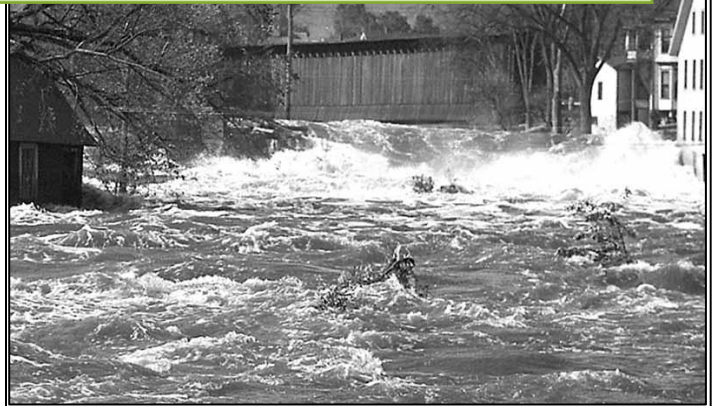


For Public Information Meeting Review

01-26-22 Board of Selectmen Meeting

**Hazard
Mitigation Plan
Update 2022**



**Town of Hillsborough
New Hampshire**

**Adopted by the Hillsborough
Board of Selectmen**

Month xx, 2022

Approved by NH HSEM/FEMA

Month xx, 2022



Town of Hillsborough, NH

Hazard Mitigation Plan Update 2022

Selectmen Adopted **Month xx, 2022**

NH HSEM/FEMA Approved **Month xx, 2022**



Town of Hillsborough

P.O. Box 7, 27 School Street

Hillsborough, NH 03244

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Fire Department Phone: (603) (603) 464-3477

Police Department Phone: (603) 464-5512

<https://www.town.hillsborough.nh.us/>

Central NH Regional Planning Commission (CNHRPC)

28 Commercial Street, Suite 3

Concord, NH 03301

Phone: (603) 226-6020

www.cnhrpc.org



NH Department of Safety (NHDOS)

NH Homeland Security and Emergency Management (NHHSEM)

33 Hazen Drive

Concord, NH 03305 (*Mailing Address*)



Incident Planning and Operations Center (IPOC)

110 Smokey Bear Blvd

Concord, NH 03301 (*Physical Address*)

Phone: (800) 852-3792 or (603) 271-2231

www.nh.gov/safety/divisions/hsem

<https://apps.nh.gov/blogs/hsem>



US Department of Homeland Security

Federal Emergency Management Agency (FEMA)

99 High Street, Sixth Floor





Boston, Massachusetts 02110

Phone: (617) 223-9540

www.fema.gov

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1 PLANNING PROCESS

The Town's Hazard Mitigation Committee reformed to rewrite the Plan into a more concise format and to incorporate the newest material required by FEMA in addition to updating the Town's newest information since **2017**. This Planning Process Chapter contains information previously available in the Introduction Chapter of the **Plan Update 2017**. Expanded public participation steps were taken and a new plan development procedure was used as documented in the Methodology section.

Certificate of Adoption, 2022

Town of Hillsborough, NH
Board of Selectmen
PO Box 7, 27 School Street
Hillsborough, NH 03244

A Resolution Adopting the Hillsborough Hazard Mitigation Plan Update 2022

WHEREAS, the Town of Hillsborough has historically experienced severe damage from natural hazards and it continues to be vulnerable to the effects of the hazards profiled in the **Hazard Mitigation Plan Update 2022** including but not limited to flooding, high wind events, severe winter weather, and fire, resulting in loss of property and life, economic hardship, and threats to public health and safety; and

WHEREAS, the Town of Hillsborough has developed and received conditional approval from the NH Homeland Security and Emergency Management (NHHSEM) for its **Hazard Mitigation Plan Update 2022** under the requirements of 44 CFR 201.6; and

WHEREAS, public and Committee meetings were held between **May 2021** through **January 2022** regarding the development and review of the **Hazard Mitigation Plan Update 2022**; and

WHEREAS, the **Plan** specifically addresses hazard mitigation strategies, and Plan maintenance procedures for the Town of Hillsborough; and

WHEREAS, the **Plan** recommends several hazard mitigation actions (projects) that will provide mitigation for specific natural hazards that impact the Town of Hillsborough with the effect of protecting people and property from loss associated with those hazards; and

WHEREAS, adoption of this Plan will make the Town of Hillsborough eligible for funding to alleviate the effects of future hazards; now therefore be it

RESOLVED by Town of Hillsborough Board of Selectmen:

The **Hazard Mitigation Plan Update 2022** is hereby adopted as an official plan of the Town of Hillsborough; The respective officials identified in the mitigation action plan of the Plan are hereby directed to pursue implementation of the recommended actions assigned to them;

Future revisions and Plan maintenance required by 44 CFR 201.6 and FEMA are hereby adopted as a part of this resolution for a period of five (5) years from the date of this resolution; and

An annual report on the progress of the implementation elements of the Plan shall be presented to the Board of Selectmen by the Emergency Management Director or designee.

IN WITNESS WHEREOF, the undersigned have affixed their signature and the corporate seal of the Town of Hillsborough this XXth day of Month 2022.

Board of Selectmen

James C. Bailey, III Chair date

Iris Campbell, Member date

Meleny Nagy, Member date

ATTEST

SEAL

Town Clerk

Deborah McDonald, Town Clerk

Plan Process Acknowledgments

The Board of Selectmen-appointed Hazard Mitigation Committee was comprised of these individuals on behalf of their respective Departments, Boards or Committees who met between **May 2021** through **January 2022** to develop the **Hillsborough Hazard Mitigation Plan Update 2022**:

- **Mike Borden**, Hillsborough Building Inspector, Acting Health Officer
- **Roland Bovio**, Hillsborough Emergency Management Technician
- **Dana Brien**, Hillsborough Health Officer (former)
- **Laura Buono**, Hillsborough Town Administrator
- **Ernie Butler**, Hillsborough Highway Department Road Agent
- **Jim Card**, Hillsborough Highway Department Road Agent (former)
- **Scott Murdough**, Hillsborough Emergency Management Director
- **Robyn Payson**, Hillsborough Town Planner
- **David Roarick**, Hillsborough Police Department Chief
- **John Segedy**, Hillsborough Conservation Commission Member
- **Chris Siege**, Hillsborough Water and Sewer Commission Member
- **Kenny Stafford Jr.**, Hillsborough Fire Department Chief and Ambulance Director
- **Susanne White**, Hillsborough Planning Board Member
- **Scott Yeaton**, Hillsborough Parks and Recreation Department Light Equipment Operator

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

- **Stephanie Alexander**, CNHRPC Senior Planner
- **Matthew Baronas**, CNHRPC Assistant Planner

Several other Town-affiliated individuals or other agency representatives attended one or more Committee meetings and/or contributed information to the content of the Plan. Members of the public* (2) participated as fully as appointed members in the Hazard Mitigation Committee meetings.

- **Liz Gilboy**, NH Homeland Security and Emergency Management Field Representative
- **Connor Jennings**, Eversource Community Relations for Western New Hampshire*
- **John Marcel**, NH Homeland Security and Emergency Management State Hazard Mitigation Planner
- **Patricia Parenteau**, Hillsborough-Deering School District Superintendent
- **Marjorie Porter**, New Hampshire State Representative*

Authority

In 2000, the President enacted the Disaster Mitigation Act 2000 (DMA) which requires states and municipalities to have local adopted and FEMA approved natural hazard mitigation plans in place to be eligible for disaster and mitigation funding programs such as the Federal Emergency Management Agency's (FEMA) Hazard Mitigation Assistance (HMA) programs, including Hazard Mitigation Grant Program, Flood Mitigation Assistance Program, and Pre-Disaster Mitigation Program. New Hampshire is awarded funds based upon the completeness of its State Plan and the number of local plans.

As a result of the DMA, funding was provided to state offices of emergency management, including the New Hampshire Homeland Security and Emergency Management, to produce local (municipal) hazard mitigation plans. To remain in compliance with the DMA, the Town of Hillsborough is required to submit for FEMA approval a revised **Hazard Mitigation Plan Update** every five years.

The New Hampshire Homeland Security and Emergency Management (NH HSEM) produced its latest approved [State of New Hampshire Multi-Hazard Mitigation Plan 2018](#) in **October 2018**. The development of the State's Plan allows for New Hampshire to receive funding programs to provide to communities in the event of disasters or for mitigation.

Prior versions of the Town's Hazard Mitigation Plan are noted in the [Final Plan Dates](#) section. A **2019** Hazard Mitigation Grant Program (HMGP) grant provided 75%/25% funding for the Town to update its prior Plan through the Central NH Regional Planning Commission. The 25% match required by the Town was provided by in-kind staff and volunteer time and labor.

This **Hillsborough Hazard Mitigation Plan Update 2022** has been developed in accordance with the Disaster Mitigation Act of **2000** and the [FEMA Local Mitigation Plan Review Guide, October 1, 2012](#) and effective one year later. The most recent Plan development standards provided by FEMA Region I have also been incorporated. The planning effort of the Town is a regular process and this Plan is considered a "living document."

The new Hillsborough Hazard Mitigation Committee was established by the Board of Selectmen to begin meeting **May 2021** and guided the development of the Plan. The Committee consisted of the Town Administration, Fire Department, Public Works Department, Police Department, Planning Department, Health Officer, Building Inspector, Recreation Department, Water & Sewer Commission, Conservation Commission, and Hillsborough School-Deering District. Because of the COVID-19 pandemic, few public participants were active with Committee activities although the process was advertised appropriately.

The attendees of the meeting process are noted in the [Acknowledgements](#). The Central NH Regional Planning Commission, of which Hillsborough is a member, contributed to the development of this Plan by facilitating the meeting and technical processes, working with the Committee and its members to obtain information, preparing the document, and handling the submissions to NH HSEM and FEMA.

Methodology

The **Hillsborough Hazard Mitigation Plan Update 2022** was developed over a seven-month period with a group of Town staff members and volunteers, open to public participants, and the CNHRPC comprising the Hazard Mitigation Committee. The **2022** methodology for Plan development is summarized in this section. The **Hazard Mitigation Plan** is designed differently from the **2017 Plan** with the intent to better conform to the current approvable Central NH Region format and incorporating the new **2018 State Multi-Hazard Mitigation Plan** items, with the purpose of easier updating and implementation while meeting FEMA's requirements. The Plan roughly follows the **FEMA Local Mitigation Planning Handbook, 2013** by using its terminology and some of its tasks, ensuring Hillsborough's **2022 Plan Update** begins to follow a standardized approach to Plan construction and content endorsed by FEMA. Many of the vital sections of the **2022 Plan Update** will be contained in the chapter **10 APPENDICES** for easier display, usage, sharing, and update.

MEETINGS AND DUTIES

The meetings and tasks of the Hazard Mitigation Committee were dictated by Agendas and how much the Committee was able to complete for each Agenda is displayed in **Table 1**. Work Sessions were designed to accomplish what could not be completed at meetings due to time constraints and additional information to process. All regular meetings and work sessions were publicly accessible by Zoom, although the special workshops held by the HMC were in-person only.

Table 1
Meeting Schedule and Agenda Activities

Meeting	Date	Agenda Activities – See APPENDIX C
Meeting 1 <i>Remotely held via Zoom Webinar</i>	05-24-21	Discuss Process and Schedule; Review Declared Disasters and Public Assistance Funding to Hillsborough; Develop New Hazard Identification and Risk Assessment (HIRA), Begin to Identify Recent Past Hazard Events in Hillsborough
Work Session 1 <i>Remotely held via Zoom Webinar</i>	06-07-21	Complete New Hazard Identification and Risk Assessment (HIRA) Rating; Identify Recent Past Hazard Events in Hillsborough; Review and Finalize Hillsborough Hazard Mitigation and Severe Weather Event Survey; Revise Maps 1-2
Work Session 1.2 <i>Remotely held via Zoom Webinar</i>	06-21-21	Update Critical and Community Facilities Vulnerability Assessment; Begin Problem Statements
Work Session 1.3 <i>Remotely held via Zoom Webinar</i>	07-12-21	Update Critical and Community Facilities Vulnerability Assessment; Begin Problem Statements
Meeting 2 <i>Remotely held via Zoom Webinar</i>	08-02-21	Finalize Problem Statements and Identify Those to Utilize as NEW 2021 Mitigation Actions; Review and Update Goals and Objectives for 2021

Meeting	Date	Agenda Activities – See APPENDIX C
Workshop 2 <i>In-Person only held at Police Dept</i>	08-16-21	Begin Capability Assessment Review and Update
Workshop 2.2 <i>In-Person only held at Police Dept</i>	08-21-21	Continue Capability Assessment Review and Update
Meeting 3 <i>Remotely held via Zoom Webinar</i>	09-13-21	Review and Update Goals and Objectives for 2021; Determine Status of 2017 Mitigation Actions
Work Session 3 <i>Remotely held via Zoom Webinar</i>	09-27-21	Develop Mitigation Action Plan 2021; Review Hazard Mitigation and Severe Weather Survey Summary; Prioritize Mitigation Action Ranking Scores for Action Achievability
Work Session 3.2 <i>Remotely held via Zoom Webinar</i>	10-04-21	Complete Mitigation Action Plan 2022; Prioritize Mitigation Action Ranking Scores for Action Achievability
Workshop 3.3 <i>In-Person only held at Police Dept</i>	10-18-21	Complete Mitigation Action Plan 2022 with Medium and High Hazard Action Types; Prioritize Mitigation Action Ranking Scores for Action Achievability
Meeting 4 <i>Remotely held via Zoom Webinar</i>	12-06-21	Prioritize Mitigation Action Ranking Scores for Action Achievability; Review Draft 12-06 Hillsborough Hazard Mitigation Plan
Workshop 4 <i>In-Person only held at Police Dept</i>	12-13-21	Complete sections of the Hard Mitigation Plan
Work Session 4.2	12-20-21	Review Draft Hazard Mitigation Plan Update 2022; Review Appendices and Maps; Interim Hazard Mitigation Plan Implementation 2022-2027; Prepare for Public Information Meeting; Review Plan Approval Process; Prepare for Board of Selectmen Adoption Meeting
Public Information Meeting <i>Remotely held via Zoom / Held in-person</i>	01-26-22	HMC members present sections of the Plan to the public in a brief question and answer format meeting. Describe hazards and mitigation Actions. Maps will be available.

Source: Hillsborough Hazard Mitigation Committee Agendas, 2022

Who is a Member of the Public?

For the purposes of this Plan,
“a member of the public” or **“the public”** or **“public participant”** means:

Anyone who is not a Town of Hillsborough, School District, County, State, or federal government employee; anyone who is not paid for hazard mitigation services by property tax dollars; anyone who is not a volunteer of the Town; and anyone who does not represent non-profit agencies and other Committees on behalf of the Town.

Early meetings through mid-June 2021 were remote-only meetings via Zoom Webinar, then subsequent meetings were simultaneously hosted remotely via Zoom Webinar by CNHRPC and were held in person at the Town of Hillsborough Police Department. For all meetings, CNHRPC staff took a roll call during each meeting and completed a meeting match timesheet for participants documenting their time at the meetings. The Committee members worked to complete the Agendas, including developing the **Hazard Risk Assessment, Critical and Community Facilities Vulnerability Assessment, Capability Assessment, and Mitigation Action Plan**, completing the **Enhanced STAPLEE Action Prioritization**, etc. along with input from members of the public and guests. The agendas and attendance sheets are included in **APPENDIX C** of the Plan.

The specific meeting tasks are described in detail on the Agendas in **APPENDIX C** and in **Table 1**. CNHRPC staff facilitated the Committee Meetings and Work Sessions. Information needed on the Agenda Tasks indicated above was collected from any attendees present, including any members of the public, by CNHRPC, during discussions among attendees. The new and updated information was described in each Chapter under the **2022 Plan Update** section. Maps were reviewed and updated by the Committee and guests and revised using a Geographic Information System (GIS) by CNHRPC.

In between meetings, Town staff and volunteers and CNHRPC staff researched and collected information for the

Public Outreach Strategy

Many individuals were personally invited to attend and participate in the Hillsborough Hazard Mitigation Plan Committee meetings. They included Town Boards and Committees, Town Departments, Hillsborough School District, Eversource, NH Homeland Security and Emergency Management (NHHSEM) Representatives, and others, along with general email invitations through the Town's public notification email list and website announcements. In addition, an online and publicized Severe Weather and Hazard Mitigation Survey yielded 49 responses.

The Hazard Mitigation Committee itself was comprised of Town Department staff and volunteers, including Town Administration, Fire Department, Public Works Department, Police Department, Planning Department, Health Officer, Building Inspector, Recreation Department, Water & Sewer Commission, Conservation Commission, and Hillsborough School-Deering District. Other staff members or volunteers may have occasionally participated on behalf of their Departments.

The public process for this Plan included posting the meeting information on the Town's online calendar and website at <https://www.town.hillsborough.nh.us/>. Meetings were held remotely using the secure Zoom Webinar platform. For the first meeting, the Town advertised by sending a mass email to the Town's notification list and posting flyers and meeting announcements at the Town Hall. Because of the COVID-19 pandemic, prior to July 2021, the Town Office availability and meeting options were limited. Other than the outdoor Town bulletin board, few physical postings of the Agenda occurred as another result of the pandemic. Copies of publicity for the Plan are included in **APPENDIX C**.

The Central NH Regional Planning Commission staff facilitated the Hazard Mitigation Committee meetings, guided the planning process, compiled new and old data, updated information, and prepared the 2022 Plan documents, Appendices, and Maps.

As a final attempt to obtain additional public input, a specially noticed Public Information Meeting was held on **January 26, 2022** at a Board of Selectmen's meeting at which many members of the public participated. This meeting was publicly noticed on the Town website and calendar, and on the Board of Selectmen's Agenda. All documents were available for review on the Town's website in advance of the meeting. The attendees and publicity of the public planning process are noted in the **Acknowledgements**.

Chapters. CNHRPC updated and rewrote Chapters, tables, and sections as appropriate. The Chapters were also updated by revising the document to the current FEMA standards and the *2018 State Multi-Hazard Mitigation Plan*.

OPPORTUNITY FOR PUBLIC PARTICIPATION

Public Input from the Hazard Mitigation Committee Meetings

The public notification is described in the Public Outreach Strategy sidebar. Two (2) members of the public attended the meetings as indicated in the **Acknowledgements** and by the Attendance Sheets in **APPENDIX C Meeting Information**, in addition to Public Information Meeting attendees. Members of the public would have assisted with completing the Agendas, including developing the **Hazard Identification Risk Assessment, Critical and Community Facilities Vulnerability Assessment, Capability Assessment, and Mitigation Action Plan**, completing the **Enhanced STAPLEE Action Prioritization**, etc. along with the Committee members. The general public had the opportunity to attend and participate in the 16 posted meetings or to contact the Town Administrator/Emergency Management Director for more information prior to the Board of Selectmen adoption of the Plan.

