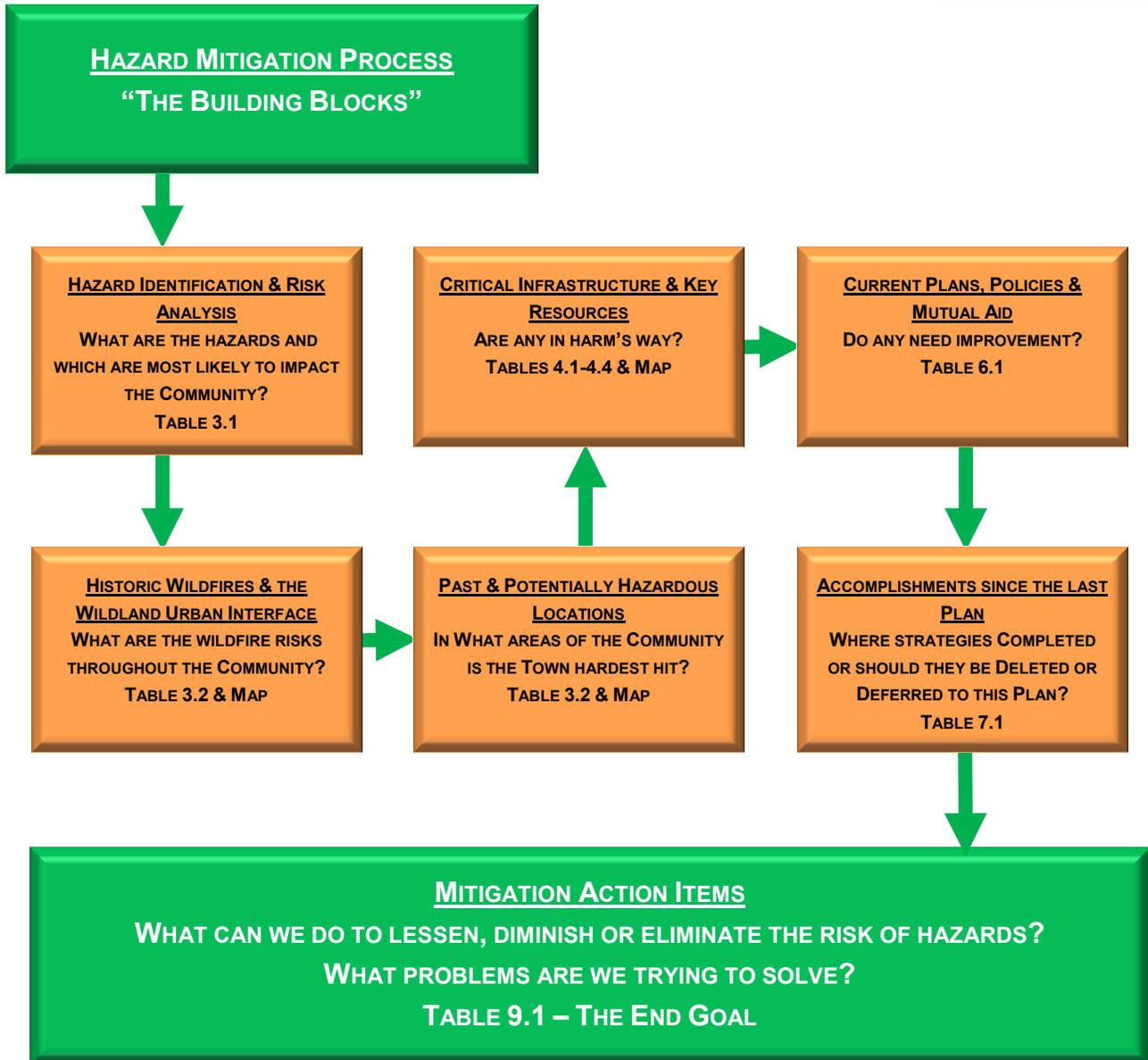
Step 11: Team Review of Plan Contents for Submission to HSEM/FEMA

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 2011 Whitefield Hazard Mitigation Plan. After discussing these goals, the current Whitefield 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 Whitefield and visitors, from all natural and human-caused hazards.
- To reduce Whitefield'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 Whitefield's:
  - *Emergency preparedness and communication network.*
  - *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 Whitefield can be notified in the most efficient manner as 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 Whitefield'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 Whitefield.*
- To identify, introduce and implement cost effective hazard mitigation measures so as 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 Whitefield.

**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 2011 Whitefield Hazard Mitigation Plan. Using the 2011 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 2011 Plan, strategies from the past were reassessed and improved upon for the future.

The following narrative explains how the 2011 Whitefield Hazard Mitigation Plan was used during each step of the planning process to make revisions that resulted in the Plan.

**Meeting 1, November 12, 2015**

The first full meeting of the Whitefield Hazard Mitigation Team was held. Meeting attendance included Edward Samson, III (Police Chief & Emergency Management Director), Judy Ramsdell (Administrative Assistant), James Watkins (Fire Chief), Shawn White (Director of Public Works), Duane Hall (Board of Selectmen), Mark Lufkin (Board of Selectmen), William Rines (Public Works Department), Olin Garneau (Mapping and Planning Solutions) and June Garneau (Mapping and 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 Hazard Mitigation Goals (handout). June also explained the need to sign-in, track time (handout) and to provide public notice to encourage community involvement. Lastly, there was discussion about potential “stakeholders” and Chief Samson made a list of others he would invite to the meetings.

Work then began on *Table 2.1, Town Statistics*. Much of the work on this table was complete with the exception of a few items that June would either determine through GIS or get at a later date from Judy Ramsdell, the Administrative Assistant. In general the Team felt that the data that had been obtained from the Census Bureau and the Economic and Labor Department Bureau’s Community Profile accurately represented the Town’s population; some discussion was had about the change in seasonal populations due to campgrounds and hotels, but it was ultimately decided that the seasonal increase in population was only about 15%.

**HAZARDS MITIGATION  
POTENTIAL TEAM MEMBERS**

FEDERAL  
US Forest Service

STATE  
Department of  
Transportation  
DRED  
RC&D (Non-Profit)

LOCAL  
Selectmen (Past/Present)  
Town Manager/Administrator  
Town Planner  
Police Chief  
Fire Chief  
EMD  
Emergency 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  
Environmentalists

Next on the Agenda were hazard identification and the completion of *Table 3.1, Hazard Threat Analysis*. Using the 2011 hazards as a benchmark and including them with hazards from the 2013 NH State Hazard Mitigation Plan, the Team identified the hazards that had a likelihood of impacting Whitefield.

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) 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 ..... Probability of Occurrence

The rankings were then calculated to reveal the hazards which pose the greatest risks to the community; 13 natural hazards and six human-caused hazards were identified. After analyzing these hazards using Table 3.1, Severe Winter Storms & Ice Storms, Extreme Temperatures (cold & hot) and High Winds (windstorms) were designated as the primary concerns.

The Team then worked on *Tables 4.1-4.4, Critical Infrastructure & Key Resources (CIKR)*; these tables had been pre-populated with the CIKR from the 2011 Plan. The next step was to determine which CIKR were still available to the Town and then to determine the hazard risk of each of the CIKR that had been identified. Using a scale of 1-3, with 1 representing “little or no risk”, the Team ranked the “hazard risk” for each CIKR. The Team also identified which hazard may affect the CIKR, if any.

With time running out June thanked all the participants and scheduled the next meeting for Thursday, December 10, 2015.

**Meeting 2 – December 10, 2015**

Meeting attendance included Ed Samson, Judy Ramsdell, James Watkins, Shawn White, William Jones (Citizen), Rick Vashaw (SAU 36), Joseph Cabamp (Citizen), Alan Demoramille (Police Department) Olin Garneau and June Garneau.

First on the agenda was to review Table 2.1 and Table 3.1, which were done at the previous meeting, to see if the Team felt that any of the data needed to be adjusted for more accuracy. The Team felt that a small change needed to be made in Table 3.1; the consensus was that Hurricane & Tropical Storms were a more significant risk than High Winds (windstorms) as was indicated at the first meeting. Together with the Team, June changed the scoring to reflect this change; this lead to Hurricane & Tropical Storms being designated as the third most likely natural hazard to affect Whitefield.

**Meeting 1 – November 12, 2015**

- 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) Town Information
  - b) Hazard Identification & Analysis
  - c) Hazard Descriptions
- 5) Homework**
  - a) Critical Infrastructure & Key Resources
  - b) Digital Photos – contributions welcome
- 6) Future Meetings**
  - a) \_\_\_\_\_

After reviewing Table 2.1 and Table 3.1 for changes, the Team went on to provide descriptions of each hazard that was identified in Table 3.1 and how they could, or do, impact the Town of Whitefield 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 Whitefield.

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?

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. June also asked the Team about current development trends; this effort helped the Team consider what new construction or infrastructure may be within hazardous areas of the Community.

June introduced the Team to *Table 3.2, Historic Hazard Identification* a list of past and potentially hazardous locations and/or events. Using projection, June and the Team looked at the hazards that were listed in the last Plan and determined which they would like to see kept in this Plan. Many of the hazards listed in the prior plan were non-descript and geographically broad in nature. Other hazards from the 2011 Plan that specifically detailed events in Whitefield remained in the Plan and were noted as having come from the 2011 Hazard Mitigation Planning Team (2011HMPT).

**Meeting 2 – December 10, 2015**

**1) Last Meeting**

- a) Discussed the process, community and stakeholder involvement, our overall goal to establish mitigation action items and the collaboration of other agencies.
- b) Completed Table 2.1, Town Statistics
- c) Completed Table 3.1, Hazard Threat Analysis
- d) Completed Table 4.1-4.4, Critical Infrastructure & Key Resources

**2) Today's Topics**

- a) Review Table 2.1
- b) Review Table 3.1 to see if order of hazards should remain as it is
- c) Hazard Descriptions
- d) Table 3.2, Historic Hazard Identification & Mitigation Ideas
- e) Mapping for Table 4.1-4.4, Critical Infrastructure & Key Resources (time allowing)

**3) Next Meeting**

- a) Table 7.1, Accomplishments since the last Plan
- b) Table 6.1, Current Plans, Policies & Mutual Aid

**4) Future Meetings**

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

The Team also examined the record of Presidential Disaster Declarations (see *Appendix D, NH Presidential Disaster & Emergency Declarations*) that have taken place in recent years, in the State, the County and in Whitefield. This record of Presidential and Emergency Declarations shows a substantial increase over past decades. For each Presidential Disaster or Emergency Declaration, the Team explained the impact the event had in Whitefield.

With time running out, the meeting was adjourned with the next meeting set for January 26, 2016

**Meeting 3 – January 26, 2016**

Meeting attendance included Ed Samson, Judy Ramsdell, James Watkins, Shawn White, Rick Vashaw and June Garneau. Even with a small number of attendees at this meeting, a good deal of progress was made

First on the agenda was a review of the last meeting, including a review of *Table 3.2, Historic Hazard Identification* that was done at the previous meeting to make sure the Team still felt the information was accurate.

While going over past hazards and wildfires, 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, Fire 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, Fire Base Risk Analysis* that the areas that are most susceptible to wildfires are on the west-facing slopes of Kimball Hill and Howland Hill, although other areas also showed considerable vulnerability for wildfire.

Next, June discussed the Wildland Urban Interface (WUI) and projected a map of the WUI over the Whitefield base layer and topography. The WUI was determined using GIS analysis to create a 300 foot buffer from the center line of all Class I-V roads and then an additional 1320 foot buffer from the first buffer (see *Map 2, Historic Wildfires & 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 Whitefield, 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.

*Table 7.1, Accomplishments since the Prior Plan Approval*, also pre-populated with data from the 2011 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 2011 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.

**Meeting 3 – January 26, 2016**

**1) Last Meeting**

- a) Reviewed....
  - i) Table 2.1, Town Statistics
  - ii) Table 3.1, Hazard Threat Analysis
- b) Worked on....
  - i) Hazard Descriptions & Mitigation Ideas
  - ii) Table 3.2, Historic Hazard Identification

**2) Today’s Topics**

- a) Review Table 4.1
- b) Table 7.1, Accomplishments since the last Plan
- c) Table 6.1, Current Plans, Policies & Mutual Aid (time allowing)
- d) Start thinking about mitigation ideas (handout)

**3) Next Meeting**

- a) Review comprehensive list of Mitigation Strategies
- b) Work on Mitigation Action Items
- c) STAPLEE & Priority & Ranking (time allowing)

**4) Future Meetings**

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

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 2011 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 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.

With time running out, June took notes and promised to write statements to support the Team’s concepts and ideas. With both Table 6.1 and 7.1 at least partially completed, the Team scheduled the next meeting for March 15, 2016 and the meeting was adjourned.

**Meeting 4 – March 15, 2016**

Meeting attendance included Ed Samson, Judy Ramsdell, James Watkins, Shawn White and June Garneau. In addition, three new members joined the Team: Peter Corey (Board of Selectmen), Gary Marshal (DPW) and Al Theodor (Planning Board). Lastly, Elizabeth Peck from NH Homeland Security and Emergency Management also attended. As there were new Team members, June did a quick recap of the work that had been done up to this point.

Then, June lead the Team through a review of the work that was done at the last meeting, primarily a review of *Table 6.1, Current Plans, Policies & Mutual Aid* and *Table 7.1, Accomplishments since the Last Plan*. Having translated her notes from the last meetings into paragraphs, June reviewed each item in both tables 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.

**Meeting 4 – March 15, 2016**

- 1) Last Meeting**
  - a) Reviewed Table 4.1
  - b) Worked on Table 7.1, Accomplishments since the last Plan
  - c) Worked on Table 6.1, Current Plans, Policies & Mutual Aid (time allowing)
- 2) Today’s Topics**
  - a) Review Table 7.1, Accomplishments since the last Plan
  - b) Review Table 6.1, Current Plans, Policies & Mutual Aid (time allowing)
  - c) Review comprehensive list of Mitigation Strategies (handout)
  - d) Work on Mitigation Action Items
- 3) Next Meeting**
  - a) Work on Mitigation Action Items
  - b) STAPLEE & Priority & Ranking
- 4) Future Meetings**
  - a) \_\_\_\_\_
  - b) \_\_\_\_\_

June explained how the “Improvements Needed” items would become new “Action Items” for this hazard mitigation plan.

With time running out, June provided the Team with a comprehensive list of mitigation strategies and showed them Table 9.1, explaining what would be accomplished at the next meeting. June also promised to send Team members a link to the FEMA publication, “Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards, January 2013” for their review before the next meeting, scheduled for Thursday, April 14, 2016.

**Meeting 5 – April 14, 2016**

Meeting attendance included Ed Samson, Judy Ramsdell, James Watkins, Peter Corey, Al Theodor, Edith Worcester (Citizen), Katie Lombardi (Citizen), Marsha Lombard (Citizen), Olin Garneau and June Garneau.

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

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 time frame was based on the following key for completion:

- **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)

Then additional mitigation items were considered and added to Table 9.1. After much discussion and a careful review, ultimately, the Team settled on thirty two “Mitigation Action Items” that they felt were achievable and that would help to diminish the impact of natural hazards in the future.

Using the handouts that were given out at the last meeting, the Team was able to go through the STAPLEE process of each of the action items. 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*.

The Team was not able to work on the prioritizing of the action items, but June did provide the Team with two handouts that would be used during the next meeting: an explanation of the STAPLEE process (Chapter 8) and an explanation of the Ranking/Prioritizing (Chapter 9) method.

The next meeting was scheduled for April 28, 2016.

**Meeting 5 – April 14, 2016**

**1) Last Meeting**

- a) Complete review of progress so far (for newcomers)
- b) Worked on Table 7.1, Accomplishments since the last Plan
- c) Worked on Table 6.1, Current Plans, Policies & Mutual Aid

**2) Today’s Topics**

- a) Review comprehensive list of Mitigation Strategies (handout)
- b) Begin work on Action Items (Tables 8.1 & 9.1)
- c) Do the STAPLEE process (handout)
- d) Ranking & Priority (handout; time allowing)

**3) Next Meeting**

- a) Finish up work not completed at the last meeting
- b) Explain process for Adoption

**4) Future Meetings**

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

**Meeting 6 – April 28, 2016**

Meeting attendance included Ed Samson, Judy Ramsdell, James Watkins, Shawn White, Peter Corey, Al Theodor, Edith Worcester, Katie Lombardi, Marsha Lombard, Olin Garneau and June Garneau.

The ranking & priority of the action items was on the agenda for this meeting. June organized the action items 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 clear and determine the correct ranking and priority.

**Meeting 6 – April 28, 2016**

- 1) Last Meeting**
  - a) Worked on...
    - i) Mitigation Action Items
    - ii) STAPLEE
- 2) Today's Topics**
  - a) Ranking & Priority (handout)
- 3) Future Meetings**
  - a) \_\_\_\_\_

The “ranking” of the action items in order of time frame, the Town’s authority to get the strategy accomplished and the STAPLEE score enabled the action items to be placed in four groups (see Chapter 9, Section A).

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.

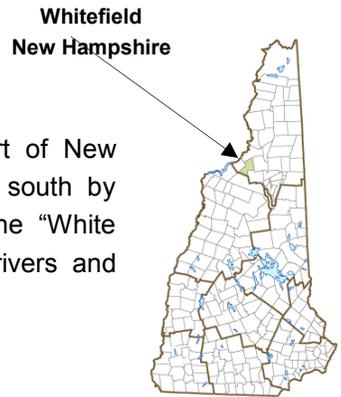
With Tables 8.1 and 9.1 completed, the Team’s work was complete, with the exception of the final review. June agreed to put the final “draft” plan together and email a copy for the Town’s review. June explained the process from this point forward and thanked the Team for their hard work. No additional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

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

## Chapter 2: Community Profile

### A. Introduction

Whitefield is a beautiful community located in Coos County in the northwest part of New Hampshire. Whitefield is bordered to the east by Jefferson and Carroll, to the south by Bethlehem, to the north by Lancaster and to the west by Dalton. Located in the “White Mountains” tourist region of New Hampshire, Whitefield is surrounded by forest, rivers and contains wonderful mountain vistas throughout.



### TOWN GOVERNMENT

A three-member Board of Selectmen governs the Town of Whitefield. The Town’s departments include, but are not limited to, Fire, Police, EMS, Highway, Planning, Zoning, Library, Trust Funds and Conservation. The largest, businesses in Whitefield are the Mountain View Grand Hotel, White Mountains Regional High School and Morrison Nursing Home.

### DEMOGRAPHICS & HOUSING

Over the last 30 years, the population of Whitefield has increased drastically; the population change from 1980 (1,681) to 2010 (2,306) showed an increase of 625 according to US Census 2010. This represents a growth rate of approximately 37.18%. Whitefield’s population in 2014 was estimated to be 2,134.<sup>4</sup>

The American Community Survey (2010-2014) estimates a total of 1,429 housing units, most of which are single family (875). Multiple-family structures total 231 and mobile homes and other housing units number 223. The median household income is estimated to be \$44,042 and the median age is 47.5 years.<sup>5</sup> Census 2010 estimates that of the 363 vacant housing units, 268 are used for recreational, seasonal or occasional use thus confirming the presence of second home and seasonal residents.

### EDUCATION & CHILD CARE

Whitefield student’s grades PK-8 attend Whitefield Elementary School. Student’s grades 9-12 attend White Mountains Regional High School; both schools are located within the Town. There are no colleges or universities in Whitefield, however there are two licensed child care facilities with a capacity of 38 according to the Town.

**Incorporated:** 1804

**Origin:** This was the last town to be granted under the English provincial government. It was chartered by Governor John Wentworth on July 4, 1774, exactly two years prior to the adoption of the Declaration of Independence. Those named in the grant included Jeremy Belknap, who authored an early history of the state, and for whom Belknap County was named. The town may have been named for George Whitefield, a famous English evangelist, and friend of the Earl of Dartmouth. The town was known as Whitefields until its incorporation in 1804, when the last letter was dropped.

**Villages and Place Names:** Hazens

**Population, Year of the First Census** Taken: 51 residents in 1810

**Population Trends:** Population change for Whitefield totaled 553 over 54 years, from 1,581 in 1960 to 2,134 in 2014. The largest decennial percent change was an increase of 14 percent between 1980 and 1990. The 2014 Census estimate for Whitefield was 2,134 residents, which ranked 135th among New Hampshire’s incorporated cities and towns.

**Population Density and Land Area, 2014 (US Census Bureau):** 62.2 persons per square mile of land area. Whitefield contains 34.3 square miles of land area and 0.4 square miles of inland water area.

*Source: Economic & Labor Market Information Bureau, NH Employment Security, January 2016; Received 6/01/2015*

<sup>4</sup> Economic & Labor Market Information Bureau, NH Employment Security, January 2016. Community Response 6/1/15.

<sup>5</sup> American Community Survey, 2010-2014; the Census Bureau

**NATURAL FEATURES**

The Town of Whitefield covers approximately 34.3 square miles of land area and 0.4 square miles of inland water. The Community is dominated by mountains and hills in northern New Hampshire. The largest peaks are Howland Hill and Kimball Hill both 1,712' above sea level. The lowest elevation in Town is 948' above sea level in the center of town; most of the Community is over 1,000 feet above sea level which leaves it vulnerable to ice storms.

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 Johns River, Burns Pond, Mirror Lake and Forest Lake.

**TRANSPORTATION**

There are three major roadways which run through Whitefield: NH Route 3 travels from Carroll in the south to Lancaster in the north; NH Route 116 travels from Bethlehem in the west to Jefferson in the east; and NH Route 142 travels from downtown Whitefield to Dalton to the northwest. Other smaller and less travelled roadways include Colby Road, Mountain View Road, Airport Road, Brown Street, Faraway Road via Forest Lake Road and South Whitefield Road.

NH Routes 116 and 3 are major northern New Hampshire highways; these roads are heavily travelled by residents, tourists (both US and Canadian) and commercial vehicles on a regular basis.

**B. Emergency Services**

**EMERGENCY OPERATION CENTER & EMERGENCY MANAGEMENT DIRECTOR**

The Emergency Management Director (EMD) position in Whitefield is held by the Police Chief who 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 Whitefield the designated EOC is at the newly built Town Building.

**WHITEFIELD FIRE RESCUE & EMS**

The Whitefield Fire Rescue is a volunteer fire department providing quality fire services and emergency medical services to the residents and visitors of Whitefield 24 hours a day, 365 days a year. The Department staffs a full-time Chief and 20 on call volunteer firefighters; the Fire Department operates one station within the Community. Whitefield Fire Rescue participates in the North Country Fire Mutual Aid District along with area departments. Emergency Medical Transport is provided by Whitefield Fire Rescue.

**WHITEFIELD POLICE DEPARTMENT**

The Whitefield Police Department is a full-time department providing law enforcement services to the residents and visitors of Whitefield 24 hours a day, 365 days a year. The Department staffs a full-time Chief, 5 full-time and 4 part-time sworn officers. The Whitefield Police Department has mutual aid agreements with surrounding towns and the NH State Police.

**WHITEFIELD PUBLIC WORKS DEPARTMENT**

The Whitefield Public Works Department operates on a year-round, 24-hour basis as needed. The Department staffs a full-time Director and 5 employees. The Public Works Department’s mission is to support the citizens of Whitefield 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 Department belongs to NH Public Works Mutual Aid.

**MEDICAL FACILITIES**

Whitefield’s closest medical facility is Weeks Medical Center in Lancaster (9.7 miles, 25 beds). If the need arises, an alternative medical facility is Littleton Regional Healthcare in Littleton (14.5 miles, 25 beds)

**EMERGENCY SHELTER(S)**

The primary shelter is the location to which evacuees are directed at the time of an emergency. In Whitefield, the designated primary shelter is White Mountains Regional High School which offers a large sleeping area, bathrooms, showers and kitchen facilities. **Action Item #23** outlines a strategy to outfit the White Mountains Regional High with a backup generator.

**C. Whitefield’s Current & Future Development Trends**

Over the last 10 years development in Whitefield has been consistent with development trends in the rest of northern New Hampshire. Nearly every community in northern New Hampshire has experienced a significant drop in new home construction since 2005; this trend is only now beginning to change.

