HAZARD MITIGATION PLAN

Town of Hillsborough
New Hampshire

Downtown Hillsborough, Flood of 1938

Adopted by the Hillsborough Board of Selectmen
March 30, 2005

HAZARD MITIGATION PLAN

Town of Hillsborough, NH

March 30, 2005

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CERTIFICATE OF ADOPTION

Town of Hillsborough, New Hampshire
Board of Selectmen
A Resolution Adopting the Hillsborough Hazard Mitigation Plan
March 2005

WHEREAS, the Town of Hillsborough received funding, administered by the Central NH Regional Planning Commission, from the NH Bureau of Emergency Management to prepare the Hillsborough Hazard Mitigation Plan; and

WHEREAS, several public planning meetings were held between January and June 2004 regarding the development and review of the Hillsborough Hazard Mitigation Plan; and

WHEREAS, the Hillsborough Hazard Mitigation Plan contains several potential future projects to mitigate hazard damage in the Town of Hillsborough; and

WHEREAS, a duly-noticed public hearing was held by the Hillsborough Board of Selectmen on March 30, 2005 to formally approve and adopt the Hillsborough Hazard Mitigation Plan.

NOW, THEREFORE BE IT RESOLVED that the Hillsborough Board of Selectmen adopts the Hillsborough Hazard Mitigation Plan.

ADOPTED AND SIGNED this 30TH day of March 2005.

Robert I. Buker, Chair
Hillsborough Board of Selectmen

Laura D. Simoes, Selectman

ATTEST

Deborah McDonald, Town Clerk

Selectman

ACKNOWLEDGEMENTS

The Hillsborough Hazard Mitigation Committee was comprised of the following individuals who met from January through June 2004 to develop this Plan:

- James Coffey, Business Administrator
- Kenny Stafford Jr., Fire Department
- William Goss, Highway Department
- Matt Taylor, Planning and Code Enforcement
- Steve Solomon, Fire Department
- Bob Stafford, Police Department

The following Central NH Regional Planning Commission staff contributed to the development of the Hazard Mitigation Plan:

- Stephanie Alexander, Principal Planner
- Amanda Arnold, Project Planner
- Stephen Lopez, GIS Technician
- Rebecca Voegele, Regional Planner

Other individuals contributed to the development of this Plan:

- Eleanor Vaillancourt
- Eleda Stafford

CHAPTER 1. INTRODUCTION

Background

The Hazard Mitigation Plan for Hillsborough is intended to provide information in the event of a natural disaster, to raise awareness of the vulnerability of facilities and structures of Hillsborough to such disasters, and to provide measures to help offset the damages of a future disaster.

In 2000, the President enacted the Disaster Mitigation Act which requires states and municipalities to have local natural hazard mitigation plans in place in order to be eligible for disaster funding programs such as Community Development Block Grant, Hazard Mitigation Grant Program, Flood Mitigation Assistance Program, Mitigation Assistance Program, and Project Impact. NH is awarded funds based upon the completeness of its State Plan and upon the number of local plans in place.

As a result of the DMA, funding is being provided to state offices of emergency management to produce local hazard mitigation plans. Now in its third round of funding, the NH Bureau of Emergency Management provided funding to the nine regional planning commissions in NH in 2004 to work with three municipalities in their respective regions to produce such a plan. The Town of Hillsborough approached the Central NH Regional Planning in summer 2003, and both parties agreed to jointly complete a Natural Hazard Mitigation Plan in winter 2004. Fully federally funded, there is no cost to the Town to produce this Plan.

A Local Hazard Advisory Committee was established which guided the development of the Plan. The Town Fire Department, Police Department, Planning Director, Road Agent, and Town Administrator were invited to participate. Other interested residents were also invited.

Goals

The overall goal of this Plan is to reduce future life and property losses caused by natural hazard events before they occur.

The general goals of the Hazard Mitigation Plan for Hillsborough are:

- To identify natural hazards that may impact the Town;
  (such as floods, hurricanes, Nor'easters, earthquakes, wildfire, and drought)

- To identify risks from these hazards; and
  (such as where the events are likely to occur and what the damage might be)

- To identify resources or techniques available to help lessen the impact of hazard events.
  (such as critical facilities protection and ordinance / regulation revision)

A number of objectives have been stated, similar to the State of NH's hazard mitigation goals, which further specify the aims of Hillsborough's Hazard Mitigation Plan.

Methodology

The Hazard Mitigation Committee met on January 18, February 19, March 11, April 8, April 29, May 20, and November 9, 2004. For each meeting, CNHRPC staff created agendas and meeting summaries for the Hazard Mitigation Committee. The agendas, attendance sheets, and meeting summaries are included in the **APPENDIX** of the Plan.

News articles about the Hazard Mitigation Plan and its process were posted in the Villager on February 13. Colorful flyers were posted at the Town Offices on January 28. Copies of publicity for the Plan are included in the **APPENDIX**.

In between meetings, CNHRPC staff interviewed the local historians about what hazard events occurred in Hillsborough and conducted research on the internet and at the State Library for information on hazards specific to Hillsborough. CNHRPC staff collected information on the critical and at-risk facilities in Town, most of which were located by global positioning system, and produced the associated four maps for this Plan. CNHRPC staff researched structures within the floodplain through Town Office and FEMA sources and wrote this Hazard Mitigation Plan.

On June 14, the Committee made a final draft of this Plan available to Town Departments for review and comment. Included with the draft was a sign-off sheet, which was signed by Department heads to acknowledge that they have read and understood the document. The sign-off sheets are included in the **APPENDIX**.

On June 22, the Committee held a public input meeting. The purpose of the meeting was to obtain review and comment from the public for the Plan. The meeting was advertised on the town web site and flyers were posted at Town Hall and the Post Office. Copies of this Plan were made available for review at the Town Hall and the library. Copies of publicity for the Plan and flyers are included in the **APPENDIX**.

On July 9, copies of this Plan were submitted to the NH Bureau of Emergency Management and FEMA for FEMA's approval of the Hillsborough Hazard Mitigation Plan. Several rounds of revisions took place through February 2005. The plan was submitted for the final time to FEMA and on February 17, 2005, Hillsborough received a letter of conditional approval, contingent up on adoption by the local governing body.

On March 30, 2005 the Hillsborough Board of Selectmen held a duly-noticed public hearing to adopt the Hazard Mitigation Plan for Hillsborough. Copies were made available at the Town Hall and library for public review. Copies of the public notice and flyers are included in the **APPENDIX**.

CHAPTER 2. HAZARD IDENTIFICATION

The State of New Hampshire's Natural Hazard Mitigation Plan recommends that municipalities examine the following natural hazards. The Hillsborough Hazard Mitigation Plan incorporates the majority of the natural hazards listed within the State Plan; hazards such as tsunamis and phragmites australis were not deemed applicable to Hillsborough.

Definitions of Hazards
The following are definitions used within the State of New Hampshire Natural Hazard Mitigation Plan.

Flooding
Floods are defined as a temporary overflow of water onto lands that are not normally covered by water. Flooding results from the overflow of major rivers and tributaries, storm surges, and/or inadequate local drainage. Floods cause loss of life, property damage, crop/livestock damage, and water supply contamination. Floods can also disrupt travel routes on roads and bridges.

Inland floods commonly occur in the spring due to the increase in rainfall and melting of snow; however, floods can occur at any time of year. A sudden thaw in the winter or a major downpour in the summer can cause flooding because there is suddenly a lot of water in one place with nowhere to go.

Hurricanes
A hurricane is a tropical cyclone in which winds reach speeds of 74 miles per hour or more and blow in a large spiral around a relatively calm center. Flooding is often caused from the coastal storm surge of the ocean and torrential rains, both of which accompany the storm. These floods often result in loss of lives and property.

100-year Floodplain Events
Floodplains are located in lowlands near rivers, and flood on a regular basis. The term 100-year flood does not mean that a flood will occur once every 100 years. It is a statement of probability that scientists and engineers use to describe how one flood compares to others that are likely to occur. It is more accurate to use the phrase "1% annual chance flood". What it means is that there is a 1% chance of a flood of that size happening in any year.

Erosion and Mudslides
Erosion is the process of wind and water wearing away soil. Typically in New Hampshire, the land along rivers is relatively heavily developed. Mudslides may be formed when a layer of soil atop a slope becomes saturated by significant precipitation and slides along a more cohesive layer of soil or rock.

Erosion and mudslides become significant threats to development during floods. Floods speed up the process of erosion and increase the risk of mudslides.

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.

River Ice Jams
Rising waters in early spring often break ice into chunks, which float downstream and pile up, causing flooding. Small rivers and streams pose special flooding risks because they are easily blocked by jams. Ice in riverbeds and against structures presents significant flooding threats to bridges, roads, and the surrounding lands.

Dam Breach and Failure
Dam failure results in rapid loss of water that is normally held by the dam. These kinds of floods are extremely dangerous and pose a significant threat to both life and property.

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.

Wind
Significantly high winds occur especially during hurricanes, tornadoes, 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 high wind occurrences.

Hurricanes
A hurricane is a tropical cyclone in which winds reach speeds of 74 miles per hour or more and blow in a large spiral around a relatively calm center. The eye of the storm is usually 20-30 miles wide and may extend over 400 miles. High winds are a primary cause of hurricane-inflicted loss of life and property damage.

Tornadoes
A tornado is a violent windstorm characterized by a twisting, funnel shaped cloud. They develop when cool air overrides a layer of warm air, causing the warm air to rise rapidly. The atmospheric conditions required for the formation of a tornado include great thermal instability, high humidity, and the convergence of warm, moist air at low levels with cooler, drier air aloft. Most tornadoes remain suspended in the atmosphere, but when they touch down they become a force of destruction.

Tornadoes produce the most violent winds on earth, at speeds of 280 mph or more. In addition, tornadoes can travel at a forward speed of up to 70 mph. Damage paths can be in excess of one mile wide and 50 miles long. Violent winds and debris slamming into buildings cause the most structural damage.

The Fujita Scale is the standard scale for rating the severity of a tornado as measured by the damage it causes. A tornado is typically accompanied by thunder, lightning, heavy rain, and a loud "freight train" noise. In comparison to a hurricane, a tornado covers a much smaller area but can be more violent and destructive.

Nor'easters
A Nor'easter is defined as a large weather system traveling from south to north, passing along or near the seacoast. As the storm approaches New England and its intensity becomes increasingly apparent, the resulting counterclockwise cyclonic winds impact the coast and inland areas from a northeasterly direction. The sustained winds may meet or exceed hurricane force, with larger bursts, and may exceed hurricane events by many hours (even days) in terms of duration.

Downbursts
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:

- microburst, which covers an area less than 2.5 miles in diameter and
- macroburst, which covers an area at least 2.5 miles in diameter.

Severe Thunderstorms
All thunderstorms contain lightning. During a lightning discharge, the sudden heating of the air causes it to expand rapidly. After the discharge, the air contracts quickly as it cools back to ambient temperatures. This rapid expansion and contraction of the air causes a shock wave that we hear as thunder, a shock wave that can damage building walls and break glass.

Lightning
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. Lightning strikes can cause death, injury, and property damage.

Hail
Hailstones are balls of ice that grow as they are held up by winds, known as updrafts, that blow upwards in thunderstorms. The updrafts carry droplets of supercooled water - water at a below freezing temperature - but not yet ice. The supercooled water droplets hit the balls of ice and freeze instantly, making the hailstones grow. The faster the updraft, the bigger the stones can grow. Most hailstones are smaller in diameter than a dime, but stones weighing more than a pound have been recorded. Details of how hailstones grow are complicated, but the results are irregular balls of ice that can be as large as baseballs, sometimes even bigger. While crops are the major victims, hail is also a hazard to vehicles and windows.

Wildfire
Wildfire is defined as an uncontrolled and rapidly spreading fire.

Forest Fires and Grass Fires
A forest fire is an uncontrolled fire in a woody area. They often occur during drought and when woody debris on the forest floor is readily available to fuel the fire. Grass fires are uncontrolled fires in grassy areas.

Ice & Snow Events

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

Ice Storms

An ice storm involves rain, which freezes upon impact. Ice coating at least one-fourth inch in thickness is heavy enough to damage trees, overhead wires, and similar objects. Ice storms also often produce widespread power outages.

Nor'easters

A Nor'easter is defined as a large weather system traveling from South to North, passing along or near the seacoast. As the storm approaches New England and its intensity becomes increasingly apparent, the resulting counterclockwise cyclonic winds impact the coast and inland areas from a Northeasterly direction. In the winter months, oftentimes blizzard conditions accompany these events. The added impact of the masses of snow and/or ice upon infrastructure often affects transportation and the delivery of goods and services for extended periods.

Earthquakes/Landslides

Geologic events are often associated with California, but New England is considered a moderate risk earthquake zone.

Earthquake

An earthquake is a rapid shaking of the earth caused by the breaking and shifting of rock beneath the earth's surface. Earthquakes can cause buildings and bridges to collapse, disrupt gas, electric and phone lines, and often cause landslides, flash floods, fires, and avalanches. Larger earthquakes usually begin with slight tremors but rapidly take the form of one or more violent shocks, and end in vibrations of gradually diminishing force called aftershocks. The underground point of origin of an earthquake is called its focus; the point on the surface directly above the focus is the epicenter. The magnitude and intensity of an earthquake is determined by the use of scales such as the Richter scale and Mercalli scale.

Landslide

A landslide is the downward or outward movement of slope-forming materials reacting under the force of gravity including: mudflows, mudslides, debris flows, rockslides, debris avalanches, debris slides, and earth flows. Landslides have damaged or destroyed roads, railroads, pipelines, electrical and telephone lines, mines, oil wells buildings, canals, sewers, bridges, dams, seaports, airports, forests, parks, and farms.

Drought

A drought is defined as a long period of abnormally low precipitation, especially one that adversely affects growing or living conditions. Droughts are rare in New Hampshire. They generally are not as damaging and disruptive as floods and are more difficult to define. The effect of droughts is indicated through measurements of soil moisture, groundwater levels, and streamflow. However, not all of these indicators will be minimal during a drought. For example, frequent minor rainstorms can replenish the soil moisture without raising ground-water levels or increasing streamflow. Low streamflow also correlates with low ground-water levels because ground water discharge to streams and rivers maintains streamflow during extended dry periods. Low streamflow and low ground-water levels commonly cause diminished water supply.

Radon

Radon is a naturally occurring radioactive gas with carcinogenic properties. The gas is a common problem in many states, including New Hampshire. Data collected by the NH Office of Community and Public Health's Bureau of Radiological Health indicates that one third of the houses in New Hampshire have indoor radon levels that exceed the US Environmental Protection Agency's "action level" of four picocuries per liter for at least some portion of the year.

Radon may also enter homes dissolved in drinking water from drilled wells. High levels of radon in water from individual drilled wells is a common occurrence in New Hampshire.

Map 1: Potential Hazards

The first map in this four-part series depicts where hazards are likely to occur in Hillsborough. Areas where flooding regularly occurs and the floodplains are shown with wetlands and the town's water features. Areas identified as particularly susceptible to ice and snow damage are noted in addition to Hillsborough's steep slopes (>15%). The municipal gas lines and PSNH powerlines as well as evacuation routes are also shown. The intent of this map is to portray a picture of which areas of Town may be more vulnerable to certain types of hazards and how to leave Hillsborough in the event of an emergency.

CHAPTER 3. PROFILE OF HAZARD EVENTS IN HILLSBOROUGH

This Chapter seeks to identify hazard events that have occurred within Hillsborough. Narrative descriptions are provided, and additional research has uncovered historical data and data which may indirectly refer to Hillsborough from a county- or state-wide context; all of the findings are then summarized in tabular form.

Past and Potential Hazard Events in Hillsborough
Hazard events were researched using a wide variety of sources. Sources and techniques included interviewing local townspeople and collecting information from the State of NH Hazard Mitigation Plan, town histories, and governmental and non-profit websites.

A compilation of hazards that have impacted Hillsborough in the past appears in **Table 1** at the end of this Chapter. Within Hillsborough, the risk of each main hazard has been identified as a high (H), medium (M), or low (L) possibility for future occurrence based on past and potential events as indicated in the following Chapters and as mapped on *Map 1: Potential Hazards* and *Map 2: Past Hazards*.

Flooding

Second only to winter storms, riverine flooding is the most common natural disaster to impact New Hampshire. Floods are a common and costly hazard. They are most likely to occur in the spring due to the increase in rainfall and the melting of snow. However, they can occur anytime of the year as a result of heavy rains, hurricane, or a Nor'easter.

The likelihood of another flood in Hillsborough is high. The Town is susceptible to flooding because the Contoocook River runs through the center of town. In addition, Beard Brook, Black Brook, North Branch River and their tributaries run through Hillsborough. Homes and businesses near these waterways, especially in low-lying areas, are at risk.

