Piermont

Hazard Mitigation Plan Update 2017

PIERMONT

This Plan integrates the following:

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

August 9, 2017
Final for Town Adoption

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

With assistance from Mapping and Planning Solutions

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

-Dwight D. Eisenhower

HAZARD MITIGATION PLAN DEFINITIONS

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

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

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

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Cover Photo: Flooding NH Route 10, August 2008
Photo Credit: Town of Piermont

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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 Natural & Cultural Resources (DNCR). The Plan was created through a grant from New Hampshire Homeland Security & Emergency Management (HSEM). The following organizations have contributed invaluable assistance and support for this project:

- NH Homeland Security & Emergency Management (HSEM)
- Federal Emergency Management Agency (FEMA)
- NH Office of Strategic Initiatives (OSI))
- Mapping and Planning Solutions (MAPS)
- NH Forests & Lands (DNCR)

This Plan is an update to the prior Piermont Hazard Mitigation Plan, approved on February 3, 2012.

Approval Notification Dates for 2017 Update

Approved Pending Adoption (APA): ..... August 8, 2017
Jurisdiction Adoption: ..... _____, 2017
CWPP Approval: ..... _____, 2017
Plan Approval Date (FEMA): ..... _____, 2017
Plan Distribution (MAPS): ..... _____, 2017

Town of Piermont Hazard Mitigation Planning Team

The Town of Piermont 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:

- Bernie Marvin ..... Piermont EMD
- Tim Cole ..... Piermont Deputy EMD
- Randy Subjeck ..... Piermont BOS (Chair)
- Frank Rodiman ..... Piermont Road Agent
- Gary Hebert ..... Piermont Police Chief
- Debra Norwood .... Piermont Village School-Principal
- Ellen Putnam ..... Piermont FAST Squad
- Diane Kircher Piermont Citizen
- Malcolm Kircher..... Piermont Citizen
- Bruce Henry ..... Piermont Fire Department
- Helga Mueller ..... Piermont Planning Board
- Paul Hatch..... NH HSEM
- Jennifer Gilbert..... NH OSI
- June Garneau..... MAPS
- Olin Garneau ..... MAPS

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

Two NH Departments have recently changed their names:

- ***The NH Office of Energy & Planning (OEP) is now the NH Office of Strategic Initiatives (NH OSI)***
- ***The NH Department of Economic Development (DRED) is now the NH Department of Natural & Cultural Resources (DNCR)***

Acronyms Associated with the above list:

EMD ..... Emergency Management Director
BOS..... Board of Selectmen
HSEM..... Homeland Security & Emergency Management
MAPS ..... Mapping and Planning Solutions
OSI ..... Office of Strategic Initiatives

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Executive Summary

The Piermont Hazard Mitigation Plan Update 2017 was compiled to assist the Town of Piermont in reducing and mitigating future losses from natural or human-caused hazardous events. The Plan was developed by participants of the Town of Piermont 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 2012 Piermont Hazard Mitigation Plan. In an effort to produce an accurate and current planning document, the Planning Team used the 2012 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 Including Ice Storms
2) Flooding (dam failure, riverine, spring rains, beaver dams, ice jams
3) Hurricane & Tropical Storm
4) Tornado/Downburst
5) Landslide, Mudslide & Erosion
6) Drought
7) High Winds (windstorms)
8) Severe Thunderstorms & Lightning
9) Extreme Temperatures (Hot & Cold)
10) Earthquake
11) Wildfire
12) Hailstorms

Human-Caused Hazards

1) Hazardous Materials – Transport
2) Hazardous Materials – Fixed
3) Dam Failure (Hydro)
4) Terrorism
5) Epidemic/Pandemic
6) Extended Power Failure (5+ days)

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 Piermont or not applicable. These include: *Coastal Flooding, Radon, Radiological, 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), Non-Emergency Response Facilities (NERF), Facilities and Populations to Protect (FPP) and Potential Resources (PR). In addition, this Plan addresses the Town's involvement in the National Flood Insurance Program (NFIP).

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

Mitigation action items are the main focus of this Plan. Some communities, when faced with an array of natural hazards, are able to adequately cope with the impact of these hazards. For example, although Severe Winter Weather is often a common hazard in New Hampshire and more often than not considered to be the most likely to occur, most New Hampshire communities handle two to three foot 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 Piermont 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:

Piermont Hazard Mitigation Plan Update 2017	the Plan or this Plan
Piermont	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 Piermont 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 Piermont 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 Piermont 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 Piermont 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".*[1]

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

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

HSEM's goal is to have all New Hampshire communities complete a local hazard mitigation plan as a means to reduce future losses from natural 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 Piermont 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.

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

C. Jurisdiction

This Plan addresses one jurisdiction – the Town of Piermont, 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 & Emergency Management, the US Forest Service, the Department of Natural & Cultural Resources (DNCR), NH Office of Strategic Initiatives (OIS) 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.*[3]

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

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

E. Public & Stakeholder Involvement

Public and stakeholder involvement was stressed during the initial meeting and community officials were given a matrix of potential team members (page 18). Community officials were urged to contact as many people as they could to participate in the planning process, including not only residents but also officials and residents from surrounding communities. The Town of Piermont understands that natural hazards do not recognize political boundaries.

There is one school in Piermont; students in grades (K-8) attend the Piermont Village School and students in grades (9-12) are tuitioned to Woodsville High School. The Piermont Village School Principal attended two of the six meetings that were held.

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 Piermont. A Press Release (see right) was posted on the Town's calendar and emailed to residents. Meeting dates were also posted on the Town's website (see above right and below).

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

Press Release

FOR IMMEDIATE RELEASE
Updated: October 3, 2016

Contact: June Garneau
603-837-7122

TOWN OF PIERMONT COMMENCES HAZARD MITIGATION PLANNING

The Piermont Emergency Management Director met with June Garneau, of Mapping and Planning Solutions, Paul Hatch of N.H. Homeland Security and Emergency Management and other Team members from Piermont, to begin work on the required five-year update to the 2012 Piermont Hazard Mitigation Plan. As a result of this meeting, the director and Mapping and Planning Solutions are conducting a series of meetings on the Hazard Mitigation Plan over the next few months.

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

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

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

The Hazard Mitigation Planning Team is currently being formed; Piermont citizens and any interested stakeholders are invited to participate. All interested parties should contact Bernie Marvin at 275-0340 if they wish to be included in the process.

The next meeting is scheduled for Monday, November 7 from 10 AM to 12 Noon at the Old Church Building. The general public is encouraged to attend all meetings, regardless of whether they are a part of the Planning Team.

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

The Emergency Management Director also wrote an article about the hazard mitigation process in the local newspaper "The Bridge Weekly Sho-Case" (see below).

The Bridge Weekly Sho-Case May 18, 2017

Bernie's Beat

Comments and observations on our local scene

EVERY TIME I HEAR A WEATHER FORECAST WITH THE WORDS "HURRICANE" OR "POTENTIAL FLOODING" OR "HEAVY SNOW EXPECTED" OR ANYTHING ELSE IN THAT FORECAST THAT HINTS OF AN ONCOMING DISASTER, I QUICKLY SEEK OUT MY TOWN HAZARDOUS MITIGATION PLAN AND DOUBLECHECK TO SEE WHERE THERE MAY BE PROBLEMS WITH THE APPROACHING HAVOC.

All of our towns in the area are prone to a long list of a variety of hazards. A hazardous Mitigation Plan, required by all towns in the state, focuses on any and all hazards of concern that the Concord government has discovered to be possible to occur in the Granite State.

The Hazardous Mitigation Committee for the entire State of New Hampshire has completed a historical review and history of past threats and hazards that have affected the state. They have determined that the number one problem facing the state, (believe it or not) is flooding. The state has recently experienced seven serious storms with resulting disaster declarations due to flooding, hurricanes and severe snow and other hazards.

Part of my duties here in Piermont is to assist with planning, response, recovery, preparation, prevention and mitigation of any and all of the hazards listed above and more that include damages by wind or fire. Also family displacement, school safety, security, shelter and reunification. All of the safety and emergency people in the towns work side by side to make it all come together when required.

I do this by working with all of the first responding groups that include police, fire, medical and highway, plus any other volunteer organizations or authorities or officials that come onto a scene to assist. It is all part of a well laid plan of attack on local disaster and how it may affect residents.

Hazards, such as the ones we face in our local communities of Piermont or Haverhill include but are not limited to flooding, dam failure, drought, wildfire, earthquakes, landslides, radon exposure, tornadoes, downbursts, hurricanes, lightning, severe winter weather, snow avalanche, and epidemic or pandemic, fire of any type, woodland wildfire, hazardous materials and terrorism.

Each town has a Hazard Mitigation Plan and an Emergency Operations Plan to deal with every single hazardous problem that may come down the pike to affect us during any season of the year and at any time of the night or day.

Your local officials including all of the first responders train to meet and to control situations when our town is the victim of an outside force of nature or a man-made disaster. Each town has a plan and each 3 to 5 years those plans must be updated to reflect reality of what's going on with technology and other strategies that we can use to make the town and its residents safer.

The prime purpose of town government is to keep people safe. I don't think it's expecting too much from our first responding departments to be well-trained and to be ready to meet any type of threat that comes to this community. I know that this

BERNIE'S BEAT CONT. ON PAGE 5

BERNIE'S BEAT CONT. FROM PAGE 4

community is ready because I work closely with these programs. I also know that the community to our north is ready, Haverhill, because I worked with that system as well for more than 20 years.

Both towns are presently undergoing updates to our Hazardous Mitigation Plans. Each town holds meetings a regular basis with the leadership of the town and they review any and all hazardous situations that may happen and they also strategize on the best ways to meet those hazards and keep people safe while at the same time allowing as little damage as possible to the residents or the infrastructure.

Each of our towns is served by a company known as Mapping and Planning Solutions. During plan update time, owner June Garneau visits each town and spends many hours listening to concerns and strategy from its leaders relative to reducing (or mitigating) the long list of hazards that face us.

I asked Ms. Garneau to provide a statement relative to her evaluation of the ongoing Hazard Mitigation Plan updates that are underway in both Piermont in Haverhill. The following is her evaluation and comments on those plan updates.

Piermont & Haverhill Hazard Mitigation Plan Updates "With the assistance of Mapping and Planning Solutions and NH Homeland Security and Emergency Management, the towns of Haverhill and Piermont, NH are in the process of working on updates for their Hazard Mitigation Plans. This work is a requirement of the Disaster Mitigation Act of 2000 which outlines a community's eligibility for receipt of FEMA funding after a declared disaster. Both processes are moving along nicely and are due to be completed by the end of 2017.

"The Hazard Mitigation Planning effort is coordinated by the towns' Emergency Management Directors (EMDs), Bernie Marvin for Piermont and Steve Robbins for Haverhill. With input from the EMDs and "Team" members, including volunteers, potential hazards are discussed as well as the history of past hazard events. Although the main focus of the plan is natural hazards, human-caused hazards are also discussed.

"Through a series of steps, the process includes a close look at not only past and potential hazards but also risk levels for critical infrastructure and key resources. Current plans, policies and mutual aid systems that are in place are analyzed to determine their effectiveness. For example, when discussing Subdivision Regulations, there may be a conversation about adding requirements for contractors to install , re ponds or cisterns in new subdivisions to mitigate the impact of wildfire. Also, the process includes a review of mitigation action items from the prior plan to determine if they have been completed or if they should be added to the current plan as new action items.

"Ultimately, the goal of the project is to develop a series of action items that will lessen or fully eliminate the impact of natural hazards on the community. For many New Hampshire communities, the most common action items include steps the community can take to reduce flooding; the best example is the upgrading of culverts to improve the flow of storm water, thus eliminating road flooding.

"The public is encouraged to participate in these very important projects taking place in Piermont and Haverhill; the next meeting in Haverhill is scheduled for Tuesday, May 16 at 9:00 AM at the Town Offices and in Piermont on Monday, June 19 at 10:00 AM at the Old Church Building. With insight from town officials, emergency responders and the general public, Piermont and Haverhill hope to develop a plan that will truly mitigate the ill effects of natural hazards."

So, there you have it. Fairly complete picture of what's going on relative to hazard mitigation in Piermont and in the adjacent town of Haverhill.

The next time you hear a warning about a possible hurricane or 3 feet of snow or 4 inches of rain, you know that a whole bunch of folks in these towns will be getting together and strategizing their plans of action to deal with the coming problem.

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 (example shown below).

MAPS Mapping and Planning Solutions

Upcoming Emergency Operations & Hazard Mitig Plan Meetings

(Highlighted by "Counties" as of June 26, 2017)

Day	Date	Time	Town/Location	Plan Type	HSEM Field Rep	County
Tuesday	6/27/17	10:00 AM	Alton Town Hall	EOP	Shawna-Leigh Morton	Belknap
Tuesday	6/27/17	2:00 PM	Madison Fire Station	EOP	Heidi Lawton	Carroll
Friday	7/7/17	1:00 PM	Greenfield Fire Station	EOP	Heather Dunkerley	Hillsborough
Monday	7/10/17	10:00 AM	Grafton Fire Station	HMP	Paul Hatch	Grafton
Tuesday	7/11/17	9:00 AM	Haverhill Town Offices	HMP	Paul Hatch	Grafton
Wednesday	7/12/17	6:00 PM	Dalton Town Offices	HMP	Heidi Lawton	Coos
Tuesday	7/18/17	2:00 PM	Clarksville Town Offices	HMP	Heidi Lawton	Coos
Tuesday	7/18/17	6:00 PM	Stewartstown Town Offices	HMP	Heidi Lawton	Coos
Thursday	7/20/17	1:00 PM	Salem Town Offices	HMP	Alex Marinaccio	Rockingham
Monday	7/31/17	9:00 AM	Orford Fire Station	EOP	Paul Hatch	Grafton
Monday	7/31/17	1:00 PM	Piermont Old Church Building	HMP	Paul Hatch	Grafton
Tuesday	8/8/17	9:00 AM	Haverhill Town Offices	HMP	Paul Hatch	Grafton
Monday	8/21/17	6:30 PM	Orford Fire Station	EOP	Paul Hatch	Grafton

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.

Piermont however had very good attendance; Emergency Response and the Highway Department were represented at each meeting. Members of the Board of Selectmen and the Planning Board were also active participants in meetings. Lastly, two interested citizens took the opportunity to attend several 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.

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

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

The planning process included a complete review of the Piermont Hazard Mitigation Plan of 2012 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 Piermont Hazard Mitigation Plan of 2012	Compare & Contrast
Piermont Master Plan (2013)	Community Information
Piermont Annual Report (2016)	Fire Report & Development
Area Hazard Mitigation Plans (Whitefield, Orford, Lyme)	Formats & Mitigation Ideas
The Piermont Subdivision Regulations (2011)	New Development Regulations
Flood Plain Management Ordinance, Town of Piermont (2007)	Floodplain Regulations
Census 2010 Data	Population Data
The NH DRA Summary of Inventory of Valuation MS-1 2015 for Piermont	Structure Evaluation
The Economic & Labor Market Information Bureau Community Response	Population Trends
The American Community Survey (ACS 2011-2015)	Population Trends
NH Forest Forests & Lands (DNCR)	DNCR Fire Report
NH Office of Strategic Initiatives	Flood Losses
The NH Department of Revenue property tax valuation by property type	Property Information

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

Flooding NH Route 10, July 1, 2017
Photo Credit: Town of Piermont

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.

HAZARD MITIGATION PROCESS
"THE BUILDING BLOCKS"

HAZARD IDENTIFICATION & RISK ANALYSIS
WHAT ARE THE HAZARDS AND WHICH ARE MOST LIKELY TO IMPACT THE COMMUNITY?
TABLE 3.1

CRITICAL INFRASTRUCTURE & KEY RESOURCES
ARE ANY IN HARM'S WAY?
TABLES 4.1-4.4 & MAP

CURRENT PLANS, POLICIES & MUTUAL AID
DO ANY NEED IMPROVEMENT?
TABLE 6.1

HISTORIC WILDFIRES & THE WILDLAND URBAN INTERFACE
WHAT ARE THE WILDFIRE RISKS THROUGHOUT THE COMMUNITY?
TABLE 3.2 & MAP

PAST & POTENTIALLY HAZARDOUS LOCATIONS
IN WHAT AREAS OF THE COMMUNITY IS THE TOWN HARDEST HIT?
TABLE 3.2 & MAP

ACCOMPLISHMENTS SINCE THE LAST PLAN
WHERE STRATEGIES COMPLETED OR SHOULD THEY BE DELETED OR DEFERRED TO THIS PLAN?
TABLE 7.1

MITIGATION ACTION ITEMS
WHAT CAN WE DO TO LESSEN, DIMINISH OR ELIMINATE THE RISK OF HAZARDS?
WHAT PROBLEMS ARE WE TRYING TO SOLVE?
TABLE 9.1 – THE END GOAL

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 2012 Piermont Hazard Mitigation Plan. After discussing these goals, the current Piermont 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 Piermont and visitors, from all natural and human-caused hazards.
- To reduce Piermont'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 Piermont'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 Piermont 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 Piermont'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 Piermont.*
- 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 Piermont.

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 2012 Piermont Hazard Mitigation Plan. Using the 2012 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 2012 Plan, strategies from the past were reassessed and improved upon for the future.

The following narrative explains how the 2012 Piermont Hazard Mitigation Plan was used during each step of the planning process to make revisions that resulted in this Plan.

Meeting 1, October 3, 2016

The first full meeting of the Piermont Hazard Mitigation Team was held on October 3, 2016. Meeting attendance included Bernie Marvin (Emergency Management Director), Tim Cole (Deputy EMD), Frank Rodiman (Road Agent), Gary Hebert (Police Chief), Debra Norwood (Piermont Village School Principal), Ellen Putnam (Piermont FAST Squad), Randy Subjeck (Chairman-Board of Selectmen), Paul Hatch (NH HSEM) and June Garneau (Mapping & Planning Solutions).

To introduce the Team to the planning process, June reviewed the evolution of Hazard Mitigation Plans, the funding, the 12 Step Process (handout), the collaboration with other agencies and the Goals (handout). June also explained the need to sign-in, track time (handout) and to provide public notice to encourage community involvement.

HAZARDS MITIGATION POTENTIAL TEAM MEMBERS

FEDERAL
US Forest Service

STATE
Department of Transportation (DOT)
Department of Cultural & Natural Resources (DNCR)
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

Work then began on *Table 2.1, Town Statistics*. Most of the work on this table was complete at this meeting with the exception of a few items that June would either determine through GIS or get at a later date. There was some discussion about the seasonal population change in Piermont with summer and winter homes., It was determined that the numbers provided by the 2010 Census were fairly close but that June would check the American Community Survey, 2011-2015 to see if there was a significant change indicated.

June also agreed to find the percent of conserved land based on GIS analysis and to revisit the evacuation routes at the next meeting to determine the need to indicate “secondary” evacuation routes.

Next on the Agenda were hazard identification and the completion of *Table 3.1, Hazard Threat Analysis*. After the hazards had been identified, the Team then assessed the risk severity and probability by ranking each hazard on a scale of 1-5 (5 being very high or catastrophic) based on the following:

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

The rankings were then calculated to reveal the hazards which pose the greatest risks to the Community; 12 natural hazards and six human-caused hazards were identified. After analyzing these hazards using Table 3.1, Severe Winter Weather including Ice Storms, Flooding (dam failure, riverine, spring rains, beaver dams, ice jams) and Hurricane & Tropical Storm were designated as the primary concerns.

Having completed Table 3.1, the Team started working on descriptions of each hazard and how they could, or do impact the Town of Piermont 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 Piermont. For example, some of the questions asked were:

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

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

Meeting 1 – October 3, 2016

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

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

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

4) Today's Topics
a) Table 2.1, Town Information
b) Table 3.1, Hazard Identification & Analysis
c) Hazard Descriptions
d) Table 4.1-4.4, Critical Infrastructure & Key Resources (time allowing)

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

6) Future Meetings
a) _____
b) _____

With time running out, the remaining hazard descriptions were left for the next meeting. June thanked the Team for their work and assigned "homework" to Team members, including requesting that the Road Agent prepare a list of road/culvert projects that would need to be completed within the next five years. June also asked the Team to think about Critical Infrastructure and Key Resources (CIKR) and past events that have affected the Town.

The next meeting was scheduled for Monday, November 7, 2016.

Meeting 2, November 7, 2016

Meeting attendance included Bernie Marvin, Tim Cole, Frank Rodiman, Gary Hebert, Debra Norwood, Ellen Putnam, Randy Subjeck, Diane Kircher (Citizen), Malcolm Kircher (Citizen), Paul Hatch, Olin Garneau (Mapping and Planning Solutions) and June Garneau.

The meeting began with a review of the work that was done at the previous meeting. June reviewed *Table 3.1, Hazard Identification Analysis* to be certain the Team felt the hazards were in the correct order for the Town. A few minor changes were made to Table 3.1. Next on the agenda was to complete the Hazard Descriptions that were started at the previous meeting. While doing the Hazard Descriptions, Development Trends were also discussed.

The Team then began work on *Table 3.2, Historic Hazard Identification*, a list of past and potentially hazardous locations and/or events. First, they looked at the hazards that were listed in the last Plan and determined which they would like to see kept in this Plan.

Next, the Team examined the record of Presidential Disaster Declarations that have taken place in recent years, a record that shows substantial increase over past decades. At this point, the Team assisted June in mapping the hazards that were identified in Table 3.2 for inclusion in *Map 3, Past & Potential Areas of Concern*.

Next on the agenda were *Tables 4.1–4.4, Critical Infrastructure and Key Resources (CIKR)*. The Emergency Response Facilities, the Non-Emergency Response Facilities, the Facilities & Populations to Protect and the Potential Resources from the 2012 plan were examined and a few minor adjustments were made for this Plan. In addition, the evacuation routes, helicopter landing zones and bridges on the evacuation routes were defined. Lastly, each of the Critical Infrastructure and Key Resources were analyzed for their "Hazard Risk".

With time running out June reviewed what would take place at the next meeting and thanked the Team. The next meeting was set for January 23, 2017 but later postponed to February 27, 2017.

Meeting 2 – November 7, 2016

1) Last Meeting
- a) Introduction
  - i) Evolution and Reasons for Hazard Mitigation and Update
  - ii) Community involvement to solicit input on how to mitigate the effects of hazards
  - iii) Definition of hazard mitigation
  - iv) Funding, the Team, collaboration, community involvement & stakeholders
  - v) Signing In, Tracking Time, Agendas, Narrative (handout)
- b) Table 2.1, Town Information
- c) Table 3.1, Hazard Identification & Analysis
- d) Hazard Descriptions (not completed)

2) Today's Topics
- a) Complete Hazard Descriptions
- b) Discuss Development
- c) Discuss roads
- d) Table 4.1-4.4, Critical Infrastructure & Key Resource and mapping
- e) Discuss evacuation routes (maybe some secondary routes?)
- f) Table 3.2, Historic Hazard Identification
- g) Table 6.1, Current Plans, Policies & Mutual Aid
- h) Table 7.1, Past Hazard Mitigation Plan Assessment (time allowing)

3) Homework
- a) Digital Photos – contributions welcome

4) Future Meetings
- a) _____

Meeting 3, February 27, 2017

Meeting attendance included Bernie Marvin, Tim Cole, Frank Rodiman, Gary Hebert, Ellen Putnam, Randy Subjeck, Diane Kircher, Bruce Henry (Piermont Fire Department), Paul Hatch and June Garneau.

First on the agenda was a review of the last meeting, including a review of *Tables 4.1-4.1, Critical Infrastructure & Key Resources (CIKR)* and *Table 3.2, Historic Hazard Identification*. While reviewing both of these tables, a few additional CIKR and past hazard events were mapped.

Meeting 3 – February 27, 2017

1) Last Meeting
- a) Table 3.1, Hazard Threat Analysis
- b) Completed Hazard Descriptions & & Discussed Development
- c) Table 3.2, Historic Hazard Identification
- d) Table 4.1-4.4, Critical Infrastructure & Key Resources

2) Today's Topics
- a) Table 6.1, Current Plans, Policies & Mutual Aid (time allowing)
- b) Table 7.1, Accomplishments since the last Plan

3) Homework
- a) Digital Photos – contributions welcome

4) Future Meetings
- a) _____
- b) _____

While reviewing Table 3.2, June took the opportunity to explain the Wildland Urban Interface (WUI) and the Base Risk Analysis. Using GIS projection, June showed the Team *Map 1, Wildfire Base Risk Analysis*, and explained the process that was used to develop the map. June explained that slope, type of fuel (i.e., softwood or hardwood) and exposure (southwest being the most susceptible) were analyzed in GIS to determine where the high, medium and low risk areas of the Town were. It was obvious in *Map 1, Fire Base Risk Analysis* that there are many areas that are susceptible to wildfires, particularly the west-facing side of Peaked and Piermont Mountain.

Staying on the subject of wildfires, June discussed the Wildland Urban Interface (WUI) and projected a map of the WUI over the Piermont 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 Piermont, 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 2012 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 2012 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.

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 2012 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, the Team was not able to complete Table 6.1. June adjourned the meeting and promised to write statements to support the concepts and ideas that were expressed for Table 7.1 and for the items in Table 6.1 that we had completed. The next meeting was scheduled for April 17, 2017.

Meeting 4 – April 17, 2017

Meeting attendance included Bernie Marvin, Tim Cole, Frank Rodiman, Ellen Putnam, Randy Subjeck, Bruce Henry, Olin Garneau and June Garneau.

June lead the Team through a review of the work that was done at the last meeting. Then work continued on Table 6.1, resulting in nineteen potential items that were designated as "Improvements Needed". June explained how the "Improvements Needed" items would become new "Action Items" for this hazard mitigation plan.

Once Table 6.1 was complete, June walked the Team through a complete review of Table 7.1. Having translated her notes from the last meeting into paragraphs, June reviewed each item in Table 7.1 to see if the concepts and ideas of the Team remained intact and to verify the accuracy of the information. With this review a few changes were made leaving 14 items from Table 7.1 deferred to become new mitigation action items for this Plan; some of these action items were also found in Table 6.1. Although several strategies from the last plan were determined to be emergency preparedness and not mitigation, the Team decided to keep some of them in the Plan as reminders to get these important action items completed.

Meeting 4 – April 17, 2017

1) Last Meeting
a) Reviewed Table 3.2, Historic Hazard Identification
b) Reviewed Tables 4.1-4.4, Critical Infrastructure & Key Resources (CIKR)
c) Did CIKR Mapping
d) Started Table 6.1 (did not finish)
2) Today's Topics
a) Table 6.1, Current Plans, Policies & Mutual Aid
b) Review Table 7.1, Past Hazard Mitigation Plan Assessment
c) Begin talking about mitigation ideas
3) Homework
a) Digital Photos – contributions welcome
4) Future Meetings
a) _____
b) _____

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

Link to explore – FEMA Mitigation Ideas:

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

The next meeting was scheduled for June19, 2017.

Meeting 5 – June 19, 2017

Meeting attendance included Bernie Marvin, Tim Cole, Frank Rodiman, Gary Hebert, Ellen Putnam, Malcolm Kircher, Bruce Henry, Paul Hatch, Olin Garneau and June Garneau.

The meeting began with an overall recap of the work that had already been done. The recap included a brief look at each of the following completed tables:

- *Table 2.1 – Town Statistics*
- *Table 3.1 – Hazard Threat Analysis*
- *Table 3.2 – Historic Hazard Identification*
- *Tables 4.1-4.4 – Critical Infrastructure & Key Resources*
- *Table 6.1 – Current Plans, Policies & Mutual Aid*
- *Table 7.1 – Accomplishments since the Last Plan*

Meeting 5 – June 19, 2017

1) Last Meeting
a) Finished Table 6.1, Current Plans, Policies and Mutual Aid (started at previous meeting)
b) Table 7.1, Past Hazard Mitigation Pan Assessment
2) Today's Topics
a) Review Table 6.1
b) Begin work on Table 91, Mitigation Action Items (handout)
3) Next Meeting
a) Digital Photos – contributions welcome
4) Future Meetings
a) _____
b) _____

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

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

Next the Team began work on *Table 8.1, Potential Mitigation Action Items & the STAPLEE* and *Table 9.1, The Mitigation Acton Plan*. June explained to the Team that these tables were combined for the purpose of the meeting, but that they would become separate tables in the final Plan.

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

The estimated cost was determined using the following criteria:

- **Low Cost**..... $0 - $1,000 or staff time only
- **Medium Cost** ..... $1,000-$10,000
- **High Cost** ..... $10,000 or more

The time frame was determined using the following criteria:

- **Short Term**..... Ongoing for the life of the Plan
- **Short Term**..... Less than 1 year (0-12 months)
- **Medium Term**..... 2-3 years (13-36 months)
- **Long Term:** ..... 4-5 years (37-60 months)

Work on this table included the STAPLEE process. Using the handouts provided by the Planner, the Team was able to go through the STAPLEE process for the action items that had been identified. It was explained that the STAPLEE process is a systematic method used to gauge the quality of each of the action items. The Social (S), Technical (T), Administrative (A), Political (P), Legal (L), Economic (E) and Environmental (E) impact for each action item would be discussed; this analysis would then became *Table 8.1, Potential Mitigation Action Items & the STAPLEE*. Most importantly, the STAPLEE process enabled the Team to consider the cost-benefit of each action item.

Although most of Tables 9.1 and 8.1 were complete, there were a few action items to discuss at the next meeting as well as the "ranking" and "prioritizing" of each action item. June provided 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 July 31 but was moved up to July 11, 2017 as a result of the heavy rain storm on July 1 which has prompted a swift completion of this Plan.