According to City-Data, as shown in the chart to the right<sup>6</sup>, building began to decrease in 2005 and stayed low through 2013; requests for building permits for new home construction increased some in 2014 and growth continues to increase today.

<i>Single-family new house construction building permits:</i>	
• 2004:	18 buildings, average cost: \$138,800
• 2005:	16 buildings, average cost: \$138,800
• 2006:	7 buildings, average cost: \$171,000
• 2007:	5 buildings, average cost: \$171,000
• 2008:	2 buildings, average cost: \$182,400
• 2009:	2 buildings, average cost: \$182,400
• 2011:	1 building, cost: \$172,800
• 2012:	3 buildings, average cost: \$184,000
• 2013:	2 buildings, average cost: \$193,300
• 2014:	7 buildings, average cost: \$211,200

The 2016 Annual Report states “2016 was a busy year for the Planning Board. Development permits were approved for 47 projects. Projects included 10 new homes and new mobile homes. 13 other projects came before the Board including 4 Subdivisions, and 3 Lot Line Adjustments. Morrison Hospital Association brought amended plans for the new Senior Living Community to the Board for approval”. Whitefield is home to primarily single-family homes and is considered a “bedroom community” for other towns in the area, particularly Littleton. The single largest development in Whitefield at this time is the new Senior Living Community being built just outside the village center of Whitefield.

The Planning Board and the Board of Selectmen will monitor growth in Whitefield using existing regulatory documents such as the Floodplain Ordinance, Change of Use Application, Subdivision Regulations and the Whitefield New Hampshire Comprehensive Development Guide. Building or “Development Permits” are required in

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

Whitefield and as a small community, Planning Board and Board of Selectmen members along with other town officials are almost always 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. It was also noted that no development since the 2011 hazard mitigation plan has occurred in hazard prone areas and no development since 2011 has impacted the Town's hazard vulnerability.

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.

**TABLE 2.1: TOWN STATISTICS**

Table 2.1 - Town Statistics				
	2010	2000	1990	1980
<b>Whitefield – Census 2010 Population Data</b>	<b>2,306</b>	<b>2,039</b>	<b>1,917</b>	<b>1,681</b>
<b>Coos County – Census 2010 Population Data</b>	<b>33,055</b>	<b>33,156</b>	<b>34,879</b>	<b>35,014</b>
<i>Elderly Population-% over 65 (ACS 2010-2014)</i>	18.2%			
<i>Median Age (ACS 2010-2014)</i>	47.5			
<i>Median Household Income (ACS 2010-2014)</i>	\$44,042			
<i>Individuals below the poverty level (ACS 2010-2014)</i>	11.3%			
<i>Change in Population-Summer (%)</i>	15%			
<i>Change in Population-Winter (%)</i>	15%			
<b>Housing Statistics (2010 Census)</b>				
<i>Total Housing Units</i>	1,339			
<i>Occupied Housing Units</i>	976			
<i>Owner Occupied Units</i>	674			
<i>Renter Occupied</i>	302			
<i>Vacant Housing Units</i>	363			
<i>Units for Seasonal, Recreational, Occasional Use</i>	268			
<i>Assessed structure value (2015-MS1)</i>	\$197,252,040			
<b>Regional Coordination</b>				
<i>County</i>	Coos			
<i>Tourism Region</i>	White Mountains			
<b>Municipal Services &amp; Government</b>				
<i>Town Manager</i>	No			
<i>Board of Selectmen</i>	Yes; elected			
<i>Planning Board</i>	Yes; appointed			
<i>School Board</i>	Yes; elected			

Table 2.1 - Town Statistics	
<i>Zoning Board of Adjustment</i>	Yes; appointed
<i>Conservation Commission</i>	Yes; appointed
<i>Master Plan</i>	2009
<i>Emergency Operation Plan (EOP)</i>	2010
<i>Hazard Mitigation Plan (HMP)</i>	2011
<i>Comprehensive Development Guide (Zoning Ordinances)</i>	Yes; 1992/05 - Last update December 2012
<i>Subdivisions Regulations</i>	Yes;
<i>Capital Improvement Plan</i>	Yes
<i>Capital Reserve Funds</i>	Yes
<i>Building Permits Required</i>	Yes
<i>Town Web Site</i>	Yes; www.whitefieldnh.org
<i>Floodplain Ordinance</i>	Yes; (Appendix IV - Comprehensive Development Guide
<i>Member of NFIP</i>	2-Apr-86
<i>Flood Insurance Rate Maps (DFIRMS)</i>	20-Feb-13
<i>Flood Insurance Rate Study (FIS)</i>	20-Feb-13
<b>Percent of Local Assessed Valuation by Property Type-2014 (NH Department of Revenue)</b>	
<i>Residential Buildings</i>	72.7%
<i>Commercial Land &amp; Buildings</i>	15.6%
<i>Other (including Utilities)</i>	11.6%
<b>Emergency Services</b>	
<i>Town Emergency Warning System(s)</i>	No
<i>School Emergency Warning System(s)</i>	Power Announcement (through Power School)
<i>Emergency Page</i>	No
<i>Facebook Page</i>	Police, Fire & Public Works
<i>ListServ</i>	No
<i>Local Newspapers</i>	Coos Country Democrat; Northwoods Weekly; White Mountain Record
<i>Local TV Stations</i>	WMUR (9); WCAX (3) Burlington
<i>Local Radio</i>	WXXS 102.3 FM (Lancaster)
<i>Police Department</i>	Yes; full-time Chief; 5 full-time 4 part-time
<i>Police Dispatch</i>	NH DOT out of Lancaster, District 1
<i>Police Mutual Aid</i>	Surrounding Towns & NH State Police
<i>Animal Control Officer</i>	No
<i>Fire Department</i>	Yes; Full Time Chief; 20 on call volunteers
<i>Fire Dispatch</i>	NH DOT out of Lancaster, District 1
<i>Fire Mutual Aid</i>	North Country Fire Mutual Aid District & Twin State Fire Mutual Aid (associate)
<i>Fire Stations</i>	1
<i>Fire Warden</i>	Yes

<b>Table 2.1 - Town Statistics</b>	
<i>Emergency Medical Services</i>	Yes; Whitefield Fire Rescue
<i>EMS Dispatch</i>	NH DOT out of Lancaster, District 1
<i>Emergency Medical Transportation</i>	Whitefield Fire Rescue
<i>HazMat Team</i>	North Country Emergency Response Team (Gorham)
<i>Established EMD</i>	Yes
<i>Established Deputy EMD</i>	No
<i>Public Health Network</i>	North Country Regional Health Network
<i>Health Officer</i>	Yes
<i>Building Inspector</i>	No
<i>Established Public Information Officer (PIO)</i>	No
<i>Nearest Hospital(s)</i>	Weeks Medical Center, Lancaster (9.7 miles); Littleton Regional Healthcare (14.5 miles)
<i>Local Humane Society or Veterinarians</i>	Whitefield Animal Hospital
<i>Primary EOC</i>	Town Building (also houses the Police Department)
<i>Secondary EOC</i>	No
<i>Primary Shelter</i>	White Mountains Regional High School
<i>Secondary Shelter</i>	Town Building
<b>Utilities</b>	
<i>Town Sewer</i>	Municipal & Private
<i>Director of Public Works</i>	Yes
<i>Public Works Mutual Aid</i>	Yes
<i>Water Supply</i>	Whitefield Water System & Private
<i>Waste Water Treatment Plant</i>	Yes
<i>Electric Supplier</i>	Eversource
<i>Natural Gas Supplier</i>	None
<i>Cellular Telephone Access</i>	Good
<i>High Speed Internet</i>	Good
<i>Telephone Company</i>	Fairpoint
<b>Transportation</b>	
<i>Primary Evacuation Routes</i>	US Route 3, NH Route 116 & 142; Airport Road
<i>Secondary Evacuation Routes</i>	Faraway Road
<i>Nearest Interstate</i>	I-93, Exit 41 (12 miles)
<i>Nearest Airstrip</i>	Mt. Washington Regional, Whitefield (4,100 ft. asphalt runway)
<i>Nearest Commercial Airport(s)</i>	Lebanon Municipal (78 miles)
	Portland (ME) International (108 miles)
	Manchester-Boston Regional (112 miles)
<i>Public Transportation</i>	North Country Transit (NCT)
<i>Railroad</i>	NH Central Railroad

**Table 2.1 - Town Statistics**

<b>Education &amp; Childcare</b>		
<i>Elementary School</i>	Whitefield Elementary School grades Pre K-8	
<i>Middle School</i>		
<i>High School</i>	White Mountains Regional grades 9-12	
<i>School Administrative Unit</i>	SAU 36	
<i>Licensed Childcare Facilities</i>	2 facilities, 38 (Head Start & New Beginnings)	
<b>Conserved Land as a Percent of Land in the Community (GIS Analysis)</b>		
	<b>Square Miles</b>	<b>Percent of Town Land</b>
<i>Approximate Square Miles in Community</i>	34.74	100.0%
<i>Approximate Square Miles Not Conserved (%)</i>	30.28	87.2%
<i>Approximate Total Conserved Land (%)</i>	4.46	12.8%
<i>Approximate Federal Owned land (%)</i>	3.45	9.9%
<i>Approximate State Owned Land (%)</i>	0.35	1.0%
<i>Approximate State Municipal/County Land (%)</i>	0.64	1.8%
<i>Approximate Private Land (%)</i>	0.02	0.1%
<b>Fire Statistics (NH Division of Forests &amp; Lands)</b>		
<i>Wildfire Calls (14 &amp; 15)</i>	4 fires; <1.0 acre combined	
<i>Coos County Fire Statistics (15)</i>	6 fires, 1.6 acres	
<i>State Forest Fires FY (16)</i>	134 fires, 661 acres	
<i>Information found in Table 2.1, unless otherwise noted, was derived from the Economic &amp; Labor Market Information Bureau, NH Employment Security, January 2016 Community Response Received 6/01/15; <a href="http://www.nh.gov/nhes/elmi/products/cp/profiles-pdf/whitefield.pdf">http://www.nh.gov/nhes/elmi/products/cp/profiles-pdf/whitefield.pdf</a> and from the Town of Whitefield</i>		

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## Chapter 3: Hazard Identification

### A. Description of the Hazards

The first step in hazard mitigation is to identify hazards; the Team determined that thirteen 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."* By using this grouping process, the Plan demonstrates each hazard's likelihood of occurrence in combination with its potential effect on the Town of Whitefield. 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.

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 Whitefield is Severe Winter Weather & Ice Storms. The second most likely threat is Extreme Temperatures (cold & hot) and the third is Hurricanes and Tropical Storms. Six 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, Hazardous Materials – Fixed Location, Recreational Hazards, Extended Power Failure, Terrorism and Epidemic & Pandemic.

In light of recent events (Tropical Storms Irene and Sandy), it should be noted that hurricanes and/or tropical storms have the potential to cause significant damage in Whitefield as a result of both wind strength and flash flooding creating road closures and damage. Tropical Storm Irene significantly impacted Whitefield; Tropical Storm Sandy had little or no impact. The Team noted that Category 1 or greater hurricanes would not likely affect Whitefield; however there is a high probability that tropical rains could cause damage.

#### THE NATURAL HAZARDS

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

- Severe Winter Weather & Ice Storms
- Extreme Temperatures (cold & hot)
- Hurricanes & Tropical Storms

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

- High Winds (windstorms)
- Tornadoes & Downbursts
- Severe Thunderstorms & Lightning
- Flooding (ice jams)
- Hailstorms

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

- Flooding (local roads)
- Wildfires
- Earthquakes
- Dam Failure
- Drought

<sup>7</sup> ESRI, <http://support.esri.com/en/knowledgebase/GISDictionary/term/natural%20breaks%20classification>

**TABLE 3.1: HAZARD THREAT ANALYSIS**

<b>Table 3.1 - Hazard Threat Analysis</b>						
<i>Hazards which are most likely to affect the Community</i>			<b><i>A natural hazard is a source of harm or difficulty created by a meteorological, environmental or geological event.</i></b>			
<i>Hazards which may affect the Community</i>						
<i>Hazards which are less likely to affect the Community</i>						
<b>Scoring for Probability (Columns A, B &amp; C)</b>	<b>Column A</b>	<b>Column B</b>	<b>Column C</b>	<b>Column D</b>	<b>Columns A+B+C/3</b>	<b>Columns D x E</b>
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%)						
<b>Natural Hazards</b>						
1) Severe Winter Weather & Ice Storms	3.0	2.0	3.0	5.0	6.0	30.0
2) Extreme Temperatures (cold & hot)	2.0	2.0	2.0	5.0	4.7	23.3
3) Hurricanes & Tropical Storms	3.0	3.0	3.0	3.0	7.0	21.0
4) High Winds (windstorms)	1.0	3.0	2.0	4.0	4.7	18.7
5) Tornadoes & Downbursts	4.0	4.0	4.0	2.0	9.3	18.7
6) Severe Thunderstorms & Lightning	1.0	2.0	2.0	5.0	3.7	18.3
7) Flooding (ice jams)	1.0	2.0	2.0	5.0	3.7	18.3
8) Hailstorms	2.0	3.0	2.0	3.0	5.7	17.0
9) Flooding (local roads)	1.0	1.0	1.0	5.0	2.3	11.7
10) Wildfires	1.0	3.0	2.0	2.0	4.7	9.3
11) Earthquakes	4.0	4.0	4.0	1.0	9.3	9.3
12) Dam Failure	1.0	3.0	1.0	1.0	4.3	4.3
13) Drought	1.0	1.0	1.0	1.0	2.3	2.3
<b>Human-Caused Hazards</b>						
1) Hazardous Materials - Transport	3.0	3.0	3.0	2.0	7.0	14.0
2) Hazardous Materials – Fixed Location	3.0	3.0	3.0	2.0	7.0	14.0
3) Recreational Hazards	2.0	1.0	1.0	4.0	3.3	13.3
4) Extended Power Failure	1.0	2.0	2.0	3.0	3.7	11.0
5) Terrorism	4.0	4.0	4.0	1.0	9.3	9.3
6) Epidemic & Pandemic	4.0	1.0	4.0	1.0	6.3	6.3

## 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 Whitefield, Coos 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 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: Base Risk Analysis*.

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



Whitefield has been a member of the National Flood Insurance Program since April 2, 1986. Whitefield has a relatively small flood plain with approximately 1.51 square miles of land in the 100-year floodplain<sup>8</sup>, 0.4 square miles of which is inland water. The floodplain areas of Whitefield are primarily along the Johns River and around the lakes, ponds and swampy areas in the Community; there are many other small streams and brooks throughout the Town that may also experience flooding.

According to the NH Office of Energy and Planning, there are no NFIP policies in effect in Whitefield. No losses have been paid and there have been no reported repetitive losses.<sup>9</sup> The location of Critical Infrastructure & Key Resources (CIKR) that lie within the floodplain as well as the floodplain itself can be seen on *Map 3, Past & Potential Areas of Concern*, located in *Appendix G: Map Documents*, of this Plan. The latest Flood Insurance Rate Studies (FIRS) and Digital Flood Insurance Rate Maps (FIRM) are dated February 20, 2013.

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

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

Source: [http://www.floodsmart.gov/floodsmart/pages/about/nfip\\_overview.jsp](http://www.floodsmart.gov/floodsmart/pages/about/nfip_overview.jsp)

<sup>8</sup> GIS Analysis of Coos County DFIRM (Digital Flood Insurance Rate Map)

<sup>9</sup> NH Office of Energy & Planning; Jennifer Gilbert, February 6, 2015

Elements of the Appendix V, Floodplain Development Criteria include the following (items that are *“italicized”* items are taken word-for-word from the Floodplain Development Criteria<sup>10</sup>):

- I. **Purpose:** the Floodplain Development Criteria states *“The following regulations in this ordinance shall apply to all lands designated as special flood hazard areas by the Federal Emergency Management Agency (FEMA) in it’s “Flood Insurance Study for the County of Coos, NH” dated February 20, 2013, together with the associated Flood Insurance Rate Maps dated February 20, 2013, which are declared to be a part of this ordinance and are hereby incorporated by reference.”*
- II. **Authority:** Authority and Overlay: *“In pursuance of the authority conferred by NH RSA 674:16 and for the purpose of promoting the health, safety and general welfare of the inhabitants of Whitefield, New Hampshire, by preventing the creation of hazards in special flood hazard areas, thereby protecting the lives and property of occupants of the town. The Floodplain Development Criteria shall overlay and supplement the regulations in the Whitefield Development Code and supersedes all other regulations where restrictions of this section are more stringent.”*
- III. **Permits:** Requirement for permits: *“All proposed development in any special flood hazard zone shall require a Development Permit and shall conform to the same procedure outlined in the Whitefield Development Code, of which this section of Floodplain Development Criteria is a part.”*
- IV. **Construction Standards:** This section discusses a review of the Development Permit by the Planning Board and details specifications for *“proposed building”* located in the floodplain. It includes discussion regarding anchoring, the use of flood resistant materials, construction methods *“that minimize flood damages”* and construction methods that *“prevent water from entering or accumulating”* in *“electrical, heating, ventilation, plumbing, and air conditioning equipment.”*
- V. **Water & Sewer:** Section V includes specifications for water & sewer systems and *“assurance that these systems will be designed...to avoid impairment to them or contamination from them during periods of flooding”*.
- VI. **Additional Information:** This section outlines the additional information that must be provided for *“new or substantially improved structures in special hazard areas”* such as the *“as-built elevation”* and *“certification of flood-proofing”*.
- VII. **Other Permits:** Section VII discusses the requirement for the applicant to obtain all necessary permits (i.e., from governmental agencies) and provide them to the Planning Board.
- VIII. **Wetlands:** Section VIII includes specification for riverine situations and watercourses and coordination with the Wetlands Board of New Hampshire (DES).

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<sup>10</sup> Whitefield Development Code; Appendix V, Floodplain Development Criteria, page 66; latest revision, March 2017

- IX. **100 Year Flood:** This section addresses the requirements for “all new construction or substantial improvement” such as the 100 year flood elevation data, elevation of the lowest floor above the 100 year flood elevation, flood-proofing, certification by a registered professional engineer and flood resistance. Further specifications for new construction and substantial improvements, manufactured homes, recreational vehicles and lowest floor regulations are included in this section.
  
- X. **Flexibility of Standards:** Section X details the process to request variances and states *“If a variance or appeal from these standards is requested, reference is made to procedures outlined in the Whitefield Development Code.”*

As a small and close-knit community, the Board of Selectmen, 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 Whitefield 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 (see **Mitigation Action Item #9, Tables 8.1 & 9.1**).

The Town of Whitefield, through its Floodplain Development Criteria 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 Energy and Planning and will carefully monitor its continued compliance with the NFIP.

**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>

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

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.

The Whitefield Planning Team noted that very few significant wildfires have occurred in Whitefield in the recent past, but 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. Whitefield’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. In addition, there is a limited municipal water supply in Whitefield so the fire department must rely on static water sources to fight fires in some areas.

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

Overall, the Town of Whitefield is fairly safe from the effects of natural hazards. However, due to Whitefield’s geographic location, forested lands, steep hills, heavy snow pack and topography, there is always a possibility of future disasters in Whitefield. The Town of Whitefield 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 hazards that are most likely to occur in Whitefield, based on analysis done in *Table 3.1, Hazard Threat Analysis*, are described below.

### SEVERE WINTER WEATHER & ICE STORMS

Severe winter weather events, particularly ice storms, are felt to pose a great risk to the people of Whitefield. 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 Whitefield range from 948 feet to the summits of Howland and Kimball Hills, both with elevations of 1,712' above sea level<sup>11</sup>, therefore ice storms have a high probability of occurring in Whitefield.

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

### EXTREME TEMPERATURES (COLD & HOT)

Extreme temperatures, both hot and cold, commonly occur in Whitefield. Although many citizens are prepared for extreme temperatures and can easily cope with the aid of wood and pellet stoves and air conditioners, others are not so fortunate. With expected climate changes and predictions of an increase in the duration of periods of extreme temperatures, the elderly and the poor are most susceptible, particularly when combined with power outages. The American Community Survey (ACS: 2010-2014) estimated the population over age 65 to be 18.2%; the estimate for individuals below the poverty level is 11.3%.

The probability that extreme temperatures will occur in Whitefield is high. For more information on the impact of extreme temperatures see Chapter 5.

### HURRICANES & TROPICAL STORMS

Hurricanes and tropical storms have occurred in Whitefield in the past and the probability of occurrence in the future is high, particularly for tropical storms, the remnants of hurricanes.

Although Tropical Storm Sandy had no significant impact in Whitefield, Tropical Storm Irene brought heavy rain and road flooding in many parts of the Community. Partial road washouts and flooding of some structures occurred. For more information on hurricanes and tropical storms, refer to Chapter 5.



*Whitefield Village from NH Route 116*  
*Photo Credit: MAPS*

<sup>11</sup> [https://en.wikipedia.org/wiki/Whitefield,\\_New\\_Hampshire](https://en.wikipedia.org/wiki/Whitefield,_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>12</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 Whitefield, should become increasingly aware of the effects of climate change on the natural hazards that are already being experienced.

**STATE HAZARD MITIGATION PLAN**

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

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

**HAZARD PROBABILITY COMBINED WITH POWER FAILURE**

Any potential disaster in Whitefield 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 depleted quickly should a power failure last for a week or more. There is one small grocery store and two convenience stores located in Whitefield but there are no major pharmacies. 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 elderly citizens. In addition, winter in New England commonly brings very low temperatures, while high temperatures can be experienced in the summer.

**HAZARD PROBABILITY COMBINED TRANSPORTATION**

US Route 3 serves as the major north-south roadway for those travelling from the Interstate 93 in Franconia to Pittsburg and the Canadian border. NH Route 116 travels from Whitefield and into Littleton where travelers can join up with Interstate 93. The two highways carry a considerable amount of vehicular traffic and are major routes between many northern communities. Whitefield's roads are often travelled by trucks and busses carrying goods and people from northern NH and/or Maine to other parts of the State. Many of Whitefield'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.