Public Input from the Public Information Meeting

The **Public Information Meeting (PIM)** was held on January 26, 2022. The Hazard Mitigation Committee members presented portions of the Plan and had the Maps available for display. The agenda and attendance sheet are included in **APPENDIX C**. Held during a scheduled Board of Selectmen meeting, the PIM involved **several** members of the public who listened to presentations, asked questions and had the opportunity to review the final draft Plan document, Appendices and Maps.

Hillsborough Community Survey for Hazard Mitigation and Severe Weather Events

As a last attempt to obtain broad public input on hazard mitigation and severe weather events, an online community survey posted on Survey Monkey was developed in **May 2021** and remained open through **December 1, 2021**. Every person on the Town's public email distribution list received notification of the survey, the Town website prominently published its link, as did Department social media. A total of **49** responses was received from the community at large. Following the HIRA hazard list, the survey asked respondents seven questions. The summary of survey responses are provided in **APPENDIX F COMMUNITY SURVEY RESULTS**.

➤➤ **Q1** On which road do you live, work, and/or travel through Hillsborough? (This will help us understand where you have experienced severe weather or other hazard events.)

Respondents traveled through all sections of Town, including Bible Hill Road, East Washington Road, West Main Street, Main Street, Center Road, Bog Road, and others.

- **Q2** How concerned are you about the following natural hazards, severe weather events, or human/technological hazards impacting Hillsborough? (on a 1-5 Importance scale)

Respondents were most concerned about Aging Infrastructure, Public Health, High Wind Events, Long Term Utility Outages, and Drought.

- **Q3** Natural hazards can have a significant impact on a community but planning for or mitigating these events can help lessen the impacts. Planning may require Town funds as well as federal funds in addition to Town staff support and volunteer support. Please indicate how important you believe these mitigation planning priorities are for Hillsborough: (on a 1-5 Importance scale).

Mitigation planning priorities were Protecting/Reducing Damage to Utilities, Improving the Transportation Network, Enhancing Functions of Natural Features, and Limiting Development in Hazard Areas.

- **Q4** Can you describe any hazard events or severe weather events you experienced in Hillsborough? If yes, please provide brief comments on up to 2 events by describing what happened (What), the location (Where), the approximate month and year of the occurrence (When), and how bad the event was from 1 [not bad] to 5 [extremely bad] (Impact scale).

Respondents most frequently recalled the ice storms of 1998 and 2008 with the related power/utility outages during these times, and more contemporary windstorms with power/utility outages. Flooding was also highly noted, in general and specifically the Mother's Day Flood of 2006. Most were given a 5 on the Impact scale.

- **Q5** In your household, has anyone done any of the following preparedness or mitigation activities? Check all that apply.

Regarding mitigation and preparedness, respondents most frequently chose Talked about What to Do in Case of Weather Emergency and Prepared Family Emergency Plans. Many respondents also had chosen Made a 72-hour Emergency Kit.

- **Q6** What are the best ways for you to receive information about disasters and severe weather events in Hillsborough? Please pick up to 3:

Respondents preferred Town E-Alerts Notification Email, Town Website Postings, and the Town Department's social media such as Facebook or Twitter, as the best ways to receive severe weather and disaster information.

➤➤ **Q7** Please feel free to provide any other information related to severe weather and hazard mitigation in the space below.

Few respondents added comments, but those who did mentioned the dangers of development in flood areas, tree damage to power lines during storms, and telephone communication. Many respondent write-in ideas are noted as Mitigation Action items or are standard Department policy.

Public Input from the Board of Selectmen Adoption Meeting

The Board of Selectmen meeting to adopt the **Hazard Mitigation Plan** was held on **Month xx, 2022**. Although the Plan's APA had been received, the Board permitted public comment prior to adoption although Plan changes could not be made at this time. Discussion was held prior to the unanimous adoption of the Plan by the Board.

COMPLETION OF THE PLAN STEPS AND DATES

On January 26, 2022, the Committee held a **Public Information Meeting**. The same extensive public notification described in the Public Outreach Strategy sidebar occurred to obtain review and comment from the public for the Plan. On **Month xx, 2022**, this Plan, Appendices and Maps were submitted to the NH Homeland Security and Emergency Management (NHHSEM) for compliance review and revision to apply for Approved Pending Adoption (APA) status, also known as conditional approval.

On **Month xx, 2022**, Hillsborough received an **Approved Pending Adoption (APA)** notification from NHHSEM. The APA states the Plan will be approved by FEMA after proof of adoption by the local governing body, a Certificate of Adoption from the Board of Selectmen, is submitted.

On **Month xx, 2022**, the Board of Selectmen **adopted the Hazard Mitigation Plan Update** for the Town at a duly noticed public meeting. Copies had been made available at the Town Office and on the Town website for public review. The public notice and flyers are included in **APPENDIX C**. The signed Certificate of Adoption was sent to NHHSEM/FEMA.

On **Month xx, 2022**, Hillsborough received a **Notification of Formal Approval** from NHHSEM, with the Plan approval granted effective that day. A **Letter of Formal Approval** from FEMA confirming the notification will be forthcoming. The next Hazard Mitigation Plan update is due five (5) years from this date of approval, on **Month xx, 2027**.

Final Plan Dates

The following is a summary of the required dates which guide the adoption and update of the **Hillsborough Hazard Mitigation Plan**. Included is the history of the Plan approvals and lapsing dates as shown in **Table 2**.

Table 2
Hillsborough's Hazard Mitigation Plan Adoption History

Year of FEMA-Approved Hazard Mitigation Plan	Adoption by Hillsborough Board of Selectmen	NHHSEM/ FEMA's Formal Approval	Plan Lapse
Original 2005	03/30/05	05/19/05	05/19/10
Update 2011	06/22/10	05/26/11	05/26/16
Update 2017	01/10/17	02/22/17	02/22/22
Update 2022	xx/xx/22	0x/xx/22	0x/xx/27

Source: Plan Adoption History

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2 COMMUNITY PROFILE

It has been over five years since the last Plan was written, with some basic information available from the newest 2020 decennial US Census beginning in mid-2021. The best available new data has been used in this Chapter to portray the population, housing, and overall demographic picture of present-day Hillsborough. The **2 COMMUNITY PROFILE** tables and narratives contain updated data.

A simplified description of how the Town's population and housing have grown within the last four decades follows. Relationships of the locations of people and buildings to natural hazard events are generally explored. Examination of this information will allow the Town to better understand the land use and demographic trends within its borders and how emergency and preventative services can best serve the growing and changing population and landscape.

Geographic Context

The Town of Hillsborough is located in Central New Hampshire within Hillsborough County. It is bordered by the small Towns of Washington to the northeast, Bradford to the north, Henniker to the east, Deering and Antrim to the south and Windsor to the west. The Town's southeastern section along US 202 and NH 9 is considered the Business District and comprises about **20%** of Hillsborough's geographic area. This is where much of the population lives and where the economic development is attracted. Intersecting with US 202 and NH 9 is NH 31, which begins on Main Street and travels in a northwesterly direction into Windsor. A large community in Town lives in the eastern section next to Henniker along developed roads leading to and encircling Emerald Lake (also known as Gould Pond). Emerald Lake village has its own Emerald Lake Village District for services and taxation purposes but is still a part of the municipality of Hillsborough. The Emerald Lake association has several private beaches and parks for residents and maintains its own infrastructure.

The Contoocook River and its floodplain lie south of the Business District area and is a potential constant flooding threat to many sections of the Business District and multi-family housing. The Contoocook River is an integral resource to the Town. Many public and private recreational opportunities abound, including Grimes Park with sports fields and trails, Manahan Park with boating, picnicking and beach facilities, Beard Brook Park with swimming and fishing, and the Hillsboro-Deering Rail Trail. Franklin Pierce Lake (Jackman Reservoir) at the Antrim town border impounds nearly 500 acres of water on the North Branch of the Contoocook River, permits boating, hosts Manahan Park, and is surrounded by year-round single family housing units.

Hillsborough is known for its historically significant stone arch bridges which are extremely difficult and expensive to maintain to traffic standards. Many of its stone arch bridges have over time been converted to more easily sustainable, conventional bridges out of necessity.

The large, northern section of the Hillsborough is primarily rural in nature. These locations are at much higher elevations than the Business District. Loon Pond in the middle of the community is the Town's drinking water source. Roads are usually gravel and are often hilly, leading to high elevations. Fox State Forest in the northeast section and several other state forests provide habitat for large wildlife.

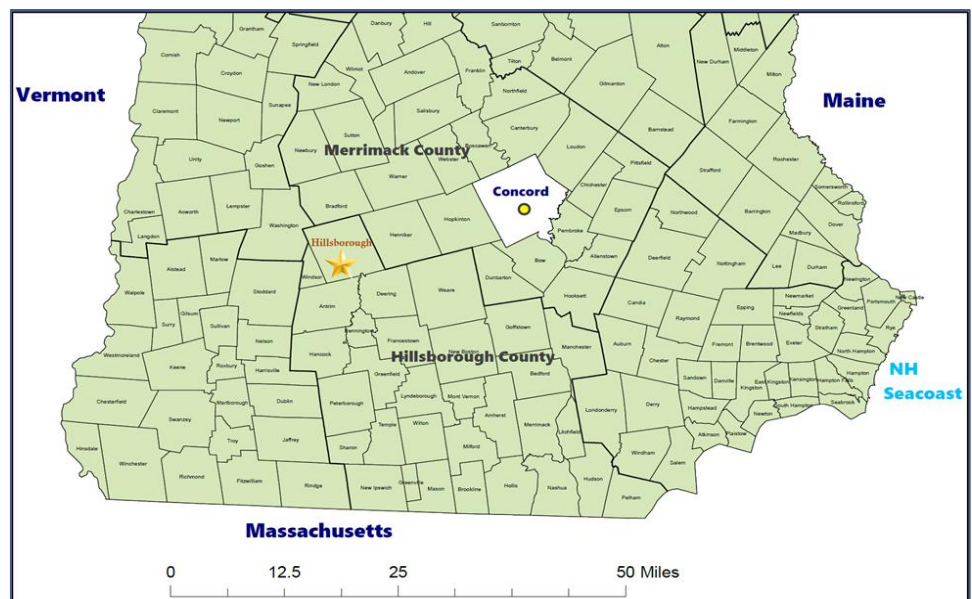
Hillsborough continues to slowly grow, attracting residents commuting to Concord, Keene, or Manchester, or Nashua and increasing the Business District amenities and retail stores. With easy access to these cities by US 202/NH 9, Hillsborough may continue to experience growth until rising development pressures require zoning changes or rural road upgrades.

HILLSBOROUGH'S LOCATION IN NH

Hillsborough County borders Massachusetts and includes the cities of Manchester and Nashua. The county is the most populous in New Hampshire. The County contains **31** communities and major transportation corridors of US 3 and Interstates 93 and 293. Two communities from Hillsborough County fall into the Central NH Planning Region (Hillsborough and Deering), and most, but not all, communities in Merrimack County comprise the remainder of the Central NH Region's jurisdictional area.

Concord and Hillsborough are located about **50** miles from the Massachusetts state border. Hillsborough is about 25 miles west of Concord and about **25** east of the Vermont state border, the mid-way point between Concord and Keene on US 202/ NH 9. The Central NH Region itself is generally a 1-hour drive from the Maine state border, the seacoast and the White Mountains traveling along New

Figure 1
Hillsborough in the State



Source: Central NH Regional Planning Commission

Hampshire's Interstates, US Routes, NH Routes, and local roadways. Hillsborough's context within Hillsborough County and the State of New Hampshire is shown in **Figure 1**.

HILLSBOROUGH'S LOCATION IN CENTRAL NH

The Town is a voluntary member of the Central New Hampshire Regional Planning Commission. The **19** Towns and **1** City comprising the Central NH Region contain several major rivers and New Hampshire and Interstate highways. Hillsborough's historically rural identity, long commuting times, available services, high elevations, state forests, and the Contoocook River are attractive to steady future development within the community.

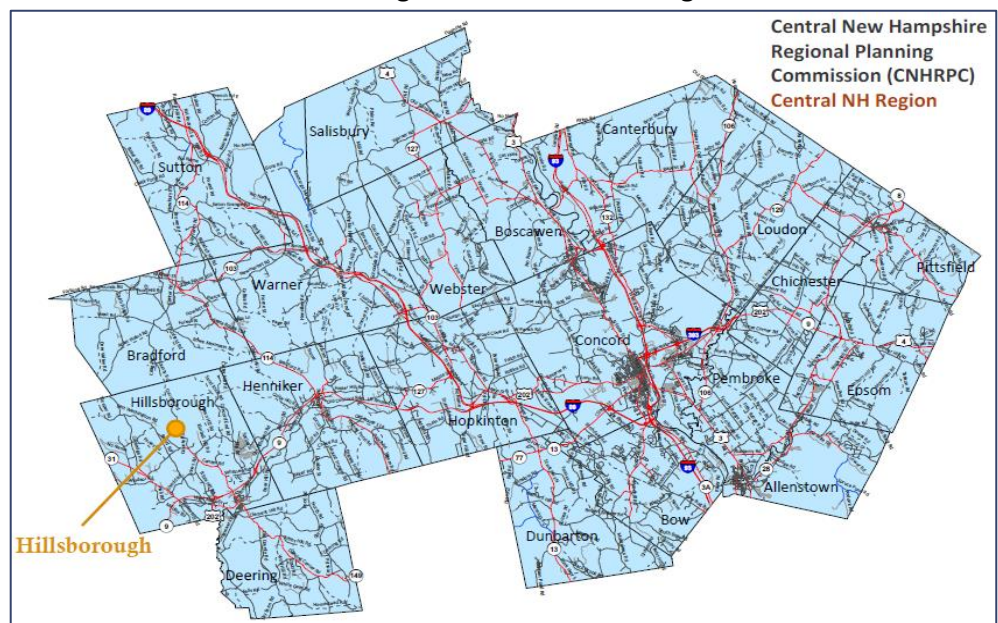
The **Blackwater River** (Salisbury, Webster, Hopkinton) and the **Warner River** (Bradford, Sutton, Warner, Webster, Hopkinton) flow south into the **Contoocook River**. The **Contoocook River** flows in a north-easterly direction through Hillsborough, Henniker, Hopkinton, Concord and Boscaawen until its confluence with the **Merrimack River** in Boscaawen/Penacook (Concord). The **Contoocook River** and the **Merrimack River** effectively bisect the region into three sections. The **Soucook River** flows south through Loudon along the Concord/Pembroke border and enters the **Merrimack River**. The **Suncook River** originates in Belknap County, flowing south through Pittsfield, Chichester, Epsom, Pembroke, and Allenstown until it too converges with the **Merrimack River** in Bow/Hooksett.

In the Central NH Region, Interstates 89, 93 and 393 stretch in north, northwest, east, and south directions, meeting in Concord and Bow.

Major traffic routes of US 3 flow north-south and US 4/202 and NH 9 traverse in an east-west direction. Hillsborough can be accessed via NH US 202/ NH 9 traveling east-west (Hopkinton-Antrim), NH 149 traveling north-south (Hillsborough-Deering), and NH 31 traveling north (Hillsborough-Windsor). Dozens of NH state highways crisscross the entire region. A map of the Central NH Region in which Hillsborough is situated, with the region's major routes, is displayed in **Figure 2**.

Figure 2

Hillsborough in the Central NH Region



Source: Central NH Regional Planning Commission

Population and Housing Growth

The *Hillsborough Master Plan 2018* was adopted by the Planning Board in **October 2018**. The goal for future updates is annual review and revision of one or two Chapters. Chapters from the *2020 Master Plan* to update include Hillsborough Today, Hillsborough Tomorrow, Implementation, Economic Base, Housing, Community and Recreational Facilities with Utilities, Transportation, Natural Resources, Existing and Future Land Use. New future chapters to consider could include Energy and Historic and Cultural Resources. The **Hazard Mitigation Plan 2022** could be adopted as an Appendix or a Chapter to the *Master Plan 2018* by the vote of the Planning Board. The Master Plan influences the Zoning Ordinance and the Subdivision and Site Plan Review Regulations along with the Capital Improvements Program. These documents are used by local land use boards and staff to guide growth and development of Hillsborough.

POPULATION AND HOUSING TRENDS

The following tables contain the newest consistent data on housing and population growth which depict development trends over time. Minimal **2020** Census figures were available as of the writing of this Plan. Shown in **Table 3**, Hillsborough's population and housing boomed during the **1980-1990** decade (**+31%** people, **+33%** homes). The following **1990-2000** decade (**+10%** people and **+8%** homes) trends slowed dramatically. The **2000-2010** decade which included a series of significant natural disasters and an economic recession again experienced faster growth (**+22%** people and **+25%** homes). The new **2021-2020** Census population and ACS 2015-2019 housing unit figures calculated **-1.2%** people and **+9.5%** housing units, indicating Hillsborough's slowest growth period in **50** years.

Table 3

Overall Population and Housing Growth Trends in Hillsborough, 1970-2020

Growth	Population	Net Change		Housing Units	Net Change	
		#	%		#	%
1970 Census	2,775	N/A	0	1,015	N/A	0
1980 Census	3,437	662	23.9%	1,620	605	59.6%
1990 Census	4,498	1,061	30.9%	2,157	537	33.1%
2000 Census	4,928	430	9.6%	2,326	169	7.8%
2010 Census	6,011	1,083	22.0%	2,896	570	24.5%
2020 Census	5,939	-72	-1.2%	3,172	276	9.5%
Total Change from 1970 – 2020 Census	---	3,164	114.0%	---	2,157	212.5%

Sources: 1970-1990 US Census CPH-2-31 Table 9 Population and Housing Unit Counts;

US Census 2000 & 2010 Data *includes all housing units, including vacant and seasonal and 2019 Group Quarters.

US Census 2020 Population, ACS 2015-2019

Population and Housing Data

In total, the Town has grown by **+3,164** people and **+2,157** housing units by confirmed Census counts and estimates from **1970-2020**. In **Table 3**, Hillsborough's confirmed **2020** Census population of **5,939** shows an overall increase of about **+114%** in population over the previous five decades, up from **2,775** people in **1970**. The estimated **2019** Census housing units (**+276**) displays an overall increase of about **+213%** (**+2,157** units) since **1970** to total **3,172** units by **2020**. The Town experienced **2** growth booms of nearly **+1,100** people each decade between **1980-1990** and between **2000-2010** before the population and housing increases tapered off significantly. Between **2010-2020**, the Town's population decreased by **-72** people while during the same time housing units increased by **+276** units.

Although population growth trends are declining over the current **2010-2020** decade, with a population decline of **-1.2%** (**-72** people), housing units growth has slowed **+9.5%** (**+276** units) to date. Over the five decade timeframe of **1970-2020**, this decade had the smallest amount of growth seen in Hillsborough. The overall **50-year** growth rate by percentage in Hillsborough since **1970** is comparable to other geographically large-sized communities in the Central NH region.