Meeting 6 – July 11, 2017

Meeting attendance included Bernie Marvin, Tim Cole, Frank Rodiman, Ellen Putnam, Randy Subjeck, Malcolm Kircher, Bruce Henry, Helga Mueller (Planning Board), Olin Garneau and June Garneau.

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

Meeting 6 – July 11, 2017

1) Last Meeting
- a) Reviewed "Subdivision Regulations" in Table 6
- b) Reviewed Table 7.1, Past Hazard Mitigation Plan Assessment
- c) Began work on Table 9.1, Mitigation Action Items (handout)

2) Today's Topics
- a) Continue work on Table 9.1, Mitigation Action Items including the STAPLEE
- b) Work on ranking & prioritizing
- c) Wrap up loose ends
- d) Explain process going forward

3) Homework
- a) Digital Photos –contributions welcome

This meeting included an intense review of the events of July 1, 2017, when an unexpected and unusually heavy rain storm struck Grafton County. Piermont was among a dozen or so communities that suffered significant damage during this storm; the estimate of costs incurred in Grafton County was thought to be approximately $12,000,000 with Piermont's portion around $250,000. The overwhelmed culverts and road washouts that occurred in Piermont were part of this discussion and their improvements are part of *Table 9.1, The Mitigation Action Plan.*

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

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

- **Category 0** was to include those items which are being done and will continue to be done in the future.
- **Category 1** was to include those items under the direct control of town officials, within the financial capability of the Town using only town funding, those already being done or planned and those that could generally be completed within one year.
- **Category 2** was to include those items that the Town did not have sole authority to act upon, those for which funding might be beyond the Town's capability and those that would generally take between 13-36 months to complete.
- **Category 3** was to include those items that would take a major funding effort, those that the Town had little control over the final decision and those that would take in excess of 37 months to complete.

Then within each rank, the Team assigned a priority; for example, if seven action items were ranked "1" then the priority rank was 1-7 (see explanation in Chapter 9). In this fashion, the Team was able to determine which action items were the most important within their rankings and in which order the action items would be accomplished.

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

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.

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Chapter 2: Community Profile

A. Introduction

Piermont is a beautiful community located in Grafton County in the west-central part of New Hampshire. Piermont is bordered to the east by Warren, to the south by Orford and Wentworth, to the north by Haverhill and to the west by the Connecticut River and Vermont. Located in the "White Mountains" tourism region of New Hampshire, Piermont is surrounded by forest, rivers and contains wonderful mountain vistas throughout.

TOWN GOVERNMENT

A three-member Board of Selectmen governs the Town of Piermont. The Town's departments include, but are not limited to, Fire, Police, Highway, Planning, Zoning, Capital Improvements and Conservation. The largest, employer in Piermont is Camp Walt Whitman with 200+ employees.

DEMOGRAPHICS & HOUSING

Over the last 30 years, the population of Piermont has increased drastically; the population change from 1980 (507) to 2010 (790) showed an increase of 283 according to US Census 2010. This represents a growth rate of approximately 37.18%. Piermont's population in 2015 was estimated to be 772.[4]

The American Community Survey (2011-2015) estimates a total of 491 housing units, most of which are single family (455). Multiple-family structures total 18 and mobile homes and other housing units number 18. The median household income is estimated to be $69,219 and the median age is 49.9 years.[5] Census 2010 estimates that of the 140 vacant housing units, 123 are used for recreational, seasonal or occasional use thus confirming the presence of second home and seasonal residents.

EDUCATION & CHILD CARE

Piermont students in grades K-8 attend Piermont Village School. Students in grades 9-12 are tuitioned to Woodsville High School in the neighboring town of Haverhill. There are no colleges, universities or childcare facilities in Piermont.

Incorporated: 1764

Origin: Situated on the Connecticut River just west of the White Mountain National Forest, this town was named for Piedmont in the Italian Alps. The majority of those named in the charter were titled Honorable or Esquire, or had a military title. Though the charter was issued in 1764, the first settlements were not made until about 1768. Lake Tarleton, on the town's eastern border, was once on the property of Colonel William Tarleton, a tavernkeeper who was a delegate to the Constitutional Convention of 1791, and member of the presidential Electoral College in 1804.

Villages and Place Names: unknown

Population, Year of the First Census Taken: 426 residents in 1790

Population Trends: Population change for Piermont totaled 295 over 55 years, from 477 in 1960 to 772 in 2015. The largest decennial percent change was a 23 percent increase between 1980 and 1990, followed by 13 and 12 percent increases the next two decades. The 2015 Census estimate for Piermont was 772 residents, which ranked 203rd among New Hampshire's incorporated cities and towns.

Population Density and Land Area, 2015 (US Census Bureau): 20.0 persons per square mile of land area, which tied with Croydon. Piermont contains 38.6 square miles of land area and 1.4 square miles of inland water area.

Source: Economic & Labor Market Information Bureau, NH Employment Security, April 2017; Received 8/02/16

[4] Economic & Labor Market Information Bureau, NH Employment Security, April 2017. Community Response 8/2/16.
[5] American Community Survey, 2011-2015; the Census Bureau

NATURAL FEATURES

The Town of Piermont covers approximately 38.6 square miles of land area and 1.4 square miles of inland water. The Community is dominated by the mountains and hills of central New Hampshire. The largest peak is Piermont Mountain at 2,717' above sea level. The lowest elevation in Town is 568' above sea level in the center of town; much 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 Lake Armington, Lake Tarleton, Lake Katherine, Lake Constance, Indian Pond Brook, Eastman Brook, Bean Brook and the Connecticut River.

TRANSPORTATION

There are three major roadways which run through Piermont; NH Routes 25, 25C and 10. NH Route 25 travels from the Vermont state border to NH Route 10 in Piermont. NH Route 25C travels from the intersection of Route 25 and 10 northeast until eventually continuing into Warren. NH Route 10 travels from the Hanover area in the south to Haverhill in the north, roughly paralleling the Connecticut River. Other smaller and less travelled roadways lend access to other areas of the Town. All roadways in Piermont are susceptible to hazards such as road flooding and high winds leading to downed trees in the roadways and potential hazardous materials spills.

B. Emergency Services

EMERGENCY OPERATIONS CENTER & EMERGENCY MANAGEMENT DIRECTOR

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

PIERMONT FIRE RESCUE & EMS

The Piermont Fire Department is a volunteer fire department providing quality fire services and emergency medical services to the residents and visitors of Piermont 24 hours a day, 365 days a year. The Department staffs a part-time Chief, 16 paid on-call volunteer firefighters and operates one station within the Community. Along with area departments, the Piermont Fire Department participates in Twin State Fire Mutual Aid and Upper Valley Regional Emergency Services (UVRESA). Emergency medical services are provided by the Piermont FAST Squad with medical transport provided by Upper Valley Ambulance and/or Warren-Wentworth Ambulance depending on the location and the scope of the emergency.

PIERMONT POLICE DEPARTMENT

The Piermont Police Department is a full-time department providing law enforcement services to the residents and visitors of Piermont. Although not a 24/7 department, the Police Department is "…always available to respond to citizen's calls for service".[6] The Department staffs a full-time Chief. The Piermont Police Department has mutual aid agreements with surrounding towns and the NH State Police.

[6] Piermont Police Department webpage; http://townofpiermontnh.org/emergency-services/police-department

PIERMONT HIGHWAY DEPARTMENT

The Piermont Highway Department operates on a year-round, 24-hour basis as needed. The Department staffs a full-time Road Agent and one full-time employee. The Highway Department's mission is to support the citizens of Piermont 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

Piermont's closest medical facility is Cottage Hospital in Woodsville (14 miles, 25 beds). If the need arises, an alternative medical facility is Dartmouth-Hitchcock Medical Center in Lebanon (30 miles, 288 beds).

EMERGENCY SHELTER(S)

The primary shelter is the location to which evacuees are directed at the time of an emergency. In Piermont, the designated primary shelter is the Piermont Congregational Church which offers a large sleeping area, bathrooms, and kitchen facilities; the Congregational Church also is equipped with a permanent generator. The secondary shelter for the Town is the Piermont Village School.

C. Piermont's Current & Future Development Trends

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

The 2016 Annual Report discusses a proposed 2-lot subdivision (the applicate decided to not go forward) and a merger of two lots. The report also discusses work that is being done on the Capital Improvement Program (CIP). The 2015 Annual Report discusses two voluntary lot mergers. The Hazard Mitigation Planning Team reported that a 26-lot subdivision is pending, but it has been in "limbo" for some time. No large-scale development is anticipated in the near future and it was also noted that no development since the 2012 hazard mitigation plan has occurred in hazard prone areas and no development since 2012 has impacted the Town's hazard vulnerability.

The Planning Board and the Board of Selectmen will monitor growth in Piermont using existing regulatory documents such as the Flood Plain Management Ordinance, the Zoning Ordinance, the Subdivision Regulations and the Piermont Master Plan. Building Permits are required in Piermont 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. 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				
Census Population Data	**2010**	**2000**	**1990**	**1980**
Piermont, NH - Census Population Data	**790**	**708**	**625**	**507**
Grafton County	**89,118**	**81,826**	**74,998**	**65,806**
*Estimated Population (*ACS 2011-2015*	772			
*Elderly Population-% over 65 (*ACS 2011-2015*	25.0%			
*Median Age (*ACS 2011-2015*	49.9			
*Median Household Income (*ACS 2011-2015*	$69,219			
*Individuals below the poverty level (*ACS 2011-2015*	5.8%			
Change in Population-Summer (%)	120%			
Change in Population-Winter (%)	0%			
Housing Statistics	***Census 2010***			***ACS 2011-2015***
Total Housing Units	474			491
Occupied Housing Units	334 *(of the total 474 housing units)*			323
Owner Occupied Units	277 *(of the 334 occupied housing units)*			278
Renter Occupied	57 *(of the 334 occupied housing units)*			45
Vacant Housing Units	140 *(of the 334 occupied housing units)*			134
Units for Seasonal, Recreational, Occasional Use	123 *(of the140 vacant housing units)*			Not available
Assessed Structure Value ***(2015 MS-1)***	***Value***	***1% Damage***		***5% Damage***
Residential	$58,610,800	$586,108		$2,930,540
Manufactured Housing	$1,125,000	$11,250		$56,250
Commercial	$1,419,400	$14,194		$70,970
Other Utilities	$1,518,100	$15,181		$75,905
Tax Exempt	$2,608,300	$26,083		$130,415
Utilities	$1,518,100	$15,181		$75,905
Total Assessed Structure Value	$66,799,700	$667,997		$3,339,985
Regional Coordination				
County	Grafton			
Tourism Region	White Mountains			
Municipal Services & Government				
Town Manager	No			
Board of Selectmen	Yes; Elected			
Planning Board	Yes; Appointed			
School Board	Yes; Elected			
Zoning Board of Adjustment	Yes; Appointed			
Conservation Committee	Yes; Appointed			
Master Plan	Yes; 2013			

Table 2.1 - Town Statistics	
Emergency Operations Plan (EOP)	Yes; 2010
Hazard Mitigation Plan (HMP)	Yes; 2012
Zoning Ordinances	Yes; 1971/2017
Subdivisions Regulations	Yes; 1970/2011
Capital Improvement Plan	Yes
Capital Reserve Funds	Yes
Building Permits Required	No
Town Web Site	Yes; www.townofpiermontnh.org
Floodplain Ordinance	Yes; 2005/2007
Member of NFIP	April 2, 1986
Flood Insurance Rate Maps (DFIRMS)	February 20, 2008
Flood Insurance Rate Study (FIS)	February 20, 2008
Percent of Local Assessed Valuation by Property Type-2015 *(NH Department of Revenue)*	
Residential Buildings	95.0%
Commercial Land & Buildings	1.9%
Other (including Utilities)	3.1%
Emergency Services	
Town Emergency Warning System(s)	CodeRED; CopSync (law enforcement only)
School Emergency Warning System(s)	School Messenger
Emergency Page	Yes
Facebook Page	Emergency Management; Fire Association; People of Piermont Communicate
ListServ	Yes
Local Newspapers	Journal Opinion, Bridge Weekly, Valley News
Local TV Stations	WMUR-TV, Manchester; WCAX, Burlington
Local Radio	WYKR-FM
Police Department	Yes; full-time Chief
Police Dispatch	Grafton County Dispatch
Police Mutual Aid	All surrounding communities
Animal Control Officer	Yes
Fire Department	Yes volunteer, paid on-call; part-time Chief, 16 volunteer firefighters
Fire Dispatch	Twin State Fire Mutual Aid
Fire Mutual Aid	Upper Valley Regional Emergency Services Association (UVRESA)
Fire Stations	One
Fire Warden	Yes
Emergency Medical Services	Piermont Fast Squad; Yes volunteer; volunteer Captain; 7 volunteers

Table 2.1 - Town Statistics	
EMS Dispatch	Grafton County Dispatch
Emergency Medical Transportation	Upper Valley Ambulance, Warren-Wentworth Ambulance
HazMat Team	Lebanon Fire Department
Established EMD	Yes
Established Deputy EMD	Yes
Public Health Network	Upper Valley Regional Public Health Network
Health Officer	Yes
Building Inspector	No
Established Public Information Officer (PIO)	Chair Board of Selectmen
Nearest Hospital(s)	Cottage Hospital (14 miles, 25 beds)
	Dartmouth -Hitchcock Medical Center (30 miles, 288 beds)
Local Humane Society or Veterinarians	No; some veterinarians live in town; use Bradford veterinarian
Primary EOC	Old Church Building
Secondary EOC	EMD's residence; 3rd at Fire Station
Primary Shelter	Piermont Congregational Church (generator)
Secondary Shelter	Piermont Village School (generator)
Utilities	
Town Sewer	Private septic & Municipal
Highway Department	Yes; full-time Road Agent, 1 full-time employee
Public Works Mutual Aid	Yes
Water Supply	Private wells
Waste Water Treatment Plant	Yes
Electric Supplier	Eversource & NH Electric Coop
Natural Gas Supplier	None
Cellular Telephone Access	Limited
High Speed Internet	Limited
Telephone Company	Fairpoint
Transportation	
Primary Evacuation Routes	NH Route 10, 25 & 25C
Secondary Evacuation Routes	Lily Pond Rd., Indian Pond Rd., Cape Moonshine Rd.
Nearest Interstate	I-91 (VT); Exit 16 (3 miles)
Nearest Airstrip	Dean Memorial, Haverhill (2,500 ft. asphalt runway)
Nearest Commercial Airport(s)	Lebanon Municipal (30 miles)
	Manchester-Boston Regional Airport (93 miles)
	Burlington International (VT) (73 miles)
Public Transportation	No
Railroad	No

Table 2.1 - Town Statistics		
Education & Childcare		
Elementary School	Grades K-8 attend Piermont Village School	
Middle School		
High School	Grades 9-12 are tuitioned to Woodsville High School or to any other high school facility	
School Administrative Unit	SAU 23	
Licensed Childcare Facilities	0 facilities; 0 capacity	
Conserved Land as a Percent of Land in the Community ***(GIS Analysis)***		
	Square Miles	**Percent of Town Land**
Approximate Square Miles in Community	39.97	100.0%
Approximate Total Un-Conserved Land	31.04	77.7%
Approximate Total Conserved Land	8.93	22.3%
Federal Owned Land	3.49	8.7%
State Owned Land	3.74	9.4%
Municipal/County Land	0.48	1.2%
Private Land	1.22	3.1%
Fire Statistics ***(NH Division of Forests & Lands, Fire Warden Report, November 2015 & the Town)***		
Wildfire Fire Calls (15 & 16)	None	
Grafton County Fire Statistics (15)	17 fire, 22.6 acres	
State Forest Fires FY (15)	134 fires, 661 acres	
**ACS: American Community Survey; five year average of long form census forms, US Census Bureau*		
Information found in Table 2.1, unless otherwise noted, was derived from the Economic & Labor Market Information Bureau, NH Employment Security, April 2017. Community Response Received 8/2/16; http://www.nhes.nh.gov/elmi/products/cp/profiles-htm/piermont.htm		

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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 twelve natural hazards have potential to affect the Community. The hazards listed to the right and in Table 3.1 were classified based upon their relative threat score (as calculated in Column F in Table 3.1) and separated into three categories using Jenks' Optimization, which is also known as natural breaks classification. "*The natural breaks classification process is a method of manual data classification that seeks to partition data into classes based upon natural groups within the data distribution.*"[7]

By using this grouping process, the Plan demonstrates each hazard's likelihood of occurrence in combination with its potential effect on the Town of Piermont. 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.

THE NATURAL HAZARDS

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

- *Severe Winter Weather including Ice Storms*
- *Flooding (dam failure, riverine, spring rains, beaver dams, ice jams)*
- *Hurricanes & Tropical Storm*

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

- *Tornado/Downburst*
- *Landslide, Mudslide & Erosion*
- *Drought*
- *High Winds (windstorms)*

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

- *Severe Thunderstorms & Lightning*
- *Extreme Temperatures (Hot & Cold)*
- *Earthquakes*
- *Wildfire*
- *Hailstorms*

Based on this analysis, the most likely natural disaster threat to Piermont is Severe Winter Weather including Ice Storms. The second most likely threat is Flooding (dam failure, riverine, spring rains, beaver dams, ice jams) and the third is Hurricanes & Tropical Storm. 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, Dam Failure (Hydro), Terrorism, Epidemic/Pandemic and Extended Power Failure (5+ days).

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 Piermont as a result of both wind strength and flash flooding creating road closures and damage. Tropical Storm Irene has minor impact on Piermont; Tropical Storm Sandy had little or no impact. The Team noted that Category 1 or greater hurricanes would have a low probability of affecting Piermont; however there is a high probability that tropical rains could cause damage.

[7] ESRI, http://support.esri.com/en/knowledgebase/GISDictionary/term/natural%20breaks%20classification

TABLE 3.1: HAZARD THREAT ANALYSIS

Table 3.1 - Hazard Threat Analysis						
Hazards which are most likely to affect the Community			***A natural hazard is a source of harm or difficulty created by a meteorological, environmental or geological event.***			
Hazards which may affect the Community						
Hazards which are less likely to affect the Community						
Scoring for Probability (Columns A, B & C)	**Column A**	**Column B**	**Column C**	**Column D**	**Columns (A+B+C)/3**	**Columns D x E**
1=Very Low (0-20%)	What is the probability or death or injury?	What is the probability of physical losses & damage?	What is the probability of interruption of service?	What is the probability of this occurring within 25 years?	Average of Human, Property & Business Impact	Relative Threat
2=Low (21-40%)						
3=Moderate (41-60%)						
4=High (61-80%)	Human Impact	Property Impact	Business Impact	Probability of Occurrence	Severity	Risk Severity x Occurrence
5=Very High (81-100%)						
Natural Hazards						
1) Severe Winter Weather including Ice Storms	2.0	3.0	3.0	5.0	2.7	13.3
2) Flooding (dam failure, riverine, spring rains, beaver dams, ice jams)	2.0	2.0	3.0	5.0	2.3	11.7
3) Hurricane & Tropical Storm	2.0	3.0	3.0	4.0	2.7	10.7
4) Tornado/Downburst	4.0	3.0	3.0	3.0	3.3	10.0
5) Landslide, Mudslide & Erosion	1.0	2.0	2.0	5.0	1.7	8.3
6) Drought	2.0	2.0	4.0	3.0	2.7	8.0
7) High Wind (windstorms)	2.0	3.0	3.0	3.0	2.7	8.0
8) Severe Thunderstorms & Lightning	2.0	2.0	2.0	3.0	2.0	6.0
9) Extreme Temperatures (Hot & Cold)	1.0	2.0	1.0	4.0	1.3	5.3
10) Earthquake	4.0	4.0	4.0	1.0	4.0	4.0
11) Wildfire	2.0	3.0	3.0	1.0	2.7	2.7
12) Hailstorms	1.0	3.0	1.0	1.0	1.7	1.7
Human-Caused Hazards						
1) Hazardous Material - Transport	4.0	4.0	4.0	4.0	4.0	16.0
2) Hazardous Material - Fixed	2.0	3.0	3.0	2.0	2.7	5.3
3) Dam Failure (Hydro)	2.0	2.0	2.0	2.0	2.0	4.0
4) Terrorism	4.0	4.0	4.0	1.0	4.0	4.0
5) Epidemic/Pandemic	4.0	1.0	3.0	1.0	2.7	2.7
6) Extended Power Failure (5+ days)	2.0	2.0	3.0	1.0	2.3	2.3

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 Piermont, Grafton County and the State and listed them in *Table 3.2, Historic Hazard Identification.*

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

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

These criteria were combined using 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. Piermont National Flood Insurance Program (NFIP) Status

Piermont has been a member of the National Flood Insurance Program since April 2, 1986. Piermont has a relatively small flood plain with approximately 1.72 square miles of land in the 100-year floodplain[8], 1.4 square miles of which is inland water. The floodplain areas of Piermont are primarily along the Connecticut River. Although Piermont is likely to experience flooding on several roads and along most small rivers and streams, only the area along the Connecticut River is indicated in the most recent Digital Flood Insurance Rate Maps (FIRM). The latest Flood Insurance Rate Studies (FIRS) and DIFRMS are dated February 20, 2008.

According to the NH Office of Energy and Planning, there is one NFIP residential policy in effect in Piermont for a total of $151,300 of insurance in force. No losses have been paid and there have been no reported repetitive losses.[9] 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*.

NATIONAL FLOOD INSURANCE PROGRAM

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

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

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

[8] GIS Analysis of Grafton County DFIRM (Digital Flood Insurance Rate Map)
[9] NH Office of Strategic Initiatives; Jennifer Gilbert, January 23, 2017

Piermont established a stand-alone flood ordinance called the "Town of Piermont Floodplain Ordinance"; this ordinance was most recently revised in March 2007. The ordinance begins with the following statement[10]:

> *"This ordinance, adopted pursuant to the authority of RSA 674:16, shall be known as the Town of Piermont Floodplain Development Ordinance. The regulations in this ordinance shall overlay and supplement the regulations in the Town of Piermont Zoning Ordinance, and shall be considered part of the Zoning Ordinance for purposes of administration and appeals under state law. If any provision of this ordinance differs or appears to conflict with any provision of the Zoning Ordinance or other ordinance or regulation, the provision imposing the greater restriction or more stringent standard shall be controlling.*
>
> *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 its Flood Insurance Rate Maps dated February 20, 2008 which are declared to be part of this ordinance and are hereby incorporated by reference, and any subsequent revisions thereto."*

Elements of the Piermont Floodplain Ordinance are listed below with a brief description of the item if warranted[11]:

Section 1. DEFINITION OF TERMS

Section 2. FLOOD PLAIN SET BACK

> *"All parts of any structure, residential, non-residential, commercial, industrial or agricultural, including mobile homes, must be set back at least 75 feet from the flood plain boundary as delineated by FIRM. Further, that no substantial improvements be permitted to any structure already existing in the delineated flood hazard area."*

Section 3. PERMITS

> *"All proposed development in any special flood hazard areas shall require a permit approved by the Zoning Administrator".*

Section 4. CONSTRUCTION REQUIREMENTS

> Requirement for the Zoning Administrator to review of *"all building permit applications for new construction or substantial improvements to determine whether proposed building sites will be reasonably safe from flooding."* Section 4 goes on to discuss requirements to prevent flooding.

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

[10] Town of Piermont Flood Plain Ordinance, Revised 03/07; all italicized words are taken directly from the ordinance
[11] Items in italic are taken directly from the Piermont Flood Plain Ordinance

Section 5. WATER AND SEWER SYSTEMS

Specifications for water & sewer systems, this item states *"…the applicant shall provide the Zoning Administrator with assurance that these systems will be designed to minimize or eliminate infiltration of flood waters into the systems and discharges from the systems into flood waters, and on-site waste disposal systems will be located to avoid impairment to them or contamination from them during periods of flooding".*

Section 6. CERTIFICATION

"For all new or substantially improved structures located in special flood hazard areas, the applicant shall furnish the following information to the Zoning Administrator:

a. *the as-built elevation (in relation to NGVD) of the lowest floor (including basement) and include whether or not such structures contain a basement.*

b. *if the structure has been flood proofed, the as-built elevation (in relation to NGVD) to which the structure was flood proofed.*

c. *Any certification of flood proofing.*

The Zoning Administrator shall maintain the aforementioned information for public inspection and shall furnish such information on request."

Section 7. OTHER PERMITS

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

Section 8. WATERCOURSES

Section 8 details the specifications for riverine situations, floodways and watercourses, and coordination with the Wetlands Board of New Hampshire (DES); among other watercourse-related items, this ordinance states: *"No encroachments, including fill, new construction, substantial improvements, and other development are allowed within the floodway that would result in any increase in flood levels within the community during the base flood discharge".*

Section 9. SPECIAL FLOOD HAZARD AREAS

Section 9 provides specifications for new construction or substantial improvements in Zone A and AE as well as the determination of the 100-year flood elevation, flood proofing requirements and lowest floor requirements. Manufactured homes and recreational vehicles are also discussed within this Item.

Section 10. VARIANCES & APPEALS

Section 10 includes a description of the variance and appeals process and states, "*Any order, requirement, decision or determination of the Zoning Administrator made under this ordinance may be appealed to the Zoning Board of Adjustment as set forth in RSA 676:5".*

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 Piermont 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 Items #16 & 17, Tables 8.1 & 9.1**).

The Town of Piermont, 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.

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

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 Piermont Planning Team noted that no significant wildfires have occurred in Piermont in the recent past, but that most 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. Piermont'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 no municipal water supply in Piermont 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 Piermont is fairly safe from the effects of natural hazards. However, due to Piermont's geographic location, forested lands, steep hills, heavy snow pack and topography, there is always a possibility of future disasters in Piermont. The Town of Piermont 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 Piermont, based on analysis done in *Table 3.1, Hazard Threat Analysis*, are described below.

SEVERE WINTER WEATHER INCLUDING ICE STORMS

Severe winter weather events, particularly ice storms, are felt to pose a great risk to the people of Piermont. 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 Highway Department.

Ice storms on the other hand pose a serious threat as they are unpredictable and can create a massive amount of damage and long-lasting power outages. Areas above 1,000 feet are more susceptible to severe ice storms. Elevations in Piermont range from 568 feet to the summit of Piermont Mountain with an elevation of 2,717' above sea level[12], therefore ice storms have a high probability of occurring in Piermont.

[12] https://en.wikipedia.org/wiki/Piermont,_New_Hampshire

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

FLOODING (DAM FAILURE, RIVERINE, SPRING RAINS, BEAVER DAMS, ICE JAMS)

Road flooding, washouts and closures are significant in Piermont. With increased intensity of storms and logging operations that have affected the rate of stormwater flow down the mountains, it is expected that future road flooding will occur. As stormwater flows into ditches, debris that is picked up along the way often jams up culverts thus causing the stormwater to find other routes, going around culverts and across roads. It is hoped that with the most recent flood event on July 1, 2017, FEMA funding will be available to mitigate road flooding for the future.

Storms in recent years have created flooding in much the same locations throughout the Community, in 2008 and 2014 and most recently on July 1, 2017. Specific locations that have caused flooding were identified and can be seen in *Map 3, Past & Potential Areas of Concern* and listed *in Table 3.2, Historic Hazard Identification.*

As a result of the 2017 storm, the Emergency Management Director has submitted a list of damaged roads to the Planner (see box to right). There is a good possibility that this event will be declared a Presidential Disaster Declaration. The total estimate of damage and expenses related to this storm is expected to be $250,000.

Impacted Roads, July 1, 2017

Piermont Heights Road
Bean Brook Road
Indian Pond Road
School Lot Road
Cape Moonshine Road
Bedford Road
Cross Road

In addition to road flooding, other flooding issues also exist in Piermont including flooding from beaver dams, ice jams, heavy rain and rapid snowmelt and riverine flooding along the Connecticut River. Fortunately, flooding on the Connecticut River primarily affects farmland.

There is a high probability that future flooding will occur in Piermont. However, the Town hopes that as a result of the damage done on July 1, 2017, most of the primary culvert issues can be mitigated with disaster funding. For more information on local road flooding, refer to Chapter 5.

HURRICANES & TROPICAL STORMS

Hurricanes and tropical storms have occurred in Piermont 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 Piermont, Tropical Storm Irene brought heavy rain and minor road flooding on several roads in the Community, including Indian Pond Road, Piermont Heights Road and Bean Brook Road. Partial road washouts and flooding of some structures occurred. For more information on hurricanes and tropical storms, refer to Chapter 5.

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[13]. 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 Piermont, 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 Piermont. Several of the State's hazards however were excluded from this Plan. These include the following:

State Hazard	Reason for exclusion from Piermont's Plan
Coastal Flooding	Distance away from the sea
Radon	Felt to be an individual homeowner's responsibility
Radiological	Distance away from a nuclear power plant
Fire & Hazardous Materials	Addressed with "Wildfire" and "Hazard 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 Piermont is particularly impactful if combined with power failure, as would most likely be the case with severe winter storms, blizzards and ice storms, hurricanes, tropical storms and windstorms. The food supply of individual citizens could become quickly depleted should a power failure last for a week or more. An outage during the winter months could result in frozen pipes and the lack of water and heat, a particular concern for the Town's 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

NH Route 10 serves as the major north-south roadway for those travelling from northern communicates such as Haverhill, Lisbon and Littleton to the Hanover and Lebanon region. NH Route 25C travels from Piermont, into Warren and eventually Plymouth via NH Route 25 where it joins up with Interstate 93. The two highways carry a considerable amount of vehicular traffic and are major routes between many communities.