<sup>12</sup> State Mitigation Pan Review Guide, FEMA, Released March 2015, Effective March 2016, Section 3.2, page 13

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

**TABLE 3.2: HISTORIC HAZARD IDENTIFICATION**

**2011 HMPT = 2011 Hazard Mitigation Planning Team**  
**2017 HMPT = 2017 Hazard Mitigation Planning Team**

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

Type of Event	Date	Location	Impact	Source
<p><b>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. Two areas prone to flooding and road erosion were mapped and can be seen on <i>Map 3, Past &amp; Potential Areas of Concern</i>; flood events have the potential to impact the Community on a town wide basis.</p>				
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); rain and some snow in Whitefield; several road washouts due to heavy rain: South Whitefield Road, Pine Street, Kimball Hill and Gould Road.	FEMA & 2016 HMPT
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; heavy rain produced some road washouts: South Whitefield Road, Pine Street, Kimball Hill and Gould Road.	FEMA & 2016 HMPT
Flooding	August 2009	Route 3 & Log Cabin Road	Heavy rain resulted in road wash outs on Route 3 and Log Cabin Road; some residents received water in their basements; ditches washed out and some roads were undermined. ( <i>Map ID #1, Map 3</i> )	2011 HMPT
Flooding	August 2009	Pine Street	Heavy rain resulted in a wash out on part of Pine Street; some residents received water in their basements; ditches washed out and part of Pine Street was undermined. ( <i>Map ID #2, Map 3</i> )	2011 HMPT
Nor'easter, Severe Storms, High Winds & 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); in Whitefield, this storm resulted in ice on trees and downed power lines; power lost in town for up to five days due to downed trees; high winds also occurred in Whitefield during this storm.	FEMA & 2016 HMPT
Severe Storms & Flooding	June 12-July 2, 1998	Neighboring Towns	<b>Presidential Disaster Declaration DR-1231:</b> Heavy rain in the area but no significant impact in Whitefield; nearby towns of Bethlehem, Littleton and Carroll had a substantial amount of trees down.	FEMA & 2016 HMPT

Type of Event	Date	Location	Impact	Source
<p><b>Past Wildfire Hazards:</b> 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 although the Wildland Urban Interface (WUI) can be seen in <i>Map 2, Historic Wildfires &amp; the Wildland Urban Interface</i>; wildfires have the potential to impact the Community on a town wide basis.</p>				
Forest Fire	July 2, 1953	NA	<b>Presidential Disaster Declaration DR-11:</b> This fire did not occur in Whitefield.	FEMA
<p><b>The Team reported no significant wildfires since the last Hazard Mitigation Plan was completed in 2011.</b></p>				
<p><b>Past High Wind Hazards including Hurricanes, Tropical Storms, Tornadoes, Downbursts &amp; Windstorms:</b> 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.</p>				
Hurricane Sandy	October 26- November 8, 2012	Belknap, Carroll, Coos, Grafton & Sullivan	<b>Presidential Disaster Declaration DR-4095 &amp; Emergency Declaration EM-3360:</b> Hurricane Sandy came ashore in NJ and brought high winds, power outages and heavy rain to all ten counties in the State of New Hampshire. 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; no significant impact in Whitefield.	FEMA & 2016 HMPT
Tropical Storm Irene	August 26- September 6, 2011	Carroll, Coos, Grafton, Merrimack, Belknap, Strafford & Sullivan	<b>Presidential Disaster Declaration DR-4026 and Emergency Declaration EM-3333:</b> Tropical Storm Irene Aug 26th- Sept 6, 2011 Carroll, Coos, Grafton, Merrimack, Belknap, Strafford, & Sullivan Counties; in Whitefield, partial road washouts and ditch and culvert issues were experienced on South Whitefield Road, Parker Road, Kimball Hill Road, Pine Street, Gould Road and Hall Road; no total road washouts; some structures on Pine Street received flood waters in water drainage runoff; this area of Pine Street has been mitigated by the Town by replacing old culverts that were installed by residents with a new three foot culvert.	FEMA & 2016 HMPT
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; no evacuees came to Whitefield.	FEMA & 2016 HMPT

Type of Event	Date	Location	Impact	Source
<p><b>Past Severe Winter Weather Hazards including Nor'easters, Blizzards &amp; Ice Storms:</b> Severe winter weather in NH may include heavy snow storms, 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.</p>				
Severe Winter Weather	February 8, 2013	All Ten NH Counties	<b>Presidential Emergency Declaration DR-4105:</b> Nemo; heavy snow in February 2013; Whitefield received some accumulation from Nemo; the Public Works Department was able to handle the accumulation with no difficulty.	FEMA & 2016 HMPT
Severe Winter Weather	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); Whitefield received some accumulation from Nemo; the Public Works Department was able to handle the accumulation with no difficulty.	FEMA & 2016 HMPT
Severe Winter Weather	Winter 2010	Town Wide	The winter of 2010 brought nearly daily light accumulation throughout the winter combined with several more significant storms adding up to an abnormal amount of accumulation for the season; the Public Works Department was able to handle the accumulation with no difficulty.	2016 HMPT
Severe Winter Weather & Ice Storm	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; very minimal impact in Whitefield.	FEMA & 2016 HMPT
Severe Winter Weather	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> (Coos: \$11,650) <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 snow storms that hit the state earlier this year, according to disaster recovery officials. Total aid for all three storms is \$6,892,023.87 (January: \$3,658,114.66; February: \$1,121,727.20; March: \$2,113,182.01); Whitefield saw significant accumulation; however, the Public Works Department was able to handle the accumulation with no difficulty.	FEMA & 2016 HMPT
Severe Winter Weather	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; Whitefield saw significant accumulation; however, the Public Works Department was able to handle the accumulation with no difficulty.	FEMA & 2016 HMPT

Type of Event	Date	Location	Impact	Source
Severe Winter Weather	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; Whitefield saw significant accumulation; however, the Public Works Department was able to handle the accumulation with no difficulty.	FEMA & 2016 HMPT
Severe Winter Weather	March 28, 1998	Town Wide	Late winter storm brought 24 inches of snow to Whitefield; remainder of the winter was a mix of rain and snow, including the Ice Storm of 1998; the Public Works Department was able to handle the accumulation from the March 28 storm with no difficulty.	2016 HMPT
Severe Winter Weather & Ice Storm	January 7-25, 1998	Town Wide	<b>Presidential Disaster Declaration DR-1199:</b> Although a good part of NH's North Country received very significant ice damage, Whitefield was fortunate and did not receive any significant damage from this ice storm.	FEMA & 2016 HMPT
High Winds, Tidal Surge, Coastal Flooding & Snow	February 16, 1978	Town Wide	<b>Presidential Disaster Declaration DR-549:</b> Blizzard of 1978; Whitefield saw significant accumulation; however, the Public Works Department was able to handle the accumulation with no difficulty.	FEMA & 2016 HMPT
Severe Winter Weather	Winter 1968-69	Town Wide	The winter of 1968-69 brought record amounts of snow to all of NH and to Whitefield; 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, including Whitefield, had difficulty with snow removal because of the great depths that had fallen from December 1968 to April 1969; loaders and backhoes were required to clear and remove snow because of the record levels of accumulation.	FEMA & 2016 HMPT

**Past Earthquake Hazards:** 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 result in 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.

Earthquake	December 20, 1940	Ossipee, NH	Magnitude 5.5	State Hazard Mitigation Plan 2013 & 2016 HMPT
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	

Type of Event	Date	Location	Impact	Source
Earthquake	April 26, 1957	Portland, ME	Magnitude 4.7	
Earthquake	April 10, 1962	Middlebury, VT	Magnitude 4.2	
Earthquake	June 15, 1973	Quebec Border	Magnitude 4.8	
Earthquake	January 19, 1982	Laconia, NH	Magnitude 4.5	
Earthquake	1989	Near Berlin	Magnitude 4.1; felt in Whitefield but no damage occurred (not in State Plan)	
Earthquake	June 23, 2010	Ontario-Quebec	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 Whitefield but no damage occurred	
<p><b>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; however droughts have the potential to impact the Community on a town wide basis.</p>				
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	Statewide & Whitefield	Severe drought conditions throughout the state, moderating from south to north; although parts of NH were in severe drought conditions during the summer/fall of 2016, Whitefield had "dry" conditions and did not experience a significant impact.	2017 HMPT

Type of Event	Date	Location	Impact	Source
<p><b>Other 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. Some of these hazards were or were not mapped and can be seen on <i>Map 3, Past &amp; Potential Areas of Concern</i>; other natural or human-caused hazards have the potential to impact the Community on a town wide basis.</p>				
Plane Crash	August 22, 1996	Across from Transfer Station near Airport	Plane crashed because of lack of fuel; resulted in three deaths. ( <i>Map ID #3, Map 3</i> )	2011 HMPT
Hazard Transport	Early 2000	On High Street across from Whitefield Veterinary	Sludge spill, driver missed gear, lost airbrakes, backwards and downhill, contents spilled in parking lot at apartment building. ( <i>Map ID #6, Map 3</i> )	2011 HMPT
Plane Crash & High Winds	2005	Mount Washington Regional Airport	Plane at airport flipped over; no injuries. ( <i>Map ID #4, Map 3</i> )	2011 HMPT
Plane Crash & High Winds	2008	Mount Washington Regional Airport	Plane blown off runway; crosswind at landing; minor injuries. ( <i>Map ID #5, Map 3</i> )	2011 HMPT
Plane Crash & High Winds	November 5, 2011	Mount Washington Regional Airport	Airplane blown off the runway; no injuries occurred and no transports were made.	2016 HMPT
Hazardous Material Transport	December 20, 2011	Downtown Whitefield	Truck carrying steel beams came down Route 116 and because of black ice, lost control and drove through Lufkin's pumps and into the Johns River; one fatality; early morning.	2016 HMPT
Plane Crash	June 28, 2014	Mount Washington Regional Airport	Airplane bounced off the runway due to inexperience and flipped over in the marsh; no injuries occurred and no transports were made.	2016 HMPT
Plane Crash	April 16, 2015	Mount Washington Regional Airport	Paraglider crashed from 100' breaking both ankles; transported to hospital.	2016 HMPT
Hazard Transport	Ongoing & Potential	Intersection of Route 3 and Route 116 and steep climb out of Town on Route 3 North and Route 116 West	Slippery roads, brake failures or other transportation difficulties could result in a potentially catastrophic event in the downtown location; steep roads and two gas stations in downtown; steep climb sometimes results in trucks backing up downhill into the Village. ( <i>Map ID #7, Map 3</i> )	2011 HMPT

Type of Event	Date	Location	Impact	Source
Extreme Temperatures (cold & hot)			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.	
Tornado & Downburst				
Severe Thunderstorms & Lightning				
Flooding (ice jams)				
Hailstorms				
Dam Failure				
Hazardous Material - Fixed Location				
Recreational Hazards				
Extended Power Failure				
Terrorism				
Epidemic & Pandemic				

\*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>
- <http://www.Earthquaketrack.com>

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

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

With Team discussion and brainstorming, Critical Infrastructure and Key Resources (CIKR) within Whitefield 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	Town Office Building & Police Station (generator/shared)	Town Offices, Police Department & Primary EOC	All Hazards	1
2	Fire Department (generator/shared)	Fire Station & EMS	All Hazards	1
3	White Mountain Regional High School	Primary Shelter	All Hazards & Wildfire	2
4	Public Works Garage	Town Garage & Diesel Supply	All Hazards	1
5	Weeks Medical Center	Medical	All Hazards	1
6	Ammonoosuc Family Health Center	Medical	All Hazards	1
7	Mirror Lake	Drafting Site	All Hazards	1
<i>Other drafting sites are available throughout Whitefield</i>				
Helicopter Landing Zones				
3	White Mountain Regional High School	Helicopter Landing Zone	All Hazards & Wildfire	2
8	Mount Washington Regional Airport	Airport & Helicopter Landing Zone	All Hazards, Wind & Hazardous Material Fixed	2
9	Stiles Fuel Parking Lot	Helicopter Landing Zone	All Hazards & Hazardous Material	2
10	Legion Ball Field	Helicopter Landing Zone	All Hazards	1
11	Whitefield Elementary Field	Helicopter Landing Zone	All Hazards	1
Bridges on the Evacuation Routes				
12	Johns River Bridge, Route 3 in town	Evacuation Bridge	All Hazards & Ice Jams, Flooding	1
13	Water Street Bridge over John River	Evacuation Bridge	All Hazards & Ice Jams, Flooding	1
14	Airport Road Bridge	Evacuation Bridge	All Hazards	1
15	US Route 3 (near Lancaster town line)	Evacuation Bridge	All Hazards	1
16	NH Route 116 (near Crane Road)	Evacuation Bridge	All Hazards	1

Emergency Response Facilities (ERF)			
Evacuation Routes			
US Route 3	Evacuation Route	All Hazards & Flooding (Beaver Dams)	1
NH Route 116	Evacuation Route	All Hazards & Flooding (Beaver Dams)	1
NH Route 142	Evacuation Route	All Hazards	1
Hazen Road to Airport Road	Secondary Evacuation Route	All Hazards & Flooding	2
Colby Road to Airport Road	Secondary Evacuation Route	All Hazards & Flooding	2
Faraway Road via Main Street to Brown Street to Pine Street to Faraway	Secondary Evacuation Route	All Hazards	1
Faraway Road via Forest Lake 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	
17	Waste Water Treatment Facility	Waste Water Treatment Plant	All Hazards	1
18	Eversource Power Substation	Utilities: Electric	All Hazards & Lightning	2
19	Fairpoint Switching Station at Pleasant Street	Utilities: Telephone & Cable TV	All Hazards	1
20	Whitefield Elementary School (WES)	Secondary Shelter & School	All Hazards	1
21	Weathervane Theatre	Secondary Shelter WMRHS evacuation point	All Hazards & Lightning	2
22	Water Tank at school, 1 Million Gallon	Water Tank	All Hazards	1
23	Water Tank on Bray Hill Road, 200,000 Gallons	Water Tank	All Hazards	1
24	Water Tank at Industrial Park, 500,000 Gallons	Water Tank	All Hazards	1
25	Route 116 water supply - 2 gravel wells - town water supply	Water Supply	All Hazards	1
NM	WW Berry Transportation (Northumberland)	Transportation	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	
20	Whitefield Elementary School	Elementary School & Secondary Shelter	All Hazards	1
3	White Mountain Regional High School	High School	All Hazards & Wildfire	2
26	Morrison Nursing Home	Nursing Home	All Hazards	1
27	Highland House	Elderly Housing	All Hazards	1
28	C.D. McIntyre Apartments	Elderly Housing	All Hazards	1
29	New Beginnings Child Care	Child Care Facility	All Hazards	1
30	Head Start on Jefferson Road	Preschool Facility	All Hazards	1
31	Whitefield Public Library	Library & Historic	All Hazards & Hazardous Material Transport	1
32	King's Square Gazebo	Historic Building/Concerts	All Hazards & Hazardous Material Transport	1
33	Spalding Inn	Historic Building/Theatre summer help	All Hazards	1
34	Mountain View Grand	Historic Building/Hotel	All Hazards	1
35	Inn at Whitefield	Gathering of People	All Hazards	1
21	Weathervane Theatre	Gathering of People	All Hazards & Lightning	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.				
Map ID	Facility	Expected use of the Facility	Hazard Risk	
36	Mac's Grocery Store	Food Supply	All Hazards	1
37	Jiffy Mart (Champlain Oil)	Food Supply & Gas	All Hazards & Flooding & Hazardous Materials -Fixed	2
38	Grandma's Restaurant	Food Supply	All Hazards & Flooding	2
39	Dollar General	Food Supply	All Hazards	1

Potential Resources (PRs)				
40	Cumberland Farms (no generator)	Gas	All Hazards & Hazardous Material	2
34	Mountain View Grand Resort	Food Supply	All Hazards	1
41	Lufkin's (no generator)	Propane	All Hazards & Hazardous Material	2
42	Stiles Fuel (no generator)	Diesel; Heating; Propane	All Hazards & Hazardous Material	2
NM	Wendell Rexford & Sons	Heavy Equipment	All Hazards	1
NM	Bob Stiles	Heavy Equipment	All Hazards & Hazardous Materials - Fixed	2
NM	AB Logging (Lancaster)	Sand, Gravel & Heavy Equipment	All Hazards	1
NM	Chick's Sand & Gravel (Dalton)	Gravel	All Hazards	1
For additional resources, please refer to the Town's Emergency Operations Plan (EOP)				

## Chapter 5: Hazard Effects in Whitefield

### 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 GIS analysis and aerial imagery, at-risk CIKR were identified throughout the Town.

All CIKR in Whitefield were identified in GIS; this list was then narrowed by those CIKRs that were located in the FEMA floodplain. A total of four CIKRs were found in the flood zone as seen in the chart to the right and in *Map #3, Past & Potential*

ID	ALL_H	NAME	Flood	Hazmit_Type
12	ERFB	Johns River Bridge over Rt 3	Yes	Bridge
13	ERFB	Water St Bridge over Johns River	Yes	Bridge
37	PR	Jiffy Mart (Champlain Oil Co.)	Yes	Food & Gas
41	PR	Lufkin's Garage	Yes	Gas & Propane

*Areas of Concern*. Two of these CIKRs are bridges on the evacuation route. The other two CIKR that are located in the floodplain are near the Johns River, a river that in the past was subject to flooding but that now has virtually no water flow since a dam was removed in Whitefield Village about ten years ago. No other CIKR were found to be in the designated FEMA floodplain although it is expected that several non-CIKR structures are within the FEMA floodplain. Town officials should keep these CIKR in mind when a flood hazard is likely.

Using the same methodology that was used for flooding, structures falling within the Wildland Urban Interface (WUI) were reviewed. Identifying these structures 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.

ID	ALL_H	NAME	Hazmit_Type
5	ERF	Weeks Medical Center	Medical
7	ERF	Mirror Lake (drafting site)	Drafting Site
9	ERFH	Parking lot near Stiles Fuel	Heli LZ
10	ERFH	Legion Ball Field	Heli LZ - Primary
17	NERF	Waste Water Treatment Facility	Water Treatment
22	NERF	1 Million Gal. Water Tank at Schoo	Water Tank (1 million gallons)
24	NERF	500,000 Gal. Water Tank at Indus.	Water Tank (500,000 gallons)
25	NERF	Route 116 Water Supply	Town Water Supply; 2 gravel we
42	PR	Stiles Fuel	Diesel, Gas, Heating & Propane

Many structures were found to be in the traditional WUI, however, only nine CIKR was found in the WUI as seen in the chart above and in *Map #2, Historic Wildfires & the Wildland Urban Interface*. An analysis of these CIKR reveals that several are related to the Town's water supply and all have substantial defensible space, therefore diminishing their risk of wildfire.

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 Whitefield, 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 Whitefield’s structures, depending on the nature of the hazard and whether or not the hazard is localized.

MS-1 Assessed Value of All Structures			
2015	Value	1% Damage	5% Damage
Residential	\$100,498,670	\$1,004,987	\$5,024,934
Manufactured Housing	\$6,319,350	\$63,194	\$315,968
Commercial	\$26,455,870	\$264,559	\$1,322,794
Other Utilities	\$0	\$0	\$0
Tax Exempt	\$43,036,150	\$430,362	\$2,151,808
Utilities	\$20,942,000	\$209,420	\$1,047,100
Total	\$197,252,040	\$1,972,520	\$9,862,602
Provided by the Town, 11/13/15			

Based on this assumption, the potential loss from any of the identified hazards would range from **\$0 to \$1,972,520** or **\$1,972,520 to \$9,862,602** based on the 2015 Whitefield town valuations which lists the assessed value of all structures in Whitefield to be **\$197,252,040** (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*.



**Road Flooding August 2009**  
Photo Credit: Town of Whitefield

The table below represents the hazards that are mapped and can be seen in **Map 3, Past & Potential Areas of Concern**.

Id	Date	Haz_Type	Effect	Location
1	August 2009	Flooding	Roads & ditches washed out; flooded basements	Rte 3 & Log Cabin Road
2	August 2009	Flooding	Roads & ditches washed out; flooded basements	Pine Street
3	1996	Plane Crash	Crash because of lack of fuel; four deaths	X from TS near Airport
4	2005	Plane Crash	Plane flipped over; no injuries	Airport
5	2008	Plane Crash	Xwind blew landing plane off runway; no injuries	Aiport
6	Early 2000s	HazMat Transport	Sludge Spill	Route 3
7	Ongoing	HazMat Transport	High potential for accident; slope; gas; turns	Intersection Rts 3 & 116

**1) Severe Winter Weather & Ice Storms ..... \$1,972,520 to \$9,862,602**

Heavy snowstorms typically occur from December through April. New England usually experiences at least one or two heavy snow storms 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 Whitefield in the past. The ability to get in and out of town and emergency service access can be hindered, particularly noting the steep hills surrounding the Village Center.

All of these impacts are a risk to the Community, including isolation, particularly of the elderly 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.

Of more concern in Whitefield than 2-4' snow storms 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.

The 1998 Ice Storm did not have a significant impact in Whitefield as it did in many other northern New Hampshire communities. This ice storm downed trees, closed roads and caused power and phone outages for many in northern New Hampshire, particular at elevations greater than 1,000'. In Whitefield, no significant damage occurred during the 1998 Ice Storm; neither the 1979 or 2008 ice storms impacted Whitefield.

Winter snow and ice storms often cause trees to fall, creating widespread power outages by downing power lines. They can also cause widespread damage to forested areas. Future ice storms in Whitefield 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; there are three elder-care facilities in Whitefield and the overall elderly population is estimated to be 18.2% of the total population according to the American Community Survey, 2010-2014.

Extreme temperatures when 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 population. 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 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) Hurricanes & Tropical Storms ..... \$0 to \$1,972,520**

Wind damage due to hurricanes is a consideration because of the forest and valley floors in Whitefield. 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 Storm Irene, the remnants of Hurricane Irene, brought heavy rain to Whitefield and several partial road washouts, although no roads became impassable. Ditch and culvert issues caused flooding on South Whitefield Road, Parker Road, Kimball Hill Road, Pine Street, Gould Road and Hall Road and a few structures on Pine Street received flood waters in basements. The Pine street area has been mitigated by the Town. Since Tropical Storm Irene, the Department of Public Works has worked diligently to expand ditches and replace underperforming culverts. Tropical Storm Sandy had no impact in Whitefield, with the exception of heavy rain.

The probability that a hurricane would remain a Category 1 or better 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.

**4) High Winds (windstorm) ..... \$0 to \$1,972,520**

Due to the location of Whitefield, 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 reported common occurrences of high winds, but felt that the higher elevations of town, rather than the Village Center, would be more susceptible to sudden and sustained winds.

A particular area that was mentioned was Kimball Hill Road, a long and very steep access road to other developed parts of town. Kimball Hill Road is considered a “scenic” road and as such, rock walls and trees over 4” in diameter cannot be disturbed. This road, as well as Parker Road, is susceptible to high winds. At times winds will blow down Dalton Mountain affecting trees and power lines; fortunately there has been no significant structure 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.

**5) Tornadoes & Downbursts ..... \$0 to \$1,972,520**

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.

A tornado touched down in Carroll County in July 2008, but it did not reach Whitefield. Additionally, in recent years a tornado was spotted in Berlin, but there has been no reported tornado activity in Whitefield in the past ten years. More common in Whitefield would be a microburst event; these are becoming more and more common in the North Country and could result in damage. Microbursts have occurred in Whitefield in areas along Parker Road and Chase Fields and near the Weathervane Theatre in the 1980's and 1990's. Photos to the right show tornado damage that occurred in 1991 along Lancaster Road.

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) Severe Thunderstorms & Lightning ..... \$0 to \$1,972,520**

Severe lightning as a result of summer and mountain storms or as a residual effect from hurricanes and tornadoes has occurred in Whitefield. 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.

A few locations in Whitefield have been hit by lightning in the past; these include the Weathervane Theatre, homes on Kimball Hill and White Mountains Regional High School. It appears that severe thunderstorms often follow the course of the Connecticut River, commonly hitting the neighboring towns of Dalton and Lancaster; however these storms are not uncommon in Whitefield as well. 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. To mitigate the effects of lightning, **Mitigation Action Item #16** calls for the installation of a lightning rod at the new Town Office building.

Lightning is a potential problem, but one who's affects would be localized. 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.

**7) Flooding (ice jams) ..... \$0 to \$1,972,520**

Flooding is often associated with hurricanes, heavy rains, ice jams and rapid snow melt in the spring. Since the removal of the dam on the Johns River in Whitefield Village more than ten years ago, neither riverine flooding nor ice jams have been major concerns, although the possibility for ice jams and riverine flooding still exists.

As stated in Chapter 3, Section B, based the Coos County Floodplain Map, Whitefield has a relatively small amount of land and structures within the 100-year floodplain. In the past, ice jams combined with riverine flooding have created minor structure flooding and road washouts, particularly in the Water Street area; however, the Team felt that structure flooding, particularly as a result of ice jams, was no longer a huge concern for the Town.

Riverine flooding and possible ice jams are potential problems if the right set of circumstances were to occur; for example tropical level rain combined with a dam failure at the Airport Marsh Bridge. However, based on the localized nature of this type of flooding, the potential loss value was determined to be 0-1% of the total assessed structure value in Town.

**8) Hailstorms ..... \$0 to \$1,972,520**

Hailstorm events, although not common in Whitefield, can occur at any time. In recent years, other communities in northern New Hampshire have experienced hailstones as part of severe thunder and lightning storms; fortunately, Whitefield has not experienced any significant hailstorms or any damage. On Memorial Day Weekend in 2011, the neighboring town of Lancaster experienced significant car and roof damage from an isolated hailstorm.

Damage from hail could result in failed crops and structure and vehicular damage, thus creating an economic impact for individual citizens. Overall it was felt that a significant hailstorm event would be unlikely and would cause minimal damage; therefore the potential loss value is estimated at 0% and 1% of the assessed value.