Over the **1970-2020** period, the number of people living in each housing unit has declined steadily from its high of **2.7** people per housing unit in **1970** to its new low of **1.9** people per housing unit in **2020**. Overall, these numbers are smaller in comparison to other geographically large-sized towns in the Central NH Region and likely indicate an aging population in Hillsborough.

Population Density

Another good measurement of community population and housing change is population density, or how many people live in a square mile of land area. Although Hillsborough encompasses a total land area of **43.7** square miles (**27,968** acres), an additional **1.0** square miles (**639** acres) is water area (**44.7** total square miles). Over the **50-year** period between **1970-2020**, the data for population density is displayed in **Table 4**.

Table 4
Population Density in Hillsborough, 1970-2020

Municipality Size		Persons per Square Mile					
Land Acreage	Land Area in Square Miles	1970	1980	1990	2000	2010	2020
27,968	43.7	64	79	103	113	138	136

Sources: **Table 3**, NH Office of Planning and Development GIS acreage calculations, 2013

From **Table 4**, the overall population density between **1970** and **2020** increased **+114%**, from **64** people per square mile in **1970** to **136** people per square mile in **2020**. Hillsborough is a geographically large-sized community in the Central NH Region at **22.8** square miles (including water acreage). Hillsborough has a comparatively small number of people per square mile as compared to both other large-sized Central NH Region towns and communities statewide.

NEW CONSTRUCTION

Table 5 displays Hillsborough’s estimated new home and new building construction permits issued by the Building Inspector between **2016-2021**. During this **6**-year period, a total of **77** new construction permits for homes and housing units have been issued, but not necessarily built.

Table 5

New Construction Permits Issued by Building Type, 2016-2021

Building Type	2016	2017	2018	2019	2020	2021*	6-Year Totals
Single Family Homes**	4	5	6	15	11	16	57
Multi-family Homes	0	0	0	0	0	0	0
Manufactured Homes	0	0	6	4	3	0	13
Non-Residential Buildings	2	0	0	0	3	2	7
Totals	6	5	12	19	17	18	77

Source: Hillsborough Planning Department (Town Reports)

*may include Accessory Dwelling Unit (ADU)

** to date 11-21

From **Table 5**, **57** permits were issued for new single family homes (or Accessory Dwelling Units (ADUs), with **0** permits for new multi-family homes, over the last **6** years. While **13** new construction permits for manufactured homes were issued during the period, it may have been the replacement of an existing home or a newly placed homes. This period was less active for the construction of new non-residential buildings, totaling **7** new commercial/ industrial/ exempt permits. The most active year was **2019** when a total of **19** new single family home and manufactured home permits were issued.

It is important to reiterate the number of permits *issued* does not necessarily equate to buildings *constructed*. When using these figures, compared to most similar-sized Central NH region communities, Hillsborough had more construction between **2016-2021**.

Land Use and Zoning

According to NH Office of Planning and Development's **2013** geographic information system (GIS) calculations, Hillsborough has a total land area of **27,968** acres, or **43.7** square land miles. An additional **639** acres (**1** square mile) is water, totaling **28,607** Town acreage within its political boundaries. The GIS land acreage figure is larger than the most recent **MS-1 2021** assessing reporting calculation of **26,905** total Land Use acres for the Town, a **1,063** acre difference. Certain acreages are often posted in more than one land use category for taxation purposes, and certain other land acreage is not displayed on MS-1 reports to the NH Department of Revenue Administration. Reviewing the assessing information closely should clarify the answer as to why this discrepancy exists. Small differences between the actual taxable land calculations from the assessing records and the acreage from the basic GIS calculations are often found and are not unusual. The total number of Hillsborough parcels is reported as **3,880** in **2021**.

For New Hampshire and specifically the Central NH Region, Hillsborough is considered a geographically larger-sized community in terms of land area and contains comparable population and housing figures. Hillsborough's proportion of residential land is higher than most towns in the Central NH Region, likely because of its multi-family developments. The northern-central section of the Town of Hillsborough is highly rural, forested, has little commercial development while the southern-western section hosts commercial, industrial, residential, and tax-exempt development. With current commuter traffic and development activity, there seems to be more of an incentive to begin the process for enabling developments in the northern section in the future.

LAND USE TYPES AND ACREAGE

Table 6 provides a snapshot of the Town's **2021** land use acreage from the Town's MS-1 reporting. Land use categories were combined for ease of summary. Forested land use and (with and without stewardship) is the most extensive land use type, comprising **51.6%** of the Town's land area. Residential land use at **18.0%** is the next highest, followed by Exempt land use at **16.4%**. Farm Land represents **(4.2%)** while Commercial and Industrial land uses are **3.0%** of the total land area.

Table 6
Land Use Acreage, 2021

Land Use Category 2021	Acres	% of Town
Residential	4,832.7	18.0%
Commercial/Ind	799	3.0%
Exempt	4,412	16.4%
Farm Land	1,137	4.2%
Forest Land	11,619	43.2%
Forest Land with Stewardship	2,275	8.5%
Unproductive	527	2.0%
Wet	1,304	4.8%
Total	26,905	100.00%

Source: Hillsborough MS-1 2021, Assessing Database. Planning Dept

HILLSBOROUGH ZONING

The perspective of the Town's Zoning Districts offers another way to view how the land is utilized within Hillsborough in **Table 7**. Tables of dimensional and density regulations pertaining to water and septic, lot frontages, setbacks, buffers and lot sizes, etc. are available within the Zoning Ordinance. The ordinance includes a table of uses for each district, indicating what types of facilities are permitted. Several commercial and residential districts fall within Hillsborough, over which aquifer, floodplain, shoreland and wetland protection overlay districts could apply further regulation.

Table 7
Hillsborough Zoning Districts, 2021

Zoning District	Abbreviation	Acreage
Rural District	--	22,853
Residential District	--	1,782
Commercial District	--	1,341
Central Business District	--	81
Emerald Lake Village Residential District	--	399
Village Residential District	--	318
Lower Village Residential District	--	132
Historic District Ordinance	--	--
Total		26,905
Zoning Overlay District	Abbreviation	Acreage
Groundwater Protection Ordinance	--	--
Floodplain Development District Ordinance	--	--
Total		
Other Zoning Ordinances		
Planned Developments Ordinance		
Cluster Development Ordinance		
Small Wind Energy Systems Ordinance		
Large Wind Energy Systems Ordinance		
Solar Collection System Ordinance		

Source: Town of Hillsborough Zoning Ordinance and AxisGIS, 2021

The overlay districts are superimposed upon the zoning districts so additional regulations shall apply. For any conflicting regulation, the more restrictive shall apply. The Zoning Ordinance has sections amended every year at the annual March Town Meeting and is used and applied by the Land Use Department, Building Inspector and Planning Board.

3 GOALS AND OBJECTIVES

The overall purpose of this Plan is to reduce future losses to life and property from potential hazard events by identifying appropriate **Actions** to implement during the five-year span of this Plan.

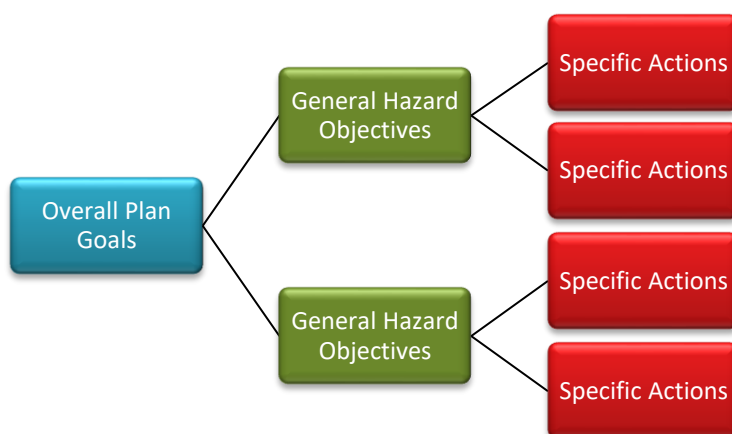
Inspired by early *State of New Hampshire Hazard Mitigation Plans*, the following Hillsborough **Goals** were initially developed in the previous **Hillsborough Hazard Mitigation Plans** and thus were reviewed and updated as applicable by the Hazard Mitigation Committee during a public meeting for the **2022 Plan**. While the hazard incidents have remained essentially the same as from the **2017 Plan** with a few disaster additions over the course of the last five years, it was important to reassess the continued relevancy of **Goals** and **Objectives** to influence the development of the best and most relevant hazard mitigation **Actions**. Lastly, with the most recent change in hazard types utilized in the *State of New Hampshire Multi- Hazard Mitigation Plan 2018*, it was necessary to revise some of the main hazard groups for the **General Hazard Mitigation Objectives** identification.

What Are Goals, Objectives and Actions

Goals, Objectives and Actions are used in the Hazard Mitigation Plan to define different levels of meaning. Their relationship is displayed in **Figure 3**.

The overall **Goals** provide a macro-level view of what emergency managers want to accomplish to keep the Town's life, property and infrastructure safer from natural disasters. Statements of overall **Goals**, beginning with "To", describe the desired vision of mitigation and safety for the community. **Goals** enable the development of thoughtful hazard **Objectives** designed to generally fulfill those **Goals**.

Figure 3
Relationship of Goals, Objectives and Actions



HAZARD CATEGORIES

From the [Hazard Identification and Risk Assessment](#), the individual natural, technological and human hazards under consideration have been grouped into similar event types for simplification, the Main Hazard categories in [Table 8. Objectives](#) begin to narrow down the focus of the overall **Goals** into hazard minimization statements and will use these categories.

Finally, **Actions** are the specific activities or projects which can be undertaken to accomplish an **Objective**. The **Action** is the target to reach to help mitigate hazards in the community. The completed **Action** fulfills the associated **Objectives**. Actions will be listed and reviewed later in **8 MITIGATION ACTION PLAN**.

Table 8

Main Hazard Categories for Objectives

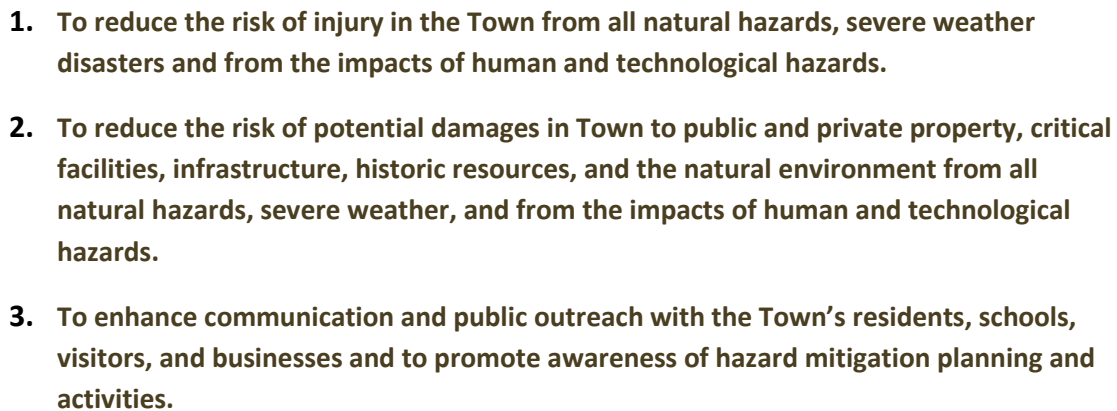
Main Hazard Category	Specific Hazards Included		
EARTH	DROUGHT	EARTHQUAKE	LANDSLIDE Soil, Rockslide or Excavation Areas
EXTREME TEMPERATURES	EXTREME TEMPERATURES Excessive Heat, Heat Wave, Cold or Wind Chill		
FIRE	WILDFIRE Brushfire, Outdoor Fires or Accidental		LIGHTNING
FLOOD	INLAND FLOODING Rains, Snow Melt, or Flash Floods	DAM FAILURE Water Overtop, Breach or Beaver	RIVER HAZARDS Ice Jams, Scouring, Erosion, Channel Movement or Debris
HEALTH	PUBLIC HEALTH Infectious Diseases, Air & Water Quality, Biological, Addiction, Arboviral or Tick-borne		
SOLAR	SOLAR STORMS AND SPACE WEATHER Solar Winds, Geomagnetic Storms (Aurora Borealis), Solar Radiation or Radio Blackout		
WIND	HIGH WIND EVENTS Wind, Thunderstorms, Hail, Downbursts, Tornadoes or Debris		TROPICAL AND POST-TROPICAL CYCLONES Hurricanes, Tropical Storms or Tree Debris
WINTER	SEVERE WINTER WEATHER Snow, Ice, Blizzard or Nor'Easter		AVALANCHE <i>appears in 2018 State HMP but is not relevant to Hillsborough's geography and development.</i>
TECHNOLOGICAL	AGING INFRASTRUCTURE Bridges, Culverts, Roads, Pipes or Underground Lines		FIRE Vehicle, Structure, Arson or Conflagration
	LONG TERM UTILITY OUTAGE Power, Water, Sewer, Gas, Internet, Communications or Live Wire Danger		HAZARDOUS MATERIALS Haz Mat Spills, Brownfields or Trucking
HUMAN	TRANSPORTATION CRASH Vehicle, Airplane, Helicopter, Rail, Interstate, Pedestrian or Bicycle		MASS CASUALTY INCIDENT As a result of any hazard event
	TERRORISM/ VIOLENCE Active Shooter, Hostage, Public Harm, Civil Disturbance/Unrest, Politically Motivated Attacks, Incendiary Devices, Sabotage or Vandalism		CYBER EVENT Municipal Computer Systems Attack, Cloud Data Breach, Identity Theft, Phishing, Ransomware or Virus

Source: Hillsborough Hazard Identification and Risk Assessment (HIRA)

Overall Hazard Mitigation Plan Goals

The following **3** Goals for the **Hazard Mitigation Plan 2022** were developed by the Hazard Mitigation Committee as the vision for the community with respect to the declared disaster declarations, general hazard events, seasonal weather events and changing climate patterns resulting in unexpected events. Collectively, the **Goals** guided the formulation of **Objectives** for each of the main hazard categories. These **Goals** were revised from the **2017 Plan** to emphasize hazard mitigation instead of preparedness, response and recovery which are covered in the *Emergency Operations Plan*. The **Hazard Mitigation Goals** are displayed in **Figure 4**.

Figure 4
Hazard Mitigation GOALS

- 
1. To reduce the risk of injury in the Town from all natural hazards, severe weather disasters and from the impacts of human and technological hazards.
 2. To reduce the risk of potential damages in Town to public and private property, critical facilities, infrastructure, historic resources, and the natural environment from all natural hazards, severe weather, and from the impacts of human and technological hazards.
 3. To enhance communication and public outreach with the Town's residents, schools, visitors, and businesses and to promote awareness of hazard mitigation planning and activities.

Source: Hillsborough Hazard Mitigation Committee

General Hazard Mitigation Objectives

Main hazard event categories of **Earth, Extreme Temperatures, Fire, Flood, Public Health, Solar Storms, Wind, Winter, Technological,** and **Human** are intended to encompass their respective full sub-hazards range described in this Plan. The **General Objectives** are developed by addressing the primary hazard events that could impact Hillsborough. They focus on minimizing or mitigating the hazard events to support the overall **Goals** while driving the direction of **Action** development later in the Plan.

Although human and technological hazards are not natural disasters, many technological hazards are secondary to (are caused by) the natural and weather hazards. Nineteen (**19**) **General Hazard Mitigation Objectives** were crafted for the **Hillsborough Hazard Mitigation Plan 2022** as displayed in **Figure 5**.

Figure 5
Hazard Mitigation OBJECTIVES

EARTH HAZARDS

1. Minimize the threat of potential landslide or rockslide areas along local roads and excavation areas.
2. Engage in public awareness of local earthquake activity and safety precautions.
3. Minimize the impact of drought events to agricultural areas, private and municipal wells, and other locations through public awareness.

EXTREME TEMPERATURE HAZARDS

4. Minimize the damages to life, property, and infrastructure due to temperature fluctuation resulting from climate change, including excessive heat events, heat waves, extreme cold events, and wind chill.

FIRE HAZARDS

5. Minimize the damages to life, property, and infrastructure, including the conservation properties, areas of Fox State Forest, Low State Forest, Emerald Lake homes, Bible Hill tower, and other communication towers from wildfires, brushfires, other outdoor fires, and lightning.

FLOOD HAZARDS

6. Minimize the damages to life, property, and infrastructure from floodwaters of the floodplains, Emerald Lake, Contoocook River, Farrar's Marsh, Beards Brook, Gleason Falls, Franklin Pierce Lake, Sand Brook, Black Pond, and other wetlands and water bodies.
7. Minimize the damages to life, property, and infrastructure caused by snowmelt and precipitation resulting in erosion and flooded roads; river scouring and ice jams, culvert washouts, dam failures, or debris (tree limbs, leafy material/ sediment), beaver dam breakage, etc.

PUBLIC HEALTH HAZARDS

8. Minimize the threat or impact of public health events to the public, including close-quarter communicable diseases (coronavirus, influenza, hepatitis, meningitis), air and water quality decline, biological infestations (milfoil, emerald ash borer), arboviral (mosquito) and tick-borne diseases, addiction, etc.

SOLAR STORMS

9. Minimize the impact to life, property, and infrastructure (such as telecommunications towers) from solar storms and space weather, including solar winds, geomagnetic storms, solar radiation, and radio blackout.

WIND HAZARDS

10. Minimize the damages to life, property and infrastructure from heavy wind events, thunderstorms, hail, downbursts, tornadoes, hurricanes, and tropical storms, including damages caused by resulting tree debris.

WINTER HAZARDS

11. Minimize the damages to life, property, and infrastructure from winter weather events, including storms, snow, ice and minimize damages from utility failure, blocked transportation routes, and roof collapses.

HUMAN HAZARDS

- 12. Minimize the risk of impacts and damages to life, property and infrastructure resulting from transportation crashes and fires involving transport trucks, vehicles, pedestrians, bicycles, airplanes, helicopters, drones, etc., along the flightpaths, State roadways (NH 9, NH 149, NH 31, US 4/202 bypass) and local Hillsborough roads (School Street, Bog Road, Old Henniker Road, Gold Pond Road, and Henniker Street/West Main Street) especially during severe weather events.**
- 13. Minimize the risk of damages to life, property and infrastructure from human terrorism and violence threats, such as active threat incidents, hostage situations, civil disturbance/ riots, politically motivated attacks, incendiary devices, sabotage, vandalism, or other public harm.**
- 14. Minimize the risk and impact of mass casualty events to better protect Hillsborough's citizens and guests.**

TECHNOLOGICAL HAZARDS

- 15. Minimize the risk of cyber events, including overall systems takeover, takeover of the Town website, telecommunications rerouting, cloud data breach, phishing, malware, ransomware, virus installation, on Town computer systems to maintain essential operations, and provide education to minimize cyberattack risk to residents and businesses, including identity theft and telephone scams.**
- 16. Minimize the damages from multiple hazards to the aging infrastructure of the community, including bridges, culverts, dams, local roads, underground water, sewer, or electric lines, and seek to maintain operational efficiency.**
- 17. Minimize the impact to Hillsborough residents from the risks of various utility outages, such as live wire dangers and long-term outages in electrical power, internet, and telecommunications services.**
- 18. Minimize the impacts of fire conflagration and explosion, especially near densely populated areas, or buildings, from fuel tanks, utilities, high tension power lines, and vehicles.**
- 19. Minimize the damages to life, property, and infrastructure from hazardous materials exposure, chemical spills, trucking accidents, and radiological materials incidents, including damages, impacts and exposures caused by brownfields sites, leaking underground storage tanks, and occupational sites.**

Source: Hillsborough Hazard Mitigation Committee

4 HAZARD RISK ASSESSMENT

Natural disasters and technological, and human hazards that have occurred in Hillsborough or have the potential to occur in the Town were assessed in a [Hazard Identification Risk Assessment \(HIRA\)](#) to determine their **Overall Risk** to the community. The major disasters declarations covering the Central NH Region (Hillsborough County and Merrimack County) were inventoried and additional hazard events occurring in Hillsborough and the surrounding area have been described. FEMA Public Assistance funding to the Town is detailed for each disaster declaration. A review of climate variations is described for the region to provide perspective on how the weather may change over time.