Hurricanes (Flooding)

Hurricane season begins on June 1 and continues through the end of November. August and September are the most active hurricane months. It is not uncommon for New England to be impacted by a hurricane more than once in a season. However, only one hurricane has been reported to have affected Hillsborough. River flooding due to heavy rains is a risk to Hillsborough during hurricanes.

> *September 21, 1938*
> When this hurricane hit, the Contoocook River was already higher than it was in the flood of 1936. The Stone Bridge on Bridge Street gave out flooding Water Street, and water raced through the Hosiery and Woolen Mills (History of Hillsborough, NH, 1921-1963).

100 and 500-year Floodplain Events

Currently, there are 450 residential properties located within the 100 and 500 year floodplain in Hillsborough (for many of these properties only land, not a structure, is located in the floodplain). While living in a 100 year floodplain, there is a 26% chance of flood loss (Northeast States Emergency Consortium).

Erosion and Mudslides

No records of mudslides have been found to occur in Hillsborough. However, development in close proximity to the Contoocook River or along hillsides is at risk for these events.

Ice Jams (Flooding)

Historically, hundreds of ice jams have occurred in New Hampshire. Warm temperatures and heavy rains cause rapid snowmelt. Rising water breaks ice into chunks, floats downstream and piles up, causing floods.

1977

An ice jam blocked Beard's Brook causing it to flood for 200 feet (History of Hillsborough, NH, 1960-2000.)

Rapid Snow Pack Melt (Flooding)

Warm late winter or early spring days can cause the snow to melt rapidly. The water cannot yet percolate into the frozen ground and runs off into streets and waterways. While only one thawing related flood is documented, town historians indicated that spring flooding is a reoccurring problem.

March 18, 1936

Warm weather and heavy rains caused the Contoocook River, Beard Brook, and the North Branch River to spill over their banks. Several bridges were washed out and small buildings at the Woolen Mills broke apart. At its peak, water was 12 feet deep in the boiler room of the Woolen Mill. Water Street was washed out and buildings along it vacated. The main highway to Antrim was flooded as were roads to Keene and Henniker. There were no casualties, but there was extensive property damage. (History of Hillsborough, NH, 1921-1963).

Dam Breach and Failure (Flooding)

There are currently 20 active dams in Hillsborough in the New Hampshire Dam database maintained by the Department of Environmental Services Dam Bureau. According to RSA 482:2 II, a dam is any artificial barrier which impounds or diverts water, has a height of four feet or more or has a storage capacity of two acre-feet or more, or is located at the outlet of a great pond. Inactive dams are defined as dams that do not meet the legal definition of a dam. There are three inactive dams listed in Hillsborough that do not meet the above definition and may be in ruins, breached, removed, or never built.

Every dam is categorized into one of four classifications, which are differentiated by the degree of potential damages that a failure of the dam is expected to cause. The classifications are designated as AA, A, B, and C. The AA rating signifies a non-hazardous

structure while the C rating reflects a high hazard dam. Hillsborough has sixteen (16) Class AA, two (2) Class A, one (1) Class B, and one (1) Class C dams.

While no incidents of dam failure were found, bridge failure was mentioned in the accounts of flooding on September 21, 1938 and March 18, 1936.

Severe Storms (Flooding)

The likelihood of severe rain storms impacting Hillsborough with flooding is high. Again, the close proximity to the Contoocook River makes the Town susceptible to flooding.

June 1984

Seven inches of rain fell in four days causing heavy flooding. The Contoocook River overflowed causing one family to be evacuated by boat. Route 9 to Henniker and Route 202 to Antrim were closed. Cricenti's grocery closed, and Chevrolet dealership body shop was flooded (History of Hillsborough, NH, 1960-2000).

March/April 1988

Heavy rains caused roads all over town to close, including Gleason Falls, Bear Hill, Beard Brook, Poverty Plains, the Second New Hampshire Turnpike, Mill Street, and Barden Hill Road. Longwoods and Johnson City mobile home parks were evacuated, and 300 people had to find alternate shelter. The water was 5 feet deep at the Pine Ridge Florist on Henniker Street (History of Hillsborough, NH, 1960-2000).

August 1990

Heavy rains cause a four foot sink hole in front of the Sylvania plant on Main Street (History of Hillsborough, NH, 1960-2000).

The likelihood of severe storms impacting Hillsborough with flooding seems high. Again, the close proximity to the Contoocook River makes the town susceptible to flooding.

Wind H

Several recorded wind events have occurred within Hillsborough over the last 250 years. The likelihood of future wind events in Town is high.

Hurricanes (Wind)

Hurricane season begins on June 1 and continues through the end of November. August and September are the most active hurricane months. It is not uncommon for New England to be impacted by a hurricane more than once in a season. It is probable that Hillsborough will be impacted by heavy winds as a result of a hurricane again in the future.

September 21, 1938

The hurricane that hit this day brought strong winds in addition to heavy flooding. Hundreds of trees were toppled. Electric and telephone lines were downed, and fallen trees blocked roads. At Breezy Point, 19 of 21 cabins were lost to blowing wind or falling trees. Grimes Field was filled with large nearby pines that were uprooted or broken.

Tornadoes (Wind)

Tornadoes can occur at anytime of the year, although they are rare outside of the warm season. The peak months of tornado occurrence in the Northeast are June through August, with August being the most frequent month. Thunderstorms have been responsible for spawning tornadoes in many parts of New England. On average six tornadoes per year touchdown somewhere in New England. Damage from tornadoes is caused as a result of high wind velocity and wind blown debris.

> Between 1791 and 1821, four tornadoes rated F2 or higher on the Fujita Tornado Damage Scale (winds between 113-157 mph causing considerable damage) have occurred in Merrimack County (Office of Emergency Management). In addition, the worst tornado ever to strike New England was the Worcester Tornado of July 9, 1953. Within one minute 90 people were killed and over 1,300 injured. Damage was estimated to exceed $52 million.
>
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Nor'easters (Wind)

Unlike the relatively infrequent hurricane, NH generally experiences at least one or two Nor'easters each year with varying degrees of severity. These storms have the potential to inflict more damage than many hurricanes because the high storm surge and high winds can last from 12 hours to 3 days, while the duration of hurricanes ranges from 6 to 12 hours.

While not specifically documented as such, many of the snow storms discussed later in this Chapter may have been Nor'easters and included high winds.

Damage caused by high winds during a Nor'easter will likely occur in Hillsborough in the future due to the commonality of these types of storms.

Downbursts (Wind)

A downburst is a severe localized wind blasting down from a thunderstorm. No record of this event has been documented in Hillsborough. However, town historians reported experiencing occasional downbursts. On July 6, 1999, a downburst impacted three counties in New Hampshire, including Hillsborough County. It resulted in 2 deaths. Also, two roofs were blown off and widespread power outages occurred. The downburst was designated a macroburst (at least 2.5 miles in diameter).

High Winds

High winds are unpredictable, and are more prevalent at higher elevations. Downtown Hillsborough is in a valley, so it is not as exposed to high winds as other towns. However, parts of Hillsborough do spread out into the surrounding hills.

July 1988
A wind gust took a branch off a tree on School Street and cut off electrical power for a large part of town (History of Hillsborough, NH, 1960-2000).

July 1999
High winds caused power outages and tree damage. The Emerald Lake area was without power the longest (Hazard Mitigation Committee Members).

Ice & Snow Events

Winter snow events are as common in Hillsborough as they are in the entire western half of New Hampshire. Hillsborough's steep slopes and hills, numerous Class VI and gravel roads, and its number of water features create a high potential for icing, damage, power outages, and impassibility when ice and storm events hit. The likelihood of future ice and snow events in Hillsborough is high.

Heavy Snow Storms

There are numerous heavy snowstorms that have impacted the central NH region in the past. Many of these do not include detailed information on the impacts, however usually infrastructure, including critical facilities, are impacted by heavy snow. Town historians report experiencing snow as deep as three feet some winters.

Snow and/or ice often affects transportation and the delivery of goods and services for extended periods. Power outages are also a common impact during snowstorms. For a complete list of heavy snows and snowfall accumulations, see the table at the end of this chapter. The following descriptions are of heavy snowstorms that have additional detail.

October 7, 1804
Over a foot of snow fell damaging several crops that had not yet been harvested (History of Hillsborough, NH, 1735-1921).

January 14-17, 1945
A blizzard brought 27 inches of snow to the area (History of Hillsborough, NH, 1921-1963)

May 7, 1967
A late season snowstorm leveled trees and downed wires (History of Hillsborough, NH, 1960-2000).

November 1972
Ten to twelve inches of snow fell, followed by ice. Some homes were without power for 36 hours (History of Hillsborough, NH, 1960-2000).

January 19, 1977
More than three feet of snow fell, making it possibly the worst storm since 1890 (History of Hillsborough, NH, 1960-2000).

December 1978
A wet snowstorm pulled down two power poles (History of Hillsborough, NH, 1960-2000).

April 28, 1987
Eight inches of snow fell knocking out power to 3,500 households (History of Hillsborough, NH, 1960-2000).

January 1988
A snowstorm dropped between 8 and14 inches of snow. Five hundred homes were without power. The following month the roof at the Town Barn collapsed due to the weight of the snow (History of Hillsborough, NH, 1960-2000).

January 2002
Two snowstorms hit the area back to back. The first dropped approximately three feet of snow and the second left approximately two feet of snow. Schools were closed (Hazard Mitigation Committee and Town Historians).

Snowstorms are a commonality for people living in New England during the winter. New England usually experiences at least one or two Nor'easters with varying degrees of severity each year. Severe winter storms, including Nor'easters, typically occur during January and February. However, winter storms can occur from late September through late May.

All winter storms make walking and driving extremely dangerous. The elderly and very young are at high risk during winter storms and may be affected by hypothermia and isolation. During winter storms, there is an increased risk of fire because people may lose electricity and use candles, portable gas stoves, and other flammable sources of heat and light (Northeast States Emergency Consortium).

The likelihood of Hillsborough experiencing another severe winter storm is high due to weather conditions in New England during the winter.

Ice Storms

Ice storms, while not as common as snow storms, occur regularly in New England. Hillsborough could easily be impacted by an ice storm in the future. Powerlines and trees are particularly susceptible to damage during ice storms.

December 1967
An ice storm covered roads, trees, and utility lines. School was cancelled and driving was hazardous (History of Hillsborough, NH, 1960-2000).

December 1973
A combination of ice and freezing rain hit the area. Some people were without power for 24 hours (History of Hillsborough, NH, 1960-2000).

January 1987
Freezing rain caused a truck to tip over on Route 202 (History of Hillsborough, NH, 1960-2000).

January 7, 1998
This ice storm had severe impacts throughout most of the state. Six injuries and one death resulted. Damage totaled $12,446,202. In addition, there were 20 major road closures, 67,586 people left without electricity, and 2,310 people without phone service.

In Hillsborough, power was out for six days in some parts of town, and thousands of trees were damaged. Forests, recreational areas, and the maple sugar industry were affected by the extensive tree damage (History of Hillsborough, NH, 1960-2000).

It seems likely that Hillsborough could be impacted by an ice storm in the future. Powerlines in Town would be susceptible to damage during ice storms.

Severe Thunderstorms 

Although few records or accounts of thunderstorms are provided, they are generally common occurrences. The likelihood of damage from severe thunderstorms in Hillsborough is high.

October 1980
Rain and wind caused several hundred people to lose power. Some trees also fell and blocked roads (History of Hillsborough, NH, 1960-2000).

June 1986
A severe storm caused power outages and downed trees (History of Hillsborough, NH, 1960-2000).

June 1990
A thunderstorm brought hailstones the size of mothballs, and lightning killed a cow at Ervin Lachut's farm on Cooledge Road (History of Hillsborough, NH, 1960-2000).

Lightning 

Severe thunderstorms are often accompanied by lightning which can cause fires or direct injury. Given that there have been several documented occurrences of lightning causing property damage, the threat of lightning strikes will remain high.

July 1831
Lightning struck a barn owned by James Jones causing it to burn to the ground (History of Hillsborough, NH, 1735-1921).

June 13, 1871
Joel Temple's barn was struck by lightning (History of Hillsborough, NH, 1735-1921).

Between 1875 and 1885
Lightning struck Hiram Davis' barns in the west part of town creating substantial damage (History of Hillsborough, NH, 1735-1921).

August 25, 1893
During a heavy thunderstorm, lightning struck a barn on the Alvah Merrill farm (History of Hillsborough, NH, 1735-1921).

August 2, 1914
A home owned by Walter Farrah was stuck by lightning and burned (History of Hillsborough, NH, 1735-1921).

August 8, 1915
George M. Russel's house was stuck by lightning (History of Hillsborough, NH, 1735-1921).

August 27, 1916
Farm buildings owned by Fred McClintock were struck by lightning and burned (History of Hillsborough, NH, 1735-1921).

Wildfire M

According to the History of Hillsborough, New Hampshire, there have been a few severe wildfires that have occurred in the past. The likelihood of wildfire striking Hillsborough in the future, particularly in remote areas, is a medium level threat.

April 8, 1892
A brush fire burned a barn on Stow Mountain (History of Hillsborough, NH, 1735-1921).

May 17, 1980
A forest fire on Thompson Mountain destroyed 60 acres of forest. While the fire may have been started by a campfire, the conditions were ripe for the fire to spread rapidly (History of Hillsborough, NH, 1960-2000).

Cold Events M

The first two recorded cold events occurred before electric power and conventional heating methods were available. While there may be cold spells in the future, it is unlikely that cold itself (without accompanying power outages) will greatly affect the Town.

Cold Friday, 1810
In Hillsborough, on January 19, 1810 intense cold resulted in extreme discomfort. Some people perished in the area surrounding Hillsborough, but nobody in town died (History of Hillsborough, NH, 1735-1921.)

The Year Without a Summer, 1816
While the winter months were mild, snow and ice continued through May, June, July, and August. Farmers tried to plant several times, but most crops were lost (History of Hillsborough, NH, 1735-1921.) This event was not unique to New Hampshire.

June 2004
Records were broken as two back to back fronts dropped temperatures well below zero for two weeks in a row (Concord Monitor).

Earthquakes M

There have been 270 earthquakes recorded in NH (Northeast Emergency Consortium). New England experiences an average of 30-40 earthquakes per year, but most are not felt. However, an earthquake on November 18, 1755 caused damage to the New England coastline.

January 1982
An earthquake measuring 4.8 on the Richter scale hit Hillsborough. The quake lasted for forty seconds, but no major damage was reported (History of Hillsborough, NH, 1960-2000).

January 20, 2004
An earthquake measuring 2.2 on the Richter scale hit Hillsborough and neighboring Hopkinton and Henniker. Some residents reported rumbling that lasted for 10 seconds, but no damage was reported (the Concord Monitor and the Hazard Mitigation Committee).

The likelihood of a future earthquake striking Hillsborough is a medium possibility.

Drought M

Periods of drought have occurred historically in NH. The longest recorded continuous spell of less than normal precipitation occurred between 1960 and 1969. In 1999, a drought warning was issued by the Governor's Office. In March 2002, all counties in NH with the exception of Coos County were declared in Drought Emergency. This was the first time that low-water conditions had progressed beyond the Level Two, Drought Warning, stage. Town historians remember droughts also being a problem in the past. The likelihood of another drought affecting Hillsborough in the future is a medium possibility.

Radon M

In NH, radon gas is a common problem. However, homes with high levels of airborne radon are most prevalent in the north, east and southeast portions of the State, putting Hillsborough at a relatively low risk for contamination in homes/buildings. Also, people with drilled wells are at risk for contamination of radon in their drinking water. Because of the possibility of the presence of radon in Hillsborough, this hazard is rated a medium.

Past Hazard Events That Have Impacted Hillsborough

Within the past 260 years, a number of moderate and severe natural disasters have impacted Hillsborough and the surrounding region. While most of the data within the following table has been recorded within the 20th century, some of the disasters were recorded between 1635 and 1892.