**9) Flooding (local roads) ..... \$0 to \$1,972,520**

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 many of Whitefield's roads.

It is estimated that the Town experiences some sort of stormwater problem whenever there are two or more inches of rain in a short period of time; many of the roads in Whitefield are long and winding and subject to some of the most severe weather in the State. Whitefield's approximate 33 miles of roads (11.5 miles of which are gravel)<sup>13</sup> are well-maintained by the Department of Public Works, although an unusual and sudden heavy rain event in August of 2009 created flooding along Route 3 North and on Pine Street. Roads were flooded and/or washed out and several homes experienced flooded driveways and basements. Subsequently, eight culverts were replaced with grant assistance.



*August 2009 Flooding  
Photo Credit: Town of Whitefield*

<sup>13</sup> GIS Analysis, 2016 DOT Road Layer

Other areas that may be affected by flooding are the Brown Street area, Water Street and the airport, depending on the extent of the storm and the capacity of culverts. In addition, water from higher elevations naturally drains toward the Pine Street area and beaver dams have been known to create flooding problems on the Town's roads. The continuous erosion of roads makes for a daunting task of "up-keep" for the Department of Public Works. Fortunately, three of the Town's major thoroughfares, US Route 3 and NH Routes 116 and 142 are the responsibility of the State.

**Mitigation Action Item #27** calls for the development of a written storm water maintenance plan that will address the condition of culverts, ditches and bridges in Town in order to mitigate future flood issues. In addition, Action Items #11 and #28 call structural improvements of two problem culverts.

The expected loss value from local road flooding would be based primarily on the economic impact on Community, the loss of accessibility and the time and cost of road repair. Therefore, the estimated loss value due to road flooding was determined to be between 0% and 1% of the total structure.

**10) Wildfires..... \$1,972,520 to \$9,862,602**

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 snowmobilers, ATV operators, campers and other outdoor enthusiasts creates an opportunity for sparks and out-of-control fires to ignite Whitefield's forested areas. To help combat fire, Whitefield has installed more than 100 hydrants located throughout the Community. The Fire Department reported that over the last five years, they had responded to 13 wildfires, most of which were small grass fires.

The Team described the forests of Whitefield 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>14</sup> Burn permits are required in Whitefield, as they are throughout the State, but often burning takes place without the proper permits. The steep terrain and heavily forested areas of town are difficult to monitor, therefore the occasional unauthorized burn will take place. Currently available documentation on fires in Whitefield indicates that the majority of fires are human-caused; however no significant wildfires have occurred in Whitefield 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 I-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 Whitefield, 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 Whitefield is so heavily forested, the potential loss value was determined to be between 1% and 5% of the total assessed structure value.

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<sup>14</sup> <http://www.fs.fed.us/nwacfire/home/terminology.html>

**11) Earthquakes ..... \$1,972,520 to \$9,862,602**

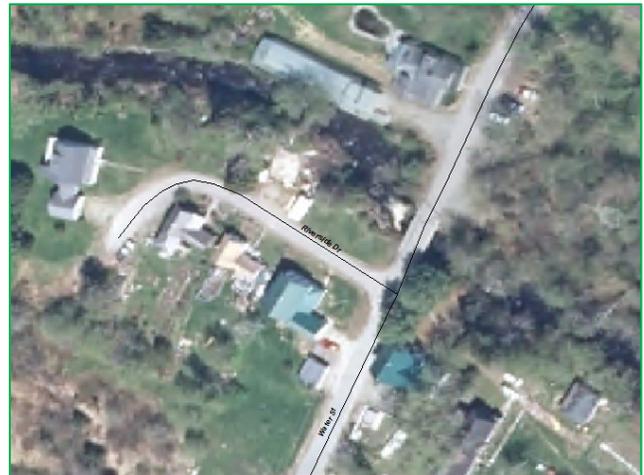
Earthquakes can cause buildings and bridges to collapse, disrupt gas, electric and phone lines and are often associated with landslides and flash floods. Four earthquakes occurred in New Hampshire between 1924-1989 having a magnitude of 4.2 or more. Two of these occurred in Ossipee (not far from Whitefield), 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 Whitefield, but no damage was reported. Additionally, the Team noted that an earthquake with its epicenter in Berlin in 1989 was also felt in Whitefield.

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.

**12) Dam Failure ..... \$0 to \$1,972,520**

Since the removal of the dam on the Johns River in Whitefield Village, a concern for dam failure and flooding below the location of the old dam has been mitigated. However, another dam in Whitefield, the Airport Marsh Dam is of some concern. The Airport Marsh Dam prevents 26 square miles of water in the marsh from flowing into the now relatively dry Johns River. Depending on the volume of water at the time, failure of this dam could fill the Johns River and ultimately affect Water Street and Riverside Drive (see GIS snip to the right).

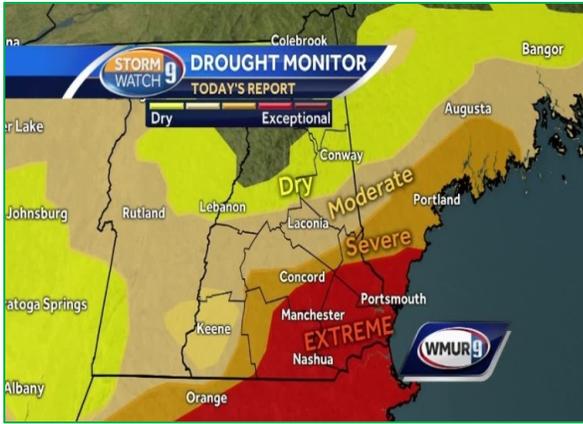


The Airport Marsh Dam was determined to be a low risk for failure. The Team felt that with the construction of a new bridge leading to the airport and industrial park and a significant amount of wetlands to absorb excess water, the access to this area should not be compromised unless a total dam failure occurred.

Due to the nature of an event of this kind and the expected localized affect, the potential loss value is estimated to be between 0% and 1% of the total assessed value of all structures in town.

**13) Drought ..... \$0 to \$1,972,520**

The cost of drought in Whitefield is difficult to calculate as any cost would primarily result from an associated fire risk and diminished water supply which, in Whitefield, is supplied both by the Town and by 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.

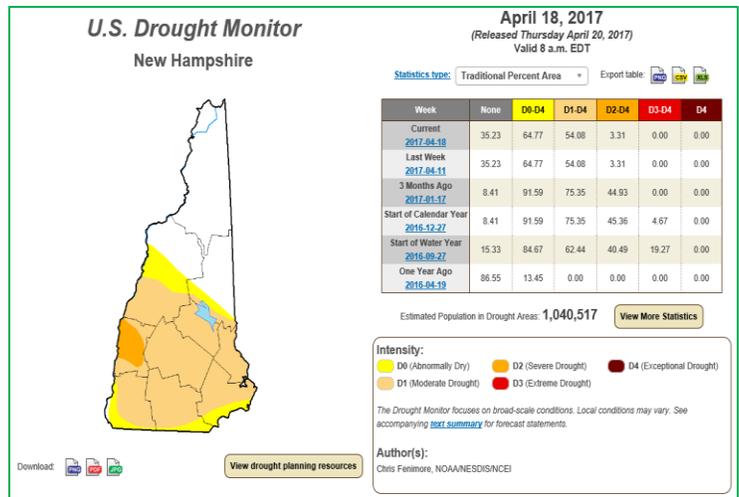


WMUR Archives; September 15, 2016

Fortunately, significant droughts rarely occur in New Hampshire or Whitefield. 2016 brought extreme and severe drought conditions to southern New Hampshire, but Whitefield remained in the “dry” category (see map to the right). Extreme droughts in northern 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>15</sup>, not including the 2016 drought. 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, the 2016 drought has abated, although recovery is still taking place in some areas of the State. Current drought monitoring depicts drought conditions in New Hampshire and shows no drought to be currently present in Whitefield (see chart to right).<sup>16</sup>

If it were to occur, a significant drought in Whitefield would not only impact the forested lands of the Town but also a small amount of agricultural land. The estimated loss value above, based on a 0-1% risk reflects the potential for not only lost woodlands and the potential for wildfire but also the economic impact to the Community.



**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 none-the-less worth mentioning as real and possible hazards that could occur in Whitefield.

**1) Hazardous Material - Transport**

Hazardous Material Transport has been and continues to be a very concerning human-cause hazard for the Town of Whitefield. The intersection of US Route 3 and New Hampshire Routes 116 and 142 is in the middle of Whitefield Village and, as major NH highways these routes are in constant use by large transport vehicles. Tractor trailer trucks often cannot make it up the steep hills leading out of town and at times back down into the Village.



<sup>15</sup> NH DES; <http://des.nh.gov/organization/divisions/water/dam/drought/documents/historical.pdf>

<sup>16</sup> US Drought Monitor-New Hampshire, April 18, 2017; <https://www.drought.gov/drought/new-hampshire>

Vehicles carry material to and from Canada and throughout New England often travelling through Whitefield in route to US Route 2; the contents of these vehicles are rarely known. Tractor trailers hauling fuel, chemicals, propane and other hazardous materials are constantly traveling through Whitefield, some to the remaining paper mill in Berlin 40 miles away.

In addition, the Village of Whitefield is located in a deep valley along the Johns River, and as mentioned in other parts of this Plan, is accessed by very steep inclines in and out of town. A hazardous material accident at the bottom of any of these inclines, particularly at the intersection of Route 116 and Route 3 could be catastrophic; two gas stations are also located at this intersection. A hazardous material accident at this location could impact business, result in deaths and injuries and produce widespread structure damage. Also, due to Whitefield's valley location, fumes from a gas explosion would likely settle in the Village area impacting the citizens of this fairly densely populated area which includes one nursing home and two elderly housing facilities.

The Team also expressed concern about aquifer contamination throughout town, but particularly on Route 116 West near Kimball Hill Road; a hazard material accident or spill at this location could affect the town's water supply and seep into the aquifer. The municipal wells at the Industrial Park also could leach into the aquifer should contamination occur. Also, should the railroad begin operation again, it is likely trains would be carrying hazardous material through town.

Lastly, as noted by Former Fire Chief James Watkins, the Fire Station (fire trucks and equipment) as well as EMS and Law Enforcement, is located at the top of the steep incline on Route 116 West leaving the village center. A serious hazardous material accident at the intersection of Route 116 and Route 3 would effectively cut the village in half, and to compound this issue, 95% of the volunteer firefighters and EMTs live on the other side of town away from the Fire Station. Although these volunteers could find access to the Station, no other direct routes are available and response time would be impacted. It is likely that the Carroll Fire Department, approximately nine miles away, would be the first manned and ready department to reach this location.

## **2) Hazardous Material – 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.

Several locations in Whitefield are known to have hazardous materials; these include but are not limited to Stiles Fuel, two gas stations in the "Village", the Mount Washington Regional Airport, Presby Plastics and DG Whitefield. Although these locations have hazard plans in place, the risk of a hazardous event still exists. In addition, Whitefield Power & Light and the Eversource substation (issue is primarily PCBs) present some fixed hazardous material risk.

### 3) Recreational Hazards

Recreational hazards, although not unique to Whitefield, were felt to be a concern for the local citizens and those visiting Whitefield to take advantage of the many opportunities in town.

Whitefield is located on a major snowmobile corridor and has three large lakes, Forest, Mirror and Burns Lakes. Ice fishing, hunting, hiking, boating, swimming and snowmobiling are the most common recreational pursuits of visitors and local residents. The Fire Department and EMS are often called to respond to incidents connected to these types of recreational hazards. In the past, fire and EMS calls have included at least one snowmobile fire, one water/ice rescue and one hypothermia incident.

### 4) Extended Power Failure

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 Whitefield, 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.

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 or handicapped. During Presidential Disaster Declaration DR-1695 in April 2007, parts of the Community were without power for five days.

The Team felt that many residents were somewhat self-sufficient; 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. It is also noted that Whitefield is a somewhat difficult place for senior citizens to live; driving can be difficult due to weather conditions and steep terrain and all services including pharmacies and major grocers are located out of town.

### 5) Terrorism

Terrorism is a fear throughout our country and although Whitefield is not home to any substantial “targets” there are several locations where terrorism could be a concern. The Town’s power plant, water supply, the Mount Washington Regional Airport and the substation on Route 3 are all potential targets. In addition, the Mountain View Grand Resort, the White Mountains Regional High School and Whitefield Elementary School are possible targets. The Town’s three major roads also provide access to the rest of New England and Canada, and as such could be used as primary routes for terrorists.

It is difficult to estimate potential structure loss due to terrorism, however due to the possibility of targeting the Mountain View Grand Resort, the Village Center or the Town’s schools, the loss could be substantial.



*Mountain View Grand Resort  
Photo Credit: MAPS*

Terrorism is identified as a relatively low risk, however if it were to occur, the affects, although probably localized, could significantly impact the community. 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.

#### **6) Epidemic/Pandemic**

Because of its location on three of northern NH's major traffic routes, the businesses in town and the commuting population, Whitefield's transient population is quite large. Visitors to the Town's nursing homes, elderly and medical facilities and to the Mountain View Grand Resort create opportunities for infectious disease to be transmitted to community residents from elsewhere.

Whitefield's high school children attend school at White Mountains Regional High School, a regional school educating children from five communities. Also, Whitefield Elementary serves children from Carroll and Dalton, thus enabling more opportunity for the spread of infectious disease. Two childcare facilities are also located in town.

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

## 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 Whitefield 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
Emergency Operation Plan (2010)	This plan offers all members of the emergency management team a better understanding of procedures in case of a disasters	Town Wide	Emergency Management Director	Good	<b>Improvements Needed:</b> The last EOP was completed in 2010 and is past the recommended five year update; deferred to this Plan to update in 2017 when the Hazard Mitigation Plan meetings are complete. <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
Emergency Notification System (ENS)	The NH Emergency Notification System (ENS) is a reverse 911 calling system available to all cities and towns in the State who are not currently on CodeRED; the ENS can be used to notify specific parts of town of impending and/or current emergency situations.	Town Wide	Fire & Police Chiefs	Good	<b>Improvements Needed:</b> The NH Emergency Notification System (ENS) is an excellent warning system but it only automatically stores resident phone numbers that are listed in the phone book; the Town should provide public outreach to encourage residents to contact ENS to add cell numbers, unlisted numbers and emails and to verify information; deferred to this Plan to provide public outreach on the ENS system. <b>Action Item #3</b>
Tree Maintenance	Eversource and NH DOT maintain a tree maintenance program to remove trees and tree limbs from around the power lines. In addition, the Whitefield Department of Public Works maintains a tree maintenance program to clear trees and hanging limbs from town roads.	Town Wide	Eversource, NH DOT & 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. <b>Action Item #10</b>
Subdivision Regulations (2012)	Includes fire and emergency access, drainage, floodplain & bonding provisions	Town Wide	Planning Board	Good	<b>Improvements Needed:</b> Although Whitefield's subdivision regulations serve the needs of the Town well, they should be reviewed and revised if necessary to include clear language regarding requirements for fire suppression, building on steep slopes, drainage, better signage (911) and other hazard reducing regulations for new subdivisions; deferred to this Plan for a review and revisions to reflect hazard reduction, such as the installation of cisterns, fire ponds and slope regulations. <b>Action Item #18</b>

Current Program or Activity	Description	Area of Town	Responsible Department	Effectiveness	Improvements Needed or Not Needed
School Emergency Response Plan (2016)	Ensures preparedness and response for school personnel and town emergency personnel in the instance of a major disaster in the school	WMRHS & WES	Superintendent of Schools, Fire Department & Police Department	Good	<b>Improvements Needed:</b> The Fire and Police Departments along with the Superintendent of Schools is in the process of redoing the schools' Emergency Operation Plans at this time; deferred to review and updated the schools' Emergency Operations Plans annually into the future. <b>Action Item #2</b>
Road Design Standards	State standards based on Average Daily Traffic	Town Wide	Public Works Department, Planning Board & Board of Selectmen	Poor	<b>Improvements Needed:</b> The Public Works Department uses the State Standards for new roads; deferred to review the road & driveway standards regarding steep slopes and other road issues in new subdivisions; new town roads must be approved at Town Meeting. <b>Action Item #19</b>
Floodplain Ordinance (part of Comprehensive Development Guide)	The minimum National Flood Insurance Program (NFIP) requirements have been adopted as part of the Town's Floodplain Ordinance. This regulates all new and substantially improved structures located in the 100-year floodplain, as identified on the FEMA Flood Insurance Rate Maps.	Flood Zone	Planning Board	Good	<b>Improvements Needed:</b> The Town has been a member of the National Flood Insurance Program (NFIP) since April 2, 1986, and has an established flood ordinance which performs as it is meant to prevent building or substantial improvements in the floodplain; although the ordinance works well, this is deferred to this Plan to provide public outreach about the NFIP and flood education on the website. <b>Action Item #9 (also in Table 7.1)</b>
State Building Codes	States regulations to ensure buildings meet National Fire Protection codes and other state building codes.	Town Wide	Fire Department & Planning Board	Poor	<b>Improvements Needed:</b> The Town has not adopted the International Building Codes (IBC) and International Residential Codes (IRC) which are used by the State; Development Permits are required by the Planning Board; Life Safety Codes are required for all commercial buildings and are inspected by the Fire Department; however, there is no enforcement of the codes; deferred to this Plan to review current procedures and zoning provisions. <b>Action Item #20</b>

Current Program or Activity	Description	Area of Town	Responsible Department	Effectiveness	Improvements Needed or Not Needed
911 Signage Compliance	A system that complies with recommended signage size, location and visibility to ensure identification by emergency responders.	Town Wide	Board of Selectmen	Poor	<b>Improvements Needed:</b> The Town is about 35% compliant now; deferred to this Plan to consider ways to get this signage more compliant so that emergency responders can better assist the public at the time of need; perhaps through purchase of signs by the Town, ordinance changes and/or public outreach. <b>Action Item #15</b>
Master Plan (2009)	Includes goals, objectives and expectations for future development of the Town.	Town Wide	Planning Board	Good	<b>Improvements Needed:</b> The Whitefield Master Plan is due for a recommended update in 2019; the Planning Board is scheduled to work on this update starting in 2017 -2018; the Planning Board will review this HMP while undergoing the Master Plan update and consider the incorporation of mitigation strategies into the new Master Plan; deferred for update in 2017-2018. <b>Action Item #21</b>
Emergency Generators	The Town Office, Police Department and the Fire Station currently have backup power.	Highway Garage, WMRHS & WES	Emergency Management Director	Average	<b>Improvements Needed:</b> With the building of the new municipal building next to the Fire Station, a generator was installed that provides backup power for the Town Offices, the Police Department and the Fire Department; deferred to this Plan to obtain a generator for the Highway Garage and to work with the SAU, School Principal and other entities to obtain a generator for the White Mountains Regional High School (WMRHS), the Whitefield Elementary School (WES) and to work with the Mount Washington Airport Commission to obtain a generator for the airport. <b>Action Items #23, #24, #25 and #32 (also in Table 7.1)</b>
Capital Improvement Plan (2015)	A Capital Improvement Plan is a short-range plan, usually four to ten years, which identifies capital projects and equipment purchases; a CIP provides a link between a town and its departments through a comprehensive and strategic plan.	Town Wide	Planning Board	Excellent	<b>Improvements Needed:</b> Although Whitefield has a current Capital Improvement Plan (CIP) in place, the CIP should be reviewed and amended to recognize long term projects that are identified in this Hazard Mitigation Plan; deferred for a review of the CIP with regards to HMP projects in this Plan. <b>Action Item #14</b>

Current Program or Activity	Description	Area of Town	Responsible Department	Effectiveness	Improvements Needed or Not Needed
NIMS Training	Ensure effective command, control, and communications during emergencies	Town Wide	Emergency Management Director	Average	<b>Improvements Needed:</b> Not all of Whitefield's town officials have received NIMS & ICS training, although most police officers, firefighters and some highway employees have; the EMD should encourage all town officials to take NIMS 700 and ICS 100 and 200. <b>Action Item #4 (also in Table 7.1)</b>
Comprehensive Development Guide	Regulations dealing with land use including rural, residential, agricultural and timber management	Town Wide	Planning Board	Average	<b>Improvements Needed:</b> The Whitefield Comprehensive Development Guide was most recently updated in 2012; deferred to update and to include a review of this Hazard Mitigation Plan and to incorporate applicable hazard mitigation projects. <b>Action Item #17 (also in Table 7.1)</b>
Capital Reserve Funds	Capital Reserve Funds are funds that are set aside annually at budget time to allow for equipment and supply purchases by the Town's departments.	Town Wide	Board of Selectmen	Good	<b>No Improvements Needed:</b> Capital reserve funds reviewed annually at budget time and work well.
Police, Fire, EMS Mutual Aid Agreements	Offers access to resources appropriate to the scope of the emergency	Town Wide	Fire Department, Police Department & Emergency Management Director	Excellent	<b>No Improvements Needed:</b> The Fire Department/EMS has mutual aid agreements with the North Country Fire Mutual Aid District and with Twin State Fire Mutual Aid (Associate Member); the Police Department maintains mutual aid agreements with the towns of Lancaster, Littleton, Bethlehem and Carroll; the mutual aid systems that are in place in Whitefield are excellent and do what they are intended to do.

Current Program or Activity	Description	Area of Town	Responsible Department	Effectiveness	Improvements Needed or Not Needed
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 the North Country Regional Public Health Region	Town Wide	North Country Regional Public Health Network	Good	<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.
Burning Index	New Hampshire Forests & Lands (DRED) 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	Fire Department	Good	<b>No Improvements Needed:</b> The Whitefield Fire Department receives regular notification of the burning index via fax and email from NH Forests & Lands; this notification is made daily during the fire danger season.
All Hazards Mitigation Plan (2004)	FEMA approved mitigation Plan based on the Disaster Mitigation Act of 2000; designed to eliminate or reduce the risk to natural hazards.	Town Wide	Emergency Management Director	Good	<b>No Improvements Needed:</b> Whitefield completed a Hazard Mitigation Plan in 2004 and again in 2011; this Plan, the 2016 Hazard Mitigation Plan will replace the plan that was created in 2011.

Current Program or Activity	Description	Area of Town	Responsible Department	Effectiveness	Improvements Needed or Not Needed
State Division of Forest and Lands/Fire Permits	State regulations for open burning	Town Wide	Fire Warden	Good	<b>No Improvements Needed:</b> System that is in place with NH Forests & Lands and the local fire wardens work well; public is aware of fire permitting requirements.
Hazmat Training	Hazmat Level 1 - Hazardous Material Clean up kits and access to Lancaster Emergency Response Trailer in Lancaster	Town Wide	Fire Chief	Good	<b>No Improvements Needed:</b> The Fire & Police Departments maintain continuous HazMat training for response personnel.
Bridge Maintenance Program	State of NH will inspect all Town bridges and advise the Town on condition and procedures to take.	Town Wide	State DOT & Public Work Departments	Good	<b>No Improvements Needed:</b> The system that is in place with DOT works well; the Town responds as needed to bridge improvements.
NH Municipal Mutual Aid	Agreement with other towns within municipal association for use of equipment and people for support of town emergency operations	Town Wide	Public Works Department	Good	<b>No Improvements Needed:</b> Whitefield is a member of the NH Municipal Mutual Aid Association.

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## Chapter 7: Prior Mitigation Plan(s)

### A. Date of Prior Plan

Whitefield has participated in the development of a prior Hazard Mitigation Plan, based on the Disaster Mitigation Act (DMA) of 2000, which was formally approved on July 13, 2011. This Plan, the “Whitefield Hazard Mitigation Plan Update 2017” is an update to the 2011 Plan.

Below are the action items that were identified in the 2011 Plan. The Team identified the current status of each strategy based on three 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 PRIOR PLAN(S) APPROVAL**

**NOTE:** Items in **red** were extracted word-for-word from the 2011 Hazard Mitigation Plan and do not represent a time frame for this plan.