The [State of New Hampshire Multi-Hazard Mitigation Plan 2018](#) recommends that municipalities examine multiple natural hazards, including several new hazards. Two hazards, avalanche and coastal flooding, are not discussed in Hillsborough's Plan because they have no ascertained relevance to the Town. The former human hazards of Civil Disturbance/ Public Unrest, Sabotage/ Vandalism, and Hostage Situation are absorbed into the [Terrorism/ Violence](#) hazard category. The opportunity was available to combine several of the former flood-related hazards into the new [Inland Flooding](#). Likewise, several former wind-related hazards are compiled within [Wind](#). No natural hazards from the [2017 Plan](#) have been removed, only placed into other groupings for evaluation. Within the [Hazard Mitigation Plan 2022](#), the **14** evaluated natural hazards and the **8** evaluated human or technological hazards have been incorporated under these basic categories, also displayed in [3 GOALS AND OBJECTIVES Table 8](#):

- | | |
|--------------------------------------|--------------------------------|
| ➤ Earth Hazards | ➤ Solar Storm Hazards |
| ➤ Extreme Temperature Hazards | ➤ Wind Hazards |
| ➤ Fire Hazards | ➤ Winter Hazards |
| ➤ Flood Hazards | ➤ Human Hazards |
| ➤ Public Health Hazards | ➤ Technological Hazards |

Within these basic hazard categories are numerous related subcategories, all of which are detailed in the [Hazard Identification and Risk Assessment \(HIRA\)](#). This Assessment provides a measure of **Frequency (Probability of Occurrence)**, **Location Area**, **Severity of Impact to the Town**, **Hazard Magnitude**, and **Overall Risk** for each hazard in a numerical format as determined by the Hazard Mitigation Committee. Scale definitions and the process to define hazards are discussed.

Many of these examined hazards discussed may pose little threat to the Town. The Hazard Mitigation Committee wanted to acknowledge their possibility as opposed to simply focusing on a handful of top hazards which will certainly occur in the community. Using this broad vision allows Hillsborough to contemplate the impact of a variety of hazards and to develop mitigation actions and design emergency planning programs as appropriate. Only the most predominant hazards, or even multiple hazards, will

have mitigation actions developed to try to reduce the hazards' impact. These are later discussed in [Potential Mitigation Actions](#) and prioritized in the [Mitigation Action Plan](#).

Hazard Identification and Risk Assessment (HIRA) Ratings

Twenty-two (**22**) natural, technological, and human hazards are evaluated within this Plan. The **14** natural hazards are ranked within in the [Hazard Identification Risk Assessment](#). Some hazards may be more likely to occur in the community than others based on past events and current conditions, and some hazards may have a greater impact than other hazards. How vulnerable Hillsborough could be to natural hazards can be measured in terms of **Overall Risk**.

The location of where each hazard has occurred either in the past or may be prone to future hazard occurrences is noted in the **Hazard Locations in Town** column.

Knowing where events may be likely to occur, the **2021** Hazard Mitigation Committee examined each potential hazard for its **Probability of Occurrence in 10 Years** and its potential **Severity of Impact to the Town** affecting people, services/infrastructure and property based on past personal recollections and community hazard trends to determine the **Overall Risk** to the community.

HIRA RATINGS EXPLANATION

The Committee identified each hazard's **Probability of Occurrence in 10 Years** score on a **1-2-3-4** scale from **Unlikely/1** (0-25% chance of occurring in **10** years, which is two **Hazard Mitigation Plan** cycles) to **Highly Likely/4** (76-100% chance in **10** years) as shown below.

Probability of Occurrence in 10 Years

1	Unlikely	0 - 25% chance
2	Possible	25 - 50% chance
3	Likely	51 - 75% chance
4	Highly Likely	76 - 100% chance

The Committee determined the likely **Severity of Impact to the Town** of an event based on a **1-2-3-4** scale for **3 Impact** characteristics – Human Injuries, the length of time Essential Services/Infrastructure are shut down and resulting Property Damage or Economic Impact. Not all of these characteristics must be expected because each hazard differs. The scale runs from **Limited/1** to **Catastrophic/4** and the more specific definitions are described below.

The **Probability of Occurrence in 10 Years** score was multiplied by the average of each **Severity of Impact to the Town** (Human Injury, Essential Services or Infrastructure and Property Damage or Economic Impact) score to obtain the **Overall Risk** score.

The technological and human hazards were not scored to ensure the natural hazards retained the focus of the **Hazard Mitigation Plan Update 2022**. However, **Dam Failure** was promoted to a natural hazard and was rated because of its close correlation to **Flooding**.

Severity of Impact to the Town

1	Limited	Human: Injuries treatable with first aid. Essential Services/Infrastructure: Minor “quality of life disturbance; Shutdown for 3 days or less. Property Damage or Economic Impact: Less than 10%.
2	Significant	Human: Significant injuries or illnesses result in no permanent disability. Essential Services/Infrastructure: Shutdown for up to 2 weeks. Property Damage or Economic Impact: 10% to 25%.
3	Critical	Human: Significant injuries or illnesses result in permanent disability. Essential Services/Infrastructure: Complete shutdown for at least 2 weeks. Property Damage or Economic Impact: 25% to 50%.
4	Catastrophic	Human: Death or multiple deaths. Essential Services/Infrastructure: Complete shutdown for 30 days or more. Property Damage or Economic Impact: Greater than 50%.

Concern Summary of HIRA Scores

A summarization of the scores is provided to ascertain at a glance the **Probability of Occurrence**, **Severity of Impact**, and **Overall Risk** using a **HIGH**, **MEDIUM** or **LOW Concern** designation for the numeric results. This summarization is also utilized in the following the **Description and Magnitude of Hazard Events** section.

Numeric of Probability and Severity	CONCERN SUMMARY	Numeric of Overall Risk Score
1	LOW	1 – 4
2	MEDIUM	5 - 7
3	HIGH	8 - 11
4	HIGH	12 - 16

OVERALL RISK ASSESSMENT SCORES

The highest possible **Overall Risk** score a natural hazard could be ranked using this **Hazard Identification Risk Assessment (HIRA)** system is **16** while the lowest score a hazard could be ranked is **1**. The **Overall Risk** numeric score is one which can help the community weigh the hazards against one another to determine which hazards are most detrimental to the community and which hazards should have the most Actions developed to try to mitigate those hazards. The **Overall Risk** is calculated simply by adding the two scores of **Probability of Occurrence in 10 Years** and **Severity of Impact to the Town**.

Out of the **14** ranked natural hazards, Hillsborough's highest-ranking hazards scored an **Overall Risk** between **10.7 – 5.3** (out of a possible Risk score of **16**), displayed with calculated decimals in **Table 9**.

Table 9

Highest Overall Risk Hazards and Hazard Events Since the Last Plan

Natural Hazard Event	HIRA Overall Risk 1-16	CONCERN	Notable Hazard Events Within the Last 5 Years?*(See Table 12)	Mitigation Actions Developed For MEDIUM & HIGH Hazards? (See Mitigation Action Tables)
Public Health	10.7	HIGH	Yes	Yes
Extreme Temperatures (Heat-Cold)	10.7	HIGH	Yes	Yes
Tropical and Post Tropical Cyclones	9.0	HIGH	No	Yes
High Wind Events	8.0	HIGH	Yes	Yes
Inland Flooding	8.0	HIGH	Yes	Yes
Severe Winter Weather	8.0	HIGH	Yes	Yes
Wildfire Events	8.0	HIGH	Yes	Yes
Drought	6.7	MEDIUM	Yes	Yes
Lightning	5.3	MEDIUM	Yes	Yes
Dam Failure	4.0	LOW	Yes	
River Hazards	2.7	LOW	Yes	
Earthquake	2.0	LOW	No	
Landslide	1.0	LOW	No	
Solar Storms and Space Weather	1.0	LOW	No	
<p>*NO = No notable impacts since the last Plan. Stated in Table 10 as "NO Event(s) Within Last 5 Years."</p> <p>YES = Notable impact events added to Table 12. Stated in Table 10 as "Event(s) Within Last 5 Years."</p> <p>ANNUAL = Annual occurrence with variable impacts; any notable impacts added to Table 12. Stated in Table 10 as "Annual Occurrence Within Last 5 Years" whether or not a notable event was added to Table 12.</p>				

Source: Compilation of Hillsborough HMC Data

HAZARD IDENTIFICATION AND RISK ASSESSMENT RATINGS

Included with the **Table 10 Hazard Identification Risk Assessment (HIRA)** is whether each hazard event occurred within the last **5** years in Hillsborough. This is indicated by either ***Events(s) Within Last 5 Years***, ***ANNUAL Occurrences Within Last 5 Years*** or ***NO Event(s) Within Last 5 Years*** beneath each *Hazard Category*. Dates and descriptions of the new hazard impacts within the last **5** years are provided in a later table, **Table 12 Local and Area Hazard Event and Disaster History (Sequential)**. The existing potential hazard locations, or those locations in Hillsborough which could be currently at present day susceptible to each of the hazard categories, are provided within **Table 10** since these locations contribute to the **Severity of Impact** ratings determinations of Committee. The **HIGH, MEDIUM** or **LOW Concern** for each *natural hazard* is provided in the **Overall Risk** column.

Table 10

Hazard Identification and Risk Assessment (HIRA)

Natural, Technological, Human Hazard Categories	Potential/Susceptible (Existing) Hazard Locations in the Town <i>See also Appendix A. Critical Community and Facility Vulnerability Assessment (CCFVA)</i>	PROBABILITY of Occurrence in 10 Years	SEVERITY of Impact			OVERALL RISK (1-16)
			Human Injury Impact	Essential Services or Infrastructure Impact	Property Damage or Economic Impact	
DAM FAILURE Water Overtop, Breach, Beaver, etc. *Event(s) Within Last 5 Years*	<p>♦ 1 High Hazard (H) dam: 116.04 Jackman Reservoir Dam (Murray) on the North Branch Contoocook River. 1 Significant Hazard (S) dam: 116.22 Hillsborough Sewage Lagoon Dam (Town)</p> <p>2 Low (L) Hazard dams: 116.01 Hosiery Mill Dam (Town) on the Contoocook River and 116.20 Farrar Marsh Dam (NHF&G) on Sand Brook.</p> <p>♦ Dams in other Towns could have a serious downstream impact should they fail or release too much water.</p> <p>♦ Other recreation ponds, Non-Menace dams and regular beaver dams could breach and flood roadways. NM dams are found along Shedd Brook, Nichols Brook, Molly Jackson Brook, Beard Brook, Tributaries of Contoocook River, and at detention ponds and recreation ponds all of which are unlikely to flood but still have potential. (See APPENDIX A for list).</p> <p>♦ Beaver dams carry a high probability of flooding and potential for breakage. Beaver dams are located throughout Hillsborough, and depending on size and location, could cause significant damage to roads if the natural dams' breach. Regular beaver activity at Farrar Marsh Beaver Dam requires frequent checks.</p>	1	4	4	4	4.0 LOW
DROUGHT *Event(s) Within Last 5 Years*	<p>♦ Entire Town. Areas susceptible to drought and dry conditions include farms and orchards, nurseries, and maple sugar operations: Mellen Patch Blueberry Orchard, Hunt's Sugar House, Fireside Flower Farm, Pam's Plants and Flowers, Tom and Robin's Garden, Three Oaks Farm, and others.</p> <p>♦ Farm animals, hay fields, produce, and vegetable gardens are negatively impacted by</p>	4	2	1	2	6.7 MEDIUM

Natural, Technological, Human Hazard Categories	Potential/Susceptible (Existing) Hazard Locations in the Town <i>See also Appendix A. Critical Community and Facility Vulnerability Assessment (CCFVA)</i>	PROBABILITY of Occurrence in 10 Years	SEVERITY of Impact			OVERALL RISK (1-16)
			Human Injury Impact	Essential Services or Infrastructure Impact	Property Damage or Economic Impact	
	<p>drought. When hayfields die off and wells go dry, livestock animals in Town cannot easily be locally fed or watered. Larger farms become economically impacted when their products are unable to grow.</p> <ul style="list-style-type: none"> ♦ Water Supplies: Private water supplies for the outside the Hillsborough Water Works District and public water supplies serving 25+ people. Dug wells are known to go dry. ♦ Emerald Lake Village District: Several dug wells tend to go dry annually, water moratoriums have been declared. ♦ Drought means increased risk of brush fire with dry vegetation (see Wildfire). Gravel roads (Class V) can be affected because Town is unable to grade them when water is low. Class VI gravel roads may become fire hazards with overhanging dry growth. ♦ Fire ponds/ dry hydrant water supplies can run dangerously low; see APPENDIX A for a list of the dry hydrants and large cisterns. When fire ponds or dry hydrants are low, response time increases as the Department needs to draw from rivers, brooks, and ponds (see Inland Flooding). 					
EARTHQUAKE *NO Event(s) Within Last 5 Years*	<p>♦ Entire Town. The Central NH Region is seismically active, and earthquakes are regularly felt from area epicenters. Locations with high density population such as the downtown Hillsborough Village Area, Emerald Lake Village District, or Manufactured Housing Parks are potentially at most risk. Potential gathering sites to evacuate include Hillsborough Schools, Historical Society, Fuller Public Library, National Guard, Wastewater Treatment Facilities, ELVD Main Beach Meeting House, ELVD Water treatment facility and Pumping Station.</p> <ul style="list-style-type: none"> ♦ Damage to utility poles and wires, roadways and infrastructure could be significant. Aboveground poles, underground electric lines, underground water, sewer, and natural gas lines could be susceptible. ♦ Fuel storage locations such as Rymes Fuel, store underground or aboveground fuel tanks which may be vulnerable during a strong earthquake. ♦ Areas with old or historic buildings are particularly susceptible to earthquake including public and private buildings (historic homes), the Bear Hill National Historic District, Hillsborough Center Congregational Church, Kemp Memorial Museum, the mill national historic district, Old 	2	1	1	1	2.0 LOW

4 HAZARD RISK ASSESSMENT

Natural, Technological, Human Hazard Categories	Potential/Susceptible (Existing) Hazard Locations in the Town <i>See also Appendix A. Critical Community and Facility Vulnerability Assessment (CCFVA)</i>	PROBABILITY of Occurrence in 10 Years	SEVERITY of Impact			OVERALL RISK (1-16)
			Human Injury Impact	Essential Services or Infrastructure Impact	Property Damage or Economic Impact	
	Goodale Schoolhouse, Union Chapel, and 17 cemeteries throughout Town.					
EXTREME TEMPERATURES Excessive Heat, Heat Wave, or Cold, Wind Chill <i>*Heat Event(s) Within Last 5 Years*</i> <i>*NO Cold Event(s) Within Last 5 Years*</i>	<p>♦ Entire Town. Groups most susceptible to extreme heat or cold include those located at: Hillsborough Schools, Town Hall, manufactured housing neighborhoods, and apartments.</p> <p>♦ Senior residences, assisted living, those dwellings without air conditioning or those receiving fuel assistance are especially vulnerable to high heat or extreme cold events. These could include: Farmsteads of NE Adult Assisted Living [~26 occupants], Hillsboro House Nursing Home Assisted Living [~33 occupants], Mapleleaf Village Senior Subsidized Housing [44 units], Barrett's MHP [16 sites], Bear Hill MHP [7 sites], Stonebridge Cooperative MHP [44 sites], Rocky Valley RV Park [~34 units], or others. Residents should be moved to air conditioned (cooling) or warming facilities.</p> <p>♦ Youth groups such as the Hillsborough Child Development Center and Stonebridge Preschool and Daycare [20 Children max] need to be protected from hot and cold temperatures.</p> <p>♦ Extreme cold or heat may be experienced by recreationalists in remote conservation lands, Town Forests, and other outdoor places.</p> <p>♦ Areas vulnerable to the effects of extreme heat or cold also include agriculture and farms (see list above in Drought)</p> <p>♦ See APPENDIX A for the list of vulnerable facilities or groups.</p>	4	4	1	3	10.7 HIGH
HIGH WIND EVENTS Wind, Thunderstorms, Hail, Downbursts, Tornadoes, Debris <i>*Event(s) Within Last 5 Years*</i>	<p>♦ Entire Town. Most high wind vulnerable areas include populated buildings, high-density locations and aboveground utilities serving residents & businesses.</p> <p>♦ Utilities at risk of failing during high wind events include telecomm towers, Eversource electric lines, transmission lines, switching stations, TDS and Granite State telephone and cable lines, water and sewer pumping stations, water lines, Loon Pond Reservoir Water Treatment Facility, and Hillsborough Wastewater Treatment Plant. Additionally Emerald Lake Village District utilities are potentially at-risk including wells, water infrastructure, Water Storage Tank and Main Pump House Facility, and the Water Treatment Facility.</p> <p>♦ High density developed areas can have greater impacts from high winds: Hillsborough Schools, Town Hall, churches, manufactured home neighborhoods, Emerald Lake Village District,</p>	4	2	2	2	8.0 HIGH