Piermont's roads are often travelled by trucks and busses carrying goods and people from southern NH and/or Vermont to other parts of the State. Many of Piermont'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.

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

[13] State Mitigation Pan Review Guide, FEMA, Released March 2015, Effective March 2016, Section 3.2, page 13

TABLE 3.2: HISTORIC HAZARD IDENTIFICATION

2012 HMPT = 2012 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
Past Flooding Hazards including Riverine, Heavy Rainfall, Rapid Snowmelt, Ice Jam Flooding & Local Road Flooding: Riverine flooding is the most common disaster event in the State of NH. Significant riverine flooding in some areas of the State occurs in less than ten year intervals and seems to be increasing with climate change. The entire State of NH has a high flood risk. Some areas in Piermont that are prone to flooding and road erosion were mapped and can be seen on ***Map 3, Past & Potential Areas of Concern***; flood events have the potential to impact the Community on a town wide basis.				
Flooding	1938	Piermont at Connecticut River	Connecticut River flooding in 1938 rose to the top step of the cellar stairs in the one house that has the potential for flooding along the Connecticut River in Piermont.	2017 HMPT
Severe Storms & Flooding	July 11, 1973	Piermont	**Presidential Disaster Declaration DR-399:** The Connecticut River flooded, Route 25 was closed in Orange (VT); river came over Route 25 on Piermont side of the Connecticut River; lost every bridge in Town that year; had to go through Haverhill to get to Piermont in some parts of Town.	FEMA & 2017 HMPT
Flooding (ice jam)	1980	Eastman Brook	Ice jams in Piermont occur mostly on Eastman Brook; in 1980, a significant ice jam caused the loss of a couple of bridges and flood waters from the brook were diverted by the jam to come down NH Route 25C.	2017 HMPT
Severe Storms & Flooding	October 7-18, 2005	Belknap, Cheshire, Grafton, Hillsborough, Merrimack & Sullivan	**Presidential Disaster Declaration DR-1610:** State and federal disaster assistance reached more than $3 million to help residents and business owners in New Hampshire recover from losses resulting from the severe storms and flooding in October; heavy rain occurred in Piermont but there was no significant impact.	FEMA & 2017 HMPT
Severe Storms & Flooding	May 12-23, 2006	Belknap, Carroll, Grafton, Hillsborough, Merrimack, Rockingham & Strafford	**Presidential Disaster Declaration DR-1643:** Flooding in most of southern NH, May 12-23, 2006. (aka: Mother's Day Storm); although a rainy period in Piermont, there was no significant impact.	FEMA & 2017 HMPT
Nor'easter, Severe Storms & Flooding	April 15-23, 2007	All Ten NH Counties	**Presidential Disaster Declaration DR-1695:** Flood damages; FEMA & SBA obligated more than $27.9 million in disaster aid following the April nor'easter. (aka: Tax Day Storm); although a rainy period in Piermont, there was no significant impact.	FEMA & 2017 HMPT

Type of Event	Date	Location	Impact	Source
Severe Storms & Flooding	July 24-August 14, 2008	Belknap, Carroll & Grafton & Coos	**Presidential Disaster Declaration DR-1787:** Severe storms, tornado and flooding on July 24, 2008; in August 2008 Piermont received a major rain storm with over 5" rain in 20 minutes and received FEMA assistance; the heavy rain caused multiple road washouts; Route 25C, River Road, Robins Way & Cross Road were affected; River Road was closed; flood water went over the top of a bridge on small stream that comes off Black Hill; logs floated down the brook causing water to overflow; water picked up trees and even round bales of hay and put them onto roads and other unusual places; culverts could not handle the amount of water that flowed; also lost beaver dam, two storms came together over Piermont and stopped.	FEMA & 2017 HMPT
Severe Storms & Flooding	October 2010	Connecticut River	In October of 2010, heavy rains caused the Connecticut River to flood onto farm fields, particularly at Gladstone Farm in Fairlee, VT where it was estimated that 70% of the farm's fields were underwater; it was estimated that 60,000 to 100,000 pumpkins were swept into the Connecticut River; there was no significant impact in Piermont which is above Fairlee, but yet an interesting event showing the force of the flooding on the Connecticut River. *(Source: http://uwire.com/2010/10/05/flood-sweeps-pumpkins-into-river/)*	2017 HMPT
Severe Storms & Flooding	May 26-30, 2011	Coos & Grafton County	**Presidential Disaster Declaration DR-4006:** May Flooding Event, May 26th-30th 2011 Coos & Grafton County. (aka: Memorial Day Weekend Storm); although a rainy period in Piermont, there was no significant impact.	FEMA & 2017 HMPT
Severe Storms, Flooding	July 9-10, 2013	Cheshire, Sullivan & Grafton	**Emergency Declaration DR-4139:** Severe storms, flooding and landslides during the period of June 26 to July 3, 2013 in Cheshire, Sullivan and southern Grafton Counties; although a rainy period in Piermont, there was no significant impact.	FEMA & 2017 HMPT
Heavy Rains, Flooding	2014	Eastman Brook	Eastman Brook Watershed is the number one area of Piermont that experiences flooding; roads have been underwater numerous times; in 2014, three consecutive thunder storms caused road flooding along with some structure flooding; Eastman Brook roughly follows the course of NH Route 25C as the brook flows from Lake Tarleton to its confluence with the Connecticut River.	2017 HMPT

Type of Event	Date	Location	Impact	Source
Severe Storms & Flooding	July 1, 2017	Piermont & Grafton County	Heavy rain produced significant road damage in the usual locations throughout Piermont; Piermont estimates $250,000 worth of total costs incurred from this unusually heavy rain event; heavy rains (up to 4.5 inches in some locations) caused flash flooding in much of central New Hampshire and Grafton County; numerous road washouts were reported in Littleton, Piermont, Campton, Canaan, Haverhill, Bath, Bethlehem, Woodstock, Benton, Campton and Piermont. ***(expected Presidential Disaster Declaration)*** The roads directly affected during this storm where the following: ***Cross Road:*** *Cross Road experienced flooding on when the culvert (private homeowner) was overwhelmed, causing the closure of Cross Road for an hour; part of the road also washed out.* ***Indian Pond Road:*** *Heavy rain created a 20' deep hole; the new 4' culvert from 7-8 years ago could not handle the volume of rain this time; no structures were involved but flood waters went over the road, washing part of the road out; took 12 trucks of gravel just to get the road open.* ***Bedford Road:*** *The heavy flow of stormwater that came out of the forest overwhelmed and crushed the plastic culverts on Bedford Road and brought debris into the ditches leaving no place for the water to go but over the road; washed out side of Bedford Road in two places causing a road closure for three days and limiting access for the single resident that lives there.* ***Cape Moonshine Road:*** *Heavy rainfall was too much for the plastic culverts on Cape Moonshine Road to handle causing parts of the road to wash out; culverts actually "bent" and were standing upright; the road was closed for 3-4 days leaving several residents stranded.* ***School Lot Road:*** *Heavy rain brought erosion and soil deposits in the brook by School Lot Road; stormwater in the brook found an alternative route through the woods and onto School Lot Road causing the road to wash out.* **Bean Brook Road***: Bean Brook Road was washed out due to the volume of water that fell during this storm; bridge scouring and road wash out resulted, closing the road for three days creating accessibility problems.* ***Piermont Heights Road:*** *Heavy rain caused debris to plug up the culvert on Piermont Heights Road; the flow of water was too much for the culvert to handle causing the road flooding; road was closed for two days.*	2017 HMPT

Type of Event	Date	Location	Impact	Source
Past Wildfire Hazards: New Hampshire is heavily forested and is therefore vulnerable to wildfire, particularly during periods of drought. The proximity of many populated areas to the State's forested land exposes these areas to the potential impact of wildfire. Wildfires were not mapped; however, the Wildland Urban Interface (WUI) and Critical Infrastructure & Key Resources (CIKR) in the WUI are mapped and can be seen in ***Map 2, Historic Wildfires & the Wildland Urban Interface***; wildfires have the potential to impact the Community on a town wide basis.				
Wildfire	2-Jul-53	NA	**Presidential Disaster Declaration DR-11:** no impact in Piermont.	FEMA
No significant wildfires (greater than 5 acres) have been reported since the last Hazard Mitigation Plan in 2012				
Past High Wind Hazards including Hurricanes, Tropical Storms, Tornadoes, Downbursts & Windstorms: Tornadoes are spawned by thunderstorms and occasionally by hurricanes; tornadoes may occur singularly or in multiples. A downburst is a severe localized wind blasting down from a thunderstorm. Downburst activity is prevalent throughout NH and is becoming more common with climate change; most downbursts go unrecognized unless significant damage occurs. Hurricanes develop from tropical depressions which form off the coast of Africa. New Hampshire's exposure to direct and indirect impacts from hurricanes is real, but modest, as compared to other states in New England. A hurricane that is downgraded to a Tropical Storm is more likely to have an impact in New Hampshire. Several areas of high winds or microbursts were mapped and can be seen in ***Map 3, Past & Potential Areas of Concern***; tornadoes and other wind events have the potential to impact the Community on a town wide basis.				
Hurricane	September 21, 1938	Region Wide	**The Great New England Hurricane:** Statewide there were 12 (or 13) deaths; damages in NH were about $12.3 million dollars in 1938 dollars (about $200 million now); in New England, 20,000 structures were damaged, 26,000 automobiles lost, 6,000 boats, 325, 000 sugar maples were lost and 80% of the people lost power; like the rest of NH, Piermont was struck with high winds, flooding and heavy rains during the Hurricane of 1938. *(Source http://nhpr.org/post/75th-anniversary-new-englands-greatest-hurricane)*	2017 HMPT
Hurricane	August 31, 1954	Region Wide	**Hurricane Carol:** Hurricane Carol resulted in an extensive amount of trees blown down and property damage; large crop loss; localized flooding; winds measured at over 100 mph; followed by Hurricane Edna just 12 days later, which caused already weakened trees to fall. *(Source: http://www.wmur.com/Timeline-History-Of-NH-Hurricanes/11861310)*	2017 HMPT
Hurricane Bob, Severe Storm	August 18-20, 1991	Region Wide	**Presidential Disaster Declaration DR-917:** Although Hurricane Bob hit NH with heavy rains and high winds; there was no significant impact in Piermont.	FEMA & 2017 HMPT
Tropical Storm Floyd	September 16-18,1999	Belknap, Cheshire & Grafton Counties	**Presidential Disaster Declaration DR-1305:** The declaration covers damage to public property from the storm that spawned heavy rains, high winds and flooding over the period of September 16-18; although Tropical Storm hit NH with heavy rains and high winds, there was no significant impact in Piermont.	FEMA & 2017 HMPT

Type of Event	Date	Location	Impact	Source
Hurricane Katrina Evacuation	August 29-October 1, 2005	All Ten NH Counties	**Emergency Declaration EM-3258:** Assistance to evacuees from the area struck by Hurricane Katrina and to provide emergency assistance to those areas beginning on August 29, 2005 and continuing; The President's action makes Federal funding available to the State and all 10 counties of the State of New Hampshire; no evacuees or shelter animals taken to Piermont.	FEMA & 2017 HMPT
High Winds / Microburst	Spring 2008	Piermont	Numerous trees and utility poles down in Piermont.	2012 HMPT
High Winds / Microburst	2010 or 2011	Bean Brook Road-Piermont	Downburst hit in the southern area of Piermont in the area of Bean Brook Road; multiple trees down, power out but no structure damage occurred.	2017 HMPT
Hurricane & Tropical Storm Irene	August 26-September 6, 2011	**EM 3333:** All Ten NH Counties **DR-4026:** Carroll, Coos, Grafton, Merrimack, Belknap, Strafford, & Sullivan	**Emergency Declaration EM-3333 & Presidential Disaster Declaration DR-4026:** Tropical Storm Irene Aug 26th- Sept 6, 2011 Carroll, Coos, Grafton, Merrimack, Belknap, Strafford, & Sullivan Counties; Emergency Declaration for all ten counties; Tropical Storm Irene had only a minor impact in Piermont; Indian Pond Road, Piermont Heights, Bean Brook Road saw minor flooding issues.	FEMA & 2017 HMPT
Hurricane & Tropical Storm Sandy	October 26-November 8, 2012	**EM 3660:** All Ten NH Counties **DR-4095:** Belknap, Carroll, Coos, Grafton & Sullivan	**Emergency Declaration EM-3660 & Presidential Disaster Declaration DR-4095:** 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; although Tropical Storm Sandy brought heavy rains to all of New Hampshire, there was no significant impact in Piermont.	FEMA & 2017 HMPT
High Winds / Microburst	2016	River Road-Piermont	Suspected microburst; in the vicinity of River Road; no structure damage but the microburst took some trees and power lines down.	2017 HMPT
Past Severe Winter Weather Hazards including Nor'easters, Blizzards & Ice Storms: 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.				
Ice Storm	Mid-1960's	Piermont	Town wide ice storm caused power to be out for two weeks in some parts of Piermont; it took a full week to get all of the Town's roads open.	2017 HMPT

Type of Event	Date	Location	Impact	Source
Snowstorms	Winter of 1968-69	Piermont	The winter of 1968-69 brought record amounts of snow to all of NH; Pinkham Notch at the base of Mount Washington recorded more than 75" of snowfall in a four day period at the end of February 1969 in addition to snow that had already fallen; all of NH experienced difficulty with snow removal because of the great depths that had fallen from December 1968 to April 1969; significant amounts of snow fell in Piermont but the accumulation was handled by the Highway Department.	2017 HMPT
High Winds, Tidal Surge, Coastal Flooding & Snow	February 6, 1978	Region Wide	**Presidential Disaster Declaration DR-549:** Blizzard of '78; region-wide Blizzard severely affecting southern New England and leaving high accumulations throughout all of New England and New Hampshire; events accumulations to 28" in northeast New Hampshire, 25" in west central New Hampshire and 33" along coastal New Hampshire; hurricane-force winds and record-breaking snowfall made this storm one of the more intense to occur this century across parts of the northeastern United States; significant amounts of snow fell in Piermont but the accumulation was handled by the Highway Department.	FEMA & 2017 HMPT
Snowstorm	1997	Piermont	Power outages throughout Piermont due to heavy snowfall; otherwise the accumulation was handled by the Highway Department.	2012 HMPT
Ice Storm	January 7-25, 1998	Piermont	**Presidential Disaster Declaration DR-1199: Although Piermont received snowfall and ice at higher elevations, there was no significant impact and the accumulation was handled by the Highway Department**.	FEMA & 2017 HMPT
Snowstorm	March 5-7, 2001	Cheshire, Coos, Grafton, Hillsborough, Merrimack, & Strafford	**Emergency Declaration EM-3166:** Declaration covers jurisdictions with record and near-record snowfall from the late winter storm that occurred March 2001; significant amounts of snow fell in Piermont but the accumulation was handled by the Highway Department.	FEMA & 2017 HMPT
Snowstorm	December 6-7, 2003	Belknap, Carroll, Cheshire, Coos, Grafton, Hillsborough, Merrimack & Sullivan	**Emergency Declaration EM-3193:** The declaration covers jurisdictions with record and near-record snowfall that occurred over the period of December 6-7, 2003; significant amounts of snow fell in Piermont but the accumulation was handled by the Highway Department.	FEMA & 2017 HMPT

Type of Event	Date	Location	Impact	Source
Snowstorm	March 11-12, 2005 January, 22-23, 2005 February 10-11, 2005	**EM-3207 (Jan):** Belknap, Carroll, Cheshire, Grafton, Hillsborough, Rockingham, Merrimack, Strafford & Sullivan **EM-3208 (Feb):** Carroll, Cheshire, Coos, Grafton & Sullivan **EM-3201 (Mar):** Carroll, Cheshire, Hillsborough, Rockingham & Sullivan	**Emergency Declaration EM-3207:** January storm; more than $3.5 million had been approved to help pay for costs of the heavy snow and high winds; total aid for the January storm was **$3,658,114.66** (Grafton: $137,118.71); **Emergency Declaration EM-3208**: February storm; total aid for the February storm was $1,121,727.20 (Grafton: $213,539.52) **EM 3208-002:** The Federal Emergency Management Agency (FEMA) had obligated more than $6.5 million to reimburse state and local governments in New Hampshire for costs incurred in three snow storms that hit the state earlier this year, according to disaster recovery officials. Total aid for all three storms was $6,892,023.87 (January: $3,658,114.66; February: $1,121,727.20; March: $2,113,182.01); Grafton County did not received aid for the March 2005 storm; significant amounts of snow fell in Piermont but the accumulation was handled by the Highway Department.	FEMA & 2017 HMPT
Severe Winter Storm & Ice Storm	December 11-23, 2008	All Ten NH Counties	**Presidential Disaster Declaration DR-1812 & Emergency Declaration EM-3297:** 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; snow fell in Piermont but the accumulation was handled by the Highway Department.	FEMA & 2017 HMPT
Severe Winter Storm, Rain & Flooding	February 23 - March 3, 2010	Grafton, Hillsborough, Merrimack, Rockingham, Strafford & Sullivan	**Presidential Disaster Declaration: DR-1892:** Flood and wind damage to most of southern NH including six counties; 330,000 homes without power; more than $2 million obligated by June 2010; significant amounts of snow fell in Piermont but the accumulation was handled by the Highway Department.	FEMA & 2017 HMPT
Snowstorm	March 6-7, 2011	Piermont	Ice at higher elevations in Piermont caused trees down and power outages; flooding and erosion at lower elevations,	2012 HMPT
Snowstorm	October 29-30, 2011	All Ten NH Counties	**Emergency Declaration EM-3344:** Severe storm during the period of October 29-30, 2011; all ten counties in the State of New Hampshire. (aka: Snowtober); snow fell in Piermont but the accumulation was handled by the Highway Department.	FEMA & 2017 HMPT
Snowstorm	February 8, 2013	All Ten NH Counties	**Emergency Declaration DR-4105:** Nemo; heavy snow in February 2013; snow fell in Piermont but the accumulation was handled by the Highway Department.	FEMA & 2017 HMPT
Ice Storm	Winter of 2014	Piermont	A localized ice storm in 2014 brought trees down and caused power outages in the eastern part of Piermont.	2017 HMPT

Type of Event	Date	Location	Impact	Source
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 cause little or no damage and have not exceeded a magnitude of 5.5 since 1940 These hazards were not mapped; earthquakes have the potential to impact the Community on a town wide basis.				
Earthquake	12/20/40	Ossipee, NH	Magnitude 5.5	State Hazard Mitigation Plan 2013
Earthquake	12/24/40	Ossipee, NH	Magnitude 5.5	
Earthquake	12/28/47	Dover NH-Foxcroft, ME	Magnitude 4.5	
Earthquake	06/10/51	Kingston, RI	Magnitude 4.6	
Earthquake	04/26/57	Portland, ME	Magnitude 4.7	
Earthquake	04/10/62	Middlebury, VT	Magnitude 4.2	
Earthquake	06/15/73	Quebec Border / NH	Magnitude 4.8	
Earthquake	01/19/82	West of Laconia, NH	Magnitude 4.5	
Earthquake	06/23/10	Ontario-Quebec Border	Magnitude 5.0	
Earthquake	06/26/10	Boscawen, NH	Magnitude 3.1	
Earthquake	08/23/11	Virginia	Magnitude 5.8	
Earthquake	09/18/12	Concord, NH	Magnitude 1.2	
Earthquake	10/16/12	Waterboro, ME	Magnitude 4.0	
Past Drought Hazards: 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.				
Drought	1929-1936	Statewide	Regional	NH Drought Historical Event - NH DES
Drought	1939-1944	Statewide	Severe in southeast and moderate elsewhere	
Drought	1947-1950	Statewide	Moderate	
Drought	1960-1969	Statewide	Regional longest recorded continuous spell of less than normal precipitation	
Drought	2001-2002	Statewide	Third worst drought on record;	
Drought	2016	Southern NH	Declared drought for all counties except Coos County during the summer of 2016	NH HSEM

Type of Event	Date	Location	Impact	Source
Other Past or Potential Hazards: Human-caused hazards and other unusual hazardous events have been noted throughout NH. Among others, one concern is the transport of hazardous material through communities by rail and tractor-trailer. These hazards were not mapped; other natural or human-caused hazards have the potential to impact the Community on a town wide basis.				
Hailstorm	Summer 1998	Piermont	Thunder & Lightning Storm with hail; damaged a few houses and John's Auto Body.	2012 HMPT
Hailstorm	21-Jul-10	Piermont	Hailstorm caused damage to houses, cars & crops.	2012 HMPT
Erosion	Has become annual or more	Indian Pond Road/Flooding & Erosion	Undersized culverts (2-36") do not handle water, floods once every several years; submerges road making it impassable; no significant erosion due to pavement; problem has been mitigated	2017 HMPT & 2012 HMPT
Erosion	Constant	Indian Pond Road/Severe Winter & Erosion	Half stone/half culvert bridge is shifting due to frost creating lose stones and a deficient bridge.	2017 HMPT & 2012 HMPT
Erosion	Beginning several years ago	Barton Road/Erosion	Large rocks fell into Eastman Brook many years ago causing heightened water levels which floods into new channels during high water; recent floods have moved some of the rocks in the brook and now the brook seems to running in its normal path.	2017 HMPT & 2012 HMPT
Erosion	2-3 times a year with large storms	Barton Road/Erosion	Drainage water gains tremendous velocity travelling down long, sloped ditches (1,400'); the road is lower than adjacent land or borders residential lawns; occurs 2-3 times a year requiring road work after large storms.	2017 HMPT & 2012 HMPT
Erosion	Over many years	Bean Brook Road/Erosion	Clay subsoil of road slumps when wet; in 1980s lost road material down the bank; beginning to slump again.	2017 HMPT & 2012 HMPT
Erosion	2008	Cross Road/Erosion & Flooding	Past flooding caused by stream jumping its bank; trees and brush in brook hold gravel raising brook; expected to flood in future due to raised height of stream.	2017 HMPT & 2012 HMPT
Erosion	Every other spring; 1972 flood took out road	Rodiman Lane/Erosion & Flooding	Debris has filled into the intermittent stream raising its bed; the bed is migrating; flooding has caused some structure damage.	2017 HMPT & 2012 HMPT
Erosion	Spring	Field off Bedford Road on Eastman Brook/Erosion	Brook changed course; losing town field property; Conservation Committee with the School have planted box alders, willows, water absorbing trees; did a divergent ditch away from field; still being worked.	2017 HMPT & 2012 HMPT

Type of Event	Date	Location	Impact	Source
Severe Thunderstorms & Lightning			Although the Team did not identify specific examples or past occurrences of these natural 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.	
Extreme Temperatures (hot & cold)				

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

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

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

Cape Moonshine Road damage, July 1, 2017
Photo Credit: Town of Piermont

Chapter 4: Critical Infrastructure & Key Resources (CIKR)

With Team discussion and brainstorming, Critical Infrastructure and Key Resources (CIKR) within Piermont 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	Old Church Building Police Department (generator)	Emergency Operations Center (Secondary at EMD's Residence) Law Enforcement	All Hazards	1
2	Fire Station (generator)	Fire Suppression 3rd Emergency Operations Center	All Hazards	1
3	Piermont Congregational Church (generator)	Primary Shelter	All Hazards	1
4	Piermont Village School (generator)	Secondary Shelter	All Hazards	1
5	Town Highway Garage	Heavy Equipment, Sand & Gravel	All Hazards	1
6	Town Office	Continuity of Government Records	All Hazards	1
NM	Dartmouth Hitchcock Medical Center	Medical Services	All Hazards	1
NM	Cottage Hospital	Medical Services	All Hazards	1
Helicopter Landing Zones				
7	Ball Field (near Highway Department)	Helicopter Landin Zone	All Hazards	1
8	Lake Armington Ball Field	Helicopter Landin Zone	All Hazards	1
Bridges & Culverts on the Evacuation Routes				
9	Route 10 (#1)	Culvert on Evac Route	All Hazards & Flooding	2
10	Route 10 (#2)	Culvert on Evac Route	All Hazards & Flooding	2
11	Route 10 (#3) South of Szuch Road	Bridge on Evac Route	All Hazards	1
12	Route 10 (#4) @ Eastman Brook	Bridge on Evac Route	All Hazards	1
13	Route 10 (#5) @ Bean Brook	Bridge on Evac Route	All Hazards	1
14	Route 25 (#1)	Culvert on Evac Route	All Hazards	1
15	Route 25 (#2)	Culvert on Evac Route	All Hazards	1
16	Route 25 (#3) @ Connecticut River	Bridge on Evac Route	All Hazards & Flooding	2
17	Route 25C (#1) @ Eastman Brook	Bridge on Evac Route	All Hazards & Flooding	1
18	Route 25C (#2) by Cross Road	Culvert on Evac Route	All Hazards & Flooding	2
19	Route 25C (#3) @ Eastman Brook	Bridge on Evac Route	All Hazards	1

Emergency Response Facilities (ERF)				
20	Route 25C (#4)	Bridge on Evac Route	All Hazards	1
21	Route 25C (#5) @ Eastman Brook	Bridge on Evac Route	All Hazards	1
22	Route 25C (#6) near Old Caddy Camp	Culvert on Evac Route	All Hazards & Flooding	2
23	Route 25C (#7)	Culvert(twin) on Evac Route	All Hazards & Flooding	3
24	Indian Pond Road @ Bean Brook	Bridge on Evac Route	All Hazards	1
25	Cape Moonshine Road near Bixby Camp	Culvert on Evac Route	All Hazards	1
26	Church Street (#1)	Culvert on Evac Route	All Hazards & Flooding	1
27	Church Street (#2)	Culvert on Evac Route	All Hazards & Flooding	1
28	River Road (#1)	Culvert on Evac Route	All Hazards & Flooding	2
29	River Road (#2)	Culvert on Evac Route	All Hazards & Flooding	2
Evacuation Routes				
NH Route 10		Primary Evacuation Route	All Hazards & Flooding	2
NH Route 25		Primary Evacuation Route	All Hazards & Flooding	2
NH Route 25C		Primary Evacuation Route	All Hazards & Flooding	2
Indian Pond Road		Secondary Evacuation Route	All Hazards	1
Cape Moonshine Road		Secondary Evacuation Route	All Hazards & Frost-out	2
Lily Pond Road		Secondary Evacuation Route	All Hazards & Flooding	1
Church Street		Secondary Evacuation Route	All Hazards & Flooding	1
River Road		Secondary Evacuation Route	All Hazards & Flooding	2

TABLE 4.2 – NON- EMERGENCY RESPONSE FACILITIES (NERF)

Non-Emergency Response Facilities (NERF)				
NERFs are facilities, that 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**	
6	Town Offices / Library	Continuity of Government; Town Records; Historical Documents	All Hazards	1
30	Microwave Tower (dam use)	TransCanada communications	All Hazards; Wind; Wildfire	2
31	Transfer station	Transfer Station	All Hazards	1
32	Hydro Dam/Eastman Brook	Dam	All Hazards	1
33	Lake Armington Dam	Dam	All Hazards	1
34	Lake Tarleton Lake	Dam	All Hazards	1
35	Lake Katherine Dam	Dam	All Hazards	1
NM	Sewage System (10-15 homes)	Route 25		

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**	
4	Piermont Village School	Students / Gathering of People	All Hazards	1
3	Congregational Church	Historic	All Hazards	1
1	Old Church Building	Historic	All Hazards	1
36	Oldest House in Town	Historic	All Hazards	1
37	Camp Walt Whitman	Summer Camp / Gathering of People	All Hazards; Wind; Wildfire	2
38	Kingswood Camp	Summer Camp / Gathering of People	All Hazards; Wind; Wildfire	2
39	Piermont Inn	Historic	All Hazards; Wildfire	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**	
40	Four Corners Store & Gas Station	Food, Water, Fuel (gas)	All Hazards & HazMat Transport	1
3	Congregational Church	Food & Water	All Hazards	1
5	Highway Department	Diesel, Sand & Gravel	All Hazards	1
NM	Butler Bus Company (Haverhill)	Mass Transportation	All Hazards	1
For additional resources, please refer to the Town's Emergency Operations Plan (EOP)				

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Chapter 5: Hazard Effects in Piermont

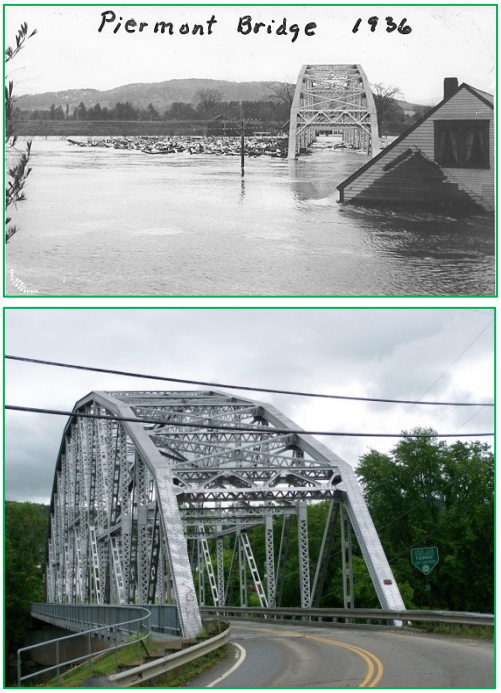
A. Identifying Vulnerable Critical Infrastructure & Key Resources (CIKR)

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 Piermont were identified in GIS; this list was then narrowed by those CIKRs that were located in the FEMA floodplain. Only one CIKR was found in the FEMA flood zone, the Piermont-Bradford Bridge (NH Route 25) over the Connecticut River. Unless there is catastrophic damage to the large hydro dams further north on the Connecticut River, it is unlikely that flood waters would reach this important evacuation bridge.