Priority	Project	Responsibility Oversight	Funding Support	Time Frame	Completed, Deleted, Deferred
1-1	(27) Obtain a radio repeater	Fire & Police Chiefs	Grants	7/1/2010	<b>Completed &amp; Deleted:</b> Through local funding, the Town obtained a repeater which is located at the new Town Office building; deleted as this strategy is completed and it is also preparedness not mitigation.
1-2	(21) Obtain high speed communications for emergency responders	EMD	Grants	2/23/2012	<b>Completed &amp; Deleted:</b> The Town has developed a good system of communications that coincides with state regulations; the Town has also made additional improvements in communications in coordination with area towns; deleted as this strategy is completed and it is also preparedness not mitigation.

Priority	Project	Responsibility Oversight	Funding Support	Time Frame	Completed, Deleted, Deferred
1-3	(1) Update Emergency Operations Plan to HSEM format	EMD	Local	6/1/2010	<b>Completed &amp; Deferred:</b> The last EOP was 2010; to be done in 2017; deferred to this Plan to update in 2017 when the Hazard Mitigation Plan meetings are complete. <b>Action Item #13 (also in Table 6.1)</b>
1-4	(9) Make Fire Department generator functional	Fire Chief	Grants	7/1/2010	<b>Completed &amp; Deleted:</b> The Town has installed a generator at the new Town Office that runs both the Town Office and the Fire Department; deleted as this action item is complete.
1-5	(16) Brown Street wall study for reconstruction of collapsing wall	Select Board	Grants	7/1/2010	<b>Completed &amp; Deleted:</b> The retaining wall on Brown Street was replaced with local funding in the amount of \$109,000 (federal program would have cost 1.2 million so the Town did it themselves); because of the clay composition, the project was possible; deleted as this action item is complete.
1-6	(18) Complete engineering evaluation for replacing Water Street bridge over Johns River	Select Board	Grants & Local	7/1/2010	<b>Completed &amp; Deleted:</b> In 2014, the Water Street bridge over the Johns River was engineered and replaced using Town funding in the amount of \$56,000 (versus 1.1 million for the federal program); deleted as this action item is complete.
1-7	(10) Develop or obtain security and monitoring systems for Town Buildings	EMD	Grants	11/30/2010	<b>Completed &amp; Deleted:</b> With the building of the new Town Offices, security systems have been installed using EMPG funding in the amount of \$40,000 (for security and EOC); deleted as this action item is complete.
1-8	(31) Replace outdated or expired bullet proof vests	Police Chief	Local	Annually	<b>Completed &amp; Deleted:</b> Expired bullet proof vests have been updated; this action is deleted as it is preparedness not mitigation.
1-9	(28) Establish a system to evaluate protective clothing expiration	Fire Chief	Local	3/10/2010	<b>Completed &amp; Deleted:</b> The Fire and Police Departments have established a system to monitor personal protective equipment (PPE) and clothing expirations; this action is deleted as it is preparedness not mitigation.

Priority	Project	Responsibility Oversight	Funding Support	Time Frame	Completed, Deleted, Deferred
1-10	(33) Obtain Base Station Replacement for Police Station	Police Chief	Grants	9/29/2010	<b>Completed &amp; Deleted:</b> The Town continuously keeps its communication capabilities up to date; a base station is located in the Police Department; this action is deleted as it is preparedness not mitigation.
1-11	(5) Continue annual Firefighter & EMS training	Fire Chief	Local	Ongoing	<b>Completed &amp; Deleted:</b> The Fire Department maintains continuous training for firefighters and EMS personnel; this action is deleted as it is preparedness not mitigation.
1-12	(6) NIMS Training	Fire Chief	Local	Ongoing	<b>Partially Completed &amp; Deferred:</b> Not all of Whitefield's town officials have received NIMS & ICS training, although some police officers & firefighters have; the EMD should encourage all town officials to take NIMS 700 and ICS 100 and 200. <b>Action Item #4 (also in Table 6.1)</b>
1-13	(8) Provide Hazardous Material refresher training for Police, Fire and EMS	EMD	Grants	12/29/2010	<b>Completed &amp; Deleted:</b> The Fire & Police Departments maintain continuous HazMat training for response personnel; this action is deleted as it is preparedness not mitigation.
1-14	(4) Post Wellhead Protection signs on roads	Water Superintendent	Local	3/31/2010	<b>Deleted:</b> It was determined that this action is no longer needed due to the location of the wellheads, therefore it is deleted.
1-15	(2) Update Comprehensive Development Guide	Planning Board	Local	6/1/2010	<b>Completed &amp; Deferred:</b> The Whitefield Comprehensive Development Guide was most recently updated in 2012; deferred to this Plan to update and to include a review of this Plan and to possibly incorporate hazard mitigation policies. <b>Action Item #17 (also in Table 6.1)</b>
1-16	(46) Survey of residents regarding special needs	Administrative Assistant	Local	8/29/2010	<b>Deferred:</b> The Town has not established a functional needs list due to time and oversight; deferred to this Plan to consider ways to develop and maintain this list while protecting HIPAA regulations; possible means would be the Town Report, Town Meeting and the Town's website. <b>Action Item #8</b>

Priority	Project	Responsibility Oversight	Funding Support	Time Frame	Completed, Deleted, Deferred
1-17	(12) Continue fire prevention awareness through the schools	Fire Chief	Local	Annually in October	<b>Completed &amp; Deferred:</b> The Fire Department continues to provide fire prevention awareness programs at the Town's school; deferred to continue this public outreach on an annual basis. <b>Action Item #6</b>
1-18	(40) Upgrade of radios & other communication equipment for public works	Public Works	Grants	3/1/2011	<b>Completed &amp; Deleted:</b> Whitefield's emergency response radios have been upgraded; there are still problem areas where radios do not work; emergency responders also use cell phones because of the dead zones; deleted as this action item is preparedness not mitigation.
1-19	(3) Find location to put siren & bring siren back to workable state	Fire Chief	Local	5/1/2010	<b>Deleted:</b> It was determined that a siren was no longer needed with the capabilities of digital/phone alerting systems that are available to the Town; deleted as it is no longer needed.
1-20	(45) Create public awareness of siren use (pamphlets/website)	Fire Chief	Local	9/19/2010	<b>Deleted:</b> It was determined that because a siren is no longer needed, a public awareness campaign about a siren is also no longer needed.
1-21	(19) Investigate security issues around wells, water supply plant and storage reservoirs	Water Superintendent	Grants & Local	7/1/2010	<b>Deferred:</b> Security issues have not been addressed; the Town's wells, the water supply and storage reservoirs should be reviewed for security needs. <b>Action Item #26</b>
1-22	(44) 30 Cots & Blankets for shelter at the High School	EMD	Grants & Local	10/29/2010	<b>Deleted:</b> The Town has not obtained shelter materials primarily because of a lack of storage space; in an emergency, the Town should be able to obtain shelter supplies from either the Public Health Network or the American Red Cross; this action item is deleted not only because it is preparedness not mitigation but also because of storage capabilities.
1-23	(47) Purchase drop in sked unit	Fire Chief	Grants	9/29/2010	<b>Deleted:</b> The Fire Department did not purchase a sked unit for wildland fire fighting due to budget constraints; this action is deleted as it is preparedness not mitigation.

Priority	Project	Responsibility Oversight	Funding Support	Time Frame	Completed, Deleted, Deferred
1-24	(13) Conduct Public Education Activities regarding Emergency Management; place FEMA, HSEM, Firewise & Red Cross flyers & videos at the Library, Elementary & High Schools	Select Board	Local	7/1/2010	<b>Partially Completed &amp; Deferred:</b> Although some public education has been done, it was determined that in today's digital world, an emergency web page would be more useful than public education via flyers and videos; deferred to this Plan to establish a comprehensive emergency webpage that will not only answer questions about emergency preparedness but also serve as a source of public outreach for mitigation techniques that the citizens of the Community can use to eliminate or diminish natural hazard threats to themselves and their properties. <b>Action Item #5</b>
1-25	(24) Obtain NFIP materials & have them available at the Town Offices	Administrative Assistant	Local	12/29/2010	<b>Complete &amp; Deferred:</b> Some brochures were obtained and kept in the Town Offices regarding the National Flood Insurance Program (NFIP), but the supply has dwindled; deferred to this Plan to obtain more brochures to provide to both citizens and builders/developers who wish to build in Whitefield so that the public is aware of not only the risks of building or doing substantial improvements in the floodplain but also to notify all citizens that flood insurance through the NFIP is available to everyone, whether or not a property is in the FEMA floodplain. <b>Action Item #9 (also in Table 6.1)</b>
1-26	(11) Develop an emergency management & hazard mitigation page on the Town's website	Administrative Assistant	Local	3/31/2010	<b>Deferred:</b> An emergency web page has not been established due to staff time, funding and oversight; deferred to this Plan to establish a comprehensive emergency webpage that will not only answer questions about emergency preparedness but also serve as a source of public outreach for mitigation techniques that the citizens of the Community can use to eliminate or diminish natural hazard threats to themselves and their properties. <b>Action Item #5</b>
1-27	(7) Conduct a Table Top Exercise of new Emergency Operations Plan when it is complete	EMD	Local	8/29/2010	<b>Deleted &amp; Deferred:</b> A Table Top Exercise (TTX) for the 2011 Emergency Operations Plan (EOP) was not completed; although this is preparedness, the Team wished to leave this action item in this Plan as a reminder; deferred to this Plan to conduct a TTX when the EOP is updated later this year. <b>Action Item #12</b>
1-28	(39) Obtain chipper for Public Works to help clear timber & to increase forest fuel reduction	Public Works	Grants	11/29/2010	<b>Completed &amp; Deleted:</b> The Public Works Department purchased a chipper with town funding; this is deleted as this action item is preparedness not mitigation and it is complete.

Priority	Project	Responsibility Oversight	Funding Support	Time Frame	Completed, Deleted, Deferred
1-29	(35) Obtain Firewise brochures to have available; add information to website regarding fuel reduction around structures	EMD	Local	3/1/2011	<b>Complete &amp; Deferred:</b> Some Firewise brochures were obtained and kept in the Town Office, but the supply has dwindled; deferred to this Plan to obtain more brochures to provide to citizens of the Community so that the public is aware of not only the risks of wildfire but also specific mitigation actions that can be taken to better protect homes and businesses from the effects of wildfire. <b>Action Item #7</b>
2-1	(41) Air Quality Meter for confined spaces such as manholes	Public Works	Local	2/29/2012	<b>Completed &amp; Deleted:</b> The Public Works Department purchased an Air Quality Meter for confined spaces with town funding; this is deleted as this action item is preparedness not mitigation and it is complete.
2-2	(30) Install three dry hydrants: Hazen Pond; Mirror Lake; Burns Pond	Fire Chief	Grants & Local	11/29/2011	<b>Deferred:</b> This strategy from the prior mitigation plan was not completed; deferred to this Plan to obtain funding and install three dry hydrants (Hazen Pond, Mirror Lake & Burns Pond). <b>Action Item #29</b>
2-3	(38) Obtain financing for the purchase of grading equipment	Public Works	Grants	2/23/2012	<b>Completed &amp; Deleted:</b> The Public Works Department purchased grading equipment with town funding; this is deleted as this action item is preparedness not mitigation and it is complete.
2-4	(14) New Municipal Building for Police and Town Offices	Select Board	Grants & Local	2/23/2012	<b>Completed &amp; Deleted:</b> A new municipal building which houses the Police Department and the Town Offices was completed in 2015 using multiple funding sources; deleted as this action item is no longer needed.
2-5	(42) Obtain computer for EOC in Fire Station	EMD	Grants & Local	5/1/2011	<b>Completed &amp; Deleted:</b> The new EOC is now located at the municipal building (Town Offices); the EOC is being equipped using EMPG funding; deleted as this action item is no longer needed.
2-6	(43) Obtain recording equipment for EOC (liability issues)	EMD	Grants & Local	5/1/2011	<b>Completed &amp; Deleted:</b> The Emergency Management Director has purchased recording equipment; this is deleted as this action item is preparedness not mitigation and it is complete.

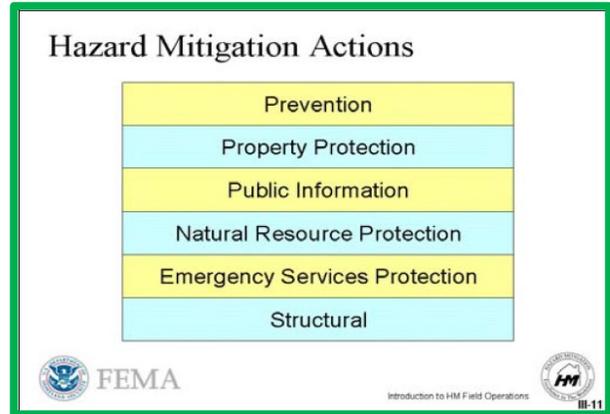
Priority	Project	Responsibility Oversight	Funding Support	Time Frame	Completed, Deleted, Deferred
2-7	(36) Replace computer equipment in police vehicles	Police Chief	Grants	3/1/2011	<b>Completed &amp; Deleted:</b> In 2014, the Police Chief replaced the computers in police vehicles using EMPG funding; this is deleted as this action item is preparedness not mitigation and it is complete.
2-8	(37) Upgrade and/or replace video equipment for cruisers	Police Chief	Grants	3/1/2011	<b>Completed &amp; Deleted:</b> In 2012, the Police Chief upgraded and/or replaced the video equipment in police vehicles using a Highway Safety Match; this is deleted as this action item is preparedness not mitigation and it is complete
2-9	(23) Consider hiring a building inspector (Fire Chief only does fire inspection)	Select Board	Local	3/31/2011	<b>Deleted:</b> The Town has considered hiring a Building Inspector and has decided not to at this time; therefore this action item is deleted; a citizens group is reviewing current zoning and ordinances and may recommend the appointment of a Code Enforcement Officer in the future.
3-1	(25) Obtain new rescue pumper	Fire Chief	Grants	3/1/2014	<b>Deferred:</b> A new rescue pumper was not purchased due to budget constraints; although this is preparedness not mitigation, the Team chose to defer this action item to this Plan as a reminder that a new rescue pumper is needed now. <b>Action Item #30</b>
3-2	(29) Generator for High School as Primary Shelter	EMD	Grants	5/30/2012	<b>Deferred:</b> A generator for the High School was not obtained due to budget constraints; deferred to this Plan to work with the SAU School Board, the School Principal and other entities to a research and obtain a generator for the High School in order to best utilize this Critical Facility as a shelter for not only Whitefield but for the region if needed; work with the Mount Washington Airport Commission to obtain a generator for the airport. <b>Action Item #23, #24, #25 and #32 (also in Table 6.1)</b>
3-3	(22) Obtain water rescue equipment	Fire Chief	Grants	9/29/2012	<b>Deferred:</b> Water rescue equipment was not purchased due to budget constraints; although this is preparedness not mitigation, the Team chose to defer this action item to this Plan as a reminder that water rescue equipment is needed now. <b>Action Item #31</b>

Priority	Project	Responsibility Oversight	Funding Support	Time Frame	Completed, Deleted, Deferred
3-4	(15) Brown Street Wall support and/or reconstructing to prevent collapse	Select Board	Grants	7/1/2013	<b>Completed &amp; Deleted:</b> The retaining wall on Brown Street was replaced with local funding in the amount of \$109,000 (federal program would have cost 1.2 million so the Town did it themselves); because of the clay composition, the project was possible; deleted as this action item is complete.
3-5	(17) Complete engineering evaluation for replacing Hazen Road bridge over Johns River	Select Board	Grants & Local	6/30/2012	<b>Deferred:</b> The town-owned red listed bridge on Hazen Road over the Johns River has been replaced with a temporary bridge; deferred to this Plan to complete an engineering study to replace the temporary bridge with a new and improved bridge that will improve storm water flow in the area; bridge aid may be available, but the Town may use local funding to complete this project. <b>Action Item #22</b>
3-6	(32) Obtain generator for Police & Town Offices	EMD	Grants	12/29/2012	<b>Completed &amp; Deleted:</b> A new municipal building which houses the Police Department and the Town Offices was completed in 2015 using multiple funding sources; the new building has a generator that also handles the Fire Department; deleted as this action item is no longer needed.
3-7	(26) Update extrication equipment	Fire Chief	Grants	3/1/2014	<b>Completed &amp; Deleted:</b> The Fire Chief has upgraded extrication equipment; this is deleted as this action item is preparedness not mitigation and it is complete.
3-8	(34) Obtain appropriate lockers for ammunition and fire arms	Police Chief	Local	12/29/2012	<b>Completed &amp; Deleted:</b> The Police Chief has obtained appropriate lockers for ammunition and fire arms; this is deleted as this action item is preparedness not mitigation and it is complete
3-9	(20) Replace existing steel culvert with a box culvert on Parker Road & Chase Brook.	Public Works	Grants	3/1/2014	<b>Deferred:</b> The culvert on Parker Road & Chase Brook was not replaced; the culvert is actually in the neighboring town of Dalton but stormwater flow effects the Parker Road and Brown Street areas of Whitefield; deferred to work with Dalton on a resolution for this issue to improve storm water flow. <b>Action Item #28</b>

## 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 on the following two pages; 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 Whitefield 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>
• <i>Community Outreach and Education</i> .....	<i>Public Awareness</i>
• <i>Changes to Zoning Regulations</i> .....	<i>Prevention</i>
• <i>Changes to Subdivision Regulations</i> .....	<i>Prevention</i>
• <i>Steep Slopes Ordinance</i> .....	<i>Prevention</i>
• <i>Density Controls</i> .....	<i>Prevention</i>
• <i>Driveway Standards</i> .....	<i>Prevention</i>
• <i>Emergency Website Creation</i> .....	<i>Public Awareness</i>
• <i>Critical Infrastructure &amp; Key Resources</i> .....	<i>Emergency Service Protection</i>
• <i>Emergency Training for Town Officials</i> .....	<i>Emergency Service Protection</i>
• <i>High Risk Notification to Homeowners</i> .....	<i>Property Protection</i>
• <i>Master Plan Update or Development</i> .....	<i>Prevention</i>
• <i>Capital Improvement Plan</i> .....	<i>Prevention</i>
<u>Flood Mitigation Ideas</u>	<u>Type of Project</u>
• <i>Storm Water Management Ordinances</i> .....	<i>Prevention</i>
• <i>Floodplain Ordinances</i> .....	<i>Prevention</i>
• <i>Updated Floodplain Mapping</i> .....	<i>Prevention</i>
• <i>Watershed Management</i> .....	<i>Natural Resource Protection</i>
• <i>Drainage Easements</i> .....	<i>Prevention</i>
• <i>Purchase of Easements</i> .....	<i>Prevention</i>
• <i>Wetland Protection</i> .....	<i>Natural Resource Protection</i>
• <i>Structural Flood Control Measures</i> .....	<i>Prevention</i>
• <i>Bridge Replacement</i> .....	<i>Structural Project</i>
• <i>Dam Removal</i> .....	<i>Structural Project</i>
• <i>NFIP Compliance</i> .....	<i>Prevention</i>
• <i>Acquisition, Demolition &amp; Relocation</i> .....	<i>Structural Project</i>
• <i>Structure Elevation</i> .....	<i>Structural Project</i>
• <i>Flood Proofing</i> .....	<i>Property Protection</i>
• <i>Erosion Control</i> .....	<i>Natural Resource Protection</i>
• <i>Floodplain/Coastal Zone Management</i> .....	<i>Prevention</i>
• <i>Building Codes Adoption or Amendments</i> .....	<i>Prevention</i>
• <i>Culvert &amp; Hydrant Maintenance</i> .....	<i>Prevention</i>
• <i>Culvert &amp; Drainage Improvements</i> .....	<i>Structural Protection</i>
• <i>Transfer of Development Rights</i> .....	<i>Property Protection</i>

**Natural Hazard Mitigation Ideas**

**Type of Project**

**Landslide**

- 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 **S**ocial, **T**echnical, **A**ministrative, **P**olitical, **L**egal, **E**conomic and **E**nvironmental 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 more 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 Board of Selectmen 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 Whitefield 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.*

Potential Mitigation Action Item	Affected Location	Type of Activity	Total	S	T	A	P	L	E	E
<b>Action Item #1:</b> Develop a hydrant maintenance program that will ensure functionality of all hydrants in the Community. (WF8)	Town Wide Hydrants	Prevention Emergency Service Protection	19	3	3	3	3	3	1	3
				<i>Economics: Budget Constraints</i>						
<b>Action Item #2:</b> Participate in the review and update of the schools' Emergency Operations Plans. (Table 6.1)	White Mountains Regional High School & Whitefield Elementary School	Prevention Emergency Service Protection	21	3	3	3	3	3	3	3
				<i>No apparent issues with this action item.</i>						

Potential Mitigation Action Item	Affected Location	Type of Activity	Total	S	T	A	P	L	E	E
<b>Action Item #3:</b> Provide public outreach to encourage all residents to contact NH ENS to add cell numbers, emails and unlisted numbers and to verify information; use the website, a possible mailing, the Town Report or a sign-up at Town Meeting. (MU14) (Table 6.1)	Town Wide	Prevention Public Education & Awareness	21	3	3	3	3	3	3	3
				<i>No apparent issues with this action item.</i>						
<b>Action Item #4:</b> Encourage all town officials and new hires to take NIMS 700 and ICS 100 and 200. (Tables 6.1 & 7.1)	Town Wide	Emergency Service Protection	21	3	3	3	3	3	3	3
				<i>No apparent issues with this action item.</i>						
<b>Action Item #5:</b> Establish an interactive emergency webpage for educating the public on hazard mitigation and preparedness measures (MU14) by adding to the Town's Emergency Management Services 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). (Table 7.1)	Town Wide	Prevention Public Education & Awareness	21	3	3	3	3	3	3	3
				<i>No apparent issues with this action item.</i>						
<b>Action Item #6:</b> Continue to provide fire prevention awareness programs at the Town's schools and public outreach on fire mitigation techniques and safety wherever possible in the Community. (Table 7.1)	Town Wide	Public Education & Awareness	21	3	3	3	3	3	3	3
				<i>No apparent issues with this action item.</i>						
<b>Action Item #7:</b> Obtain and have available "Firewise" brochures to educate homeowners on methods to reduce fire risk around their homes (WF10); provide "Firewise" brochures to those residents seeking burn permits; advise residents of the importance of maintaining defensible space, the safe disposal of yard and household waste and the removal of dead or dry leaves, needles, twigs, and combustible materials from roofs, decks, eaves, porches and yards. (WF12) (Table 7.1)	Town Wide	Prevention Public Education & Awareness Natural Resource Protection Property Protection	21	3	3	3	3	3	3	3
				<i>No apparent issues with this action item.</i>						

Potential Mitigation Action Item	Affected Location	Type of Activity	Total	S	T	A	P	L	E	E
<p><b>Action Item #8:</b> Create a voluntary database to identify those individuals at high risk of death, such as the elderly, homeless, etc. by developing a survey that asks for next of kin notification or other persons who can assist if needed; voluntary basis based on HIPAA; perhaps through mailing, the Town Report, at Town Meeting or on the Town's website. (ET3 &amp; WW6) (Table 7.1)</p>	Town Wide	Prevention Public Education & Awareness Emergency Service Protection	21	3	3	3	3	3	3	3
				<i>No apparent issues with this action item.</i>						
<p><b>Action Item #9:</b> Advise the public about the local flood hazard, flood insurance and flood protection measures (F10) by obtaining and keeping on hand a supply of NFIP brochures to have available in the Town Offices; give NFIP materials to homeowners and builders when proposing new development or substantial improvements; encourage property owners to purchase flood insurance (F22), whether or not they are in the flood zone and provide appropriate links to the NFIP and Ready.gov on the Town's website or provide mailing materials. (Tables 6.1 &amp; 7.1)</p>	Town wide and specifically in the FEMA floodplain	Public Education & Awareness	21	3	3	3	3	3	3	3
				<i>No apparent issues with this action item.</i>						
<p><b>Action Item #10:</b> Continue program to mow roadsides and cut limbs and branches in an effort to mitigate the effects of wind damage to power lines and structures and to ensure defensible space for mitigating wildfires; continue tree maintenance program to reduce or eliminate the damage that may result during a natural hazard such as a wildfire, windstorm, hurricane or tropical storm. (SW4 &amp; WF7) (Table 6.1)</p>	Town Wide	Prevention Emergency Service Protection Natural Resource Protection Property Protection	21	3	3	3	3	3	3	3
				<i>No apparent issues with this action item.</i>						
<p><b>Action Item #11:</b> Improve the flow of stormwater and eliminate flooding on Pine Street by replace the rotting 15" culvert with an 18-24", 100-foot long culvert (FU13)</p>	Pine Street	Prevention Natural Resource Protection Property Protection Structural Projects	20	3	3	3	3	3	3	2
				<b>Environmental:</b> Project will need DES approval and permitting.						
<p><b>Action Item #12:</b> Conduct a Table Top Exercise (TTX) upon completion of the update to the Emergency Operations Plan in 2017 or as part of the Emergency Operations Plan planning procedures. (Table 7.1)</p>	Town Wide	Prevention Emergency Service Protection	21	3	3	3	3	3	3	3
				<i>No apparent issues with this action item.</i>						