4 HAZARD RISK ASSESSMENT

Natural, Technological, Human Hazard Categories	Potential/Susceptible (Existing) Hazard Locations in the Town <i>See also Appendix A. Critical Community and Facility Vulnerability Assessment (CCFVA)</i>	PROBABILITY of Occurrence in 10 Years	SEVERITY of Impact			OVERALL RISK (1-16)
			Human Injury Impact	Essential Services or Infrastructure Impact	Property Damage or Economic Impact	
	<p>apartments and independent living, childcare facilities.</p> <p>✦ Construction, manufacturing, or industrial-like areas such as those along Henniker St and West Main Street or open land/excavation pits like those found along NH 31 and Gleason Falls Rd are collectively vulnerable to the effects of high wind events.</p> <p>✦ Downbursts are occurring with greater regularity. The Town's highest elevation points (see Map 1 Potential Hazards) may experience the greatest high wind impacts, including the steep slopes and hillsides. Many town roads, private roads and Class VI roads lead up and through these hills.</p> <p>✦ Most of the Town north of US 202 is wooded and forested and sections would be difficult to access with trees and power lines down on the gravel, hilly residential roads. They could be difficult to access with treefall and power lines downed from high wind events. Remote neighborhoods include manufactured housing parks and neighborhoods on roads with only one egress.</p> <p>✦ Outdoor recreation areas such as Town Forests, rail trails, conservation lands, and current use lands utilize large amounts of tree cover. During high wind events, people recreating in these areas could experience unfavorable conditions during and may require rescue assistance in difficult to access locations.</p> <p>✦ Agricultural operations are vulnerable to damage from high winds (see list above in Drought)</p> <p>✦ Older, or historical buildings are vulnerable to high wind damage include public and private buildings (historic homes), Historic Districts, Churches, Old Schoolhouses, historical monuments, and cemeteries (headstones) throughout Town could be especially vulnerable.</p> <p>✦ Floods are also possible with severe windstorm events (see Inland Flooding).</p>					
INLAND FLOODING Rains, Snow Melt or Flash Floods <i>*Event(s) Within Last 5 Years*</i>	<p>✦ Entire Town, Floodplains of the Contoocook River. Major watercourses include the Contoocook River, North Branch River, Shedd Brook, Beard Brook, Nichols Brook, Molly Jackson Brook, Sand Brook, Black Pond Brook, and Cedar Brook are the most prominent waters flowing in Town.</p> <p><u>Major waterbodies</u> include wildlife and recreation ponds which are among the main standing bodies</p>	4	2	2	2	8.0 HIGH

4 HAZARD RISK ASSESSMENT

Natural, Technological, Human Hazard Categories	Potential/Susceptible (Existing) Hazard Locations in the Town <i>See also Appendix A. Critical Community and Facility Vulnerability Assessment (CCFVA)</i>	PROBABILITY of Occurrence in 10 Years	SEVERITY of Impact			OVERALL RISK (1-16)
			Human Injury Impact	Essential Services or Infrastructure Impact	Property Damage or Economic Impact	
	<p>of water. Named waterbodies in Hillsborough include Franklin Pierce Lake, Contention Pond, Loon Pond, and Gould Pond.</p> <p>♦ Flooding could occur from breached High, Significant, and Low Hazard Dams within and connected to Hillsborough. Other recreation ponds, Non-Menace dams and regular beaver dams can breach and flood roadways. See Dam Failure hazard above.</p> <p>♦ Any of these waters could flood local roads, homes, buildings, and waterfront properties including the Bear Hill Rd Apartments or 19 Bridge Street Apartments, or others. Bear Hill Road's flat area along the Contoocook River floods annually.</p> <p>♦ Runoff from roadways, heavy rain, or snowmelt can cause floods and washouts over the Entire Town. Regular washout locations occur. (See also Aging Infrastructure)</p> <p>♦ Roads, bridges, drainage systems and related areas can flood, creating flooded infrastructure for many travelers.</p>					
LANDSLIDE Soil, Rockslide or Excavation Areas *NO Event(s) Within Last 5 Years*	<p>♦ Slopes greater than 15%, which is much of the community (see Map 1) including roads with steep ditching or embankments are most vulnerable to landslide. The Town has numerous hills over 1,000' in elevation, many of them with roads or trails.</p> <p>♦ Roads with steep ditching or embankments are most vulnerable to landslide. No roads were identified by the HMC as having landslide vulnerability. (see Inland Flooding). Landslide is an uncommon hazard but one that could have devastating effects, including property damage.</p> <p>♦ There are several known excavation sites in Town, some of which may have the potential of landslide/ rockslide. Many areas are reclaimed and vegetated.</p>	1	1	1	1	1.0 LOW
LIGHTNING *Event(s) Within Last 5 Years*	<p>♦ Entire Town. Areas of particular concern to lightning include critical facilities, high density areas, and places of high elevation.</p> <p>♦ The Town & cultural facilities including Town Hall, Police and Fire Stations, Historic Districts, and Churches. (see also High Wind).</p> <p>♦ Most Town Buildings are believed to have lightening rods including the Library (town office). However, it is unknown if the Town municipal solar array at the Transfer Station have dedicated grounding systems and circuit panels. A lightning strike is much more likely to destroy electronic equipment, cause local fires, and cause operation disruptions if proper systems are not installed.</p>	4	1	1	2	5.3 MEDIUM

4 HAZARD RISK ASSESSMENT

Natural, Technological, Human Hazard Categories	Potential/Susceptible (Existing) Hazard Locations in the Town <i>See also Appendix A. Critical Community and Facility Vulnerability Assessment (CCFVA)</i>	PROBABILITY of Occurrence in 10 Years	SEVERITY of Impact			OVERALL RISK (1-16)
			Human Injury Impact	Essential Services or Infrastructure Impact	Property Damage or Economic Impact	
	<ul style="list-style-type: none"> Numerous outdoor recreational and gathering places such as School fields, Town Forests, and the various trails on conservation lands could be vulnerable to lightning. Other locations containing large numbers of people include Hillsborough Schools, downtown Hillsborough Village area, Emerald Lake Village District, and high-density housing. Lightning and Wildfire and potential conflagration could occur in these densely populated areas. Businesses with potentially hazardous materials onsite such as fuel, gasoline, used fluids (various automotive repair shops, construction and lumber yards, salvage yards) could each be vulnerable to lightning and fire. Outdoor utilities and antennas would have high impacts should lightning strike, such as the telecommunications towers, high transmission lines, Eversource electric lines, TDS and Granite State telephone lines, and telephone switching stations. Old, historic, or wooden structures and those structures without lightning rods would be more susceptible to damage from a strike. Old wooden buildings at high elevations within forested areas could be especially vulnerable to lightning. Remote, forested areas, parks, public Town Forests, conservation areas, open recreation fields, points of higher elevation can be dangerous to people and property if struck by lightning, including the many conservation lands and trail systems. 					
PUBLIC HEALTH Infectious Diseases, Air & Water Quality, Biological, Addiction, Arboviral, or Tick-borne *Event(s) Within Last 5 Years*	<ul style="list-style-type: none"> Entire Town. Congregated populations, older and younger residents, medical facilities, and social settings can be more vulnerable to infectious diseases. Schools: Hillsboro-Deering Elementary School, Hillsboro-Deering High School, Hillsboro-Deering Middle School, Hillsborough Christian School, Stonebridge Montessori School. Manufactured housing neighborhoods, Barrett's MHP [16 sites], Bear Hill MHP [7 sites], Stonebridge Cooperative MHP [44 sites], Rocky Valley RV Park [~34 units]. Independent living facilities or apartment buildings: 1830 House Motel [13 units], 19 Bridge Street (MBF Enterprises) [14 units], Bear Hill Motel [4 units in Hillsborough], Bear Hill Rd Apartments (RNC Realty) [12 units], Contoocook Mills Apartments (Operman)[30 units], Woodlawn Avenue Apartments (Keystone Management) [24 	4	4	2	2	10.7 HIGH

4 HAZARD RISK ASSESSMENT

Natural, Technological, Human Hazard Categories	Potential/Susceptible (Existing) Hazard Locations in the Town <i>See also Appendix A. Critical Community and Facility Vulnerability Assessment (CCFVA)</i>	PROBABILITY of Occurrence in 10 Years	SEVERITY of Impact			OVERALL RISK (1-16)
			Human Injury Impact	Essential Services or Infrastructure Impact	Property Damage or Economic Impact	
	<p>units], Apartments (RNC Realty) [12 units], Willow Rock Apartments (Keystone) [40 units].</p> <p>♦ Multi-family housing developments throughout Town (including Garden Gate Condominiums and others).</p> <p>♦ Childcare facilities: Hillsborough Child Development Center and Stonebridge Preschool and Daycare [20 Children max]</p> <p>♦ Medical facilities: Bara Dental, Monadnock Orthodontics, Brookside Counseling, Concord Hospital – Hillsborough Deering Family Health, Foxbend Veterinary Clinic, Lee Chiropractic, Puleo Dental.</p> <p>♦ Local stores and eateries increase the risk of exposure to and transfer of food-borne illness, causing potential public health concerns.</p> <p>♦ The Town's local Point of Dispensing (POD) is located at the Hillsboro-Deering Middle School, the town shelter with Deering and Windsor. Hillsborough is a member of the Capital Area Public Health Network.</p> <p>♦ The many forests, conservation areas, agriculture, wooded areas, and ponds can support ticks (Tick-borne) hosting bacterial diseases (Lyme, Anaplasmosis, Leptospirosis, more) and mosquitos (Arboviral) can host many bacteria (West Nile, EEE, Equine Infectious Anemia, etc) which transmit diseases. The conservation lands and trail systems attract people, which can also enable disease transmission. Lyme disease rates are increasing according to NH Health WISDOM, with no indication of decline.</p> <p>♦ Waters and beaches susceptible to high bacteria counts in the summer include banks of the Contoocook River, and any locations used as public or private beaches including Manahan Park on Franklin Pierce Lake, and others along Contention Pond, Loon Pond, and Gould Pond. Ponds especially are prone to high cyanobacteria (blue-green algae) counts that are harmful to people, or host e. coli counts from people or wildlife. Manahan Beach has periodically had cyanobacteria and posted e. coli. Beard Brook Beach has periodically had e. coli posted.</p> <p>♦ Some of the largest sources of local air pollution are vehicular traffic of US 202. Air pollution regularly reaches the Central NH region from Canada or the US Midwest.</p>					
RIVER HAZARDS Ice Jams,	<p>♦ Entire Town, Floodplains of the Contoocook River. <u>Major watercourses</u> include the Contoocook River, North Branch River, Shedd</p>	2	1	2	1	2.7 LOW

4 HAZARD RISK ASSESSMENT

Natural, Technological, Human Hazard Categories	Potential/Susceptible (Existing) Hazard Locations in the Town <i>See also Appendix A. Critical Community and Facility Vulnerability Assessment (CCFVA)</i>	PROBABILITY of Occurrence in 10 Years	SEVERITY of Impact			OVERALL RISK (1-16)
			Human Injury Impact	Essential Services or Infrastructure Impact	Property Damage or Economic Impact	
Scouring, Erosion, Channel Movement or Debris <i>*Event(s) Within Last 5 Years*</i>	<p>Brook, Beard Brook, Nichols Brook, Molly Jackson Brook, Sand Brook, Black Pond Brook, and Cedar Brook are the most prominent waters flowing in Town.</p> <p><u>Major waterbodies</u> include wildlife and recreation ponds which are among the main standing bodies of water. Named waterbodies in Hillsborough include Franklin Pierce Lake, Contention Pond, Loon Pond, and Gould Pond.</p> <p>♦ Erosion of banks could occur along locations of the Contoocook River. Erosion of sandy banks of the Contoocook River on Bear Hill Road has caused trees to tip over and sinkholes to form on the side of road, this is possible in many locations along the river. The Contoocook River's sandy banks have little stabilization making them particularly prone to erosion.</p> <p>♦ Ice jams could endanger the dams, bridges and nearby infrastructure and have the potential to recur, endangering travelers.</p> <p>♦ Floating debris down the rivers and brooks can accumulate at bridges and dams.</p>					
SEVERE WINTER WEATHER Snow, Ice, Blizzard or Nor'Easter <i>*Event(s) Within Last 5 Years*</i>	<p>♦ Entire Town. Areas of concern during winter weather include high density areas as listed in High Wind Events.</p> <p>♦ Utilities at risk of failing during winter weather include telecomm towers, Eversource electric lines, transmission lines, switching stations, TDS and Granite State telephone and cable lines, water and sewer pumping stations, water lines, Loon Pond Reservoir Water Treatment Facility, and Hillsborough Wastewater Treatment Plant. Additionally Emerald Lake Village District utilities are potentially at-risk including wells, water infrastructure, Water Storage Tank and Main Pump House Facility, and the Water Treatment Facility. Telecomm tower antenna arrays as well as Town Department antennas could receive significant impacts from snow, ice, and blizzards.</p> <p>♦ The schools close during inclement weather and have automatic messaging alerts sent to parents about status updates.</p> <p>♦ The entire Hillsborough Road network is susceptible to winter conditions, including the state roads (US 202, NH 9, NH 31, NH 149). Local Town roads are also often difficult to travel. Many local roads and the hilly gravel roads have sharp incline/ decline or cars have trouble traveling the road during winter conditions. Freezing rain resulting in ice is the most difficult to maintain,</p>	4	2	2	2	8.0 HIGH

4 HAZARD RISK ASSESSMENT

Natural, Technological, Human Hazard Categories	Potential/Susceptible (Existing) Hazard Locations in the Town <i>See also Appendix A. Critical Community and Facility Vulnerability Assessment (CCFVA)</i>	PROBABILITY of Occurrence in 10 Years	SEVERITY of Impact			OVERALL RISK (1-16)
			Human Injury Impact	Essential Services or Infrastructure Impact	Property Damage or Economic Impact	
	<p>requiring constant salt and sand during the weather event.</p> <p>✦ Neighborhoods at higher elevation include the hilly roads which can be difficult to keep clear of snow and tree fall.</p> <p>✦ Much of the Town is wooded and forested with most sections vulnerable to snow, ice effects and power failure. Homes are difficult to access with trees and power lines down on the hilly residential roads. They could be difficult to access with treefall and power lines down from winter storm events. Remote housing could become isolated by treefall, especially those with only one egress. The manufactured housing parks have homes less capable of withstanding snow load.</p> <p>✦ These roads and especially the one-egress roads are often blocked by fallen trees or powerlines, and residents cannot access their homes or leave their homes until the road is clear.</p> <p>✦ Local government operations in the Hillsborough Town Hall, Police and Fire Station, Public Works, Highway Department and Transfer Station, and Hillsborough Water and Sewer conduct essential business and make decisions during winter weather conditions that keep residents safe. These vital personnel may not live in Town or may have commuting difficulties getting to work to perform these duties.</p>					
SOLAR STORMS AND SPACE WEATHER Solar Winds, Geomagnetic Storms (Aurora Borealis), Solar Radiation or Radio Blackout *NO Event(s) Within Last 5 Years**	<p>✦ Entire Town. Should a solar event impact the Region, it is likely most electrical and radio systems will become unavailable. The Town's critical facilities must be operational to support residents. Hillsborough Town Hall, Police and Fire Departments, Public Works, Highway Department and Transfer Station, and Hillsborough Water and Sewer, Schools, telecomm towers, high tension power lines, underground water, sewer, and gas lines, pumping and switching stations. The aurora borealis is regularly seen on Mount Kearsarge to the northwest in Warner and could likely be spotted from Pat's Peak (Henniker), indicating geomagnetic storms are present without noticeable effects.</p> <p>✦ The Town's technology is most vulnerable to space weather, especially communications systems (internet, cable, cellular, landline) and the electrical grid. Private wells and private septic serve most residents, but municipal water and sewer lines serve thousands of residents and businesses. Gas lines may be operational. Electricity (powerlines & substations) may be</p>	1	1	1	1	1.0 LOW

4 HAZARD RISK ASSESSMENT

Natural, Technological, Human Hazard Categories	Potential/Susceptible (Existing) Hazard Locations in the Town <i>See also Appendix A. Critical Community and Facility Vulnerability Assessment (CCFVA)</i>	PROBABILITY of Occurrence in 10 Years	SEVERITY of Impact			OVERALL RISK (1-16)
			Human Injury Impact	Essential Services or Infrastructure Impact	Property Damage or Economic Impact	
	interrupted, which could cause automated backup systems to operate. <ul style="list-style-type: none"> ♦ Alternate support or communications systems available in the event of blackout or equipment failure include Town Department back-up generators or resident generators to temporarily provide power alternatives, and the Capital Area Fire Mutual Aid Dispatch to provide regional communications, or local ham radio operators could also provide assistance. 					
TROPICAL AND POST-TROPICAL CYCLONES Hurricanes, Tropical Storms or Tree Debris *NO Event(s) Within Last 5 Years*	<ul style="list-style-type: none"> ♦ Entire Town. Most Tropical Events would impact vulnerable areas including populated buildings, high-density locations, and utilities serving residents and business, antennas, and telecommunications towers (See listed under Earthquake & High Wind). ♦ Much of the Town north of US 202 is wooded and forested. Many sections would be difficult to access with trees and power lines down on the residential roads from Tropical events. Many of the remote neighborhoods could be difficult to access when tropical cyclone events occur. (See remote areas listed under High Wind). ♦ Agricultural areas are vulnerable to damage from Tropical Events: (See listed under Drought). ♦ Older, or historical buildings are vulnerable to Tropical storm damage. 	3	3	3	3	9.0 HIGH
WILDFIRE Brushfire, Outdoor Fires or Accidental *Event(s) Within Last 5 Years*	<ul style="list-style-type: none"> ♦ Entire Town. Locations most susceptible to Wildfire include vulnerable populations and buildings as identified in Lightning. Backyard burning without a permit is often the cause of brushfires throughout Town. ♦ Remote, forested areas such as Fox State Forest, Chute Forest, and low State Forest, as well as parks, conservation areas, open recreation fields such as Grimes field, and points of higher elevation than surrounding area can all be dangerous to people and property during Wildfire. ♦ The public conservation lands and trail systems, Class VI Roads, could experience difficult to access wildfires on these lands, with people in proximity or possible danger. Trails are often narrow making access difficult without OHRV or a small brush truck, water must be carried on vehicles to fires. ♦ Much of the Town is privately owned wooded and forested lands which could be difficult to access in case of wildfire. There are dozens of backlots or undeveloped parcels in Town which are 50 acres or greater located on unmaintained Town roads, indicating potentially difficult access 	4	3	1	2	8.0 HIGH

4 HAZARD RISK ASSESSMENT

Natural, Technological, Human Hazard Categories	Potential/Susceptible (Existing) Hazard Locations in the Town <i>See also Appendix A. Critical Community and Facility Vulnerability Assessment (CCFVA)</i>	PROBABILITY of Occurrence in 10 Years	SEVERITY of Impact			OVERALL RISK (1-16)
			Human Injury Impact	Essential Services or Infrastructure Impact	Property Damage or Economic Impact	
	by fire apparatus. Many of the high elevation roads could be difficult to evacuate should wildfire encroach. ♦ Several extremely large, undeveloped parcels are located around town (See APPENDIX A)					
SECONDARY TECHNOLOGICAL AND HUMAN HAZARDS						
AGING INFRASTRUCTURE Bridges, Culverts, Roads, Pipes or Underground Lines *Event(s) Within Last 5 Years*	♦ Entire Town. Most dams, culverts, and bridges could experience impacts of aging infrastructure . Many bridges, including the historic stone arch bridges have been threatened by high water debris or ice floes. ♦ Hillsborough has many bridges most of which span the Contoocook River and the other Brook's in town. No state bridges are redlisted in Hillsborough. However, the town owns many bridges that are failing and redlisted including: 061/139 Cooledge Road Over Beards Brook, 088/093 Gleason Falls Road Over Bear Brook, 100/070 Jones Road Over Beards Brook, 154/113 Bog Road over Sand Brook, 171/064 Contoocook Falls Road Over Contoocook River. These structurally deficient bridges pose an increased threat of hazard. ♦ Many old or undersized culverts remain vulnerable, although the Highway Department replaces many annually. Culverts on Camp Road, Zoski Road, East Deering Road at Becca Lane, Fisher Road, and Pond Road were identified as in need of upgrade due to the levels of degradation, and effectiveness. ♦ Emerald Lake Village District infrastructure including its bridges, dams, water system, and sewer system are aging and prone to failure. Broken pipes and leaks happen frequently. ♦ The 66 Miles of Class V Town maintained roads are difficult to maintain and rehabilitate. Harsh winter weather and frost heaves can cause the road network quality to decrease quickly. ♦ Underground electric utilities, water, sewer, gas, or telephone lines are often old and subject to breakage during earthquake or aging materials . See also Earthquake for known roads over lines. ♦ Utility stations like Hillsborough highway department and transfer station, or Public Works, or any water & sewer pumping stations require maintenance and upgrade. Additionally the Emerald Lake Village District Wells, Water Treatment Facility, Water Storage Tank and Main Pumphouse Facility require maintenance.	not scored	not scored	not scored	not scored	not scored

