Town of Cornish
New Hampshire

HAZARD MITIGATION PLAN

Update 2016

Cornish, NH Covered Bridge, Connecticut River

Prepared by the
Town of Cornish Hazard Mitigation Committee and
Upper Valley Lake Sunapee Regional Planning Commission

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I. INTRODUCTION

A. BACKGROUND

The New Hampshire Division of Homeland Security and Emergency Management (NH HSEM) has a goal for all communities within the State of New Hampshire to establish local hazard mitigation plans as a means to reduce future losses from natural or human-made hazard events before they occur. The NH HSEM has provided funding to the Town of Cornish, to update their local Hazard Mitigation Plan. UVLSRPC wrote the first Cornish Hazard Mitigation Plan that was approved in 2010. The *Cornish Hazard Mitigation Plan Update 2016* serves as a strategic planning tool for use by the Town of Cornish in its efforts to reduce future losses from natural and/or man-made hazard events before they occur. This *Plan* does *not* constitute a section of the Master Plan.

In the previous plan of 2010, much of the focus was on emergency management though this is a hazard mitigation plan. Due to greater focus on hazard mitigation, the update 2016 plan includes an inventory of emergency management improvements, but the heart of the plan is now hazard mitigation. Changes to the Town have been made since 2010 as will be noted in the *Development Trends* section of Chapter II.

The Cornish Hazard Mitigation Committee updated the *Cornish Hazard Mitigation Plan* with the assistance and professional services of the Upper Valley Lake Sunapee Regional Planning Commission (UVLSRPC). After a public meeting held in the Cornish Town Offices, the Cornish Town Selectboard adopted the updated plan on DATE as shown in Appendix F.

B. PURPOSE

The Cornish Hazard Mitigation Plan is a planning tool for use by the Town of Cornish in its efforts to reduce future losses from natural and/or human-made hazards. This plan does not constitute a section of the Town Master Plan, nor is it adopted as part of the Zoning Ordinance.

C. HISTORY

On October 30, 2000, President Clinton signed into law the Disaster Mitigation Act of 2000 (DMA 2000). The ultimate purpose of DMA 2000 is to:

- Establish a national disaster mitigation program that will reduce loss of life and property, human suffering, economic disruption, and disaster assistance costs resulting from disasters, and

- Provide a source of pre-disaster mitigation funding that will assist States and local governments in accomplishing that purpose.

DMA 2000 amends the Robert T. Stafford Disaster Relief and Emergency Assistance Act by, among other things, adding a new section: 322 – Mitigation Planning. This 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 any hazard mitigation grants. Local governments must review and if necessary, update the mitigation plan annually to continue program eligibility.

Why develop a Mitigation Plan?
Planning ahead to lessen or prevent a disaster will reduce the human, economic, and environmental costs. The State of NH is vulnerable to many types of hazards, including, but not limited to, floods, hurricanes, winter storms, wildfires, wind events, and earthquakes. All of these types of events can have significant economic, environmental, and social impacts. The full cost of the damage resulting from the impact of natural hazards – personal suffering, loss of lives, disruption of the economy, and loss of tax base – is difficult to quantify and measure. However, addressing these topics will give municipal planners a greater sense of potential loss and the need for mitigation efforts.

D. SCOPE OF THE PLAN

The scope of the *Cornish Hazard Mitigation Plan* includes the identification of natural hazards affecting the Town, as identified by the Cornish Hazard Mitigation Committee. In 2016, the Committee determined that Public Health should not be in the plan, but that Extreme Heat should be included. The hazards were reviewed under the following categories:

- Dam Failure
- Flooding
- Hurricane
- Tornado & Downburst
- Thunderstorm/Lightning/Hail
- Severe Winter Weather
- Earthquake
- Drought
- Extreme Heat
- Erosion
- Wildfire
- Natural Contaminants
- Hazardous Materials Spills
- Terrorism

E. METHODOLOGY

Using the *Local Mitigation Planning Handbook by FEMA (2013*), the Cornish Hazard Mitigation Committee, in conjunction with the UVLSRPC, developed the content of the *Cornish Hazard Mitigation Plan Update 2016* by tailoring the nine-task process set forth in the handbook appropriate for the Town of Cornish. Many FEMA resources and multiple State and Federal websites were also used as

well. The Committee held two posted meetings in 2016. The meetings were posted inviting the general public and notices were sent to the Town Offices of neighboring towns to invite town officials. A public notice was placed in two places in the Town of Cornish and the town web site to invite the public to attend. An e-mail was sent to all surrounding municipalities to also invite them to the meeting or to request a copy of the draft plan. These notices are provided in Appendix C. No members of the public attended the meetings. There are no major employers in the Town. The School was invited and school employee Dale Lawrence was their representative. The following hazard mitigation meetings were held at the Cornish Town Office: July 22, 2016 and August 12, 2016.

The Cornish Town Selectboard held a public meeting and adopted the Plan after FEMA conditional approval on DATE as shown in Appendix F. Prior to the Town of Cornish adopting the updated Plan, a public meeting was held to gain additional input from the citizens of Cornish and to raise awareness of the ongoing hazard mitigation planning process.

The two hazard mitigation meetings were vital to the development of this Plan. They were lengthy meetings preceded by phone discussions and a separate meeting with the Highway Agent. The meetings included a review of the plan on a screen to expedite the process. Follow-up phone conversations confirmed information such as cost estimates.

To complete this updated Plan, the Hazard Mitigation Committee followed the planning tasks below to re-evaluate the plan sections of the existing 2010 plan and to update it to reflect current information and issues:

Task 1: Determine the Planning Area and Resources (May 2016)

Cornish is a rural town and chose to continue their planning process as a single town. The Town chose to work with the Upper Valley Lake Sunapee Regional Planning Commission to provide technical support.

Task 2: Build the Planning Team (July 2016)

Members of the Committee included all relevant personnel. This included the entire Select Board, the Administrative Assistant, the Road Agent, the Fire Chief, and a Fire Department Captain..

Task 3: Create an Outreach Strategy (July 2016)

The Committee chose to provide public notices to the public to encourage participation at the public meetings. They also put a notice on the town website. Notices were also sent to each of the neighboring municipalities to invite them to participate in the meetings, send comments, or request a final plan. The final plan will also be available for public review prior to Town adoption.

Task 4: Review Community Capabilities (July 2016)

Committee members identified facilities that were considered to be of value to the Town for emergency management purposes, for provision of utilities and services, and for historic, cultural and social value. A GIS-generated map was prepared to show critical facilities identified by the Cornish Hazard Mitigation Committee. A summary listing of "Critical Facilities" is presented in Chapter IV. Costs were determined for losses for each type of hazard. Using information and activities in the handbook, the Committee and UVLSRPC staff identified existing mitigation strategies which are already implemented in the Town related to relevant hazards. A summary chart and the results of this activity are presented in Chapter VI.

Task 5: Conduct a Risk Assessment (July 2016):

The Committee determined natural and human-made hazards affecting the Town and updated description, location, and extent of those previous and potential hazards. Existing and future assets were updated to determine vulnerability to potential hazard events. Critical facilities needed during an emergency were identified and given values based on tax data. It was also determined if these facilities are in a hazard zone or not. Other facilities identified are those needed to continue the daily operation of the municipality and those that have dense populations or valued historical structures and vulnerable natural areas.

Task 6: Develop a Mitigation Strategy (July-August 2016):

The Committee evaluated the goals in the previous plan and determined they were still appropriate with minor modification. They then determined actions that they could take to meet those goals to reduce their risk to hazard events. They discussed existing regulations, ordinances, and the Master Plan and how they could continue to incorporate hazard mitigation strategies into these documents to include hazard mitigation in land use planning. Committee members agreed to pursue this integration with appropriate municipal boards.

Task 7: Keep the Plan Current:

The plan will be reviewed after every major event to evaluate the effectiveness of the plan. It will also be updated at least every five years as required. This includes review of goals, existing and proposed actions, and prioritizing those actions. Updates of other Town documents and regulations and ordinances will be part of this updating process.

Task 8: Review and Adopt the Plan:

The Committee will incorporate any feedback from Committee members, municipal officials, residents, businesses and institutions, and neighboring communities. The plan will be assessed by using FEMA's Local Mitigation Plan Review Tool prior to sending to NH Homeland Security and Emergency Management for preliminary review. If HSEM considers the plan to meet the requirements, they will forward the draft plan to FEMA for their review. Once FEMA determines the plan meets requirements, the municipality will

hold a public meeting to obtain further comments and review the final draft. If there are no major suggested changes, the municipal government will adopt the plan and the adoption form will be sent to HSEM and then to FEMA to receive a final approval of the plan.

Task 9: Create a Safe and Resilient Community:

The municipality will implement the plan by committing to task accomplishment as indicated in the plan. The municipality will take advantage of available funding opportunities such as FEMA's mitigation grant programs. The process for monitoring and updating the Plan can be found in Chapter IX.

UVLSRPC staff compiled the results of tasks one through nine in a draft document, as well as helpful and informative materials from the *State of New Hampshire Multi-Hazard Mitigation Plan Update 2013*, which served as a resource for the *Cornish Hazard Mitigation Plan Update 2016*.

F. HAZARD MITIGATION GOALS

The Cornish Hazard Mitigation Committee reviewed the hazard mitigation goals set forth in the previous Hazard Mitigation Plan and revised them slightly as follows:

1. To identify, introduce and implement cost effective Hazard Mitigation measures so as to accomplish the Town's goals and to raise awareness and acceptance of hazard mitigation opportunities generally.

2. To improve upon the protection of the general population, the citizens, and visitors of the Town of Cornish from natural and human-made hazards.

3. To reduce the potential impact of natural and human-made disasters to:
   - the Town of Cornish's Critical Support Services,
   - Critical Facilities in the Town of Cornish,
   - the Town of Cornish's infrastructure,
   - private property,
   - the Town's economy,
   - the Town's natural environment, and
   - the Town's specific historic treasures and interests.

4. To improve the Town's Disaster Response and Recovery capability as a hazard mitigation strategy to be prepared for emergencies and reduce their impact.

G. ACKNOWLEDGEMENTS

The following people participated in developing the update of this plan as the Hazard Mitigation Committee:

- Scott Baker, Selectman, Town of Cornish
- Mary Curtis, Administrative Assistant, Town of Cornish
- John Drye, Fire Department Captain, Town of Cornish
- Wayne Gray, Road Agent, Town of Cornish
- John Hammond, Selectman, Town of Cornish
- Dale Lawrence, Selectman/Rescue Squad, Town of Cornish
- Robert Rice, Fire Chief, Town of Cornish

- Shawna-Leigh Morton, Field Representative, NH Homeland Security and Emergency Management
- Victoria Davis, Planner, Upper Valley Lake Sunapee Regional Planning Commission

The Hazard Mitigation Committee was composed of local officials, many of whom are citizens of Cornish and a staff representative of the UVLSPRC for meeting facilitation and plan development. All abutting communities were invited to participate in the public meeting, submit comments, and request copies of the final plan. The general public was invited to attend the meeting by public postings at the town office and on the town website. See Appendix C. No town residents or businesses inquired about the update process or attended the meeting and no comments were submitted to be incorporated into the plan. There are no large employers located within the Town of Cornish.

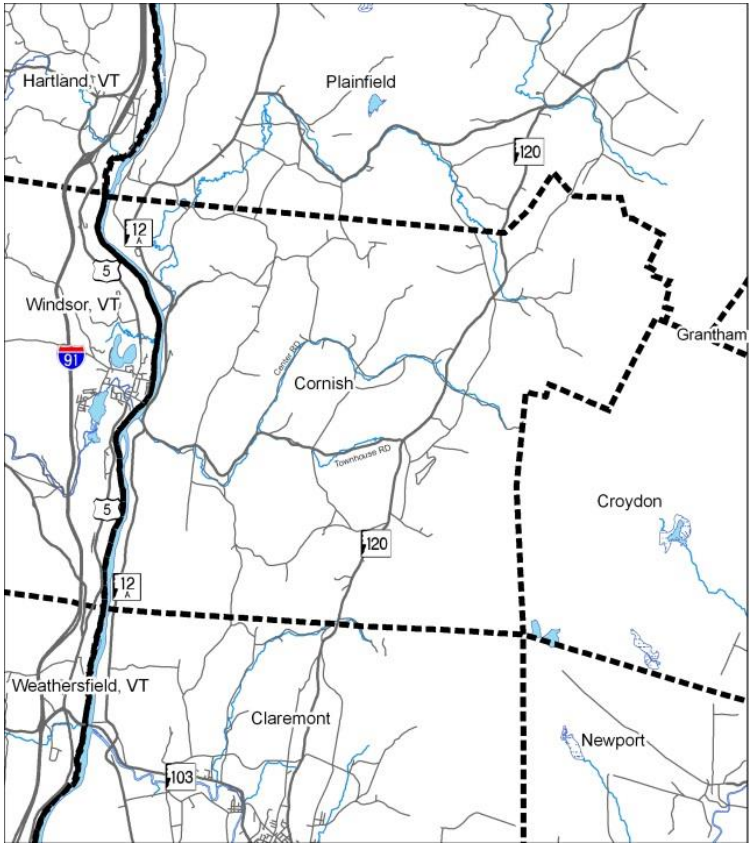
Historical information, relevant data and potential future mitigation strategies were contributed by all parties involved in the planning process. For a record of all meeting topics see Appendix C: Meeting Documentation. The staff representative of the UVLSRPC gathered all information from local officials, agency representatives and public input and compiled the information to develop the Plan.

II. COMMUNITY PROFILE

A. INTRODUCTION[1]

Geographical Location and Information

Located in the New England upland region, Cornish is situated along the Connecticut River. Most of Cornish is composed of undulating topography where the highest points are between 1000 and 2300 feet above sea level. The highest point in Cornish is found on Croydon Mountain at approximately 2300 feet. The lowest point in Cornish is at the banks of the Connecticut River at approximately 280 feet. Mountains to note include Dingleton Hill (1300'), Wellmans Hill (1103'), Ironwood Hill (1100'), Kenyon Hill (1300'), Smith Hill (1309'), Parsonage Hill (1300'), Altai Hill (1300') Yatsevich Hill (1540'), Fernald Hill (1647'), and Spaulding Hill (1456').



B. DEVELOPMENT TRENDS

The population growth experienced in Cornish and the region has resulted in land use changes. The current population estimate for the Town of Cornish indicates that the number of persons within the municipality has again reached the population peak that occurred in 1840. During Cornish's early development, population levels almost doubled during a fifty-year period in the early nineteenth century. This was the result of a growing agrarian economy. Over the next one hundred years, as the advantages of farming and sheep herding left the northeast, the population of Cornish declined until after World War II in 1940. Since that time, population levels have shown a modest increase. Population data from the past few decades shows Cornish's rate of growth behind the state and county trends and only negligible from 1990 to 2000.

[1] Town of Cornish Master Plan (2009)

The Master Plan describes the population trends based on statistical data periodically prepared by the New Hampshire Office of Energy and Planning (OEP), noting that an important consideration in OEP methodology is that town-level projections are controlled to county totals. In other words, they are based on the town's historical share of its respective county's growth and the assumption that established growth trends will remain about the same in the future. As with any data projections, particularly for smaller areas, actual circumstances and events can drastically alter these figures. Growth is expected to occur at an annual compound average rate of 1.3 percent per year between 2000 and 2025. This equals about 22 individuals per year or a total of 659 persons, which is a faster pace of growth than has occurred in the past decade. This pace of growth would result in about 1,050 additional acres being consumed for residential development. This is less than 4% of Cornish's total land area and most development has occurred along state and local roads.[1]

Table II-1: PERMITS FOR NEW STRUCTURES

Year of Permit	New Homes	New Mobile Homes	New Commercial	Floodplain?
2015	0	0	0	No
2014	3	0	0	No
2013	4	0	0	No
2012	3	0	0	No
2011	3	0	0	No

The Table below shows the number of new lots created through the subdivision process for the last five years. There have been only a total of eight new lots during that time. None of these are in hazard areas.

Table II-2: NEW LOTS CREATED

Year of Subdivision Approval	New Lots	Floodplain?
2015	1	No
2014	1	No
2013	1	No
2012	2	No
2011	3	No

Table II-3: AREA POPULATION TRENDS

Area	1970	1980	1990	2000	2010
Cornish	1,268	1,390	1,659	1,661	1,640
Plainfield	1,323	1,749	2,059	2,254	2,364
Croydon	396	457	627	661	764
Newport	5,899	6,229	6,110	6,269	6,507
Claremont	14,221	14,557	13,902	13,151	13,336
Sullivan County	30,949	36,063	38,592	40,458	43,713
New Hampshire	737,578	920,475	1,109,252	1,235,786	1,327,000

Source: US Census

Table II-4: POPULATION GROWTH IN CORNISH

	1970	1980	1990	2000	2010
Population	1,268	1,390	1,659	1,661	1,640
Decade Change in Population		9.6%	17.9%	1.7%	14.0%

Source: US Census

Table II-5: POPULATION PROJECTIONS FOR CORNISH

Area	2015	2020	2025	2030	2035	2040
Cornish	1,590	1,544	1,583	1,623	1,653	1,671
Change in Population in 5 yrs.	-3.0%	-2.9%	2.5%	2.5%	1.8%	1.1%
Change in Population in 10 yrs		-5.9%		5.0%		2.9%

Source: State of New Hampshire, Regional Planning Commissions, Office of Energy and Planning - Municipal Population Projections, 2013

Despite an increase in the population in the earlier decades, Cornish remains a rural community. The rate of growth was moderate in the 1990's, but has slowed significantly since then. In 2010, the total population was 1,640 persons. Population projections show Cornish to continue to grow at a very slow rate after a moderate decline. See the population projections table.

The Committee does not feel that the Town is more vulnerable to hazards that it was five years ago as there has been little development, and none are within hazard areas.

III. HAZARD IDENTIFICATION

The Cornish Hazard Mitigation Committee reviewed the list of hazards provided in the *State of New Hampshire Hazard Mitigation Plan*, and some hazard history for the State of New Hampshire and Sullivan County in particular. A list of past hazard events in Cornish, Sullivan County, and the State of New Hampshire can be found in the following discussion and tables. After reviewing this information and the Emergency Operations Plan, the Committee conducted a Risk Assessment. The resulting risk designations are provided in the heading of each hazard table below as well as a more detailed discussion further into this chapter.

A. WHAT ARE THE HAZARDS IN CORNISH?

Cornish is prone to a variety of natural and human-made hazards. The hazards that Cornish is most vulnerable to were determined through gathering historical knowledge of long-time residents and town officials; research into the CRREL Ice Jam Database, FEMA and NOAA documented disasters, and local land use restrictions; and from the input of representatives from state agencies (NH HSEM). The hazards potentially affecting the Town of Cornish are dam failure, flooding, hurricane, tornado & downburst, thunderstorm (including lightning and hail), severe winter weather, earthquake, drought, extreme heat, erosion, wildfire, natural contaminants, hazardous materials spills, and terrorism. Each of these hazards and the past occurrences of these hazards are described in the following sections. Hazards that were eliminated from assessment are those that have not had a direct impact on the Town of Cornish and are not anticipated to have an impact as determined by the Hazard Mitigation Planning Committee, representatives from state agencies and citizens of the Town of Cornish. Eliminated hazards include Land Subsidence, Expansive Soils, Landslides, and Snow Avalanches.

B. DESCRIPTIONS OF HAZARDS

An assessment of each hazard relevant to Cornish is provided below. An inventory of previous and potential hazards is provided. Past events are shown in the following tables and the potential for future events is then discussed. The "risk" designation for each hazard was determined after evaluations discussed later in this chapter.

- Dam Failure
- Flooding
- Hurricane
- Tornado & Downburst
- Thunderstorm/Lightning/Hail
- Severe Winter Weather
- Earthquake
- Drought
- Extreme Heat
- Erosion
- Wildfire
- Natural Contaminants
- Hazardous Materials Spills
- Terrorism

Dam Failure

Dam failure results in rapid loss of water that is normally held by the dam. These kinds of floods pose a significant threat to both life and property. Appendix D shows a map with the location of active dams in Cornish.

NH DES assigns a hazard designation to each dam in the state depending upon the potential damage it would cause if the dam failed:

- A "high hazard potential" is indicated if the dam is in a location and of a size that failure or mis-operation of the dam would result in the following: major economic loss to structures or property; structural damage to roads; major environmental; or public health losses; and probable loss of human life.

- A "significant hazard potential" would mean the dam is in a location and of a size that failure or mis-operation of the dam would result in any of the following: major economic loss to structures or property; structural damage to roads; major environmental or public health losses.

- A "low" hazard dam failure could cause some structural damage to buildings and roads.

- A "non-menace" dam failure would not cause any significant damage.

"High" and Significant" hazard potential dam owners must provide NH DES with maps of the potential inundation area if the dam were to fail. It should be noted that there are some exemptions from this requirement such as lagoons.

Past Dam Failure Events

There have been no dam failures in Cornish, or any surrounding towns, which had impact upon Cornish. Most dams are rated by the State as "non menace" or "low" hazard structures. This means there is no possibility for loss of life if any of these dams fail. A "low" hazard dam failure could cause some structural damage to buildings and roads though a "non menace" dam failure would not. There are forty-seven (47) non menace dams and one (1) low hazard dam (see table below). There are no dams rated as "significant" hazard. This means there is a significant hazard potential because the dam is in a location and of a size that failure or improper operation of the dam would result in any of the following: Major economic loss to structures or property; structural damage roads; major environmental or public health losses. The Committee identified only one dam that pose risk to residences, bridges or roadways. Inundation areas for dams affecting Cornish are shown on the map in Appendix D.

The Whitewater Brook Dam in Claremont could affect 13 houses in Cornish if the dam were to fail. The Wilder Dam on the Connecticut River would affect 16 houses and one commercial structure if it were to fail. The North Hartland Dam on the Connecticut River also would affect 14 houses if the dam were to fail. These three dams are all ranked as "high hazard." No critical facilities are located within the inundation areas.