Table 1
Hillsborough Hazard Events 1635-Present

Hazard	Date	Location	Critical Facility or Impacted Area	Remarks	Source
Downburst	July 6, 1999	Merrimack, Grafton and Hillsborough Counties, NH	Two fatalities and two roofs blown off with widespread power outages throughout these counties.	Macroburst (areas at least 2.5 miles in diameter).	Office of Emergency Management
Drought	1929-36	State of NH	Unknown.	Regional	Office of Emergency Management
Drought	1939-44	State of NH	Unknown.	Severe in southeast and moderate elsewhere.	Office of Emergency Management
Drought	1947-50	State of NH	Unknown.	Moderate	Office of Emergency Management, Town Historians
Drought	1960-69	State of NH	Unknown.	Longest recorded continuous spell of less than normal precipitation	Office of Emergency Management
Drought Warning	1999	State of NH	Unknown.	Drought warning was issued by governor's office on 06/29/99	Office of Emergency Management
Drought Emergency	March, 2002	All counties in the State of NH except Coos County	Unknown.	This is the first time low-water conditions have progressed beyond the Level Two, Drought Warning, stage.	NH Department of Environmental Services
Earthquake	November 18, 1755	New England	Damage to New England Coast.		Northeast States Emergency Consortium
Earthquake	November 18, 1929	Grand Banks Newfoundland	All of NH felt minor effects.	Richter Magnitude Scale: 7.2	National Earthquake Information Center
Earthquake	December 20, 1940	Ossipee, NH	Ground cracks in the region in two towns and damage over a broad area.	Richter Magnitude Scale: 5.5	National Earthquake Information Center, Northeast States Emergency Consortium

Continued

Hazard	Date	Location	Critical Facility or Impacted Area	Remarks	Source
Earthquake	December 24, 1940	Ossipee, NH	Ground cracks in the region in two towns and damage over a broad area.	Richter Magnitude Scale: 5.5	National Earthquake Information Center, Northeast States Emergency Consortium, Deering Town History
Earthquake	January 19,1982	West of Laconia	Unknown.	Richter Magnitude Scale: 4.5	Northeast States Emergency Consortium
Earthquake	October 29, 1727	New England	Damage throughout New England.		Northeast States Emergency Consortium
Earthquake	January 1982	Hillsborough, NH	No major damage	Richter Magnitude Scale: 4.8	History of Hillsborough, NH, 1960-2000
Earthquake	January 2004	Hillsborough, Hopkinton, and Henniker, NH	No major damage	Richter Magnitude Scale: 2.2.	Concord Monitor
Extreme Cold	January 19, 1810	Hillsborough, NH	Several people perished nearby, but not in Hillsborough	Known as "Cold Friday".	History of Hillsborough, NH, 1735-1921
Extreme Cold	1816	Hillsborough, NH	While the winter was not particularly bad, cold and snow continued through June, July, and August ruining crops.	Known as the "Year without a Hard Summer"	History of Hillsborough, NH, 1735-1921
Extreme Cold	January 2004	Throughout State of NH		Two weeks of extreme cold brought temperatures into the minus teens and set records.	Concord Monitor
Flood	March 11-21, 1936	Throughout State of NH	Contoocook River flooded an extensive area in Hillsborough.	Caused by heavy snowfall totals, heavy rains and warm weather at the same time, Run-off from melting snow with rain overflowed the rivers.	Northeast States Emergency Consortium, Office of Emergency Management, Hillsborough Town History
Flood	September 21, 1938	NH and Southern New England	The Stone Bridge on Bridge Street gave out. The Hosiery and Woolen Mills were flooded.	Associated with Hurricane.	Concord Monitor September 22, 1938, History of Hillsborough, NH, 1921-1963

Continued

Hazard	Date	Location	Critical Facility or Impacted Area	Remarks	Source
Flood	July, 1986-August 10, 1986	Throughout state of NH	Road network impacted statewide.	Severe summer storms with heavy rains, tornadoes, flash flood and severe winds.	Office of Emergency Management
Flood	August 27, 1986	Cheshire & Hillsborough Counties	FEMA Disaster Declaration # 771, $1,005,000.	Severe storms and flooding.	Office of Emergency Management
Flood	April 16, 1987	Cheshire, Carroll, Grafton, Hillsborough Merrimack, Rockingham & Sullivan Counties	FEMA Disaster Declaration # 789 $4,888,889 in damage.	Caused by snowmelt and intense rain.	Office of Emergency Management
Flood	August 7-11, 1990	Belknap, Carroll, Cheshire, Coos, Grafton, Hillsborough Merrimack & Sullivan Counties	FEMA Disaster Declaration #-876, $2,297,777 in damage.	A series of storm events with moderate to heavy rains.	Office of Emergency Management
Flood	October 1996	Grafton, Hillsborough Merrimack, Rockingham, Strafford & Sullivan Counties	FEMA Disaster Declaration #-1144. $2,341,273 in damage.	Heavy rains.	Office of Emergency Management
Heavy Wind	July 1988	Hillsborough, NH	Heavy wind gusts knocked out power.		History of Hillsborough, NH, 1960-2000
Hurricane	August, 1635	Unknown	Unknown.		Office of Emergency Management
Hurricane	October 18-19, 1778	Portions of NH	Unknown.	40-75 mph winds.	Office of Emergency Management
Hurricane	October 9, 1804	Portions of NH	Extreme cold and gale force winds.	Referred to as “a snow hurricane”.	Office of Emergency Management, Deering Town History

Continued

Hazard	Date	Location	Critical Facility or Impacted Area	Remarks	Source
Hurricane	September 8, 1869	Portions of NH	Unknown.	>50 mph winds.	Office of Emergency Management
Hurricane	September 21, 1938	All of Southern New England	13 of 494 dead in NH. $12, 337,643 total storm losses (1938 dollars) statewide, state damage to trees was between $2,000,000 and $3,000,000, electric and telephone service disrupted, structures damaged, and heavy flooding, Hillsborough experienced heavy wind damage throughout town, and their was heavy tree loss.		Office of Emergency Management, Concord Monitor September 1938, Hillsborough Town History
Hurricane (Carol)	August 31, 1954	Southern New England	Extensive tree and crop damage in NH.		Office of Emergency Management,
Hurricane (Donna)	September 12, 1960	Southern and Central NH	Heavy flooding in some parts of the state.		Office of Emergency Management
Hurricane (Gloria)	September 27, 1985	Southern New England	Unknown		Office of Emergency Management
Hurricane (Bob)	August 19, 1991	Southern New England	Unknown.		Office of Emergency Management
Ice Storm	December 17-20, 1929	State of NH	Disruption to telephone, telegraph, and power systems.		U.S. Army Corps of Engineers NH Ice Storms
Ice Storm	December 29-30, 1942	State of NH	Unknown	Glaze storm of severe intensity.	U.S. Army Corps of Engineers NH Ice Storms
Ice Storm	December 22, 1969-January 17,1970	State of NH	Power disruption to many communities.		U.S. Army Corps of Engineers NH Ice Storms
Ice storm	January 8-25, 1979	State of NH	Major disruptions to power and transportation.		U.S. Army Corps of Engineers NH Ice Storms
Ice storm	March 3-6, 1991	State of NH	Numerous outages from ice-laden power lines in southern NH.		U.S. Army Corps of Engineers NH Ice Storms

Continued

Hazard	Date	Location	Critical Facility or Impacted Area	Remarks	Source
Ice storm	January 7, 1998	State of NH, 52 communities in nine counties impacted	FEMA Disaster Declaration-1199. Six injuries and one fatality, 20 major road closures, 67,586 without electricity, 2,310 without phone service, $12,446,202 in damages, In Hillsborough the power was out for 6 days, and there was extensive tree damage throughout Town.		U.S. Army Corps of Engineers NH Ice Storms, Office of Emergency Management, History of Hillsborough, NH, 1960-2000.
Lightning	July, 1831	Hillsborough, NH	Lightning struck a barn and burned it to the ground		History of Hillsborough, NH 1735-1921
Lightning	June 13, 1871	Hillsborough, NH	Lightning struck a barn		History of Hillsborough, NH 1735-1921
Lightning	Between 1875 & 1885	Hillsborough, NH	Lightning struck a barn doing damage to the west part of town		History of Hillsborough, NH 1735-1921
Lightning	August 25, 1893	Hillsborough, NH	Lightning struck a barn		History of Hillsborough, NH 1735-1921
Lightning	August 2, 1914	Hillsborough, NH	Lightning struck a home and caused it to burn		History of Hillsborough, NH 1735-1921
Lightning	August 8, 1915	Hillsborough, NH	Lightning struck a home.		History of Hillsborough, NH 1735-1921
Lightning	August 27, 1916	Hillsborough, NH	Lightning struck some farm buildings		History of Hillsborough, NH 1735-1921
Severe Thunderstorm	October, 1980	Hillsborough, NH	Storm caused power outages and downed trees.		History of Hillsborough, NH, 1960-2000
Severe Thunderstorm	June, 1986	Hillsborough, NH	Storm caused power outages and downed trees.		History of Hillsborough, NH, 1960-2000
Severe Thunderstorm	June, 1990	Hillsborough, NH	Storm brought hail the size of mothballs.		History of Hillsborough, NH, 1960-2000

Continued

Hazard	Date	Location	Critical Facility or Impacted Area	Remarks	Source
Snowstorm	October 7, 1804	Hillsborough, NH	Over a foot of snow fell damaging crops.		History of Hillsborough, NH, 1735-1921
Snowstorm	January 14-17, 1945	Hillsborough, NH	Blizzard brought 27 inches of snow to the area		History of Hillsborough, NH, 1921-1963
Snowstorm	May 7, 1967	Hillsborough, NH	Late season snowstorm leveled trees and downed wires.		History of Hillsborough, NH, 1960-2000
Snowstorm	Nov, 1972	Hillsborough, NH	10 to 12 inches of snow fell followed by ice		History of Hillsborough, NH, 1960-2000
Snowstorm	February, March 1969	State of NH	Unknown	Snow accumulations between 24-98 inches (higher totals in western NH), slow moving storm with long duration.	American Meteorological Society
Snowstorm	December 25-28, 1969	State of NH	Unknown.	Snow accumulations 12-18 inches in most areas.	American Meteorological Society
Snowstorm	December 1978	Hillsborough, NH	Wet snow pulled down power poles		History of Hillsborough, NH, 1960-2000
Snowstorm	April 28, 1987	Hillsborough, NH	8 inches of snow knocked out power to 3,500 households		History of Hillsborough, NH, 1960-2000
Snowstorm	February, 1996	New England	Unknown.	Snow, ice, bitter temperatures throughout central NH.	Suncook-Hooksett Banner, March 7, 1996, Northeast States Emergency Consortium
Snowstorm	January 1988	Hillsborough, NH	8 to 14 inches of snow knocked out power to 500 households		History of Hillsborough, NH, 1960-2000
Snowstorm	March, 2001	New England	Unknown		Northeast States Emergency Consortium

Continued

Hazard	Date	Location	Critical Facility or Impacted Area	Remarks	Source
Snowstorm	January 2002	Hillsborough, NH	Heavy snow falls closed schools	Approximately 3 feet of snow was followed by an additional 2.	Town Historian, Hazard Mitigation Committee
Tornado	July 28, 1748	Hillsborough County	Unknown.		Office of Emergency Management
Tornado	May 21, 1814	Hillsborough County	Unknown.		Office of Emergency Management
Tornado	September 15, 1922	Hillsborough County	Unknown.	Rated F2.	Office of Emergency Management
Tornado	July 2, 1961	Hillsborough County	Unknown.	Rated F2.	Office of Emergency Management
Tornado	June 9, 1963	Hillsborough County	Unknown.	Rated F2.	Office of Emergency Management
Tornado	July 19, 1966	Hillsborough County	Unknown.	Rated F2.	Office of Emergency Management
Tornado	July 17, 1968	Hillsborough County	Unknown.	Rated F2.	Office of Emergency Management
Wildfire	May 17, 1980	Thompson Mountain	Fire burnt 60 acres		History of Hillsborough, NH, 1960-2000

Map 2: Past Hazards

The Past Hazards Map identifies the locations where known natural disasters have occurred in town. The past hazard locations were primarily identified by the Hazard Mitigation Committee or through research into the hazards listed within **Table 1**.

CHAPTER 4. ASSET IDENTIFICATION

The identification of assets within a community is integral to determining what may be at risk from a natural disaster. This Chapter examines the assets in five categories: Critical Facilities, Vulnerable Populations, Economic Assets, Special Considerations, and Historic/Other Considerations.

Not only are the address and phone number, where applicable, supplied for each identified asset, the hazards to which the asset is most susceptible are listed. Hazards are primarily natural disasters, but can also include secondary disasters (such a sewer or water line rupture) or human-made disasters or emergencies (such as a vehicular accident).

In Hillsborough, each asset can be damaged by all of the hazards listed in the **PROFILE OF HAZARD EVENTS** Chapter. The majority of the assets appear on *Map 3: Critical Facilities* at the end of this report. They include numerous flooding hazards throughout Town along rivers, streams and wetlands, and vehicular accidents along several stretches of roadway. Also, fire and lightning events were identified as having particular significance in certain areas of Hillsborough based on past events or potential events. When the asset was not specifically vulnerable to one or more particular hazards, the term "All" was used to signify the asset's vulnerability to all possible hazards.

Critical Facilities

Critical facilities are categorized as those town or state buildings or services that are first-responders in a disaster. Fire Departments, Police Departments, and Highway Departments as well as the Town Office are crucial in providing and coordinating the emergency services. Other critical facilities would include hospitals and shelters. Utilities or utility features are also included because of communication and power/water service.

Table 2
Essential Facilities

Facility Type	Address	Phone	Hazard the Site is Most Susceptible to
Hillsborough Fire Station	13 Central Street	464-3477	Ice & snow, wind
Hillsborough Police Station	22 Dump Road	464-5512	Ice & snow, wind
Hillsborough Town Hall	29 School Street	464-3877	Ice & snow, wind
Public Works Garage	45 Dump Road	464-5509	Ice & snow, wind
NH DOT State Highway Barn	679 West Main Street	271-2693	Ice & snow, wind
National Guard Armory	140 West Main Street	271-2121	Flooding

Table 3
Utilities

Facility Type	Address	Phone	Hazard the Site is Most Susceptible to
Granite State Telephone	590 Second NH Turnpike	529-9911	Ice & snow, wind
TDS Telecom	25 School Street	464-9911	Ice & snow, wind
Telecommunications Tower	199 Bible Hill Road	464-3877	Ice & snow, wind
Jackman Hydro Station	8 Sawmill Road	1-800-468-0034	Flooding
Hosiery Mill Power Dam	Bridge Street	464-3877	Flooding
Water Tower	Sawmill Road	1-800-468-0034	Ice & snow, wind
Bible Hill Water Supply Storage Tank	168 Bible Hill Road	464-5041	Ice & snow, wind
Wastewater Treatment Plant	40 Norton Drive	464-5041	Flooding
Public Service NH, Hillsboro Office	193 West Main Street	1-800-468-0034	All

Table 4
Dams

Facility Type	Status	Class	Location	Hazard the Site is Most Susceptible to
Branch Beard Brook Dam	Active	AA	Contention Pond	All
Recreation Pond Dam	Active	AA	Beard Brook	All
Wildlife Pond Dam	Active	AA	Shedd Brook	All
Loon Pond Dam	Active	AA	Beard Brook	Flooding
Gould Pond Dam	Active	AA	Sand Brook	Flooding
Jones Dam	Active	AA	Shedd Brook	Flooding
Posse Nissen Pond Dam	Active	AA	Shedd Brook	Flooding
Farm Pond Dam	Active	AA	Natural swale	All
Fox State Forest Dam 3	Active	AA	Contoocook River	All
Fox State Forest Dam 2	Active	AA	Contoocook River	All
Sprague Dam	Active	AA	Unnamed stream	All
Jackson Brook Dam	Active	AA	Molly Jackson Brook	All
Nichols Brook Dam	Active	AA	Nichols Brook	All
Fox State Forest Dam 1	Active	AA	Contoocook River	All
Landfill Closure Detention Dam	Active	AA	Runoff	All
Inchcape Plaza Detention Pond Dam	Active	AA	Runoff	Flooding
Hosiery Mill Dam	Active	A	Contoocook River	Flooding

Facility Type (continued)	Status	Class	Location	Hazard the Site is Most Susceptible to
Farrar Marsh Dam	Active	A	Sand Brook	Flooding
Hillsborough Sewage Lagoon Dam	Active	B	Not applicable	Flooding
Jackman Reservoir Dam	Active	C	North Branch Contoocook River	Flooding
Contoocook River II Dam	Ruins	--	Contoocook River	Flooding
Nichols Brook II Dam	Ruins	--	Nichols Brook	Flooding
North Branch Contoocook River Dam	Ruins	--	North Branch Contoocook River	Flooding