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, CIKR falling within the Wildland Urban Interface (WUI) were reviewed. Identifying these facilities assists the Team in creating wildfire mitigation action items and prioritizing those action items; it is important to determine which Critical Infrastructure and Key Resources are most vulnerable to wildfires.



Top Photo:
http://larrycoffin.blogspot.com/2016/03/flood-of-1936-floods-dams-and-bridges.html

Bottom Photo:
https://www.flickr.com/photos/kevystew/6686288969

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

MAPS-Structures selection

ID	ALL_HA	NAME	Hazmit_Type
8	ERFH	Lake Arrington Ball Field	Heli Landing Zone
30	NERF	Microwave Tower	Communications
31	NERF	Transfer Station	Transfer Station
33	NERF	Lake Armington Dam	Dam
34	NERF	Lake Tarleton Dam	Dam
37	FPP	Camp Walt Whitman	Gathering of People
38	FPP	Kingswood Camp	Gathering of People

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 Piermont, 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 Piermont'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	$58,610,800	$586,108	$2,930,540
Manufactured Housing	$1,125,000	$11,250	$56,250
Commercial	$1,419,400	$14,194	$70,970
Other Utilities	$1,518,100	$15,181	$75,905
Tax Exempt	$2,608,300	$26,083	$130,415
Utilities	$1,518,100	$15,181	$75,905
Total	$66,799,700	$667,997	$3,339,985
Provided by the Town, October 31, 2016			

Based on this assumption, the potential loss from any of the identified hazards would range from **$0 to $667,997** or **$667,997 to $3,339,985** based on the 2015 Piermont town valuations which lists the assessed value of all structures in Piermont to be **$66,799,700** (see chart above).

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

C. Natural Hazards

Descriptions below represent the **"local impact"** to the Community for the hazards that were identified by the Team. For the **"extent"** of these hazards, please refer to *Appendix C, The Extent of Hazards*, which includes charts such as the Saffir-Simpson Hurricane Wind Scale, the Beaufort Wind Scale, the National Weather Service Heat Index, the Sperry-Piltz Ice Accumulation Index and the Enhanced Fujita Scale for tornadoes. The numbers preceding the hazard name in this section, correspond to the numbers in *Table 3.1, Hazard Threat Analysis*.

1) Severe Winter Weather including Ice Storms .....$667,997 to $3,339,985

Heavy snowstorms typically occur from November 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 Piermont in the past. The ability to get in and out of town and emergency service access can be hindered.

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

Piermont has seen snowstorms that have caused the Town to come to a "stop for 24-48 hours". During one winter in particular, so much snow was dropped that it was impossible for the Highway Department to push any more snow back resulting in Indian Pond Road being single lane for a period of time. Heavy snow such as this can also cause roof collapse, heart attacks due to over work from shoveling and carbon monoxide issues within homes.

Of more concern in Piermont 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.

Several ice storms have affected the Community in the past. In the mid-1960s an ice storm knocked out power for two weeks and caused the closure of many roads for up to week. An ice storm in 2014 also caused town wide power outages and many trees down. The 1998 Ice Storm did not have a significant impact in Piermont 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 Piermont, no significant damage occurred during the 1998 Ice Storm; neither the 1979 or 2008 ice storms impacted Piermont.

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 Piermont 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) Flooding (dam failure, riverine, spring rains, beaver dams, ice jams) ..... $0 to $667,997

Heavy rain, rapid snowmelt and stream flooding can cause culverts to be overwhelmed and roads to wash out. Today, with changes in land use, aging roads, designs that are no longer effective and undersized culverts, the risk of flooding is a serious concern. Piermont is subject to a good deal of flooding, particularly along the banks of the Connecticut River and Eastman Brook, although there are many other locations in Town that also flood. Flooding is also often associated with tropical storms, thunder and lightning storms and hurricanes. Based on the Grafton County Floodplain Map, Piermont has a relatively small 100-year floodplain which follows along the banks of Connecticut River.

Dam Failure: Flooding as a result of overwhelmed or failed dams has the potential to occur in several locations in Piermont. Piermont has five dams: two hydro dams on Eastman Brook, the Lake Armington Dam, the Lake Tarleton Dam and the Lake Katherine Dam. Failure at either the Lake Katherine Dam or the Lake Armington Dam would only have a minor impact in the immediate vicinity of the dams, although water from Lake Katherine could flow into Eastman Brook. The bigger issue is the Lake Tarleton Dam; failure at this site would cause flood waters to flow into Eastman Brook along which road flooding and potential structure flooding can occur. The hydro dams on Eastman Brook are also concerning; failure of this dam could potentially cause not only road damage but possibly structure damage. Flooding that would result from dam failure along the Connecticut River is discussed in Section D. of this chapter.

Riverine Flooding: Riverine flooding along the Connecticut River is generally the result of rapid snowmelt and heavy spring rains although riverine flooding can occur elsewhere in Piermont as a result of overwhelmed brooks and streams, particularly at Eastman Brook and Bean Brook**.** Tropical Storms, hurricanes and summer and fall heavy rain storms could also produce riverine flooding. In 1936 Connecticut River flood waters covered the bottom of the Piermont-Bradford Bridge and in 1938 water reached the "top of the cellar stairs" in one house in the flood zone. By and large, Connecticut River flooding today generally impacts farmland and not roads or homes.

While producing substantial damage in other parts of New Hampshire and in Vermont, Tropical Storm Irene resulted in only minor damage in Piermont along Indian Pond Road, Piermont Heights Road and Bean Brook Road. Tropical Storm Sandy had no impact. With changes in climate the expectation is that although storms may be less frequent, they are likely to be more intense.

Spring Rains: 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 Piermont are long and winding and subject to some of the most severe weather in the State. Flooding from spring rains general creates road flooding in multiple places in Piermont, the most concerning of which is along the Eastman Brook watershed; Eastman Brook is the number one area of flooding in Piermont. Flooding of this sort primarily affects the road and transportation system in Piermont.

Eastman Brook generally follows NH Route 25C running southeast from the higher peaks in Piermont to meet up with the Connecticut River. Several roads along Eastman Brook have been impacted by in the past including Rodimon Lane, Cross Road, Indian Pond Road and Barton Road. In addition, Eastman Brook has flooded over NH Route 25C.

In August of 2008 as a result of a major rain storm that brought 5" of rain in 20 minutes, the Town experienced multiple washouts including the closures of NH Route 25C and River Road. Robins Way and Cross Road were also affected during this storm. During the summer of 2014, three consecutive storms caused significant road flooding along Eastman Brook and some structure flooding.

Flash flooding as a result of heavy rains is the biggest issue. Heavy rains fall on the mountain peaks and rapidly travel down Piermont's brooks and streams, overwhelming ditches and culverts and flooding roadways before quickly receding. As recently as July 1, 2017, the Town experienced a significant rain storm that caused damage in the several locations; please refer to Table 3.2 and Table 9.1 for details.

The continuous erosion of roads makes for a daunting task of "up-keep" for the Highway Department. Fortunately, three of the Town's major thoroughfares, NH Routes 10, 25C and 25 are the responsibility of the State. The Highway Department maintains approximately 21 miles of Class V roads, 16 miles of which are gravel and it was stated that the Town has 152 culverts.

Beaver Dams: Beaver dams can also cause flooding; vigilance on the part of the highway department is required to keep these beaver dams away from culverts and low-lying areas.

Ice Jams: Flooding resulting from ice jams have happened in Piermont in the past, primarily along Eastman Brook. In the past, ice jams have resulted in the loss of two bridges on Eastman Brook and an ice jam in 1980 caused water to be diverted down NH 25C.

As road damage is the most concerning flood-related issue, the expected loss value from flooding would be based primarily on the economic impact on the Community, the loss of accessibility and the time and cost of road repair. Therefore, the estimated loss value due to road flooding was determined to be between 0% and 1% of the total structure.

3) Hurricane & Tropical Storm ..... $0 to $667,997

Wind damage due to hurricanes is a consideration because of the forest and valley floors in Piermont. 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 Piermont and several road washouts. Ditch and culvert issues caused flooding on Indian Pond Road, Piermont Heights Road and Bean Brook. Since Tropical Storm Irene, the Highway Department has worked diligently to expand ditches and replace underperforming culverts. Tropical Storm Sandy had no impact in Piermont, 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) Tornado/Downburst..... $0 to $667,997

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 Piermont or Grafton County. Additionally, in recent years a tornado was spotted in Berlin, but there has been no reported tornado activity in Piermont in the past ten years. More common in Piermont would be a downburst event; these are becoming more and more common in the North Country and could result in damage. A downburst occurred in Piermont in the southern area of town near Bean Brook Road causing fallen trees and power outages. A suspected microburst in 2016 near River Road and Lily Pond Road took trees down and created power outages.

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.

5) Landslide, Mudslide & Erosion ..... $0 to $667,997

Erosion, landslides and mudslides are often associated with heavy rains, steep terrain and the overflow of river banks. Piermont has been impacted by these types of events in the past, particularly along the Connecticut River and Eastman Brook. Erosion and the subsequent loss of land along the river banks, road washouts, overburdened culverts, and changes in the course of rivers and have been some of the effects of this type of erosion in Piermont. Heavy stream flooding often causes culverts to be overwhelmed and roads to wash out.

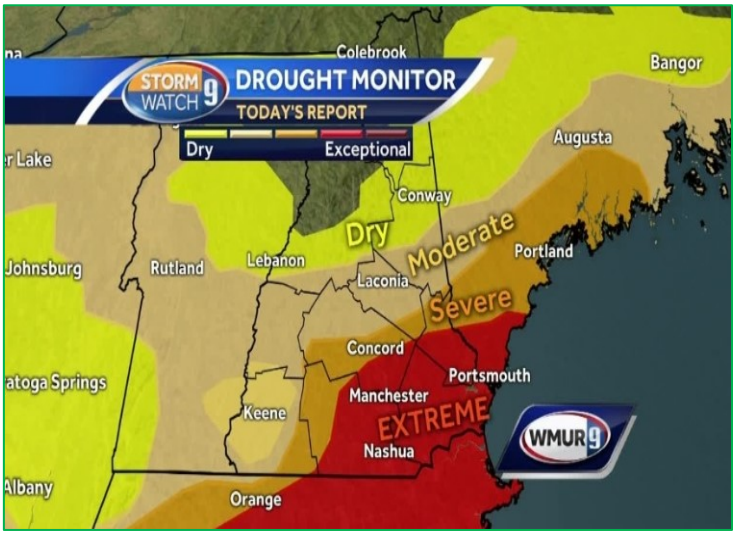
Lack of planning, improper road design and undersized culverts add to the risk of erosion along Piermont's roadways. In addition, minor landsides could result from clear cuts, new development, deforestation and improper land conservation.

During a heavy rain storm in July 2014, three inches of rain fell in 20 minutes. Rodiman Lane was lost three times in two weeks due to road erosion. In 1985, the same type of event happened on Bean Brook Road leading to 50 feet of hillside collapsing onto the road, thus causing the closure of Bean Brook Road. Although this area has since been filled-in, there is still concern in this area. In addition, along Eastman Brook behind Piermont Village School, land is being lost in several spots due to erosion and under scouring of the riverbank. Lastly, an erosion issue exists along the Connecticut River behind the cemetery on River Road. Although the embankment is 80-100 feet high and composed primarily of clay, there is fear that a 4-5 foot sand layer is eroding away and could potentially affect the graves at the cemetery.

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

6) Drought ..... $0 to $667,997

The cost of drought in Piermont is difficult to calculate as any cost would primarily result from an associated fire risk, crop loss and diminished water supply which, in Piermont, is supplied 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. Piermont which is a farming community could feel an extra burden during a drought; crops could be damaged and lack of water for livestock could severely affect the Community's economy.

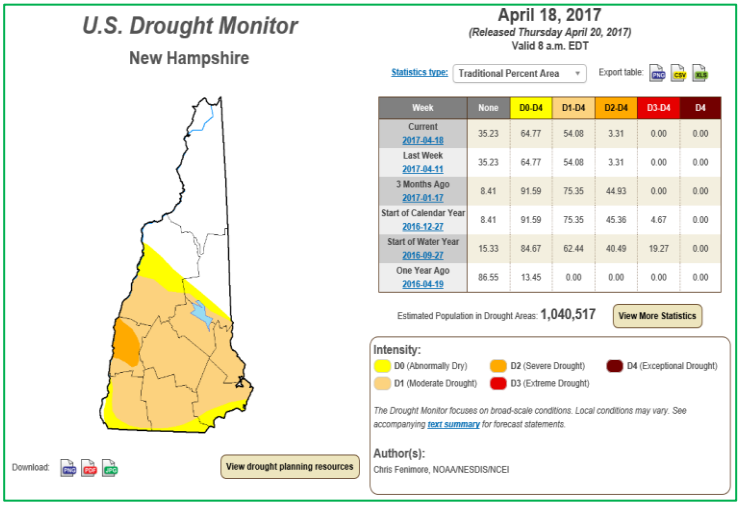


WMUR Archives; September 15, 2016

Fortunately, significant droughts rarely occur in New Hampshire or Piermont. 2016 brought extreme and severe drought conditions to southern New Hampshire, but Piermont remained in the "dry or moderate" category (see map to the left). 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[14], not including the 2016 drought.

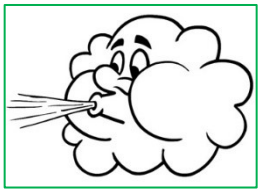
[14] NH DES; http://des.nh.gov/organization/divisions/water/dam/drought/documents/historical.pdf

Fortunately, the 2016 drought has abated, although recovery is still taking place in some areas of the State. Recent drought monitoring depicts drought conditions in New Hampshire and shows no drought to be currently present in Piermont (see chart to right).[15]



If it were to occur, a significant drought in Piermont would not only impact the forested lands of the Town, but also agricultural land which is abundant in Piermont (dairy, produce and beef farms). 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.

7) High Winds (windstorms) ..... $0 to $667,997



Due to the location of Piermont, 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.

In 2010 a windstorm took down trees and power lines on Barton Road causing a power outage for two days. Also in 2010 a strong wind took the door off of the Congregational Church. In the summer of 2016, a windstorm took down trees and created power outages along River Road. Areas around Lake Armington and Lake Tarleton also commonly experience high winds.

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.

8) Severe Thunderstorms & Lightning ..... $0 to $667,997

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

Two locations in Piermont have been hit by lightning in the past; these include the generator at Piermont Village School and the top of Peaked Mountain. The school's generator has been hit a few times, but does have a surge protector. When lightning hit Peaked Mountain it caused a small wildfire. This wildfire was contained, a credit to the Piermont Fire Department as it occurred in a highly inaccessible area making fire suppression a challenge.

[15] US Drought Monitor-New Hampshire, April 18, 2017; https://www.drought.gov/drought/new-hampshire

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. 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.

9) Extreme Temperatures (Hot & Cold).....Structure loss value was not estimated

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

Also of concern today are extreme heat conditions. Few residents, particularly the elderly and vulnerable populations, have air conditioners and are less able to cope with extreme heat. The estimated elderly population is 22% of the total population according to the American Community Survey, 2011-2015.

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. To combat this issue the Town has designated the Congregational Church, which has a generator, as a cooling/warming center.

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.

10) Earthquake ..... $667,997 to $3,339,985

Earthquakes can cause buildings and bridges to collapse, disrupt gas, electric and phone lines and are often associated with landslides and flash floods. Four earthquakes occurred in New Hampshire between 1924-1989 having a magnitude of 4.2 or more. Two of these occurred in Ossipee, one west of Laconia and one near the Quebec border. It is well documented that there are fault lines running throughout New Hampshire, but high magnitude earthquakes have not been frequent in New Hampshire history.

In October 2012, an earthquake with its epicenter in Hollis, ME and a magnitude of 4.6 on the Richter scale occurred. The tremor was felt through most of New England, however it was not felt in Piermont.

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

11) Wildfire ..... $667,997 to $3,339,985

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 Piermont's forested areas. To help combat fire, Piermont maintains and improves firefighting equipment and continuously maintains dry hydrants and fire ponds.

The Team described the forests of Piermont 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."*[16] Burn permits are required in Piermont, 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 Piermont indicates that the majority of fires are human-caused; however no significant wildfires have occurred in Piermont 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 Piermont, 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 Piermont is heavily forested, the potential loss value was determined to be between 1% and 5% of the total assessed structure value.

12) Hailstorms ..... $0 to $667,997

Hailstorm events can occur at any time and cause significant damage. In recent years, Piermont has seen two damaging hailstorms, one in August 1999 and another in August 2010. Both of these hailstorms caused damage to vehicles, roofs, trees and Piermont's abundant agricultural land.

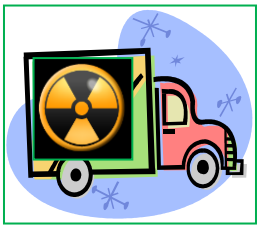
Damage from hail could result in failed crops and structure, roof and vehicular damage, thus creating an economic impact for individual citizens. Overall it was felt that a significant hailstorm event would be unlikely and would cause minimal damage; therefore the potential loss value is estimated at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

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

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 Piermont.

1) Hazardous Material - Transport



The possibility of vehicular accidents involving hazardous materials is identified as a serious hazard in Piermont. The Town's major route, NH Route 10, is very heavily travelled both by large and small vehicles; the contents of these vehicles are rarely known. Tractor trailers hauling fuel, propane and other hazardous materials travel through Piermont on a constant basis, travelling north-south from southern New England and the Hanover area north to Haverhill and then on to Littleton via US Route 302.

The location of a hazardous material transportation accident is the biggest concern. The intersection of NH Routes 10 and 25C at "Four Corners" is perhaps the most dangerous, particularly because trucks, including fuel trucks, must unload in this risky location to serve the Four Corners General Store. Factors affecting the likelihood of a vehicular accident involving hazardous material include icy roads, snow accumulation, heavy rains and other environmental factors.

Also of concern, just across the Connecticut River in Vermont, is an active railroad. Rail cars carrying hazardous materials frequent the area daily; under the right conditions, a spill and/or explosion could impact Piermont.

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.

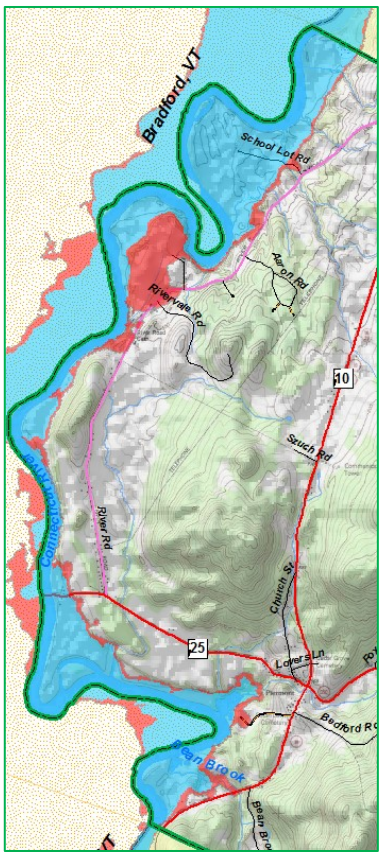
Of particular concern in Piermont are fertilizers and/or bio-solids (such as Class B Sludge) that are used by farms. Chemicals and fertilizers are sprayed onto the farm fields and during periods of heavy rain and flooding, these chemicals are washed into the Connecticut River. The Four Corners General Store also has gas pumps that could potentially create a hazardous event.

3) Dam Failure (Hydro)

Piermont could be significantly impacted by the failure of any of the hydro dams along the upper Connecticut River. An upstream dam breach such as a breach at Moore Dam, the Comerford Dam and/or the Dodge Falls Dam could create a domino effect for dams downstream.

Construction on the Moore Dam on the Connecticut River was begun in the mid-1950s with completion in July 1957. Combined with Moore Reservoir, a result of dam construction, there are 3,490 surface acres of water. Moore Reservoir stretches eleven miles up the Connecticut River from the 178-foot dam. The total impoundment storage of the reservoir is 223,722 acre feet but it is normally at about 114,000 acre feet and lowered in the spring to accommodate snow melt. The average depth is 59 feet and the maximum depth is about 150 feet.

Failure of the Moore Dam could be catastrophic in some locations in New Hampshire, primarily because of the amount of water the dam controls. The bridges along Interstate 93 connecting New Hampshire and Vermont would be inundated and most likely fail. Also, homes along the river would be lost and the village district of Woodsville (part of Haverhill, NH) would experience severe flooding thus hampering significant regional communications with important Grafton County facilities located there. Moore Dam is currently owned and maintained by Great River Hydro, a subsidiary of Arclight Capital Partners out of Boston.



The image to the right shows the inundation path should complete failure of Moore Dam occur. The "blue" areas in the image show sunny day inundation while the "red" areas show probable maximum flow (pmf) days. As stated elsewhere in this Plan, flooding along the Connecticut River, even at Moore Dam inundation levels, would primarily affect farmland, although on home may be effected.

4) Terrorism

Terrorism is a fear throughout our country and although Piermont is not home to any substantial "targets" there is always a potential for a terrorism event. Of concern would be the deliberate destruction of one of the hydro dams on the Connecticut River. The Town's major road, NH Route 10, also provides access to the rest of New England and Canada, and as such could be used as primary routes for terrorists. As with many small towns, the terrorism threat is minimal; if a terrorist incident were to occur, it would most likely be a home-grown terrorist event.

5) Epidemic/Pandemic

The threat of either an epidemic or a pandemic is a concern for the Town of Piermont. The influx of summer visitors and residents and its substantial elderly population increase this concern. Illnesses may be brought to this small community from other places, and in doing so would place a severe burden on Piermont's already limited resources. In addition, Piermont's high school children are tuitioned to Woodsville High School (Haverhill) and to other nearby schools of their choosing, thus increasing the risk of exposure.

Piermont's unique geography provides hikers and other recreation enthusiasts opportunities to visit the Town. Because of these factors and those described above, the Team decided that an epidemic or pandemic could present a possible threat to Piermont. With the occurrence of world-wide pandemics such as SARS, the Zika Virus, H1N1 and Avian Flu, Piermont could be susceptible to an epidemic and subsequent quarantine.

6) Extended Power Failure (5+ days)

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

If a major and/or extended power outage occurs and lasts for more than a week, a significant hardship on individual residents could result, particularly those citizens who are elderly or handicapped. 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 Piermont 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.

Cover: Peaked Mountain
Photo Credit: http://picturenh.photoshelter.com/image/I0000f1PleaA.Ekc

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 Piermont 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	Effective-ness	Improvements Needed
Subdivision Regulations (2011)	The purpose of Piermont's subdivision regulations is to provide for the orderly present and future development of the Town by promoting the public health, safety, convenience and welfare of the Town's residents.	Town Wide	Planning Board	Good	**Improvements Needed:** The Piermont Subdivision Regulations, most recently updated in 2011 but reviewed annually, are in good shape; the Subdivision Regulations however, do not address building on steep slope, ridgeline protection, the slope of driveways or water resources for fire suppression; deferred to this Plan to review the Subdivision Regulations and to address the issues mentioned above and any other issues that may serve to lessen the impact of future hazards. **Action Item #27** ***(also in Table 7.1)***

Current Program or Activity	Description	Area of Town	Responsible Department	Effective-ness	Improvements Needed
Outreach to Children's' Summer Camps	Public education about hazard mitigation and emergency management	Summer Camps	Emergency Management Director	Excellent	**Improvements Needed:** Piermont's children's summer camps are visited annually by the Piermont Fire Department and Fast Squad to provide emergency planning and fire awareness information; the Town has also participated in the development of an Emergency Operations Plan with Camp Walt Whitman and Kingswood; deferred to continue to offer this public outreach to the Town's summer camp children. **Action Item #11** ***(also in Table 7.1)***
Emergency Operations Plan (2010)	This Plan identifies the response procedures and capabilities of the Town of Piermont in the event of a natural or man-made disaster.	Town Wide	Emergency Management Director	Good	**Improvements Needed:** The Piermont Emergency Operations Plan is currently in need of an update according to the recommended five-year cycle; the EOP was last updated in 2010; deferred to update the plan to the new State format of 15-ESFs and to include an EOC Call Alert List, a detailed Resource Inventory List; the new EOP will include ESF #5, Emergency Management (for the EOC) and ESF #6, Mass Care Housing and Human Services (shelter). **Action Item #18** ***(also in Table 7.1)***
Master Plan (2013)	The Master Plan serves as the guiding document for future development and serves as the guiding document to assist the Planning Board as it updates the Town Zoning Ordinances, Subdivision and Site Plan Review Regulations.	Town Wide	Planning Board	Excellent	**Improvements Needed:** The Piermont Master Plan was updated in 2013 and will need a recommended 10-year update in 2023; the Master Plan will not be due for an update during the life of this Plan; however it is recommended that any future updates to the Master Plan include a Natural Hazards section. **Action Item #13** ***(also in Table 7.1)***
Public Education & Awareness	The Town of Piermont is very well situated to provide public information and outreach to its citizens through a variety of means.	Town Wide	Emergency Management Director & Other Departments	Good	**Improvements Needed:** The Town has recently created an Emergency Webpage which is great way to provide outreach to residents on not only emergency preparedness but also mitigation techniques property owners can use to reduce or eliminate the impact of natural hazards; deferred to this Plan to continue to provide robust information and links to the Emergency Webpage to educate the public on general and seasonal mitigation techniques; the Town also has the ability to get information out via a ListServ and Facebook pages for the Fire Department. **Action Item #14** ***(also in Table 7.1)***
Tree Maintenance	The ongoing maintenance of tree and brush and the removal of damaged and hazardous trees.	Town Wide	Road Agent	Good	**Improvements Needed:** The Road Agent, NH DOT, Eversource and the NH Electric Coop do a good removing brush and limbs near and on roadways; however, this action is deferred to this Plan to continue tree maintenance and management in an effort to lessen the impact from high wind events and other storms. **Action Item #3** ***(also in Table 7.1)***

Current Program or Activity	Description	Area of Town	Responsible Department	Effective-ness	Improvements Needed
Zoning Ordinance (2017)	The Town has emergency back-up power the Police Station, Piermont Congregational Church, the Fire Station and the Piermont Elementary School; the Town Office has the capability for emergency power with a portable generator, providing it is not in use.	CIKR Town Wide	Emergency Management Director	Good	**Improvements Needed:** The Town of Piermont is well-covered for emergency backup power, however the Town Offices must rely on a Fire Department portable generator that may already be in use; deferred to investigate the possibility of getting a permanent generator for the Town Offices. **Action Item #28** ***(also in Table 7.1)***
School Emergency Plan (2010)	A School Comprehensive Emergency Management Plan ensures preparedness and response for school personnel and Town emergency personnel in the instance of a major disaster in the schools	Piermont Elementar y School	SAU 23	Good	**Improvements Needed:** The Piermont Elementary School Emergency Plan was updated in 2016; deferred to develop additional exercises going forward. **Action Item #5** ***(also in Table 7.1)***
National Flood Insurance Program (NFIP) Piermont Floodplain Development Ordinance (Part of Zoning)	The minimum National Flood Insurance Program (NFIP) requirements (Section 60.3(c)) have been adopted; Piermont has been a member of the NFIP since April 2, 1986; the Floodplain Development Ordinance regulates all new and substantially improved structures located in the 100-year floodplain, as identified on the FEMA Flood Maps dated February 20, 2008.	Floodplain	Planning Board	Excellent	**Improvements Needed:** The Town's Floodplain Development Ordinance works well to successfully prohibit or force compliance to the ordinance for building and substantial improvements to structures within the FEMA flood zone; the Floodplain Development Ordinance was last amended in 2007; deferred to continue to provide NFIP brochures to homeowners and builders who are proposing building in the floodplain and to educate the public regarding mitigation measures that can be taken to reduce the risk of flooding. **Action Items #16 & #17**
Emergency Warning System	Code Red through Graton County reverse calling; door-to-door notification; supplementing the EOP are PA systems in all Fire & Police vehicles; the NH Alert phone app also available.	Town Wide	Emergency Management Director	Excellent	**Improvements Needed:** CodeRED is an excellent warning system but it only stores resident phone numbers that are listed in the phone book; the Town has continuously provided information to residents on CodeRED but it should continue to provide public outreach to encourage all residents to contact CodeRED to add cell numbers, email, unlisted numbers and to verify information; use the website, a possible brochure or a sign up at Town Meeting. **Action Item #10**