Potential Mitigation Action Item	Affected Location	Type of Activity	Total	S	T	A	P	L	E	E
<b>Action Item #13:</b> Update the Emergency Operations Plan to increase the Town's ability to respond to disasters and to mitigate future or continued occurrences; incorporate this Plan as an annex to the Emergency Operations Plan. (Tables 6.1 & 7.1)	Town Wide	Prevention, Public Education & Awareness & Emergency Service Protection	21	3	3	3	3	3	3	3
				<i>No apparent issues with this action item.</i>						
<b>Action Item #14:</b> Review and update the Capital Improvement Plan (CIP) to include recommendations for long term projects that are identified in this Hazard Mitigation Plan. (MU6, WF2 & F1) (Table 6.1)	Town Wide	Prevention	21	3	3	3	3	3	3	3
				<i>No apparent issues with this action item.</i>						
<b>Action Item #15:</b> Consider ways to get 911 signage more compliant so that emergency responders can better assist the public at the time of need; perhaps through purchase of signs by the Town, ordinance changes and/or public outreach. (Table 6.1)	Town Wide	Prevention Public Education & Awareness Emergency Service Protection	18	3	3	3	1	3	2	3
				<b>Political:</b> Some residents may not want to a sign on their property <b>Economic:</b> Possible Budget Constraints						
<b>Action Item #16:</b> Obtain funding and install a lightning rod on the new Town Office building. (L1).	Town Hall	Prevention Property Protection	21	3	3	3	3	3	3	3
				<i>No apparent issues with this action item.</i>						
<b>Action Item #17:</b> Review the Whitefield Comprehensive Development Guide as planned and include a review of this Hazard Mitigation Plan for incorporation of possible mitigation actions items. (Tables 6.1 & 7.1)	Town Wide	Prevention	17	2	3	2	2	2	3	3
				<b>Social:</b> Recommended changes could be controversial <b>Administrative:</b> No Code Enforcement Officer <b>Political:</b> Recommended changes could be controversial <b>Legal:</b> Possible legal challenges could result						
<b>Action Item #18:</b> Review and revise Whitefield's subdivision regulations to include clear language regarding requirements for fire suppression (cisterns, fire ponds, etc.), building on steep slopes, drainage, better signage (911) and other hazard reducing regulations for new subdivisions. (MU7, WF3 & F1) (Table 6.1)	Town Wide	Prevention Public Education & Awareness Emergency Service Protection Natural Resource Protection Property Protection Structural Projects	17	2	3	2	2	2	3	3
				<b>Social:</b> Recommended changes could be controversial <b>Administrative:</b> No Code Enforcement Officer <b>Political:</b> Recommended changes could be controversial <b>Legal:</b> Possible legal challenges could result						

Potential Mitigation Action Item	Affected Location	Type of Activity	Total	S	T	A	P	L	E	E
<b>Action Item #19:</b> Review the current road standards in Whitefield and update them according to the Public Works Department's recommendations to ensure that roads in new subdivisions address steep slopes, water drainage and other road issues. (F17) (Table 6.1)	Town Wide	Prevention	21	3	3	3	3	3	3	3
				<i>No apparent issues with this action item.</i>						
<b>Action Item #20:</b> Review current procedures and zoning provisions with a goal of making a presentation or recommendations at Town Meeting; consider adopting the International Building Code (IBC) and the International Residential Code (IRC). (F4, EQ1, SW1, WW1 & MU8) (Table 6.1)	Town Wide	Prevention	17	2	3	2	2	2	3	3
				<b>Social:</b> Recommended changes could be controversial <b>Administrative:</b> No Code Enforcement Officer <b>Political:</b> Recommended changes could be controversial <b>Legal:</b> Possible legal challenges could result						
<b>Action Item #21:</b> Review and update the Master Plan and incorporate a natural hazards section and mitigation action items from this Plan if applicable. (MU6, WF2 & F1) (Table 6.1)	Town Wide	Prevention	21	3	3	3	3	3	3	3
				<i>No apparent issues with this action item.</i>						
<b>Action Item #22:</b> Complete an engineering study to replace the temporary bridge on Hazen Road, over the Johns River, with a new and improved bridge that will improve the flow of storm water in the area. (F13) (Table 7.1)	Hazen Road	Structural Projects	20	3	3	3	3	3	2	3
				<b>Economic:</b> Budget Constraints						
<b>Action Item #23:</b> Work with the SAU, the Superintendent and other local entities to purchase and install a permanent generator at White Mountains Regional High School so that this facility can more effectively used as the Primary Shelter serving not only Whitefield but possibly the entire region. (MU13) (Tables 6.1 & 7.1)	White Mountains Regional High School	Prevention Emergency Service Protection	16	3	3	3	1	1	2	3
				<b>Political:</b> Attached to other projects, so public input may be an issue; five towns and an SAU; stakeholders will have to come to an agreement on the project <b>Legal:</b> The town does not have sole legal authority to get project done <b>Economic:</b> Budget Constraints						

Potential Mitigation Action Item	Affected Location	Type of Activity	Total	S	T	A	P	L	E	E
<b>Action Item #24:</b> Obtain funding and install a generator at the Whitefield Public Works Department to ensure proper functioning at the time of an emergency (MU14).	Public Works Garage	Prevention Emergency Service Protection	20	3	3	3	3	3	2	3
				<b>Economics:</b> Budget Constraints						
<b>Action Item #25:</b> Work with the SAU, the Superintendent and other local entities to purchase and install a permanent and whole-facility generator at the Whitefield Elementary School. (MU13) (Tables 6.1 & 7.1)	Whitefield Elementary School	Prevention Emergency Service Protection	16	3	3	3	1	1	2	3
				<b>Political:</b> Attached to other projects, so public input may be an issue; five towns and an SAU; stakeholders will have to come to an agreement on the project <b>Legal:</b> The town does not have sole legal authority to get project done <b>Economic:</b> Budget Constraints						
<b>Action Item #26:</b> Address the security issues at the Town's water supply facilities and storage reservoirs, perhaps by installing better fencing. (Table 7.1)	Town's Water Supply Facilities	Prevention Property Protection Natural Resource Protection Structural Projects	20	3	3	3	3	3	2	3
				<b>Economic:</b> Budget Constraints						
<b>Action Item #27:</b> Develop a written storm water maintenance plan in order to ensure more efficient storm water management; size, location, age, time for replacement, etc. for culverts and ditches throughout the Town. (F5)	Town Wide	Prevention	21	3	3	3	3	3	3	3
				No apparent difficulties with the Action Item.						
<b>Action Item #28:</b> Work with the neighboring town of Dalton on a resolution for storm water issues caused by the underperforming culvert on Parker Road at Chase Brook. (FU13) (Table 7.1)	Parker Road in Dalton	Prevention Natural Resource Protection Property Protection Structural Projects	18	3	3	2	2	3	2	3
				<b>Administrative:</b> Must be agreement between both Dalton & Whitefield. <b>Political:</b> Must be agreement between both Dalton & Whitefield. <b>Economic:</b> Must be agreement between both Dalton & Whitefield and Budget Constraints						

Potential Mitigation Action Item	Affected Location	Type of Activity	Total	S	T	A	P	L	E	E
<b>Action Item #29:</b> Obtain and install dry hydrants at locations that were recommended in the prior hazard mitigation plan; locations indicated are Hazen Pond, Mirror Lake & Burns Pond (WF8) (Table 7.1)	Hazen Pond, Mirror Lake & Burns Pond	Prevention Emergency Service Protection Natural Resource Protection Property Protection Structural Projects	17	3	3	3	3	3	1	1
				<i>Economics: Budget Constraints</i> <i>Environmental: Could require DES permitting</i>						
<b>Action Item #30:</b> Obtain funding and purchase a new rescue pumper for the Fire Department. (Table 7.1)	Fire Station	Emergency Service Protection	19	3	3	3	3	3	1	3
				<i>Economic: Budget Constraints</i>						
<b>Action Item #31:</b> Obtain funding and purchase water rescue equipment for the Fire Department. (Table 7.1)	Fire Station	Emergency Service Protection	19	3	3	3	3	3	1	3
				<i>Economic: Budget Constraints</i>						
<b>Action Item #32:</b> Work with the Mount Washington Regional Airport Commission to obtain funding for a generator to be used for vital airport functions at this important critical facility. Tables 6.1 & 7.1)	Mount Washington Regional Airport	Emergency Service Protection	19	3	3	3	3	3	1	3
				<i>Economic: Budget Constraints</i>						



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## 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 committee 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 below). 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 operation 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.

Final Priority	Problem Statement Mitigation Action Item	Hazard Addressed	Responsible Department	Funding or Support	Time Frame	Est. Cost	STAP LEE
0-1	<p><b>Problem Statement:</b> Hydrants that are used by the Fire Department are not maintained on a regular basis.</p> <p><b>Action Item #1:</b> Develop a hydrant maintenance program that will ensure functionality of all hydrants in the Community. (WF8)</p>	Wildfire	Water Department	Local & Grants	Short Term Ongoing for the Life of the Plan	High Cost: >\$10,000 (if new hydrants need replacing)	19
0-2	<p><b>Problem Statement:</b> The schools' Emergency Operations Plans need updating now and on a continuous basis in years ahead.</p> <p><b>Action Item #2:</b> Participate in the review and update of the schools' Emergency Operations Plans. (Table 6.1)</p>	All Hazards	SAU 36 & Emergency Management Director	Local	Short Term Ongoing for the Life of the Plan	Low Cost: <\$1,000 or Staff time only	21
0-3	<p><b>Problem Statement:</b> The NH Emergency Notification System (ENS) 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 and unlisted numbers as well as emails.</p> <p><b>Action Item #3:</b> Provide public outreach to encourage all residents to contact NH ENS to add cell numbers, emails and unlisted numbers and to verify information; use the website, a possible mailing, the Town Report or a sign-up at Town Meeting. (MU14) (Table 6.1)</p>	All Hazards	Emergency Management Director, Police Chief & Fire Chief	Local	Short Term Ongoing for the Life of the Plan	Low Cost: <\$1,000 or Staff time only	21
0-4	<p><b>Problem Statement:</b> Not all of Whitefield's town officials, and others who may have to respond to an emergency, have received NIMS &amp; ICS training.</p> <p><b>Action Item #4:</b> Encourage all town officials and new hires to take NIMS 700 and ICS 100 and 200. (Table s 6.1 &amp; 7.1)</p>	All Hazards	Emergency Management Director	Local	Short Term Ongoing for the Life of the Plan	Low Cost: <\$1,000 or Staff time only	21

Final Priority	Problem Statement Mitigation Action Item	Hazard Addressed	Responsible Department	Funding or Support	Time Frame	Est. Cost	STAP LEE
0-5	<p><b>Problem Statement:</b> Residents may not be aware of emergency procedures or preventative techniques that can be done to protect their lives and property; it is difficult to convey these messages and to provide Public Outreach via mail or personal contact.</p> <p><b>Action Item #5:</b> Establish an interactive emergency webpage for educating the public on hazard mitigation and preparedness measures (MU14) by adding to the Town's Emergency Management Services 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). (Table 7.1)</p>	All Hazards & Severe Wind, Drought, Earthquake, Extreme Temperatures, Hail, Lightning, Severe Winter Weather, Tornado & Wildfire	Emergency Management Director & other Town Departments	Local	Short Term Ongoing for the Life of the Plan	Low Cost: <\$1,000 or Staff time only	21
0-6	<p><b>Problem Statement:</b> The Fire Departments needs to continue to provide fire prevention awareness programs at the Town's school.</p> <p><b>Action Item #6:</b> Continue to provide fire prevention awareness programs at the Town's schools and public outreach on fire mitigation techniques and safety wherever possible in the Community. (Table 7.1)</p>	Wildfire	Fire Department	Local	Short Term Ongoing for the Life of the Plan	Low Cost: <\$1,000 or Staff time only	21

Final Priority	Problem Statement Mitigation Action Item	Hazard Addressed	Responsible Department	Funding or Support	Time Frame	Est. Cost	STAP LEE
0-7	<p><b>Problem Statement:</b> Residents may not be aware of the steps they can take to reduce the risk of fire at their homes.</p> <p><b>Action Item #7:</b> Obtain and have available "Firewise" brochures to educate homeowners on methods to reduce fire risk around their homes (WF10); provide "Firewise" brochures to those residents seeking burn permits; advise residents of the importance of maintaining defensible space, the safe disposal of yard and household waste and the removal of dead or dry leaves, needles, twigs, and combustible materials from roofs, decks, eaves, porches and yards. (WF12) (Table 7.1)</p>	Wildfire	Fire Department	Local	Short Term Ongoing for the Life of the Plan	Low Cost: <\$1,000 or Staff time only	21
0-8	<p><b>Problem Statement:</b> There is currently no written survey of the functional needs population in Whitefield who may need special assistance at the time of an emergency.</p> <p><b>Action Item #8:</b> Create a voluntary database to identify those individuals at high risk of death, such as the elderly, homeless, etc. by developing a survey that asks for next of kin notification or other persons who can assist if needed; voluntary basis based on HIPAA; perhaps through mailing, the Town Report, at Town Meeting or on the Town's website. (ET3 &amp; WW6) (Table 7.1)</p>	All Hazards & Winter Weather & Extreme Temperatures	Emergency Management Director	Local	Short Term Ongoing for the Life of the Plan	Low Cost: <\$1,000 or Staff time only	21
0-9	<p><b>Problem Statement:</b> Residents and Builders may not be aware of flood regulations &amp; the availability of flood insurance through the NFIP.</p> <p><b>Action Item #9:</b> Advise the public about the local flood hazard, flood insurance and flood protection measures (F10) by obtaining and keeping on hand a supply of NFIP brochures to have available in the Town Offices; give NFIP materials to homeowners and builders when proposing new development or substantial improvements; encourage property owners to purchase flood insurance (F22), whether or not they are in the flood zone and provide appropriate links to the NFIP and Ready.gov on the Town's website or provide mailing materials. (Tables 6.1 &amp; 7.1)</p>	Flooding	Emergency Management Director & Public Works Department	Local	Short Term Ongoing for the Life of the Plan	Low Cost: <\$1,000 or Staff time only	21

Final Priority	Problem Statement Mitigation Action Item	Hazard Addressed	Responsible Department	Funding or Support	Time Frame	Est. Cost	STAP LEE
0-10	<p><b>Problem Statement:</b> In addition to efforts by DOT and Eversource, the Town maintains a program to clear brush, downed trees and other debris and to remove weakened tree limbs in an effort to prevent damage from natural hazards; this work needs to continue; brush along roadsides, hanging limbs and dying trees can damage power lines and structures in severe wind events and can create fuel for wildfires.</p> <p><b>Action Item #10:</b> Continue program to mow roadsides and cut limbs and branches in an effort to mitigate the effects of wind damage to power lines and structures and to ensure defensible space for mitigating wildfires; continue tree maintenance program to reduce or eliminate the damage that may result during a natural hazard such as a wildfire, windstorm, hurricane or tropical storm. <b>(SW4 &amp; WF7) (Table 6.1)</b></p>	Severe Wind, Downbursts, Tornadoes, Hurricanes & Wildfire	Emergency Management Director & Public Works Department	Local	<b>Short Term</b> Ongoing for the Life of the Plan	<b>Low Cost:</b> <\$1,000 or Staff time only	21
1-1	<p><b>Problem Statement:</b> The aging and undersized culvert on Pine Street is no longer working effectively to handle the flow of stormwater.</p> <p><b>Action Item #11:</b> Improve the flow of stormwater and eliminate flooding on Pine Street by replace the rotting 15" culvert with an 18-24", 100-foot long culvert <b>(FU13)</b></p>	Flooding	Public Works Department	Local & Grants	<b>Short Term</b> 1 year or less (1-12 months)	<b>High Cost:</b> >\$10,000	20
1-3	<p><b>Problem Statement:</b> A Table Top Exercise (TTX) was not done after the 2011 Emergency Operations Plan was developed.</p> <p><b>Action Item #12:</b> Conduct a Table Top Exercise (TTX) upon completion of the update to the Emergency Operations Plan in 2016 or as part of the Emergency Operations Plan planning procedures. <b>(Table 7.1)</b></p>	All Hazards	Emergency Management Director	Local	<b>Short Term</b> 1 year or less (1-12 months)	<b>Low Cost:</b> <\$1,000 or Staff time only	21

Final Priority	Problem Statement Mitigation Action Item	Hazard Addressed	Responsible Department	Funding or Support	Time Frame	Est. Cost	STAP LEE
1-2	<p><i>Problem Statement: The Whitefield Emergency Operations Plan (2010) is in need of the recommended five-year update; deferred to this Plan for the 2016 update.</i></p> <p><b>Action Item #13:</b> Update the Emergency Operations Plan to increase the Town's ability to respond to disasters and to mitigate future or continued occurrences; incorporate this Plan as an annex to the Emergency Operations Plan. (Tables 6.1 &amp; 7.1)</p>	All Hazards	Emergency Management Director	Local & Grants	Short Term 1 year or less (1-12 months)	Low Cost: <\$1,000 or Staff time only	21
1-4	<p><i>Problem Statement: The Whitefield Capital Improvement Plan (CIP) needs to be reviewed and amended to recognize long term projects in this Plan.</i></p> <p><b>Action Item #14:</b> Review and update the Capital Improvement Plan (CIP) to include recommendations for long term projects that are identified in this Hazard Mitigation Plan. (MU6, WF2 &amp; F1) (Table 6.1)</p>	All Hazards & Flooding, Wildfire	Planning Board	Local	Short Term 1 year or less (1-12 months)	Medium Cost: \$1,000-\$10,000	21
1-5	<p><i>Problem Statement: The Town is only about 35% compliant with regards to the placement of 911 signage for emergency responders.</i></p> <p><b>Action Item #15:</b> Consider ways to get 911 signage more compliant so that emergency responders can better assist the public at the time of need; perhaps through purchase of signs by the Town, ordinance changes and/or public outreach. (Table 6.1)</p>	All Hazards	Emergency Management Director, Planning Board, Public Works Department, Fire Department & Police Department	Local	Short Term 1 year or less (1-12 months)	High Cost: >\$10,000	18
1-6	<p><i>Problem Statement: The new Whitefield Town Office building does not have lightning protection.</i></p> <p><b>Action Item #16:</b> Obtain funding and install a lightning rod on the new Town Office building. (L1).</p>	Lightning	Emergency Management Director	Local	Short Term 1 year or less (1-12 months)	Medium Cost: \$1,000-\$10,000	21

Final Priority	Problem Statement Mitigation Action Item	Hazard Addressed	Responsible Department	Funding or Support	Time Frame	Est. Cost	STAP LEE
2-1	<p><i><b>Problem Statement:</b> The Whitefield Comprehensive Development Guide was most recently updated in 2012; the Guide is being reviewed, but currently does not include elements from this Hazard Mitigation Plan.</i></p> <p><b>Action Item #17:</b> Review the Whitefield Comprehensive Development Guide and include a review of this Hazard Mitigation Plan for incorporation of possible mitigation actions items. (Tables 6.1 &amp; 7.1)</p>	All Hazards	Planning Board	Local	Medium 1-3 years (13-36 months)	Medium Cost: \$1,000-\$10,000	17
2-2	<p><i><b>Problem Statement:</b> Whitefield's subdivision regulations are in need of a complete review and revision which should include recommendations for hazard reduction.</i></p> <p><b>Action Item #18:</b> Review and revise Whitefield's subdivision regulations to include clear language regarding requirements for fire suppression (cisterns, fire ponds, etc.), building on steep slopes, drainage, better signage (911) and other hazard reducing regulations for new subdivisions. (MU7, WF3 &amp; F1) (Table 6.1)</p>	All Hazards & Wildfire & Flooding	Planning Board	Local	Medium 1-3 years (13-36 months)	Low Cost: <\$1,000 or Staff time only	17
2-3	<p><i><b>Problem Statement:</b> The Town's driveway and road standards do not adequately address steep slopes, water drainage and other road issues, particularly with regard to roads for new subdivisions.</i></p> <p><b>Action Item #19:</b> Review the current road standards in Whitefield and update them according to the Public Works Department's recommendations to ensure that roads in new subdivisions address steep slopes, water drainage and other road issues. (F17) (Table 6.1)</p>	All Hazards & Flooding	Planning Board	Local	Medium 1-3 years (13-36 months)	Medium Cost: \$1,000-\$10,000	21

Final Priority	Problem Statement Mitigation Action Item	Hazard Addressed	Responsible Department	Funding or Support	Time Frame	Est. Cost	STAP LEE
2-4	<p><b>Problem Statement:</b> <i>The Town has not adopted the International Building Codes (IBC) or the International Residential Codes (IRC) that are used by the State of NH; the Town requires building permits but there is no enforcement of the State's codes.</i></p> <p><b>Action Item #20:</b> Review current procedures and zoning provisions with a goal of making a presentation or recommendations at the 2017 Town Meeting; consider adopting the International Building Code (IBC) and the International Residential Code (IRC). (F4, EQ1, SW1, WW1 &amp; MU8) (Table 6.1)</p>	All Hazards & Flooding, Earthquake, Severe Wind, Severe Winter Weather	Planning Board	Local	Medium 1-3 years (13-36 months)	Medium Cost: \$1,000-\$10,000	17
2-5	<p><b>Problem Statement:</b> <i>The Whitefield Master Plan (2009) is in need of a review and update.</i></p> <p><b>Action Item #21:</b> Review and update the Master Plan and incorporate a natural hazards section and mitigation action items from this Plan if applicable. (MU6, WF2 &amp; F1) (Table 6.1)</p>	All Hazards & Flooding, Wildfire	Planning Board	Local	Medium 1-3 years (13-36 months)	High Cost: >\$10,000	21
2-6	<p><b>Problem Statement:</b> <i>The town-owned bridge on Hazen Road over the Johns River has been replaced with a temporary bridge; a permanent bridge is needed.</i></p> <p><b>Action Item #22:</b> Complete an engineering study to replace the temporary bridge on Hazen Road, over the Johns River, with a new and improved bridge that will improve the flow of storm water in the area. (F13) (Table 7.1)</p>	Flooding	Public Works Department	Local	Medium 1-3 years (13-36 months)	High Cost: >\$10,000	20
2-7	<p><b>Problem Statement:</b> <i>White Mountains Regional High School, which is the designated Primary Shelter, does not have emergency backup power.</i></p> <p><b>Action Item #23:</b> Work with the SAU, the Superintendent and other local entities to purchase and install a permanent generator at White Mountains Regional High School so that this facility can more effectively be utilized as the Primary Shelter serving not only Whitefield but possibly the entire region. (MU13) (Tables 6.1 &amp; 7.1)</p>	All Hazards	Emergency Management Director, SAU & possibly surrounding towns	Local & Grants	Medium 1-3 years (13-36 months)	High Cost: >\$10,000	16