Table 5
Bridges

Facility Type	Location	Phone	Hazard the Site is Most Susceptible to
Bridge # 056/144 (Town)	Sleeper Road & Beard Brook	464-5509	Flooding
Bridge # 061/102 (Town)	Cooledge Road & Beard Brook	464-5509	Flooding
Bridge # 061/139 (Town)	Cooledge Road & Beard Brook	464-5509	Flooding
Bridge # 062/143 (Town)	E. Washington Road & Cedar Brook	464-5509	All
Bridge # 071/072 (State)	NH 31 & Black Pond Brook	271-3667	All
Bridge # 072/136 (Town)	Center Road & Brook	464-5509	Flooding
Bridge # 083/124 (Town)	Danforth Corners & Beard Brook	464-5509	Flooding
Bridge # 088/093 (Town)	Gleason Falls Road & Beard Brook	464-5509	Flooding
Bridge # 089/064 (Town)	Shedd Road & Shedd Brook	464-5509	All
Bridge # 089/093 (Town)	Gleason Falls Road & Beard Brook	464-5509	Flooding
Bridge # 092/090 (Town)	Beard Road & Beard Brook	464-5509	Flooding
Bridge # 093/044 (Town)	Second NH Tpk & Brook	464-5509	All
Bridge # 093/045 (Town)	Second NH Tpk & Brook	464-5509	All
Bridge # 100/070 (Town)	Jones Road & Beard Brook	464-5509	All
Bridge # 107/056 (Town)	Beard Road & Beard Brook	464-5509	All
Bridge # 111/042 (State)	Old NH 9 & Beard Brook	271-3667	All
Bridge # 112/042 (Town)	Sawmill Road & Beard Brook	464-5509	All
Bridge # 117/035 (State)	US 202 & North Branch Contoocook River	271-3667	All
Bridge # 118/035 (State)	Bypassed Historic North Branch River	271-3667	All
Bridge # 118/045 (State)	Bible Hill Road & US 202	271-3667	All
Bridge # 118/045 (State)	Bible Hill Road & US 202	271-3667	All
Bridge # 037/051 (State)	Center Road & US 202, NH 9	271-3667	All

Facility Type (continued)	Status	Class	Location		Hazard the Site is Most Susceptible to
Bridge # 037/051 (State)			Center Road & US 202, NH 9	271-3667	All
Bridge # 144/033 (State)			NH 149 & Contoocook River	271-3667	Flooding
Bridge # 146/102 (Town)			Colby Road & Nelson Brook	464-5509	All
Bridge # 152/095 (Town)			Bog Road & Sand Brook	464-5509	All
Bridge # 154/113 (Town)			Bog Road & Sand Brook	464-5509	Flooding
Bridge # 158/080 (Emerald Village Dist.)			Red Fox Crossing & Nelson Brook	464-3128	All
Bridge # 169/081 (Emerald Village Dist.)			Emerald Drive & Gould Pond Outlet	464-3128	All
Bridge # 170/071 (State)			US 202, NH 9 & Sand Brook	271-3667	All
Bridge # 171/064 (Town)			Old US 202 & Contoocook River	464-5509	All

Table 6
Schools and Medical Facilities

Facility Type	Address	Phone	Hazard the Site is Most Susceptible to
Hillsborough Family Health	462 West Main Street	478-3141	All
Hillsborough-Deering Elementary School	4 Hillcat Drive	464-5906	Ice & snow, wind
Hillsborough-Deering Middle School	6 Hillcat Drive	464-5904	Ice & snow, wind
Hillsborough-Deering High School	12 Hillcat Drive	464-4555	Ice & snow, wind
Hillsborough Christian School	337 2nd NH Turnpike	478-3929	Ice & snow, wind

Vulnerable Populations

Areas or neighborhoods that are densely populated, buildings that house people who may not be self-sufficient in a disaster, or areas that include homes which are not very resistant to natural disasters are considered vulnerable. Vulnerable populations include manufactured home parks (MHP), elderly housing developments or care facilities, and day care centers.

Table 7
Vulnerable Populations

Facility Type	Address	Phone	Hazard the Site is Most Susceptible to
Homecoming Child Care	8 Myrtle Street	464-4165	Ice & snow, wind
George Porter Memorial Preschool and Child Care	64 School Street	464-0225	Ice & snow, wind
Southern NH Services/ Head Start	21 School Street	464-5835	Ice & snow, wind
Hillsborough House (Caring Home for the Elderly)	67 School Street	464-5561	Ice & snow, wind
Mapleleaf Elderly and Disabled Housing	10 Center Road	352-9105	Ice & snow, wind
Whitney Mobile Home Park	20 Old Henniker Road	496-3520	Flooding
Barretts Mobile Home Park	25 Old Henniker Road	464-3842	Flooding

Economic Assets

Although a town normally contains dozens of small businesses, typically several businesses stand out prominently in town. These businesses employ the most people in a town (both from Hillsborough and from outside) and are places where large numbers of people are located and may need to evacuate from in the event of a disaster. In other cases, some large businesses can provide critical services or products to residents in need or may be able to sustain their employees for a duration of time.

Table 8
Economic Assets

Facility Type	Address	Phone	Hazard the Site is Most Susceptible to
Osram Sylvania Plant	275 West Main Street	464-5533	Flooding
Cricenti's Market	15 Antrim Road	464-5902	Flooding
Shaws Grocery Store	276 West Main Street	unknown	Flooding
Hillsborough Ford	16 Antrim Road	464-4000	Flooding
Wyman's Chevrolet	172 West Main Street	464-5544	Flooding
Hillsborough-Deering School District	78 School Street	464-4466	Ice & snow, wind

Special Considerations

Churches and cemeteries are special considerations for their unique contributions to society. Churches are often natural gathering places for people in disasters and can temporarily provide shelter and accommodation. Cemeteries, both public and small privately owned lots, are recognized for their historical and logistical importance. In addition, businesses that potentially store or use hazardous materials are listed as special considerations due to the potential for leaking or combustion in the event of a disaster.

Table 9
Cemeteries & Churches

Facility Type	Address	Phone	Hazard the Site is Most Susceptible to
Hillsboro Baptist Church	337 Second NH Turnpike	478-3929	All
Smith Memorial Congregational Church	34 West Main Street	464-3529	Flooding
Valley Bible Chapel	14 West Main Street	464-3511	All
Hillsboro Bible Fellowship	166 West Main Street	464-2687	All
Hillsboro United Methodist Church	16 Henniker Street	464-3056	All
St. Mary's Catholic Church	36 Church Street	464-6021 or 464-5565	All
St. Mary's Cemetery	Center Road	464-6021 or 464-5565	All
Kimball Hill Cemetery	North Road	464-3877	All
Gerry Cemetery	Concord End Road	464-3877	All
Harvey Memorial Cemetery/St. Charles	Shedd Road	464-3877	All
Pine Hill and Maple Avenue Cemetery	Atwood Road	464-3877	All
Bible Hill Cemetery	Bible Hill Road	464-3877	All
Preston Cemetery	Preston Street	464-3877	Flooding
Dascomb Cemetery	West Main Street	464-3877	All
Kimball Cemetery	Dean Hill Road	464-3877	All
Farrar Cemetery	Carter Hill Road	464-3877	All
Cooledge Cemetery	Cooledge Road	464-3877	Wind, flooding
Hillsborough Center Cemetery	Center Road	464-3877	All
Monroe Cemetery	Flint Road	464-3877	All
Clark Cemetery	Center Road	464-3877	All
Codman Cemetery	Beard Road	464-3877	All
Bear Hill Cemetery	Bear Hill Road	464-3877	All
Robbins Cemetery	County Road	464-3877	All
Beard Road Cemetery	Beard Road	464-3877	All
Hillsboro Bridge	Church Street	464-3877	All

Table 10
Hazardous Materials Facilities

Facility Type	Address	Phone	Hazard the Site is Most Susceptible to
Hillsborough Municipal Landfill	Dump Road	464-4340	Ice & snow, wind
Public Works Garage	Dump Road	464-5509	Ice & snow, wind
Town of Hillsborough Transfer Station and Recycling Center	Dump Road	464-4340	Ice & snow, wind
Irving Gas	303 Main Street	unknown	Ice & snow, wind
Global Gas (Diamond Acres)	737 West Main Street	478-3121	Ice & snow, wind
Citgo Gas (Najibs)	5 Henniker Street	464-5080	Ice & snow, wind
Citgo Gas (Corner Store)	237 Second NH Turnpike	478-3335	Ice & snow, wind
Mobile Gas	22 Henniker Street	unknown	Ice & snow, wind
AmeriGas/Vermont Castings	202 West Main Street	464-2600	Flooding
Sunoco	18 West Main Street	464-0208	Ice & snow, wind
Cumberland Farms	60 Henniker Street	464-3731	Ice & snow, wind
NHDOT State Highway Barn, Division 4	679 West Main Street	271-2693	Ice & snow, wind
NH Army National Guard	140 West Main Street	271-2121	Ice & snow, wind
Barett and Gould	31 Norton Drive	464-6400	Flooding
Barret Propane	210 Henniker Street	464-3842	Flooding
Agway Fertilizer	191 Henniker Street	464-3755	Flooding
Osram/Syvania	275 West Main Street	464-5533	Ice & snow, wind
JB Vailencourt	99 Henniker Street	464-5447	Flooding

Historic/Other Considerations

Historic resources and structures provide that link to the cultural history of a town. They may also be more vulnerable to certain hazards since they often have fewer safety devices installed or have limited access. Recreational facilities are places where large groups of people can and do gather. Campgrounds in particular may be more vulnerable to natural disasters because the shelters are light and temporary.

Table 11
Historic Sites & Buildings

Facility Type	Address	Phone	Hazard the Site is Most Susceptible to
Franklin Pierce Homestead	301 Second NH Turnpike	478-3165	All
Hillsborough Historic District (zoning)	NA	NA	All
Bear Hill National Historic District	NA	NA	All
Mill National Historic District	NA	NA	All
Stone Arch Bridges (Listed in Table 5)	See Table 5	See Table 5	Flooding

Table 12
Recreational or Gathering Sites

Facility Type	Address	Phone	Hazard the Site is Most Susceptible to
American Legion	538 West Main Street	478-0091	All
Hillsborough Masonic Temple	16 Gay Avenue	464-3427	All
Hillsboro Family Center (Moose Lodge)	15 School Street	464-6024	All
Grimes Field	47 Preston Street	464-3877	Flooding
Community Building/Fuller Public Library	29 School Street	464-3877	Ice & snow, wind
Manahan Recreation Facility	732 West Main Street	464-3877	Ice & snow, wind
Fire Museum	5 Central Street	464-3877	Ice & snow, wind
Police Department	22 Dump Road	464-5512	Ice & snow, wind
Hillsborough Community Hall	27 School Street	464-3877	Ice & snow, wind

Homes within the Floodplain

Hillsborough has several brooks and one major river, the Contoocook, all of which have floodplains along them. In addition there are several ponds and lakes in Hillsborough that have some floodplain areas surrounding them. The Contoocook runs through downtown Hillsborough exposing many properties to potential flooding. Beards Brook, Shedd Brook, and Black Pond Brook all cover large distances and also have adjacent flood prone areas. There is not as much flood prone land around the lakes and ponds in Hillsborough. However, many homes are located around Emerald Lake and Franklin Pierce Lake.

At the time of the 2000 Census, there were 2,326 total housing units in Hillsborough. As part of this study, and analysis was done of how many properties were in the 100 and 500 floodplains. It was found that there are 69 properties with manufactured homes where all or part of the property is in the floodplain. In addition, there are 450 properties with traditional single family homes where all or part of the property is in the floodplain. This means that approximately 22% of the housing units in Hillsborough are in the floodplain or a portion of the property on which the unit sits is in the floodplain.

Evacuation Routes
Hillsborough has several major roads that can serve as evacuation routes. Main Street and Route 202/9 are both major arteries running east and west. Center Road, Second NH Turnpike, and Beards Road are all major north/south roadways connecting to the east/west corridors. In flood situations, Main Street and Beards Road may not be as effective as the other routes because they are in flood prone areas. Other evacuation routes focus on the Emerald Lake District where there are many homes. Unfortunately, if everyone in the Emerald Lake area had to evacuate to the west only along Gould Pond Road, the route from there to Center Road would be quite circuitous. Evacuation Routes are depicted on *Map 3: Critical Facilities.*

Future Development of Buildings, Infrastructure, and Critical Facilities
Currently, two private commercial developments are planned along Henniker Street and Antrim Road where there has been past sporadic flooding, but these developments will not be located within the floodplain. Much of the floodplain in Hillsborough is already developed, so extensive future development in flood prone areas is unlikely. If there is any future development within the floodplain, the construction is required to meet certain standards outlined in the floodplain ordinance limiting the potential for damage. Some residential development is planned along Second NH Turnpike, but this area has only been susceptible to occasional fires in the past.

The Town of Hillsborough does not have any plans to construct any new public buildings or major infrastructure projects at this time. So, the list of critical facilities is unlikely to change in the near future.

Map 3: Critical Facilities
The Critical Facilities Map illustrates the sites inventoried within this section. They are categorized into Emergency Response and Town Facilities, Schools, Water Supplies, Bridges, Dams, Cemeteries, Churches, Communications Towers, Daycare Facilities, Elderly Housing, Entertainment and Recreation, Hazardous Material Facilities, Large Employers, Manufactured Housing Parks, and Unique/Historic Resources. Each facility is referenced by a keyed and numbered legend.

CHAPTER 5. POTENTIAL LOSSES

The Town of Hillsborough has been impacted in the past by natural disasters, including flooding, severe winter storms, and even earthquakes and hurricanes. This Chapter identifies areas in Town that are most vulnerable to these events and estimates their potential loss. 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 somewhat unique. In addition, human loss of life was not included in the potential loss estimates, but could be expected to occur, depending on the severity of the hazard.

Flooding

Flooding is often associated with hurricanes, ice-jams, rapid snow melt in the spring, and heavy rains.

In the following calculations, the average replacement value was calculated by adding up the assessed values of all structures on properties in the 100- and 500-year floodplains and then dividing by the number of structures. To do this tax records and floodplain maps were reviewed. It was not currently feasible to determine where on a property in the floodplain a structure might sit. It is possible that in some cases portions of the property may be in the floodplain, but the structure may sit on a portion of the property outside the floodplain. However, in Hillsborough many of the properties are small and almost completely in the floodplain. If a property has no structures on it, it was not considered in the calculations. The costs for repairing or replacing bridges, railroads, power lines, telephone lines, natural gas pipelines, and the contents of structures were also not included in this estimate.

The Federal Emergency Management Agency (FEMA) has developed a process to calculate potential loss for structures during flooding. The potential loss was calculated by multiplying the average replacement value by the percent of damage expected from the hazard event, and then by multiplying that figure by the number of structures. Manufactured homes, other residential, and non-residential structures were separated.

The following calculation is based on eight-foot flooding and assumes that, on average, a manufactured home receives 82% damage *(Understanding Your Risks, Identifying Hazards and Estimating Losses, FEMA page 4-13*).

Manufactured Home Damage:
69 properties x ($21,022 avg. structure replacement value x 0.82) =
$1,189,425

The following calculation is based on eight-foot flooding and assumes that, on average, one or two story buildings with basements receive 49% damage *(Understanding Your Risks, Identifying Hazards and Estimating Losses, FEMA page 4-13*).

Residential Damage:
450 properties x ($58,952 avg. structure replacement value x 0.49) =
$12,998,916

Non-Residential Damage:
56 properties x ($251,872 avg. structure replacement value x 0.49) =
$6,911,368

The following calculation is based on 4-foot flooding and assumes that, on average, a manufactured home receives 78% damage (Understanding Your Risks, Identifying Hazards and Estimating Losses, FEMA page 4-13).

Manufactured Home Damage:
69 properties s x ($21,022 avg. structure replacement value x 0**.**78) =
$1,131,404

The following calculation is based on 4-foot flooding and assumes that, on average, a one or two story building with basement receives 28% damage.

Residential Damage:
450 properties x ($58,952 avg. structure replacement value x 0.28) =
$7,427,952

Non-Residential Damage:
56 properties x ($251,872 avg. structure replacement value x 0.28) =
$3,949,353

The following calculation is based on 2-foot flooding and assumes that, on average, a manufactured home receives 63% damage.

Manufactured Home Damage:
69 properties s x ($21,022 avg. structure replacement value x 0**.**63) =
$913,826

The following calculation is based on 2-foot flooding and assumes that, on average, a one or two story building with basement receives 20% damage.

Residential Damage:
450 properties x ($58,952 avg. structure replacement value x 0.20) =
$5,305,680

Non-Residential Damage:
56 properties x ($251,872 avg. structure replacement value x 0.20) =
$2,820,966

The following areas have flooded in the past and are likely to flood in the future:

- Areas along the Contoocook River
- Portions of Beards Brook
- Areas surrounding Emerald Lake
- Portions of Severance Road, Mountain Road, and Gleason Falls Road.

The largest floodplain areas are along the Contoocook River in downtown. However, areas along smaller water bodies such as Beards Brook, Shedd Brook, and Emerald Lake seem more prone to flooding based upon past events.

Dam Breach and Failure
According to the NH Department of Environmental Services, there are 20 active dams within Hillsborough. Sixteen are classified as AA, which means dam failure would not threaten life or property, and 2 are classified as A, which means low hazard potential. The Hillsborough Sewage Lagoon Dam is classified as B, which means it has a significant hazard potential if the dam should fail. The Jackman Reservoir Dam is classified as C, which means a high hazard potential with possible loss of life and damage to major highways. The amount of dollar damage in the event of a dam breach will vary according to the extent and severity of the breach as well as the classification of the dam.