Table III-1 - DAMS

DAMS – POTENTIAL FAILURE: LOW/MEDIUM RISK									
Dam #	**Class**	**Dam Name**	**Water Body**	**Tax Map/Lot #**	**Status**	**Type**	**Impoundment Area in Acres**	**Height of Dam (Ft)**	**Drainage Area in Acres**
053.01	NM	Saint Gaudens Mill Dam	Blow Me Down Brook	8/39	active	concrete	6.000	18.00	28.00
053.02		Blow Me Down Sawmill Dam	Blow Me Down Brook	8/39	ruins	stone/ earth	0.000	24.00	3.60
053.03		Winston Churchill Dam	Blow Me Down Brook	1/35B	ruins	timber comb	0.000	14.00	25.60
053.04	NM	Dingleton Brook 1	Dingleton Farm Brook	7/4A	active	concrete	0.700	18.00	0.10
053.05	NM	Dingleton Brook 2	Dingleton Farm Brook	7/4A	active	concrete	0.300	7.50	0.05
053.06*		Hartford, VT Water Supply Dam	Trib Blow Me Down Brook	Edward Burling, 12A/Wilson Rd	breached	concrete	0.000	6.00	0.01
053.07	NM	Trib to Mill Brook Dam	Trib Mill Brook	16/25	active	concrete	0.200	10.00	0.30
053.08	NM	Blow Me Down Brook 3 Dam	Blow Me Down Brook	18/29	active	stone/ earth	0.250	9.50	4.84
053.09		Whitewater Brook Reservoir	White Water Brook	12/38	breached	earth	8.990	53.00	0.00
053.10	NM	farm pond	Trib Blow Me Down Brook	16/20A	active	earth	0.110	8.00	0.04
053.11	NM	water supply	natural swale	11/32	active	earth	0.320	10.00	0.03
053.12		Cornish Fair Fire Pond Dam	natural swale	6/71	exempt	earth	0.200	3.00	0.44
053.13	NM	farm pond	natural swale	9/8/C	active	earth	0.370	11.00	0.03
053.14	NM	fire pond	Trib Blow Me Down Brook	8/28	active	earth	0.300	11.00	0.53

DAMS – POTENTIAL FAILURE: LOW/MEDIUM RISK									
Dam #	**Class**	**Dam Name**	**Water Body**	**Tax Map/Lot #**	**Status**	**Type**	**Impoundment Area in Acres**	**Height of Dam (Ft)**	**Drainage Area in Acres**
053.15	NM	farm pond	natural swale	20/3	active	earth	1.000	8.00	0.02
053.16		water supply	natural swale	8/31	exempt	earth	0.300	5.00	0.02
053.17*		forest farm pond dam	natural swale	Paul Forest	breached	earth	0.090	11.00	0.01
053.18	NM	fire pond	natural swale	16/32	active	earth	0.400	7.00	0.07
053.19		Tracy Dam	Trib Mill Brook	6/99	ruins	timber comb	0.010	3.00	4.49
053.20	NM	farm pond	natural swale	16/22	active	earth	0.690	15.00	0.09
053.21	NM	farm pond	natural swale	11/91	active	earth	0.290	10.00	0.01
053.22	NM	wildlife pond	Wine Brook	19/1	active	earth	0.340	11.00	0.20
053.23	NM	wildlife pond	natural swale	11/77	active	earth	0.660	9.00	0.01
053.24	L	Davison Wildlife Pond Dam	Mill Brook	11/35	active	earth	5.600	23.00	1.92
053.25	NM	fire pond	natural swale	16/41	active	earth	0.280	9.00	0.03
053.26		Libby Dam	natural swale	7/75C	not built	earth	0.400	15.00	0.11
053.27	NM	recreation pond	natural swale	11/73	active	earth	0.220	14.00	0.11
053.28	NM	wildlife pond	natural swale	11/92	active	earth	0.250	11.00	0.08
053.29	NM	wildlife pond	natural swale	1/52	active	earth	0.800	10.00	0.12
053.30	NM	fire pond	natural swale	7/8	active	earth	0.300	16.00	0.01
053.31		Redlands Pond	natural swale	10/66	not built	earth	0.190	6.00	0.02
053.32		fire pond	natural swale	2/5	exempt	earth	0.800	5.00	0.01
053.33	NM	Pearson Dam	unnamed stream	15/4	active	earth	0.150	13.00	0.05
053.34	NM	recreation pond	unnamed stream	16/32	active	earth	0.250	12.00	0.05
053.35	NM	farm pond	natural swale	8/41	active	earth	0.300	16.00	0.03

DAMS – POTENTIAL FAILURE: LOW/MEDIUM RISK									
Dam #	**Class**	**Dam Name**	**Water Body**	**Tax Map/Lot #**	**Status**	**Type**	**Impoundment Area in Acres**	**Height of Dam (Ft)**	**Drainage Area in Acres**
053.36		Luggett/Miller Pond	natural swale	3/35	not built	earth	0.420	20.00	0.03
053.37	NM	Austin Farm Pond II	NA	1/52	active	earth	0.400	8.00	0.02
053.38	NM	Sullivan Stock Water Pond	NA	16/22A	active	earth	0.130	7.20	0.03
053.39	NM	Storrs Recreation Pond	adjacent to brook	11/88	active	earth	0.500	10.00	0.00
053.40	NM	wildlife pond	unnamed stream	11/19	active	earth	0.250	12.00	2.00
053.41*	NM	Fellows Recreation Pond	unnamed stream	Steve Fellows	active	earth	0.280	18.00	12.00
053.42	NM	Blair Recreation Pond	unnamed stream	11/90	active	earth	0.330	7.00	0.01
053.43	NM	Dorris Recreation Pond	unnamed stream	11/77	active	earth	0.500	7.00	0.01
053.44	NM	Meyette Wildlife Pond	unnamed stream	11/39	active	earth	0.500	15.00	0.01
053.45	NM	Meyette Wildlife Pond	unnamed stream	11/39	active	earth	0.500	15.00	0.01
053.46	NM	Tetirick and Masters Pond	unnamed stream	9/10	active	earth	0.360	14.00	0.01
053.47	NM	McSwain Recreation Pond	unnamed stream	35/B	active	earth	0.440	15.00	0.01
053.48	NM	Maslan Recreation Pond	NA	11/81	active	earth	0.220	10.00	0.00
053.49	NM	St. Gaudens Blow Me Down	Blow Me Down Brook	Natl Park Service	active	stone	0.000	8.00	0.00
053.50	NM	St. Gaudens Farm Pond Dam	Trib Blow Me Down Brook	Natl Park Service	active	earth	0.330	12.00	0.00

Class of potential hazard: NM – non-menace; L-low; S-significant *Source: NH DES*
Material: T-timber; S-stone; E-earth; C-concrete **The Committee believes this to be incorrect or nonexistent.*

Potential Future Dam Failure Damage

According to the *State of New Hampshire Multi-Hazard Mitigation Plan* (2013), Sullivan County has a low risk of dam failure. The Committee also determined dam failure is a low risk in Cornish.

There are no critical facilities located within any of the dam inundation areas.

Table III-2: STRUCTURE ASSESSED VALUES IN DAM INUNDATION AREAS BY PROPERTY TYPE - 2015

Dam Inundation Area	Houses		Mobile Homes		Commercial		TOTAL	
	#	Value	#	Value	#	Value	#	Value
Wilder Dam	16	$2,588,672	0	0	0	0	16	$2,588,672
North Hartland Dam	14	2,265,088	0	0	0	0	14	2,265,088
Whitewater Brook Dam	13	2,103,296	0	0	0	0	13	2,103,296
TOTAL	**43**	**$6,957,056**	**0**	**$0**	**0**	**$0**	**43**	**$6,957,056**

Flooding

Flooding is the 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 inadequate local drainage. Floods can cause loss of life, property damage, crop/livestock damage, and water supply contamination, and can disrupt travel routes on roads and bridges.

Floods in the Cornish area are most likely to occur in the spring due to the increase in rainfall, snowmelt and ice flow; however, floods can occur at any time of the year. A sudden winter thaw or a major summer downpour can cause flooding. Floodplains indicate areas potentially affected by flooding. There are several types of flooding.

Special Flood Hazard Areas Formerly called "100-year flood" zones, these areas have a one percent chance of a flood in any given year. These areas were mapped for all towns in New Hampshire by FEMA. Appendix D displays the "Special Flood Hazards Areas."

River Ice Jams Ice forming in riverbeds and against structures presents significant hazardous conditions storm waters encounter these ice formations which may create temporary dams. These dams may create flooding conditions where none previously existed (i.e., as a consequence of elevation in relation to normal floodplains). Additionally, there is the impact of the ice itself on structures such as highway and railroad bridges. Large masses of ice may push on structures laterally and/or may lift structures not designed for such impacts.

Rapid Snow Pack Melt Warm temperatures and heavy rains cause rapid snowmelt. Quickly melting snow coupled with moderate to heavy rains are prime conditions for flooding.

Severe Storms Flooding associated with severe storms can inflict heavy damage to property. Heavy rains during severe storms are a common cause of inland flooding.

Beaver Dams and Lodging Flooding associated with beaver dams and lodging can cause road flooding or damage to property.

Bank Erosion and Failure As development increases, changes occur that increase the rate and volume of runoff, and accelerate the natural geologic erosion process. Erosion typically occurs at the outside of river bends and sediment deposits in low velocity areas at the insides of bends. Resistance to erosion is dependent on the riverbank's protective cover, such as vegetation or rock riprap, or its soils and stability. Roads and bridges are also susceptible to erosion.

Past Flooding Events

The Committee determined there are other flood areas in the town other than the FEMA designated flood zones. Appendix D shows the special flood hazard areas of Special Flood Hazard Areas as well as Committee determined flood hazard areas. The following tables provide a list of floods in the State, County, and Cornish. Other flooding issues are listed in the Erosion section—primarily for roads.

Table III-3: FLOODING – FEMA DECLARATIONS, LOCAL RECOLLECTIONS & CRREL ICE JAMS

FLOODING				
Hazard	**Date**	**Location**	**Description of Areas Impacted**	**Damages**
Flood	March 11-21, 1936	NH State	Flooding caused by simultaneous heavy snowfall totals, heavy rains and warm weather. Run-off from melting snow with rain overflowed the rivers	Damage to road networks; no damage recorded in Cornish.
Flood	June 1973	Localized flooding in Cornish	Several locations	No recorded damage.
Flood / Severe Storm	April 16, 1987	Cheshire, Carroll, Grafton, Hillsborough, Merrimack, Rockingham, & Sullivan Counties	FEMA Disaster Declaration # 789- DR (Presidentially Declared Disaster). Flooding of low-lying areas along river caused by snowmelt and intense rain.	$4,888,889 in damage in State. No recorded damage in Cornish

FLOODING				
Hazard	**Date**	**Location**	**Description of Areas Impacted**	**Damages**
Flood	August 7-11, 1990	Belknap, Carroll, Cheshire, Coos, Grafton, Hillsborough, Merrimack & Sullivan Counties, NH	FEMA Disaster Declaration # 876. Flooding caused by a series of storm events with moderate to heavy rains.	$2,297,777 in damage in State. No recorded damage in Cornish.
Flood	October 29, 1996	Grafton, Hillsborough, Merrimack, Rockingham, Strafford & Sullivan Counties, NH	FEMA Disaster Declaration # 1144- DR. Flooding caused by heavy rains.	$2,341,273 in damage in State. A house on the CT River was flooded in Cornish—it has since been removed. No recorded cost.
Flood	July 21 – August 18, 2003	Cheshire and Sullivan Counties, NH	FEMA Disaster Declaration #1489. Flooding from persistent rainfall in July	Almost a million dollars in total assistance; no damage in Cornish
Flood	October 7-18, 2005	Belknap, Cheshire, Grafton, Hillsborough, Merrimack, and Sullivan Counties, NH	FEMA Disaster Declaration # 1610. Severe storms and flooding.	$3,000,000 in NH damages; no damage Cornish
Flood	October-November 2005	Grafton, Hillsborough, Merrimack, Rockingham, Strafford & Sullivan counties	FEMA Disaster Declaration # DR-1144- NH	Minor road washing in Cornish
Flood	April 16, 2007	All counties, NH	FEMA Disaster Declaration # 1695. Severe storms and flooding; 2,005 home owners and renters applied for assistance in NH.	$27,000,000 in damages in NH
Flood	March 14-31, 2010	Statewide	FEMA DR-1913; severe storms & flooding; Declared Counties: Hillsborough and Rockingham Counties	No damage in Cornish
Flood/ Tropical Storm	August 28 – September 2, 2011	Coos, Grafton, Carroll, Sullivan, Merrimack, Belknap, and Strafford Counties	FEMA DR-4026; Tropical Storm Irene	Cornish received $5,200 to repair Tift and Clark Camp Road with gravel
Flood	June 26-July 3, 2013	Grafton, Sullivan and Cheshire Counties	FEMA DR-4139; severe storms, flooding, and landslides	Cornish received $56,000 to repair Hell Hollow, Paget Road, and Center Road

Cornish became a participating member of the National Flood Insurance Program on April 18, 1983. Updated maps (DFIRM) for all towns within Sullivan County were finalized May 23, 2006. The Flood Insurance Study date is also, May 23, 2006. In 2016, there are currently 16 policies in the town with $2.7 million of insurance: 15 are single-family homes and one is a non-residential property. Flood insurance purchase is not a reflection of the number of structures within the flood plain. Three of the 16 policies are not in the

designated flood plain. There are no repetitive loss properties in the town. As of January 2016, no losses have been paid in the Town. All of Cornish's Special Flood Areas are located within the A Zone, with no base flood elevations determined and the AE Zone where base flood elevations have been determined. See Appendix D for a map showing all Special Flood Hazard Areas.

As an NFIP participant, the Town of Cornish has a floodplain ordinance which restricts building within the special floodplains to protect the flow of flood waters and not increase the needed land area for those waters. The Town adopted the model ordinance provided by the NH Floodplain Management Office. This ordinance is reflected in the zoning ordinance, subdivision regulations, and site plan review regulations.

Potential Future Flooding Events

Future flooding is likely as noted in the above table based upon local knowledge of past flood events. In 2016, there were 96 properties with buildings located within the FEMA determined special flood hazard areas. The total structural value of these properties in the floodplain is $17 million. Floodplains have been mapped and information provided about structures within those areas. There are no other areas of flooding other than the FEMA designated special flood areas according to the Hazard Mitigation Committee. According to the State's Mitigation Plan, Sullivan County has a high hazard risk for flooding. The Committee determined flooding is a medium/high risk in Cornish.

The Fire Department on Cornish Flats, the elementary school, and the town offices are located within the FEMA designated special flood area with a total value of over $2 million.

Table III-3: STRUCTURE VALUES IN FLOOD HAZARD AREAS BY TYPE - 2015

	Houses		Mobile Homes		Commercial		Critical Facility		TOTAL	
	#	Value	#	Value	#	Value	#	Value	#	Value
FEMA Designated Special Flood Areas	91	$14,723,072	1	$30,300	1	$140,900	3	$2,228,000	96	$17,122,272

Sources: FEMA floodplain map, HazMit Committee, Town Tax Maps, and 2015 Tax Assessment values

Hurricane

A hurricane is an intense tropical weather system with a well-defined circulation and maximum sustained winds of 74 mph (64 knots) or higher. Hurricane winds blow in a large spiral around a relative calm center known as the "eye." The "eye" is generally 20 to 30 miles wide, and the storm may extend outward 400 miles. As a hurricane nears land, it can bring torrential rains, high winds, and

storm surges. A single hurricane can last for more than 2 weeks over open waters and can run a path across the entire length of the eastern seaboard. August and September are peak months during the hurricane season that lasts from June 1 through November 30. Damage resulting from winds of this force can be substantial, especially considering the duration of the event, which may last for many hours (*NH Hazard Mitigation Plan*; FEMA website).

The Saffir-Simpson Hurricane Wind Scale provides categories of sustained winds by miles per hour: 1 – 74-95 mph; 2 – 96-110 mph; 3 – 111-129 mph; 4 – 130 – 156 mph; and 5 – 157 mph or higher. Categories 3 -5 are considered to be major wind events that can cause devastating to catastrophic damage.

Past Hurricane Events

There have been several hurricanes over the years which have impacted New England and New Hampshire. These are listed below.

Table III-4: HURRICANES & TROPICAL STORMS

HURRICANES AND TROPICAL STORMS				
Hazard	**Date**	**Location**	**Description of Areas Impacted**	**Damages**
Hurricane	August, 1635	n/a	Unknown	None recorded in Cornish
Hurricane	October 18-19, 1778	n/a	Winds 40-75 mph	None recorded in Cornish
Hurricane	October 9, 1804	n/a	Unknown	None recorded in Cornish
Gale	September 23, 1815	n/a	Winds > 50mph	None recorded in Cornish
Hurricane	September 8, 1869	n/a	Unknown	None recorded in Cornish
Hurricane	September 21, 1938	Southern New England	Flooding caused damage to road network and structures. 13 deaths, 494 injured throughout NH. Disruption of electric and telephone services for weeks. 2 Billion feet of marketable lumber blown down. Total storm losses of $12,337,643 (1938 dollars). 186 mph maximum winds.	None recorded in Cornish
Hurricane (Carol)	August 31, 1954	Southern New England	Category 3, winds 111-130 mph. Extensive tree and crop damage in NH, localized flooding	None recorded in Cornish
Hurricane (Edna)	September 11, 1954	Southern New England	Category 3 in Massachusetts. This Hurricane moved off shore but still cost 21 lives and $40.5 million in damages throughout New England. Following so close to Carol it made recovery difficult for some areas. Heavy rain in NH	None recorded in Cornish
Hurricane (Donna)	September 12, 1960	Southern and Central NH	Category 3 (Category 1 in NH). Heavy flooding in some parts of the State.	No damage in Cornish

HURRICANES AND TROPICAL STORMS				
Hazard	**Date**	**Location**	**Description of Areas Impacted**	**Damages**
Tropical Storm (Daisy)	October 7, 1962	Coastal NH	Heavy swell and flooding along the coast	No damage in Cornish
Tropical Storm (Doria)	August 28, 1971	New Hampshire	Center passed over NH resulting in heavy rain and damaging winds	No damage in Cornish
Hurricane (Belle)	August 10, 1976	Southern New England	Primarily rain with resulting flooding in New Hampshire. Category 1	No damage in Cornish
Hurricane (Gloria)	September, 1985	Southern New England	Category 2, winds 96-110 mph. Electric structures damaged; tree damages. This Hurricane fell apart upon striking Long Island with heavy rains, localized flooding, and minor wind damage in NH	No damage in Cornish
Hurricane (Bob)	August 19, 1991	Southern New England	Structural and electrical damage in region from fallen trees. 3 persons were killed and $2.5 million in damages were suffered along coastal New Hampshire. Federal Disaster FEMA-917-DR	No damage in Cornish
Hurricane (Edouard)	September 1, 1996	Southern New England	Winds in NH up to 38 mph and 1 inch of rain along the coast. Roads and electrical lines damaged	No damage in Cornish
Tropical Storm (Floyd)	September 16-18, 1999	Southern New England	FEMA DR-1305-NH. Heavy Rains	No damage in Cornish
Hurricane (Katrina)	August 29, 2005	East Coast of US and more	FEMA-3258-EM. Heavy rains and flooding devastating SE US	No damage in Cornish
Tropical Storm (Tammy)	October 5-13, 2005	East Coast of US	Remnants of Tammy contributed to the October 2005 floods which dropped 20 inches of rain in some places in NH.	No damage in Cornish
Tropical Storm (Irene)	August 26 – September 6, 2011	East Coast of US	FEMA-4026-DR for Coos, Carroll, Grafton, Strafford, Belknap, Merrimack and Sullivan Counties; EM-3333 Hillsboro, Rockingham, and Cheshire Counties	See Flooding Table III-3.
Hurricane (Sandy)	October 26 – November 8, 2012	East Coast of US	FEMA-4095-DR-NH for Belknap, Carroll, Coos, Grafton and Sullivan Counties.	No damage in Cornish

Potential Future Hurricane Damage

Hurricane events will affect the entire town. It is impossible to predict into the future what damage will occur in the town. According to the State's mitigation plan, Sullivan County has a medium/high risk for hurricanes. The Committee determined the hurricane risk to be medium Cornish.

Tornado & Downburst

"A tornado is a violent windstorm characterized by a twisting, funnel shaped cloud. These events are spawned by thunderstorms and, occasionally by hurricanes, and may occur singularly or in multiples. They develop when cool air overrides a layer of warm air, causing the warm air to rise rapidly. Most vortices remain suspended in the atmosphere. Should they touch down, they become a force of destruction." (*NH Hazard Mitigation Plan*). The Enhanced Fujita Scale is the standard scale for rating the severity of a tornado as measured by the damage it causes. Most tornadoes are in the F0 to F2 Class. Building to modern wind standards provides significant property protection from these hazard events. New Hampshire is located within Zone 2 for Design Wind Speed for Community Shelters, which suggests that buildings should be built to withstand 160 mph winds.

Significantly high winds occur especially during tornadoes, hurricanes, winter storms, and thunderstorms. Falling objects and downed power lines are dangerous risks associated with high winds. In addition, property damage and downed trees are common during severe wind occurrences. A downburst is a severe, localized wind blasting down from a thunderstorm. These "straight line" winds are distinguishable from tornadic activity by the pattern of destruction and debris. Downbursts fall into two categories: 1. Microburst, which covers an area less than 2.5 miles in diameter, and 2. Macroburst, which covers an area at least 2.5 miles in diameter. Most downbursts occur with thunderstorms, but they can be associated with showers too weak to produce thunder.

Past Tornado & Downburst Events

The following table displays tornadoes occurring in Sullivan County between 1950 and 1995. The committee did not recall any tornadoes or downburst in which the town was impacted. The Committee recalled that around 2006, a severe microburst knocked down stands of trees in Cornish. In 2015, there was a severe straight-line wind event (downburst) which greatly impacted Cornish.