Final Priority	Problem Statement Mitigation Action Item	Hazard Addressed	Responsible Department	Funding or Support	Time Frame	Est. Cost	STAP LEE
2-8	<p><b>Problem Statement:</b> <i>The Whitefield Public Works Department does not have a sufficient generator; power also is needed to operate pumps.</i></p> <p><b>Action Item #24:</b> Obtain funding and install a generator at the Whitefield Public Works Department to ensure proper functioning at the time of an emergency <b>(MU14)</b>.</p>	All Hazards	Emergency Management Director & Public Works Department	Local & Grants	<b>Medium</b> 1-3 years (13-36 months)	<b>Medium Cost:</b> \$1,000-\$10,000	20
2-9	<p><b>Problem Statement:</b> <i>The Whitefield Elementary School, which is the designated Secondary Shelter, does not have sufficient emergency backup power.</i></p> <p><b>Action Item #25:</b> Work with the SAU, the Superintendent and other local entities to purchase and install a permanent and whole-facility generator at the Whitefield Elementary School. <b>(MU13) (Tables 6.1 &amp; 7.1)</b></p>	All Hazards	Emergency Management Director, SAU & possibly surrounding towns	Local & Grants	<b>Medium</b> 1-3 years (13-36 months)	<b>High Cost:</b> >\$10,000	16
2-10	<p><b>Problem Statement:</b> <i>Some security issues in the Town have not been addressed; the Town's wells, the water supply and storage reservoirs should be reviewed for security needs.</i></p> <p><b>Action Item #26:</b> Address the security issues at the Town's water supply facilities and storage reservoirs, perhaps by installing better fencing. <b>(Table 7.1)</b></p>	Terrorism	Water Department	Local	<b>Medium</b> 1-3 years (13-36 months)	<b>Medium Cost:</b> \$1,000-\$10,000	20
2-11	<p><b>Problem Statement:</b> <i>Although the Whitefield Department of Public Works does a good job cleaning and repairing drainage basins and culverts, a written maintenance plan should be developed to ensure continuity of actions and efficient storm water management.</i></p> <p><b>Action Item #27:</b> Develop a written storm water maintenance plan in order to ensure more efficient storm water management; size, location, age, time for replacement, etc. for culverts and ditches throughout the Town. <b>(F5)</b></p>	Flooding	Public Works Department	Local	<b>Medium</b> 1-3 years (13-36 months)	<b>Low Cost:</b> <\$1,000 or Staff time only	21

Final Priority	Problem Statement Mitigation Action Item	Hazard Addressed	Responsible Department	Funding or Support	Time Frame	Est. Cost	STAP LEE
2-12	<p><b>Problem Statement:</b> <i>The culvert on Parker Road at Chase Brook in Dalton is underperforming causing flooding from storm water to flow into Whitefield.</i></p> <p><b>Action Item #28:</b> Work with the neighboring town of Dalton on a resolution for storm water issues caused by the underperforming culvert on Parker Road at Chase Brook. <b>(FU13) (Table 7.1)</b></p>	Flooding	Public Works Department	Local & Grants	<b>Medium</b> 1-3 years (13-36 months)	<b>High Cost:</b> >\$10,000	18
3-1	<p><b>Problem Statement:</b> <i>The installation of three dry hydrants that were recommended in the prior Hazard Mitigation Plan was not done.</i></p> <p><b>Action Item #29:</b> Obtain and install dry hydrants at locations that were recommended in the prior hazard mitigation plan; locations indicated are Hazen Pond, Mirror Lake &amp; Burns Pond <b>(WF8) (Table 7.1)</b></p>	Wildfire	Fire Department & Water Department	Local & Grants	<b>Long Term</b> 3-5 years (37-60 months)	<b>High Cost:</b> >\$10,000	17
3-2	<p><b>Problem Statement:</b> <i>The Town is in need of a new rescue pumper.</i></p> <p><b>Action Item #30:</b> Obtain funding and purchase a new rescue pumper for the Fire Department. <b>(Table 7.1)</b></p>	Wildfire	Fire Department	Local & Grants	<b>Long Term</b> 3-5 years (37-60 months)	<b>High Cost:</b> >\$10,000	19
3-3	<p><b>Problem Statement:</b> <i>The Town is in need of water rescue equipment.</i></p> <p><b>Action Item #31:</b> Obtain funding and purchase water rescue equipment for the Fire Department. <b>(Table 7.1)</b></p>	Wildfire	Fire Department	Local & Grants	<b>Long Term</b> 3-5 years (37-60 months)	<b>High Cost:</b> >\$10,000	19
3-4	<p><b>Problem Statement:</b> <i>The Mount Washington Regional Airport in Whitefield does not have a generator.</i></p> <p><b>Action Item #32:</b> Work with the Mount Washington Regional Airport Commission to obtain funding for a generator to be used for vital airport functions at this important critical facility. <b>(Tables 6.1 &amp; 7.1)</b></p>	All Hazards	Emergency Management Director & Board of Selectmen	Local & Grants	<b>Long Term</b> 3-5 years (37-60 months)	<b>High Cost:</b> >\$10,000	19

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## 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 Whitefield Hazard Mitigation Plan Update 2017 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 item. 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. Whitefield completed its last hazard mitigation plan in 2011 and has completed many of projects from that Plan. Examples of these can be found in Table 7.1 and include items such as completing a retaining wall on Brown Street, replacing the Water Street Bridge over the Johns River and the continued maintenance and improvement program for town-owned roads. The Town was able to integrate these actions into other town activities, budgets, plans and mechanisms.



*Brown Street retaining wall before and after mitigation (see Table 7.1, Action Item #16, Priority 1-5  
Photo Credit: MAPS*

The Town will incorporate elements from this Plan into the following documents:

**Whitefield Master Plan:**

Traditionally, Master Plans are updated every 5 to 10 years and detail the use of capital reserves funds and capital improvements within the Town. A complete update of the Whitefield’s Master Plan was completed in 2009 and is due for a recommended update in 2019. Future updates of the Master Plan will include a Natural Hazards section and will integrate concepts, ideas and action items from this Hazard Mitigation Plan. **(Action Item #21)**

**Whitefield Emergency Operations Plan 2010 (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 Whitefield EOP was completed in 2010; an update for the Emergency Operations Plan is in the process of being updated with completion expected in 2017. The new EOP will include elements from this hazard mitigation plan. **(Action Items #2 & #13)**

**Town Budget, Capital Improvement Plan & Capital Reserve Funds:**

The Town of Whitefield maintains a Capital Improvement Plan and also maintains Capital Reserve Funds for major expenditures; the Capital Reserve Fund is adjusted annually in coordination with the Board of Selectmen 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 including Action Item #14.**

**The Whitefield Comprehensive Development Guide, Ordinances & Subdivision Regulations:**

As time goes by and the needs of the Town change, the Town’s planning mechanisms will be reviewed and updated. In coordination with these actions, the Planning Board will review this Hazard Mitigation Plan and incorporate any changes that help mitigate the susceptibility of the Community and its citizens to the dangers of natural or human-caused disasters. An example of this integration can be seen in this Plan’s mitigation action item. **(Action Items #17, #18, #19 and #20)**

The local governments will modify other plans and actions as necessary to incorporate hazard and/or wildfire issues; the Board of Selectmen 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**

The Plan was presented to the This Plan was completed in a series of open meetings beginning on November 12, 2015. 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, HESM, FEMA, DRED 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.

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)

*(Note: for the purposes of clarity, the above paragraph was written in future tense, noting that these actions have not yet transpired – this box will be deleted when final hard copy is distributed)*



**US Route Flooding, August 2009**  
**Photo Credit: Town of Whitefield**

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## 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 Whitefield, NH

Current Plan Expiration: July 12, 2016  
PDM14 Grant Expiration: September 30, 2016

This Agreement between the Town of Whitefield (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 2016 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 Whitefield 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 Whitefield Hazard Mitigation Plan.
- After final approval is received from FEMA, MAPS will provide the Town with a one copy 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; additional copies of the Plan will be priced according to number of pages. 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 insure that the Planning Team includes members who are able to support the planning process by identifying available Town resources including people who will have access to and can provide pertinent data. The planning team should include, but not be limited to, such Town members as the local Emergency Management Director, the Fire, Ambulance and Police Chiefs, members of the 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 insure 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 Whitefield 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 Whitefield, 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 September 30, 2016 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.

➤ **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 Whitefield. 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 Whitefield 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 50 Hazard Mitigation Plans, more than 35 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

➤ **Contacts:**

**For Mapping & Planning Solutions**

June Garneau  
P.O. Box 283, 91 Cherry Mountain Place  
Twin Mountain, NH 03595  
jgarneau@mappingandplanning.com

**For the Town**

Ed Samson, III  
EMD & Police Chief  
56 Littleton Road  
Whitefield, NH 03598  
Samson1682@ne.rr.com  
603-837-9086

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

**FOR THE TOWN OF WHITEFIELD, NH**



Signature

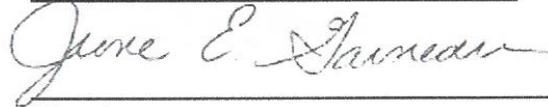
*Ed Samson* Chief of Police / EMD

Printed Name/Title

*11/17/15*

Date

**FOR MAPPING AND PLANNING SOLUTIONS**



Signature

June Garneau, Owner  
September 16, 2015

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

## B. Conditional Approval Letter from FEMA

### Whitefield, NH - Approvable Pending Adoption

Hazard Mitigation Planning <HazardMitigationPlanning@dos.nh.gov>

Sent: Wed 7/12/2017 1:23 PM

To: 'June Garneau'

Cc: 'petercorey@myfairpoint.net'; 'Edward'

Good afternoon!

The Department of Safety, Division of Homeland Security & Emergency Management (HSEM) has completed its review of the Whitefield, 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 [Whitney.Welch@dos.nh.gov](mailto:Whitney.Welch@dos.nh.gov) or 603-223-3667.

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

Sincerely,

Whitney

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

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

**CERTIFICATE OF ADOPTION**

**WHITEFIELD, NH**

**BOARD OF SELECTMEN**

**A RESOLUTION ADOPTING THE TOWN OF WHITEFIELD HAZARD MITIGATION PLAN UPDATE 2017**

WHEREAS, the Town of Whitefield 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 Whitefield has developed and received conditional approval from the Federal Emergency Management Agency (FEMA) for its Hazard Mitigation Plan Update 2017 under the requirements of 44 CFR 201.6; and

WHEREAS, public and committee meetings were held between November 12, 2015 and April 28, 2016 regarding the development and review of the Hazard Mitigation Plan Update 2017 and

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

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

RESOLVED by the Board of Selectmen:

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

**Whitefield, 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 Board of Selectmen by the Emergency Management Director.

Adopted this day, the \_\_\_\_\_ of \_\_\_\_\_, 2017

**Chairman of the Board of Selectmen**

**Member of the Board of Selectmen**

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Print Name

\_\_\_\_\_  
Print Name

**Member of the Board of Selectmen**

**Emergency Management Director**

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Print Name

\_\_\_\_\_  
Print Name

**IN WITNESS WHEREOF**, the undersigned has affixed his/her signature and the corporate seal of the Town of Whitefield on this day, \_\_\_\_\_, 2017

\_\_\_\_\_  
Notary

\_\_\_\_\_  
Expiration

\_\_\_\_\_  
Date

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

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

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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 DRED**

**Whitefield, NH  
A Resolution Approving the  
Whitefield Hazard Mitigation Plan Update 2017  
As a Community Wildfire Protection Plan**

Several public meetings and committee meetings were held between November 12, 2015 and April 28, 2016 regarding the development and review of the Whitefield Hazard Mitigation Plan Update 2017. The Whitefield Hazard Mitigation Plan Update 2017 contains potential future projects to mitigate hazard and wildfire damage in the Town of Whitefield.

The Fire Chief along with the Board of Selectmen and EMD desire that this Plan and be accepted by the Department of Resources and Economic Development (DRED) as a Community Wildfire Protection Plan, having adhered to the requirements of said Plan.

The Board of Selectmen, EMD and the Fire Chief approve the Whitefield Hazard Mitigation Plan Update 2017 and understand that with approval by DRED, this Plan will also serve as a Community Wildfire Protection Plan.

For the Town of Whitefield

APPROVED and SIGNED this day, \_\_\_\_\_, 2017.

\_\_\_\_\_  
Chairman of the Board of Selectmen

\_\_\_\_\_  
Printed Name

\_\_\_\_\_  
Fire Chief

\_\_\_\_\_  
Printed Name

\_\_\_\_\_  
Emergency Management Director

\_\_\_\_\_  
Printed Name

**For the Department of Resources and Economic Development**

APPROVED and SIGNED this day, \_\_\_\_\_, 2017.

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

APPROVED and SIGNED this day, \_\_\_\_\_, 2017.

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

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

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**F. Annual Review or Post Hazard Concurrence Forms**

**YEAR ONE**

Check all that apply

- Annual Review & Concurrence - **Year One**: \_\_\_\_\_ (Date)
- Annual Review & Concurrence – Post Hazardous Event: \_\_\_\_\_ (Event/Date)
- Annual Review & Concurrence – Post Hazardous Event: \_\_\_\_\_ (Event/Date)

The Town of Whitefield, 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.

Whitefield, 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 2017 Hazard Mitigation Plan Update

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**Please use reverse side for additional notes** 



**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 Whitefield, 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.

Whitefield, 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 2017 Hazard Mitigation Plan Update

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**Please use reverse side for additional notes** 



**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 Whitefield, 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.

Whitefield, 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 2017 Hazard Mitigation Plan Update

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\_\_\_\_\_

**Please use reverse side for additional notes** 



**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 Whitefield, 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.

Whitefield, 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 2017 Hazard Mitigation Plan Update

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**Please use reverse side for additional notes** 



## Chapter 12: Appendices

- APPENDIX A: BIBLIOGRAPHY
- APPENDIX B: TECHNICAL AND FINANCIAL ASSISTANCE FOR HAZARD MITIGATION
  - *Hazard Mitigation Grant Program (HMGP)*
  - *Pre-Disaster Mitigation (PDM)*
  - *Flood Mitigation Assistance (FMA)*
  - *Repetitive Flood Claims (RFC)*
  - *Severe Repetitive Loss (SRL)*
- APPENDIX C: THE EXTENT OF HAZARDS
- APPENDIX D: PRESIDENTIAL DISASTER & EMERGENCY DECLARATIONS
- APPENDIX E: POTENTIAL MITIGATION IDEAS
- APPENDIX F: ACRONYMS
- APPENDIX G: MAP DOCUMENTS
  - *Map 1 – Base Risk Analysis*
  - *Map 2 – Historic Fires & the Wildland Urban Interface (WUI)*
  - *Map 3 – Past & Potential Areas of Concern*
  - *Map 4 – Critical Infrastructure & Key Resources*

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## Appendix A: Bibliography

### Documents

- **Local Hazard Mitigation Planning Review Guide**, FEMA, October 2011
- **Local Hazard Mitigation Planning Handbook**, FEMA, March 2013
- **Mitigation Ideas, A Resource for Reducing Risk to Natural Hazards**, FEMA, January 2013
- **Hazard Mitigation Unified Guidance**, FEMA, July 12, 2013
- **Hazard Mitigation Assistance Guidance**, FEMA, February 27, 2015
- **Hazards Mitigation Plans**
  - Whitefield Hazard Mitigation Plan, 2011
  - Conway Hazard Mitigation Plan, 2014
  - Carroll Hazard Mitigation Plan, 2015
  - Columbia Hazard Mitigation Plan, 2016
- **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.nhdfi.org/fire-control-and-law-enforcement/fire-statistics.aspx>
- **Disaster Mitigation Act (DMA) of 2000**, Section 101, b1 & b2 and Section 322a
  - <http://www.fema.gov/library/viewRecord.do?id=1935>
- **Economic & Labor Market Information Bureau**, NH Employment Security, January 2016; Community Response for Whitefield, Received, 6/1/2015, Census 2000 and Revenue Information derived from this site; <http://www.nhes.nh.gov/elmi/products/cp/profiles-pdf/Whitefield.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 of Energy and Planning; <http://www.nh.gov/oep/planning/programs/fmp/join-nfip.htm>
- Code of Federal Regulations; Title 14, Aeronautics and Space; Part 1, Definitions and Abbreviations; [https://www.ecfr.gov/cgi-bin/text-idx?tpl=/ecfrbrowse/Title14/14tab\\_02.tpl](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>17</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?**

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

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

FEMA'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>17</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.

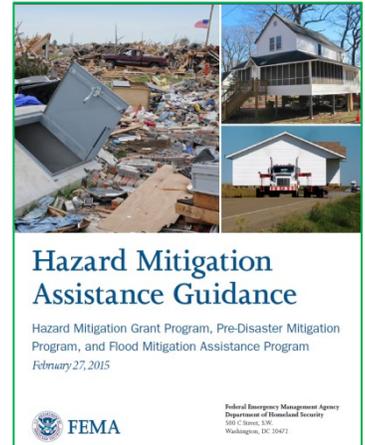
**B. Pre-Disaster Mitigation (PDM)**

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>18</sup>:

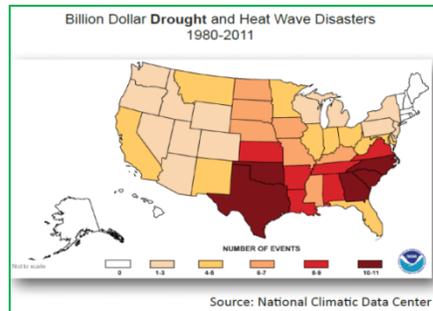
Classification	Description	Inspection Intervals
<b>Non-Menace</b>	A dam that is not a menace because it is in a location and of a size that failure or misoperation of the dam would not result in probable loss of life or loss to property. The dam must be less than six feet in height if the storage capacity 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

[1] 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>18</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.

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>19</sup>

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

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.

<sup>19</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>20</sup>

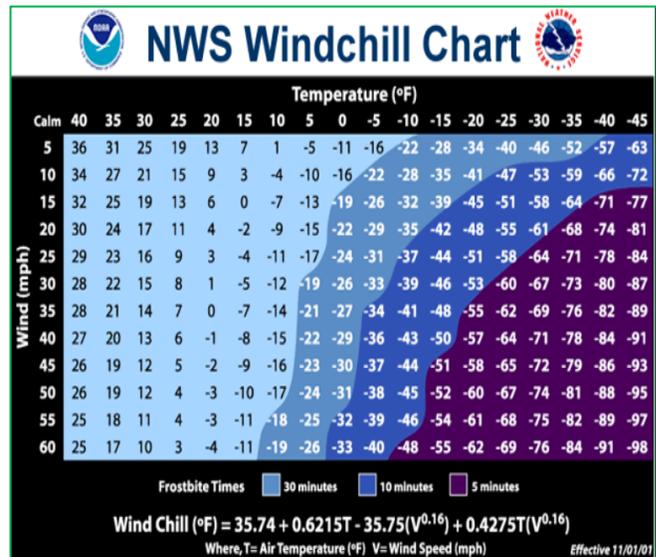
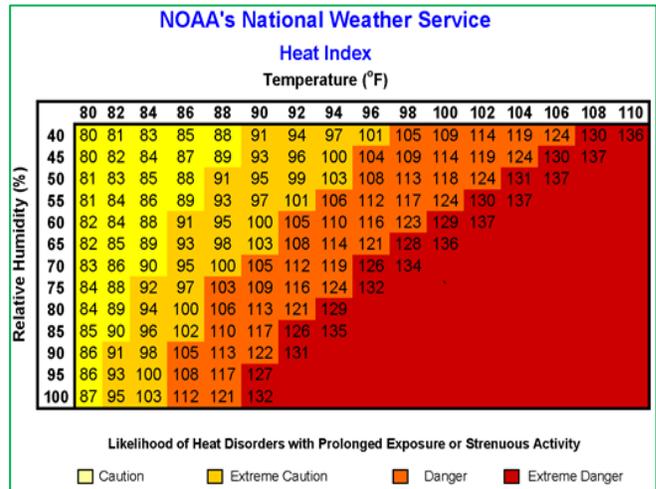
**\*EXTREME TEMPERATURES**

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.

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>21</sup> The chart above explains the likelihood of heat disorders that may result from high heat.<sup>22</sup>



<sup>20</sup>Mitigation Ideas, A Resource for Reducing Risk to Natural Hazards, FEMA, January 2013

<sup>21</sup> NOAA, Index/Heat Disorders; <http://www.srh.noaa.gov/ssd/html/heatwv.htm>

<sup>22</sup> NOAA; <http://www.nws.noaa.gov/os/heat/index.shtml>

EXTREME COLD

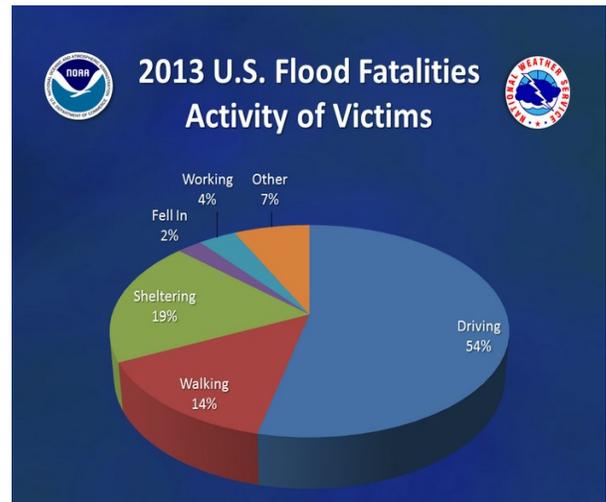
What constitutes extreme cold and its effects can vary across different areas of the country. In regions relatively unaccustomed to winter weather, near freezing temperatures are considered “extreme cold.” Whenever temperatures drop decidedly below normal and as wind speed increases, heat can leave your 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>23</sup> The National Weather Service Chart (previous page) shows windchill as a result of wind and temperature.<sup>24</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.



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 storm water 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.

<sup>23</sup> CDC; <http://www.bt.cdc.gov/disasters/winter/guide.asp> f

<sup>24</sup> National Weather Service; <http://www.nws.noaa.gov/om/windchill/>

FLOODING (DAM FAILURE)

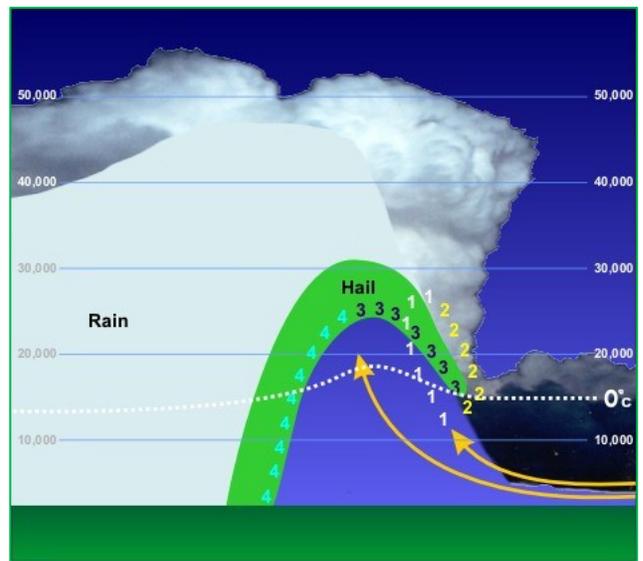
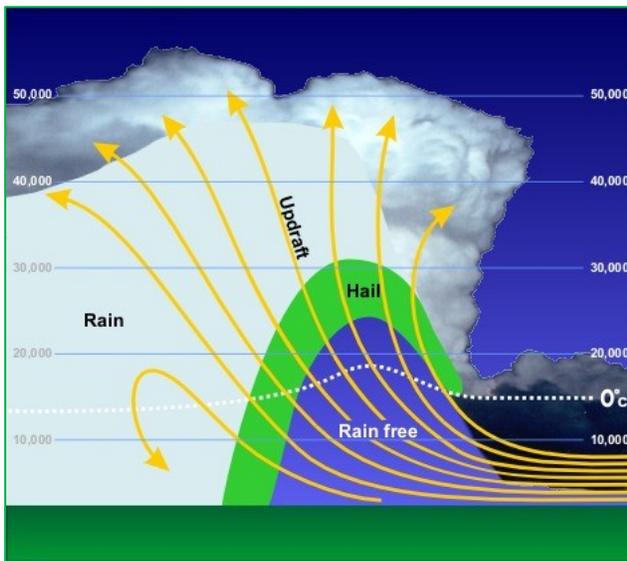
Flooding as a result of dam failure can be small enough to only affect the immediate area of the dam, or large enough to cause catastrophic results to cities, towns and human life that is below the dam. The extent of flooding depends largely on the size of the dam, the amount of water that is being held 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>25</sup>

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

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>26</sup> The charts below show how hail is formed.<sup>27</sup>



<sup>25</sup> NOAA National Severe Storms Laboratory; <https://www.nssl.noaa.gov/education/svrwx101/hail/>

<sup>26</sup> <http://www.pinterest.com/pin/126171227030590678/>

<sup>27</sup> <http://oceanservice.noaa.gov/education/yos/resource/JetStream/tstorms/hail.htm#hail>

**\*HIGH WIND (WINDSTORM)**

As stated by NOAA (National Oceanic & Atmospheric Administration), wind is defined as “The horizontal motion of the air past a given point. Winds begin with differences in air pressures. 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>28</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>29</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>28</sup> NOAA; <http://www.nws.noaa.gov/glossary/index.php?letter=w>

<sup>29</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>30</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>31</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)	96-110 mph 83-95 kt 154-177 km/h	<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.