Hurricane
Damage caused by hurricanes can be both severe and expensive. In the past, Hillsborough has been impacted by wind and flooding damage as a result of hurricanes. The assessed value of all residential and commercial structures in Hillsborough in 2002 was $150,660,328. Assuming 1% to 5% town-wide damage, a hurricane could result in $1,506,003 to $7,530,016 in damage.

Tornado
Tornadoes are relatively uncommon natural hazards in NH. On average about six touch down each year. However, damage largely depends on where a tornado strikes. If it strikes an inhabited area, the impacts could be severe. In the State of New Hampshire, the total cost of tornadoes between 1950 and 1995 was $9,071,389 (The Disaster Center). The cost of a tornado in Hillsborough would not be town-wide because tornadoes strike in smaller areas. Dollar amounts would depend on if the tornado hit an area with a high density of buildings.

Wildfire
The risk of fire is difficult to predict based on location. Forest fires are more likely to occur during years of drought. In addition, areas and structures that are surrounded by dry vegetation that has not been suitably cleared are at high risk. However, fire danger is generally universal and can occur practically at any time. In the past, fires in Hillsborough have destroyed many acres of woodlands and have occurred during dry years. Dollar damage would depend on the extent of the fire, the number and type of buildings burned, and the amount of contents destroyed within the buildings.

Nor'easter and Heavy Snow Storms
Heavy snowstorms typically occur during January and February. New England usually experiences at least one or two Nor'easters with varying degrees of severity each year. Power outages, extreme cold, and impacts to infrastructure are all effects of winter storms that have been felt in Hillsborough in the past. All of these impacts are a risk to the community, including isolation, especially of the elderly, and increased traffic accidents. Damage caused as a result of this type of hazard varies according to wind velocity, snow accumulation, and duration. The assessed value of all residential and commercial structures in Hillsborough in 2002 was $150,660,328. Assuming 1% to 5% town-wide damage, a Nor'easter or heavy snow storm could result in $1,506,003 to $7,530,016 in damage.

Ice Storms
Ice storms often cause widespread power outages by downing power lines, making power lines at risk in Hillsborough. They can also cause severe damage to trees. In 1998, an ice storm inflicted $12,446,202 worth of damage to NH as a whole. Ice storms in Hillsborough could be expected to cause damage ranging from a few thousand dollars to several million, depending on the severity of the storm. The assessed value of all residential and commercial structures in Hillsborough in 2002 was $150,660,328. Assuming 1% to 5% town-wide damage, an ice storm could result in $1,506,003 to $7,530,016 in damage.

Earthquake
Earthquakes can cause buildings and bridges to collapse, disrupt gas, electric, and phone lines and are often associated with landslides and flash floods. Four earthquakes in NH between 1924-1989 had a magnitude of 4.2 or more. Two of these occurred in Ossipee, one west of Laconia, and one near the Quebec border.

Seismic lines are indicated on *Map 1: Potential Hazards*. If an earthquake were to impact Hillsborough, underground lines would be susceptible. In addition, buildings that are not built to a high seismic design level would be susceptible to structural damage. The assessed value of all residential and commercial structures in Hillsborough in 2002 was $150,660,328. Assuming 1% to 5% town-wide damage, an earthquake could result in $1,506,003 to $7,530,016 in damage.

Severe Lightning
In the past, severe lightning has caused damage to individual residences in Hillsborough. In the future, damages will vary according to the value of the home and the contents inside.

Downbursts, Hailstorms, Landslides, Radon, Drought
Similarly to tornadoes, damage caused by a downburst would not be town-wide because downbursts strike in smaller areas. Dollar amounts would depend on if the downburst hit an area with a high density of buildings.

No major hazard events have occurred related to the other events in Hillsborough, although damage would depend on the location, extent, and severity of the hazard.

Map 4: Potential Hazards and Losses
The Potential Hazards and Losses Map illustrates where the community facilities and vulnerable populations are located as well as the locations of potential and future hazards. The map shows those areas where the buildings are most susceptible to flooding, icy roads, landslides, and lightning strikes as well as the locations of bridges, dams, wetlands, the municipal water lines and the recommended evacuation routes.

CHAPTER 6. DEVELOPMENT TRENDS

A brief description of how the Town has grown in terms of both population and housing within the last three decades follows. Examination of this information will allow the Town to better understand the trends within its borders and how emergency and preventative services can best serve the growing and changing population and landscape.

It should be noted that the Emerald Lake Village District is a municipal entity organized under the laws of the State of New Hampshire and located within boundaries of the Town of Hillsborough. The District maintains its own water supply system, parks, beaches and roadways. The District is supervised by a three-person Board of Commissioners elected by the residents of the District. The area consists primarily of summer residences clustered around the 57 acre Emerald Lake (aka Gould Pond). There are also several hundred year-round residents. Since most of the following information, the population of the Emerald Lake Village District is included in the Hillsborough figures.

Population and Housing Growth

Hillsborough completed an update of its master plan in 1999. Chapters include detailed information and maps (where feasible) on History, Demographics, Economic Development, Housing, Community Facilities, Transportation, Natural Resources, and Land Use. Unfortunately, the master plan update predated the availability of the 2000 Census figures, but the document still provides valuable background on past growth trends.

Table 13

Overall Population and Housing Growth Trends in Hillsborough, 1970-2000

Growth	Population	Net Change #	Net Change %	Housing Units	Net Change #	Net Change %
1970 (US Census)	2,775	NA	NA	1,015	NA	NA
1980 (US Census)	3,437	662	23.8%	1,620	605	59.6%
1990 (US Census)	4,498	1,061	30.9%	2,157	537	33.1%
2000 (US Census)	4,928	430	9.6%	2,326	169	7.8%
Total Change from 1970 – 2000		2,153	77.6%		1,311	129%

Source: New Hampshire Association of Regional Planning Commissions website, www.anhrpc.org

As shown in Table 13 above, Hillsborough grew substantially between 1970 and 2000. The town's population almost doubled and the number of housing units did double. There was a population increase of 2,653 and an increase 1,311 in housing units. In addition, as shown below, the population density has increase from 62 persons per square mile in 1970 to 110 persons per square mile in 2000.

Table 14
Population Density in Hillsborough, 1970-2000

Community	2000 Population	Area in Square Miles (excluding water)	Persons per square mile			
			1970	1980	1990	2000
Hillsborough	4,928	43.7	62	77	101	110

Source: New Hampshire Association of Regional Planning Commissions website, www.anhrpc.org

In recent years, the Town had a steep increase in the number of residential building permits issued for new construction. In 2003, 96 permits for new residential construction verses only 36 permits in 1998. Hillsborough has experienced the addition of 362 new houses in last six years.

Table 15
New Residential Building Permits Issued, 1998 – 2003

	1998	1999	2000	2001	2002	2003	Five-Year Total*
New Residential Permits Issued (all housing types)	36	43	36	56	95	96	362

Source: Hillsborough Town Office

Land Use
Hillsborough has a total land area of 27,968 acres (excluding water), or 43.7square miles.

The most intensive land uses are along Route 202/9, Main Street, and the Contoocook River which are all close together. There is more dispersed growth in the rural outskirts of town where there are steep hillsides, many streams and ponds, and a limited roadway system.

Hillsborough contains five individual and unique communities: the Emerald Lake District, Hillsborough Center, Lower Village, Upper Village, and Downtown Hillsborough. Approximately 10% of the town's population lives in the Emerald Lake Village District which surrounds Gould Pond.

Relation to Natural Hazards
The highest density of population in Hillsborough is located in the downtown area. This area originally contained several mills located on the Contoocook River. Main Street and Route 202/9 run parallel to much of Contoocook River, and therefore downtown remains the center of commercial development. Main Street is prone to flooding, but the Route 202/9 corridor which is at a higher elevation is not.

Three other areas of town, the Emerald Lake District, Lower Village and Hillsborough center surround or are near lakes or ponds. The Emerald Lake District is made year round residences and summer homes on Gould Pond. The Lower Village includes Franklin Pierce Lake, and Loon Pond is near Loon Pond. The Emerald Lake District and Loon Pond area have the potential to flood. Franklin Pierce Lake is a dammed reservoir, so flooding can be managed there.

The less developed areas of town are more susceptible to ice, snow and wind damage than flooding. Because these areas are less developed the amount of property damage would be less in even of a natural hazard. However, people in these areas are likely to be more isolated when a weather event occurs.

CHAPTER 7. FLOODPLAIN MANAGEMENT

Second only to winter storms, flooding is the most common natural disaster to impact New Hampshire. Floods are most likely to occur in the spring due to the increase in rainfall and melting of snow. However, they can occur anytime of year as a result of heavy rains, hurricane, or Nor'easter.

Flood mitigation is an essential step in preventing flood damage. This section provides an overview of past and potential flooding risks in Hillsborough and discusses Hillsborough's participation in the National Flood Insurance Program.

Flooding in Hillsborough

The likelihood of another flood in Hillsborough seems high. The Town is highly susceptible to flooding because of the close proximity of downtown to the Contoocook River. In addition, 450 properties with single family dwellings and 69 properties with manufactured homes were counted within the 100-year and 500-year floodplain, to potential total of 519 homes. As the 2000 Census counted 2,326 housing units, it can be calculated that 22% of homes in Hillsborough may be situated in the floodplain.

The following areas have flooded in the past and are likely to flood in the future:

- Areas along the Contoocook River
- Portions of Beards Brook
- Areas surrounding Emerald Lake
- Portions of Severance Road, Mountain Road, and Gleason Falls Road.

National Flood Insurance Program

In 1968, Congress created the National Flood Insurance Program (NFIP) in response to the rising cost of taxpayer funded disaster relief for flood victims and the increasing amount of damage caused by floods. The Federal Insurance and Mitigation Administration (FIMA) a component of the Federal Emergency Management Agency (FEMA) manages the NFIP, and oversees the floodplain management and mapping components of the Program.

Communities participate in the NFIP by adopting and enforcing floodplain management ordinances to reduce future flood damage. In exchange, the NFIP makes federally subsidized flood insurance available to homeowners, renters, and business owners in these communities. Flood insurance, Federal grants and loans, Federal disaster assistance, and Federal mortgage insurance is unavailable for the acquisition or construction of structures located in the floodplain shown on the NFIP maps for those communities that do not participate in the program.

To get secured financing to buy, build, or improve structures in Special Flood Hazard Areas, it is legally required by federal law to purchase flood insurance. Lending institutions that are federally regulated or federally insured must determine if the structure is located in a SFHA and must provide written notice requiring flood insurance. Flood insurance is available to any property owner located in a community participating in the NFIP.

Flood damage is reduced by nearly $1 billion a year through partnerships with communities, the insurance industry, and the lending industry. Further, buildings constructed in compliance with NFIP building standards suffer approximately 80 percent less damage annually than those not built in compliance. Additionally, every $3 paid in flood insurance claims saves $1 in disaster assistance payments.

The NFIP is self-supporting for the average historical loss year, which means that operating expenses and flood insurance claims are not paid for by the taxpayer, but through premiums collected for flood insurance policies. The Program has borrowing authority from the U.S. Treasury for times when losses are heavy, however, these loans are paid back with interest.

Hillsborough has been a participant in the National Flood Insurance Program since 1987. Only 32 policies are in force (of the 519 residential properties in the floodplain), and 14 losses have been paid since 1978 (**Table 16**).

Table 16
Hillsborough Policy and Loss Statistics, December 2003

Policies in Force	Insurance in Force	Number of Paid Losses (since 1978)	Total Losses Paid (since 1978)
32	$5,246,100	14	$32,637

Source: December 2003 FEMA database

Repetitive Loss Properties

A specific target group of repetitive loss properties is identified and serviced separately from other NFIP policies by the Special Direct Facility (SDF). The target group includes every NFIP-insured property that, since 1978 and regardless of any change(s) of ownership during that period, has experienced four or more paid flood losses, two paid flood losses within a 10-year period that equal or exceed the current value of the insured property, or three or more paid losses that equal or exceed the current value of the insured property. The loss history includes all flood claims paid on an insured property, regardless of any changes of ownership, since the building's construction or back to 1978. Target group policies are afforded coverage, whether new or renewal, only through the SDF.

The FEMA Regional Office provides information about repetitive loss properties to state and local floodplain management officials. The FEMA Regional Office may also offer property owners building inspection and financial incentives for undertaking measures to mitigate future flood losses. These measures include elevating buildings above the level of the base flood, demolishing buildings, removing buildings from the flood area, and in some cases drainage improvement projects. If the property owners agree to mitigation measures, their property may be removed from the target list and would no longer be serviced by the SDF. As of March 2002, Hillsborough had a total of one repetitive loss properties.

Floodplain Management Goals/Reducing Flood Risks
A major objective for floodplain management is to continue participation in the National Flood Insurance Program.

Communities that agree to manage Special Flood Hazard Areas shown on NFIP maps participate in the NFIP by adopting minimum standards. The minimum requirements are the adoption of the Floodplain Ordinance and Subdivision/Site Plan Review requirements for land designated as Special Flood Hazard Areas. Hillsborough has a Floodplain Ordinance that was adopted as part of the Zoning Ordinance. The ordinance is considered a type D ordinance by the NFIP because maps are available for both the floodplain and the floodway. A floodway is the channel of a river or other watercourse that must be reserved in order to discharge the base flood. According to NFIP, a type D Ordinance must restrict all activities, including filling, mining, improvements, and new construction in the floodway unless a hydrological study is completed. Hillsborough's Floodplain Ordinance meets this requirement.

Under federal law, any structure located in the floodplain is required to have flood insurance. Federally subsidized flood insurance is available to any property owner located in a community participating in the NFIP. Communities that fail to comply with NFIP will be put on probation and/or suspended. Probation is a first warning where all policyholders receive a letter notifying them of a $50 increase in their insurance. In the event of suspension, the policyholders lose their NFIP insurance and are left to purchase insurance in the private sector, which is of significantly higher cost. If a community is having difficulty complying with NFIP policies, FEMA is available to meet with staff and volunteers to work through the difficulties and clear up any confusion before placing the community on probation or suspension.

On April 19, 2001, a Community Assistance Visit (CAV) was held in Hillsborough to review compliance with NFIP policies and educate staff on the policies. Two minor concerns were noted during this visit, but no violations were identified. Edits to the floodplain development ordinance and subdivision and site plan review regulations were suggested. The flood plain ordinance was amended at Town Meeting in March 2002, and subdivision and site plan regulations were amended by the Planning Board.

According to NFIP policies, when an applicant files a request for a building permit in the floodplain, the applicant must include an elevation certificate in order to be in compliance. In addition, if an applicant intends to fill onsite, a letter of map of revision must be submitted along with the application. According to NFIP requirements in the Floodplain Ordinance, building permits should be reviewed to assure sites are reasonably safe from flooding and require anchoring to prevent flotation, collapse, or lateral movement and construction out of flood resistant materials.

In order to reduce flood risks, the Code Enforcement Officer should be familiar with the Floodplain Ordinance and the NFIP. In addition, the Planning Board and Zoning Board of Adjustments should be familiar with NFIP policies, especially those regulations that are required to be incorporated into the Subdivision/Site Plan Review regulations. A workshop sponsored by the NH Bureau of Emergency Management or the NH Office of Energy and Planning would be appropriate to educate current staff and volunteers on a bi-yearly basis. An essential step in mitigating flood damage is participation in the NFIP. Hillsborough should work to consistently enforce NFIP compliant policies to continue its participation in this program.

CHAPTER 8. LOCAL HAZARD MITIGATION OBJECTIVES

The following objectives were adopted by the Local Hazard Mitigation Committee to represent Hillsborough's commitment to reduce the damages caused by natural hazards. The objectives were excerpted from the State Hazard Mitigation Plan and amended as needed to reflect Hillsborough's small community needs.

Objectives

1. To improve upon the protection of the general population, the citizens of Hillsborough and guests, from natural and human-made hazards.

2. To reduce the potential impact of natural and human-made disasters on the Town of Hillsborough's Critical Support Services, Critical Facilities, and Infrastructure.

3. To improve Emergency Preparedness through the Town's Disaster Response and Recovery Capability.

4. To reduce the potential impact, and related liability, of natural and human-made disasters on Hillsborough's economy, the natural environment, and on private property.

5. To reduce the potential impact of natural and human-made disasters on the Town's specific historic treasures and interests as well as other tangible and intangible characteristics which add to the quality of life of the citizens and guests of Hillsborough.

6. To identify, introduce and implement cost effective Hazard Mitigation measures so as to accomplish the Town's Goals and Objectives and to raise awareness of, and acceptance of Hazard Mitigation opportunities generally.

CHAPTER 9. EXISTING MITIGATION STRATEGIES

The Local Hazard Mitigation Committee identified a number of protection mechanisms that are currently place in Hillsborough which could reduce the damages and losses in the event of a natural disaster or secondary disaster.