4 HAZARD RISK ASSESSMENT

Natural, Technological, Human Hazard Categories	Potential/Susceptible (Existing) Hazard Locations in the Town <i>See also Appendix A. Critical Community and Facility Vulnerability Assessment (CCFVA)</i>	PROBABILITY of Occurrence in 10 Years	SEVERITY of Impact			OVERALL RISK (1-16)
			Human Injury Impact	Essential Services or Infrastructure Impact	Property Damage or Economic Impact	
FIRE Vehicle, Structure, Arson or Conflagration *Event(s) Within Last 5 Years*	<p>♦ Several locations around Town are potential sites for explosions and fires. Numerous other sites have the potential for prolonged burning. They include above ground fuel tanks, high tension power lines, areas away from cisterns or hydrants; vacant buildings, foreclosed homes, or seasonal buildings; or buildings in densely populated areas like the downtown Hillsborough Village area and Emerald Lake Village District; or agricultural operations because of fertilizers and pesticides. See Drought for an agricultural operation list.</p> <p>♦ High Density neighborhoods, Manufactured housing neighborhoods(Barrett's MHP, Bear Hill MHP, Stonebridge Cooperative MHP, Rocky Valley RV Park), Independent living facilities or apartment buildings (1830 House Motel, 19 Bridge Street, Bear Hill Motel, Bear Hill Apartments, Contoocook Mills Apartments, Woodlawn Avenue Apartments, RNC Realty Apartments, Willow Rock Apartments), Emerald Village Lake District, Multi-family housing developments throughout Town (including Garden Gate Condominiums) and other higher density areas could be subject to conflagration (see also Lightning).</p> <p>♦ Hillsborough is home to several commercial and industrial activities, mills, excavation, auto repair businesses and other flammable activities (Rymes Fuel, PMH Auto Repair, SC Auto Repair, New England Development, Barrett and Gould (Osram Annex), JB Vaillancourt, and local gas stations). School laboratories and other facilities could catch fire through occupational event, accident, or arson. Other businesses could be vulnerable to fire and may utilize hazardous materials in their work. See APPENDIX A for hazardous materials and business lists.</p> <p>♦ Vehicle fires could occur anywhere, in parking lots, driveways, or roadways. US 202 & NH 9 from Concord to Keene is the most highly traveled route, followed by NH 149, then NH 31 Second NH Turnpike. The Hillsborough Police, Fire and EMS departments respond to crashes. See also APPENDIX A.</p> <p>♦ Perhaps the greatest rural concern for human-started fires are the forested trails, Class VI Roads and conservation lands which would be difficult for fire response. See Lightning and High Wind for other remote area lists.</p>	not scored	not scored	not scored	not scored	not scored
HAZARDOUS MATERIALS	♦ Most likely routes of vehicular traffic transport of hazardous materials include US 202 & NH 9	not scored	not scored	not scored	not scored	not scored

4 HAZARD RISK ASSESSMENT

Natural, Technological, Human Hazard Categories	Potential/Susceptible (Existing) Hazard Locations in the Town <i>See also Appendix A. Critical Community and Facility Vulnerability Assessment (CCFVA)</i>	PROBABILITY of Occurrence in 10 Years	SEVERITY of Impact			OVERALL RISK (1-16)
			Human Injury Impact	Essential Services or Infrastructure Impact	Property Damage or Economic Impact	
Haz Mat Spills, Brownfields or Trucking <i>*Event(s) Within Last 5 Years*</i>	<p>from Concord to Keene and NH 31 Second NH Turnpike. Other local roads like West Main Street, Henniker Street, and Old Henniker Road could have serious transportation accidents involving hazardous materials.</p> <p>♦ Vulnerable areas for targeted mass evacuation/shelter in place from hazardous materials spills include the downtown Hillsborough village area, West Main Street residences and facilities, Emerald Lake Village District and the Schools.</p> <p>♦ The largest or most dangerous stationary sites that store and/or handle haz mat on site (fertilizer, pesticides, fuel, etc) are listed in APPENDIX A but include Rymes Fuel, Barrett and Gould (Osram Annex), JB Vaillancourt, auto repair sites, and gas stations. See also list of agriculture operations in Drought.</p> <p>♦ Occupational stationary haz mat sites where spills could occur include schools, manufacturing, industry, of which there are many in Town. Key sites would include excavation sites, automotive businesses, construction businesses, and the Public Works Garage and Transfer Station.</p> <p>♦ Possible brownfields sites to be aware of include Historic Woods Woolen Mill, any old mill sites along the Contoocook River, and parcels with suspected soil contamination. There could also be properties with “illegal” long term, non-permitted junkyard uses or salvage yard use occurring before the Town is notified.</p>					
LONG TERM UTILITY OUTAGE Power, Water, Sewer, Gas, Internet, Communications or Live Wire Danger <i>*Event(s) Within Last 5 Years*</i>	<p>♦ Entire Town. Electrical outages are often town wide, but high-density areas or vulnerable populations are of greatest concern: the high density neighborhoods and Schools (see Public Health for a list).</p> <p>♦ Power outages (Eversource) may last for several days in the most remote areas before service is restored from a large event. Systems failures could affect Town businesses and local government on an isolated scale. The internet TDS enables alternative communication options, and many rely on VOIP for telephones instead of landlines.</p> <p>♦ The Granite State Telephone Telecommunications tower on Hall Road contains CAFMAC, County, State, and federal Repeaters. Local Antennas are located on Town Department buildings. Other Towers are on Bible Hill also provide cellular services.</p>	not scored	not scored	not scored	not scored	not scored

4 HAZARD RISK ASSESSMENT

Natural, Technological, Human Hazard Categories	Potential/Susceptible (Existing) Hazard Locations in the Town <i>See also Appendix A. Critical Community and Facility Vulnerability Assessment (CCFVA)</i>	PROBABILITY of Occurrence in 10 Years	SEVERITY of Impact			OVERALL RISK (1-16)
			Human Injury Impact	Essential Services or Infrastructure Impact	Property Damage or Economic Impact	
	<ul style="list-style-type: none"> ♦ Communications failure would be worse if it occurred during a holiday or inhibited emergency dispatch and EOC operations. Some Town radios are interoperable, and they are used in more than one location. ♦ The Town is serviced by the Capital Area Mutual Aid Fire Compact which handles all emergency medical service and Fire dispatching. They have redundant capabilities and are regularly upgrading their systems. ♦ Many businesses in town provide propane, natural gas, and oil services locally and statewide. ♦ Other utility systems, such as Rymes fuel, natural gas, generators, oil tanks, wood fuel and more, are used by residents as both back up and primary heating. See also Aging Infrastructure and APPENDIX A. ♦ Much of the Town is wooded and forested and sections would be difficult to access with excessive power lines down. See also High Wind or Winter Weather. ♦ The agricultural farms (feeding or dairy animals) should be monitored (See Drought) during extended utility outage. 					
TRANSPORTATION CRASH Vehicle, Airplane, Helicopter, Rail, Interstate, Pedestrian or Bicycle <i>*ANNUAL Occurrences Within Last 5 Years*</i>	<ul style="list-style-type: none"> ♦ US 202 & NH from Concord to Keene and NH 31 Second NH Turnpike are the main thoroughways in Town and have the most reported crashes. Crashes at the NH 31 Intersection with NH 9 recur frequently. Rerouting traffic can be dangerous resulting in other potentially severe crashes. Some of the more frequent crash locations can occur along hilly intersections. ♦ Crashes also occur throughout the community at rural intersections, along hills and s-curves. All gravel roads have a low speed limit. Winter and summer months are of particular concern. See also MAPS 1-4. ♦ Crashes increase during hazard events, winter weather, spring snow melt (washouts) and windstorms. Few areas in Town are equipped with bicycle and pedestrian infrastructure other than the downtown Hillsborough Village area and near Hillsborough Schools. The Class VI Roads and the local trail system could have the potential for serious crashes or conflict of use crashes. ♦ Increased use of personal drones creates additional hazard for those on the ground. 	not scored	not scored	not scored	not scored	not scored
MASS CASUALTY INCIDENT <i>As a result of</i>	<ul style="list-style-type: none"> ♦ Unlikely, but Possible. A mass casualty event could occur as a possible secondary effect of a large-scale event, such as Terrorism/Violence, Public Health, Transportation Crash, or High 	not scored	not scored	not scored	not scored	not scored

4 HAZARD RISK ASSESSMENT

Natural, Technological, Human Hazard Categories	Potential/Susceptible (Existing) Hazard Locations in the Town <i>See also Appendix A. Critical Community and Facility Vulnerability Assessment (CCFVA)</i>	PROBABILITY of Occurrence in 10 Years	SEVERITY of Impact			OVERALL RISK (1-16)
			Human Injury Impact	Essential Services or Infrastructure Impact	Property Damage or Economic Impact	
any hazard event *NO Event(s) Within Last 5 Years*	Wind Event. These could occur throughout the Town. ♦ Any mass casualty event could be localized to a certain area. Locations and occasions of potential public unrest include NH Army National Guard, Town Hall, Hillsboro-Deering Elementary School, Hillsboro-Deering Middle School, Hillsboro-Deering Highschool, Town & School Meetings, voting day, local board meetings, visits from political candidates, large events such as, School sports events or political rallies. ♦ Hillsborough-Deering Middle School is identified as the town shelter in combination with Deering and Windsor.					
TERRORISM/ VIOLENCE Active Shooter, Hostage, Public Harm, Civil Disturbance/ Unrest, Politically Motivated Attacks, Incendiary Devices, Sabotage or Vandalism *Events(s) Within Last 5 Years*	♦ Possible. Terrorism/ violence could possibly occur anywhere in the Entire Town and could result in mass casualty . Most susceptible non-municipal sites could include the downtown Hillsborough Village area, NH Army National Guard, Town Hall, Hillsboro-Deering Elementary School, Hillsboro-Deering Middle School, Hillsboro-Deering Highschool, Town & School Meetings, or the Churches: Hillsboro Baptist Church, Hillsboro Bible Fellowship, Hillsboro United Methodist Church, Smith Memorial Congregational Church, St. Mary's Catholic Church, Valley Bible Chapel. ♦ All municipal facilities in Hillsborough, Town Hall, Police Station, Fire station, Public Works Garage, Highway Department and Transfer Station, and NH DOT State Highway Shed have a risk of terrorism or violence . ♦ Private manufacturing or industrial businesses with large quantities of hazardous materials could be possible terrorism targets, including Barret and Gould (Osram Annex), JB Vaillancourt, and Rymes Fuel. ♦ Sabotage would be most likely to occur at Town, School, State, or governmental facilities to halt operations or computer systems, including the telecom towers & antennas, switching stations, the Town Hall computer systems, and Hillsborough Water and Sewer facilities. ♦ Vandalism could occur at dams, under bridges, wooden covered bridges, telecommunications or tower, cemeteries, vacant buildings, beaver dams, recreation areas, Manahan Park, Grimes Field, etc. ♦ Hostage and active shooter situations might most likely occur domestically anywhere in the Town, in municipal buildings, Churches, Schools, high density housing (see Public Health).	not scored	not scored	not scored	not scored	not scored

4 HAZARD RISK ASSESSMENT

Natural, Technological, Human Hazard Categories	Potential/Susceptible (Existing) Hazard Locations in the Town <i>See also Appendix A. Critical Community and Facility Vulnerability Assessment (CCFVA)</i>	PROBABILITY of Occurrence in 10 Years	SEVERITY of Impact			OVERALL RISK (1-16)
			Human Injury Impact	Essential Services or Infrastructure Impact	Property Damage or Economic Impact	
	<ul style="list-style-type: none"> ♦ Sites of local significance (historic markers, the downtown Hillsborough village area) or other public places could become potential sites of Terrorism/ Violence. 					
CYBER EVENT Municipal Computer Systems Attack, Website Overtake, Cloud Data Breach, Telephone Rerouting, Identity Theft, Phishing, Ransomware, Virus or Phone Scams *ANNUAL Occurrences Within Last 5 Years*	<ul style="list-style-type: none"> ♦ Entire Town. Cyberattack could target Town or School websites, computer systems, cloud data systems, archival records, email phishing, etc. Town Hall, School Districts, Police Department, Fire Department, Transfer Station, Public Works Department, Library and Historical Society records would be high-value targets. ♦ Email scams and identity theft are likely regular problems for residents and businesses. Towns often post known attempts on websites to inform residents. The large businesses in Hillsborough (See APPENDIX A) would need to be aware of the risks. ♦ The Police Department receives phone calls from residents about internet and email scams and reports them to the appropriate authorities. 	not scored	not scored	not scored	not scored	not scored

Source: Hillsborough Hazard Mitigation Committee

Central NH Region Major Disaster Declarations, 1973-2021

The Central NH region, which encompasses parts of Merrimack County (**18** communities) and Hillsborough County (**2** communities), has been damaged by **30** presidentially-declared major disasters [DR-] and presidentially-declared emergencies [EM-] in the last **48** years between **1973-2021**.

Although a natural disaster typically befalls multiple counties in New Hampshire, only those presidentially-declared or emergency declarations within either Hillsborough County or Merrimack County were identified in this Plan.

Disaster declarations [DR-] within a county enable the ability to receive Public Assistance (PA) funding and Individual Assistance (IA) funding, Hazard Mitigation Grant Program (HMGP) *plan* funding is typically made available to all communities statewide, and for those towns with an active, approved Hazard Mitigation Plan, HMGP *project* funding becomes available. *Emergency declarations* [EM-] are often proclaimed for counties in New Hampshire to help communities receive funding for less serious hazard events that may have caused more damage in nearby declared declaration [DR-] counties or states. EM- declarations typically open Hazard Mitigation Grant Program (HMGP) plan and project funding for communities with an active hazard mitigation plan.

Over the last **16** years (**2005-2021**), the Central NH region containing communities within Merrimack and Hillsborough Counties experienced **17** presidentially- declared natural major disasters [DR-] or presidentially- declared emergency declarations [EM-] which differ between DR- or EM- depending on which county was declared. The earliest Central NH region declarations spanned **1973** to **2004** (**32** years) and yielded total **13** disasters of both [DR-] and [EM-].

PUBLIC ASSISTANCE GRANT FUNDING

For the global COVID-19 pandemic DR-4516 from **2020**-ongoing, the Town obtained **\$208,415** in GOFERR and First Responder Stipend funding. The last weather disaster declared in Hillsborough County in which Hillsborough is located was the blizzard event in **January 2015** for which Hillsborough applied for and received **\$23,141** in federal Public Assistance funding. Details of Central NH region declared disasters and emergency declarations since **1973** and federal funding provided to the Town of Hillsborough are displayed in **Table 11**. Most of these disasters will be described within the following **Past Disasters and Severe Weather Events** section.

GOVERNOR'S OFFICE FOR EMERGENCY RELIEF AND RECOVERY (GOFERR)

The NH Governor's Office for Emergency Relief and Recovery (GOFERR) at <https://www.goferr.nh.gov/> provides transparent review and access to the state's CARES Act - Coronavirus Relief Fund allocations for the DR-4516 COVID-19 Pandemic. The US HR 748 Coronavirus Aid, Recovery, and Economic Security (CARES) Act enacted 3/27/20 provided **\$1.25b** to the state and is one of several relief bills and funding pots for COVID-19. The GOFERR is making these funds available through various programs. Municipalities, businesses, and individuals can apply to several funding programs through GOFERR.