Table III-5: TORNADOES IN OR NEAR SULLIVAN COUNTY

TORNADOES & DOWNBURSTS – MEDIUM RISK			
	Date	**Scale**	**Damages**
Tornado	September 9, 1821	Most intense in NH	Killed 6 people; crossed Lake Sunapee
Tornado	July 14, 1963	F1	No deaths or injuries; costs unknown; no damage in Cornish
Tornado	June 27, 1964	F0	No deaths or injuries; costs unknown; no damage in Cornish
Tornado	August 11, 1966	F2	No deaths or injuries; costs unknown; no damage in Cornish
Tornado	August 25, 1969	F1	No deaths or injuries; costs unknown; no damage in Cornish
Tornado	May 31, 1972	F1	No deaths or injuries; costs unknown (Merrimack County); no damage in Cornish
Tornado	July 21, 1972	F1	No deaths or injuries; costs unknown; no damage in Cornish
Tornado	May 11, 1973	F2	No deaths or injuries; costs unknown; no damage in Cornish
Tornado	June 11, 1973	F0	No deaths or injuries; costs unknown; no damage in Cornish
Tornado	August 15, 1976	F1	No deaths; 5 injuries; costs unknown (Merrimack County); no damage in Cornish
Tornado	August 13, 1999	F1	No deaths or injuries; costs unknown; no damage in Cornish
Tornado	July 6, 1999	F2	No deaths or injuries; costs unknown (Merrimack County); in New London two roofs blown off structures; power outages,; downed trees, utility pole, and wires; no damage in Cornish
Tornado	Summer 2006	NA	Began in Barnet, VT and moved to Monroe, NH; trees knocked down in Cornish
Tornado	April 15, 2007	NA	Numerous trees were knocked down in Enfield, NH; no damage in Cornish
Tornado	August 18, 2007	NA	Cornish Fairgrounds evacuated. Many swaths of trees were knocked down in Cornish and neighboring towns. Costs unknown.
High Winds	May 31, 2009	NA	Minor tree damage and temporary loss of power in Cornish.
Tornado	July 24, 2008	(EF 2)	DR 1799: Numerous trees and utility poles down; damage to many houses; 1 fatality; $2.5 million from FEMA; tree fell on house in Cornish.
Downburst	July 19, 2015	NA	Heavy rains and powerful winds knocked down trees and power lines in Cornish; electricity out for several days in place; took over 2 weeks of cleanup; one person killed in Claremont

Source: www.tornadoproject.com; NH Natural Hazard Mitigation Plan; Committee

Table III-6 ENHANCED FUJITA SCALE

FUJITA SCALE (old model)			OPERATIONAL EF SCALE	
F Number	**Fastest ¼-mile (mph)**	**3 second gust (mph)**	**EF Number**	**3 second gust (mph)**
F0	**40-72**	**45-78**	**EF0**	**65-85**
F1	**73-112**	**79-117**	**EF1**	**86-110**
F2	**113-157**	**118-161**	**EF2**	**111-135**
F3	**158-207**	**162-209**	**EF3**	**136-165**
F4	**208-260**	**210-261**	**EF4**	**166-200**
F5	**261-318**	**262-317**	**EF5**	**Over 200**

Source: http://www.spc.noaa.gov/faq/tornado/ef-scale.html

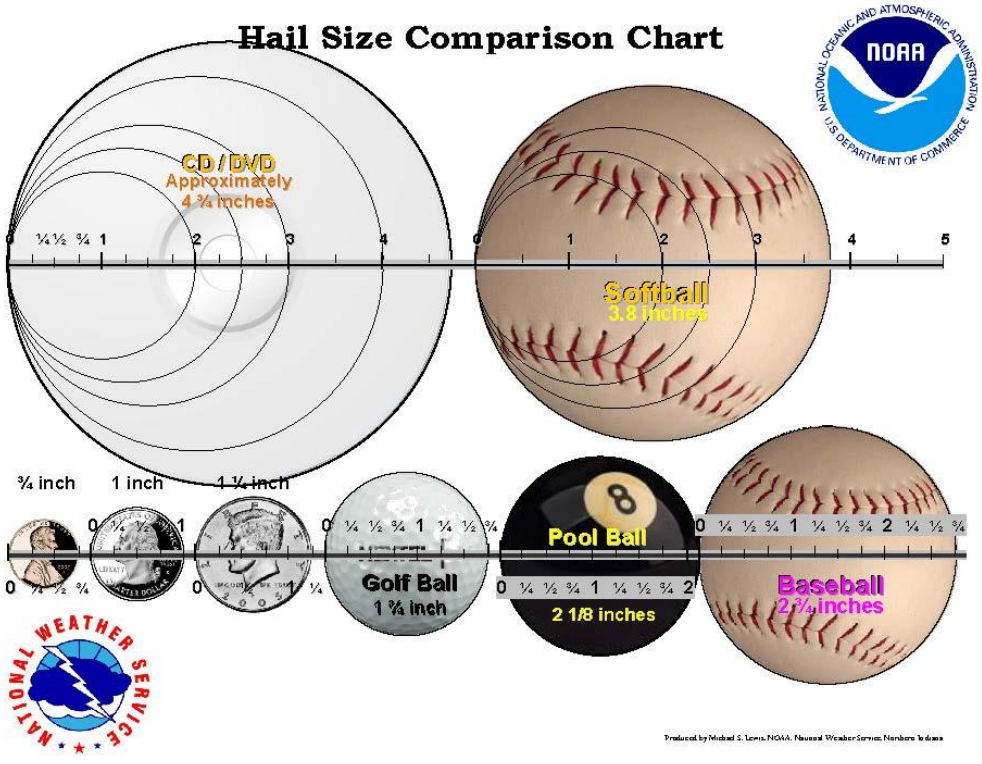
Potential Future Tornado and Downburst Damage

It is impossible to predict where a tornado or downburst will occur or what damage it will inflict. A tornado or downburst could happen anywhere in town. The Cornish Committee recalls a tornado in Cornish requiring the evacuation of the fairgrounds in 2007. The FEMA website places the State of NH in the Zone II Wind Zone which provides that a community shelter should be built to a 160 mph "design wind speed." According to the State's mitigation plan, Sullivan County has a medium risk for tornadoes. The Committee determined there is a medium/high risk for tornadoes and downbursts in Cornish.

Thunderstorms/Lightning/Hail

A thunderstorm is a rain shower during which you hear thunder. Since thunder comes from lightning, all thunderstorms have lightning. A thunderstorm is classified as "severe" when it contains one or more of the following: hail three-quarter inch or greater, winds gusting in excess of 50 knots (57.5 mph), tornado. Hail is a form of precipitation that occurs when updrafts in thunderstorms carry raindrops upward into extremely cold areas of the atmosphere where they freeze into ice. When the hail particle becomes heavy enough to resist the updraft, it falls to the ground. The resulting wind and hail can cause death, injury, and property damage. Below is a comparison chart for the various sizes of hail.

Figure III-1: HAIL SIZE COMPARISON CHART



An average thunderstorm is 15 miles in diameter and lasts an average of 30 minutes. Winter thunderstorms are rare because the air is more stable, strong updrafts cannot form because the surface temperatures during the winter are colder.

Lightning is a giant spark of electricity that occurs within the atmosphere or between the atmosphere and the ground. As lightning passes through the air, it heats the air to a temperature of about 50,000 degrees Fahrenheit, considerably hotter than the surface of the sun. Fires are a likely result of lightning strikes, and lightning strikes can cause death, injury, and property damage. It is impossible to predict where lightning will strike.

A lightning activity level has been developed by the National Weather Service and is shown below:

Table III-7: LIGHTNING ACTIVITY LEVEL

Lightning Activity Level	Description
1	No thunderstorms
2	Isolated thunderstorms: Light rain will occasionally reach the ground. Lightning is very infrequent, 1 to 5 cloud to ground strikes in a five minute period.
3	Widely scattered thunderstorms. Light to moderate rain will reach the ground. Lightning is infrequent, 6 to 10 cloud to ground strikes in a 5 minute period.
4	Scattered thunderstorms. Moderate rain is commonly produced. Lightning is frequent, 11 to 15 cloud to ground strikes in a 5 minute period.
5	Numerous thunderstorms. Rainfall is moderate to heavy. Lightning is frequent and intense, greater than 15 cloud to ground strikes in a 5 minute period.
6	Dry lightning (same as LAL3, but without rain). This type of lightning has the potential for extreme fire activity and is normally highlighted in fire weather forecasts with a Red Flag Warning.

Source: http://graphical.weather.gov/definitions/defineLAL.html

Past Thunderstorm Events

There have been lightning strikes in Cornish, but none were noteworthy according to the Committee. No repetitive strikes are known. A thunderstorm with lightning or hail could impact the entire town.

Potential Future Thunderstorm Damage

It is inevitable that thunderstorms will occur in Cornish's future. Lightning, hail, or wind from a thunderstorm could impact anywhere in town. It is not possible to estimate potential damage. According to the State's mitigation plan, Sullivan County has a medium risk of a lightning hazard. The risk for future thunderstorm damage was determined by the Committee to be medium/high risk in Cornish

Table III-8: THUNDERSTORMS/LIGHTNING, HAIL

Thunderstorms/Lightning/Hail				
Hazard	**Date**	**Location**	**Description of Areas Impacted**	**Damages**
Hail	June 16, 2007	SW NH	A severe thunderstorm produced large hail (.75 in) in southwestern New Hampshire.	No damage in Cornish
Hail	August 3, 2007	Sullivan County	An isolated thunderstorm produced large hail in Sullivan County.	No damage in Cornish
Lightning	June 26, 2013	Cornish	Lightning struck the Newport Town Offices Building: damage to computer networks, phone system, alarm systems, emergency communications, and emergency generator	Affected Newport but no impact in Cornish

Severe Winter Weather

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

Heavy Snow Storms A heavy snowstorm is generally considered to be one which deposits four or more inches of snow in a twelve-hour period. A blizzard is a sustained wind or frequent gusts greater than or equal to 35 miles per hour accompanied by falling and/or blowing snow, frequently reducing visibility to less than ¼ mile for three hours or more (NOAA National Weather Service). Therefore, intense Nor'easters, which occur in the winter months, are often referred to as blizzards. The definition includes the conditions under which dry snow, which has previously fallen, is whipped into the air and diminishes visual range. Such conditions, when extreme enough, are called "white outs."

Ice Storms Freezing rain occurs when snowflakes descend into a warmer layer of air and melt completely. When these liquid water drops fall through another thin layer of freezing air just above the surface, they don't have enough time to refreeze before reaching the ground. Because they are "supercooled," they instantly refreeze upon contact with anything that is at or below O degrees C, creating a glaze of ice on the ground, trees, power lines, or other objects. A significant accumulation of freezing rain lasting several hours or more is called an ice storm. This condition may strain branches of trees, power lines and even transmission towers to the breaking point and often creates treacherous conditions for highway travel and aviation. Debris impacted roads make emergency access, repair and cleanup extremely difficult.

The National Weather Service has developed a Scaled Predictive Ice Storm Aftermath (SPIA) Index. The potential impacts are scaled from 0 to 5 and suggest potential electrical outage coverage and duration. Current ice storm warnings are based on forecast of ice accumulation only. SPIA reports on the combined effects of the predicted ice and wind. Below is a chart of the SPIA index levels.

Table III-9: SCALED PREDICTIVE ICE STORM AFTERMATH INDEX

Ice & Wind: Average Ice in Inches and Wind in Miles per hour	**<15 mph**	**15-25 mph**	**25-35 mph**	**≥35 mph**
0.10 – 0.25 inches	0	1	2	3
0.25 – 0.50 inches	1	2	3	4
0.50 – 0.75 inches	2	3	4	5
0.75 – 1.00 inches	3	4	5	5
1.00 – 1.50 inches	4	5	5	5
>1.50 inches	5	5	5	5

"Nor'easters" Nor'easters can occur in the eastern United States any time between October and April, when moisture and cold air are plentiful. They are known for dumping heavy amounts of rain and snow, producing hurricane-force winds, and creating high surfs that cause severe beach erosion and coastal flooding. A Nor'easter is named for the winds that blow in from the northeast and drive the storm up the east coast along the Gulf Stream, a band of warm water that lies off the Atlantic coast.

There are two main components to a Nor'easter: Gulf Stream low-pressure system (counter-clockwise winds) generate off the coast of Florida. The air above the Gulf Stream warms and spawns a low-pressure system. This low circulates off the southeastern U.S. coast, gathering warm air and moisture from the Atlantic. Strong northeasterly winds at the leading edge of the storm pull it up the east coast. As the strong northeasterly winds pull the storm up the east coast, it meets with cold Arctic high-pressure system (clockwise winds) blowing down from Canada. When the two systems collide, the moisture and cold air produce a mix of precipitation.

Winter conditions make Nor'easters a normal occurrence, but only a handful actually gather the force and power to cause problems inland. The resulting precipitation depends on how close you are to the converging point of the two storms. Nor'easter events which occur toward the end of a winter season may exacerbate the spring flooding conditions by depositing significant snow pack at a time of the season when spring rains are poised to initiate rapid snow pack melting.

Past Extreme Winter Weather Events

The following table provides a list of past extreme winter weather events in New Hampshire and Cornish.

Table III-10: SEVERE WINTER WEATHER

SEVERE WINTER WEATHER/ICE STORMS				
Hazard	**Date**	**Location**	**Description of Areas Impacted**	**Damages**
Ice Storm	December 17-20, 1929	New Hampshire	Unprecedented disruption and damage to telephone, telegraph and power system. Comparable to 1998 Ice Storm (see below)	No damage in Cornish recorded
Blizzard	February 14-17, 1958	New Hampshire	20-30 inches of snow in parts of New Hampshire	No damage in Cornish recorded
Snow Storm	March 18-21, 1958	New Hampshire	Up to 22 inches of snow in south central NH	No damage in Cornish recorded
Snow Storm	December 10-13, 1960	New Hampshire	Up to 17 inches of snow in southern NH	No damage in Cornish
Snow Storm	January 18-20, 1961	New Hampshire	Up to 25 inches of snow in southern NH	No damage in Cornish
Snow Storm	February 2-5, 1961	New Hampshire	Up to 18 inches of snow in southern NH	No damage in Cornish
Snow Storm	January 11-16, 1964	New Hampshire	Up to 12 inches of snow in southern NH	No damage in Cornish
Blizzard	January 29-31, 1966	New Hampshire	Third and most severe storm of 3 that occurred over a 10-day period. Up to 10 inches of snow across central NH	No damage in Cornish
Snow Storm	December 26-28, 1969	New Hampshire	Up to 41 inches of snow in west central NH	No damage in Cornish
Snow Storm	February 18-20, 1972	New Hampshire	Up to 19 inches of snow in southern NH	No damage in Cornish
Snow Storm	January 19-21, 1978	New Hampshire	Up to 16 inches of snow in southern NH	No damage in Cornish
Blizzard	February 5-7, 1978	New Hampshire	New England-wide. Up to 25 inches of snow in central NH	No damage in Cornish
Snow Storm	February, 1979	New Hampshire	President's Day storm	No damage in Cornish
Ice Storm	January 8-25,	New Hampshire	Major disruptions to power and transportation	No damage in Cornish

SEVERE WINTER WEATHER/ICE STORMS				
Hazard	**Date**	**Location**	**Description of Areas Impacted**	**Damages**
	1979			
Snow Storm	April 5-7, 1982	New Hampshire	Up to 18 inches of snow in southern NH	No damage in Cornish
Ice Storm	February 14, 1986	New Hampshire	Fiercest ice storm in 30 yrs. in the higher elevations in the Monadnock region. It covered a swath about 10 miles wide from the MA border to New London NH	No damage in Cornish
Extreme Cold	November-December, 1988	New Hampshire	Temperature was below 0 degrees F for a month	No damage in Cornish
Ice Storm	March 3-6, 1991	New Hampshire	Numerous outages from ice-laden power lines in southern NH	No damage in Cornish
Snow Storm	1996	Regional	Two major storms with five feet of snow in a week	No damage in Cornish
Snow Storm	1997	New Hampshire	Power outages throughout region due to heavy snowfall	No damage in Cornish
Ice Storm	January 15, 1998	New Hampshire; Substantial power in NH	Federal disaster declaration DR-1199-NH, 20 major road closures, 67,586 without electricity, 2,310 without phone service, $17+ million in damages to Public Service of NH alone	No damage in Cornish
Snow Storm	2000	Regional	Heavy snow	No damage in Cornish
Snow Storm	March 5-7, 2001	New Hampshire	Heavy snow.	No damage in Cornish
Snow Storm	December 6-7, 2003	New Hampshire	Heavy snow. Federal Disaster Declaration FEMA-3193-NH	No damage in Cornish
Ice Storm	2004	Regional	Ice storm resulted in many trees down and loss of power.	No damage in Cornish
Snow Storm	January 22-23, 2005	New Hampshire	Snow damage; FEMA EM-3207	No damage in Cornish
Snow Storm	February 10-12, 2005	New Hampshire	Heavy snow. Federal Disaster Declaration FEMA-3208-NH	No damage in Cornish
Snow Storm	March 11-12, 2005	New Hampshire	Heavy snow. Federal EM-3211	No damage in Cornish

SEVERE WINTER WEATHER/ICE STORMS				
Hazard	**Date**	**Location**	**Description of Areas Impacted**	**Damages**
Ice Storm	December 2008	New Hampshire	Debris removal. FEMA DR-1812; power outages in region for up to 10 days; downed trees blocked roads and damaged utility lines	Widespread electrical outages and broken pipes in many Cornish homes.
Wind Storm	February 23 – March 3, 2010	New Hampshire	FEMA DR-1892; Federal funding to Grafton, Hillsborough, Merrimack, Rockingham, Strafford, and Sullivan Counties; power loss	Cornish received $26,000 to remove vegetative and woody debris around town
Snow Storm	October 29-30, 2011	Statewide	EM-3344; FEMA-4049 Hillsborough & Rockingham Counties	No damage in Cornish
Ice Storm	January 27, 2012	Region	Isolated power outages in region; several limbs down	No damage in Cornish
Snow Storm	February 8-10, 2013	New Hampshire	Heavy Snow. FEMA DR-4105	No damage in Cornish
Snowstorm	January 26-28, 2015	Hillsborough, Rockingham, and Strafford Counties, NH	Severe Winter Storm and Snowstorm DR-4209	No damage in Cornish

Potential Future Severe Winter Damage:

All areas of Cornish are at risk from ice storms and snow storms compounded by steep slopes in much of the town. There is the potential for severe winter damage every year. Any event would affect the entire Town. According to the State's mitigation plan, Sullivan County has a high risk for severe winter weather. The Committee determined severe winter weather to be a High risk in Cornish.

Earthquake

Earthquakes are characterized by a sudden and rapid shaking of the ground caused by the shifting of rock beneath the ground. The damage caused by an earthquake can be severe, causing the collapse and destruction of buildings, bridges, roads and other critical infrastructure. As a result, there can be many other hazards that occur, such has gas leaks, fires, electrical outages, landslides, etc. The magnitude and intensity of an earthquake can be rated on a scale such as the Richter or Mercalli, which are both illustrated below.

The following is a list of earthquakes which have impacted New England, New Hampshire, and potentially Cornish.

Table III-11: EARTHQUAKES

EARTHQUAKES			
Date	**Location**	**Magnitude**	**Damage**
1638	Central NH	6.5-7	
October 29, 1727	Off NH/MA coast	NA	Widespread damage Massachusetts to Maine: cost unknown
December 29, 1727	Off NH/MA coast	NA	Widespread damage Massachusetts to Maine: cost unknown
November 18, 1755	Cape Ann, MA	6.0	Much damage: cost unknown
1800s	Statewide	83 felt earthquake in NH	No damage recorded in Cornish
1900s	Statewide	200 felt earthquake in NH	No damage recorded in Cornish
March 18, 1926	Manchester, NH	Felt in Hillsborough Co	No damage recorded in Cornish
Dec 20, 1940	Ossipee, NH	Both earthquakes 5.5	Damage to homes, water main rupture: cost unknown; no damage in Cornish
December 24, 1940	Ossipee, NH	NA	No damage in Cornish
December 28, 1947	Dover-Foxcroft, ME	4.5	No damage in Cornish
June 10, 1951	Kingston, RI	4.6	No damage in Cornish
April 26, 1957	Portland, ME	4.7	No damage in Cornish
April 10, 1962	Middlebury, VT	4.2	No damage in Cornish
June 15, 1973	Near Quebec Border	4.8	No damage in Cornish
Summer 1977-1978*	Centered in Franklin	NA	No damage in Cornish
January 19, 1982	West of Laconia	4.5	Structure damage 15 miles away in Concord: no damage in Cornish
October 20, 1988	Near Berlin, NH	4	No damage in Cornish
September 26, 2010	New Hampshire	3.4	Centered in Boscawen, NH, The Committee recalls feeling the earthquake; no damage in Cornish
August 23, 2011	Central Virginia, East Coast	5.8	Felt in region; no damage in Cornish
September 18, 2012	Concord, NH	1.2	Epicenter was Concord, NH; No damage in Cornish
October 16, 2012	Southern Maine	4.0	The earthquake was located southern Maine and felt throughout the area and into southern NH; No damage in Cornish

Source: earthquake.usgs.gov/earthquakes/states/new_hampshire/history.php for earthquakes through 1964. NH Multi-Hazard Mitigation Plan, 2010 for 1973-1982; earthquake.usgs.gov/earthquakes (12/13/11)
**Committee recollection*

Table III-12 RICHTER SCALE AND MERCALLI INTENSITY

Richter Scale and Mercalli Intensity		
Richter Scale	**Modified Mercalli Intensity**	**Average Earthquake Effects**
1.0-3.0	I	**I** – Not felt except by a very few under especially favorable conditions.
3.0-3.9	II-III	**II** – Felt only by a few persons at rest, especially on upper floors of buildings. **III** – Felt quite noticeably by persons indoors. Standing motor cars may rock slightly.
4.0-4.9	IV-V	**IV** – Felt indoors by many, outdoors by few during the day. Dishes, windows, doors disturbed; walls make cracking sound. V – Felt by nearly everyone; many awakened. Some dishes, windows broken.
5.0-5.9	VI-VII	**VI** – Felt by all. Some heavy furniture moved; a few instances of fallen plaster. **VII** – Damage negligible in buildings of good design and construction, considerable damage in poorly built or badly designed structures; some chimneys broken.
6.0-6.9	VII-IX	**IX** – Damage considerable in specially designed structures; damage great is substantial buildings, with partial collapse.
7.0 and higher	VIII or higher	**VIII** and higher: damage slight in specially designed structures. Fall of chimneys, factory stacks, columns, monuments, walls. **X** – Some well-built wooden structures destroyed, most masonry and frame structures destroyed with foundations. **XI** – Few if any masonry structures remain standing. Bridges destroyed. **XII** – Total damage. Lines of sight and level are distorted. Objects thrown in air.