Description of Existing Programs and Activities
Each program or activity was identified by the Hazard Mitigation Committee. The Committee discussed the effectiveness of each strategy and recommended changes or improvements to their existing programs.

Table 17
Existing Mitigation Strategies

Existing Program or Activity	Description	Area of Town Covered	Enforcement	Effective-ness	Improvements or Changes
Fire & Rescue Mutual Aid	Individual mutual aid agreements with neighboring towns.	Town-wide, plus Windsor	Fire Chief	High	None
This program reduces fire damage by ensuring that there is enough staff during a fire emergency.					
Firefighter I training level	Almost all firefighters are at Level I.	Town-wide, plus Windsor	Fire Chief	High	Continue to maintain high level of training. Improve technical rescue training.
This training reduces the impact of fire damage on people and property by ensuring that fire fighters are prepared to respond.					
EMT training	Currently have 12 EMTs.	Town-wide, plus Windsor	Fire Chief	High	Get more advanced life support personnel.
This training reduces the impact of natural hazards on human life. For example, if someone is seriously hurt during an ice or snow event, local fire fighters are trained to respond.					
Fire Prevention Program	Target ages 3-9 for prevention training.	Town-wide, plus Deering and Windsor	Fire Chief	High	Need updated training aids.
This program teaches children how to respond to all fires no mater whether the cause is natural or manmade.					
Annual fire station open house	Annual open house during fire prevention week	Town-wide	Fire Chief	High	None
This program teaches the public about the resources of the fire department. It could be used to teach residents about natural hazards.					
Portable generators	Two portable generators and one mobile for emergencies at night.	Town-wide, plus surrounding towns	Fire Chief	High	None
These generators can be used to keep vital offices open or light emergency sites at night in the case of natural hazards.					

Continued

Existing Program or Activity	Description	Area of Town Covered	Enforcement	Effective-ness	Improvements or Changes
Interoperability radio grant	20 mobile radios provided by the state allow for communication between every fire and rescue team	State-wide	Fire Chief	High	Will review after more use.
This equipment allows all of the fire and rescue staff across the state to communicate and respond better to all emergencies.					
Defibrillators	Have one that is shared among police cruisers	Town-wide	Police Chief	High	Should ideally have three more.
This equipment helps police respond to injured people in natural and man made emergencies.					
Weapons of Mass Destruction Training	State sponsored training for general awareness.	Town-wide	Police Chief	High	Need to ensure that all officers have training.
While designed for man-made disasters, this training has applicability to natural hazards.					
Level C protection suits	Gas masks and suits that are at an appropriate level of protection for police.	Town-wide	Police Chief	High	None
This program helps police respond to potential secondary impacts of natural disaster. For example, if a natural occurrence causes a facility to leak toxic substances, the police can respond.					
Police Mutual Aid	Renewed every two years with surrounding towns.	Town-wide, plus surrounding towns	Police Chief	High	None
This policy provides additional police personnel in case of emergencies; such emergencies include road closures and evacuations due to natural hazards.					
Emergency drills in schools	Have practiced lock downs and evacuations	Schools	Police Chief and Fire Chief	High	None
This program teaches kids how to evacuate schools in case of an emergency; such emergencies could be man made or natural hazards.					
School resource officer program	Officer assigned to school district conducts programs and distributes information	Schools	Police Chief	High	Program needs more funding.
This program can be used to distribute information about natural hazards if needed.					
Emergency Management Plan	Updated in 2003. Have reviewed thoroughly and it works well.	Town-wide	Emergency Management Director	High	Need to incorporate Hazard Mitigation Plan
This plan outlines how the town should react in case of an emergency.					
New communication tower	Being placed on Crotchet Mountain, will expand range for police communication	Town-wide	Police Chief	High	None
This new tower will allow police to communicate better in case of an emergency.					

Continued

Existing Program or Activity	Description	Area of Town Covered	Enforcement	Effective-ness	Improvements or Changes
75' setbacks from any water body	Prohibits construction within 75' of the edge of a water body.	Town-wide	Town Planner	High	None
This regulation prohibits construction on the edge of a water body, reducing the risk of flood.					
Capital Improvement Program	Adopted in 2004. Outlines future spending for fire, police, highway, and planning among other departments.	Town-wide	Planning Board	High	Need to closely examine operating budgets.
The CIP ensures that future needs for emergency personnel are being considered. This is the primary mechanism for planning future needs.					
Cell tower ordinance	Sets maximum height for cell towers.	Town-wide	Planning Board	High	None
This ordinance can ensure that towers are place where they will receive and create the least amount of damage in a natural hazard event such as a wind storm.					
Unofficial highway mutual aid	Hillsborough, Washington, Antrim, and Deering help each other.	Town-wide, plus surrounding towns	Road Agent	High	None
This unofficial policy allows Hillsborough to receive roadway help in all types of storms.					
General road maintenance program	Every year $120,000 is spent on road reconstruction.	Town-wide	Board of Selectmen, Road Agent	High	Need a more formal plan
This is the primary means of improving roads. Improved roads are less susceptible to flooding and washouts.					
Hazardous materials training	All firemen must be trained to DCON level.	Town-wide, plus Windsor	Fire Chief	Medium	Would like to add two or three technical level people.
This training reduces potential secondary impacts of natural hazards. For example, if a truck overturns because of ice, local fire personnel are trained to respond.					
Advanced Life Support Ambulance	Have one ALS ambulance that provides mutual aid to surrounding towns.	Town-wide, plus surrounding towns	Fire Chief	Medium	Need more ALS personnel and a second ambulance.
Having an Advanced Life Support Ambulance reduces the impact of natural hazards on human life. Some towns in the region do not have ambulances.					
Inspection of assembly places	Part of enforcement of the state life safety code	Town-wide, plus Windsor	Fire Chief	Medium	Need more public support and the adoption of a building code.
This program ensures that public assembly places are property constructed, and thus are likely to withstand a natural hazard.					
Fire inspection	Find origin/cause of fires. Two staff members are trained for this	Town-wide, plus Windsor	Fire Chief	Medium	Need better inspection equipment to help with evidence collection.
This program can help find the cause of natural or man made fires or a combination of both.					

Continued

Existing Program or Activity	Description	Area of Town Covered	Enforcement	Effective-ness	Improvements or Changes
Floodplain ordinance	Standard NFIP ordinance.	Town-wide	Town Planner	Medium	Doesn't prevent construction. Doesn't apply to non-substantial improvements.
The ordinance requires new structures in the floodplain to meet certain standards.					
Drinking water protection ordinance	Requires a 200' setback on Loon Pond	Town-wide	Water & Sewer Commission, Board of Selectmen	Medium	Language concerning variances needs to be clarified.
This ordinance limits construction along Loon Pond, reducing the risk of flood.					
1999 Town Master Plan	Recommends creating aquifer and slope protection ordinances.	Town-wide	Planning Board	Medium	Plan is just a guide, needs to be updated by 2007.
This plan has the potential to lead to more regulation of slopes and the aquifer.					
State building code	State standards for building construction	Town-wide	State Fire Marshal	Low	Enforcement is difficult.
This code is designed to ensure that buildings are constructed well. This can mean that they can withstand natural hazards better.					

CHAPTER 10. NEWLY IDENTIFIED MITIGATION STRATEGIES

In addition to the programs and activities that Hillsborough is currently undertaking to protect its residents and property from a natural disaster, a number of additional strategies were identified by the Hazard Mitigation Committee for consideration. Many of these newly identified mitigation strategies will be considered for further action in the Mitigation Action Plan in the **EVALUATION AND IMPLEMENTATION OF ACTIONS** chapter. Some, but not all, of them are the result of improvements to the existing strategies identified in **Table 18**. Here these actions are sorted by the hazard they address. In Chapter 11, they are sorted by program and activity type and by priority ranking.

These types of activities were considered when determining new programs and activities which Hillsborough can develop:

- Life and Property Protection
- Emergency Services
- Public Information and Involvement
- Training and Preparation
- Planning and Implementation

Table 18
Potential Mitigation Strategies

Primary Hazard Type(s)	Potential Program or Activity	Description and Justification of Potential Strategy(ies)	Affected Location	Type of Activity
All	Equipment trailer	Purchase a trailer to move equipment faster from area to area. This would be used for emergency activities such as tree removal or sandbagging.	Town-wide	Emergency services
All	Resource list	Create a plan for where to obtain needed supplies in an emergency. This will save time in cases of emergencies.	Town-wide	Planning and Implementation
All	Building code	Adopt a building code to ensure that construction can withstand most natural hazards.	Town-wide	Property/ structural protection
All	Drinking water protection	Clarify the drinking water protection ordinance concerning variances. This could limit the number of variances for structures around Loon Pond.	Loon Pond	Life and Property Protection (as a result of natural resources protection)
All	Emergency clean up	Purchase a bull dozer to help with emergency clean up. This would be used to clean up roads and protect structures.	Town-wide	Emergency services
All	Signage	Purchase additional signage to direct vehicles when roads are blocked. This would be used for downed trees, washed out roads, ice areas, etc.	Town-wide	Emergency services

Continued

Primary Hazard Type	Potential Program or Activity	Description of Potential Strategy(ies)	Affected Location	Type of Activity
All	Night time operations	Purchase a generator to provide flood lighting at night. This would be used for emergency road repair, fallen trees, and sandbagging.	Town-wide	Emergency services
All	Formalize Highway Mutual Aid Agreement	Formalize agreements related to highway assistance with neighboring towns. This would ensure help during all types of storms.	Town-wide	Emergency services
All	School resource officer program	Secure more funding for school resource officer program. This program can be used to disseminate information about natural hazards.	Schools	Public Information and involvement
All	Site specific emergency plans	Create plans for emergency response at specific locations such as major employers or gathering spots	Population centers	Planning and Implementation
All	New phone system	Get a new phone system at Town Hall to ensure that all calls are directed efficiently.	Town-wide	Public information and involvement
All	Road clean up	Purchase more trucks for road clean up and construction	Town-wide	Emergency Services
Fire	Fire prevention program	Update training aids. This program trains people how to prevent man made fires which can grow into natural hazards.	Town-wide	Training and Preparation
Fire	Fire inspection and investigation	Purchase better inspection and investigation equipment. This will help fire dept. understand the cause of man-made and natural fires.	Town-wide	Training and Preparation
Flooding	Road upgrades	Secure more funds for road reconstruction. Many roads have poor drainage and rough surfaces. They area subject to washouts. Roads in need of immediate upgrades include: Second NH Turnpike Gould Pond Road Hall Road Beard Road Bible Hill Road	Town-wide	Life and Property Protection
Flooding	Drainage upgrades	Secure more funds for storm water drainage. Roads and houses sometimes flood because of the poor drainage system. Roads with culverts in need of immediate upgrade include: Gleason Falls Road Carter Road These roads each have 5' culverts that need to be replaced with 7 or 8' culverts.	Town-wide	Life and Property Protection
Flooding	Floodplain Ordinance	Enhance floodplain protection ordinance to limit construction in the floodplain.	Floodplain	Property/ structural protection

Continued

Primary Hazard Type	Potential Program or Activity	Description of Potential Strategy(ies)	Affected Location	Type of Activity
Flooding	Floodplain Assessment	Currently, the Town does not have a precise assessment of the number of structures in the floodplain. It is known when a part of a parcel is in the floodplain, but it is not easy to compare building location and flood boundaries. Conduct an assessment of structure locations and the flood boundary.	Floodplain	Planning and Implementation
Flooding	Evacuation routes	Improve evacuation plans to limit dangers to residents. This effort would include public information about dangerous areas and ways to avoid dangerous/damaging situations.	Town-wide	Public Information and Involvement
Flooding	Information for business owners	Provide information to businesses about flood proofing and maintaining operations during disasters.	Downtown	Public Information and Involvement
Flooding	Dam assessment	Analyze the one class "C" dam in town, the Jackman Reservoir Dam. Assess what improvements need to be made to upgrade the dam.	Jackman Reservoir	Life and Property Protection
Flooding	Outreach to manufactured home park residents	Inform residents of the Whitney Manufactured Home Park of potential flooding threats and ways to mitigate impacts.	Whitney Manufactured Home Park	Public Information and Involvment
Flooding	Hazardous Material Facilities	Evaluate impacts of hazardous material in floodplain. Several gas stations and industrial sites are in the floodplain.	Specific business locations	Life and Property Protection
Flooding	Wastewater Treatment Plant Evaluation	Evaluate whether or not potential flooding could adversely impact the facility or water quality.	Wastewater Treatment Plant	Life and Property Protection (as a result of natural resources protection)
Flooding	Stone arch bridge evaluation	Evaluate stone arch bridges to see if they cause flooding or are in need of repair.	Contoocook River	Life and Property Protection
Flooding	National Guard Building Evaluation	Evaluate flooding threat to National Guard building because it is a critical facility near the floodplain.	National Guard Building	Life and Property Protection
Flooding Snow and Ice	Subdivision regulations (road design)	Improve road design specifications. This will help will make roads easier to plow, less subject to washouts, and better for evacuation. Will include an analysis of best design practices and an assessment of where what types of road designs are needed.	Town-wide	Planning and Implementation
Flooding Snow and ice	Road re-construction training	Continue training for workers on tools and safety so they know how to make emergency repairs.	Town-wide	Emergency services

Continued

Primary Hazard Type	Potential Program or Activity	Description of Potential Strategy(ies)	Affected Location	Type of Activity
Landslides	Slope ordinance	Adopt a slope ordinance to limit building on steep slopes. This will prevent landslides and structural damage. This effort would begin with an analysis of the steepest slopes in town.	Sloped areas	Life and Property Protection
Wind	Hazardous tree removal	Continue removing hazardous trees, so that they won't fall into roads during storms.	Town-wide	Life and Property Protection
Wind	Inform citizens about hazardous tree removal	Develop educational materials for homeowners and an overall tree management.	Town-wide	Public Information and Involvement
Secondary human impacts of all hazard types	Ambulance purchase	Purchase new ambulance. Current single ambulance can't keep up with demand. Will ensure that there is proper equipment in an emergency.	Town-wide	Emergency Services
Secondary human impacts of all hazard types	Defibrillators	Need four more defibrillators for police cruisers, plus one for the police training center	Town-wide	Emergency services
Secondary human impacts of all hazard types	Hazardous materials training	Train more technical level people. This will help the town deal with hazardous spills caused by natural hazards such as ice.	Town-wide	Training and preparation
Secondary human impacts of all hazard types	Technical rescue training	Improve technical rescue training. This will increase ability to assist people by assuring that staff is well trained.	Town-wide	Training and preparation
Secondary human impacts of all hazard types	Personnel increase - advance life support	Hire more advanced life support personnel. Currently have 3. This will increase ability to assist people by assuring that staff is well trained.	Town-wide	Training and preparation

CHAPTER 11. EVALUATION AND IMPLEMENTATION OF ACTIONS

The Hazard Mitigation Committee ranked each of the new or improved mitigation strategies by utilizing the following criteria. The Committee asked and then answered such questions as "Does the action reduce damage?", "Does the action contribute to Town objectives?", "Is the action socially acceptable", and "Does the action offer reasonable benefits compared to its cost in implementing?"

The following list documents the questions (criteria) that were posed to the Committee. The Committee responded to these and other questions, with a numeric score of "1" (indicating poor), a "2" (indicating average), and a "3" (indicating good).

- Does the action reduce damage?
- Does the action contribute to community objectives?
- Does the action meet existing regulations?
- Does the action protect historic structures?
- Can the action be implemented quickly?
- Is the action socially acceptable?
- Is the action technically feasible?
- Is the action administratively possible?
- Is the action politically acceptable?
- Is the action legal?
- Does the action offer reasonable benefits compared to its cost in implementing?
- Is the action environmentally sound?

The numeric answers were totaled to give a final score for each of the criteria. Those answers which totaled higher were given the higher priority. A score of 36 would indicate that the mitigation strategy, or action, received the highest possible score. The scores ranged from a high of 36 to a low of 24. The full scoring matrix is located in the **APPENDIX**. The rankings are indicated in the *Priority Score* column on the Mitigation Action Plan table on the following page.

Hillsborough's Mitigation Action Plan

The ranking in the *Priority Score* column in **Tables 19 A-E** is merely a guideline for when the Town should begin acting on the identified strategies, or Actions. The Committee then determined who would be responsible for ensuring that each action would be completed, the recommended completion date, the approximate cost for completing the action, and how the action would be funded. The Mitigation Action Plan is a comprehensive strategy designed to help the Town of Hillsborough prepare in advance for the impacts of natural disasters. Combined with the maps of this Hazard Mitigation Plan, the Action Plan should guide future hazard mitigation efforts.