Table 11

Central NH Region Major Disaster Declarations, 1973 to 2021

FEMA DR-	Local Disaster Name	Incident Period	FEMA Disaster Name	Includes County*		FEMA Public Assistance (PA) Funding To Hillsborough**
				Merr	Hill	
	TOWN ADD NEW DISASTER ROWS HERE-					
4516	2021 COVID-19 Pandemic	Apr 3, 2020 – TBD	COVID-19 Novel Coronavirus Pandemic (national, global)	M	H	No PA GOFERR \$141,683. First Responder Stipend \$5,682.
4355	2017 Oct Wind and Rainstorm	Oct 28-20, 2017	Severe Storm and Flooding from Tropical Storm Phillippe	M	---	\$0
4209	2015 January Blizzard	Jan 26-28, 2015	Severe Winter Storm and Snowstorm	---	H	\$23,141
4105	2013 February Snowstorm	Feb 8-10, 2013	Severe Winter Storm and Snowstorm	M	H	\$27,540
4095 EM-3360	2012 Hurricane Sandy Emergency	Oct 26-Nov 8, 2012	Hurricane Sandy	EM-M	EM-H	\$0
4049 EM-3344	2011 Halloween Snowstorm Emergency	Oct 29-30, 2011	Severe Storm and Snowstorm	EM-M	H	\$10,787
4026 EM-3333	2011 Tropical Storm Irene	Aug 26-Sep 6, 2011	Tropical Storm Irene	M	EM-H	\$0
1913	2010 March Flooding & Winds	Mar 14-31, 2010	Severe Storms and Flooding	M	H	\$0
1892	2010 Winter Storm	Feb 23-Mar 3, 2010	High Winds, Rain, Snow	M	H	\$0
1812	2008 December Ice Storm	Dec 11-23, 2008	Severe Winter Storm	M	H	\$122,187
1799	2008 September Flood	Sep 6-7, 2008	Heavy Rains and Floods	M	H	\$0
1782	2008 July Tornado	Jul 24, 2008	Tornado, Severe Winds, Heavy Rains	M	---	\$0
1695	2007 April Spring Flood	Apr 15-23, 2007	Severe Storms and Flooding	M	H	\$112,927
1643	2006 Mother's Day Flood	May 12-23, 2006	Severe Storms and Flooding	M	H	\$25,236

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4 HAZARD RISK ASSESSMENT

FEMA DR-	Local Disaster Name	Incident Period	FEMA Disaster Name	Includes County*		FEMA Public Assistance (PA) Funding To Hillsborough**
				Merr	Hill	
1610	2005 Columbus Day Flood	Oct 7-18, 2005	Severe Storms and Flooding	M	H	\$93,033
EM-3211	2005 Snow Emergency	March 11-12, 2005	Snowstorm	---	EM-H	\$0
EM-3207	2005 Snow Emergency	Jan 22-23, 2005	Snowstorm	EM-M	EM-H	\$0
EM-3193	2003 Snow Emergency	Dec 6-7, 2003	Snowstorm	EM-M	EM-H	\$16,304
EM-3177	2003 Snow Emergency	Feb 17-18, 2003	Snowstorm	EM-M	EM-H	\$12,836
EM-3166	2001 Snow Emergency	Mar 5-7, 2001	Snowstorm	EM-M	EM-H	\$11,906
1231	1998 Flooding	Jun 12-Jul 2, 1998	Severe Storms and Flooding	M	H	\$0
1199	1998 December Ice Storm	Jan 7-25, 1998	Ice Storms	M	H	\$0
1144	1996 Storms and Flooding	Oct 20-23, 1996	Severe Storms and Flooding	M	H	\$0
1077	1995 Flood	Oct 20-Nov 15, 1995	Storms and Floods	M	---	\$0
EM-3101	1993 Blizzard	Mar 13-17, 1993	Blizzards, High Winds and Record Snowfall	EM-M	EM-H	\$0
917	1991 Hurricane Bob	Aug 18-20, 1991	Severe Storm	---	H	N/A
876	1990 Flooding and Severe Storm	Aug 7-11, 1990	Flooding and Severe Storm	M	H	No data
789	1987 Storms and Flooding	Mar 30-Apr 11, 1987	Severe Storms and Flooding	M	H	No data
771	1986 Storms and Flooding	Jul 29-Aug 10, 1986	Severe Storms and Flooding	---	H	N/A
399	1973 Storms and Flooding	Jul 11, 1973	Severe Storms and Flooding	M	H	No data
Total Public Assistance (PA) FEMA Funding to Hillsborough, 1993-2021** Includes 2020 GOEFFR & First Responder Stipend \$						\$455,898

Source: http://www.fema.gov/disasters/grid/state/33?field_disaster_type_term_tid_1=All

*M = Merrimack County (18 towns in CNH region) H = Hillsborough County (2 towns in CNH region)

** Dollar figures are rounded to the nearest \$100 and include only PA and HMGP. PA dataset available at <https://www.fema.gov/openfema-dataset-public-assistance-funded-projects-details-v1>.

To help reclaim some of the costs these disasters wrought on town property and infrastructure and for additional staff time, Hillsborough applied for and received FEMA Public Assistance (PA) funds, Categories A-G, a 75% grant and 25% match program for several declared Merrimack County disasters. These PA funds have been used for overtime wages for Town employees, equipment rentals, snow removal, washout repair, road reconstruction, bridge repair, debris removal, and more.

The database where the Public Assistance funding information resides is available from **1993** to present (**2021**). Hillsborough in Hillsborough County was eligible for reimbursement for up to a total of **27** disasters and emergency declarations. Disaster funding was sought for and received by Hillsborough for **7** of the **18** [DR-] and for **4** of the **9** [EM-] during this period. All funding awarded to Hillsborough appearing

in the Public Assistance database between **1993-2017** totals **\$455k**. This detail is displayed previously in **Table 11** and is summarized to \$100/\$1000 in the forthcoming **Table 12** for each disaster.

The most expensive disaster for Hillsborough in terms of FEMA Public Assistance (PA) funds received for recovery was the **April 2007 Spring Flood** after which Hillsborough received just under **\$113k** for project funding to help repair local Town roads and bridges. Additional monies for the **2020-2021** COVID-19 funding were provided to the Town and totals **\$148k** to date.

Past Disasters and Severe Weather Events

The Town of Hillsborough has been affected by several significant natural disasters within the last decade and applied for and received Public Assistance (PA) funding for many of these events. Severe natural hazard events have been occurring more frequently in Hillsborough and Merrimack Counties than in the past. While these events on occasion disrupted the flow of the community and isolated residents for days, the disaster impacts were relatively mild as few injuries were reported. FEMA provided Public Assistance funding to the Town for tasks such as cleanup, road repairs, tree and brush cutting, and culvert replacement.

The Hazard Mitigation Committee helped provide anecdotal descriptions of how the recently declared natural disasters or emergency declarations for the Central NH Region affected Hillsborough and its residents. Public Assistance disaster funding opportunities open to communities when a disaster is declared within a county. The Town of Hillsborough applied for and received this funding for several recently declared disasters.

Although New Hampshire experienced more disasters than those shown in **Table 12**, typically only those which occurred as declared disasters [DR-] or emergency declarations [EM-] in the Central NH region (Merrimack and Hillsborough Counties) were described. Sometimes a disaster occurring in a nearby county, such as Rockingham County in proximity to Hillsborough, will be included. Refer to the [*State of New Hampshire Multi-Hazard Mitigation Plan 2018*](#) for a complete list of disasters which impacted the rest of New Hampshire.

Also identified were numerous past hazard events or severe weather events that occurred locally in the community and within the area that were impactful enough to note in **Table 12 Local and Area Hazard Event and Disaster History (Sequential)**. These past hazard events are listed consecutively with the newest events at the top of the table. If a specific category of event was not recorded in Hillsborough in the last **5** years, this means the Hazard Mitigation Committee did not recall an event of significance since the **2017 Plan**.

Town of Hillsborough, NH Hazard Mitigation Plan Update 2022

4 HAZARD RISK ASSESSMENT

COLOR KEY for Table 12:

Declared Disasters (DR-) or Emergency Declaration (EM-) in Hillsborough County or Merrimack County in Central NH Region M= Merrimack County H= Hillsborough County	PA Funding \$ Received by Hillsborough	Other Hillsborough Local Hazard Event	Regional Hazard Event with Hillsborough Impacts
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Table 12

Local and Area Hazard Event and Disaster History (Sequential)

Event	Declared Disaster DR-	Year	Date	FEMA Public Assistance	Area Effects Surrounding Hillsborough	Local Effects Occurring in Hillsborough	Hazard Category	Source
TOWN TO ADD NEW EVENTS HERE								Hillsborough Hazard Mitigation Committee,
TOWN TO ADD NEW EVENTS HERE								Hillsborough Hazard Mitigation Committee,
Hazard Events 2017-2022 (Since Last Plan)								
Regional Geomagnetic Storm G3 Watch Oct 30-31 2021	No	2021	Oct 30-31	N/A	NOAA issued a G3 "strong" geomagnetic storm watch. A storm of this capacity can cause voltage irregularities on protection devices, potential harmful currents in power grids, disruptions in global positioning systems (GPS), as well as the potential to cause high frequency radio blackouts. Visible effects of a geomagnetic storm include enhancing the visibility of the aurora borealis across large parts of the United States and Europe. A geomagnetic storm of this capacity likely reaches large portions of the earth, including the entire northeast of the United States and the Central New Hampshire Region.	There were no known impacts in Town, but predictions had noted potential radio interference, potential harmful currents in the power grid, and potential disruptions to global positioning systems (GPS).	Solar Storm, Space Weather, Power Failure	Hillsborough Hazard Mitigation Committee, CNHRPC, NOAA, CNN

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Event	Declared Disaster DR-	Year	Date	FEMA Public Assistance	Area Effects Surrounding Hillsborough	Local Effects Occurring in Hillsborough	Hazard Category	Source
Hillsborough Bear Hill Road Flooding 2021	No	2021		N/A	Surrounding towns likely experience similar flooding conditions for roads along the Contoocook River.	Flat areas on Bear Hill Road along the Contoocook River flood annually. Flooding level does not reach homes in the last 15 years	Inland Flooding	Hillsborough Hazard Mitigation Committee, CNHRPC
Hillsborough Drought at Emerald Lake 2021	No	2021		N/A	Drought conditions were experienced for all the Central New Hampshire Region.	Multiple years of drought conditions at Emerald Lake. Conditions required moratoriums to be declared. Several dug wells tend to go dry annually. From Jul-Nov 2020 alone, the ELVD purchased 1,398,000 gallons from the Water & Sewer Comm to supply ELVD residents.	Drought	Hillsborough Hazard Mitigation Committee, CNHRPC, Hillsborough 2020 Annual Report
Hillsborough Erosion of Contoocook Riverbanks 2021	No	2021		N/A	Surrounding towns likely experience similar erosion along the banks of the Contoocook River.	Erosion of sandy banks of the Contoocook River located along Bear Hill Road. The erosion effect caused trees to tip over and sinkholes to develop on the side of the road.	River Hazard, Aging Infrastructure	Hillsborough Hazard Mitigation Committee, CNHRPC
Hillsborough Brushfire at Grimes Field Jun 2021	No	2021	Jun	N/A	Hillsborough is a member of the Capital Area Mutual Aid Fire Company and may have received assistance from surrounding towns.	A brushfire burned at local public park and playing field area, Grimes Field.	Wildfire	Hillsborough Hazard Mitigation Committee, CNHRPC
Hillsborough School Street High Wind Damage Nov 2020	No	2020	Nov	N/A	Regional storms likely impacted other Central NH communities in a similar matter.	High winds resulted in trees and power lines down on School Street.	High Wind Event, Power Failure	Hillsborough Hazard Mitigation Committee, CNHRPC
Hillsborough Cyber Attack on Town Files 2020	No	2020		N/A	N/A	Ransomware attack targeting Town files occurred. Attack was unsuccessful, for Information Technology Department resolved the issue.	Cyber Event	Hillsborough Hazard Mitigation Committee, CNHRPC

Town of Hillsborough, NH Hazard Mitigation Plan Update 2022

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Event	Declared Disaster DR-	Year	Date	FEMA Public Assistance	Area Effects Surrounding Hillsborough	Local Effects Occurring in Hillsborough	Hazard Category	Source
COVID-19 Pandemic Apr 2020-TBD	4516 M-H	2021	Apr 3 – TBD	N/A PA \$141,683 GOFERR \$61,050 First Responder Stipend \$5,682 Elections \$208,415 Total	The NH Governor issued social activities restrictions, minimal public meetings, remote meetings held, social distance practices in April 2020 for all counties. Cases closely tracked by NH Division of Health and Human Services and NH HSEM. The State EOC was activated.	Beginning in March 2021, the EOC activated for coronavirus. The Town follows the Governor's orders. To date nearly 490 people have tested positive in Hillsborough. The Town Hall was closed to the public for several months through Oct 2020. A long period occurred with no meetings, then remote only meetings were held. From Oct 2020, most meetings held in person but are socially distanced. Hand sanitizing /masking station is available, signs are posted, front door is often locked.	Public Health, Pandemic, Infectious	Hillsborough Hazard Mitigation Committee, CNHRPC, NH HSEM, NH DHHS, WMUR
Hillsborough East Washington Road High Wind Damage Mar 2020	No	2020	Mar 29	N/A	Regional storms likely impacted other Central NH communities in a similar matter.	High winds resulted in trees and powerlines down on East Washington Road. Power was out for 6-8 hours.	High Wind Event, Power Failure	Hillsborough Hazard Mitigation Committee, CNHRPC
Hillsborough Fire on Second NH Turnpike Nov 2019	No	2019	Nov 15	N/A	N Hillsborough is a member of the Capital Area Mutual Aid Fire Company and may have received assistance from surrounding towns.	Total loss of a barn in a fire occurring at 1245 Second NH Turnpike. No injuries occurred	Fire	Hillsborough Hazard Mitigation Committee, CNHRPC
Hillsborough Riot with Police Department Oct 2019	No	2019	Oct 3	N/A	Neighboring town of Antrim police department assisted on the scene.	Town riot with Police Department messenger resulted in threats, damage to police department equipment, and multiple arrests.	Violence	Hillsborough Hazard Mitigation Committee, CNHRPC, The Messenger
Hillsborough Severe Storm and Flooding Jul 2019	4457 --	2019	Jul 11-12	N/A for Hillsborough	Declared disaster in Grafton County. Within the Central NH Region, it is likely communities experienced local flooding conditions, with wind blowing trees	Hillsborough could not apply for or receive PA funding. The Town had likely experienced hard rains, localized flooding and culverts	River, Wind, Storms, Debris, Flood, Utility, Aging	Hillsborough Hazard Mitigation Committee, CNHRPC, NH HSEM

Town of Hillsborough, NH Hazard Mitigation Plan Update 2022

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Event	Declared Disaster DR-	Year	Date	FEMA Public Assistance	Area Effects Surrounding Hillsborough	Local Effects Occurring in Hillsborough	Hazard Category	Source
					down, causing short power outages. <u>Not a declared disaster in Merrimack or Hillsborough Counties.</u>	required cleaning to ensure road washouts did not occur. A few trees may have fallen on roads, but the storm was not particularly notable to Hillsborough.	Infrastructure	
Hillsborough Bacteria Outbreaks at Local Water Sources Jun 2019	No	2019	Jun	N/A	Water sources that are contaminated may flow into other towns.	Cyanobacteria and E.Coli present at Manahan Beach (6/11/19). E. Coli present at Beards Brook Beach (6/27/15).	Public Health	Hillsborough Hazard Mitigation Committee, CNHRPC
Regional Capital Area Mutual Aid Fire Compact (CAMAFC) Communications Outage Apr 2019	No	2019	Apr 6	N/A	The dispatch center in Concord lost power because a tree fell on Unitil wires. The facility is protected by a large uninterruptible power supply (UPS) that protects computers, telephone & radio equipment. This UPS also is a power conditioner, so it is always on, working in the power line entering the building insuring that incoming power is clean and on specification. The City of Concord also has a diesel backup generator for power loss, the UPS is running in the incoming line, so it powers CAMAFC equipment during the very brief period it takes the generator to start and the transfer switch to transfer. This all worked seamlessly, as it has many times before. CAMAFC ran on the generator without issue but when Unitil reenergized their lines and the generator transfer was switched,	About 23 communities belong to the CAMARC and were similarly impacted by the radio dispatch outage, including Deering. Deering has not last comms in last 5 years. Redundancy systems are in place- comms batteries for radio. Wolfe Hill Tower backup generator wireless, radio. Verizon is cell provider.	Utility Failure, Communications Failure	Hillsborough Hazard Mitigation Committee, CNHRPC, CAMAFC

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					the UPS failed. Despite having a backup for the backup, power to equipment was lost, resulting in damage to additional equipment beyond the UPS. On-duty staff immediately started to implement the continuity of operation plan. Lakes Region began dispatching for CAMAFC but the Simulcast equipment at the dispatch center was down. Initially Lakes was dispatching on their antenna sites and the audio was poor and tones were not getting through. CAMAFC was able to get the radio system running again and Lakes Region was then able to dispatch calls over the Simulcast system. CAMAFC then sent 2 dispatchers to Lakes and called others back into the Concord center to work through the problems caused by the outage.			
Canterbury Epicenter Earthquake 2.3M (Mercalli III) Mar 2019	No	2019	Mar 16	N/A	Many local news outlets reported on this quake, which shook communities of Merrimack County at 9:23 PM. This was a widely felt earthquake (Concord, Webster, Hopkinton, Canterbury, Boscawen, Loudon, and more) although there were no reports of damage. USGS reported the epicenter was at Bryant Brook in Canterbury, just east of the Merrimack River. The depth was 4.2 km.	Hillsborough does not tend to feel or hear nearby earthquakes because of its topography and distance away from epicenter.	Earthquake, Earth	Hillsborough Hazard Mitigation Committee, CNHRPC, wmur.com, unionleader.com, earthquake.usgs.gov, Hopkinton Dam USACE

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Hillsborough Pedestrian Involved in Transportation Crash Main Street 2019	No	2019		N/A	N/A	Transportation crash occurring on Main Street resulting in a pedestrian fatality.	Transportation Crash	Hillsborough Hazard Mitigation Committee, CNHRPC
Hillsborough Red Fox Bridge Collapse Nov 2018	No	2018	Nov 4	N/A	Towns through the Central NH Region likely also experience heavy rain and flooding conditions.	The Emerald Lake Village District Bridge at Red Fox Crossing collapsed during heavy rain.	Aging Infrastructure, Flooding, Heavy Rainfall	Hillsborough Hazard Mitigation Committee, CNHRPC, ELVD Official Website
Hillsborough Fire on Deer Lane Sept 2018	No	2018	Sep 7	N/A	Hillsborough is a member of the Capital Area Mutual Aid Fire Company and may have received assistance from surrounding towns.	A home at 30 Deer Lane was destroyed due to a fire, but no injuries occurred.	Fire	Hillsborough Hazard Mitigation Committee, CNHRPC
Hillsborough Brushfire at Camp Comfort Jun 2018	No	2018	Jun	N/A	Hillsborough is a member of the Capital Area Mutual Aid Fire Company and may have received assistance from surrounding towns.	Starting from an unwatched brush pile, a fire burned 3.5 acres at Camp Comfort.	Wildfire	Hillsborough Hazard Mitigation Committee, CNHRPC
Hillsborough Bacteria Outbreaks at Local Water Sources Jun 2018	No	2018	Jun	N/A	Water sources that are contaminated may flow into other towns.	Cyanobacteria present at Manahan Beach (6/7/18). E. Coli present at Beards Brook Beach (6/8/15).	Public Health	Hillsborough Hazard Mitigation Committee, CNHRPC
Hillsborough Regional Thunderstorm, Severe Winds, Tornado and Debris May 2018	No	2018	May 3-5	N/A	Across the northern Central NH region, the evening of May 4 experienced heavy downpours along with strong wind gusts, straight line winds (microbursts) and possible tornadic activity. Many communities suffered significant tree and structure damage. The National Weather Service determined an F-1 tornado blew 36 miles, about 300 yards across, through Bradford, Warner, and Webster in the CNHRPC Region after originating	The tornado did not travel through Hillsborough but did travel within the Central NH region. The winds accompanying this storm likely knocked down trees and power lines, blocked roads, and caused short-term power outages in Town. Downed limbs are common during windstorms and thunderstorms.	Wind, Tornado, Debris, Utility, Power Outage	Hillsborough Hazard Mitigation Committee, CNHRPC, wmur.com, Concord Monitor