Potential Future Earthquake Damage:

A United States Geographic Survey mapping tool on the web (geohazards.cr.usgs.gov/ projects) projects a 5 – 6 peak ground acceleration (pga) with 10% probability of exceedance in 50 years for the Town of Cornish. This pga rating is equivalent to a Modified Mercalli Intensity of "V" with moderate perceived shaking and very light potential damage. An earthquake event would impact the entire town. According to the State's mitigation plan, Sullivan County has a medium risk for earthquakes. The Committee determined the risk to be low in Cornish.

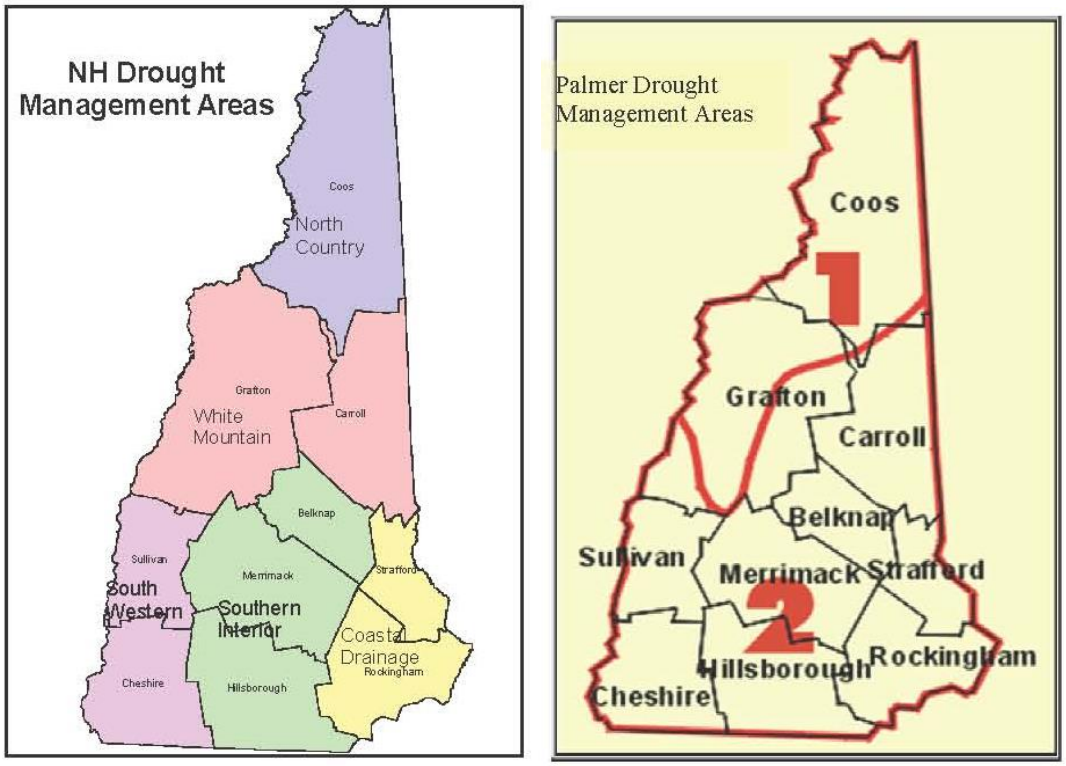
Drought

Droughts or abnormally low precipitation are generally not as damaging or disruptive as floods, but 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 or only a few months. Fortunately, droughts are rare in New Hampshire. The severity of the water deficit if gauged by the degree of moisture deficiency, its duration, and the size of the area affected. The effects of drought are indicated through measurements of soil moisture, groundwater levels and stream flow; however, not all of these indicators will be low during a drought. Not all of these indicators will be minimal during a particular drought. For example, frequent minor rainstorms can replenish the soil moisture without raising ground water levels or increasing stream flow.

Low stream flow correlates with low ground water level because it is ground water discharge to streams and rivers that maintain stream flow during extended dry periods. Low stream flow and low ground water levels commonly cause diminished water supply.

New Hampshire breaks the State into five Drought Management Areas, with one in the north, one across the central region, and three along the southern portion of the State. The National Oceanic and Atmospheric Administration (NOAA) and the US government use the Palmer Drought Survey Index for conditions of the nation. The Palmer Drought Management areas divide the State into two areas and use the Palmer Drought Severity Index which is based on rainfall, temperature, and historic data. The Town of Cornish is in Area 2. The NH Drought Management Team, coordinated by the NH Department of Environmental Services Dam Bureau, uses these maps to help determine which areas are hardest hit.

Figure III-2: DROUGHT MAPS



Past Drought Events

Around 2001-2002, Cornish and other nearby towns had drought issues. This occurred again in 2010.

Table III-13: DROUGHT

Date	Location	Description	Damages
1929-1936	Statewide	Regional. Recurrence Interval 10 to > 25 years	No damage recorded in Cornish
1939-1944	Statewide	Severe in southeast and moderate elsewhere. Recurrence Interval 10 to > 25 years	No damage recorded in Cornish
1947-1950	Statewide	Moderate. Recurrence Interval 10 to > 25 years	No damage recorded in Cornish
1960-1969	Statewide	Regional longest recorded continuous spell of less than normal precipitation. Encompassed most of the Northeastern US. Recurrence Interval > 25 years	No impact in Cornish recalled
2001-2002	Statewide	Affected residential wells and agricultural water sources; third worst drought on record, exceeded only by the drought of 1956-1966 and 1941-1942; recurrence level not determined yet	Minor impact in Cornish
2010	Mostly southern counties	Affected dug wells and those in hillsides.	Minor impact in Cornish
2015	Southern & Central NH	Concord currently 5.17" below the average precipitation from March 1 to May 21, 2015; considered a "moderate drought" by the US Dept. of Agriculture	Minor impact in Cornish
July 2016	Statewide	Southern NH in severe drought while areas in central (including Sullivan County) were in a moderate drought	Minor impact in Cornish

Source: NH DES through 2002; Concord Monitor August 22, 2010; WMUR.com May 21, 2015 & July 7, 2016

Potential Future Drought Damage

Drought will affect the entire town. The damage will depend upon the crops being grown at the time of the drought. No cost has been assigned to residential wells going dry though new wells may have to be dug or drilled. According to the State's mitigation plan, Sullivan County has a medium risk for drought. The Committee determined that drought is a medium/high risk in Cornish.

Extreme Heat

Extreme heat is characterized by abnormally high temperatures and/or longer than average time periods of high temperatures. These event conditions may impact the health of both humans and livestock. The National Weather Service developed a heat index based upon temperature and relative humidity. This is shown below.

Table III-14: HEAT INDEX

NOAA's National Weather Service

Heat Index

Temperature (°F)

Relative Humidity (%)	80	82	84	86	88	90	92	94	96	98	100	102	104	106	108	110
40	80	81	83	85	88	91	94	97	101	105	109	114	119	124	130	136
45	80	82	84	87	89	93	96	100	104	109	114	119	124	130	137	
50	81	83	85	88	91	95	99	103	108	113	118	124	131	137		
55	81	84	86	89	93	97	101	106	112	117	124	130	137			
60	82	84	88	91	95	100	105	110	116	123	129	137				
65	82	85	89	93	98	103	108	114	121	128	136					
70	83	86	90	95	100	105	112	119	126	134						
75	84	88	92	97	103	109	116	124	132							
80	84	89	94	100	106	113	121	129								
85	85	90	96	102	110	117	126	135								
90	86	91	98	105	113	122	131									
95	86	93	100	108	117	127										
100	87	95	103	112	121	132										

Likelihood of Heat Disorders with Prolonged Exposure or Strenuous Activity

Caution Extreme Caution Danger Extreme Danger

Past Extreme Heat Events

Below is a table listing extreme heat events in the region.

Table III-15: EXTREME HEAT

Date	Location	Description	Damage
July, 1911	New England	11-day heat wave in New Hampshire	No impact recorded in Cornish
Late June to September, 1936	North America	Temps to mid 90s in the northeast	No impact recorded in Cornish
June - August, 1999	Northeast	Mean temperatures well above long-term average	No impact recorded in Cornish
Early August, 2001	New Hampshire	Mid 90s and high humidity	No impact in Cornish
August 2-4, 2006	New Hampshire	Regional heat wave and severe storms	No impact in Cornish
July 2010	Northeast	Regional heat wave	No impact in Cornish
July - August 2015	New Hampshire	Regional heat wave	No impact in Cornish; nearby Lebanon opened cooling shelters

Source: Union Leader July 30, 2015

Potential Future Extreme Heat Events

Extreme heat would impact the entire town though those with air conditioning in their homes would have less impact. The costs of extreme heat are most likely to be in human life. The elderly are especially susceptible to extreme heat. The State did not develop a county risk factor for extreme heat in its *NH Hazard Mitigation Plan*. The Committee determined extreme heat to be a low risk in Cornish.

Erosion

Soil erosion is the process of removal and transportation of soil by wind or water to a new location. Landslides are also the removal and transportation of soils on a larger scale and including larger materials such as rocks. The most common trigger of a landslide is water as it reduces the friction between the bedrock and overlying sediment, and gravity sends the debris sliding downhill.

Soil erosion, although a natural process, can be greatly accelerated by improper construction practices. Because of the climate in New Hampshire and the general nature of our topography, eroded soils can be quickly transported to a wetland, stream, or lake. The New Hampshire Department of Environmental Services (DES) regulates major construction activities to minimize impacts upon these resources. A properly conducted construction project should not cause significant soil erosion. The committee felt that Erosion and Landslide were essentially the same hazard. They recognize that there can be varying causes to both erosion and landslide, but that the product of the hazards is the same, as such, they have grouped them into one section.

Soil becomes vulnerable to erosion when construction activity removes or disturbs the vegetative cover. Vegetative cover and its root system play an extremely important role in preventing erosion by: (1) Shielding the soil surface from the impact of falling rain drops; (2) Reducing the velocity of runoff; (3) Maintaining the soil's capacity to absorb water, and (4) Holding soil particles in place.

Because of the vegetation's ability to minimize erosion, limiting its removal can significantly reduce soil erosion. In addition, decreasing the area and duration of exposure of disturbed soils is also effective in limiting soil erosion. The designer must give special consideration to the phasing of a project so that only those areas actively under construction have exposed soils. Other factors influencing soil erosion are: (1) Soil types, (2) Land slope, (3) Amount of water flow from up-slope, and (4) Season of disturbance.

Past Erosion Events

There have been several erosion events in Cornish primarily involving town road washes associated with major storms. Many of the dirt roads in Cornish are clay based which makes them partly or entirely impassable when wet.

Table III-16: EROSION/LANDSLIDE AREAS

Date	Area	Description	Damages
September 2005	Bridge 151/1222 at Clark Camp Road	Cross Section road access between NH 120 and Center Road caused by seasonal run-off and rainfall	Destroyed Culvert; Bridge closed in 2008.
Spring 2006	Entire 4.5 Miles Center Road	Pavement breaking, sub-base continually eroded. Roadway collapsing into brook bank by seasonal run-off and rainfall	Roadway destabilized shoulder currently 16 inches below road.
Winter–Spring 1999-2000	Gap Road	Continuous erosion of road causing washout of gravel road due to seasonal run-off and rainfall on steep slope. Emergency Access Restricted.	Roadway Washout and impassability.
June 2013	Hell Hollow; Paget & Center Roads	Flooding event #4139 caused road washouts	See flood Table III-3
Ongoing	Entire 4.7 Miles Dingleton Hill Road	Continuous erosion of road sub-base due to seasonal run-off and rainfall.	Road destabilized pavement broken and heaved.
Ongoing	Entire 3.5 Miles of Platt Road	Continuous erosion of road sub-base due to seasonal run-off and rainfall.	Road destabilized pavement broken and heaved.
Ongoing	Entire 5 Miles of Jackson Road	Continuous erosion of road sub-base due to seasonal run-off and rainfall.	Roadway Washout and impassability.
Ongoing.	St. Gaudens Road	Continuous erosion of road causing washout of gravel road due to seasonal run-off and rainfall on steep slope. Emergency Access Restricted.	Roadway Washout and impassability.

Potential Erosion Events

Due to the topography of the town, there is always potential for erosion. As properties are developed there will be less vegetative buffer to protect the town from erosion during rainstorms. Several roads need improvement as shown above to mitigate erosion from future rainstorms. The Committee determined that erosion is a medium/high risk in Cornish. In 2015, the NH Department of Environmental Services did a study on fluvial erosion of the Sugar River in Cornish. This information is provided in Appendix E.

Wildfire

Wildfire is defined as any unwanted and unplanned fire burning in the forest, shrub or grass. Wildfires are frequently referred to as forest fires, shrub fires or grass fires, depending on their location. They often occur during drought and when woody debris on the forest floor is readily available to fuel the fire. The threat of wildfires is greatest where vegetation patterns have been altered by past unsafe land-use practices, fire suppression and fire exclusion. Vegetation buildup can lead to more severe wildfires.

Increased severity over recent years has decreased capability to extinguish wildfires. Wildfires are unpredictable and usually destructive, causing both personal property damage and damage to community infrastructure, cultural and economic resources. Negative short term effects of wildfires include destruction of timber, forage, wildlife habitats, scenic vistas and watersheds. Some long term effects include erosion and lowered water quality.

There are many types and causes of fires. Wildfires, arson, accidental fires and others all pose a unique danger to communities and individuals. Since 1985, approximately 9,000 homes have been lost to urban/wild land interface fires across the United States (Northeast States Emergency Consortium: www.nesec.org). The majority of wildfires usually occur in April and May, when home owners are cleaning up from the winter months, and when the majority of vegetation is void of any appreciable moisture making them highly flammable.

The threat of wildfires for people living near wildland areas or using recreational facilities in wilderness areas is real. Dry conditions at various times of the year and in various parts of the United States greatly increase the potential for wildfires. Advance planning and knowing how to protect buildings in these areas can lessen the devastation of a wildfire. To reduce the risk to wildfire, it is necessary to consider the fire resistance of structures, the topography of property and the nature of the vegetation in the area.

According to the National Wildfire Coordination Group, there are categories of wildfire based upon size: Class A - one-fourth acre or less; Class B - more than one-fourth acre, but less than 10 acres; Class C - 10 acres or more, but less than 100 acres; Class D - 100

acres or more, but less than 300 acres; Class E - 300 acres or more, but less than 1,000 acres; Class F - 1,000 acres or more, but less than 5,000 acres; Class G - 5,000 acres or more.

Past Wildfire Events

There have been very few wildfires in the Town of Cornish. There is strict enforcement of outside burning and fire permits. The greatest danger is weather driven during periods of drought, especially in spring before the grass has greened up. The Committee recalled that the most recent wildfire occurred on April 18, 2009. The fire destroyed over fifteen (15) acres of forest whose timber value is unknown. Thirteen Fire Departments in the Town's mutual aid compact were required to respond at a cost of more than $10,000 in unbudgeted compensation for fire fighters.

Potential Future Wildfire Events

There are many large, contiguous forest tracts in Cornish. Where development interfaces with the forested areas is called the "urban interface." These are the areas where structures could be impacted by a wildfire; these areas are scattered throughout the town. The most likely areas for wildfire are where ice storm impact downs trees and branches providing fuel for a fire. During drought conditions, many areas may be at risk for wildfire. According to the State's mitigation plan, Sullivan County has substantial debris to fuel a wildfire remaining from the ice storm of 1998 and 2008 and heavy forest cover. The State plan gives the county a high risk of wildfire. The Committee determined that the risk of wild and structure fire risk in Cornish is medium.

Natural Water & Air Contaminants

Radium, radon and uranium are grouped together because they are radionuclides, unstable elements that emit ionizing radiation. These three particular substances are a health risk only if taken into the body by ingestion or inhalation. They occur naturally in the environment, uranium and radium as solids in rock while radon exists as a gas. Radionuclides are undetectable by taste, odor, or color, so only analytical testing can determine if they are present in water. Because they are associated with rock, wells drilled into bedrock are more likely to contain elevated levels of radionuclides than shallow or dug wells.

Radon gas can also be found in the soil. Openings between the soil and buildings, such as foundation cracks and where pipes enter, provide conduits for radon to move into structures. The difference in air pressure, caused by heated indoor air moving up and out of buildings, results in a flow of soil gas toward the indoors, allowing radon to potentially accumulate in structures. Air quality in a home can also be tested for radon. Following is a map of New Hampshire by the U.S. EPA to show radon zones.

There are many other natural contaminants which can render drinking water unsafe such as arsenic. The Drinking Water and Groundwater Bureau of the NH Department of Environmental Services has several fact sheets available to address these natural materials and suggests which materials to be included in testing. See their list of fact sheets at http://www.des.state.nh.us/dwg.htm.

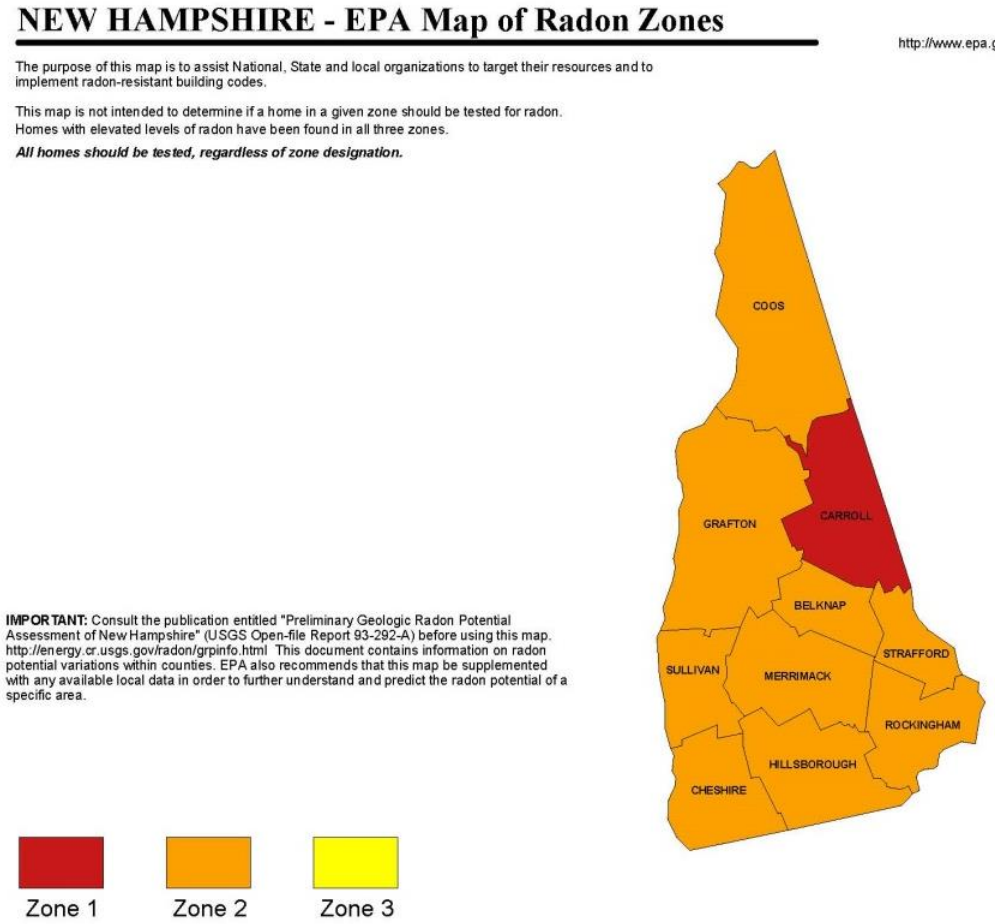
Past Natural Water & Air Contaminant Events

There have been no recorded events related to natural water and air contamination in Cornish although uranium was found when constructing I-89 to the east of Cornish. It is also anticipated that although no one is aware of any radon contamination, given that we are in the "Granite State," it is likely that some homes are affected by radon.

Table III-17: RADON – LOW/MEDIUM RISK

RADON					
Summary Table of Short-term Indoor Radon Test Results in NH's Radon Database 11/04/2003)					
County	**# Tests**	**G. Mean**	**Maximum**	**% > 4.0 pCi/l**	**% > 12.0 pCi/l**
Belknap	744	1.3	22.3	14.4	1.3
Carroll	1042	3.5	478.9	45.4	18
Cheshire	964	1.3	131.2	15.6	2.3
Coos	1072	3.2	261.5	41	17
Grafton	1286	2.0	174.3	23.2	5.2
Hillsborough	2741	2.1	202.3	29.6	6.8
Merrimack	1961	2.0	152.8	25.2	6
Rockingham	3909	3.0	155.3	40	9.5
Strafford	1645	3.4	122.8	44	13
Sullivan	**466**	**1.4**	**29.4**	**15.7**	**2.1**
STATEWIDE	**15860**	**2.4 pCi/L**	**478.9 pCi/L**	**32.4**	**8.6**

Figure III-3: MAP OF RADON ZONES



Zone 1 counties have a predicted average indoor radon screening level greater than 4 pCI/L (picocuries per liter) (red zones) **Highest Potential**

Zone 2 counties have a predicted average indoor radon screening level between 2 and 4 pCi/L (orange zones) **Moderate Potential**

Zone 3 counties have a predicted average indoor radon screening level less than 2 pCi/L (yellow zones) **Low Potential**

Potential Future Natural Air & Water Contaminant Damage:

Although there are no known records of illness that can be attributed to radium, radon, or uranium or other contaminants in Cornish, residents should be aware that they are present. Houses with granite and dirt cellars are at increased risk to radon gas

infiltration. According to the table above, Sullivan County radon levels are below average for the State. According to the State's mitigation plan, Sullivan County has a medium probability of a radon related hazard.