Table 19A

Hillsborough's Mitigation Action Plan 2004: Life and Property Protection

Priority Score	Action	Who is Responsible	Completed By Date	Approx Cost*	How Funded
31	Increase funds for road upgrades. Roads in need include: Second NH Turnpike, Gould Pond Rd., Hall Rd., Beard Rd., and Bible Hill Rd.	Selectmen	Starting in 2005, then ongoing	$240,000 annually	Town Budget
Project Rationale: Currently the Town is spending $120,000 a year on road upgrades, and not all needs are met. Poor roads contribute to poor drainage and flooding.					
Cost Rationale: Road reconstruction costs approximately $100,000 per mile in Hillsborough, so this cost will allow for approximately 2.5 miles of road work each year.					
31	Increase funds for storm drainage upgrades. Culverts in need of upgrade include ones on: Gleason Falls Rd. and Carter Rd.	Selectmen	Starting in 2005, then ongoing	$75,000	Town Budget
Project Rationale: Storm drainage needs to be maintained and updated to avoid roadway flooding					
Cost Rationale: Cost is for equipment and manpower.					
31	Enhance floodplain development ordinance	Planning Board	March 2005	$0	Town Budget
Project Rationale: The current ordinance doesn't prevent construction and doesn't apply to non-substantial improvements. Improving the ordinance would limit construction in the floodplain.					
Cost Rationale: Cost is $0 because work would be done as part of the regular duties of the planning staff and volunteer planning board.					
30	Continue hazardous tree removal	Highway Foreman	Ongoing	$3,000 annually	Town Budget
Project Rationale: The Town routinely removes trees that appear to be hazardous in order to prevent them from doing damage during a weather event.					
Cost Rationale: Cost is for staff time and equipment.					
30	Assess wastewater treatment plant	Water and Sewer Commission	December 2005	Unknown	Sewer Users
Project Rationale: The plant is in the floodplain. Assessment of the impacts of flooding could help avoid potential flooding of the plant and water contamination.					
Cost Rationale: The scope of the project is unknown. Some materials could already exist. The study could be part of a larger project.					

Continued

Priority Score	Action	Who is Responsible	Completed By Date	Approx Cost*	How Funded
29	Evaluate stone arch bridges	Board of Selectmen	Done on an ongoing basis	Varies	State and local funds
Project Rationale: Since the bridges are historic, they could be in need of repair. In addition, their size may limit water flow. Evaluating these situations could avoid flooding and bridge damage. The State does inspect these bridges on a regular basis, a report is given to the town, and the bridges are repaired if needed.					
Cost Rationale: Regular maintenance and upkeep is performed. The cost is variable.					
29	Adopt a building code.	Planning Board	March 2005	$500	Town Budget
Project Rationale: A building code would ensure higher quality construction that could withstand more impacts from severe weather.					
Cost Rationale: Cost is for fairly extensive public outreach (mailings, etc) since a building code would affect all town residents.					
28	Clarify the drinking water protection ordinance	Planning Board	March 2005	$0	Town Budget
Project Rationale: Even though this would be designed for natural resources protection, it could prevent life and property damage by limiting the number of structures around Loon Pond. Current inconstancies in the ordinance could allow a pollutant source.					
Cost Rationale: Cost is $0 because work would be done as part of the regular duties of the planning administrator, Planning Board, and Town Attorney.					
28	Adopt an ordinance to limit construction on steep slopes	Planning Board	March 2005	$0	Town Budget
Project Rationale: Limiting construction on steep slopes would limit property damage in the case of flooding and landslides.					
Cost Rationale: Cost is $0 because work would be done as part of the regular duties of the planning administrator, Planning Board, and Town Attorney.					
27	Assess Class "C" dam	Road Agent	December 2006	$50,000	PSNH and NH DES
Project Rationale: One dam in Town is listed by the state as having significant hazard potential. The level of repair needed and potential impacts should be understood.					
Cost Rationale: Cost is a rough guess for hiring a professional engineering firm to conduct the study.					
23	Evaluate National Guard building.	Staff of the NH Army National Guard	December 2007	$5,000	Army National Guard
Project Rationale: This building is a critical facility that is very near the floodplain. The potential impacts of flooding on this building should be understood.					
Cost Rationale: Cost is thought to include an elevation survey with building setbacks. An evaluation may already exist.					

Continued

Priority Score	Action	Who is Responsible	Completed By Date	Approx Cost*	How Funded
22	Assess hazardous materials locations	Fire Department	December 2007	$5,000	Fire Department Budget
Project Rationale: Several businesses with hazardous material are located in the floodplain. These businesses should be evaluated so the threat of potential spills can be understood and mitigated.					
Cost Rationale: Cost is a to hire a technical consultant to produce the study.					

Table 19B

Hillsborough's Mitigation Action Plan 2004: Emergency Services

Priority Score	Action	Who is Responsible	Completed By Date	Approx Cost*	How Funded
36	Purchase a generator to provide flood lighting at night	Highway Foreman	2005	$17,000	Town Budget
Project Rationale: Purchase of a generator would allow the Highway Department to work at night when there are occurrences such as road wash outs.					
Cost Rationale: The cost is the cost of a generator and lighting equipment.					
35	Formalize highway assistance agreements with neighboring towns (mutual aid)	Highway Forman	2004	$0	Town Budget
Project Rationale: Currently Hillsborough and neighboring towns help each other with road work in emergencies based on an informal agreement. Formalizing this agreement would create ensure that assistance is available and outline the type of assistance.					
Cost Rationale: Cost is $0 because this will be done as part of the Highway Foreman's regular duties.					
34	Purchase bull dozer to help with clean up	Highway Foreman	2005	$85,000	Town Budget
Project Rationale: A bull dozer could be used to clear roads of debris or build berms in the case of flooding.					
Cost Rationale: Cost is the cost of the bull dozer, which might be purchased second hand.					
34	Purchase more trucks for road clean up and construction	Highway Foreman	2006	$130,000	Town Budget
Project Rationale: Having another truck would provide for simultaneous clean up of two different locations and make clean up faster.					
Cost Rationale: Cost is for one 10 wheeler (dump truck with plow)					

Continued

Priority Score	Action	Who is Responsible	Completed By Date	Approx Cost*	How Funded
34	Purchase a trailer to move equipment from area to area	Highway Foreman	2006	$60,000	Town Budget
Project Rationale: Trailer would enable to the Highway Department to work more effectively by not making several trips to a site, or moving several pieces of equipment one at a time.					
Cost Rationale: Cost is for a flat bed trailer.					
34	Purchase additional signage	Highway Foreman	2005	$3,000	Town Budget
Project Rationale: The Town needs signs to direct vehicles when roads are blocked, for example detour, road blocked, and/or high water signs.					
Cost Rationale: Cost is for several road signs.					
34	Continue training highway works about tools and safety	Highway Foreman	Ongoing	$1000 annually	Town Budget
Project Rationale: Good training allows workers who clear roads to work faster and more safely. It enables them to know how to react to hazards appropriately.					
Cost Rationale: Cost is for the cost of training and staff time to attend the training.					
33	Purchase a second ambulance	Fire Chief	March 2005	$100,000	Town Budget (capital reserves)
Project Rationale: Currently, the Town's single ambulance can not address all needs. Frequently two people need the service of the ambulance at once.					
Cost Rationale: Cost is the cost of an ambulance.					
28	Get 5 more defibrillators	Police Chief	2009	$3,500 annually for 5 years	Town Budget and donations
Project Rationale: Defibrillators are needed in the police cruisers and one is needed at police headquarters. The Police are often the first people at the scene of an emergency so they need to have defibrillators.					
Cost Rationale: Cost represents $2,500 for a defibrillator and $1000 for training each year.					

Table 19C

Hillsborough's Mitigation Action Plan 2004: Public Information and Involvement

Priority Score	Action	Who is Responsible	Completed By Date	Approx Cost*	How Funded
30	Improve evacuation plans	Emergency Management Director	2006	$0	Town Budget
Project Rationale: The evacuation plans need to be updated. This effort would include public education about routes and potential dangers.					
Cost Rationale: The cost is $0 because the Emergency Management Director would do this as part of his regular duties.					
26	Purchase a new phone system for Town Hall	Town Business Manager	March 2005	$12,000	Town Budget
Project Rationale: An automated phone system would make Town Hall more efficient and promote better emergency response.					
Cost Rationale: Cost is for phones and phone installation					
26	Conduct outreach to residents of Whitney manufactured home park	Code Enforcement Officer and Park Owner	December 2007	$250	Code Enforcement budget
Project Rationale: A portion of the Whitney Home Park is in the floodplain. Residents should be informed of the threat of flooding and how to deal with it.					
Cost Rationale: Cost includes informational material bulkmailed to residents and a public information meeting.					
24	Continue school resource officer program	Police Chief	2006	$45,000	Town Budget and school budget
Project Rationale: Having an officer in the schools can educate student about how to react in emergency situations and help with evacuation if needed.					
Cost Rationale: Cost is for the salary of one officer and any training he or she may conduct.					
16	Develop educational material about tree maintenance.	Conservation Commission	December 2006	$1,500	Conservation Commission budget
Project Rationale: Trees are a major source of damage during snow and wind storms. The Town removes hazardous trees, but damage could be reduced if homeowners were educated about proper tree maintenance.					
Cost Rationale: Cost is for developing a brochure and mailing it out to all homeowners.					
15	Conduct outreach to business owners	Hillsborough Pride / Main Street Program	December 2006	$250	Hillsborough Pride budget
Project Rationale: Many downtown businesses are near the floodplain. Providing information about flood prevention and whys to cope with floods would reduce damage.					
Cost Rationale: Cost includes the printing of informative material.					

Table 19D

Hillsborough's Mitigation Action Plan 2004: Training and Preparation

Priority Score	Action	Who is Responsible	Completed By Date	Approx Cost*	How Funded
35	Update fire prevention training aids	Fire Chief	Ongoing	$4000 annually	Town Budget
Project Rationale: The fire department conducts fire prevention for the public. Better training aids would make the sessions more effective.					
Cost Rationale: Cost is for educational tools such as videos and coloring books about fire prevention. Cost also includes staff time to conduct the training.					
31	Purchase better fire investigation equipment	Fire Chief	2006	$1,000 initially, $500 annually	Town Budget
Project Rationale: Fire investigation used to be done by the State. The Town has to take on fire investigation (and needs appropriate equipment) to learn from fires and prevent them in the future.					
Cost Rationale: Cost is for equipment like evidence cans and PID meters.					
30	Improve technical rescue training	Fire Chief	Ongoing	$1000	Town Budget and donation from Sylvania plant
Project Rationale: Training would help the fire department staff be more capable of protecting people.					
Cost Rationale: Cost is for staff time and training equipment.					
29	Hire 3 more advanced life support personnel.	Fire Chief	2008	$150,000	Town Budget
Project Rationale: Not all of the rescue personnel are trained in advanced life support, and thus more skilled staff is needed.					
Cost Rationale: Cost is for the salaries and benefits of three people.					
28	Train 3 more people to deal with hazardous materials	Fire Chief	Nov 2005	$2,900	Town Budget
Project Rationale: Need more training to meet state requirements. In addition, a large amount of hazardous waste is transported through Hillsborough, so the skill is needed on staff in case of an emergency.					
Cost Rationale: Cost is for training for 3 people and staff time to have their shift covered while at training.					

Table 19E
Hillsborough's Mitigation Action Plan 2004: Planning and Implementation

Priority Score	Action	Who is Responsible	Completed By Date	Approx Cost*	How Funded
34	Improve road design specifications (subdivision regulations)	Planning Board	2005	$0	Town Budget
Project Rationale: Requiring better road construction would prevent wash outs and improve drainage.					
Cost Rationale: The cost is $0 because the work would be done as part of regular staff duties and volunteer board operations.					
32	Create a resource list of where to get supplies in an emergency	Fire Chief	April 2005	$0	Town Budget
Project Rationale: The Fire Department would like to have a list of where to get certain supplies in an emergency. This list could be quickly referenced is supplies were needed.					
Cost Rationale: The cost is $0 because the list would be created as part of the fire department staff's regular duties.					
32	Create emergency response plans for certain locations (pre-plans)	Fire Chief	2006 for the creation of plans that will be updated on an ongoing basis	$15,000	Town Budget
Project Rationale: Large employment centers should have individual emergency response plans.					
Cost Rationale: The cost is for new staff or a consultant to write the plans. There is not time to have fire department staff create these plans as part of their regular duties, so help will be needed.					
23	Floodplain assessment	Town Planner	Need updated FEMA maps, then perhaps by December 2007	$25,000	Grants, property taxes
Project Rationale: The Town does not have a clear assessment of how many structures are in the floodplain. It is known whether a property is all or partially in the floodplain, but not known if the structure is. An overall analysis of building location and floodplain boundaries would be helpful. The floodplain maps need to be updated first.					
Cost Rationale: Costs include field checking and hiring a surveyor or engineer. Effort will be facilitated by Town Staff.					

** The Approximate Cost for each project was a rough estimate agreed upon by the Hazard Mitigation Committee utilizing their various fields of expertise. The costs are total approximate costs for the entire project. In-kind staff time is not considered as part of out-of-pocket expense.*

The prioritization exercise helped the Committee seriously evaluate the new hazard mitigation strategies that they had brainstormed throughout the Hazard Mitigation Planning process. While the actions would all help improve the Town's disaster responsiveness capability, funding availability will be a driving factor in determining what and when new mitigation strategies are implemented. For example, the hiring of more personnel trained in advanced live support would have an immediate positive impact on the community, but because of the cost it was rated on the low side.

Cost to Benefit Analysis
There are 37 Actions within the Mitigation Action Plan. As indicated in the above table, those Actions which cost the least or impart the highest benefit to residents and businesses are not necessarily the first Actions to be completed. Some Actions that can be accomplished with little time or money (such as updating codes) were given a lower priority because they are considered less important than several of the actions that would have an impact in a weather event (such as the purchase of more highway equipment

Less than $100
Eight Action items listed cost less than $100. In fact these eight items are all listed with as having no cost because they are things that can be done as part of the regular duties of town staff. Most of these items involve updating codes, and the cost of doing so has already been factored into the operations of the planning function of the Town.

$101 to $10,000
Fourteen Actions identified are in this cost range. One of the eight, adopting a building code, is similar to the regulation changes mentioned above, but it is felt this action will require more public outreach, and thus additional cost, than the ordinance updates. Several items in this cost category relate to training, for example it would cost approximately $2,900 to train three more people to deal with hazardous waste. Typically training cost includes the fee for a course and the staff time spent attending. Three of the items in this category involve the purchase of supplies such as new roadway signs.

The highest cost to benefit gained for each Action is again dependent on the chances of a hazard event, the type of hazard, and its severity. Potential loss of life and property are extremely difficult to predict or place a dollar figure on. However, the following may provide the best cost to benefit relationship within this monetary category based on their capability to directly affect life safety:

- Purchase additional road signage to use in emergencies. [2005]
- Improve technical rescue training. [Ongoing]
- Train more people to deal with hazardous materials spills [November 2005]
- Conduct outreach to residents of Whitney manufactured home park. [December 2007]

Over $10,000

Most Actions costing over $10,000 involve the purchase of large equipment, hiring of staff, conducting studies/assessments or improvements to infrastructure. Those Actions for which an estimated cost could not be developed are also assumed to cost over $10,000. Some Actions in this cost category involve the reconstruction and maintenance of roads and drainage systems, which is seen as key to insuring mobility in a disaster. Other Actions have to do with hiring more personnel like more people trained in advance life support and a school-based police officer.

The highest cost to benefit for these Actions is difficult to anticipate as most of these expenditures are required to keep the town operating in a safe manner. Nonetheless, the following may provide the highest cost to benefit based on their on their capability to help the Town react more effectively in an emergency:

- Purchasing a generator and flood lighting so emergency crews can work at night [2005]
- Purchasing a bull dozer to clear debris. [2005]
- Purchasing a second ambulance [March 2005]
- Floodplain assessment (after new FEMA maps are issued. [December 2007]

CHAPTER 12. PLAN MONITORING, EVALUATING, AND UPDATING

The completion of a planning document is merely the first step in its life as an evolving tool. The Hazard Mitigation Plan is a dynamic document which should be reviewed on a regular basis as to its relevancy and usefulness and to add new tasks as old tasks are completed. This Chapter will discuss the methods by which the Town of Hillsborough will review, monitor, and update its 2005 Hazard Mitigation Plan.