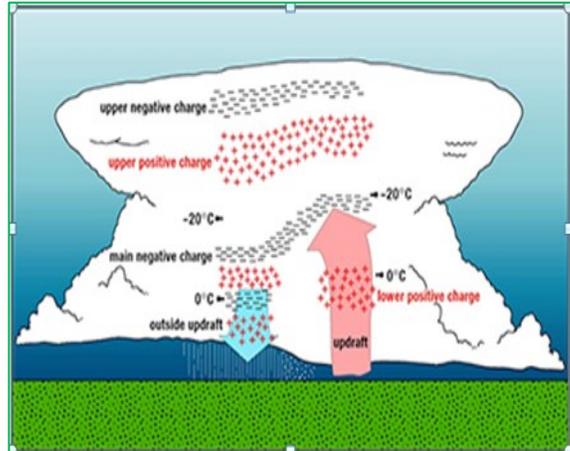
Rainfall from tropical storms has been reported at rates of up to 6 inches per hour; 43 inches of rain in a 24 hour period was reported in Alvin, TX as a result of Tropical Storm Claudette.<sup>32</sup>

<sup>30</sup> National Hurricane Center; <http://www.nhc.noaa.gov/aboutsshws.php>  
<sup>31</sup> National Hurricane Center, NOAA; <http://www.nhc.noaa.gov/aboutsshws.php>  
<sup>32</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)

### \*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>33</sup>

Thunder, a result of lightning, is created when the "lightning channel heats the air to around 18,000 degrees Fahrenheit..."<sup>34</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.



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

Although thunderstorms and their associated lightning can occur any time of year, in New England they are most likely to occur in the summer months and during the late afternoon or early evening hours and 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>35</sup>

<sup>33</sup> NOAA National Severe Storms Laboratory, <https://www.nssl.noaa.gov/education/svrwx101/lightning>

<sup>34</sup> Ibid

<sup>35</sup> Ibid

**\*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.

SNOW STORMS

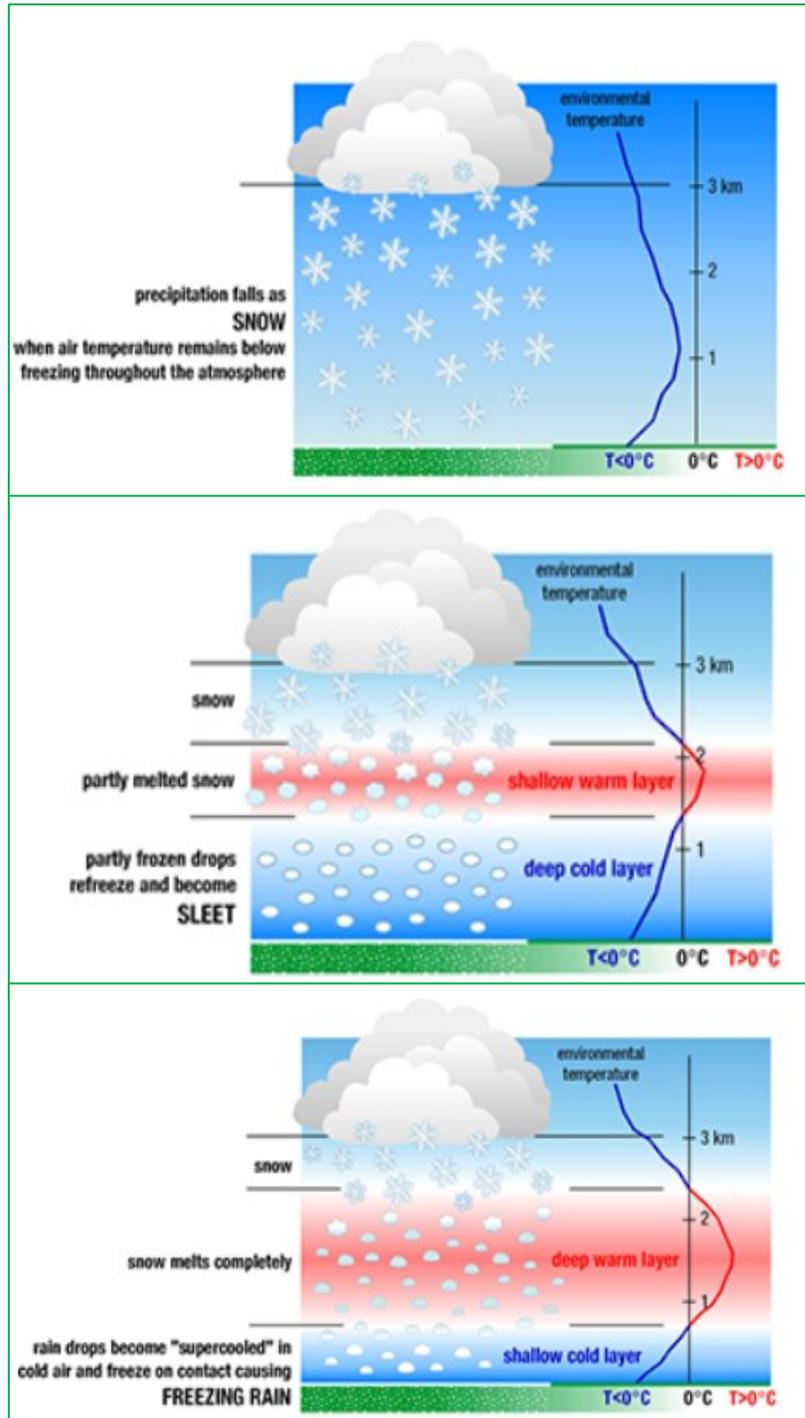
A winter storm can range from moderate snow to blizzard conditions. Blizzard conditions are considered blinding wind-driven snow over 35 mph that lasts several days. A severe winter storm deposits four or more inches of snow during a 12-hour period or six inches of snow during a 24-hour period.

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>36</sup>



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

<sup>36</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>37</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>38</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>39</sup>

<sup>37</sup> The Weather Channel, <http://www.weather.com/news/weather-winter/rating-ice-storms-damage-sperry-piltz-20131202>

<sup>38</sup> Copyright Richard Armstrong, NSIDC, <http://nsidc.org/cryosphere/snow/science/avalanches.html>

<sup>39</sup> NSIDC, <http://nsidc.org/cryosphere/snow/science/avalanches.html>; image credit: Betsy Armstrong

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

The third part of an avalanche is the “runout zone”. The runout zone is where the avalanche has come to a stop and left the largest and highest 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>40</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>41</sup>

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

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

<sup>40</sup> Copyright Richard Armstrong, NSIDC, <http://nsidc.org/cryosphere/snow/science/avalanches.html>

<sup>41</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>42</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>42</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>43</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>44</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>45</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>46</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>43</sup> NOAA - <http://www.srh.noaa.gov/jetstream/tstorms/wind.html>

<sup>44</sup> <http://www.nwcg.gov/pms/pubs/glossary/s.htm>

<sup>45</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>46</sup> International Wildland-Urban Interface Code, 2012, International Code Council, Inc.

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**Appendix D: NH Presidential Disaster & Emergency Declarations**

**Presidential Disaster Declarations**

Number	Description	Date of Event	Counties	Description
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.
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.

Number	Description	Date of Event	Counties	Description
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>
DR-1199	Ice Storms	January 7-25, 1998	NA	<b>Presidential Disaster Declaration DR-1199:</b>
DR-1144	Severe Storms/Flooding	October 20-23, 1996	NA	<b>Presidential Disaster Declaration DR-1144:</b>
DR-1077	Storms/Floods	October 20-November 15, 1995	NA	<b>Presidential Disaster Declaration DR-1077:</b>
DR-923	Severe Coastal Storm	October 30-31, 1991	NA	<b>Presidential Disaster Declaration DR-923:</b>
DR-917	Hurricane Bob, Severe Storm	August 18-20, 1991	NA	<b>Presidential Disaster Declaration DR-917:</b>

Number	Description	Date of Event	Counties	Description
DR-876	Flooding, Severe Storm	August 7-11, 1990	NA	<b>Presidential Disaster Declaration DR-876:</b>
DR-789	Severe Storms & Flooding	March 30-April 11, 1987	NA	<b>Presidential Disaster Declaration DR-789</b>
DR-771	Severe Storms & Flooding	July 29-August 10, 1986	NA	<b>Presidential Disaster Declaration DR-771:</b>
DR-549	High Winds, Tidal Surge, Coastal Flooding & Snow	16-Feb-78	NA	<b>Presidential Disaster Declaration DR-549:</b> Blizzard of 1978
DR-411	Heavy Rains, Flooding	21-Jan-74	NA	<b>Presidential Disaster Declaration DR-411:</b>
DR-399	Severe Storms & Flooding	11-Jul-73	NA	<b>Presidential Disaster Declaration DR-399:</b>
DR-327	Coastal Storms	18-Mar-72	NA	<b>Presidential Disaster Declaration DR-327:</b>
DR-11	Forest Fire	2-Jul-53	NA	<b>Presidential Disaster Declaration DR-11:</b>

**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 Snow Storm	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.
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.

Number	Description	Date of Event	Counties	Description
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: \$11,0021.18; 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 snow storms that hit the state earlier this year, according to disaster recovery officials. Total aid for all three storms is \$6,892,023.87 (January: \$3,658,114.66; February: \$1,121,727.20; March: \$2,113,182.01)
EM-3207	Snow	January, 22-23, 2005	Belknap, Carroll, Cheshire, Grafton, Hillsborough, Rockingham, Merrimack, Strafford & Sullivan	<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>47</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 .... Floodproof Residential & Non-Residential Structures
- FT17 .. Protect Infrastructure
- FT18 .. Protect Critical Facilities
- FT19 .. Construct Flood Control Measures
- FT20 .. Protect & Restore Natural Flood Mitigation Features
- FT21 .. Preserve Floodplains as Open Space
- FT22 .. Increase Awareness of Flood Risk & Safety
- FT23 .. 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>47</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
DRED.....	Department of Resources & Economic Development
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
NCRC&D.....	North Country Resource Conservation & Development Council
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
NIMS.....	National Incident Management System
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

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## **Appendix G: Map Documents**

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

*Map 1 – Base Risk Analysis*

*Map 2 – Historic Wildfires & Wildland Urban Interface*

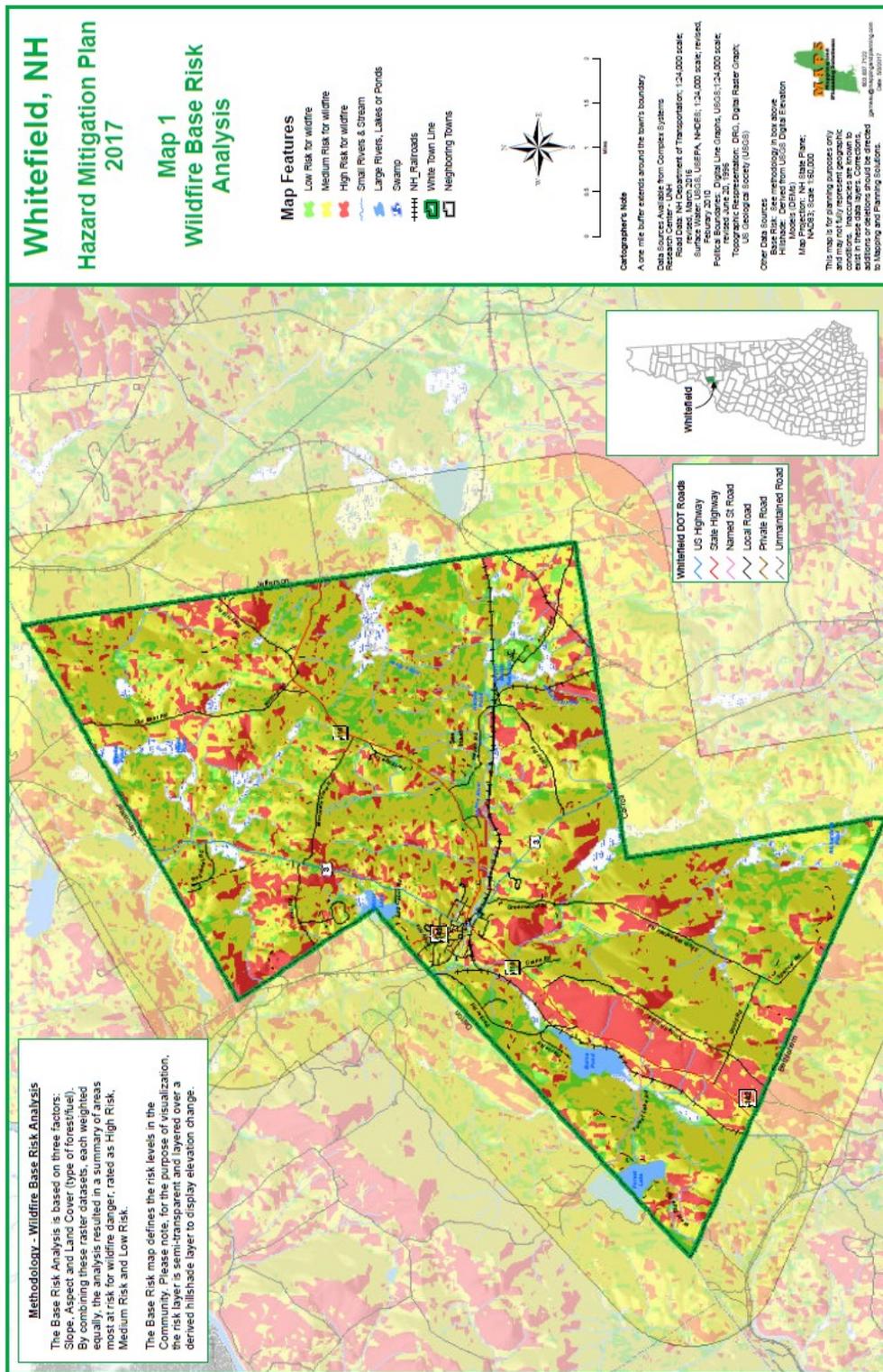
*Map 3 – Past & Potential Areas of Concern*

*Map 4 – Critical Infrastructure & Key Resources*

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MAP 1 – BASE RISK ANALYSIS

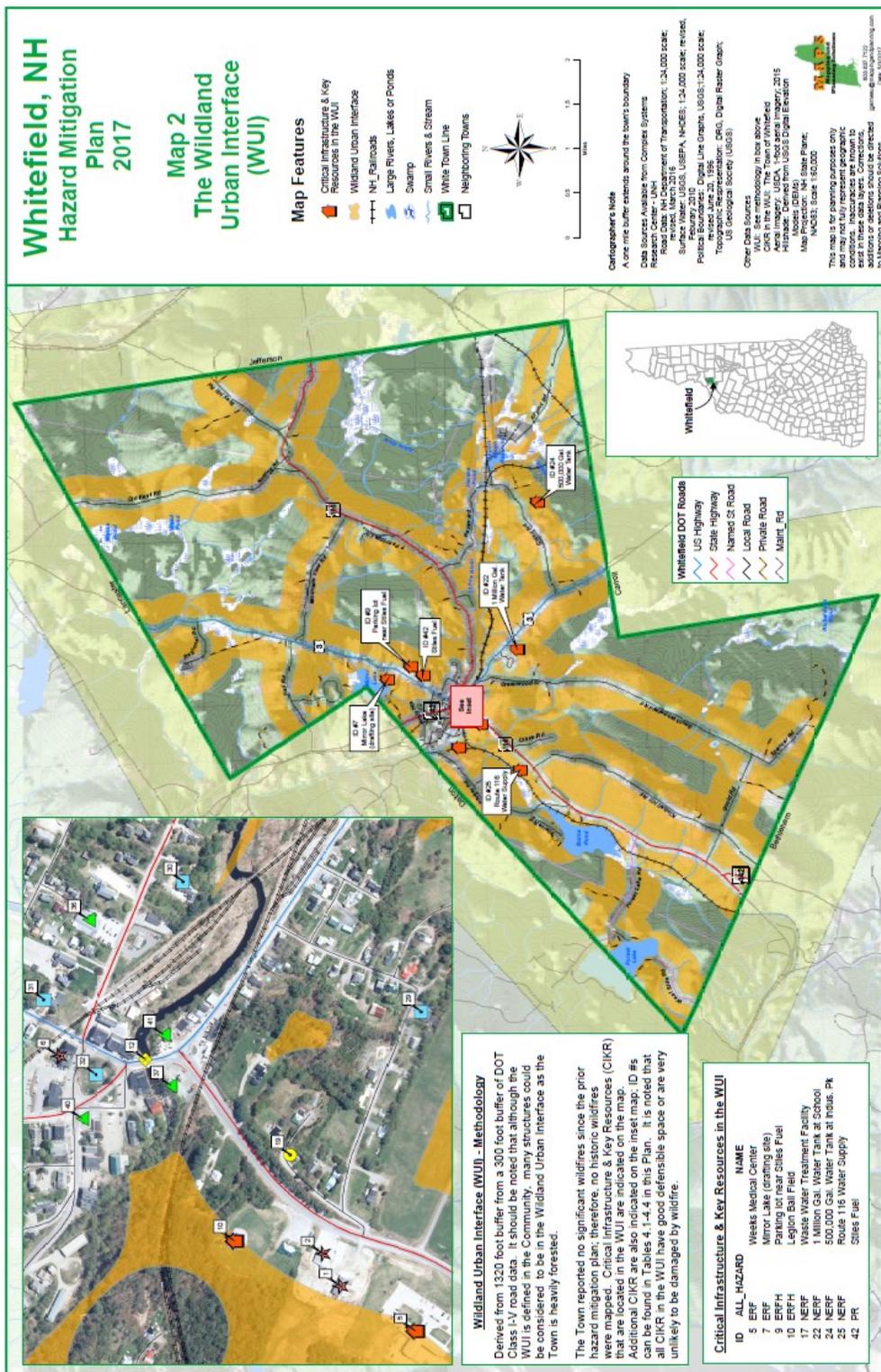
To be replaced with 11" x 17" map in final hard copy.



PLACE HOLDER FOR MAP 1

MAP 2 – HISTORIC WILDFIRES & THE WILDLAND URBAN INTERFACE

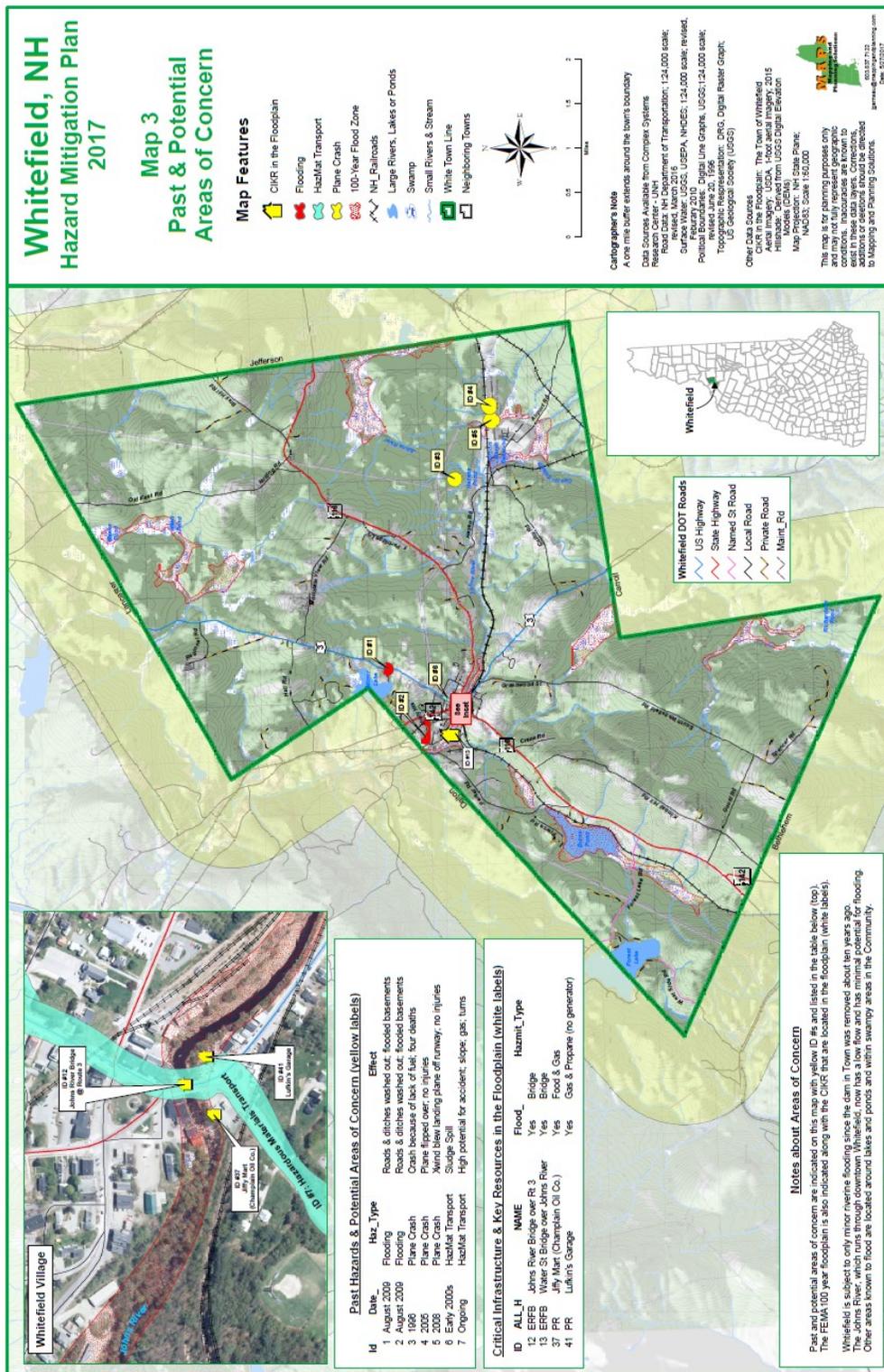
To be replaced with 11" x 17" map in final hard copy.



PLACE HOLDER FOR MAP 2

MAP 3 – PAST & POTENTIAL AREAS OF CONCERN

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



PLACE HOLDER FOR MAP 3



PLACE HOLDER FOR MAP 4

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*Whitefield Fire Station*  
*Photo Credit: MAPS*

**The Town of Whitefield**

Ed Samson, III  
EMD & Police Chief  
56 Littleton Road  
Whitefield, NH 03598  
Samson1682@ne.rr.com  
(603) 837-9086

**Mapping and Planning Solutions**

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