In addition radium, radon, and uranium as well as other natural materials can be present in drinking water. Residents, especially with bedrock wells, should be aware of the possibility of water contamination and the availability of testing and remediation. The Committee determined that the risk of natural contaminants is low.

Hazardous Materials Spills

Hazardous materials spills or releases can cause loss of life and damage to property. Short or long-term evacuation of local residents and businesses may be required, depending on the nature and extent of the incident. In Cornish, there are about 130 hazardous waste generators listed on the NH Department of Environmental Services (DES) "one-stop" list. Most of these are inactive and probably only produce small amounts of hazardous waste. However, there are also some larger producers. There are also large tanks for fuel such as propane, oil, and gas to service the various businesses and industries in town. Fourteen commercial entities have licensed tanks with NH DES. The Town of Cornish is an active member of the Midwestern NH Regional Hazardous Materials Response Team.

Past Hazardous Waste Spill Events

No known recent and significant spills have occurred in Cornish though two train derailments occurred which involved hazardous materials. In 1975 a fertilizer tank car derailed requiring emergency management until the tracks were repaired so the car could return to the rail line. In 2003 a propane tank car derailed. There were no known impacts resulting from either derailment.

There are also possible in road transportation hazards as there is substantial through traffic on Routes 12A and 120. In addition, heating fuel is delivered to homes on many of the town's roads. Spills could also occur at underground storage tanks during the filling of the tanks, but above-ground tanks are more susceptible to hazards such as earthquakes and wind events.

Potential Future Hazardous Waste Spill Damage

There conceivably could be spills near any home in Cornish due to home heating fuel delivery. The property owner is responsible for clean-up. The Cornish Elementary School's 16' dug well is located next to Townhouse Road with a parking area and is potentially vulnerable to truck traffic and spills. There is a chain link fence around the well area.

The State oversees these reported spills. Larger spills are possible from non-residential fuel tanks as shown above in Cornish. The cost for clean-up would be assigned to the transporter. However, there should be an emergency plan to immediately respond to the site to minimize water and ground contamination.

The State did not determine county risk for hazardous waste spills in the *NH Hazard Mitigation Plan*. The Committee determined a hazardous waste spill is a low risk.

Terrorism

Terrorism has been defined in many ways. The word terrorism is derived from the Latin term "terrere" which means to frighten. Section 802 of the USA Patriot Act expanded the definition of terrorism to cover "domestic," as opposed to international terrorism. A person engages in domestic terrorism if they do an act "dangerous to human life" that is a violation of the criminal laws of a state or the United States, if the act appears to be intended to: (i) to intimidate or coerce a civilian population; (ii) to influence the policy of a government by intimidation or coercion; or (iii) to affect the conduct of a government by mass destruction, assassination, or kidnapping; and (C) occur primarily within the territorial jurisdiction of the United States."

Past Terrorism Events

There have been no terrorism events within Cornish in the past. Cemeteries have been vandalized.

Future Terrorism Events

Terrorism is not considered a major risk, although vandalism is an occasional problem. The Cornish Fair brings in 20,000 people in three days so this is a potential target. There is also a national park in Cornish. The Committee determined that the risk of terrorism is a low risk in Cornish.

C. HAZARD RISK RATINGS

The Town of Cornish Hazard Mitigation Committee reviewed each potential hazard and rated the vulnerability (cost if the hazard actually occurs) and probability of occurrence to come up with an overall risk rating. The ratings were based on past occurrences of hazards affecting the State of New Hampshire, Sullivan County, and the Town of Cornish. These ratings were reevaluated for change in 2016. Flooding and severe winter were determined to fall in the high risk range.

Assessing Vulnerability

A relative scale of 1 to 3 was used to determine the impact and cost for human death and injury, property losses and damages, and business/agricultural impact: 1 – limited damage and cost; 2 - moderate amount of damage and cost, and 3 – high damage and cost.

Table III-18: VULNERABILITY OF EXISTING DEVELOPED AREAS

Committee Assessment of Vulnerability	Human Impact	Property Impact	Economic Impact	Vulnerability
	Probability of death or injury	Physical losses and damages	Cottage businesses & agriculture	Avg. of human/ property/ business impact
Dam Failure	1.5	2	1	1.50
Flooding	1	3	3	2.33
Hurricane	1.5	3	2	2.17
Tornado, Wind Events & Down Bursts	2	3	1.5	2.17
Thunderstorm/Lightning	2	3	1.5	2.17
Severe Winter Weather	3	3	3	3.00
Earthquake	1	1	1	1.00
Drought	1	2	2	1.67
Extreme Heat	2	1	2	1.67
Erosion	1.5	3	3	2.50
Wildfire	2	2	1.5	1.83
Natural Contaminants	1	1	1	1.00
HazMat Spills	1	1	1	1.00
Terrorism	1	1	1	1.00

Assessing Probability

The process involved assigning a number to each hazard type based on its potential of occurring determined using the committee's knowledge of past events:

1 – Low: 0-33% chance of occurrence during a 10-year period

2 – Medium: 33-66% chance of occurrence during a 10 year-period
3 – High: 66-100% chance of occurrence during a 10-year period

An n/a score was given if there was insufficient evidence to make a decision. To ensure some balance with a more scientific measurement, the plan also identifies the probability of occurrence from the State Hazard Plan as shown in Table III-18. For comparative purposes the Low rating was given a designation of "1," the Medium rating a designation of "2," and the High rating a designation of "3." These figures are shown in Table III-19 and III-20.

Table III-19: PROBABILITY OF HAZARD FOR SULLIVAN COUNTRY FROM STATE PLAN

Flood	Dam Failure	Drought	Wildfire	Earth-quake	Radon	Tornado	Hurricane	Lightning	Severe Winter
H	L	M	H	M	M	M	M	M	H

Assessing Risk

The averages of each vulnerability and probability were multiplied to arrive at the overall risk the hazard has on the community. The overall risk or threat posed by a hazard over the next 25 years was determined on a scale outlined below:

HIGH**:** There is very strong potential for a disaster of major proportions during the next 25 years; or (2) history suggests the occurrence of multiple disasters of moderate proportions during the next 25 years. The threat is significant enough to warrant major program effort to prepare for, respond to, recover from, and mitigate against this hazard. This hazard should be a major focus of the city's emergency management training and exercise program.

MEDIUM/HIGH: There is strong potential for a disaster of significant proportions during the next 25 years. The threat is significant enough to warrant major program effort to prepare for, respond to, recover from, and mitigate against this hazard. This hazard should be a major focus of the city's emergency management training and exercise program.

MEDIUM: There is moderate potential for a disaster of less than major proportions during the next 25 years. The threat is great enough to warrant modest effort to prepare for, respond to, recover from, and mitigate this hazard. This hazard should be included in the city's emergency management training and exercise program.

LOW/MEDIUM: There is slight potential for disaster in the in the next 25 years. The modest threat warrants modest effort to prepare for, respond to, recover from, and mitigate this hazard. This hazard should be included in the city's emergency management training and exercise program.

LOW**:** There is little potential for a disaster during the next 25 years. The threat is such as to warrant no special effort to prepare for, respond to, recover from, or mitigate this hazard. This hazard need not be specifically addressed in the city's emergency management training and exercise program except as generally dealt with during hazard awareness training.

Table III-13: RISK ASSESSMENT

Risk Assessment 0-1.9 Low 2-3.9 Low/Med 4-5.9 Med 6-7.9 Med-High 8-9 High				
Hazards	**Probability based on Committee Review**	**Vulnerability based on Committee Review**	**Risk Rating (Probability x Vulnerability)**	**Risk**
Dam Failure	1.0	1.50	1.50	Low
Flooding	3.0	2.33	6.99	Medium/High
Hurricane	2.0	2.17	4.34	Medium
Tornado & Downburst	3.0	2.17	6.51	Medium/High
Thunderstorm/Lightning/Hail	3.0	2.17	6.51	Medium/High
Severe Winter	**3.0**	**3.00**	**9.00**	**High**
Earthquake	1.0	1.00	1.00	Low
Drought	3.0	1.67	5.01	Medium
Extreme Heat	2.0	1.67	3.34	Low/Medium
Erosion	3.0	1.83	5.49	Medium
Wildfire	3.0	1.00	3.00	Low/Medium
Natural Contaminants	1.0	1.00	1.00	Low
HazMat	1.0	1.00	1.00	Low
Terrorism	1.0	1.50	1.50	Low

IV. CRITICAL FACILITIES/LOCATIONS

The Critical Facilities list, identified by the Cornish Hazard Mitigation Committee, is divided into three categories. The first category contains facilities needed for emergency response in the event of a disaster. The second category contains non-emergency response facilities that are not required in an event, but that are considered essential for the everyday operation of the Town of Cornish. The third category contains facilities/populations that the Committee wishes to protect in the event of a disaster. Values for all buildings in this document were obtained from town tax records for main structures plus accessory structures for 2016. The assessed values were used. All buildings are subject to non-specific events such as a severe winter or wind event, or even a hazardous materials spill.

Table IV-1: EMERGENCY RESPONSE FACILITIES, SERVICES & STRUCTURES

Map #	Critical Facility	Hazard Vulnerability	Value	Comments
1	Fire Station – Cornish Flat – NH 120	Flood Plain	$143,100	
2	Fire Station /Police Dept., Town House Road (Emergency Operations Center)	Flood Plain	$144,300	
3	Rescue Station – Center Road (truck, equip. storage)	Flood Plain	$13,000	
4	Town Garage - (pet shelter)	Non-specific	$232,000	
5	Elementary School (emergency shelter)	Flood Plain	$1,821,900	

Table IV-2: NON-EMERGENCY RESPONSE FACILITIES & STRUCTURES

Map #	Critical Facility	Hazard Vulnerability	Value	Comments
6	Town Office Building	Flood Plain	$263,000	
NA	Bridges most critical – Evacuation Route	Windsor-Cornish Bridge	Unknown/State	
NA	Evacuation Routes: 3 Bridges, Windsor Cornish, 12A Bridge, Town House Road Bridge	Flood Plain	Unknown	

Table IV-3: FACILITIES & POPULATIONS TO PROTECT

Critical Facility	Hazard Vulnerability	Value	Comments
Cornish Library	Non-specific	$300,700	
Trinity church (town building-not an active church)	Flood Plain	$237,700	
Meeting House	Flood Plain	$436,800	
Old SM Office (Historical Society)	Non-specific	$ 96,700	
Old Town Hall	Flood Plain	$223,700	

V. DETERMINING HOW MUCH WILL BE AFFECTED

A. IDENTIFYING VULNERABLE FACILITIES

It is important to determine which critical facilities and other structures are the most vulnerable and to estimate potential losses. The first step is to identify the facilities most likely to be damaged in a hazard event. To do this, the locations of critical facilities were compared to the location of past and potential hazard events. Facilities and structures located in federally and locally determined flood areas, dam inundation areas, etc. were identified and included in the analysis. There is neither large land areas slated for potential development nor large development projects in the works, so vulnerability of undeveloped land was not analyzed except to note logical future development areas.

Table V-1: VULNERABILITY OF EXISTING DEVELOPED AREAS

Area	Hazard	Critical Facilities	Buildings	Infrastructure	Total Known Bldg Value
100 Year Floodplains	Flood, Erosion	Approximately 22 miles of local roadway subject to Erosion	103 Residences; 3 Small Businesses	Roads and bridges	$26,590,625.00 (structures) $10-20 Million Roadways
100 Year Floodplains	All Hazards	Cornish Flat Fire Station, NH 120	Wood frame	Emergency Equipment	$143,100
	All Hazards	Town Office Building	Brick Masonry	Emergency Shelter	$263,000
100 Year Floodplains	All Hazards	Fire Station /Police Dept. Town House Rd.	Wood frame	EOC	$144,300
100 Year Floodplains	Flood Plain, All Hazards	Rescue Station – Center Road	Wood frame	Emergency Equipment	$13,000
	All Hazards	Elementary School	Wood frame	Emergency Shelter	$1,821,900
	All Hazards	Old Town Hall	Wood frame	Emergency shelter	$223,700

There are no areas in Town that are anticipated to be developed within any hazard areas.

Table V-2: VULNERABILITY OF POTENTIAL DEVELOPMENT

Area	Hazard	Critical Facilities	Projected Buildings	Projected Infrastructure	Projected Value
N/A	N/A	N/A	N/A	N/A	N/A

B. IDENTIFYING VULNERABLE SPECIAL POPULATIONS

There is just one center of special populations in Cornish: the elementary school as identified in Table IV-3. The elderly and physically or mentally challenged residents are located throughout the community, but scattered throughout the Town in their homes. Town-wide programs will have to take this into account. Town officials having knowledge of its residents will assist in protection of those with special needs. Cornish Rescue Squad has list of those who would want assistance during an emergency.

C. POTENTIAL LOSS ESTIMATES

This section identifies areas in town that are most vulnerable to hazard events and estimates potential losses from these events. It is difficult to ascertain the amount of damage caused by a natural hazard because the damage will depend on the hazard's extent and severity, making each hazard event quite unique. In addition, human loss of life was not included in the potential loss estimates, but could be expected to occur. FEMA's *Understanding Your Risks: Identifying Hazards and Estimating Losses* (August 2001) was used in estimating loss evaluations. The value of structures was determined by using town records. The Town's tax maps were used to determine number of units within each hazard area. These 2016 values are assessed tax values.

Dam Failure – Low Risk - $2 Million Estimated Cost

There are a total of 43 houses within the dam inundation areas of Wilder Dam, North Hartland Dam, and Whitewater Brook Dam. None of these dams is located within the Town of Cornish. All of the dams are rated as "high hazard" dams, meaning they could cause significant harm to properties, infrastructure, and loss of human and animal life. The total cost of structures within the dam inundation areas is $7 million. Assuming 28% damage to these buildings, the cost of damage could be almost $2 million.

Flooding – Medium/High Risk - $6 Million Estimated Cost
There are approximately 91 houses located within the FEMA designated Special Flood Hazard areas. The total value of the houses is about $14 million The critical facilities within the floodplain include Cornish Flat Fire Station, Town House Road Station and Police Department, Town Office Building, Center Road Rescue Station, Old Town Hall, Elementary School, Trinity Church, and the Church-in the Flats. The value of these structures is $7,225,000. Assuming a 28% structural damage to the houses and non-residential structures, the damage would total close to $6 million.

Hurricane – Medium Risk – No Recorded or Estimated Cost
Damage caused by hurricanes can be severe and expensive. It is random which structures would be impacted and how much. There is no standard loss estimation available and no record of past costs. A hurricane could damage or demolish buildings; knock down utility lines causing breaks in water, sewer, and electricity; cause heavy rain and flooding; and kill livestock and people.

Tornado & Downburst – High Risk – No Recorded or Estimated Cost
Tornadoes, downbursts, and microbursts are relatively uncommon natural hazards in New Hampshire. On average, about two tornado events strike each year in New Hampshire. In the State, the average annual cost of tornadoes between 1950 and 1994 was $9 million (NOAA's Storm Prediction Center) in adjusted US dollars. These wind events occur in specific areas, so calculating potential town-wide losses is difficult. There is no standard loss estimation model available for tornadoes due to their random nature although it is likely that there could be severe damage to buildings, utilities, crops, livestock, and trees as well as potential for human fatalities.

Although more recent information was not found for New Hampshire, a July 2008 tornado which touched down in Deerfield, NH where it resulted in one fatality and damaged nearly 100 homes and completely destroyed two homes. The 52 mile long damage path was the longest damage path for any tornado in NH and extended from several other NH counties before crossing into Maine. Twisted trees still remained in some towns five years later, as property owners could not afford to clear them. No cost estimate for this disaster was found, but FEMA provided about $2.5 million in assistance to affected NH communities.

Thunderstorm/Lightning/Hail – Medium/High Risk – No Recorded or Estimated Cost
According to the Federal Alliance for Safe Homes, in an average year, hail causes more than $1.6 billion worth of damage to residential roofs in the United States, making it, year in and year out, one of the most costly natural disasters. Lightning is one of the most underrated severe weather hazards, yet it ranks as the second-leading weather killer in the United States. More deadly than hurricanes or tornadoes, lightning strikes in America each year killing an average of 73 people and injuring 300 others, according to the National Weather Service. There is no cost estimation model for thunderstorms due to their random nature. Lightning strikes can start fires in buildings and forests causing great loss of property and natural resources. Lightning can also cause power outages costing significantly in repairs to utilities, not to mention great inconvenience to homeowners and businesses.

Severe Winter Weather – High Risk – No Recorded or Estimated Cost
Ice storms often cause widespread power outages by downing power lines, and these storms can also cause severe damage to trees. New England usually experiences at least one or two severe snowstorms, with varying degrees of severity, each year. All of these impacts are a risk to the community and put all residents, especially the elderly, at risk. Municipal costs rise in severe winters as towns attempt to keep ice and snow off the roads. The purchase of salt and sand can greatly increase if the severity of winter weather is greater than anticipated.

According to a study done for the Institute for Catastrophic Loss Reduction (Canada) and the Institute for Business and Home Safety (U.S.), the 1998 Ice Storm inflicted $1.2 billion (U.S.) worth of damage in the U.S. and Canada. In New Hampshire alone, over 67,000 people were without power (http://www.meteo.mcgill.ca/extreme/Research_Paper_No_1.pdf). U.S. average insurance claim was $1,325 for personal property, $1,980 for commercial property, and $1,371 for automobiles. In a 2014 study by the Insurance Information Institute, winter-related disasters totaled $3.7 billion nationwide. The organization further reported that severe winter weather caused 15% of all insured auto, home, and business catastrophe losses in the US in 2014.

Earthquake – Low Risk – $18, 337,497.00 Million Estimated Cost (10% of total taxable property and infrastructure)
Earthquakes can cause buildings and bridges to collapse, disrupt gas, electric and phone lines, and precipitate landslide and flash flood events. Four earthquakes in NH between 1924 and 1989 had a magnitude of 4.2 or more. Two of these occurred in Ossipee, one west of Laconia, and one near the Quebec border. Buildings have not been subject to any seismic design level requirement for construction and would be susceptible to structural damage. The dams, bridges, and roads would be vulnerable to a sizable earthquake event. Building practices can make a difference in the deaths during an earthquake. Even a moderate rupture beneath a city with structure unprepared for shaking can produce many casualties.

FEMA's *Understanding Your Risks: Identifying Hazards and Estimating Costs*, August 2001 provides that an earthquake with a 5% peak ground acceleration (as determined by the US Geologic Survey for the area) could cause damage to single family residences by around 10% of the structural value. If 10% of buildings in Cornish were impacted by an earthquake, the estimated damage could be around $3.3 million.

Drought – Medium/High Risk – No Recorded or Estimated Cost
A long drought would cause damage to crops and dry up wells. There is no cost estimate for this hazard in Cornish as no drought has significantly affected Cornish in the past. If any farms are impacted, the crop loss could be devastating, but it depends upon the length of the drought. Drought can also require the development of new and deeper wells for residential use. Fires can occur during a drought especially if combined with a lightning strike and dry tinder.

Extreme Heat – Low Risk – No Recorded or Estimated Cost
Excessive heat kills more people in the U.S. than tornadoes, hurricanes, floods, and lightning combined. The elderly, very young, obese and those who work outdoors or have substance abuse problems are most at risk from succumbing to heat. Additionally, people in urban areas are more susceptible as asphalt and cement tend to hold in heat throughout the night (Federal Alliance of Safe Homes website). The costs for this hazard are in terms of human suffering. It is not anticipated that there would be any structural or infrastructure costs.

Erosion– Medium/High Risk – No Recorded or Estimated Cost
Development on steep slopes can cause substantial erosion in the adjacent area. This can impact the adjacent roads in the area by making them more susceptible to erosion and washout. Construction itself can cause erosion if best management practices are not used to control run-off from disturbed soils, and the rooftops of buildings displace water which would have gone into the ground. This is then exacerbated by the steep slopes where the run-off moves more quickly and can cause more damage**.** Severe erosion has occurred along several roads in Cornish.

Wildfire– Medium Risk – No Recorded or Estimated Cost
The risk of fire is difficult to predict based on location. Forest fires are more likely to occur during drought years. In addition, areas and structures that are surrounded by dry vegetation that has not been suitably cleared are at high risk. Fire danger is generally universal, however, and can occur practically at any time. Dollar damage would depend on the extent of the fire and the number and type of buildings burned. Some of the developed area of Cornish interfaces with forest, where structures are potentially vulnerable to wildfire. The estimated value of all structures in the Town is approximately $334 million. If 1% of the structures received 50% damage, the total estimated cost would be about $1.7 million.

According to the Sullivan County Forester, big wildfires are uncommon in Sullivan County as the weather here is generally not favorable for a high probability of ignition and rapid spread. Additionally, there are enough roads and people in the county that fires are generally spotted and addressed before they are too large. Occasionally weather conditions are more favorable as was seen in the 1950s on Croydon Mountain.