Current Program or Activity	Description	Area of Town	Responsible Department	Effective-ness	Improvements Needed
Functional Needs List	A prepared and update list of those citizens of the Community who may require special assistance at the time of an emergency.	Town Wide	Emergency Management Director; Fire Department; FAST Squad	Poor	**Improvements Needed:** A list of the functional needs population has not been developed in Piermont; this list needs to be developed and maintained in order to serve as an effective tool during an emergency. **Action Item #4**
Storm Drain / Culvert Maintenance	The Piermont Road Agent and the State DOT clean the drainage basins once a year and after major flooding events. Culverts are repaired as needed.	Town Wide	Highway Department	Good	**Improvements Needed:** Although the Piermont Highway Department does a good job cleaning and repairing drainage basins and culverts, a written stormwater maintenance plan should be developed to ensure continuity of actions and efficient stormwater management; deferred for continued maintenance and the development of a written stormwater maintenance plan; several culverts in Town need improvement and some drainage work needs to be completed. **Action Item #2**
911 Signage Compliance	A system that complies with recommended signage size, location and visibility to ensure identification by emergency responders.; markers at driveway entrances that identify residence locations in conjunction with the E-911 alerting system.	Town Wide	Board of Selectmen & Emergency Management	Poor	**Improvements Needed:** The Town is about 25% compliant now and has a 911 ordinance; deferred to this Plan to continue to get this signage more compliant so that emergency responders can better assist the public at the time of need; through public outreach. **Action Item #1**
Building Code & Permits	The Town has not adopted International Building Codes (IBC) but does require builders to follow the NH State adopted codes for new construction to meet national standards for flood, wind, earthquake, fire and snow load.	Town Wide	Planning Board	Poor	**Improvements Needed:** The Town of Piermont does not have a Building Inspector however, the permitting process requires builders to abide by the International Building Codes (IBC) and the International Residential Codes (IRC) which have been adopted by the State of New Hampshire; deferred to this Plan to develop an official building permit and to consider the establishment of a "Building Committee" that will work hand-in-hand with the Planning Board. **Action Item #33**
Shoreland Water Quality Protection Act	Establishes minimum standards for the subdivision, use and development of shore land adjacent to the state's public water bodies.	Shoreland adjacent to NH public waters - Town of Piermont	Planning Board	Good	**Improvements Needed:** The Town of Piermont has established an ordinance which covers the Shoreland Conservation District; the Town abides by the regulations provided in the Shoreland Water Quality Protection Act; deferred to consider the establishment of an ordinance that deals with "sludge" being applied to farmland that can be brought to the river during flood events. **Action Item #29**

Current Program or Activity	Description	Area of Town	Responsible Department	Effective-ness	Improvements Needed
Capital Reserve Fund (CRF)	A type of account on a town's balance sheet that is reserved for long-term capital investment projects or any other large and anticipated expense(s) that will be incurred in the future; reserve funds set aside to ensure adequate funding to at least partially finance future projects, equipment and other expenditures.	Town Wide	Select Board	Average	**Improvements Needed:** The Town's Capital Reserve Funds set funds are aside each year at budget time to assist the Town's departments with planned purchases of equipment and supplies or in emergency situations; the Piermont Capital Reserve Funds work well when well-funded, however currently funding is inadequate. **Action Item #9**
Capital Improvement Plan	A Capital Improvement Plan is a short-range plan (usually four to ten years,) which identifies capital projects and equipment purchases; provides a planning schedule and identifies options for financing the plan; a CIP provides a link between a town and its departments through a comprehensive and strategic plan.	Town Wide	Select Board	Excellent	**Improvements Needed:** Although Piermont has a current Capital Improvements Plan (CIP), work needs to be done on the Plan; a committee has been established; deferred to consider mitigation strategies from this Hazard Mitigation Plan for inclusion in the CIP. **Action Item #30**
NIMS & ICS Training	Ensure effective command, control, and communications during emergencies.	Town Wide	Emergency Management Director	Average	**Improvements Needed:** NIMS & ICS training has been done by most first responders; although this is preparedness, this is deferred to this Plan to continue to provide NIMS (IS-700) & ICS (ICS 100 & ICS 200) training to new first responders and to new Town officials as they become elected and/or appointed. **Action Item #8**
Road Design Standards	Piermont Subdivision and Site Plan Regulations include road design standards that control the amount and retention of stormwater runoff.	Town Wide	Planning Board & Highway Department	Good	**Improvements Needed:** Road design standards are detailed within the Town's planning mechanisms (Subdivision Regulations) and adhere to State standards; new roads will not be accepted by the Town as "town" roads unless approved at Town Meeting and properly built according to town standards; deferred to consider establishment of written standards for the construction of Class V roads. **Action Item #32**

Current Program or Activity	Description	Area of Town	Responsible Department	Effective-ness	Improvements Needed
Communica-tion Tower	Regulations dealing with land use including rural, residential, agriculture and timber management	Town Wide	Planning Board	Excellent	**No Improvements Needed:** Piermont Zoning Ordinances are reviewed and updated when there is a need and they have been completely updated in 2017; the Zoning Ordinance does what it is meant to do and includes language regarding building on slopes of 25% or more in hazardous areas; the Piermont Zoning Districts are regulated within this document; the Piermont Zoning Districts are: Lake, Village and Rural. ***(also in Table 7.1)***
Hazardous Materials Response Team	Have FCC license for tower and active frequency	Town Wide	Board of Selectmen & Emergency Management	Excellent	**No Improvements Needed:** Radio communications for Piermont's emergency responders is good; radios are up-to-date and state requirements have been met; base stations are located at the Fire Station and Police Station and a number of portable and mobile units are in service. ***(also in Table 7.1)***
Mutual Aid Agreements (Fire, Police, Highway & EMS)	The Town relies on the Lebanon Fire Department for HazMat response.	Town Wide	Fire Department	Excellent	**No Improvements Needed**: The established HazMat team at the Lebanon Fire Department provides good hazmat response; a Hazardous Materials trailer is located at the Lebanon Fire Department.
Burning Index	Mutual Aid agreements provide communications capabilities and cooperative assistance between area cities and towns; mutual aid provides access to resources that are appropriate to the scope of the emergency.	Town Wide	Fire, Police, EMS & Highway	Good	**No Improvements Needed:** The Fire Department has a mutual aid agreement with the Upper Valley Regional Emergency Services Association (UVRESA) and Twin State Fire Mutual Aid; the Police Department has agreements with the NH State Police and Grafton County Sheriff's Office and the neighboring towns of Haverhill, Orford, Warren, Bradford, VT; the Highway Department has an agreement with NH Public Works Mutual Aid Association; Piermont FAST Squad provides medical treatment; transport is provided by Upper Valley Ambulance, Woodsville Ambulance and Warren-Wentworth Ambulance; all mutual aid systems in Piermont work very well.
Flood Warning System for Moore Dam failure	New Hampshire Forests & Lands (DNCR) has a burning index, which measures the risk for wildfires; how likely they are to start on a given day. It also evaluates the potential damages wildfires can create, the number of people that will be needed to fight it and the type of equipment that might be needed as well.	Town Wide	Department of Natural & Cultural Resources (DNCR)	Excellent	**No Improvements Needed:** The Fire Department receives regular notification of the burning index via fax and email from NH Forests & Lands; this notification is made daily during the fire danger season.

Current Program or Activity	Description	Area of Town	Responsible Department	Effective-ness	Improvements Needed
Conservation Commission/ Fund	High water notification for conditions 1-3 on the Connecticut River is provided by the owners of Moore Dam to the Grafton County Sheriff.	Along Connecticut River	Grafton County Sheriff's	Excellent	**No Improvements Needed:** The owners of Moore Dam provide notification to the Grafton County Sheriff when high water levels are reached, at which time CodeRED may be activated; the system works well.
State Health Department Public Health Plan	Development review for wetlands protection; acquisition and protection of lands	Town Wide	Conservation Commission	Good	**No Improvements Needed:** The Piermont Conservation Commission works to ensure that new developments or acquisitions abide by regulations that are established for wetlands protection; the Conservation Commission also monitors adherence to the Shoreland Water Quality Protection Act.
Emergency Back-up Power	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 Upper Valley Public Health Region	Town Wide	Upper Valley Public Health Region	Excellent	**No Improvements Needed:** The Public Health Plan does what it is meant to do; the Town participates in regional public health meetings whenever possible.
State Division of Forest and Lands/Fire Permits	State regulations for open burning and permits	Town Wide	Police Department, Fire Chief, Fire Wardens	Excellent	**No Improvements Needed:** System that is in place with NHFL and the local fire warden works well; public is aware of fire permitting requirements and the ability to get permits online (fee required).

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Chapter 7: Prior Mitigation Plan(s)

A. Date of Prior Plan

Piermont has participated in the development of a prior Hazard Mitigation Plan, based on the Disaster Mitigation Act (DMA) of 2000, which was formally approved in 2012. This Plan, the "Piermont Hazard Mitigation Plan Update 2017" is an update to the 2012 Plan.

Below are the action items that were identified in the 2012 Plan. The Team identified the current status of each strategy based on three sets of questions:

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

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

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

Deferred
- Should the strategy be deferred for consideration in this Plan?
- If the strategy was not completed, should this strategy be reconsidered and included as a new action item for this Plan?

TABLE 7.1: ACCOMPLISHMENTS SINCE PRIOR PLAN(S) APPROVAL

NOTE: Items in red were extracted word-for-word from the 2012 Hazard Mitigation Plan and do not represent a time frame for this Plan.

Project	Responsibility Oversight	Funding Support	Time Frame	Completed, Deleted or Deferred
Table VIII-1: PRIORITZED IMPLEMENTATION SCHEDULE FOR EXISTING PROGRAM IMPROVEMENTS				
Emergency Operations Plan - Update plan; provide more specific information on hazardous materials sites and proper procedures for spill	Emergency Management Director & Fire Chief	grant	2011	**Deferred:** The Piermont Emergency Operations Plan is currently in need of an update according to the recommended five-year cycle; the EOP was last updated in 2010; deferred to update the plan to the new State format of 15-ESFs and to include an EOC Call Alert List, a detailed Resource Inventory List; the new EOP will include ESF #5, Emergency Management (for the EOC) and ESF #6, Mass Care Housing and Human Services (shelter). **Action Item #18** ***(also in Table 6.1)***

Project	Responsibility Oversight	Funding Support	Time Frame	Completed, Deleted or Deferred
Police Department - Set up to share permanent generator with school (emergency shelter)	Board of Selectmen	taxes	2012	**Completed & Deleted**: Since the prior plan, the Town has installed a permanent generator, with HSEM grant assistance, which is shared by the Police Department and the Elementary School; deleted as this is completed.
Emergency Shelter - Obtain supplies for a shelter such as cots, blankets, etc...Train shelter managers	Emergency Management Director	taxes	2012	**Completed & Deleted:** Twenty-five cots, water, signage and a food pantry have been located and stored at Piermont Congregational Church with assistance from American Red Cross; deleted as this is preparedness, not mitigation and will be addressed in the Emergency Operations Plan.
School Emergency Plan - Provide Selectman mediator to work between school and town to update their emergency plan and reference in town emergency plan	Board of Selectmen	NA	2011	**Completed & Deferred:** The Piermont Elementary School Emergency Plan was updated in 2016; deferred to develop additional exercises going forward. **Action Item #5** ***(also in Table 6.1)***
Subdivision Regulations - Provide for town to monitor required fire protection structures such as ponds and cisterns to insure continued adequate protection	Planning Board & Fire Chief	NA	2011	**Completed & Deferred:** The Piermont Subdivision Regulations, most recently updated in 2011 but reviewed annually, are in good shape; the Subdivision Regulations however, do not address building on steep slope, ridgeline protection, the slope of driveways or water resources for fire suppression; deferred to this Plan to review the Subdivision Regulations and to address the issues mentioned above and any other issues that may serve to lessen the impact of future hazards. Action Item #27 ***(also in Table 6.1)***
Outreach to Summer Children's Camps - Continue to encourage the camps to develop emergency plan and reference in the Town's Emergency Operations Plan	Emergency Management Director & Fire Chief	NA	2011	**Completed & Deferred:** Piermont's children's summer camps are visited annually by the Piermont Fire Department and Fast Squad to provide emergency planning and fire awareness information; the Town has also participated in the development of an Emergency Operations Plan with Camp Walt Whitman and Kingswood; deferred to continue to offer this public outreach to the Town's summer camp children. **Action Item #7** ***(also in Table 6.1)***
Public Works Winter Operations Plan - Document existing plan of prioritized school bus and evacuation routes	Road Agent	NA	2011	**Completed & Deleted:** Piermont has a winter road maintenance policy; this strategy from the prior plan is deleted as this is preparedness not mitigation.

Project	Responsibility Oversight	Funding Support	Time Frame	Completed, Deleted or Deferred
Tree Maintenance - Identify problem areas and develop prioritized schedule	Road Agent	NA	2011	**Completed & Deferred:** The Road Agent, NH DOT, Eversource and the NH Electric Coop do a good job removing brush and limbs near and on roadways; however, this action is deferred to this Plan to continue tree maintenance and management in an effort to lessen the impact from high wind events and other storms. **Action Item #3** ***(also in Table 6.1)***
Town Master Plan - Selectman Chair to make sure there is a reference in the Master Plan to the Hazard Mitigation Plan	Board of Selectmen	NA	2011	**Deferred:** The Piermont Master Plan was updated in 2013 and will need a recommended 10-year update in 2023; the Master Plan will not be due for an update during the life of this Plan; however it is recommended that any future updates to the Master Plan include a Natural Hazards section. **Action Item #13** ***(also in Table 6.1)***
Communication Tower - Continue evaluation of need for tower and requirements for construction	Emergency Management Director	NA	2011	**Completed & Deleted:** Since the prior plan, an antenna has been installed in the steeple of the Old Church Building thus eliminating the need for this strategy; in addition, this strategy is preparedness, not mitigation therefore it is deleted. ***(also in Table 6.1)***
Emergency Operations Center - Get repeaters for Fire & Police Departments	Emergency Management Director	grant	2012	**Completed & Deleted:** Radio communications for Piermont's emergency responders is good; radios are up-to-date and state requirements have been met; base stations are located at the Fire Station and Police Station and a number of portable and mobile units are in service; deleted as this strategy is completed; in addition, this strategy is preparedness, not mitigation. ***(also in Table 6.1)***
Barton Road - Install catch basins to decrease damage	Road Agent	Taxes & grants	2012	**Deleted:** Because of the amount of ledge on Barton Road, it was decided that the installation of catch basins would not be likely and is therefore deleted.
Fire Department - Develop pay scale based upon training level and publicize it	Fire Chief	NA	2011	**Completed & Deleted:** Since the prior plan, the Town has established a fire department pay scale; deleted as this strategy is not mitigation.
*Cross Road - Raise of road section to allow proper snow storage	Road Agent	Taxes & grants	2018	**Deferred:** In order to deal with snow accumulation and flooding, the raising of Cross Road has been planned and is expected to be completed in 2017 using local funding. **Action Item #23**

Project	Responsibility Oversight	Funding Support	Time Frame	Completed, Deleted or Deferred
*Indian Pond Road - Replace shifting bridge with culvert	Road Agent	Taxes & grants	2019	**Completed & Deleted:** The shifting culverts on Indian Pond Road have been replaced with an improved bridge; this was completed in 2016 with HMGP funding and is therefore deleted.
Zoning Ordinance - Prohibit new development on slopes of 25 % or more	Planning Board	NA	2012-2016	**Completed & Deleted:** The Piermont Zoning Ordinances are reviewed and updated when there is a need and they were completely updated in 2017; the Zoning Ordinance does what it is meant to do and includes language regarding building on slopes of 25% or more in hazardous areas; the Piermont Zoning Districts are regulated within this document; the Piermont Zoning Districts are: Lake, Village and Rural. ***(also in Table 6.1)***
Indian Pond Road - Increase size of culvert to handle water	Road Agent	Taxes & grants	2016	**Deferred:** The Indian Pond Road 4-foot culvert is half stone and half metal and is showing metal fatigue; there is a threat that the 25 foot high headwall can collapse taking out a section of Indian Pond Road (secondary evacuation route); deferred to replace the 4-foot culvert with a 5'-box culvert to eliminate the risk of flooding. **Action Item #20**
*Bean Brook Road - Lay drainage line uphill of slump area	Road Agent	Taxes & grants	2017	**Deferred:** Although a flooding problem does not currently exist on Bean Brook Road, the road continues to slump due to clay composition under the road, causing dangerous conditions and the possibility of accessibility issues for residents and emergency responders; deferred to repair the "slump" in the road and to lay a drainage line uphill of the slump. **Action Item #36**
*Rodimon Lane - Increase size of culvert; install berm	Road Agent	Taxes & grants	2017	**Completed & Deleted:** Using local funding, the culvert on Rodimon Lane has been increased in size and a berm was installed in 2015 to reduce the risk of flooding in the area; deleted as this strategy from the prior plan has been completed.
Cross Road - Install berm between road and brook	Road Agent	Taxes & grants	2015	**Deferred:** This strategy from the prior plan was not completed; deferred to install a berm between Cross Road and the brook (at the same level) to eliminate the potential for flooding. **Action Item #31**
Barton Road - Stabilize stream bank	Road Agent	Taxes & grants	2011	**Completed & Deleted:** Stream bank stabilization was completed on Barton Road using local funding; deleted as this strategy from the prior plan is no longer needed.

Project	Responsibility Oversight	Funding Support	Time Frame	Completed, Deleted or Deferred
Table VIII-2: IMPLEMENTATION SCHEDULE FOR PROPOSED MITIGATION ACTIONS				
HazMat Response Evaluation Need	Board of Selectmen and Emergency Management Director	NA	2011	**Completed & Deleted:** An evaluation of the HazMat Response has been completed; the established HazMat team at the Lebanon and Hanover Fire Departments provides good hazmat response; a Hazardous Materials trailers are located at the Hanover and Lebanon Fire Departments; this strategy from the prior plan is deleted as an evaluation is no longer needed, however it is noted that a spill at the store could put petro into the river.
Develop Public Awareness Program	Emergency Management Director, Board of Selectmen, Fire Chief, Police Chief	NA	2011	**Completed & Deferred:** The Town has recently created an Emergency Webpage which is great way to provide outreach to residents on not only emergency preparedness but also mitigation techniques property owners can use to reduce or eliminate the impact of natural hazards; deferred to this Plan to continue to provide robust information and links to the Emergency Webpage to educate the public on general and seasonal mitigation techniques; the Town also has the ability to get information out via a ListServ and Facebook pages for the Fire Department. **Action Item #14** ***(also in Table 6.1)***
Generator for Fire Department and Town Offices	Emergency Management Director	Grant & Taxes	2012-2013	**Completed & Deferred:** The Town of Piermont is well-covered for emergency backup power; however the Town Offices must rely on a Fire Department portable generator that may already be in use; deferred to investigate the possibility of getting a permanent generator for the Town Offices. **Action Item #28** ***(also in Table 6.1)***
Obtain Digitized Tax Maps & Floodplain Maps	Emergency Management Director	NA (Free map from UVLSRPC)	2011	**Deferred:** This strategy form the prior plan was not completed however it still needs to be done; deferred to contact NH OSI for new and updated floodplain maps. **Action Item #34**
Emergency Operations Implementation Tabletop Exercises	Emergency Management Director, Selectmen, Fire Chief, Police Chief	Grant & Taxes	2012	**Completed & Deferred:** Although some EOP training has been done, this strategy from the prior plan was deferred to make arrangements for a table-top exercise (TTX) once the new EOP is completed; although this is preparedness, this strategy was felt important enough to defer it to this Plan. **Action Item #26**

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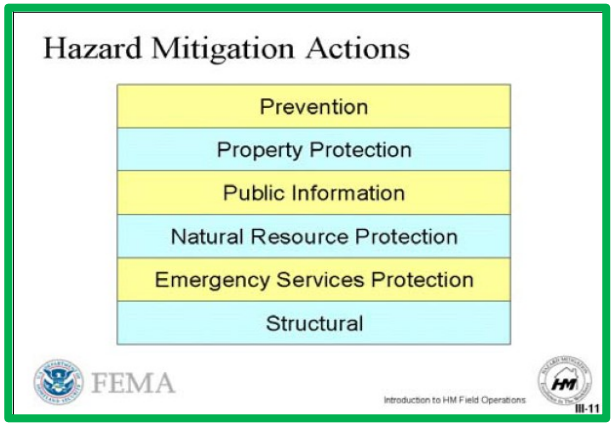
Chapter 8: New Mitigation Strategies & STAPLEE

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 Piermont with special emphasis on new and existing buildings and infrastructure.

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

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

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

C. STAPLEE Methodology

Table 8.1, Potential Mitigation Items & the STAPLEE, reflects the newly identified potential hazard and wildfires mitigation action items as well as the results of the STAPLEE evaluation as explained below. It should also be noted that although some areas are identified as "All Hazards", many of these would apply indirectly to wildfire response and capabilities. Many of these potential mitigation action items overlap.

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

The STAPLEE method analyzes the **S**ocial, **T**echnical, **A**dministrative, **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 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 Piermont 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 comprehesive list of other possible mitigation action items (see sections A & B of this chapter) for this Plan, there are no additional "Mitigation Action Items" to add at this time.

TABLE 8.1: POTENTIAL MITIGATION ACTION ITEMS & THE STAPLEE

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

Action Items are listed in numerical order.

Proposed Mitigation Action Items	Affected Location	Type of Activity	TTL	S	T	A	P	L	E	E
Action Item #1: Consider ways to improve 911 signage compliance so that emergency responders can better assist the public at the time of need; perhaps through purchase of signs by the Town and/or through continued public outreach. (MU13) ***(Table 6.1)***	Town Wide	Prevention Emergency Service Protection Property Protection	18	2	3	3	2	3	2	3
				Social: *Some will not want to adhere to the 911 number change* ***Political:*** *Some will not want signs at their properties* ***Economic:*** *Budget constraints*						
Action Item #2: Develop a written stormwater maintenance plan in order to ensure more efficient stormwater management; include the location, type, size, age and expected replacement date of all culverts, catch basins and drainage ditches in the Community. (F5) ***(Table 6.1)***	Town Wide	Prevention Emergency Service Protection Property Protection Natural Resource Protection	21	3	3	3	3	3	3	3
				No apparent difficulties with this action item.						

Proposed Mitigation Action Items	Affected Location	Type of Activity	TTL	S	T	A	P	L	E	E
Action Item #3: In addition to work that is done by and with local utility companies, continue to monitor and maintain brush cutting, drainage system maintenance and tree removal as part of a tree maintenance program and continue to create defensible space around power lines, oil and gas lines and other infrastructure; continue to work to reduce wildfire risk by clearing dead vegetation, cutting high grass and other fuel loads in the Community. **(SW4, WF7, WF9 & F14)** ***(Tables 6.1 & 7.1)***	Town Wide	Prevention Emergency Service Protection Property Protection Natural Resource Protection	20	3	3	3	3	3	3	2
				Environmental: *May need DES approvals on some actions*						
Action Item #4: Consider the creation of a database to track those individuals at high risk of death, such as the elderly, homeless, etc. by developing a new and updated survey of the functional needs population and a method of maintaining the data. **(ET3 & WW6)** ***(Table 6.1)***	Town Wide	Prevention Public Education & Awareness Emergency Service Protection	19	2	3	3	2	3	3	3
				Social: *People are very independent and do not want to share this* ***Political:*** *Some people will not want to share information*						
Action Item #5: Work with the Piermont Elementary School to develop training and exercises to practice the 2016 Plan. ***(Tables 6.1 & 7.1)***	Piermont Elementary School	Prevention Emergency Service Protection Property Protection	21	3	3	3	3	3	3	3
				No apparent difficulties with this action item.						
Action Item #6: Routinely inspect the functionality of fire hydrants and continue the maintenance and repair of all hydrants and other water resources in Piermont; consider other areas of the Community that have limited water resources and address these issues by installing new hydrants, fire ponds and/or cisterns; consult with the Piermont FD. **(WF8)**	Town Wide	Prevention Emergency Service Protection Property Protection Natural Resource Protection Structural Projects	21	3	3	3	3	3	3	3
				No apparent difficulties with this action item.						
Action Item #7: Continue to maintain the Town's ditches as needed to improve the flow stormwater. **(F14)**	Town Wide (ditches)	Prevention Property Protection Natural Resource Protection	20	3	3	3	3	3	2	3
				Economic: *Budget Constraints*						

Proposed Mitigation Action Items	Affected Location	Type of Activity	TTL	S	T	A	P	L	E	E
Action Item #8: The Emergency Management Director will encourage all town officials and new hires to take NIMS 700 and ICS 100 and 200. ***(Table 6.1)***	Town Wide	Public Education & Awareness Emergency Service Protection	20	3	3	3	2	3	3	3
				Political: *May be difficult to get participants*						
Action Item #9: Work with the Board of Selectmen and the Capital Improvement Committee to better fund the Piermont Capital Reserve Funds. **(MU6)*(Table 6.1)***	Town Wide	Prevention Public Education & Awareness Emergency Service Protection Property Protection Natural Resource Protection Structural Projects	19	3	3	3	2	3	2	3
				Political: *Some will not see the need for these funds* ***Economic:*** *Budget constraints*						
Action Item #10: Provide public outreach to encourage all residents to contact CodeRED to add cell numbers, email and unlisted numbers and to verify information; use the website, a possible brochure 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
				No apparent difficulties with this action item.						
Action Item #11: Continue to offer public outreach to the Town's summer camp children. **(MU14)** ***(Tables 6.1 & 7.1)***	Summer Camps	Public Education & Awareness	21	3	3	3	3	3	3	3
				No apparent difficulties with this action item.						
Action Item #12: Provide public outreach to the citizens of Piermont regarding the availability of the Piermont Congregational Church as a "cooling or warming center" during times of extended high temperatures and severe winter weather. **(ET3 & WW6)**	Town Wide	Prevention Public Education & Awareness	21	3	3	3	3	3	3	3
				No apparent difficulties with this action item.						
Action Item #13: Review the Piermont Master Plan and consider the incorporation of a Natural Hazards section and mitigation action items from this Plan into periodic updates and in the recommended 10-year update in 2023. **(MU6)** ***(Tables 6.1 & 7.1)***	Town Wide	Prevention Public Education & Awareness Emergency Service Protection Property Protection Natural Resource Protection Structural Projects	21	3	3	3	3	3	3	3
				No apparent difficulties with this action item.						

Proposed Mitigation Action Items	Affected Location	Type of Activity	TTL	S	T	A	P	L	E	E
Action Item #14: Continue to provide robust information on the Town's Emergency webpage for educating the public on hazard mitigation and preparedness measures **(MU14)** by adding to the Town's website a webpage that will include such information as emergency contacts, shelter locations, evacuation routes **(SW7, WF11 & T3)**, methods of emergency alerting, 911 compliance, water saving techniques **(D9)**, earthquake risk and mitigation activities that can be taken in residents' homes **(EQ7)**, steps homeowners can take to protect themselves and their properties when extreme temperatures occur **(ET1 & ET4)**, safety measures that can be taken during hail **(HA3)** and lightning storms **(L2)**, mitigation techniques for property protection and links to available sources; educate homeowners regarding the risks of building in hazard zones and encourage homeowners to install carbon monoxide monitors and alarms **(WW5)**; continue to develop ways to provide notification to citizens. ***(Tables 6.1 & 7.1)***	Town Wide	Prevention Public Education & Awareness Property Protection	21	3	3	3	3	3	3	3
				No apparent difficulties with this action item.						
Action Item #15: Continue to post important information on the Town's Emergency website and notices of red flag burning days through mailings and obtain and have available "Firewise" brochures to educate homeowners on methods to reduce fire risk around their homes **(WF10)**; provide "Firewise" brochures to those residents seeking burn permits; 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)**	Town Wide	Prevention Public Education & Awareness	21	3	3	3	3	3	3	3
				No apparent difficulties with this action item.						
Action Item #16: 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 Emergency Management Services webpage. ***(Table 6.1)***	Town Wide areas known to flood or in floodplain	Prevention Public Education & Awareness	21	3	3	3	3	3	3	3
				No apparent difficulties with this action item.						