Maintenance and Update Schedule of the Hazard Mitigation Plan

The Hillsborough Town Administrator will formulate a permanent Local Hazard Mitigation Committee with assistance from the Board of Selectmen. The Business Administrator will serve as Chair of the Committee. Existing Hazard Mitigation Committee members have expressed a desire to join the new permanent Committee. This Committee will meet quarterly according to the following schedule:

Table 20
Hazard Mitigation Committee Annual Future Meeting Schedule

Month	Preliminary Agenda
April	Department reports on Action Items status, Evaluation of Existing Hazard Mitigation Plan
July	Begin to update the Hazard Mitigation Plan, Status of Implementation Action items
October	Update the Hazard Mitigation Plan, Begin writing warrant articles and budget requests for Implementation Action Items
January	Department reports on Action Items status, Finalize warrant articles and budget requests for first Implementation Action items

For each of these meetings, the Business Administrator will invite Department Heads and Board Chairs staff to participate in the meetings as well as coordinating with the permanent Hazard Mitigation Committee. Public notice will be given as press releases in local papers, will be posted in the public places in Hillsborough, and will be posted on the Town of Hillsborough website.

The Hazard Mitigation Plan will be updated annually according to the schedule in **Table 20**. Funds will be placed into the annual budget for the administrative costs associated with updating the plan such as word processing and map generation, and for printing costs.

The Business Administrator will work with the Board of Selectmen to schedule a series of meetings to update the Hazard Mitigation Plan as part of the budget process cycle in the fall of each year. Strategies, actions, or items identified will be placed into the following fiscal year's budget request.

The Business Administrator will invite Department Heads, Board Chairs, and administrative staff to participate in the annual meetings to update the Hazard Mitigation Plan and will place notices in local papers, post in public places.

Implementation of the Plan Through Existing Programs
In addition to work by the Hazard Mitigation Committee and Town Departments, several other mechanisms exist which will ensure that the Hazard Mitigation Plan receives the attention it requires for satisfactory use.

Master Plan
The Hillsborough Master Plan was last updated in 1999. An update has not yet been scheduled. However, when an update is done, the incorporation of the Hazard Mitigation Plan should be encouraged by the Local Hazard Mitigation Committee.

Capital Improvements Program
On January 7, 2004 Hillsborough adopted a Capital Improvements Program (CIP) that runs through 2008. Although this plan serves a guide for the next several years, it will be updated annually.

Strategies or purchases requiring capital improvements from the Hazard Mitigation Plan will be inserted into the Capital Improvements Program. Depending on the Town's funding needs, a Capital Reserve Fund for Hazard Mitigation Program Projects may be established to set aside funding for the many projects identified in the Hazard Mitigation Plan. The Local Hazard Mitigation Committee will oversee the process to begin working with the CIP Committee to incorporate the various projects into the yearly CIP updates.

Zoning Ordinance and Regulations
Several of the implementation strategies proposed involve revisions to the Subdivision Regulations and/or the Site Plan Review Regulations. Member of the Local Hazard Mitigation Committee will oversee the process to begin working with the Planning Board to develop appropriate language for the modifications.

Continued Public Involvement
On behalf of the Hazard Mitigation Committee, the Town Business Administrator, under direction of the Board of Selectmen, will be responsible for ensuring that Town Departments and the public have adequate opportunity to participate in the planning process. Other administrative staff may be utilized to assist with the public involvement process.

For each quarterly meeting (see **Table 20**) and for the yearly update process, techniques that will be utilized for public involvement include:

- Provide personal invitations to Budget Committee members;
- Provide personal invitations to Town Department heads;
- Post notices of meetings at the Town Office, Fire Department, and Library;
- Post flyers of the project at the Town Office, Fire Department, and Library; and
- Submit newspaper articles for publication to the Concord Monitor and the Union Leader.

The Local Hazard Mitigation Committee will ensure that the Town website is updated with the Hazard Mitigation meeting notices. A two-page summary of the Hazard Mitigation Plan and its process will be posted on the Hillsborough Town website which is accessible to residents and visitors at all times. All public meetings of the Hazard Mitigation Committee will be posted on the website. A number of Implementation Action items which will be undertaken relate to public education and involvement.

These outreach activities will be undertaken during the Plan's annual review and during any Hazard Mitigation Committee meetings the Board of Selectmen calls to order.

CHAPTER 13. APPENDIX

The Appendix contains supplemental information to this Hazard Mitigation Plan. The intent of this Plan is to provide information about potential disasters, assets at risk, and a means of implementing the actions to help minimize loss to life and property. In addition, the process by which grant and relief money can be obtained and what programs are available to assist the Town and its residents are equally important. When the Hazard Mitigation Plan process is repeated in 2004 and subsequent years, materials used for publicity and meetings are exhibited to lay out the process for future Hazard Mitigation Committees.

Process for Disaster Declaration in Hillsborough

There are two phases to a disaster – first response and recovery. The recovery phase, or clean-up efforts, is where the majority of grant funds could be applied for. Having a Hazard Mitigation Plan in place before a disaster occurs, according to the US Disaster Mitigation Act of 2000 and its amendments, is required after November 2004 in order to be eligible to apply for these recovery funds. These grant programs are briefly explained later in this chapter under the **Grant Programs for Disaster Relief** section.

FEMA Information

The Federal Emergency Management Agency (FEMA) has extensive resources related to disaster prevention and disaster recovery on its website at www.fema.gov. The following is an excerpt from their on-line library:

The first response to a disaster is the job of local government's emergency services with help from nearby municipalities, the state and volunteer agencies. In a catastrophic disaster, and if the governor requests, federal resources can be mobilized through the Federal Emergency Management Agency (FEMA) for search and rescue, electrical power, food, water, shelter and other basic human needs.

It is the long-term recovery phase of disaster which places the most severe financial strain on a local or state government. Damage to public facilities and infrastructure, often not insured, can overwhelm even a large city.

A governor's request for a major disaster declaration could mean an infusion of federal funds, but the governor must also commit significant state funds and resources for recovery efforts. A Major Disaster could result from a hurricane, earthquake, flood, tornado or major fire which the President determines warrants supplemental federal aid. The event must be clearly more than state or local governments can handle alone. If declared, funding comes from the President's Disaster Relief Fund, which is managed by FEMA, and disaster aid programs of other participating federal agencies.

A Presidential Major Disaster Declaration puts into motion long-term federal recovery programs, some of which are matched by state programs, and designed to help disaster victims, businesses and public entities.

An Emergency Declaration is more limited in scope and without the long-term federal recovery programs of a Major Disaster Declaration. Generally, federal assistance and funding are provided to meet a specific emergency need or to help prevent a major disaster from occurring.

The Major Disaster Process

A Major Disaster Declaration usually follows these steps:

- The Local government responds, supplemented by neighboring communities and volunteer agencies. If overwhelmed, turn to the state for assistance;
- The State responds with state resources, such as the National Guard and state agencies;
- Damage assessment by local, state, federal, and volunteer organizations determines losses and recovery needs;
- A Major Disaster Declaration is requested by the governor, based on the damage assessment, and an agreement to commit state funds and resources to the long-term recovery;
- FEMA evaluates the request and recommends action to the White House based on the disaster, the local community and the state's ability to recover;
- The President approves the request or FEMA informs the governor it has been denied. This decision process could take a few hours or several weeks depending on the nature of the disaster.

Disaster Aid Programs

There are two major categories of disaster aid: Individual Assistance is for damage to residences and businesses or personal property losses, and Public Assistance is for repair of infrastructure, public facilities and debris removal.

Individual Assistance

Immediately after the declaration, disaster workers arrive and set up a central field office to coordinate the recovery effort. A toll-free telephone number is published for use by affected residents and business owners in registering for assistance. Disaster Recovery Centers also are opened where disaster victims can meet with program representatives and obtain information about available aid and the recovery process.

Disaster aid to individuals generally falls into the following categories:

Disaster Housing may be available for up to 18 months, using local resources, for displaced persons whose residences were heavily damaged or destroyed. Funding also can be provided for housing repairs and replacement of damaged items to make homes habitable.

Disaster Grants are available to help meet other serious disaster related needs and necessary expenses not covered by insurance and other aid programs. These may include replacement of personal property, and transportation, medical, dental and funeral expenses.

Low-Interest Disaster Loans are available after a disaster for homeowners and renters from the U.S. Small Business Administration (SBA) to cover uninsured property losses. Loans may be for repair or replacement of homes, automobiles, clothing or other damaged personal property. Loans are also available to businesses for property loss and economic injury.

Other Disaster Aid Programs include crisis counseling, disaster-related unemployment assistance, legal aid and assistance with income tax, Social Security and Veteran's benefits. Other state or local help may also be available.

Assistance Process -- After the application is taken, the damaged property is inspected to verify the loss. If approved, an applicant will soon receive a check for rental assistance or a grant. Loan applications require more information and approval may take several weeks after application. The deadline for most individual assistance programs is 60 days following the President's major disaster declaration.

Audits are done later to ensure that aid went to only those who were eligible and that disaster aid funds were used only for their intended purposes. These federal program funds cannot duplicate assistance provided by other sources such as insurance.

After a major disaster, FEMA tries to notify all disaster victims about the available aid programs and urge them to apply. The news media are encouraged to visit a Disaster Recovery Center, meet with disaster officials, and help publicize the disaster aid programs and the toll-free teleregistration number.

Public Assistance
Public Assistance is aid to state or local governments to pay part of the costs of rebuilding a community's damaged infrastructure. Generally, public assistance programs pay for 75 per cent of the approved project costs. Public Assistance may include debris removal, emergency protective measures and public services, repair of damaged public property, loans needed by communities for essential government functions and grants for public schools.

Hazard Mitigation
Disaster victims and public entities are encouraged to avoid the life and property risks of future disasters. Examples include the elevation or relocation of chronically flood-damaged homes away from flood hazard areas, retrofitting buildings to make them resistant to earthquakes or strong winds, and adoption and enforcement of adequate codes and standards by local, state and federal government. FEMA encourages and helps fund damage mitigation measures when repairing disaster damaged structures.

For more information, FEMA should be contacted at (617) 223-9540 or at www.fema.gov, or contact the NH Bureau of Emergency Management at (800) 852-3792 or at www.nhoem.state.nh.us.

Grant Programs for Disaster Relief

Through the NH Bureau of Emergency Management (NH OEM), the Federal Emergency Management Agency provides funds for assistance to municipalities in the event of a disaster. The programs are described briefly here; some of them may not be currently active. For more details about these funding sources, contact the NH OEM.

Emergency Management Assistance (EMA)

This proactive funding program requires a 50% match from communities. It supports projects that will improve local emergency management preparedness and response in the following areas: planning, training, drills and exercise, and administration. It is designed to fund projects such as Hazard Mitigation Plans, Emergency Management/Action Plans, and other administrative projects.

Mitigation Assistance Program (MAP)

This program requires a 25% match (in-kind or cash) and supports planning and implementation activities that reduce long-term hazard vulnerability and risk under the following categories: public awareness and education; mitigation planning and implementation; and preparedness and response planning.

Pre-Disaster Mitigation Program (PDM)

The Pre-Disaster Mitigation (PDM) program provides technical and financial assistance to States and local governments for cost-effective pre-disaster hazard mitigation activities that complement a comprehensive mitigation program, and reduce injuries, loss of life, and damage and destruction of property. FEMA provides grants to States and Federally recognized Indian tribal governments that, in turn, provide sub-grants to local governments (to include Indian Tribal governments) for mitigation activities such as planning and the implementation of projects identified through the evaluation of natural hazards.

Flood Mitigation Assistance Program (FMA)

This program requires a 25% match (half in-kind and half local cash) and awards funds for Planning Grants, Technical Assistance Grants, and Project Grants. A Flood Mitigation Plan must be in place before funds can be sought for Technical Assistance or Projects. This program awards funding for Flood Mitigation Plans, structural enhancements, acquisition of buildings or land, and relocation projects.

Community Development Block Grant (CDBG)
A disaster must be declared to take advantage of this program, which awards emergency funds to cover unmet needs in a community. At least one of three national objectives must be met: the funds must have a direct benefit to low and moderate income persons; or must prevent or eliminate slums and blight in neighborhoods; or must eliminate conditions which threaten the public health and welfare. The NH Office of Energy and Planning administers this program.

Hazard Mitigation Grant Program (HMGP)
A disaster must be declared to take advantage of this program, which is designed to protect public and private property from future disasters. This program typically awards funding for projects that are structural in nature or for the acquisition of buildings or land.

For more information, for a listing of criteria, or to request an application to these or any other grant programs, please contact the NH Bureau of Emergency Management at (800) 852-3792 or at www.nhoem.state.nh.us.

Action Evaluation and Prioritization Matrix of the Hazard Mitigation Committee

Hazard Mitigation Plan: Action Evaluation, Prioritization, and Implementation

Vote of Committee required to accept the following Ranking Criteria

As a group, rank each of the following Actions according to the following criteria:

3 = Good **2 = Average** **1 = Poor**

Action	Reduce damage?	Contribute to Town objectives?	Meet Regulations?	Protect sensitive structures?	Implemented quickly?	Socially Acceptable?	Technically Feasible?	Administ-ratively Realistic?	Politically Acceptable?	Legal?	Reasonable Cost to Benefits?	Environ-mentally Sound?	Total Score
Purchase a generator to provide flood lighting at night	3	3	3	3	3	3	3	3	3	3	3	3	36
Update fire preventiontraining aids	3	3	3	3	2	3	3	3	3	3	3	3	35
Formalize agreements related to highway assistance with neighboring towns	3	3	3	3	2	3	3	3	3	3	3	3	35
Purchase a bull dozer to help with emergency clean up	3	3	3	2	3	3	3	2	3	3	3	3	34
Purchase more trucks for road construction and clean up	3	3	3	3	2	3	3	2	3	3	3	3	34
Purchase a trailer to move equipment faster from area to area	3	3	3	3	2	3	3	2	3	3	3	3	34
Purchase additional signage to direct vehicles when roads are blocked	3	3	3	1	3	3	3	3	3	3	3	3	34
Continue training for workers on tools and safety	3	3	3	1	3	3	3	3	3	3	3	3	34
Improve road design specifications	3	3	3	3	1	3	3	3	3	3	3	3	34
Get a second ambulance	2	3	3	1	3	3	3	3	3	3	3	3	33
Create a resouce list	3	3	3	3	1	3	2	2	3	3	3	3	32
Create plans for emergency response at specific locations	3	3	3	3	1	3	3	1	3	3	3	3	32
Get better fire investigation equipment	3	3	3	3	2	3	3	1	1	3	3	3	31
Find more funds for road maintenance	3	3	3	3	1	3	2	3	2	3	3	2	31
Find more funds for storm water drainage	3	3	3	3	1	3	2	3	2	3	3	2	31
Enhance floodplain protection ordinance to limit construction in the floodplain	3	3	3	2	1	2	3	3	2	3	3	3	31
Improve technical rescue training	2	2	1	2	2	3	3	3	3	3	3	3	30
Continue removing hazardous trees	3	3	3	3	3	1	3	2	1	3	3	2	30
Improve evacuation plans	2	3	3	2	1	3	2	2	3	3	3	3	30
Assess wastewater treatment plant	2	3	3	1	3	3	2	3	2	3	2	3	30
Evaluate stone arch bridges	2	3	1	3	2	3	3	2	3	3	1	3	29
Get more advance life support personnel.	2	3	3	1	1	3	3	1	3	3	3	3	29
Adopt a building code	3	2	3	3	2	1	3	1	2	3	3	3	29
Hazardous materials training: Get 2 or 3 more technical level people	2	2	3	2	1	3	3	2	2	3	2	3	28
Get 5 more defibrillators	2	3	3	1	1	3	2	1	3	3	3	3	28
Clarify the drinking water protection ordinance concerning variances	1	3	3	1	1	2	3	3	2	3	3	3	28
Adopt an aquifer protection ordinance	1	3	3	1	1	2	3	3	2	3	3	3	28
Adopt a slope ordinance to limit building on steep slopes	3	3	3	2	1	2	2	2	1	3	3	3	28
Assess Class "C" dam	3	2	1	3	2	3	2	2	3	1	3	2	27
Get a new phone system at Town Hall to ensure that all calls can get through	1	2	3	1	2	3	3	3	1	3	3	1	26
Conduct outreach to residents of Whitney manufactured home park	2	1	2	2	3	2	3	2	2	3	2	2	26
Get more funding for school resource officer program.	1	2	3	1	1	3	3	2	2	3	1	2	24
Evaluate National Guard building.	2	1	1	2	3	2	3	3	1	2	1	2	23
Floodplain assessment	3	2	2	1	1	2	3	2	2	2	1	2	23
Assess hazardous materials locations	2	1	1	1	2	2	3	2	1	2	2	3	22
Develop educational material about tree maintenance.	1	1	1	2	1	1	3	1	1	2	1	1	16
Conduct outreach to business owners	1	1	1	2	1	1	2	1	1	1	1	2	15

Publicity and Meeting Information for the Hillsborough 2004 Hazard Mitigation Plan
To better assist future Hazard Mitigation Committee updates of this Plan, exhibited are the Agendas from each of the six Committee meetings and one public information meeting, their attendance sheets, and their meeting summaries. Also included are press releases, published public notices, and flyers which were posted around the Town to encourage all interested people to attend the meetings.