Natural Contaminants – Low Risk – No Recorded or Estimated Cost

The cost of a radon hazard would be the health of individuals exposed to radon. No cost estimate is provided for this hazard as often people do not even know they have radon in their home interior air or water. The impact to their health may never be known as they may not realize the source of their illness if it is related to radon which can cause cancer. The Centers for Disease Control and

Prevention, the American Lung Association and the American Medical Association agree with estimates that radon causes thousands of preventable lung cancer deaths every year. (US EPA)

Hazardous Material Spills –Low Risk – No Recorded or Estimated Cost

The cost of a hazardous material spill would depend upon the extent of the spill, the location of the spill in relation to population, structures, infrastructure, and natural resources, as well as the type of hazardous material. The cost of any clean-up would be imposed upon the owner of the material. However, other less tangible costs such as loss of water quality might be borne by the community. No cost estimate has been provided for this possible hazard. There are no significant hazardous waste generators in Cornish—so any spills would likely be from heating fuel delivery or transport of materials through the town.

Terrorism – Low Risk – No Recorded or Estimated Cost

The cost of any terrorism event is unpredictable and not estimated in this document. The intent of terrorism is typically to cause deaths and destroy infrastructure. The Committee does not feel that terrorism is a substantial threat in Cornish.

VI. EXISTING MITIGATION ACTIONS

A. EXISTING HAZARD MITIGATION PROGRAMS

The following table provides the existing mitigation actions in Cornish. The fourth or "Effectiveness" column ranks each program as one of the following: "high" – the existing program works as intended and meets its goals; "average" – the existing program works though there is room for improvement; and "low" – the existing program does not work as intended or falls short of its goals. The fifth column lists if there were recommendations for improvement in the previous hazard mitigation plan and if those recommendations were put into action or not and if not, why not. The final column provides either an update of the mitigation action or proposed improvements that are currently being recommended for the future. Any proposed actions or actions to be continued will be shown again in future tables for evaluation, prioritization, and scheduling for implementation.

Table VI-1: EXISTING MITIGATION ACTIONS

Existing Mitigation Action & Description	Hazard Type/Service Area	Responsible Local Agent	Effectiveness (Low, Average, High)	Recommendations in Previous Hazard Mitigation Plan/Actions Taken to Meet Recommendations	Proposed Improvements
Emergency Power	All Hazards/Entire Town	EMD & Selectboard	Low	Obtain generator for Emergency Operation Center and shelter/have generator at Emergency shelter and portable at Fire/Police Station	Install stand-by generator at Fire/Police Station for EOC and Highway Garage for disaster work (secondary EOC); Cornish Flat Fire Station (secondary shelter)
NFIP Member - Provides flood insurance program info to residents	Flood/Entire Town	Zoning Board	Average	Participate in NFIP training offered by the State and/or FEMA (or in other training) that addresses flood hazard planning and management. Work with elected officials, the state and FEMA to review compliance and prevent any potential NFIP non-compliance issues through continuous communications, training and education/	Continue to participate in the NFIP and comply with NFIP requirements. Continue to provide floodplain maps to the public and include education on the Town web site
Conservation Commission Fund - Development review for	Flood/Entire Town	Conservation Commission	Average	No recommendations in previous plan; the CC did extensive wetland mapping which can be used for wetland buffer requirement in Zoning Ordinance	Continue to evaluate wetland impact applications and acquire lands for conservation

Existing Mitigation Action & Description	Hazard Type/Service Area	Responsible Local Agent	Effectiveness (Low, Average, High)	Recommendations in Previous Hazard Mitigation Plan/Actions Taken to Meet Recommendations	Proposed Improvements
wetlands protection; acquisition and conservation of wetlands					
NH Shoreland Protection Act - Restricts development near water bodies	Flooding/ Connecticut River; Mill Brook;	NH DES and Zoning Board	Average	No recommendations in previous plan	Continue to enforce this program when reviewing subdivision and site plan review applications
Roadway Maintenance - Routine roadway maintenance	Erosion	Highway Department	Average	Creation of a capital improvement plan to take action on roadways subject to significant erosion/COMPLETED created paving and culvert replacement plan	Continue to follow the paving and culvert replacement plan; See Table VI:2 for list of road projects for hazard mitigation.
Dam Maintenance - Regular maintenance of town dam	Dam Failure/Inundation Areas	Highway Department	Average	No recommendations in previous plan	Continue to maintain town dam
Drought Mitigation Plan - Encourage replacement of spring fed systems with dug wells.	Drought/Entire Town	Selectboard, Conservation Commission	High	No recommendations in previous plan/ DELETE as no town water	NA
Regular Tree Maintenance - Remove damaged and hazardous trees	Wind Events, Wildfire/Entire Town	Utility companies and Town Highway Department	High (Town)/ Average (PSNH)	No recommendations in previous plan	Continue to remove damaged and hazardous trees; work with Planning Board to remove trees as needed on roads designated as "scenic."

Existing Mitigation Action & Description	Hazard Type/Service Area	Responsible Local Agent	Effectiveness (Low, Average, High)	Recommendations in Previous Hazard Mitigation Plan/Actions Taken to Meet Recommendations	Proposed Improvements
Stormwater Management - Regular culvert maintenance	Flooding/Entire Town	Public Works	Average	Infrastructure assessment to evaluate roads and bridges/COMPLETED as State did evaluation annually and Town developed culvert replacement plan	Continue to follow the culvert replacement plan
Subdivision Requirements (2015) –Provides development standards for subdivision	Flood & Erosion/Entire Town	Planning Board	High	No recommendations in previous plan	Continue to enforce the Subdivision Regulations and evaluate them for increased hazard mitigation
Site Plan Review Regulations (2006) – Review of multi-family and commercial development guarding against health and safety hazards	Flood & Erosion/ Entire town	Planning Board	High	No recommendation sin previous plan	Continue to enforce the Site Plan Review Regulations and evaluate them for increased hazard mitigation
Driveway Regulations (1995) – Controls driveway slope (first 100') and culverts at access point to Town roads	Flood & Erosion/ Entire Town	Planning Board	High	No recommendations in previous plan	Continue to enforce the Driveway Regulations and evaluate them for increased hazard mitigation

Existing Mitigation Action & Description	Hazard Type/Service Area	Responsible Local Agent	Effectiveness (Low, Average, High)	Recommendations in Previous Hazard Mitigation Plan/Actions Taken to Meet Recommendations	Proposed Improvements
Zoning Ordinance (2015) – Provides a 100' buffer around wetlands, streams, and water bodies	Flood & Erosion/Entire Town	Planning Board	High	No recommendations in previous plan	Continue to enforce the Zoning Ordinance and review it for increased hazard mitigation.
Town Master Plan (2009) - Includes hazard mitigation strategies	All Hazards/Entire Town	Planning and Selectboard	High	No recommendations in previous plan	Amend Town Master Plan to reference Hazard Mitigation Plan and Emergency Operations Plan
Public Works Winter Operations Plan - Maintenance standards and policies; prioritized roads for plowing	Winter/Entire Town	Public Works/Highway Dept.	High	No recommendations in previous plan	Continue to provide prioritized road plowing to accommodate school buses and commuters.

Table VI-2: ROAD IMPROVEMENTS PROGRAM – PROPOSED IMPROVEMENTS

Location	Problem	Mitigation Action/Status of Action
Center Road	Erosion causing road slumping into brook	Provide engineering study to determine best course of mitigation action
Jackson Road	Erosion causing road slumping into beaver marsh	Provide engineering study to determine best course of mitigation action

The Town of Cornish will provide a public education and outreach program by using brochures and the town website to reach their citizens. There will also be one-on-one outreach as appropriate. Below is a table showing the potential topics and outreach methods.

Dam failure is not included as this is performed by the State Dam Bureau in their assessment of all dams in the State. Terrorism would be the same as the "Multi-Hazard" topics.

Table VI-3: PUBLIC EDUCATION AND OUTREACH TOPICS

Natural Hazard	Educational Topics	Outreach Methods
Multi-Hazard	Shelters inc. for pets; evacuation routes; proper evacuation procedures; emergency kits and family plans	Town web site; Town meeting display
Flooding	National Flood Insurance Program participation; building in a floodplain; stormwater runoff; driving on flooded roads; protecting natural systems which provide flood mitigation; securing property items such as propane tanks prior to a flood	Town web site Brochures
Wind Events (Hurricane, Tornado, Downburst	Wind retrofits such as shutters, hurricane clips; school and town official sheltering basics; resident and business sheltering basics; window coverings	Town web site
Severe Winter Weather	Installation of carbon monoxide monitor and alarms; ventilation of fuel-burning equipment; protecting water pipes	Town web site; Town meeting display for detectors and wood stoves
Thunderstorms/Lightning/Hail	Taking cover; staying inside when it thunders	Town web site
Earthquake	Structural and non-structural home retrofitting; securing furnishings	Town web site
Drought	Water-saving measures; crop insurance; soil and water conservation practices by farmers	Town web site
Extreme Heat	Preparing for extreme heat; air conditioning; cooling shelters	Town web site
Erosion	High risk areas near Connecticut River; stormwater management; bank stabilization; water body buffers	Town web site
Wildfire	Reducing fuel for fires such as dry brush around buildings	Town web site; Fire Department and Fire Warden interactions
Natural Contaminants	Testing for contaminants in air and water	Town web site
Hazardous Materials Spills	What to do if there's a fuel delivery spill	Town web site

B. NEW MITIGATION PROGRAMS

The Committee evaluated the existing programs and proposed improvements to determine if they were addressing all the hazards they felt could impact the town. Table VI-4 summarizes this evaluation and notes where new programs could be implemented to address all hazards.

Table VI-4: COMMITTEE ASSESSMENT FOR NEW HAZARD MITIGATION ACTIONS

Hazard	Committee Ideas and Assessment
Dam Failure	The committee felt that overall they did not have the ability to mitigate dam failures. They noted that NH DES keeps record of dam inspections. The committee felt that any actions that could be taken regarding private dam failure were beyond the scope of their jurisdiction.
Drought	The Committee determined that since there is no municipal water service, they could not mitigate a drought.
Earthquake & Severe Wind	The Committee did not feel they could adopt more stringent requirements since these events are rare and the available actions to take were outside the capacity and resources of the Town. The Town has not adopted any building codes and does not have the resources to hire a building inspector.
Erosion/Landslide	Road maintenance and upgrades; Site Plan Review Regulations address stormwater; Driveway Regulations assure proper culvert size. The Board of Selectmen review Intents to Cut.
Extreme Heat	The town could offer a cooling station at the school since it contains the only rooms with air conditioning in public buildings.
Flood	The Town is an NFIP member and has adopted a floodplain ordinance; the Town will provide NFIP educational information on the Town web site; the highway department will continue to evaluate culverts and bridges for flooding impacts.
Thunderstorms, Lightning and Hail	The Committee discussed the hazards, but did not feel a particular area of town is more prone to lightning strikes, and there are no feasible mitigation strategies at this point.
Severe Winter Weather	The Town does its best to maintain the roads in the winter to keep them clear of snow and ice. The Town already adopted the Life Safety Code which is enforced by the Fire Chief. The Town provides shelter during major storms and power outages.
Earthquake	The Committee felt the risk of a destructive earthquake was not sufficient enough to warrant expensive mitigation strategies. The Town does not have a building code or building inspector.
Wildfire	The Town requires fire permits to reduce unsafe fire practices. The Town provides wildfire prevention educational materials at Town Meeting and programs at the school. They will add information to the town website.
Natural	The Committee discussed the different natural contaminants and noted that radon is always a risk living in a

Hazard	Committee Ideas and Assessment
Contaminants	region on granite bedrock. They did not feel it appropriate for the town to take action other than educating its residents about the danger and how to test for radon.
Hazardous Materials	The Committee felt the most suitable strategies for hazardous materials are to continue their mutual aid agreements regarding HazMat spills. They recognize this is considered a preparedness item, but the committee feels it is the best action for the town to take and did not feel they could take on any other measures at this time other than putting educational materials on the Town web site.
Terrorism	Since the Town is quite rural and terrorism is a low risk, the Committee did not feel they needed to develop strategies for this hazard. The Town does have a school. School lockdown and active shooter plan is part of LEOP.

Table VI-5 provides a list of proposed new mitigation actions including ones that had been proposed in the previous plan. If these actions had not been accomplished since the last plan, then there is an explanation, however, all mitigation actions are new.

Table VI-5: PROPOSED NEW MITIGATION ACTIONS

Proposed New Mitigation Action Description	Hazard Type/Service Area	Responsible Local Agent	If Recommended in Previous Plan, why was it not put into place?
Education and Public Outreach Program	All/Town wide	Board of Selectmen	NOT DONE/lack of personnel assistance to implement

C. CRITICAL EVALUATION FOR IMPROVEMENTS TO EXISTING PROGRAMS AND NEW PROGRAMS

The Cornish Hazard Mitigation Committee reviewed each of the proposed improvements to existing programs and proposed new programs identified for existing mitigation programs using the following factors:

- Does it reduce disaster damage?
- Does it contribute to community objectives?
- Does it meet existing regulations?
- Can it be quickly implemented?
- Is it socially acceptable?

- Is it technically feasible?
- Is it administratively possible?
- Does the action offer reasonable benefits compared to cost of implementation?

Each mitigation strategy was evaluated and assigned a score (High – 3; Average – 2; and Low – 1) based on the criteria.

The Cornish Hazard Mitigation Committee assigned the following scores to each strategy for its effectiveness related to the critical evaluation factors listed above, and actions had the following scores, with the highest scores suggesting the highest priority. These scores are re-evaluated during each update process for new and existing strategies.

Table VI-6: PRIORITIZING EXISTING & NEW MITIGATION STRATEGY IMPROVEMENTS

Rank	Strategy Improvement	Reduce Damage	Community Objectives	Existing Regulations	Quickly Implemented	Socially Acceptable	Technically Feasible	Administration Possible	Benefit – Cost	TOTAL SCORE	Mitigate Existing or New Development or Both
3	**Emergency Power** – Install stand-by generator at Fire/Police Station for EOC; generators at Highway Garage and Cornish Flat Fire Station	1	3	3	3	3	3	2	3	21	Both
2	**NFIP Education** – Include NFIP education on Town web site	1	3	3	3	3	3	3	3	22	Both
2	**Town Master Plan** – Amend to reference hazard mitigation plan and emergency operations plan	1	3	3	3	3	3	3	3	22	Both
1	**Education and Public Outreach** – Provide information about hazards, hazard mitigation, and emergency preparedness on the Town web site	2	3	3	3	3	3	3	3	23	Both
4	**Center Road** - Provide engineering study to determine best course of mitigation action	1	3	3	2	3	3	2	2	20	Both
4	**Jackson Road** – Provide engineering study to determine best course of mitigation action	1	3	3	2	3	3	2	2	20	Both

D. EMERGENCY PREPAREDNESS ACTIONS

Although this is a hazard mitigation plan, the Committee felt it was important to address new and proposed emergency preparedness actions. It is sometimes difficult to distinguish between hazard mitigation and emergency preparedness. Essentially, emergency preparedness is the preparation to act once a hazard has occurred. And as has been discussed previously, hazard mitigation includes actions to eliminate or reduce hazards before they happen. Table VI-7 below is a list of the emergency preparedness actions that the Committee felt should be addressed and included in this plan.

Table VI-7: EMERGENCY PREPAREDNESS ACTIONS

Existing Emergency Preparedness Action & Description	Type/Service Area	Responsible Local Agent	Effectiveness (Low, Average, High)	Recommendations in Previous Hazard Mitigation Plan/*Actions Taken to Meet Recommendations or Not Met*	Update/Future Proposed Improvements
Dam Emergency Action Plans - Require determination of dam failure impact	Dam Failure/Entire Town	NH DES	Average	None/None	Continue to monitor State assessments of dams
Dam Breech Exercises - Exercises and drills in process	Dam Failure/Inundation Areas	Emergency Management Director	Average	Subscribe to "Code Red" system to contact all people within inundation areas.	
Mutual Aid - Fire, Police, Dispatch and sharing services among 37 surrounding and nearby towns.	All Hazards/Entire Town	Police, Rescue Squads & Fire Chiefs	High	None/None	Continue to participate in mutual aid
Emergency Operations Plan - Determines actions and responsibilities in event of emergencies	All Hazards/Entire Town	EMD	Average	Development of an EOP has commenced and completion is expected by end of calendar year 2009.	Update plan every five years
Emergency Operations Center - Site for emergency communications	All Hazards/Entire Town	EMD	Average	Need equipment and supplies including generator for emergency power source.	Continue to evaluate needs of EOC

Existing Emergency Preparedness Action & Description	Type/Service Area	Responsible Local Agent	Effectiveness (Low, Average, High)	Recommendations in Previous Hazard Mitigation Plan/*Actions Taken to Meet Recommendations or Not Met*	Update/Future Proposed Improvements
Emergency Shelter - Elementary School	All Hazards/Entire Town	EMD	Average	Need generator, equipment and supplies including cots, bedding, and replenishment of water and food stock; emergency generator available at elementary school.	Continue to evaluate needs of shelter.
HazMat Plan - Preparation for spill clean up and/or evacuation.	Substance Spill or Release/Entire Town	EMD	Average	Drill currently included in fire rescue exercises.	Continue to participate in HazMat program
All Hazards Plan - Reviews all types of hazards	All Hazards/Entire Town	EMD	Average	None	Continue to participate in All Hazards Plan updates

VII. PRIORITIZED IMPLEMENTATION SCHEDULE

The Cornish Hazard Mitigation Committee created the following action plan for implementation of priority mitigation strategies. Actions ranked in Table VI:4 as "1" are shown here as "high," as "2" and "3" are shown here at "med" (medium), and as 4 are shown as "low."

Timeframe Key	
Short Term	0-1 Year
Medium Term	2-3 Years
Long Term	4-5 Years

Table VII-1: PRIORITIZED IMPLEMENTATION SCHEDULE FOR EXISTING AND NEW PROGRAMS

Rank	Evaluation Score	Problem Statement	Mitigation Action	Hazard Addressed	Responsible Party	Anticipated Cost	Potential Funding Source	Timeframe
1	23	Education and Public Outreach	Provide information about hazards, hazard mitigation, and emergency preparedness on the Town web site	All hazards	Board of Selectmen, EMD	$0	NA	Short Term
2	22	NFIP Education	Include NFIP education on Town web site	Flooding	Board of Selectmen	$0	NA	Short Tern
2	22	Town Master Plan	Amend to reference hazard mitigation plan and emergency operations plan	All hazards	Planning Board	$0	NA	Medium Term
3	21	Emergency Power – lack of emergency power at emergency facilities	Install stand-by generator at Fire/Police Station for EOC; Highway Garage for secondary EOC; and Cornish Flat Fire Station for secondary shelter	All hazards	Board of Selectmen, EMD	$45,000	Grants and Taxes	Fire Police Station – Medium Term; Highway Garage – Medium Term; Cornish Flat Fire Station – Long Term
4	20	Center Road – slumping into brook	Provide engineering study to determine best course of mitigation action	Erosion	Road Agent and Board of Selectmen	$25,000	Grants & Taxes	Long Term
4	20	Jackson Road – slumping into beaver marsh	Provide engineering study to determine best course of mitigation action	Erosion	Road Agent and Board of Selectmen	$25,000	Grants & Taxes	Long Term

*This action will be completed on an ongoing basis throughout the life of the plan.

VIII. ADOPTION & IMPLEMENTATION OF THE PLAN

A good plan needs to provide for periodic monitoring and evaluation of its successes and challenges, and to allow for updates of the Plan where necessary. In order to track progress and update the Mitigation Strategies identified in the Plan, the Town of Cornish will revisit the Hazard Mitigation Plan *annually, or after a hazard event*. The Cornish Emergency Management Director will initiate this review and should consult with the Hazard Mitigation Committee. Changes will be made to the plan to accommodate for projects that have failed, or that are not considered feasible after a review for their consistency with the evaluation criteria, the timeframe, the community's priorities, and funding resources. Priorities that were not ranked highest, but that were identified as potential mitigation strategies, will be reviewed as well during the monitoring and update of this plan, to determine feasibility for future implementation. The plan will be updated and submitted for FEMA approval at a minimum every five years as required by the Disaster Mitigation Act 2000.

A. IMPLEMENTATION THROUGH EXISTING PROGRAMS

Many municipalities have web sites where they can share information about hazard mitigation and emergency management. The use of the web site by its citizens is often dictated by the availability of broadband service to easily access the web. The Town of Cornish has provided a link to the Regional Planning Commission's web page, "A Citizen's Guide to Hazard Mitigation and Emergency Management" as well as other more Town-specific information.

Municipalities have documents to convey town goals and objectives that are used to guide future programs. They can be used to promote and implement hazard mitigation. A Municipal Master Plan outlines how the community wants to grow and develop. It includes overall goals and objectives of the community and recommendations for ordinances and regulations to accomplish those goals. A zoning ordinance is a common vehicle to implement goals of the master plan and regulates land use. It can be used to restrict development in flood zones, steep sloped areas, buffer zones around wetlands and water bodies, drinking water recharge areas, hillsides, and ridgelines. These areas may be "overlay districts" mapped out for protection. A zoning ordinance can also require best management practices in forestry and timber harvesting and stormwater management to prevent erosion. A floodplain management plan is part of the zoning ordinance and has typically followed a format recommended by the NH Flood Management Program.

Other municipal documents include regulations such as Curb Cut or Driveway Regulations, Excavation Regulations, Subdivision Regulations and Site Plan Review Regulations. Curb Cut Regulations are used to make sure the culverts at the intersection of driveways and roads are adequate to handle runoff water or stream flow. Excavation Regulations are used to restrict the removal of earth including distance to seasonal high water table and the requirements to restore the site once the excavation is completed. This is

essential to make sure the area is graded and re-vegetated to reduce the chances of erosion. Subdivision Regulations determine how lots are to be laid out in a subdivision. This might include requirements for fire protection, stormwater runoff management, vegetated buffers, and reference back to the zoning ordinance. Site Plan Review Regulations are for multi-family housing and commercial development. Again, these regulations refer back to the zoning ordinance. The regulations can determine site specific development requirements such as parking, open space, vegetated buffers, and traffic flow.