Proposed Mitigation Action Items	Affected Location	Type of Activity	TTL	S	T	A	P	L	E	E
Action Item #17: Through Public Outreach and the Town's website, educate homeowners regarding the risks of building in flood zone and measures that can be taken to reduce the chance of flooding, such as securing debris, propane tanks, yard items or stored objects that may otherwise be swept away, damaged, or pose a hazard if picked up and washed away by floodwaters; add links and info to website; continue to actively work with residents to ensure they are in compliance with the Town's Floodplain Ordinance. (F23) ***(Table 6.1)***	Town Wide areas known to flood or in floodplain	Prevention Public Education & Awareness	21	3	3	3	3	3	3	3
				No apparent difficulties with this action item.						
Action Item #18: Update the Piermont Emergency Operations Plan to coincide with the new State 15-ESF format and to include an EOC Call Alert List, a detailed Resource Inventory List; the new EOP will include ESF #5, Emergency Management (for the EOC) and ESF #6, Mass Care Housing and Human Services (shelter). ***(Tables 6.1 & 7.1)***	Town Wide	Prevention Emergency Service Protection	21	3	3	3	3	3	3	3
				No apparent difficulties with this action item.						
Action Item #19: improve the 36" culverts on Cape Moonshine Road with a 4x6 culverts to improve the flow of stormwater and prevent flooding and road closures. (F13)	Cape Moonshine Road	Prevention Public Education & Awareness Emergency Service Protection Property Protection Natural Resource Protection Structural Projects	19	3	3	3	3	3	2	2
				***Economic**: Budget Constraints* ***Environmental:** DES approvals will be needed*						
Action Item #20: Improve the 4-foot half stone/half metal culvert on Indian Pond Road by upgrading it with a 5 or 6 foot concrete box culvert to eliminate the flooding and to improve the flow of stormwater. (F13) ***(Table 7.1)***	Indian Pond Road	Prevention Public Education & Awareness Emergency Service Protection Property Protection Natural Resource Protection Structural Projects	16	2	3	3	2	3	1	2
				***Social:** Some may not be pleased by the closure of the road for this upgrade* ***Political:** Some may be push back on the elimination of the old (historic) culvert* ***Economic:** Budget constraints* ***Environmental:** DES permitting will be required*							

Proposed Mitigation Action Items	Affected Location	Type of Activity	TTL	S	T	A	P	L	E	E
Action Item #21: Improve the two 36" culverts on Piermont Heights Road by upgrading to one big 4x6 culvert to prevent flooding and improve the flow of stormwater. **(F13)**	Piermont Heights Road	Prevention Public Education & Awareness Emergency Service Protection Property Protection Natural Resource Protection Structural Projects	19	3	3	3	3	3	2	2
				***Economic**: Budget Constraints* ***Environmental:** DES approvals will be needed*						
Action Item #22: Improve the 36" culvert on Cape Moonshine Road by upgrading to a 4 x 6 culvert to improve the flow of stormwater and to end the scouring issue. **(F13)**	Cape Moonshine Road	Prevention Public Education & Awareness Emergency Service Protection Property Protection Natural Resource Protection Structural Projects	19	3	3	3	3	3	2	2
				***Economic**: Budget Constraints* ***Environmental:** DES approvals will be needed*						
Action Item #23: Raise the section of Cross Road two feet for 250' where the road is not only at the same level as the brook but has also "slumped" in an effort to increase the ability to remove snow and to help eliminate the potential for flooding; encourage homeowner to improve the culvert at the end of driveway to prevent future flooding. **(F17)** ***(Table 7.1)***	Cross Road	Structural Projects	20	3	3	3	3	3	2	3
				***Economic:** Minor budget constraints*						
Action Item #24: Improve the undersized and often overwhelmed culverts (approximately 7) on Bedford Road; replace and upgrade the size of the remaining plastic culvers with larger metal culverts. **(F13)**	Bedford Road	Prevention Public Education & Awareness Emergency Service Protection Property Protection Natural Resource Protection Structural Projects	20	3	3	3	3	3	2	3
				***Economic:** Budget constraints*						
Action Item #25: Dredge brook and/or put in in alternate channel in the brook (unnamed) near School Lot Road to improve the flow of stormwater and to prevent flooding on the road. **(F13)**	School Lot Road	Prevention Public Education & Awareness Emergency Service Protection Property Protection Natural Resource Protection Structural Projects	19	3	3	3	3	3	2	2
				***Political:** Some people will not see the need to spend money there because there are no residents* ***Economic:** Budget constraints* ***Environmental:** DES approvals will be needed*						

Proposed Mitigation Action Items	Affected Location	Type of Activity	TTL	S	T	A	P	L	E	E
Action Item #26: Hold a table-top exercise (TTX) at the completion of the Piermont Emergency Operations Plan Update. ***(Table 7.1)***	Town Wide	Prevention Public Education & Awareness Emergency Service Protection Property Protection Natural Resource Protection Structural Projects	21	3	3	3	3	3	3	3
				No apparent difficulties with this action item.						
Action Item #27: Review the Piermont Subdivision Regulations to consider adding specific language regarding building on steep slopes, the slope of driveways, ridgeline protection and the need for water resources for fire suppression in new subdivisions. **(ER2, MU6 & WF4)** ***(Tables 6.1 & 7.1)***	Town Wide	Prevention Emergency Service Protection Property Protection Natural Resource Protection	20	3	3	2	3	3	3	3
				Administrative: *The Planning Board may not want to consider these changes*						
Action Item #28: Investigate the possibility of installing a permanent generator at the Town Office. **(MU13)** ***(Tables 6.1 & 7.1)***	Town Office	Prevention Emergency Service Protection	21	3	3	3	3	3	3	3
				No apparent difficulties with this action item.						
Action Item #29: Consider the establishment of an ordinance that deals with "Class B Sludge" being applied to farmland that can seep into the river during flood events. **(MU6)*****(Table 6.1)***	Town Wide (farmland, particular near water sources)	Prevention Public Education & Awareness Natural Resource Protection	18	1	3	3	3	3	3	2
				Social: *Farmer's may say they need the "sludge" to operate efficiently (although the general public may see this as a good thing)* ***Environmental:*** *Involvement with DES may be important to evaluate the impact of "sludge" on waterways, particularly the Connecticut River*						
Action Item #30: The CIP Committee to produce a more comprehensive plan for the future and to consider mitigation strategies from this Hazard Mitigation Plan for inclusion in the CIP. **(MU6)** ***(Table 6.1)***	Town Wide	Prevention Public Education & Awareness Emergency Service Protection Property Protection Natural Resource Protection Structural Projects	21	3	3	3	3	3	3	3
				No apparent difficulties with this action item.						

Proposed Mitigation Action Items	Affected Location	Type of Activity	TTL	S	T	A	P	L	E	E
Action Item #31: Install a berm between Cross Road and the brook in an effort to eliminate the potential for flooding. **(F17)** ***(Table 7.1)***	Cross Road	Structural Projects	21	3	3	3	3	3	3	3
				No apparent difficulties with this action item.						
Action Item #32: Consider the establishment of written minimum standards for the construction of Class V roads, particularly addressing steep slopes on roadways and driveways. ***(Table 6.1)***	Town Wide (new roads)	Prevention Emergency Service Protection	21	3	3	3	3	3	3	3
				No apparent difficulties with this action item.						
Action Item #33: Develop an official building permit and consider the establishment of a "Building Committee" that will work hand-in-hand with the Planning Board. **(MU6)** ***(Table 6.1)***	Town Wide	Prevention Public Education & Awareness Emergency Service Protection Property Protection Natural Resource Protection	19	3	3	3	1	3	3	3
				Political: *Some will not want to adhere to a building permit process*						
Problem Statement: *Flood Insurance Rate Maps (FIRMS) have not been updated since 2008 and although the Town has the 2008 maps, new floodplain maps should be created.* **Action Item #34:** Contact NH OSI and/or FEMA to obtain new and revised regulatory floodplain maps to replace the 2008 maps. **(F7)** ***(Table 7.1)***	Flood Zone	Prevention Public Education & Awareness Emergency Service Protection Property Protection Natural Resource Protection Structural Projects	21	3	3	3	3	3	3	3
				No apparent difficulties with this action item.						
Action Item #35: Improve the 36" plastic culvert on Indian Pond Road by upgrading it with a 4x6 foot concrete box culvert to eliminate the flooding and to improve the flow of stormwater. **(F13)**	Indian Pond Road	Prevention Public Education & Awareness Emergency Service Protection Property Protection Natural Resource Protection Structural Projects	16	2	3	3	2	3	1	2
				Social: *Some may not be pleased by the closure of the road for this upgrade* ***Political:*** *Some may be push back on the elimination of the old (historic) culvert* ***Economic:*** *Budget constraints* ***Environmental:*** *DES permitting will be required*						
Action Item #36: Repair the "slump" in the road on Bean Brook Road and lay a drainage line uphill of the slump to not only eliminate potential flooding problems, but also to eliminate this dangerous section of the road. **(F17)** ***(Table 7.1)***	Brook Road	Prevention Public Education & Awareness Emergency Service Protection Property Protection Natural Resource Protection Structural Projects	16	2	3	3	2	3	1	2
				Social: *Not a high volume road, so some won't see the need because it doesn't serve many people* ***Political:*** *same as social* ***Economic:*** *Budget constraints* ***Environmental:*** *DES approvals will be needed*						

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 operations plan and implemented through that planning effort.

TABLE 9.1: THE MITIGATION ACTION PLAN

Table 9.1, The Mitigation Action Plan, located on the next page, includes Problem Statements that were expressed by the Planning Team. These action items are listed in order of priority and indicate if they were derived from prior tables in this Plan.

The estimated cost was determined using the following criteria:

- **Low Cost**..... $0 - $1,000 or staff time only
- **Medium Cost** ..... $1,000-$10,000
- **High Cost** ..... $10,000 or more

The time frame was determined using the following criteria:

- **Short Term**..... Ongoing for the life of the Plan
- **Short Term**..... Less than 1 year (0-12 months)
- **Medium Term**..... 2-3 years (13-36 months)
- **Long Term:** ..... 4-5 years (37-60 months)

Items in green such as **(MU14)** represent mitigation action items taken from Mitigation Ideas, A Resource for Reducing Risk to Natural Hazards, FEMA, January 2013; see *Appendix E: Potential Mitigation Ideas*, for more information.

Mitigation Action Items are listed in order of priority.

Final Priority	Problem Statement New Mitigation Action Item	Type of Hazard	Responsible Department	Funding or Support	Time Frame	Est. Cost
0-1	***Problem Statement:*** *The Town has continuously used public outreach to advise residents of the need for proper 911 signage; however, the Town is currently only about 25% compliant with the proper 911 signage.* **Action Item #1:** Consider ways to improve 911 signage compliance so that emergency responders can better assist the public at the time of need; perhaps through purchase of signs by the Town and/or through continued public outreach. **(MU13)** ***(Table 6.1)***	All Hazards	Board of Selectmen & Emergency Management Director	Local	**Short Term-Ongoing** For life of the Plan	**Low Cost** <$1,000 or staff time only
0-2	***Problem Statement:*** *Although the Piermont Highway Department 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 stormwater management.* **Action Item #2:** Develop a written stormwater maintenance plan in order to ensure more efficient stormwater management; include the location, type, size, age and expected replacement date of all culverts, catch basins and drainage ditches in the Community. **(F5)** ***(Table 6.1)***	Flooding	Highway Department	Local	**Short Term-Ongoing** For life of the Plan; plan is already complete but will be updated	**Low Cost** <$1,000 or staff time only
0-3	***Problem Statement:*** *As tree limbs fall and/or encroach roadways and water systems and as vegetation grows around utilities, there is a need to continue to work to keep this hazard to a minimum.* **Action Item #3:** In addition to work that is done by and with local utility companies, continue to monitor and maintain brush cutting, drainage system maintenance and tree removal as part of a tree maintenance program and continue to create defensible space around power lines, oil and gas lines and other infrastructure; continue to work to reduce wildfire risk by clearing dead vegetation, cutting high grass and other fuel loads in the Community. **(SW4, WF7, WF9 & F14)** ***(Tables 6.1 & 7.1)***	Severe Wind, Wildfire, Ice Storms & Flooding	Highway Department	Local	**Short Term-Ongoing** For life of the Plan	**Medium Cost** $1,000-$10,000

Final Priority	Problem Statement New Mitigation Action Item	Type of Hazard	Responsible Department	Funding or Support	Time Frame	Est. Cost
0-4	**Problem Statement:** *A survey was not done to identify the functional needs population in Piermont; a functional needs survey should be developed to serve as a tool for emergency responders.* **Action Item #4:** Consider the creation of a database to track those individuals at high risk of death, such as the elderly, homeless, etc. by developing a new and updated survey of the functional needs population and a method of maintaining the data. **(ET3 & WW6)** ***(Table 6.1)***	All Hazards	Emergency Management Director & Fire Department, Fast Squad and Police Department	Local	**Short Term-Ongoing** For life of the Plan	**Low Cost** <$1,000 or staff time only
0-5	***Problem Statement:*** *The Piermont Elementary School Emergency Plan was updated in 2016; continued updates and training are needed; the school plan is a good plan but needs more exercising.* **Action Item #5:** Work with the Piermont Elementary School to develop training and exercises to practice the 2016 Plan. ***(Tables 6.1 & 7.1)***	All Hazards	School Principal with assistance from Fire Department, Fast Squad, Police Department & Emergency Management Director	Local	**Short Term-Ongoing** For life of the Plan	**Low Cost** <$1,000 or staff time only
0-6	***Problem Statement:*** *Recommendations for the installation of new water resources (i.e., dry hydrants, fire ponds, cisterns) has not been done; in addition, maintenance needs to continue on all of the Town's water resources.* **Action Item #6:** Routinely inspect the functionality of fire hydrants and continue the maintenance and repair of all hydrants and other water resources in Piermont; consider other areas of the Community that have limited water resources and address these issues by installing new hydrants, fire ponds and/or cisterns; consult with the Piermont FD. **(WF8)**	Wildfire	Fire Department & Emergency Management Director	Local	**Short Term-Ongoing** For life of the Plan	**Low Cost** <$1,000 or staff time only

Final Priority	Problem Statement New Mitigation Action Item	Type of Hazard	Responsible Department	Funding or Support	Time Frame	Est. Cost
0-7	***Problem Statement:*** *The Town's ditching needs continuous maintenance.* **Action Item #7:** Continue to maintain the Town's ditches as needed to improve the flow stormwater. **(F14)**	Flooding	Highway Department	Local	**Short Term-Ongoing** For life of the Plan	**High Cost** >$10,000
0-8	***Problem Statement:*** *Although most police officers and firefighters have received NIMS & ICS training, not all of Piermont's town officials have.* **Action Item #8:** The Emergency Management Director will encourage all town officials and new hires to take NIMS 700 and ICS 100 and 200. ***(Table 6.1)***	All Hazards	Emergency Management Director	Local	**Short Term-Ongoing** For life of the Plan	**Low Cost** <$1,000 or staff time only
0-9	***Problem Statement:*** *The Town's Capital Reserve Funds set funds aside each year at budget time to assist the Town's departments with planned purchases of equipment and supplies or in emergency situations; the Piermont Capital Reserve Funds work well when well-funded, however currently funding is inadequate.* **Action Item #9:** Work with the Board of Selectmen and the Capital Improvement Committee to better fund the Piermont Capital Reserve Funds. **(MU6)*(Table 6.1)***	All Hazards	Board of Selectmen & the Capital Improvement Committee	Local	**Short Term-Ongoing** For life of the Plan	**Low Cost** <$1,000 or staff time only
0-10	***Problem Statement:*** *CodeRED is an excellent warning system but it only stores resident phone numbers that are listed in the phone book; residents may not be aware that they can add cell numbers and unlisted numbers.* **Action Item #10:** Provide public outreach to encourage all residents to contact CodeRED to add cell numbers, email and unlisted numbers and to verify information; use the website, a possible brochure or a sign up at Town Meeting. **(MU14)** ***(Table 6.1)***	Flooding	Board of Selectmen, Police Department, Emergency Management Director & other Departments	Local	**Short Term-Ongoing** For life of the Plan	**Low Cost** <$1,000 or staff time only

Final Priority	Problem Statement New Mitigation Action Item	Type of Hazard	Responsible Department	Funding or Support	Time Frame	Est. Cost
0-11	***Problem Statement:*** *Piermont's children's summer camps are visited annually by the Piermont Fire Department and Fast Squad to provide emergency planning and fire awareness information; the Town has also participated in the development of an Emergency Operations Plan with Camp Walt Whitman and Kingswood; this education and awareness needs to continue into the future.* **Action Item #11:** Continue to offer public outreach to the Town's summer camp children. **(MU14)** ***(Tables 6.1 & 7.1)***	All Hazards	Fire Department, Fast Squad, Police Department & Emergency Management Director	Local	**Short Term-Ongoing** For life of the Plan	**Low Cost** <$1,000 or staff time only
0-12	***Problem Statement:*** *Although public outreach has been done to advise the citizens of Piermont of the possibility of using the Piermont Congregational Church as a cooling shelter in times of extended high temperatures and a warming shelter in times of extended cold weather, additional public outreach needs to be done.* **Action Item #12:** Provide public outreach to the citizens of Piermont regarding the availability of the Piermont Congregational Church as a "cooling or warming center" during times of extended high temperatures and severe winter weather. **(ET3 & WW6)**	Extreme Temperatures & Severe Winter Weather	Emergency Management Director	Local	**Short Term-Ongoing** For life of the Plan	**Low Cost** <$1,000 or staff time only
0-13	***Problem Statement:*** *The Piermont Master Plan (2013) will be need of an update based on the recommended ten year guidelines in 2023; however it does not include a Natural Hazards section or mitigation action items from this Plan.* **Action Item #13:** Review the Piermont Master Plan and consider the incorporation of a Natural Hazards section and mitigation action items from this Plan into periodic updates and in the recommended 10-year update in 2023. **(MU6)** ***(Tables 6.1 & 7.1)***	All Hazards	Planning Board	Local	**Short Term-Ongoing** For life of the Plan whenever updates are made	**Low Cost** <$1,000 or staff time only

Final Priority	Problem Statement New Mitigation Action Item	Type of Hazard	Responsible Department	Funding or Support	Time Frame	Est. Cost
0-14	***Problem Statement:*** *Although the Town has made a great effort in providing public education, more can be done to provide not only emergency preparedness but also hazard mitigation techniques that residents can take to protect their homes and properties.* **Action Item #14:** Continue to provide robust information on the Town's Emergency webpage for educating the public on hazard mitigation and preparedness measures **(MU14)** by adding to the Town's website a webpage that will include such information as emergency contacts, shelter locations, evacuation routes **(SW7, WF11 & T3)**, methods of emergency alerting, 911 compliance, water saving techniques **(D9)**, earthquake risk and mitigation activities that can be taken in residents' homes **(EQ7)**, steps homeowners can take to protect themselves and their properties when extreme temperatures occur **(ET1 & ET4)**, safety measures that can be taken during hail **(HA3)** and lightning storms **(L2)**, mitigation techniques for property protection and links to available sources; educate homeowners regarding the risks of building in hazard zones and encourage homeowners to install carbon monoxide monitors and alarms **(WW5)**; continue to develop ways to provide notification to citizens. ***(Tables 6.1 & 7.1)***	All Hazards including: Severe Wind, Drought, Earthquake, Extreme Temperatures, Hail, Lightning, Severe Winter Weather, Tornado & Wildfire	Board of Selectmen, Police Department, Emergency Management Director & other Departments	Local	**Short Term-Ongoing** For life of the Plan	**Low Cost** <$1,000 or staff time only
0-15	***Problem Statement:*** *Although the Town does a great job using its Emergency webpage to keep the Community informed, residents may not be aware of the steps they can take to reduce the risk of fire at their homes; this work needs to continue into the future.* **Action Item #15:** Continue to post important information on the Town's Emergency website and notices of red flag burning days through mailings and obtain and have available "Firewise" brochures to educate homeowners on methods to reduce fire risk around their homes **(WF10)**; provide "Firewise" brochures to those residents seeking burn permits; 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)**	Wildfire	Board of Selectmen, Fire Department & Emergency Management Director	Local	**Short Term-Ongoing** For life of the Plan	**Low Cost** <$1,000 or staff time only

Final Priority	Problem Statement New Mitigation Action Item	Type of Hazard	Responsible Department	Funding or Support	Time Frame	Est. Cost
0-16	***Problem Statement:*** *Residents and Builders may not be aware of flood regulations & the availability of flood insurance through the NFIP.* **Action Item #16:** 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 Emergency Management Services webpage. ***(Table 6.1)***	Flooding	Board of Selectmen, Police Department, Emergency Management Director & other Departments	Local	**Short Term-Ongoing** For life of the Plan	**Low Cost** <$1,000 or staff time only
0-17	***Problem Statement:*** *Residents may not be aware of the risk of building in the floodplain and the steps they can take to reduce flooding.* **Action Item #17:** Through Public Outreach and the Town's website, educate homeowners regarding the risks of building in flood zone and measures that can be taken to reduce the chance of flooding, such as securing debris, propane tanks, yard items or stored objects that may otherwise be swept away, damaged, or pose a hazard if picked up and washed away by floodwaters; add links and info to website; continue to actively work with residents to ensure they are in compliance with the Town's Floodplain Ordinance. **(F23)** ***(Table 6.1)***	Flooding	Board of Selectmen, Police Department, Emergency Management Director & other Departments	Local	**Short Term-Ongoing** For life of the Plan	**Low Cost** <$1,000 or staff time only
1-1	***Problem Statement:*** *The Piermont Emergency Operations Plan is currently in need of an update according to the recommended five-year cycle; the EOP was last updated in 2010 and is in need of an update.* **Action Item #18:** Update the Piermont Emergency Operations Plan to coincide with the new State 15-ESF format and to include an EOC Call Alert List, a detailed Resource Inventory List; the new EOP will include ESF #5, Emergency Management (for the EOC) and ESF #6, Mass Care Housing and Human Services (shelter). ***(Tables 6.1 & 7.1)***	All Hazards	Emergency Management Director	Local & Grants	**Short Term** 1 Year or Less (0-12 months)	**Medium Cost** $1,000-$10,000

Final Priority	Problem Statement New Mitigation Action Item	Type of Hazard	Responsible Department	Funding or Support	Time Frame	Est. Cost
1-2	***Problem Statement:*** *The undersized culverts on Cape Moonshine have caused flooding over the road in the past.* ***July 1, 2017:*** *Heavy rainfall was too much for the plastic culverts on Cape Moonshine Road to handle causing parts of the road to wash out; culverts actually "bent" and were standing upright; the road was closed for 3-4 days leaving several residents stranded.* **Action Item #19:** improve the 36" culverts on Cape Moonshine Road with a 4x6 culverts to improve the flow of stormwater and prevent flooding and road closures. **(F13)**	Flooding	Highway Department	Local & Grants	**Short Term** 1 Year or Less	**High Cost** >$10,000
1-3	***Problem Statement:*** *The Indian Pond Road 4-foot culvert is half stone and half metal and is showing metal fatigue; there is a threat that the 25 foot high headwall can collapse taking out a section of Indian Pond Road (secondary evacuation route); deferred to replace the 4-foot culvert with a 5'-box culvert to eliminate the risk of flooding.* ***July 1, 2017:*** *Heavy rain created a 20' deep hole; the new 4' culvert from 7-8 years ago could not handle the volume of rain this time; no structures were involved but flood waters went over the road, washing part of the road out; took 12 trucks of gravel just to get the road open.* **Action Item #20:** Improve the 4-foot half stone/half metal culvert on Indian Pond Road by upgrading it with a 5 or 6 foot concrete box culvert to eliminate the flooding and to improve the flow of stormwater. **(F13)** ***(Table 7.1)***	Flooding	**Highway Department**	Local & Grants	**Short Term** 1 Year or Less (0-12 months)	**High Cost** >$10,000
1-4	***Problem Statement:*** *Two underperforming culverts on Piermont Heights Road need to be replaced.* ***July 1, 2017:*** *Heavy rain caused debris to plug up the culvert on Piermont Heights Road; the flow of water was too much for the culvert to handle causing the road flooding; road was closed for two days.* **Action Item #21:** Improve the two 36" culverts on Piermont Heights Road by upgrading to one big 4x6 culvert to prevent flooding and improve the flow of stormwater. **(F13)**	Flooding	Highway Department	Local & Grants	**Short Term** 1 Year or Less	**High Cost** >$10,000

Final Priority	Problem Statement New Mitigation Action Item	Type of Hazard	Responsible Department	Funding or Support	Time Frame	Est. Cost
1-5	***Problem Statement:*** *Water crossing under Cape Moonshine Road through an aging culvert with concrete abutments and a wooden deck; high water causes scouring and erosion of the abutments on one side which results in a hole opening up closing the bridge.* ***July 1, 2017:*** *Cape Moonshine Road was washed out due to the volume of water that fell during this storm; bridge scouring and road wash out resulted, closing the road for three days creating accessibility problems.* **Action Item #22:** Improve the 36" culvert on Cape Moonshine Road by upgrading to a 4 x 6 culvert to improve the flow of stormwater and to end the scouring issue. **(F13)**	Erosion	Highway Department	Local & Grants	**Short Term** 1 Year or Less	**High Cost** >$10,000
1-6	***Problem Statement:*** *Due to a slump in the road, snow removal is difficult in one 250' long portion of Cross Road; in addition, the brook and road are at the same level thus increasing the possibility of flooding in this location.* ***July 1, 2017:*** *Cross Road experienced flooding on when the culvert (private homeowner) was overwhelmed, causing the closure of Cross Road for an hour; part of the road also washed out.* **Action Item #23:** Raise the section of Cross Road two feet for 250' where the road is not only at the same level as the brook but has also "slumped" in an effort to increase the ability to remove snow and to help eliminate the potential for flooding; encourage homeowner to improve the culvert at the end of driveway to prevent future flooding. **(F13 & F17)** ***(Table 7.1)***	Flooding	Highway Department	Local & Grants	**Short Term** 1 Year or Less (0-12 months)	**Medium Cost** $1,000-$10,000
1-7	***Problem Statement:*** *The undersized culverts on Bedford road result in flooding on part of the road and limits access to the lone resident that lives there.* ***July 1, 2017:*** *The heavy flow of stormwater that came out of the forest overwhelmed and crushed the plastic culverts on Bedford Road and brought debris into the ditches leaving no place for the water to go but over the road; washed out side of Bedford Road in two places causing a road closure for three days and limiting access for the single resident that lives there.* **Action Item #24:** Improve the undersized and often overwhelmed culverts (approximately 7) on Bedford Road; replace and upgrade the size of the remaining plastic culvers with larger metal culverts. **(F13)**	Flooding	Highway Department	Local & Grants	**Short Term** 1 Year or Less (0-12 months)	**High Cost** >$10,000

Final Priority	Problem Statement New Mitigation Action Item	Type of Hazard	Responsible Department	Funding or Support	Time Frame	Est. Cost
1-8	***Problem Statement:*** *Water flows down toward the river, bringing silt, rocks and debris that blocks up the stream, which then overflows onto School Lot Road; this is a single access road with no houses and it has been a consistent problem.* ***July 1, 2017:*** *Heavy rain brought erosion and soil deposits in the brook by School Lot Road; stormwater in the brook found an alternative route through the woods and onto School Lot Road causing the road to wash out.* **Action Item #25:** Dredge brook and/or put in in alternate channel in the brook (unnamed) near School Lot Road to improve the flow of stormwater and to prevent flooding on the road. **(F13)**	Flooding	Highway Department	Local & Grants	**Short Term** 1 Year or Less	**High Cost** >$10,000
1-9	***Problem Statement:*** *Although some EOP training has been done, this strategy from the prior plan was deferred to make arrangements for a table-top exercise (TTX) once the a EOP is completed.* **Action Item #26:** Hold a table-top exercise (TTX) at the completion of the Piermont Emergency Operations Plan Update. ***(Table 7.1)***	All Hazards	Emergency Management Director	Local	**Short Term** 1 Year or Less (0-12 months)	**Medium Cost** $1,000-$10,000 but grant assisted
1-10	***Problem Statement:*** *The Piermont Subdivision Regulations do not include specific language outlining: building on steep slopes, ridgeline protection, the slope of driveways and water resources for fire suppression in new subdivisions.* **Action Item #27:** Review the Piermont Subdivision Regulations to consider adding specific language regarding building on steep slopes, the slope of driveways, ridgeline protection and the need for water resources for fire suppression in new subdivisions. **(ER2, MU6 & WF4)** ***(Tables 6.1 & 7.1)***	Erosion & Wildfire	Planning Board	Local	**Short Term** 1 Year or Less (0-12 months)	**Low Cost** <$1,000 or staff time only
2-1	***Problem Statement:*** *During power outages, the Piermont Town Offices must rely on the Fire Department's portable generator which may be dedicated to other services.* **Action Item #28:** Investigate the possibility of installing a permanent generator at the Town Office. **(MU13)** ***(Tables 6.1 & 7.1)***	All Hazards	Board of Selectmen	Local	**Medium Term** 2-3 Years (13-36 months)	**Medium Cost** $1,000-$10,000

Final Priority	Problem Statement New Mitigation Action Item	Type of Hazard	Responsible Department	Funding or Support	Time Frame	Est. Cost
2-2	***Problem Statement:*** *The Town of Piermont has established an ordinance which covers the Shoreland Conservation District; the Town abides by the regulations provided in the Shoreland Water Quality Protection Act; however, "Class B Sludge" that is being applied to farmlands continues to seep into the river during flood events.* **Action Item #29:** Consider the establishment of an ordinance that deals with "Class B Sludge" being applied to farmland that can seep into the river during flood events. ***(Table 6.1)***	Flooding & HazMat-Transport & Fixed	Board of Selectmen with input from Health Officer & Conservation Commission	Local	**Medium Term** 2-3 Years (13-36 months)	**Low Cost** <$1,000 or staff time only
2-3	***Problem Statement:*** *Although Piermont has a current Capital Improvements Plan (CIP), work needs to be done on the Plan.* **Action Item #30:** The CIP Committee to produce a more comprehensive plan for the future and to consider mitigation strategies from this Hazard Mitigation Plan for inclusion in the CIP. **(MU6)** ***(Table 6.1)***	All Hazards	Board of Selectmen & the Capital Improvement Committee	Local	**Medium Term** 2-3 Years (13-36 months)	**Low Cost** <$1,000 or staff time only
2-4	***Problem Statement:*** *The potential for flooding exists on Cross Road (second section) in locations where the brook is at the same level as the road.* **Action Item #31:** Install a berm between Cross Road and the brook in an effort to eliminate the potential for flooding. **(F17)** ***(Table 7.1)***	Flooding	**Highway Department**	Local	**Medium Term** 2-3 Years (13-36 months)	**Medium Cost** $1,000-$10,000
2-5	***Problem Statement:*** *Road design standards are detailed within the Town's planning mechanisms (Subdivision Regulations) and adhere to State standards; new roads will not be accepted by the Town as "town" roads unless approved at Town Meeting and properly built according to town standards; however written standards for the construction of Class V roads have not been established.* **Action Item #32:** Consider the establishment of written minimum standards for the construction of Class V roads, particularly addressing steep slopes on roadways and driveways. ***(Table 6.1)***	All Hazards	Planning Board & Highway Department	Local	**Medium Term** 2-3 Years (13-36 months)	**Low Cost** <$1,000 or staff time only

Final Priority	Problem Statement New Mitigation Action Item	Type of Hazard	Responsible Department	Funding or Support	Time Frame	Est. Cost
2-6	***Problem Statement:*** *The Town of Piermont does not have a Building Inspector however, the permitting process requires builders to abide by the International Building Codes (IBC) and the International Residential Codes (IRC) which have been adopted by the State of New Hampshire.* **Action Item #33:** Develop an official building permit and consider the establishment of a "Building Committee" that will work hand-in-hand with the Planning Board. **(MU6)** ***(Table 6.1)***	All Hazards	Board of Selectmen & Planning Board	Local	**Medium Term** 2-3 Years (13-36 months)	**Low Cost** <$1,000 or staff time only
2-7	***Problem Statement:*** *Flood Insurance Rate Maps (FIRMS) have not been updated since 2008 and although the Town has the 2008 maps, new floodplain maps should be created.* **Action Item #34:** Contact NH OSI and/or FEMA to obtain new and revised regulatory floodplain maps to replace the 2008 maps**. (F7)** ***(Table 7.1)***	Flooding	**Planning Board**	Local	**Medium Term** 2-3 Years (13-36 months)	**Low Cost** <$1,000 or staff time only
3-1	***Problem Statement:*** *The 36" plastic culvert on Indian Pond Road cannot handle the flow of stormwater, becoming overwhelming during heavy periods of rain.* **Action Item #35:** Improve the 36" plastic culvert on Indian Pond Road by upgrading it with a 4x6 foot concrete box culvert to eliminate the flooding and to improve the flow of stormwater. **(F13)**	Flooding	**Highway Department**	Local & Grants	**Long Term** 4-5 Years (37-60 months)	**High Cost** >$10,000
3-2	***Problem Statement:*** *Although a flooding problem does not currently exist (although on July 1, 2017 there was flooding, see above) on Bean Brook Road, the road continues to slump due to clay composition under the road, causing dangerous road conditions and the possibility of accessibility issues for residents and emergency responders; in the 1980s, part of the road was lost when road material were washed down the bank causing "slumping".* **Action Item #36:** Repair the "slump" in the road on Bean Brook Road and lay a drainage line uphill of the slump to not only eliminate potential flooding problems, but also to eliminate this dangerous section of the road. **(F17)** ***(Table 7.1)***	Erosion, Flooding & HazMat-Transport	**Highway Department**	Local & Grants	**Long Term** 4-5 Years (37-60 months)	**High Cost** >$10,000

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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 Piermont 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 items. The review will also address recommended improvements to the Plan as contained in the FEMA plan review checklist and address any weaknesses the Town identified that the Plan did not adequately address.
- Second, the Plan will be thoroughly updated every five years.
- Third, if the Town adopts any major modifications to its land use planning documents, the jurisdiction will conduct a Plan review and make changes as applicable.