Since Subdivision Regulations and Site Plan Review Regulations typically refer back to the Zoning Ordinance, so it may be more effective to amend the zoning ordinance to address hazard mitigation through specific restrictions though this can vary by municipality.

Another important municipal document is the Capital Improvements Program which is a "budget of the future" to consider potential capital expenditures such as new roads, major road improvements, equipment, schools, parks. This allows a systematic evaluation of potential projects. Any capital expenditures related to hazard mitigation will be incorporated into this document.

There are other regulations and ordinances that municipalities may adopt such as to regulate water use during a drought or restrict development in areas around drinking water sources. This all varies by municipality.

It should also be noted that many municipalities do not update these documents very often, and some towns do not have them at all. However, where they exist, they offer the potential to include hazard mitigation and emergency management topics.

B. CONTINUED PUBLIC INVOLVEMENT

The public will continue to be invited to participate in the hazard mitigation planning process. In future years, a public meeting will be held (separate from the adoption hearing) to inform and educate members of the public. It is hoped that a separate meeting discussing hazard mitigation and emergency management will create more interest in the process.

Copies of the Hazard Mitigation Plan have been or will be shared with to the following parties for review for reference:

- Select Board Offices in neighboring towns
- NH Homeland Security & Emergency Management
- Cornish Select Board, Conservation Commission, and Planning Board
- Upper Valley Lake Sunapee Regional Planning Commission

RESOURCES USED IN THE PREPARATION OF THIS PLAN

FEMA *Multi-Hazard Mitigation Planning Guidance Under the Disaster Mitigation Act of 2000*, March 2004, Last Revised June 2007

FEMA 386-1 *Getting Started: Building Support for Mitigation Planning*, September 2002

FEMA 386-2 *Understanding Your Risks: Identifying Hazards and Estimating Costs*, August 2001

FEMA 386-3 *Developing the Mitigation Plan: Identifying Mitigation Actions and Implementation Strategies*, April 2003

Ice Storm '98 by Eugene L. Lecomte et al for the Institute for Catastrophic Loss Reduction (Canada) and the Institute for Business & Home Safety (U.S.), December 1998

Town of Cornish Emergency Operations Plan, 2013

Town of Cornish Master Plan, 2009

NH HSEM's *State of New Hampshire Multi-Hazard Mitigation Plan*, Update 2013

www.fema.gov/disasters: Website for FEMA's Disaster List

http://www.ncdc.noaa.gov/: Website for National Oceanic & Atmospheric Administration Disaster List

www.tornadoproject.com: Website for The Tornado Project

http://www.erdc.usace.army.mil/Locations/CRREL.aspx: Website for Cold Regions Research and Engineering Laboratory Website

www.nesec.org: Website for Northeast States Emergency Consortium

http://earthquake.usgs.gov/earthquakes/states/new_hampshire/history.php: Website for area earthquake information

APPENDICES

APPENDIX A:

Technical Resources

APPENDIX A: TECHNICAL RESOURCES

1) Agencies

New Hampshire Homeland Security and Emergency Management
Hazard Mitigation Section 271-2231
Federal Emergency Management Agency ..... (617) 223-4175
NH Regional Planning Commissions:
Upper Valley Lake Sunapee Regional Planning Commission 448-1680
NH Executive Department:
Governor's Office of Energy and Community Services 271-2611
New Hampshire Office of State Planning 271-2155
NH Department of Cultural Affairs: 271-2540
Division of Historical Resources 271-3483
NH Department of Environmental Services: 271-3503
Air Resources 271-1370
Waste Management 271-2900
Water Resources 271-3406
Water Supply and Pollution Control 271-3504
Rivers Management and Protection Program 271-1152
NH Office of Energy and Planning 271-2155
NH Municipal Association 224-7447
NH Fish and Game Department 271-3421
NH Department of Resources and Economic Development: 271-2411
Natural Heritage Inventory 271-3623
Division of Forests and Lands 271-2214
Division of Parks and Recreation 271-3255
NH Department of Transportation 271-3734
Northeast States Emergency Consortium, Inc. (NESEC) ..... (781) 224-9876
US Department of Commerce:
National Oceanic and Atmospheric Administration:
National Weather Service; Gray, Maine 207-688-3216

US Department of the Interior:
US Fish and Wildlife Service 225-1411
US Geological Survey 225-4681
US Army Corps of Engineers..... (978) 318-8087
US Department of Agriculture:
Natural Resource Conservation Service 868-7581

2) Mitigation Funding Resources

404 Hazard Mitigation Grant Program (HMGP) ..... NH Homeland Security and Emergency Management
406 Public Assistance and Hazard Mitigation ..... NH Homeland Security and Emergency Management
Community Development Block Grant (CDBG)..... NH HSEM, NH OEP, also refer to RPC
Dam Safety Program ..... NH Department of Environmental Services
Disaster Preparedness Improvement Grant (DPIG) ..... NH Homeland Security and Emergency Management
Emergency Generators Program by NESEC‡ ..... NH Homeland Security and Emergency Management
Emergency Watershed Protection (EWP) Program ..... USDA, Natural Resources Conservation Service
Flood Mitigation Assistance Program (FMAP) ..... NH Homeland Security and Emergency Management
Flood Plain Management Services (FPMS) ..... US Army Corps of Engineers
Mitigation Assistance Planning (MAP) ..... NH Homeland Security and Emergency Management
Mutual Aid for Public Works..... NH Municipal Association
National Flood Insurance Program (NFIP) † ..... NH Office of Energy and Planning
Power of Prevention Grant by NESEC‡ ..... NH Homeland Security and Emergency Management
Project Impact..... NH Homeland Security and Emergency Management
Roadway Repair & Maintenance Program(s) ..... NH Department of Transportation
Section 14 Emergency Stream Bank Erosion & Shoreline Protection..... US Army Corps of Engineers
Section 103 Beach Erosion..... US Army Corps of Engineers
Section 205 Flood Damage Reduction..... US Army Corps of Engineers
Section 208 Snagging and Clearing ..... US Army Corps of Engineers
Shoreland Protection Program..... NH Department of Environmental Services
Various Forest and Lands Program(s)..... NH Department of Resources and Economic Development
Wetlands Programs..... …..NH Department of Environmental Services

‡NESEC – Northeast States Emergency Consortium, Inc. is a 501(c)(3), not-for-profit natural disaster, multi-hazard mitigation and emergency management organization located in Wakefield, Massachusetts. Please, contact NH HSEM for more information.

† Note regarding National Flood Insurance Program (NFIP) and Community Rating System (CRS):
The National Flood Insurance Program has developed suggested floodplain management activities for those communities who wish to more thoroughly manage or reduce the impact of flooding in their jurisdiction. Through use of a rating system (CRS rating), a community's floodplain management efforts can be evaluated for effectiveness. The rating, which indicates an above average floodplain management effort, is then factored into the premium cost for flood insurance policies sold in the community. The higher the rating achieved in that community, the greater the reduction in flood insurance premium costs for local property owners. The NH Office of State Planning can provide additional information regarding participation in the NFIP-CRS Program.

3) Websites

Sponsor	Internet Address	Summary of Contents
Natural Hazards Research Center, U. of Colorado	http://www.colorado.edu/litbase/hazards/	Searchable database of references and links to many disaster-related websites.
Atlantic Hurricane Tracking Data by Year	http://wxp.eas.purdue.edu/hurricane	Hurricane track maps for each year, 1886 – 1996
National Emergency Management Association	http://nemaweb.org	Association of state emergency management directors; list of mitigation projects.
NASA – Goddard Space Flight Center "Disaster Finder:	http://www.gsfc.nasa.gov/ndrd/disaster/	Searchable database of sites that encompass a wide range of natural disasters.
NASA Natural Disaster Reference Database	http://ltpwww.gsfc.nasa.gov/ndrd/main/html	Searchable database of worldwide natural disasters.
U.S. State & Local Gateway	http://www.statelocal.gov/	General information through the federal-state partnership.
National Weather Service	http://nws.noaa.gov/	Central page for National Weather Warnings, updated every 60 seconds.
USGS Real Time Hydrologic Data	http://h20.usgs.gov/public/realtime.html	Provisional hydrological data
Dartmouth Flood Observatory	http://www.dartmouth.edu/artsci/geog/floods/	Observations of flooding situations.
FEMA, National Flood Insurance Program, Community Status Book	http://www.fema.gov/fema/csb.htm	Searchable site for access of Community Status Books
Florida State University Atlantic Hurricane Site	http://www.met.fsu.edu/explores/tropical.html	Tracking and NWS warnings for Atlantic Hurricanes and other links

Sponsor	Internet Address	Summary of Contents
National Lightning Safety Institute	http://lightningsafety.com/	Information and listing of appropriate publications regarding lightning safety.
NASA Optical Transient Detector	http://www.ghcc.msfc.nasa.gov/otd.html	Space-based sensor of lightning strikes
LLNL Geologic & Atmospheric Hazards	http://wwwep.es.llnl.gov/wwwep/ghp.html	General hazard information developed for the Dept. of Energy.
The Tornado Project Online	http://www.tornadoroject.com/	Information on tornadoes, including details of recent impacts.
National Severe Storms Laboratory	http://www.nssl.uoknor.edu/	Information about and tracking of severe storms.
Independent Insurance Agents of America IIAA Natural Disaster Risk Map	http://www.iiaa.iix.com/ndcmap.htm	A multi-disaster risk map.
Earth Satellite Corporation	http://www.earthsat.com/	Flood risk maps searchable by state.
USDA Forest Service Web	http://www.fs.fed.us/land	Information on forest fires and land management.

APPENDIX B:

Hazard Mitigation Assistance Grants

APPENDIX B:
HAZARD MITIGATION ASSISTANCE GRANTS

Hazard Mitigation Assistance (HMA) grant programs of the Department of Homeland Security (DHS) Federal Emergency Management Agency (FEMA), presents a critical opportunity to protect individuals and property from natural hazards while simultaneously reducing reliance on Federal disaster funds. The HMA programs provide pre-disaster mitigation grants annually to local communities. The statutory origins of the programs differ, but all share the common goal of reducing the loss of life and property due to natural hazards. Eligible applicants include State-level agencies including State institutions; Federally recognized Indian Tribal governments; Public or Tribal colleges or universities (PDM only); and Local jurisdictions.

All sub-applicants for Flood Mitigation Assistance Program (FMA) must currently be participating in the National Flood Insurance Program (NFIP) to be eligible to apply for this grant. Hazard Mitigation Grant Program (HMGP) and Pre-Disaster Mitigation (PDM) mitigation project sub-applications for projects sited within a special flood hazard area are eligible only if the jurisdiction in which the project is located is participating in the NFIP. There is no NFIP participation requirement for HMGP and PDM project sub-applications located outside the special flood hazard area. Properties included in a project sub-application for FMA funding must be NFIP-insured at the time of the application submittal. Flood insurance must be maintained at least through completion of the mitigation activity.

The HMA grant assistance includes three programs:

1. *Hazard Mitigation Grant Program (HMGP*): This program assists in the implementation of long-term hazard mitigation measures following a major disaster.

2. *The Pre-Disaster Mitigation (PDM) program*: This provides funds 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 awarded on a competitive basis.

3. *The Flood Mitigation Assistance (FMA) program*: This provides funds so that cost-effective measures can be taken to reduce or eliminate the long-term risk of flood damage to buildings, manufactured homes, and other structures insured under the NFIP. The long-term goal of FMA is to reduce or eliminate claims under the NFIP through mitigation activities.

Potential eligible projects are shown in the following table by grant program. For further information on these programs visit the following FEMA websites:

HMGP - http://www.fema.gov/hazard-mitigation-grant-program

PDM – www.fema.gov/government/grant/pdm/

FMA – www.fema.gov/government/grant/fma

Mitigation Project:	HMPG	PDM	FMA
1. Mitigation Projects	**X**	**X**	**X**
Property Acquisition and Structure Demolition	**X**	**X**	**X**
Property Acquisition and Structure Relocation	**X**	**X**	**X**
Structure Elevation	**X**	**X**	**X**
Mitigation Reconstruction	**X**	**X**	**X**
Dry Floodproofing of Historic Residential Structures	**X**	**X**	**X**
Dry Floodproofing of Non-residential Structures	**X**	**X**	**X**
Generators	**X**	**X**	
Localized Flood Reduction Projects	**X**	**X**	**X**
Non-Localized Flood Reduction Projects	**X**	**X**	
Structural Retrofitting of Existing Buildings	**X**	**X**	**X**
Non-structural Retrofitting of Existing Buildings and Facilities	**X**	**X**	**X**
Safe Room Construction	**X**	**X**	
Wind Retrofit for One- and Two-Family Residences	**X**	**X**	
Infrastructure Retrofit	**X**	**X**	**X**
Soil Stabilization	**X**	**X**	**X**
Wildfire Mitigation	**X**	**X**	
Post-Disaster Code Enforcement	**X**		
Advance Assistance	**X**		
5% Initiative Projects	**X**		
Misc. Other	**X**	**X**	**X**
2. Hazard Mitigation Planning	**X**	**X**	**X**
Planning Related Activities	**X**		
3. Technical Assistance			**X**
4. Management Costs	**X**	**X**	**X**

OTHER HAZARD MITIGATION ASSISTANCE FUNDING

Environmental Protection Agency

The EPA makes available funds for water management and wetlands protection programs that help mitigate against future costs associated with hazard damage.

Mitigation Funding Sources Program	Details	Notes
Clean Water Act Section 319 Grants	Grants for water source management programs including technical assistance, financial assistance, education, training, technology transfer, demonstration projects, and regulation. http://www.epa.gov/OWOW/NPS/cwact.html	Funds are provided only to designated state and tribal agencies
Clean Water State Revolving Funds	State grants to capitalize loan funds. States make loans to communities, individuals, and others for high-priority water-quality activities. http://www.epa.gov/owow/wetlands/initiative/srf.html	States and Puerto Rico
Wetland Program Development Grants	Funds for projects that promote research, investigations, experiments, training, demonstrations, surveys, and studies relating to the causes, effects, extent, prevention, reduction, and elimination of water pollution. http://www.epa.gov/owow/wetlands/initiative/#financial	See website

National Oceanic and Atmosphere Administration (NOAA)

NOAA is the major source for mitigation funding related to coastal zone management and other coastal protection projects.

Mitigation Funding Sources Program	Details	Notes
Coastal Services Center Cooperative Agreements	Funds for coastal wetlands management and protection, natural hazards management, public access improvement, reduction of marine debris, special area management planning, and ocean resource planning. http://www.csc.noaa.gov/funding/	May only be used to implement and enhance the states' approved Coastal Zone Management programs
Coastal Services Center Grant Opportunities	Formula and program enhancement grants for implementing and enhancing Coastal Zone Management programs that have been approved by the Secretary of Commerce. http://www.csc.noaa.gov/funding/	Formula grants require non-federal match
Coastal Zone Management Program	The Office of Ocean and Coastal Resource Management (OCRM) provides federal funding and technical assistance to better manage our coastal resources. http://coastalmanagement.noaa.gov/funding/welcome.html	Funding is reserved for the nation's 34 state and territory Coastal Zone Management Programs
Marine and Coastal Habitat Restoration	Funding for habitat restoration, including wetland restoration and dam removal. http://www.nmfs.noaa.gov/habitat/recovery/	Funding available for state, local and tribal governments and for- and non-profit organizations.

Floodplain, Wetland and Watershed Protection Programs

USACE and the U.S. Fish and Wildlife Service offer funding and technical support for programs designed to protect floodplains, wetlands, and watersheds.

Funding and Technical Assistance for Wetlands and Floodplains Program	Details	Notes
USACE Planning Assistance to States (PAS)	Fund plans for the development and conservation of water resources, dam safety, flood damage reduction and floodplain management. http://www.lre.usace.army.mil/planning/assist.html	50 percent non-federal match
USACE Flood Plain Management Services (FPMS)	Technical support for effective floodplain management. http://www.lrl.usace.army.mil/p3md-o/article.asp?id=9&MyCategory=126	See website
USACE Environmental Laboratory	Guidance for implementing environmental programs such as ecosystem restoration and reuse of dredged materials. http://el.erdc.usace.army.mil/index.cfm	See website
U.S. Fish & Wildlife Service Coastal Wetlands Conservation Grant Program	Matching grants to states for acquisition, restoration, management or enhancement of coastal wetlands. http://ecos.fws.gov/coastal_grants/viewContent.do?viewPage=home	States only. 50 percent federal share
U.S. Fish & Wildlife Service Partners for Fish and Wildlife Program	Program that provides financial and technical assistance to private landowners interested in restoring degraded wildlife habitat. http://ecos.fws.gov/partners/viewContent.do?viewPage=home	Funding for volunteer-based programs

Housing and Urban Development

The Community Development Block Grants (CDBG) administered by HUD can be used to fund hazard mitigation projects.

Mitigation Funding Sources Program	Details	Notes
Community Development Block Grants (CDBG)	Grants to develop viable communities, principally for low and moderate income persons. CDBG funds available through Disaster Recovery Initiative. http://www.hud.gov/offices/cpd/communitydevelopment/programs/	Disaster funds contingent upon Presidential disaster declaration
Disaster Recovery Assistance	Disaster relief and recovery assistance in the form of special mortgage financing for rehabilitation of impacted homes. http://www.hud.gov/offices/cpd/communitydevelopment/programs/dri/assistance.cfm	Individuals
Neighborhood Stabilization Program	Funding for the purchase and rehabilitation of foreclosed and vacant property in order to renew neighborhoods devastated by the economic crisis. http://www.hud.gov/offices/cpd/communitydevelopment/programs/neighborhoodspg/	State and local governments and non-profits

Bureau of Land Management

The Bureau of Land Management (BLM) has two technical assistance programs focused on fire mitigation strategies at the community level.

Mitigation Funding Sources Program	Details	Notes
Community Assistance and Protection Program	Focuses on mitigation/prevention, education, and outreach. National Fire Prevention and Education teams are sent to areas across the country at-risk for wildland fire to work with local residents. http://www.blm.gov/nifc/st/en/prog/fire/community_assistance.html	See website
Firewise Communities Program	Effort to involve homeowners, community leaders, planners, developers, and others in the effort to protect people, property, and natural resources from the risk of wildland fire before a fire starts. http://www.firewise.org/	See website

U.S. Department of Agriculture

There are multiple mitigation funding and technical assistance opportunities available from the USDA and its various sub-agencies: the Farm Service Agency, Forest Service, and Natural Resources Conservation Service.

Mitigation Funding Sources Agency Program	Details	Notes
USDA Smith-Lever Special Needs Funding	Grants to State Extension Services at 1862 Land-Grant Institutions to support education-based approaches to addressing emergency preparedness and disasters. http://www.csrees.usda.gov/funding/rfas/smith_lever.html	Population under 20,000
USDA Community Facilities Guaranteed Loan Program	This program provides an incentive for commercial lending that will develop essential community facilities, such as fire stations, police stations, and other public buildings. http://www.rurdev.usda.gov/rhs/cf/cp.htm	Population under 20,000
USDA Community Facilities Direct Loans	Loans for essential community facilities. http://www.rurdev.usda.gov/rhs/cf/cp.htm	Population of less than 20,000
USDA Community Facilities Direct Grants	Grants to develop essential community facilities. http://www.rurdev.usda.gov/rhs/cf/cp.htm	Population of less than 20,000
USDA Farm Service Agency Disaster Assistance Programs	Emergency funding and technical assistance for farmers and ranchers to rehabilitate farmland and livestock damaged by natural disasters. http://www.fsa.usda.gov/	Farmers and ranchers
USDA Forest Service National Fire Plan	Funding for organizing, training, and equipping fire districts through Volunteer, State and Rural Fire Assistance programs. Technical assistance for fire related mitigation. http://www.forestsandrangelands.gov/	See website
USDA Forest Service Economic Action Program	Funds for preparation of Fire Safe plans to reduce fire hazards and utilize byproducts of fuels management activities in a value-added fashion. http://www.fs.fed.us/spf/coop/programs/eap/	80% of total cost of project may be covered
USDA Natural Resources Conservation Service Emergency Watershed Protection Support	Funds for implementing emergency measures in watersheds in order to relieve imminent hazards to life and property created by a natural disaster. http://www.nrcs.usda.gov/programs/ewp/	See website

Mitigation Funding Sources Agency Program	Details	Notes
Services		
USDA Natural Resources Conservation Service Watershed Protection and Flood Prevention	Funds for soil conservation; flood prevention; conservation, development, utilization and disposal of water; and conservation and proper utilization of land. http://www.nrcs.usda.gov/programs/watershed/index.html	See website

Health and Economic Agencies

Alternative mitigation programs can be found through health and economic agencies that provide loans and grants aimed primarily at disaster relief.

Federal Loans and Grants for Disaster Relief Agency Program	Details	Notes
Department of Health & Human Services Disaster Assistance for State Units on Aging (SUAs)	Provide disaster relief funds to those SUAs and tribal organizations who are currently receiving a grant under Title VI of the Older Americans Act. http://www.aoa.gov/doingbus/fundopp/fundopp.asp	Areas designated in a Disaster Declaration issued by the President
Economic Development Administration (EDA) Economic Development Administration Investment Programs	Grants that support public works, economic adjustment assistance, and planning. Certain funds allocated for locations recently hit by major disasters. http://www.eda.gov/AboutEDA/Programs.xml	The maximum investment rate shall not exceed 50 percent of the project cost
U.S. Small Business Administration Small Business Administration Loan Program	Low-interest, fixed rate loans to small businesses for the purpose of implementing mitigation measures. Also available for disaster damaged property. http://www.sba.gov/services/financialassistance/index.html	Must meet SBA approved credit rating

Research Agencies

The United States Geological Survey (USGS) and the National Science Foundation (NSF) provide grant money for hazard mitigation-related research efforts.