In keeping with the process of adopting this hazard mitigation plan, the public and stakeholders will have the opportunity for future involvement as they will be invited to participate in any and all future reviews or updates of this Plan. Public notice before any review or update will be given by such means as: press releases in local papers, posting meeting information on the Town website and at the Town Offices, sending letters to federal, state and local organizations impacted by the Plan and posting notices in public places in the Town. This will ensure that all comments and revisions from the public and stakeholders will be considered. The Emergency Management Director ensures that these actions will be done.

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

B. Integration with Other Plans

This Plan will only enhance mitigation if balanced with all other town plans. Piermont completed its last hazard mitigation plan in 2012 and has completed many of projects from that Plan. Examples of these can be found in Table 7.1 and include items such as updating the Subdivision Regulations, continued tree maintenance 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.

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

Piermont 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 Piermont's Master Plan was completed in 2013 and is due for a recommended update in 2023. 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 #13)**

Piermont 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 Piermont EOP was completed in 2010; an update for the Emergency Operations Plan is expected to be updated with completion expected in 2018. The new EOP will include elements from this hazard mitigation plan. **(Action Items #18 & #26)**

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

Town Budget, Capital Improvement Plan & Capital Reserve Funds:

The Town of Piermont 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 (multiple Action Items) or address the CIP and CRF (Action Item #9).**

The Piermont 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 #27, 32 & 33)**

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

This Plan was completed in a series of open meetings beginning on October 3, 2016. The Plan was presented to the Town for review, submitted to HSEM for Conditional Approval *(APA, Approved Pending Adoption)*, formally adopted by the Board of Selectmen and resubmitted to HSEM for Final Approval. Once Final Approval from HSEM was met, copies of the Plan were distributed to the Town, HESM, FEMA, DNCR and the USDA-FS; the Plan was then distributed as these entities saw fit. Copies of the Plan remain on file at Mapping and Planning Solutions (MAPS) in both digital and paper format.

(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)

Cape Moonshine Road, July 1, 2017
Photo Credit: Town of Piermont

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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 Piermont, NH

Current Plan Expiration: February 13, 2017
PDM15 Grant Expiration: October 31, 2018

This Agreement between the Town of Piermont (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 2017 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 Piermont 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 Piermont Hazard Mitigation Plan.

- After final approval is received from FEMA, MAPS will provide the Town with a two copies of the Plan containing all signed documents, approvals and GIS maps along with CDs containing these same documents in digital form, for distribution by the Town as it sees fit. Additional CDs may be requested at no additional cost. CD copies of the Plan will be distributed by MAPS to collaborating agencies including, but not limited to, NH Homeland Security (HSEM) and FEMA.

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

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

- The Town shall 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 Piermont 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 Piermont, not MAPS. Mapping and Planning Solutions will however assist the Town with attendance tracking by asking meeting attendees to "sign in" at all meetings and to "log" any time spent outside of the meetings working on this project. MAPS will provide the Town with final attendance records in spreadsheet form at project's end for the Town to use in its match fulfillment.

- **Project Period:** This project shall begin upon signing this Agreement by both parties and continue through a date yet to be determined or whenever the planning process is complete. The project period may be extended by mutual written Agreement between the Town, MAPS and Homeland Security if required. The actual project end date is dependent upon timely adoptions and approvals which may be outside of the control of MAPS and the Town. It is anticipated that five or six two-hour meetings will be required to gather the necessary information to create the updated the Plan.

  The grant provided for this project is a Pre-Disaster Mitigation Grant (PDM15); per the grant agreement between the Town and HSEM, all work must be completed by October 31, 2018. It is expected that this project will be completed long before the grant expiration date of October 31, 2018.

- **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 Piermont. 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 Piermont and Mapping and Planning Solutions.

- **About Mapping and Planning Solutions**: Mapping and Planning Solutions provides hazard mitigation and emergency operations planning throughout New Hampshire. Mapping and Planning Solutions has developed more than forty Hazard Mitigation Plans, more than fifteen 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
Mapping and Planning Solutions
105 Union Street
Whitefield, NH 03598

For the Town

Bernie Marvin
Emergency Management Director
PO Box 67
130 Route 10
Piermont, NH 03779
berniemarvin@gmail.com
(603) 275-0340

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

FOR THE TOWN OF PIERMONT, NH

Signature

Randy Sobieck

Printed Name/Title

30 August 2016

Date

FOR MAPPING AND PLANNING SOLUTIONS

June E. Garneau

Signature
June Garneau, Owner
August 23, 2016

Signatures are scanned facsimiles; original signatures are on file.

B. Approved Pending Adoption (APA) Letter from HSEM

Piermont, NH - Approvable Pending Adoption

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

Sent: Tue 8/8/2017 3:41 PM
To: 'June Garneau'
Cc: 'cstubbins.selectman@gmail.com'; 'Bernie Marvin'; Hatch, Paul

Good afternoon!

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

With this approval, the jurisdiction meets the local mitigation planning requirements under 44 CFR 201 **pending HSEM's receipt of electronic copies of the adoption documentation and the final plan**.

Acceptable electronic formats include Word or PDF files and must be submitted to us via email at HazardMitigationPlanning@dos.nh.gov. Upon HSEM's receipt of these documents, notification of formal approval will be issued, along with the final Checklist and Assessment.

The approved plan will be submitted to FEMA on the same day the community receives the formal approval notification from HSEM. FEMA will then issue a Letter of Formal Approval to HSEM for dissemination that will confirm the jurisdiction's eligibility to apply for mitigation grants administered by FEMA and identify related issues affecting eligibility, if any. If the plan is not adopted within one calendar year of HSEM's Approval Pending Adoption, the jurisdiction must update the entire plan and resubmit it for HSEM review. If you have questions or wish to discuss this determination further, please contact me at Whitney.Welch@dos.nh.gov or 603-223-3667.

Thank you for submitting the Piermont, 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

PIERMONT, NH

BOARD OF SELECTMEN

A RESOLUTION ADOPTING THE TOWN OF PIERMONT HAZARD MITIGATION PLAN UPDATE 2017

WHEREAS, the Town of Piermont 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 Piermont 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 October 3, 2016 and July 11, 2017 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 Piermont; and

WHEREAS, the Plan recommends several hazard mitigation actions/projects that will provide mitigation for specific natural hazards that impact the Town of Piermont 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 Piermont 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 Piermont;
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;

Piermont, 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

_____
Signature

_____
Print Name

Member of the Board of Selectmen

_____
Signature

_____
Print Name

Member of the Board of Selectmen

_____
Signature

_____
Print Name

Emergency Management Director

_____
Signature

_____
Print Name

IN WITNESS WHEREOF, the undersigned has affixed his/her signature and the corporate seal of the Town of Piermont 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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PAGE LEFT INTENTIONALLY BLANK FOR INSERTION OF FINAL APPROVAL LETTER (PAGE 2) FROM FEMA WHEN RECEIVED.

Signatures are scanned facsimile; original signatures are on file.

E. CWPP Approval Letter from DNCR

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

Several public meetings and committee meetings were held between October 3, 2016 and July 11, 2017 regarding the development and review of the Piermont Hazard Mitigation Plan Update 2017. The Piermont Hazard Mitigation Plan Update 2017 contains potential future projects to mitigate hazard and wildfire damage in the Town of Piermont.

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

The Board of Selectmen, the Emergency Management Director and the Fire Chief approve the Piermont Hazard Mitigation Plan Update 2017 and understand that with approval by DNCR, this Plan will also serve as a Community Wildfire Protection Plan.

For the Town of Piermont

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 Natural & Cultural Resources (DNCR)

APPROVED and SIGNED this day, _____, 2017.

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

APPROVED and SIGNED this day, _____, 2017.

_____
Director – NH Division of Forest and Lands, DNCR

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 Piermont, 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.

Piermont, 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

_____

_____

_____

_____

_____

Please use reverse side for additional notes ➡

Additional Notes – Year One:

YEAR TWO

Check all that apply

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

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

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

The Town of Piermont, 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.

Piermont, 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 ➡

Additional Notes – Year Two:

YEAR THREE

Check all that apply

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

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

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

The Town of Piermont, 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.

Piermont, 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 ➡

Additional Notes – Year Three:

YEAR FOUR

Check all that apply

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

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

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

The Town of Piermont, 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.

Piermont, 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

_____

_____

_____

_____

_____

_____

_____

Please use reverse side for additional notes ➡

Additional Notes – Year Four:

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**
    - Piermont Hazard Mitigation Plan, 2012
    - Whitefield Hazard Mitigation Plan, 2017
    - Orford Hazard Mitigation Plan, 2016
    - Lyme Hazard Mitigation Plan, 2017
- **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.nhdfl.org/fire-control-and-law-enforcement/fire-statistics.aspx*
- **Disaster Mitigation Act (DMA) of 2000,** Section 101, b1 & b2 and Section 322a
    - *http://www.fema.gov/library/viewRecord.do?id=1935*
- **Economic & Labor Market Information Bureau**, NH Employment Security, April 2017;Community Response for Piermont, Received, 08/02/2016, Census 2000 and Revenue Information derived from this site; *http://www.nhes.nh.gov/elmi/products/cp/profiles-htm/piermont.htm*

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*
    - Wildfire Preparedness Guide to Forest Wardens; *www.quickseries.com*
    - Ready Set Go; *www.wildlandfires.org*
    - Fire education for children; *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*
- NOAA, National Weather Service; *http://www.nws.noaa.gov/glossary/index.php?letter=w*
- NOAA, Storm Prediction Center; *http://www.spc.noaa.gov/faq/tornado/beaufort.html*
- National Weather Service; http://www.nws.noaa.gov/om/cold/wind_chill.shtml
- Center for Disease Control; https://www.cdc.gov/disasters/winter/index.html
- Slate; http://www.slate.com/id/2092969/
- NH Office 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
- 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[17]:

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

Did You Know?

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

FEMA's HMA grants are provided to eligible Applicants (States/Tribes/Territories) that, in turn, provide sub-grants to local governments and communities. The Applicant selects and prioritizes subapplications developed and submitted to them by subapplicants. These subapplications are submitted to FEMA for consideration of funding.

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

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

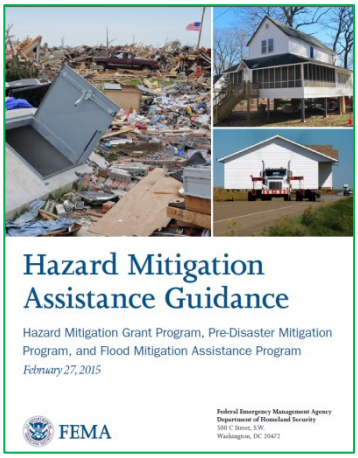
Eligible Activities	HMGP	PDM	FMA
1. Mitigation Projects	✓	✓	✓
Property Acquisition and Structure Demolition	✓	✓	✓
Property Acquisition and Structure Relocation	✓	✓	✓
Structure Elevation	✓	✓	✓
Mitigation Reconstruction	✓	✓	✓
Dry Floodproofing of Historic Residential Structures	✓	✓	✓
Dry Floodproofing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

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

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

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

What is the Hazard Mitigation Grant Program?



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

Who is eligible to apply?

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

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

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

How are potential projects selected and identified?

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

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

B. Pre-Disaster Mitigation (PDM)

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

Program Overview

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

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

C. Flood Mitigation Assistance (FMA)

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

Program Overview

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

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

Types of FMA Grants

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

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

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

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

D. Repetitive Flood Claims (RFC)

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

Program Overview

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

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

Federal / Non-Federal Cost Share

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

E. Severe Repetitive Loss (SRL)

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

Program Overview

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

Definition

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

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

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

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

Purpose

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

Federal / Non-Federal cost share

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

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

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

Appendix C: The Extent of Hazards

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

*DAM FAILURE

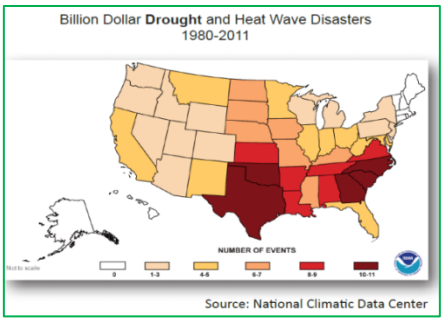
A "Dam" means any artificial barrier, including appurtenant works, which impounds or diverts water, and which has a height of 4 feet or more, or a storage capacity of 2 acre-feet or more, or is located at the outlet of a great pond[1]. A dam failure occurs when water overtops the dam, or there is structural failure of the dam which causes there to be a breech and an unintentional release of water. Dams are classified in the following manner[18]:

Classification	Description	Inspection Intervals
Non-Menace	A dam that is not a menace because it is in a location and of a size that failure or misoperation of the dame would not result in probable loss of life or loss to property The dam must be less than six feet in height if the storage capacity is greater than 50 acre-feet or less than 25 feet in height if it has a storage capacity of 15-50 acre-feet.	Every 6 years
Low Hazard	A dam that has a low hazard potential because it is in a location and of a size that failure or misoperation of the dam would result in no possible loss of life, low economic loss to structures or property, structural damage to a town or city road or private road accessing property other than the dam owner's that could render the road impassable or otherwise interrupt public safety services, the release of liquid industrial, agricultural, or commercial wastes, septage, or contained sediment if the storage capacity is less two-acre-feet and is located more than 250 feet from a water body or water course, and/or reversible environmental losses to environmentally-sensitive sites.	Every 6 years
Significant Hazard	A dam that has a significant hazard potential because it is in a location and of a size that failure or misoperation of the dam would result in no probable loss of lives; however, there would be major economic loss to structures or property, Structural damage to a Class I or Class II road that could render the road impassable or otherwise interrupt public safety services, major environmental pro public health losses including one or more of the following: Damages to a public water system (RSA 485:1-a, XV) which will take longer than 48 hours to repair, the release of liquid industrial, agricultural, or commercial wastes, septage, sewage, or contaminated sediments if the storage capacity is 2 acre-feet or more; or damage to an environmentally-sensitive site that does not meet the definition of reversible environmental losses.	Every 4 years
High Hazard	A dam that has a high hazard potential because it is in a location and of a size that failure or misoperation of the dam would result in probable loss of human life as well as a result of; water levels and velocities causing the structural failure of a foundation of a habitable residential structure or commercial or industrial structure which is occupied under normal conditions; water levels rising above the first floor elevation of a habitable residential structure or a commercial or industrial structure, which is occupied under normal conditions when the rise due to a dam failure is greater than one foot; structural damage to an interstate highway, which could render the roadway impassable or otherwise interrupt public safety services; the release of a quantity and concentration of material, which qualify as "hazardous waste" as defined by RSA 147-A:2 VII; or any other circumstance that would more likely than not cause one or more deaths.	Every 2 years

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

*DROUGHT

A drought is defined as a long period of abnormally low precipitation, especially one that adversely affects the growing season or living conditions of plants and animals. Droughts are rare in New Hampshire. They generally are not as damaging and disruptive as floods and are more difficult to define. The effect of drought is indicated through measurements of soil moisture, groundwater levels and stream flow.



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

NEW HAMPSHIRE DROUGHT HISTORY

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

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

*EARTHQUAKE

An earthquake is a rapid shaking of the earth caused by the breaking and shifting of rock beneath the earth's surface. Earthquakes can cause buildings and bridges to collapse, disrupt gas, electric and phone lines and often cause landslides, flash floods, fires and avalanches. Larger earthquakes usually begin with slight tremors but rapidly take the form of one or more violent shocks and end in vibrations of gradually diminishing force called aftershocks. The underground point of origin of an earthquake is called its focus; the point on the surface directly above the focus is the epicenter. The magnitude and intensity of an earthquake is widely determined by the use of two scales, the more commonly used Richter scale (measures strength or magnitude) and the Mercalli Scale (measures intensity or severity). The chart to the right shows the two scales relative to one another. The Richter Scale measures earthquakes starting at 1 as the lowest with each successive unit being about 10 times stronger and more severe than the previous one.[19]

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

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.

[19] Modified Mercalli Scale/Richter Scale Chart; MO DNR, http://www.dnr.mo.gov/geology/geosrv/geores/richt_mercali_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.[20]

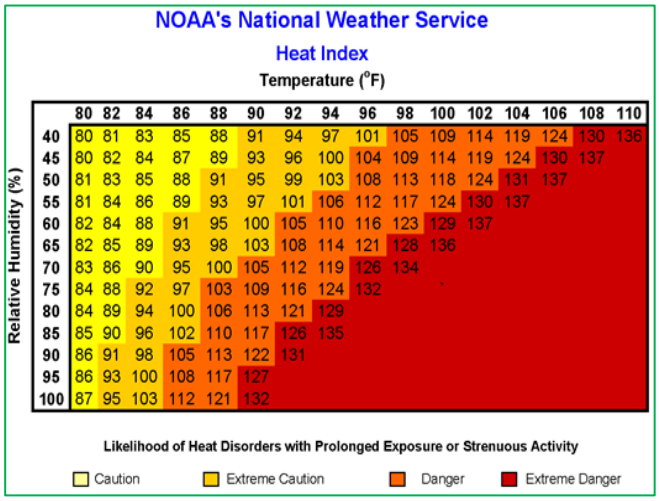
*EXTREME TEMPERATURES

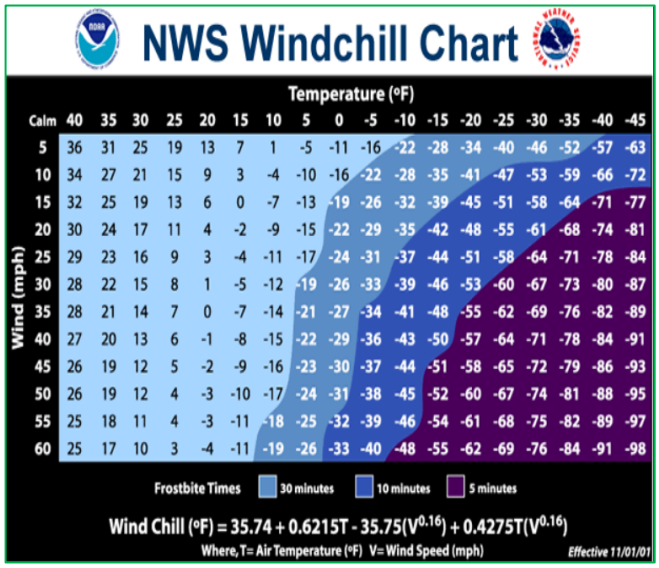
EXTREME HEAT

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."[21] The chart above explains the likelihood of heat disorders that may result from high heat.[22]





[20] Mitigation Ideas, A Resource for Reducing Risk to Natural Hazards, FEMA, January 2013
[21] NOAA, Index/Heat Disorders; http://www.srh.noaa.gov/ssd/html/heatwv.htm
[22] NOAA; http://www.nws.noaa.gov/os/heat/index.shtml

EXTREME COLD

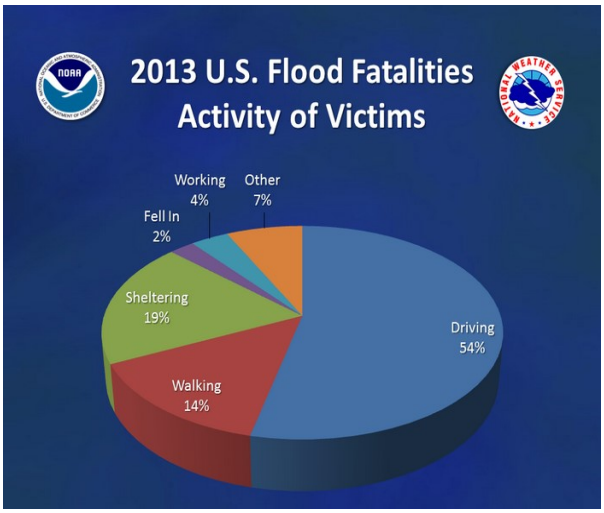
What constitutes extreme cold and its effects can vary across different areas of the country. In regions relatively unaccustomed to winter weather, near freezing temperatures are considered "extreme cold." Whenever temperatures drop decidedly below normal and as wind speed increases, heat can leave your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

*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 stormwater drainage systems create local flooding on both asphalt and gravel roads.

FLOODING (RIVERINE)

Floodplains are usually located in lowlands near rivers and flood on a regular basis. The term 100-year flood does not mean that flood will occur once every 100 years. It is a statement of probability that scientists and engineers use to describe how one flood compares to others that are likely to occur. It is more accurate to use the phrase "1% annual chance flood". What this means is that there is a 1% chance of a flood of that size happening in any year. Flooding is often associated with hurricanes, heavy rains, ice jams and rapid snowmelt in the spring.

[23] CDC; http://www.bt.cdc.gov/disasters/winter/guide.asp f
[24] National Weather Service; http://www.nws.noaa.gov/om/windchill/

FLOODING (DAM FAILURE)

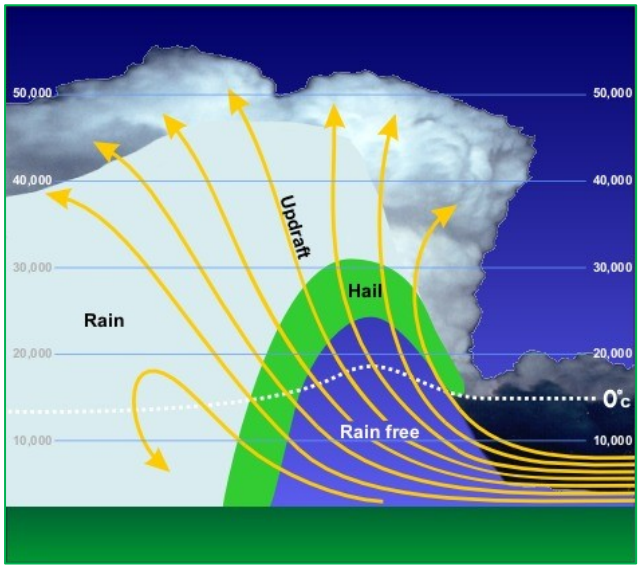
Flooding as a result of dam failure can be small enough to only affect the immediate area of the dam, or large enough to cause catastrophic results to cities, towns and human life that is below the dam. The extent of flooding depends largely on the size of the dam, the amount of water that is being held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

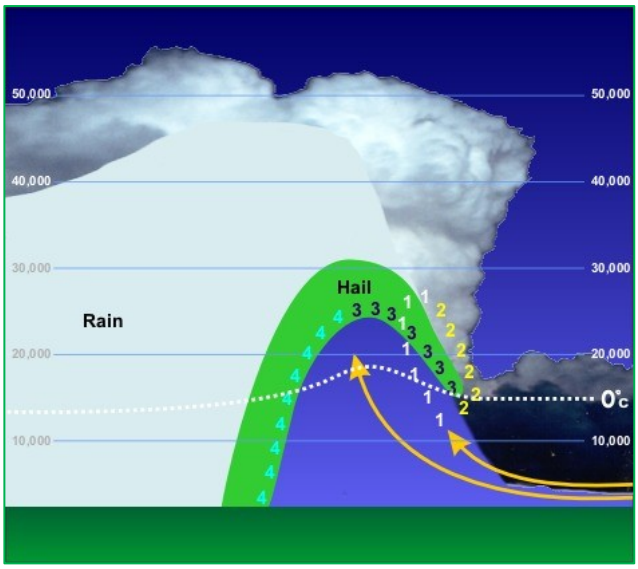
***HAILSTORM**

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 includes. It weighed 1 lb. 15 oz."[25]

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

Details of how hailstones grow are complicated, but the results are irregular balls of ice that can be as large as baseballs. The chart above shows the relative size differences and a common way to "measure" the size of hail based on diameter.[26] The charts below show how hail is formed.[27]





[25] NOAA National Severe Storms Laboratory; https://www.nssl.noaa.gov/education/svrwx101/hail/
[26] http://www.pinterest.com/pin/126171227030590678/
[27] 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.[28]

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.[29]

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, forum blown in streaks	Whole trees in motion, resistance felt walking against wind
9	41-47	Strong Gale	High waves (20 ft.), sea begins to roll, dense streaks of foam, spray may reduce visibility	Slight structural damage occurs, slate blows off roofs
10	48-55	Storm	Very high waves (20-30 ft.) with overhanging crests, sea white with densely blown foam, heavy rolling, lowered visibility	Seldom experienced on land, trees broken or uprooted, "considerable structural damage"
11	56-63	Violent Storm	Exceptionally high(30-45 ft.) waves, foam patches cover sea, visibility more reduced	
12	64+	Hurricane	Air filled with foam, waves over 45 ft., sea completely white with driving spray, visibility greatly reduced	

[28] NOAA; *http://www.nws.noaa.gov/glossary/index.php?letter=w*
[29] 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[30]) 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."[31]

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

TROPICAL STORMS

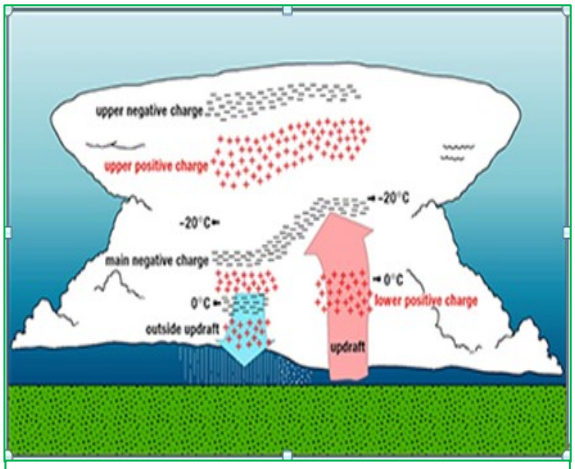
A tropical depression becomes a tropical storm when its maximum sustained winds are between 39-73 mph. Although tropical storms have winds of less than 74 miles per hour, like hurricanes, they can do significant damage. The damage most felt by tropical storms is from the torrential rains they produce 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.[32]

[30] National Hurricane Center; http://www.nhc.noaa.gov/aboutsshws.php
[31] National Hurricane Center, NOAA; http://www.nhc.noaa.gov/aboutsshws.php
[32] 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."[33]



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

Thunder, a result of lightning, is created when the "lightning channel heats the air to around 18,000 degrees Fahrenheit..."[34] thus causing the rapid expansion of the air and the sounds we hear as thunder. Although thunder that is heard during a storm cannot hurt you, the lightning that is associated with the thunder can not only strike people but also strike homes, out-buildings, grass and trees sparking disaster. Wildfires and structure loss are at a high risk during severe lightning events.

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

[33]NOAA National Severe Storms Laboratory, https://www.nssl.noaa.gov/education/svrwx101/lightning
[34]Ibid
[35]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

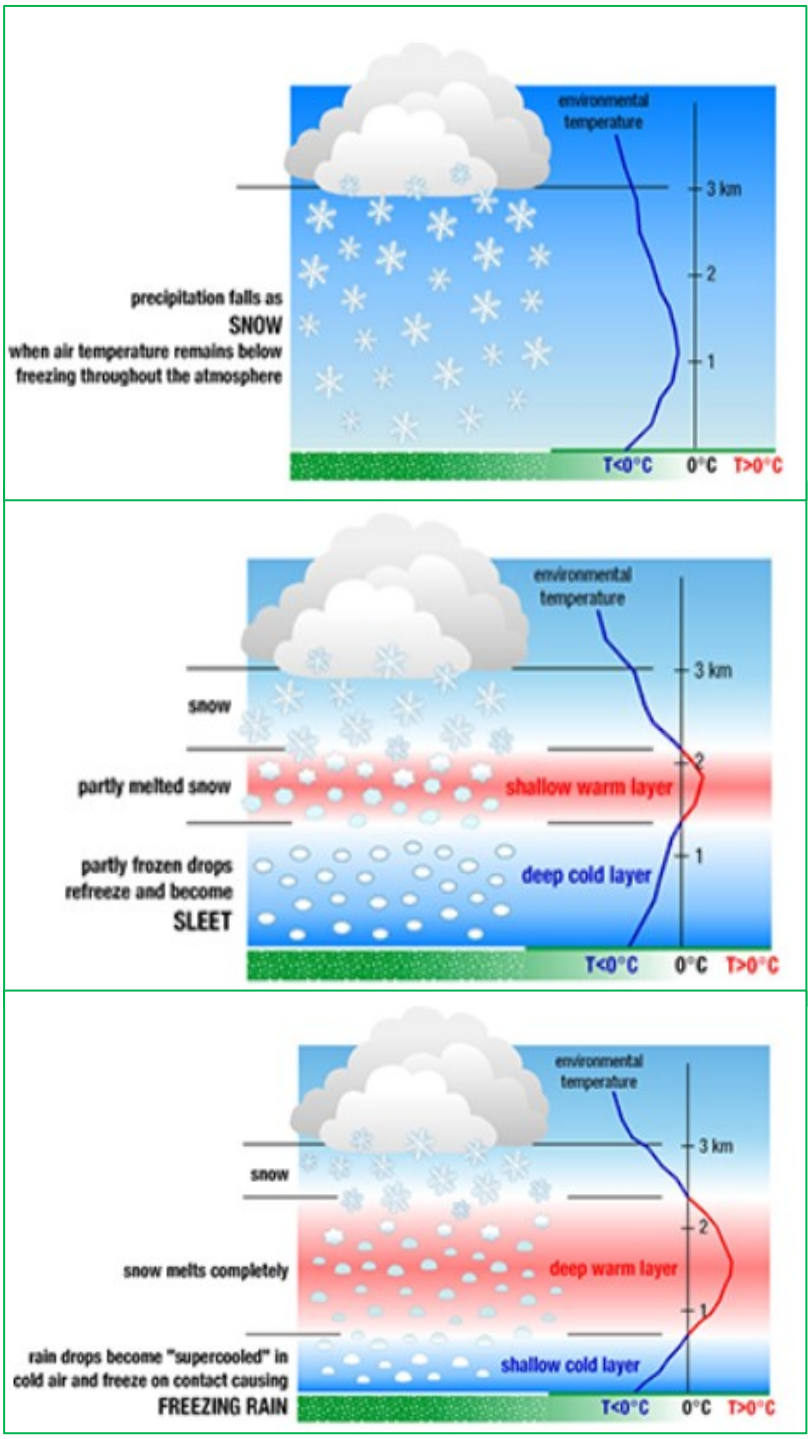
A winter storm can range from moderate snow to blizzard conditions. Blizzard conditions are considered blinding wind-driven snow over 35 mph that lasts several days. A severe winter storm deposits four or more inches of snow during a 12-hour period or six inches of snow during a 24-hour period.

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."[36]



Types of Severe Winter Weather
NOAA – National Severe Storms Laboratory

[36] NOAA, National Severe Storms Laboratory, https://www.nssl.noaa.gov/education/svrwx101/winter/types/

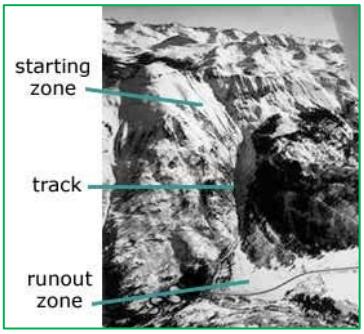
The Sperry-Piltz Ice Accumulation Index (SPIA) (below) is designed to help utility companies better prepare for predicated ice storms.[37]

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

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

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

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."[38]

"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."[39]

[37] The Weather Channel, http://www.weather.com/news/weather-winter/rating-ice-storms-damage-sperry-piltz-20131202
[38] Copyright Richard Armstrong, NSIDC, http://nsidc.org/cryosphere/snow/science/avalanches.html
[39] 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."[40]

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.[41]

North American Public Avalanche Danger Scale

Avalanche danger is determined by the likelihood, size and distribution of avalanches.

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

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

[40] Copyright Richard Armstrong, NSIDC, http://nsidc.org/cryosphere/snow/science/avalanches.html
[41] 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.

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

"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."[42] 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.

[42] Enhance Fujita Scale, 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.[43]

***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:[44] For the purpose of statistical analysis, the US Forest Service recognizes the cause of fires according to the bottom chart to the right:[45]

Class	Aces Burned
Class A	0 to .25 acres
Class B	.26 to 9 acres
Class C	10 to 99 acres
Class D	100 to 299 acres
Class E	300 to 999 acres
Class F	1,000 to 4,999 acres
Class G	5,000 acres or more

Code	Statistical Cause
1	Lightning
2	Equipment Use
3	Smoking
4	Campfire
5	Debris Burning
6	Railroad
7	Arson
8	Children
9	Miscellaneous

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.[46]

There are two main potential losses with a wildfire: the forest itself and the threat to the built-up human environment (the structures within the WUI). In many cases, the only time it is feasible for a community to control a wildfire is when it threatens the built-up human environment. Therefore, the loss to the forest itself will not be a factor in our loss calculation analysis.

[43] NOAA - http://www.srh.noaa.gov/jetstream/tstorms/wind.html
[44] http://www.nwcg.gov/pms/pubs/glossary/s.htm
[45] https://www.fs.fed.us/cgi-bin/Directives/get_dirs/fsh?5109.14
[46] International Wildland-Urban Interface Code, 2012, International Code Council, Inc.

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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	**Presidential Emergency Declaration DR-4316:** 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	**Presidential Emergency Declaration DR-4206:** 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	**Presidential Emergency Declaration DR-4139:** Severe storms, flooding, and landslides during the period of June 26 to July 3, 2013 in Cheshire, Sullivan and southern Grafton Counties.
DR-4105	Severe Winter Storm	8-Feb-13	All Ten NH Counties	**Presidential Emergency Declaration DR-4105:** Nemo; heavy snow in February 2013.
DR-4095	Hurricane Sandy	October 26-November 8, 2012	Belknap, Carroll, Coos, Grafton & Sullivan	**Presidential Disaster Declaration DR-4095:** 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	**Presidential Disaster Declaration DR-4065:** Severe Storm and Flood Event May 29-31, 2012 Cheshire County.
DR-4049	Severe Storm & Snowstorm	October 29-30, 2011	Hillsborough & Rockingham	**Presidential Disaster Declaration DR-4049:** 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	**Presidential Disaster Declaration DR-4026:** 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	**Presidential Disaster Declaration DR-4006:** 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	**Presidential Disaster Declaration DR-1913:** Flooding to two NH counties including Hillsborough and Rockingham counties.
DR-1892	Severe Winter Storm, Rain & Flooding	February 23 - March 3, 2010	Grafton, Hillsborough, Merrimack, Rockingham, Strafford & Sullivan	**Presidential Disaster Declaration: DR-1892:** 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	**Presidential Disaster Declaration DR-1812:** 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	**Presidential Disaster Declaration: DR-1799:** Severe storms and flooding beginning on September 6-7, 2008.
DR-1787	Severe Storms & Flooding	July 24-August 14, 2008	Belknap, Carroll & Grafton & Coos	**Presidential Disaster Declaration DR-1787:** Severe storms, tornado, and flooding on July 24, 2008.
DR-1782	Severe Storms, Tornado, & Flooding	24-Jul-08	Belknap, Carroll, Merrimack, Strafford & Rockingham	**Presidential Disaster Declaration DR-1782:** Tornado damage to several NH counties.
DR-1695	Nor'easter, Severe Storms & Flooding	April 15-23, 2007	All Ten NH Counties	**Presidential Disaster Declaration DR-1695:** 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	**Presidential Disaster Declaration DR-1643:** Flooding in most of southern NH; May 12-23, 2006. (aka: Mother's Day Storm)
DR-1610	Severe Storms & Flooding	October 7-18, 2005	Belknap, Cheshire, Grafton, Hillsborough, Merrimack & Sullivan	**Presidential Disaster Declaration DR-1610:** To date, state and federal disaster assistance has reached more than $3 million to help residents and business owners in New Hampshire recover from losses resulting from the severe storms and flooding in October.
DR-1489	Severe Storms & Flooding	July 21-August 18, 2003	Cheshire & Sullivan	**Presidential Disaster Declaration DR-1489:** Floods stemming from persistent rainfall and severe storms that caused damage to public property occurring over the period of July 21 through August 18, 2003.
DR-1305	Tropical Storm Floyd	September 16-18,1999	Belknap, Cheshire & Grafton	**Presidential Disaster Declaration DR-1305:** The declaration covers damage to public property from the storm that spawned heavy rains, high winds and flooding over the period of September 16-18.
DR-1231	Severe Storms & Flooding	June 12-July 2, 1998	NA	**Presidential Disaster Declaration DR-1231:**
DR-1199	Ice Storms	January 7-25, 1998	NA	**Presidential Disaster Declaration DR-1199:**
DR-1144	Severe Storms/Flooding	October 20-23, 1996	NA	**Presidential Disaster Declaration DR-1144:**
DR-1077	Storms/Floods	October 20-November 15, 1995	NA	**Presidential Disaster Declaration DR-1077:**
DR-923	Severe Coastal Storm	October 30-31, 1991	NA	**Presidential Disaster Declaration DR-923:**
DR-917	Hurricane Bob, Severe Storm	August 18-20, 1991	NA	**Presidential Disaster Declaration DR-917:**

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

Emergency Disaster Declarations

Number	Description	Date of Event	Counties	Description
EM-3360	Hurricane Sandy	October 26-31, 2012	All Ten NH Counties	**Presidential Emergency Declaration EM-3360:** 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	**Presidential Emergency Declaration EM-3344:** 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	**Presidential Emergency Declaration EM-3333:** Emergency Declaration for Tropical Storm Irene for in all ten counties.
EM-3297	Severe Winter Storm	11-Dec-08	All Ten NH Counties	**Presidential Emergency Declaration EM-3297:** Severe winter storm beginning on December 11, 2008.
EM-3258	Hurricane Katrina Evacuation	August 29-October 1, 2005	All Ten NH Counties	**Presidential Emergency Declaration EM-3258:** Assistance to evacuees from the area struck by Hurricane Katrina and to provide emergency assistance to those areas beginning on August 29, 2005, and continuing; The President's action makes Federal funding available to the State and all 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	**Presidential Emergency Declaration EM-3211**: March snowstorm; more than $2 million has been approved to help pay for costs of the snow removal; Total aid for the March storm is **$2,112,182.01** (Carroll: $73,964.57; Cheshire: $118,902.51; Hillsborough: $710,836; Rockingham: $445,888.99; Sullivan: $65,088.53; State of NH: $697,501.41)
EM-3208	Snow	February 10-11, 2005	Carroll, Cheshire, Coos, Grafton & Sullivan	**Presidential Emergency Declaration EM-3208:** FEMA had obligated more than $1 million by March 2005 to help pay for costs of the heavy snow and high winds; Total aid for the February storm is **$1,121,727.20** (Carroll: $91,832.72; Cheshire: $11,0021.18; Coos: $11,6508.10; Grafton: $213,539.52; Sullivan: $68,288.90; State of NH: $521,536.78) **EM 3208-002:**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	**Presidential Emergency Declaration EM-3207:** 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 **$3,658,114.66** (Belknap: $125,668.09; Carroll: $52,864.23; Cheshire: $134,830.95; Grafton: $137,118.71; Hillsborough: $848,606.68; Merrimack: $315,936.55; Rockingham: $679,628.10; Strafford: $207,198.96; Sullivan: $48,835.80; State of NH: $1,107,426.59)
EM-3193	Snow	December 6-7, 2003	Belknap, Carroll, Cheshire, Coos, Grafton, Hillsborough, Merrimack & Sullivan	**Presidential Emergency Declaration EM-3193:** 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	**Presidential Emergency Declaration EM-3177:** 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	**Presidential Emergency Declaration EM-3166:** 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	**Presidential Emergency Declaration EM-3101:**
EM-3073	Flooding	15-Mar-79	NA	**Presidential Emergency Declaration EM-3073:**

Source:
Disaster Declarations for New Hampshire
http://www.fema.gov/disasters/grid/state-tribal-government/33?field_disaster_type_term_tid_1=All

Appendix E: Potential Mitigation Ideas[47]

Drought

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

Earthquake

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

Erosion

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

Extreme Temperatures

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

Hailstorm

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

Landslide

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

Lightning

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

Flood

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

[47] 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
DNCR.....Department of Natural & Cultural Resources (formerly DRED)
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
NHOSI.....NH Office of Strategic Initiatives (formerly OEP)
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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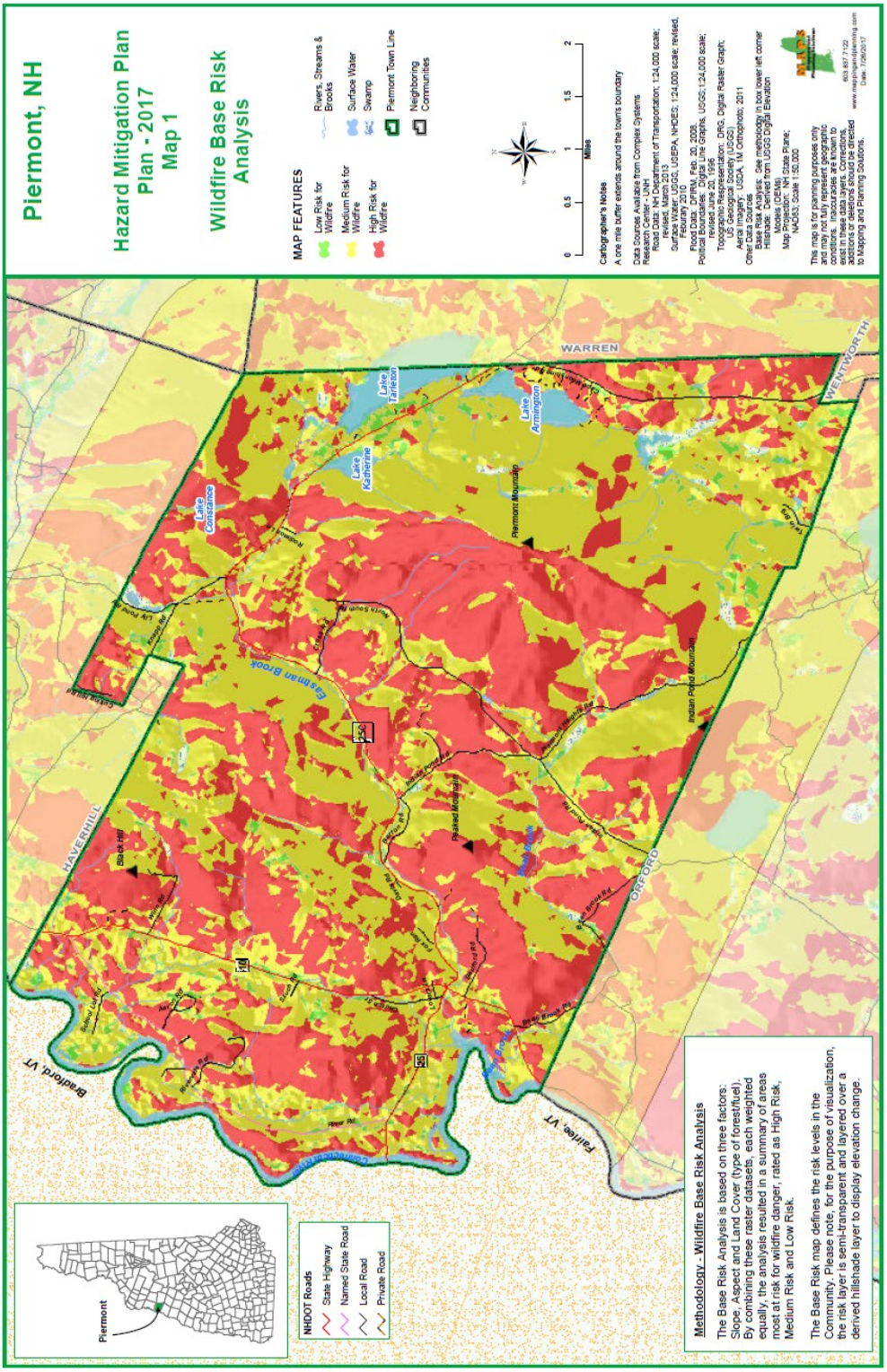
MAP 1 – BASE RISK ANALYSIS

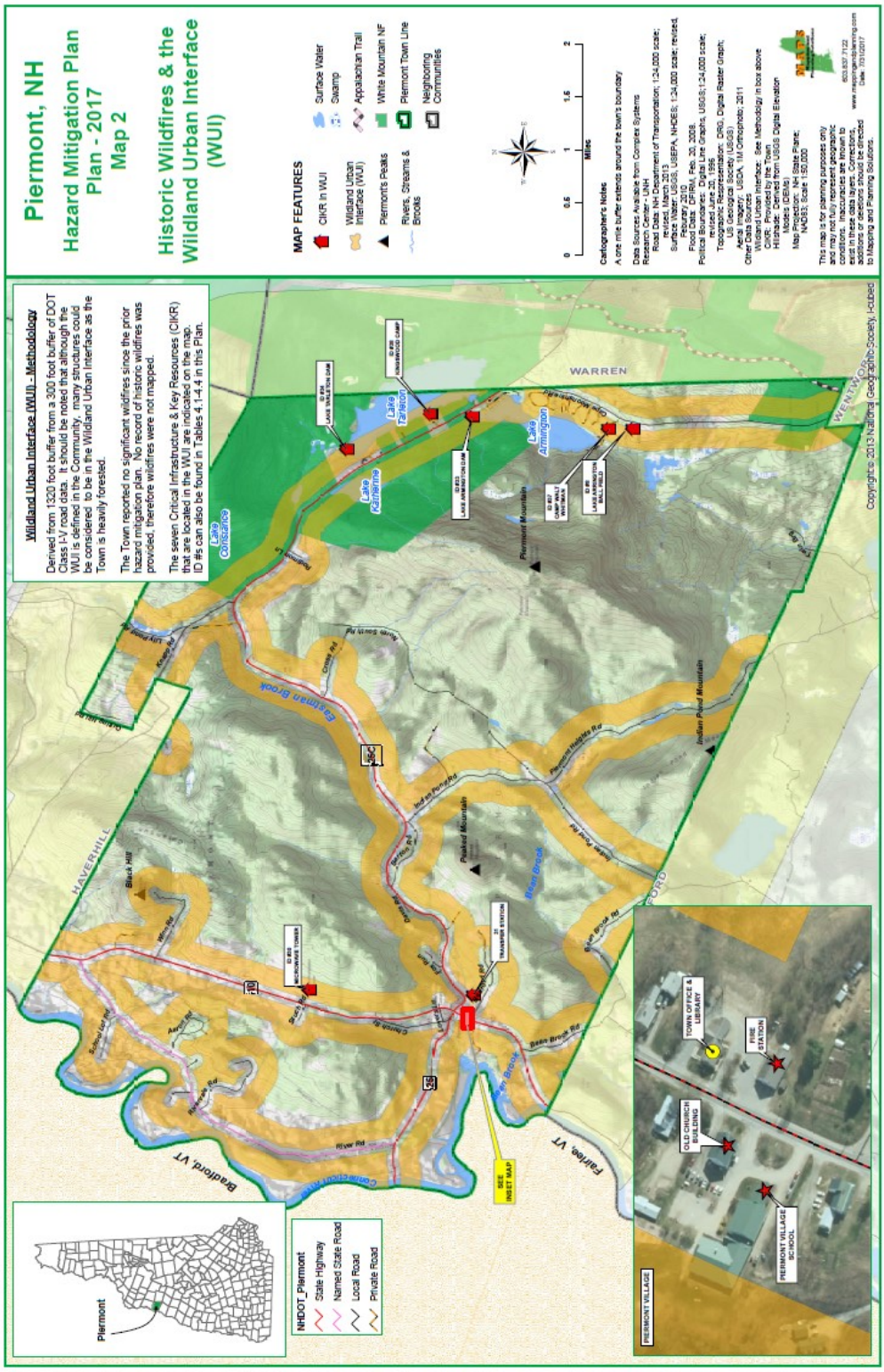
To be replaced with 11" x 17" map in final hard copy.



PLACE HOLDER FOR MAP 1

MAP 2 – HISTORIC WILDFIRES & THE WILDLAND URBAN INTERFACE

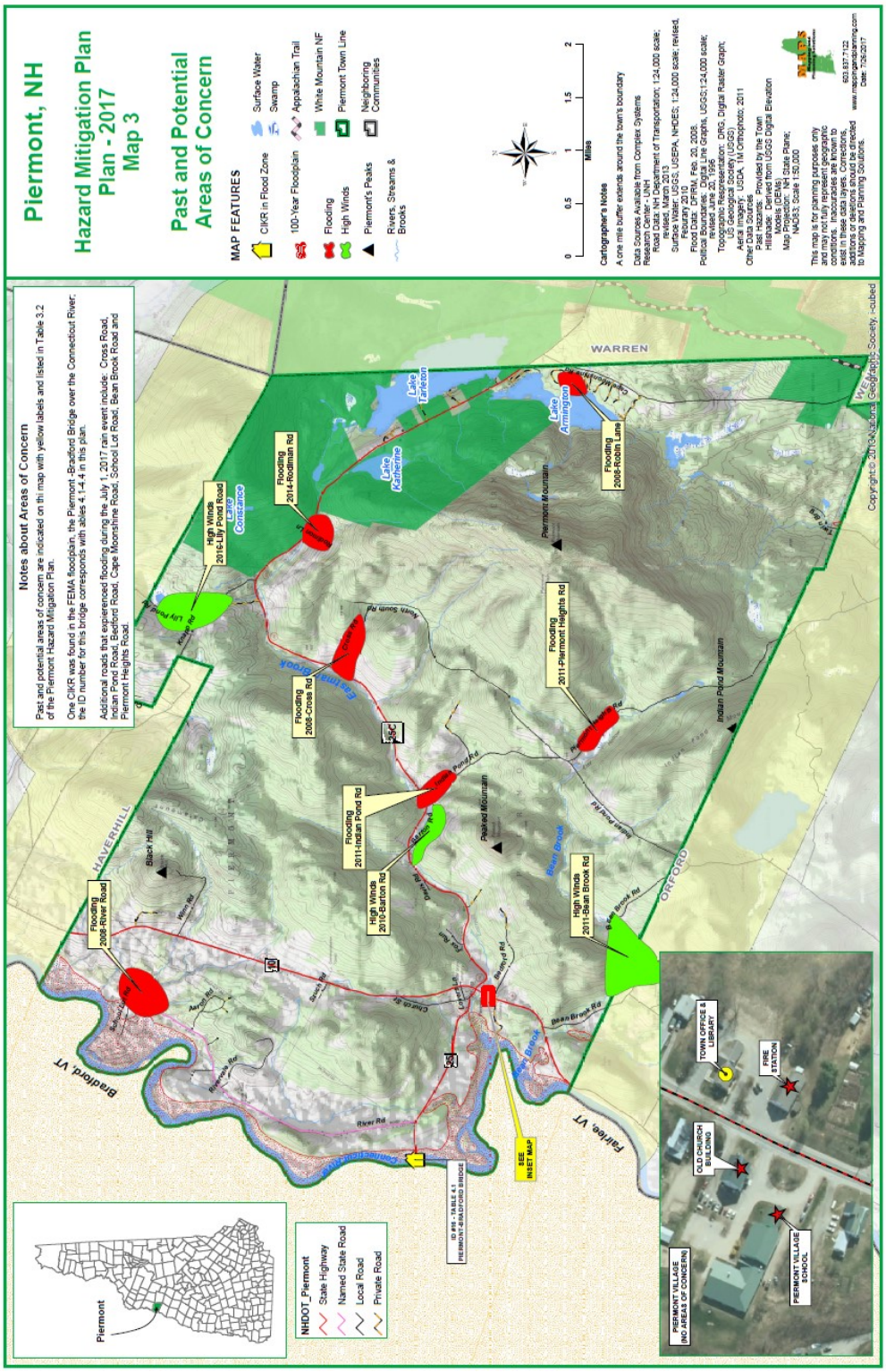
To be replaced with 11" x 17" map in final hard copy.



PLACE HOLDER FOR MAP 2

MAP 3 – PAST & POTENTIAL AREAS OF CONCERN

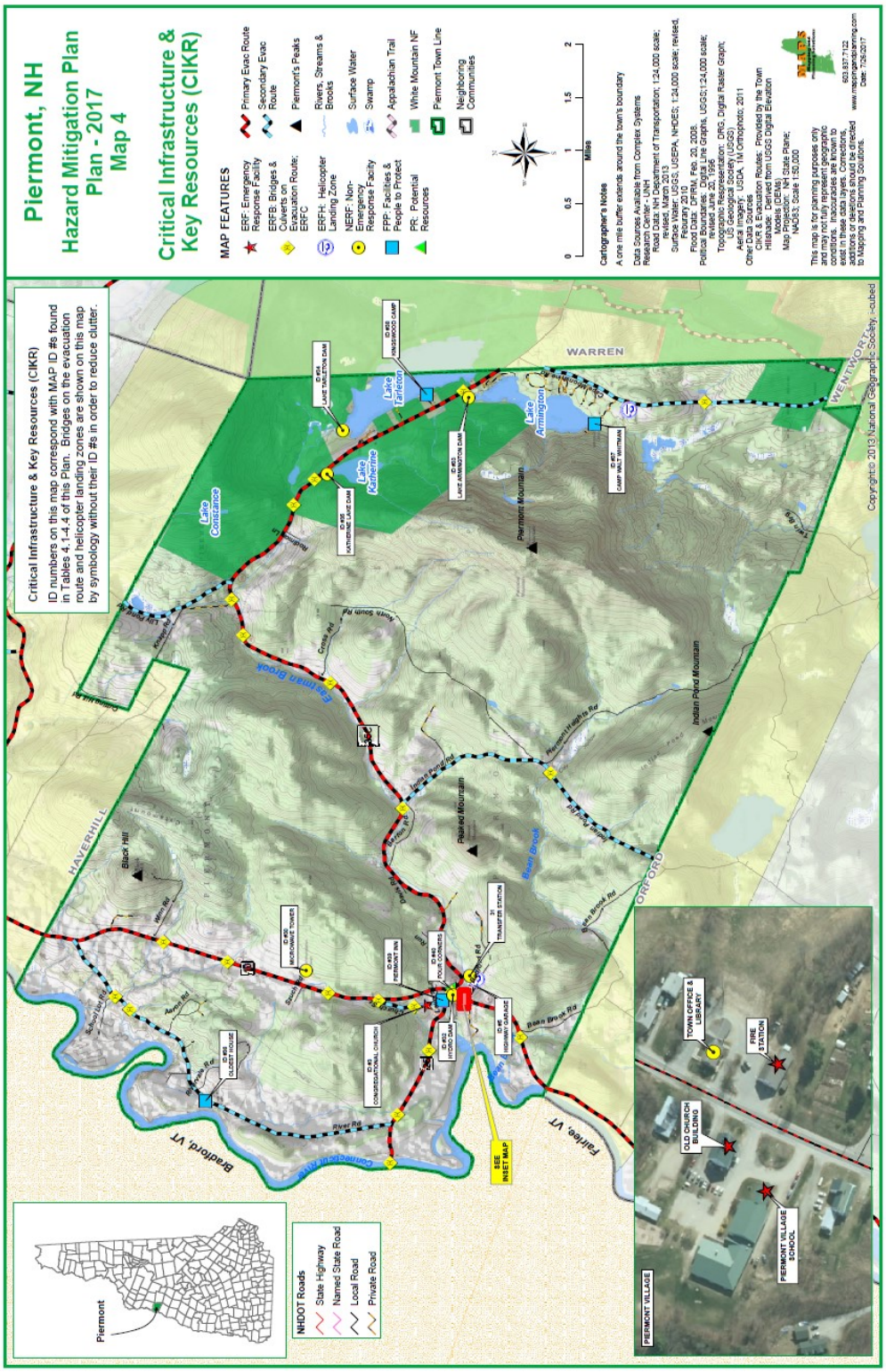
To be replaced with 11" x 17" map in final hard copy.



PLACE HOLDER FOR MAP 3

MAP 4 – CRITICAL INFRASTRUCTURE & KEY RESOURCES

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



PLACE HOLDER FOR MAP 4

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Indian Pond Road Washout
Photo Credit: Town of Piermont

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