Hazard Mitigation Research Grants Agency Program	Details	Notes
National Science Foundation (NSF) Decision, Risk, and Management Sciences Program (DRMS)	Grants for small-scale, exploratory, high-risk research having a severe urgency with regard to natural or anthropogenic disasters and similar unanticipated events. http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=5423&org=SES	See website
U.S. Geological Survey (USGS) National Earthquake Hazards Reduction Program	The purpose of NEHRP is to provide products for earthquake loss reduction to the public and private sectors by carrying out research on earthquake occurrence and effects. http://www.usgs.gov/contracts/nehrp/	Community with a population under 20,000

APPENDIX C:

Meeting Documentation

Vickie Davis

From: Vickie Davis
Sent: Thursday, July 14, 2016 1:36 PM
To: Stephen Halleran; Town of Croydon (croydon@myfairpoint.net); Wayne Conroy; Rick Bergeron (firechief@claremontnh.com)
Subject: Cornish Hazard Mitigation Plan Meeting - July 22

Greetings,

This is to let you know that the Town of Cornish will be holding a work meeting to update their hazard mitigation plan. This is done every five years, and it includes natural hazards such as flooding and erosion which often cross municipal lines. If you would like to attend, they will meet on Friday, July 22 at 3:00 pm in the town offices. If you are unable to attend, you are welcome to submit written comments or request a draft or final copy of the plan.

If you have any questions, please let me know.

Vickie

Victoria Davis
Upper Valley Lake Sunapee Regional Planning Commission
10 Water Street, Suite 225
Lebanon, NH 03766
603-448-1680
603-448-0170 fax

Visit our Household Hazardous Waste web site at http://hhw.uvlsrpc.org
Visit our Waste web site at http://waste.uvlsrpc.org
Visit the Healthy Home Facebook Page at www.Facebook.com/HealthyHomeProgram

Join our Mailing List

Please consider the environment before printing this e-mail.

PLEASE SIGN IN –Town of Cornish Hazardous Mitigation Plan Update Meeting – July 22, 2016

	Name (please print clearly)	Title	Mailing Address	Telephone	E-mail
1	Scott Baker	Selectboard	449 Parsonage Rd Cornish NH 03745	542-2630	bkRcarcrazy@gmail.com
2	JOHN DRYE	CAPT., FIRE DEPT	PO BOX 67 CORNISH FLAT, NH 03746	804 6084	JWDRYE@GMAIL.COM
3	Dale H. Lawrence	Selectman	PO Box 87 03746 Cornish Flat NH	675-2002	dalehlawrence@yahoo.com
4	Robert Rice	F.D Chief	PO Box 268 Cornish Flat N.H	469-3282	—
5	JOHN HAMMOND	SELECTMAN	1356 NH RT 12A CORNISH, N.H. 03745	558-0006	Johnshammond@COMCAST.NET
6	Mary Curtis	Adm Asst	488 Town House Rd Cornish NH 03745	675-5611	townbos@comcast.net
7	WAYNE GRAY	Road agent	1214 RT12A Cornish NH 03745	675-5714	CornishRoads@GMail.com
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Cornish New Hampshire

The Official Town Web Site

Home: Welcome to Cornish, NH

The 67th annual CORNISH FAIR will be held August 19, 20 & 21. Please visit the Cornish Fair Website for schedules, exhibit information and more!

ooOoo

Cornish News & Announcements

Cornish Town Office

The Town of Cornish 249th Annual Report is now online! Please click here to view.

7.25.2016 **Hazard Mitigation Plan Update:** The **Selectboard** will be meeting on **August 12, 2016,** at **3pm** upstairs in the **Town Office** to update the Town of Cornish Hazard Mitigation Plan. This required update will allow the town to apply for Hazard Mitigation Grants. The public is welcomed and encouraged to attend.

6.20.2016 The **Selectboard Office** will close at noon on Tuesday, June 28 and will reopen on Tuesday, July 5th at 8:30am. The Selectboard will NOT be meeting on Friday July 1st or Monday July 4th.

4.27.2016 **Dog Licenses** are due **April 30**. Licenses may be purchased from the Town Clerk. Fees may be mailed to the Town Clerk with a self addressed, stamped ($0.70 postage) envelope included.
neutered/spayed: $6.50
unaltered: $9.00
puppy: $6.50
senior (owner over 65): $2.00
Dogs must have a valid rabies certificate in order to be licensed.

—more→

Cornish New Hampshire

The Official Town Web Site

Home

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ooOoo

Cornish News & Announcements

Cornish Town Office

The **New Hampshire State Primaries** will be held on **Tuesday, September 13, 2016.** Polls will be open from **8am-7pm.** Please visit the Election Information page for more information.

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8.5.2016 The **NH Department of Transportation** will hold a combined **Public Officials/Public Information** meeting at the **Cornish Town Offices** on **Thursday, August 11, 2016,** at **6 pm.** NHDOT will discuss the reconstruction reconstruction of Saint Gaudens Road from NH Route 12A to the Saint-Gaudens National Historic Site.

8.4.2016 **Road closed** to thru traffic on **School Street, Thursday, August 4th** for paving. **Road closed** to thru traffic on **Cornish Stage Road, Friday, August 5th** for paving, weather permitting. – Cornish Highway Department

7.25.2016 **Hazard Mitigation Plan Update:** The **Selectboard** will be meeting on **August 12, 2016,** at **3pm** upstairs in the **Town Office** to update the Town of Cornish Hazard Mitigation Plan. This required update will allow the town to apply for Hazard Mitigation Grants. The public is welcomed and encouraged to attend.

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PLEASE SIGN IN –Town of Cornish Hazardous Mitigation Plan Update Meeting – August 12, 2016

	Name (please print clearly)	Title	Mailing Address	Telephone	E-mail
1	Mary Curtis	Adm Asst			
2	Scott Baker	Selectboard			
3	Wayne Gray	Road agent			
4	Dale Lawrence	selectman Pres Cornish Rescue Squad			
5	John Hammond	Selectman			
6	Meghan Betts	UVLSRPC			
7	Shawna-Leigh Morton	Field Rep - HSEM			
8	Robert Rice	Chief Cornish FD			
9	Victoria Davis	UVLSRPC			
10					
11					
12					
13					
14					

Public Meeting Notice

For Work Session on Cornish Hazard Mitigation Plan Update

When: Friday, July 22, 2016 from 3:00 – 5:00 pm

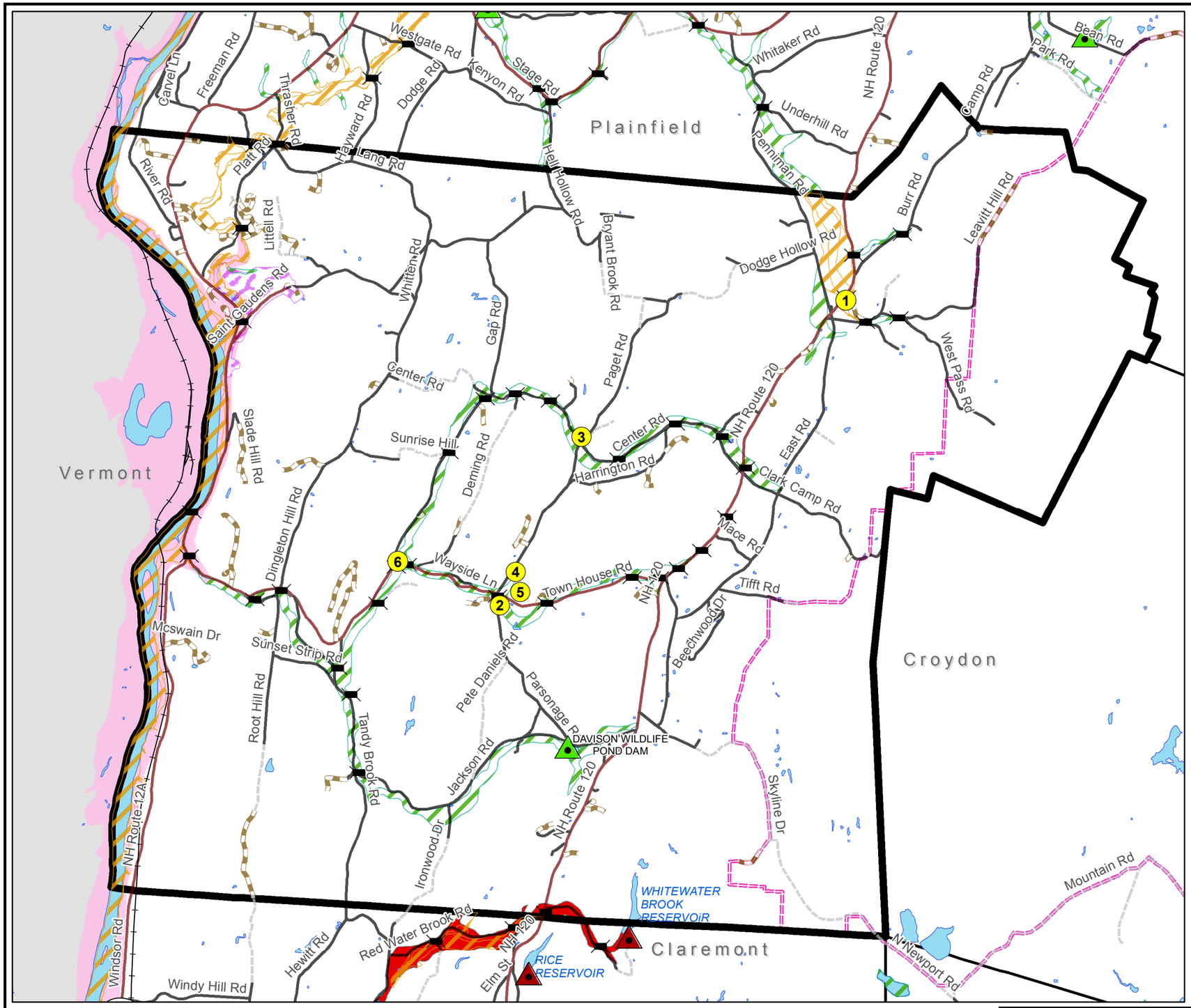
Where: Cornish Town Office

Why: Update plan for hazard mitigation from natural hazards (flooding, hurricane…) and human-made hazards (hazardous waste spills…). This is a five-year plan that is required by the State of NH to obtain hazard mitigation grants.

APPENDIX D:

Maps of Hazard Areas and Critical Facilities

Hazard Areas & Critical Facilities Map
Cornish, NH



Legend

- Critical Facilities

Dams by Hazard Class

- High hazard potential
- Significant hazard potential
- Low hazard potential
- Dam Inundation Areas

Flood Zones

- A
- AE
- Waterbodies

Roads

- State
- Local
- Not Maintained
- Private
- Bridges
- Railroad
- Saint-Gaudens National Historic Site
- Corbin Park

ID	Critical Facility
1	Cornish Flat Fire Station
2	Fire Station/Police Department (EOC)
3	Rescue Station
4	Town Garage
5	Elementary School (Emergency Shelter)
6	Town Office Building

N W E S

0 0.275 0.55 1.1 1.65 2.2 Miles

MAP PREPARED BY UVLSRPC FOR CORNISH HAZARD MITIGATION PLAN JUNE 2016.

UPPER VALLEY LAKE SUNAPEE REGIONAL PLANNING COMMISSION

Data Source: Dam hazard class and inundation data from NH DES Dam Bureau. FEMA floodplain data. Critical Facilities data developed by UVLSRPC with the Cornish Hazard Mitigation Committee. Roads and Bridges data NH DOT 2016.

Map created May 2016 by UVLSRPC. THIS MAP IS INTENDED FOR PLANNING PURPOSES ONLY.

APPENDIX E:

Fluvial Erosion

Town of Cornish, NH

Fluvial Erosion Hazard Data

Addendum to Hazard Mitigation Plan – September 2015

Introduction

During the summer of 2013 the NH Department of Environmental Services hired a contractor to assess the conditions and attributes of many reaches of river and stream throughout the Sugar River Watershed. The results of that data provided the towns with information regarding vulnerabilities to erosion, or Fluvial Erosion Hazard (FEH) Sensitivity Rating, and the conditions that contribute to the rating. In Cornish, there was one reach of Redwater Brook assessed. The reach is approximately 2,000 feet long and extends from the Claremont town line east to where it again meets the Claremont town line.

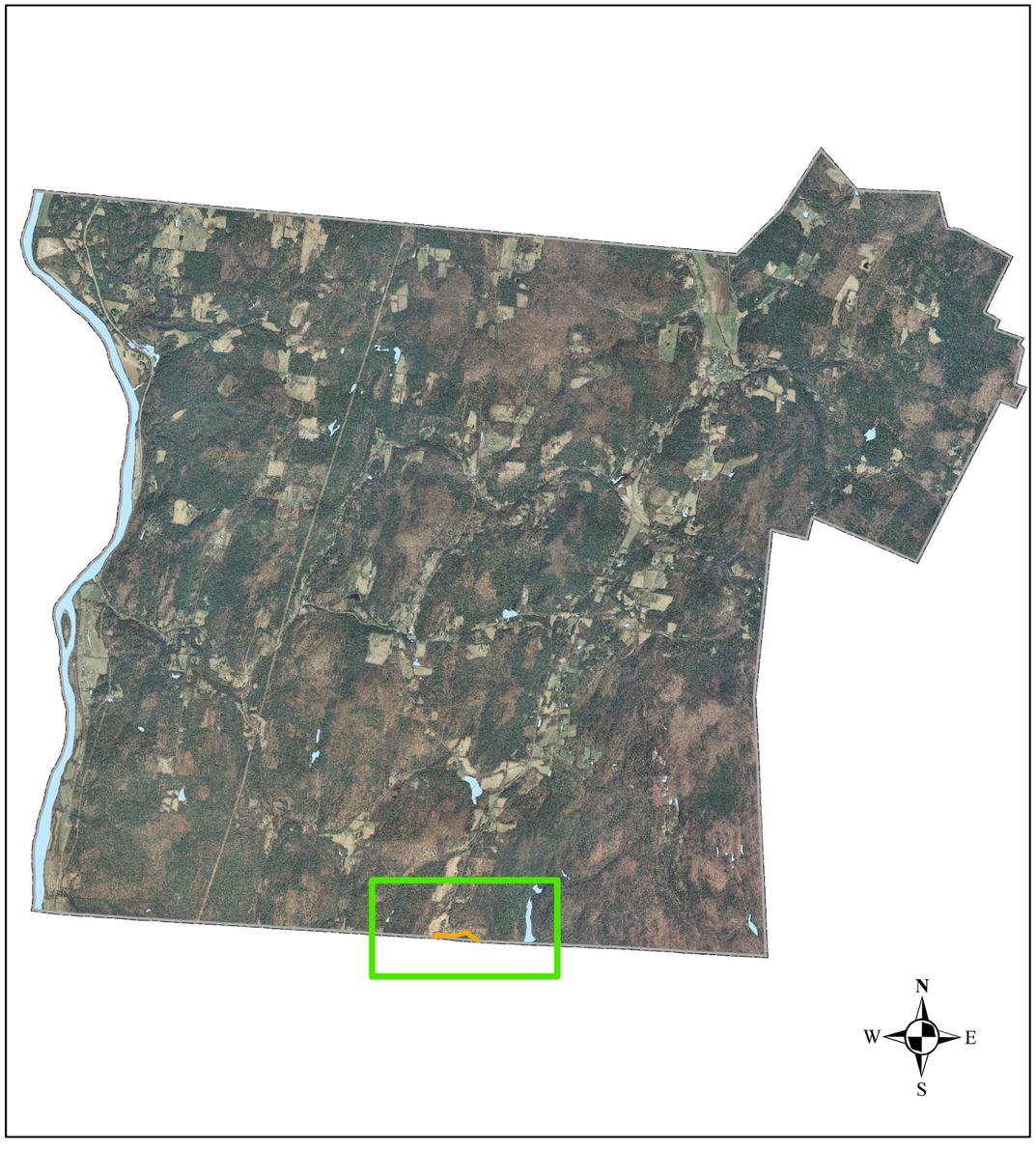
Results

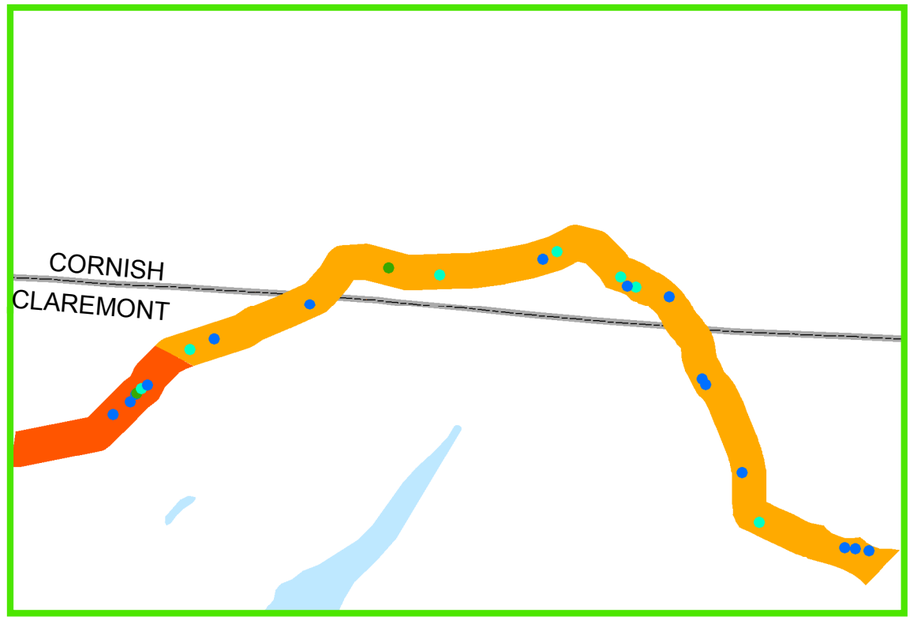
The reach of Redwater Brook reach received a FEH rating of "high". Within the reach, five of the points where data was collected were noted for migration of the flood chute. Other factors that contributed to the high rating were a steep riffle and storm water input from the road ditch. Together these characteristics are used to assess the sensitivity of the Fluvial Erosion Hazard zones, and the sensitivity for this reach was classified as high. The attached map below depicts the study reach and the factors that were associated with the reach condition.

Mitigation Actions

Though the town of Cornish understands the value in this data and sharing with the public, the town did not feel that it had any authority in undertaking mitigation actions along the stretch of Redwater Brook that was assessed. The reach bends slighting to cross into Cornish from Claremont for approximately 2,000 feet and is bordered entirely by private land owners. The town noted that having the baseline data was important so that in the future landowners can use the data to assess changes to the stream and flow characteristics.

Fluvial Geomorphic Study - Town of Cornish, Sugar River Watershed (HUC 10)





High FEH Sensitivity Rating	
Impact	**Subimpact**
Bridge or Culvert	Bridge
Migration	Flood Chute
Migration	Flood Chute
Migration	Flood Chute
Migration	Flood Chute
Migration	Flood Chute
Cross Section Location	NOT Representative
Stormwater Input	Road Ditch
Steep Riffle or Head Cut	Steep Riffle

Map Features

- Community Facilties
- Data Collection Sites

Subimpact

- Bridge
- Culvert
- Migration

FEMA 100 Year Flood Zone

- Zone A
- Zone AE

FEH Sensitivity Rating

- Extreme
- Very High
- High
- Moderate
- Very Low

Data Sources: Data drawn from info provided by the NH DES as results from the Sugar River Watershed fluvial geomorphic study. Other data was provided by: NH GRANIT, the state's GIS clearinghouse, and represents the best available data. Critical Facilities developed by UVLSRPC with the Hazard Mitigation Committe.

Data Source Disclaimer: Digital data in NH GRANIT represent the efforts of the contributing agencies to record information from the cited source materials. Complex Systems Research Center (CSRC), under contract to the Office of Energy and Planning (OEP), and in consultation with cooperating agencies, maintains a continuing program to identify and correct errors in these data. OEP, CSRC, and the cooperating agencies make no claim as to the validity or reliability or to any implied uses of these data.

Fluvial Erosion Hazard Zone Sensitivity Rating
This inforamtion is based on data collected for the Sugar River Watershed Area by the NH Geological Survey & the NH Department of Environmental Services. The Fluvial Erosion Hazard Zone (FEH), or meander belt, is provided for river reaches that have been assessed for this study. Sensitivity ratings are based on 6 categories of condition, ranging from Very Low to Extreme. Sensitivity is defined as the potential of a river to respond to flood events, through bank erosion and lateral migration (across the floodplain) processes.

Culvert Compatability
This data was rated and scored based on how the culvert will influence specific features that impact the compatability of a culvert with river/stream geomorphic processes, in general, the information provides guidance on what each rank tells us about the long-term compatability of a culvert with flow and sediment transport processes. The tables on each map indicate culvert data for the points in the selected area.

UVLSRPC NHDES

Map created by UVLSRPC January 2015

APPENDIX F:

FEMA Approvals and Town Adoption of Hazard Mitigation Plan

Town of Cornish, New Hampshire
Board of Selectmen
A Resolution Adopting the Cornish Hazard Mitigation Plan Update 2016

WHEREAS, the Town of Cornish received assistance from the Upper Valley Lake Sunapee Regional Planning Commission through funding from the NH Homeland Security and Emergency Management to prepare a hazard mitigation updated plan; and WHEREAS, several planning meetings to develop the hazard mitigation plan update were held in XXXXX 2016 and then presented to the Board of Selectmen for review and discussion on _____, 2016; and WHEREAS, the Cornish Hazard Mitigation Plan Update 2016 contains several potential future projects to mitigate the hazard damage in the Town of Cornish; and WHEREAS, the Board of Selectmen held a public meeting on _____, 2016 to formally approve and adopt the Cornish Hazard Mitigation Plan Update 2016.

RESOLVED by the Town of Cornish Board of Selectmen:

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

IN WITNESS WHEREOF, the undersigned has affixed his/her signature and the corporate seal of the Town this ___ day of _____, 2016: Town of Cornish Board of Selectmen

_____
John Hammond, Chair

_____
Scott Baker

_____
Dale Lawrence

_____
Attest to Signatures