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					in Charlestown (Sullivan County). About 41,000 customers lost power because of the storm.			
Regional Severe Winter Storm and Snowstorm Mar 2018	4371 --	2018	Mar 13-14	N/A for Hillsborough	Within the Central NH Region, it is likely communities experienced regular snowstorm conditions, with heavy snow and wind blowing trees and power lines down, causing short power outages. <u>Not a declared disaster in Merrimack or Hillsborough Counties</u>	Hillsborough could not apply for or receive PA funding. On March 13, a large Noreaster likely piled much snow on the Town of Hillsborough causing the Public Works crews to work to clear roads of snow debris, trees, and powerlines.	Winter, Extreme Temps, Wind, Storms, Debris, Utility, Aging Infrastructure	Hillsborough Hazard Mitigation Committee, CNHRPC, NH HSEM
Concord/Hopkinton Epicenter Earthquake 2.4M (Mercalli IV) Mar 2018	No	2018	Mar 7	N/A	A significant 2.4M earthquake was recorded by the USGS in March 2018 a little after 5:00am. Its epicenter indicated in Concord south of Warner Road at the Hopkinton town line on the Contoocook River at a depth of 3.2km. 90 citizen reports were filed to USGS. Weak to light shaking and a boom was heard as reported by a great number of people in Penacook, Pembroke, Dunbarton, Boscawen, Hopkinton, Webster, Salisbury, while its greatest intensity was felt in Warner and Concord. From Mar 2018, the Concord area had experienced 9 earthquakes in the past 365 days.	Hillsborough does not tend to feel or hear nearby earthquakes because of its topography and distance away from epicenter.	Earthquake, Earth	Hillsborough Hazard Mitigation Committee, EarthquakeTracker.com, CNHRPC, concordmonitor.com, earthquake.usgs.gov, Hopkinton Dam USACE
Regional Severe Winter Storm and Flooding Mar 2018	4370 --	2018	Mar 2 - 8	N/A for Hillsborough	Within the Central NH Region, it is likely communities experienced local flooding conditions, with wind blowing trees down, causing short power outages. <u>Not a declared disaster in</u>	Hillsborough could not apply for or receive PA funding. The Town likely experienced early spring rains that may have flooded culverts or caused a few washouts.	River, Wind, Storms, Debris, Flood, Utility, Aging Infrastructure, Dam	Hillsborough Hazard Mitigation Committee, CNHRPC, NH HSEM

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					<u>Merrimack or Hillsborough Counties</u>			
Regional Flooding, Ice Storms, Snow Melts, and Ice Jams Jan 2018	No	2018	Jan 13-23	N/A	During the month of January 2018 with several snowfall and melt periods, the region experienced high snow totals, flooding, and temperature fluctuations. Ice jams were common along the Contoocook and Warner Rivers.	Rivers and brooks were at flowing capacity. Some regions of town saw significant run off due to frozen grounds, while other areas had worsened driving conditions due to the flooding. Freezing rain is the hardest weather for the Highway Department to maintain for it requires constant attention.	River, Flood, Extreme Temp, Winter, Debris, Ice Jam	Hillsborough Hazard Mitigation Committee, CNHRPC, nhpr.org
Regional CAMAFC Radio Communications Disruptions by Solar Storms 2018-2021	No	2018-	2021	N/A	The Town is a member of the Capital Area Fire Mutual Aid Compact (CAFMAC) of about 23 member communities in 4 counties. Mutual aid is provided and received as needed. Area towns reported 2018-2021 geomagnetic storms affected radio transmissions. Reception has been better since CAFMAC transferred to the SimulCast system and has undergone upgrades. In June 2018, a minor G1 geomagnetic storm contributed to ending the Northeast drought. In late August (26-27) 2018, the aurora borealis was visible across the planet, including in NH at high elevations. This event was classified as a strong G3 geomagnetic storm. In May (16-17) 2021, a G2 moderate geomagnetic storm with	Although Hillsborough could have been impacted by solar / geomagnetic storms, it has not yet been affected. The Town is a member of CAMAFC.	Solar Storms, Communications Interruption, Utility	Deering Hazard Mitigation Committee, CNHRPC, visibleearth.nasa.gov

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					aurora borealis was forecast for New Hampshire. From Aug 31- Sep 1 2021, a G2 storm was observed again impacting NH with a positive polarity coronal hole high speed stream influence with solar wind speeds of >800km/s.			
Regional Severe Windstorm and Flood Oct 2017	4355 M	2017	Oct 28-30	N/A for Hillsborough	Merrimack and Hillsborough Counties experienced downed trees on powerlines, debris to clean up, and some flooding of drainage catch basins and culverts. The storm impacted northern NH, with 6 counties declared disasters. Power was out for an estimated 270,000 customers.	Hillsborough did not apply for or receive FEMA Public Assistance funding for roads & bridges, debris removal, or protective measures. Instead, they handled the storm effects within their Dept budgets. No injuries were reported. High wind and storm conditions resulted in damage to trees and wires as well as causing water problems. Storm Department responded to 18 calls for service.	Wind, Storms, Debris, Tropical, Utility, Aging Infrastructure, Power Failure	Hillsborough Hazard Mitigation Committee, CNHRPC
Hillsborough Fire at Livingstons Jul 2017	No	2017	Jul 19	N/A	Hillsborough is a member of the Capital Area Mutual Aid Fire Company and may have received assistance from surrounding towns.	A line of new UTV's were destroyed at Livingstons due to a fire igniting. However, no injuries occurred.	Fire	Hillsborough Hazard Mitigation Committee, CNHRPC
Regional Severe Storms and Flooding Jul 2017	4329 --	2017	Jul 1-2	N/A for Hillsborough	The entire State, North Country and Central NH region experienced severe storms with rain, wind, lightning, thunder, and flooding. Not a declared disaster in Merrimack or Hillsborough counties.	Hillsborough could not apply for or receive federal PA funds. The Town likely conducted debris clean up along roads.	River, Wind, Storms, Flood, Lightning, Debris	Hillsborough Hazard Mitigation Committee, FEMA CNHRPC, WMUR, NOAA

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Hillsborough Bacteria Outbreaks at Local Water Sources Jun 2017	No	2017	Jun	N/A	Water sources that are contaminated may flow into other towns.	Cyanobacteria present at Manahan Beach and Jackman Reservoir. E. Coli present at Hummingbird beach (6/7/17). E. Coli present at Beards Brook Beach (6/13/15).	Public Health	Hillsborough Hazard Mitigation Committee, CNHRPC
Regional NH Geomagnetic Storm May 2017	No	2017	May	N/A	The aurora borealis (geomagnetic storm) likely reached all of NH although only those with equipment to capture the image likely knew it was occurring. In Warner, the Northern Lights were photographed overlooking Mount Kearsarge. No known effects from the storm.	Hillsborough was likely subject to any potential geomagnetism or solar radiation. Radio communications (Capital Area Mutual Aid Fire Compact and local) interference could have occurred.	Solar Storms, Geomagnetic, Potential Communications failure	Hillsborough Hazard Mitigation Committee, CNHRPC
Hillsborough Brush Fire Near Colby and Bog Roads Apr 2017	No	2017	Apr 19	N/A	Hillsborough is a member of the Capital Area Mutual Aid Fire Company and may have received assistance from surrounding towns.	Brush fire burned 5.2 acres near Colby and Bog Roads emanating from a campsite fire pit.	Wildfire	Hillsborough Hazard Mitigation Committee, CNHRPC
Regional April Fool's Snowstorm Apr 2017	No	2017	Apr 1-2	N/A	A spring snowstorm impacted New England, with 50,000 without power in NH alone and 180,000 in the NE. Massachusetts was buried in nearly 2 feet of snow. The Central NH Region experienced more snowfall than the rest of the state, with Henniker at 15", Deering and Concord at 13", and Pembroke at 12".	Hillsborough may have received heavy snowfall, ice jams, power failures and road washouts because of trees down on roadways, and rapid melting the following the day with warmer temperatures. Yet the storm was not notable to the Town.	Winter, Extreme Temp Changes, Snow, Utility, Debris, Storms, Rain, Flood, Inundation	Hillsborough Hazard Mitigation Committee, Hopkinton Dam USACE, wmur.com, CNHRPC, USA Today
Regional Severe Snowstorm-Town Meeting Blizzard Mar 2017	4316 --	2017	Mar 14-15	N/A for Hillsborough	Many other NH towns had to choose whether to close or not to accommodate the blizzard, which became a legal issue to sort out. Not a declared disaster in Merrimack or Hillsborough counties.	Hillsborough could not apply for or receive federal PA funds. A state-wide blizzard occurred (Election Day Storm).	Winter, Extreme Temp, Snow, Crash	Hillsborough Hazard Mitigation Committee, CNHRPC

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Webster Epicenter Earthquake 1.9M (Mercalli III) Feb 2017	No	2017	Feb 27	N/A	Residents of Contoocook, Webster and Warner in Central NH communities also felt this earthquake. Since it occurred overnight, there were fewer reports. The USGS reported its epicenter north of the Blackwater River in the hilly area between Battle Street and Clothespin Bridge Road at a depth of 8.9km.	The USACE registered this earthquake on their Hopkinton Dam monitoring equipment. No damages reported in Hillsborough.	Earthquake, Earth	Hillsborough Hazard Mitigation Committee, Earthquake.ack.com, CNHRPC, earthquake.usgs.gov, Hopkinton Dam USACE
Hillsborough Potentially Hazardous Materials Gas Bear Hill Road Apartments Feb 2017	No	2017	Feb 6	N/A	Hillsborough is a member of the Capital Area Mutual Aid Fire Company and may have received assistance from surrounding towns.	Police Department responded to Bear Hill Road apartments for suspected home lab. Chemical smell emanating in apartment. Subject using small, liquefied petroleum to run a furnace.	Hazardous Materials	Hillsborough Hazard Mitigation Committee, CNHRPC
Hillsborough Jackman Penstock Breach 2017	No	2017		N/A	N/A	Jackman Penstock dam breached, requiring new owner to repair or replace wooden penstock with fiberglass. There are plans to replace the rest of the wood in the future. No reported damages in community.	Dam Failure, Flooding	Hillsborough Hazard Mitigation Committee, CNHRPC
Hillsborough Overtopping of Farrar Marsh Beaver Dam 2016-2021	No	2016-	2021	N/A	N/A	Frequent overtopping of beaver dams, especially the Farrar Marsh Dam. Water often overtops the road, but not to the level that it stops car travel. Debris build up requires clearing out.	Dam Failure, Flooding	Hillsborough Hazard Mitigation Committee, CNHRPC

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Central NH Region and Hillsborough Excessive Heat 2016-2017	No	2016	-2017	N/A	NH and the Central NH region experienced high heat records throughout 2016 and 2017.	In Hillsborough, likely Emerald Lake Village District Dug wells went dry, in addition to higher elevation dug wells.	Extreme Temp, Excessive Heat, Public Health	Hillsborough Hazard Mitigation Committee, CNHRPC
Hazard Events 2005-2016								
Salisbury Epicenter Triple Earthquakes 1.8M/1.6M/1.3M Oct 2016	No	2016	Oct 31	N/A	Epicenters of three quakes in Salisbury occurred a few minutes apart, one 1.8M with a depth of 6.1 km, one with 1.6M with a 5.0km depth, and one with 1.3M with 5.0km depth. Three separate epicenters were located, the 2 first quakes south of West Salisbury Road and the last 1 north of the Blackwater River at Bay Road.	Hillsborough may have felt some light rattling from these small earthquakes, with its epicenters close. No damage or injuries reported in Town.	Earth, Earthquake	Hillsborough Hazard Mitigation Committee, Earthquake.ack.com, CNHRPC, earthquake.usgs.gov
NH Severe Wind Rain & Thunderstorm Jul 2016	No	2016	Jul 23	N/A	The entire region and the State experienced a severe storm with rain, wind, lightning, and thunder. A possible microburst was reported. As many as 72,000 customers lost electricity. A similar storm earlier in the week brought several confirmed microbursts and also downed trees.	Hillsborough likely experienced many of these conditions on their gravel roads. Washouts would have resulted along with downed trees and power lines.	Flood, Debris Impacted Infrastructure, Wind, Lightning, Rains, Utility, Power Outage, Washout	Hillsborough Hazard Mitigation Committee Concord Patch, CNHRPC, WMUR, NOAA
Hillsborough ELVD Drought Emergency 2016 Jul 2016	No	2016	Jul 19	No	Moderate Drought (D1) intensities are found in northern Hillsborough and southern Merrimack Counties. Southern Hillsborough County is experiencing (D2) Severe Drought intensity while northern Merrimack County is in (D0) Abnormally Dry intensity. All counties in the State of NH except for portions of Grafton and Coos County are dry	The Emerald Lake Village District has water ban information on their website as of 07-19-16: Despite the recent rain, Emerald Lake Village District is still under a WATER USE BAN for most outdoor water uses. We still need more rain to replenish the groundwater system before we can lift the ban. Expect	Earth, Drought	US Drought Monitor NH July 26, 2016, ELVD website www.elvdnh.com

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						restrictions to run through the entire month of July and into August. Anyone using water in violation of this ban is subject to a fine of up to \$250. The current rules include but are not limited to: - No watering of grass - No pressure washing - No washing of cars - No filling or topping off of pools - Hand watering of gardens only - Underground sprinklers MUST draw from lake and have signage visible from road stating as such.		
Hillsborough Fire on Butler Street May 2016	No	2016	May 25	N/A	Hillsborough is a member of the Capital Area Mutual Aid Fire Company and may have received assistance from surrounding towns.	Fire occurred at a Butler Street apartment. Starting in the Bathroom the fire extended to other living areas, but no injuries occurred.	Fire	Hillsborough Hazard Mitigation Committee, CNHRPC
Warner Epicenter Earthquake 2.8M (Mercalli IV) Mar 2016	No	2016	Mar 21	N/A	Epicenter in Warner on Schoodac Brook just south of I-89, with 2.8 magnitude at a depth of 7.3km. 124 citizen reports made to USGS. Felt in the Central NH Region and most of Merrimack County, light in Hillsborough County. Felt most strongly in Hopkinton, Allenstown, Warner, Webster, Salisbury, Franklin, Bradford, Concord, and Hillsborough. This quake was believed to have snapped one of the underground water lines	Reports were made to the USGS from Hillsborough residents feeling the earthquake as a rumble or loud noise.	Earth, Earthquake	Hillsborough Hazard Mitigation Committee, Earthquake.ack.com, CNHRPC, earthquake.usgs.gov, USGS

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					in the Town of Warner, and people exited buildings onto Main Street wondering what happened.			
Epsom Epicenter Earthquake 2.2M 2015 Aug 2015	No	2015	Aug 2	N/A	Epicenter around Epsom in the Central NH Region in Merrimack County, felt in nearby locations including Concord, Pembroke, Allenstown, Loudon, Chichester, and Pittsfield	N/A, although Hillsborough is 5 communities east of Epsom in the Central NH Region	Earth, Earthquake	Earthquake rack.com
Regional Tornado, Severe Thunderstorms Jul 2015	No	2015	Jul 31	N/A	In Warner, NWS confirmed an EF-0 tornado touched down in the evening. It had a maximum wind speed of 75 mph and was 100 yards wide. Town officials said the tornado ripped the roof off a barn, but there were no injuries reported.	N/A, although Warner is 2 communities to the northeast of Hillsborough	Wind, Tornado	WMUR
Regional Lyme Disease Epidemic 2015 - 2018	No	2015-	2018	N/A	Likely experienced by other Central NH region communities during the same period.	Central NH region residents are known to have been subjected to and tested for Lyme Disease; many are positive. Spring is particularly bad. Hillsborough contains rural, forested developments and the conservation lands are used for outdoor recreation. Lyme Disease is not known to be a significant local problem.	Public Health (Epidemic), Tick-borne	CNHRPC, NH Dept of Environmental Services, Capital Area County Public Health Network, Deering Hazard Mitigation Committee

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Regional Severe Winter Storm and Snowstorm - Jan Blizzard 2015	4209	2015	Jan 26-28	\$23,100	The closest reporting weather station, Concord Airport (CON), had accumulated 29" of heavy snow, 50 mph whiteout wind conditions in the region	Hillsborough received \$23,100 in FEMA Public Assistance funding for protective measures. The Town used funding for 48-hour snow removal. Non-essential personnel did not return to work. The EOC was on standby. No power failure was experienced	Extreme Temp, Snow, Wind	FEMA, CNHRPC
Regional Thanksgiving Day Snowstorm Nov 2014	No	2014	Nov 27	N/A	Large amount of snowfall fell in a very short period ahead of typical seasonal expectations. Power outages were prolific, with a peak of About 200,000 power outages in NH, the 4th largest blackout in history. large amount of snowfall in very short period. Merrimack County has about 6-12" of snow, far less than other counties. Extreme wind gusts reached 110 mph in Concord.	Hillsborough had no issues. No power failure - Jackman Hydro Dam source of constant power. No resident generator checks needed.	Extreme Temp, Snow, Wind	Concord Monitor, Washington Post, WMUR, NHPR, Hillsborough Hazard Mitigation Committee
Hopkinton Public Health EEE in Human Fall 2014	No	2014	Fall	N/A	The New Hampshire Department of Health and Human Services (DHHS) is announcing the second human case of Eastern Equine Encephalitis (EEE) this season in New Hampshire, in an adult from Hopkinton. The first human case of EEE in New Hampshire this season was confirmed on August 22nd in Conway, NH. Other EEE positive tests this year include 6 mosquito batches and a mule; there have been no positive test results so	N/A although Hopkinton is 2 communities to the east of Hillsborough. Due to this human case, the risk level for human illness in Hopkinton was be raised to high, and the surrounding towns to moderate risk by NHDHHS.	Extreme Temp, Public Health, Epidemic	Hopkinton Town website, Hopkinton Hazard Mitigation Committee, NH DHHS

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					far for West Nile Virus (WNV).			
Warner Epicenter Earthquake 2.6M 2013 Oct 2013	No	2013	Oct 11	N/A	Epicenter in Warner, 2.6 magnitude. Felt in the Central NH Region/northern Merrimack County, most strongly in Hopkinton, Henniker, Warner, Webster, Concord, Salisbury, Franklin	Reports were also made to the USGS from Hillsborough residents, 2 communities away from Warner	Earthquake	USGS
NH Severe Storms, Flooding and Landslide Jun-Jul 2013	4139 --	2013	Jun 26 – Jul 3	N/A for Deering	This declared disaster for Grafton, Sullivan and Cheshire Counties included landslides from the heavy rain. Public Assistance (PA) was available for these 3 Counties and Hazard Mitigation Assistance (HMA) became available statewide. Damage per capita was high – Grafton (\$39.58), Sullivan (\$24.48), and Cheshire (\$21.46). <u>Not declared in Merrimack or Hillsborough Counties.</u>	Hillsborough could not apply for or receive PA funding. Hillsborough likely experienced heavy rains, road washouts during this event.	Landslide, Storms, Flood, Wind	Hillsborough Hazard Mitigation Committee, FEMA, CNHRPC
Regional and Hillsborough Communications Failure Apr 2013	No	2013	Apr 15	No	The bombing incident occurred in Boston during the Boston Marathon. Its effects were felt throughout New England and the country.	On Apr 15 after the Boston Marathon bombing, some Hillsborough callers likely could not communicate because the lines and towers were overwhelmed. No local carriers were operational.	Terrorism/ Violence, Communications Failure	Regional Hazard Mitigation Committees, CNHRPC
Regional Severe Winter Storm and Snowstorm - Winter Storm NEMO Feb 2013	4105	2013	Feb 8-10	\$27,500	Winter Storm "Nemo". FEMA-3360-DR. Blizzard conditions with winds gust of 50-60 MPH and over 20 inches snow hit New Hampshire and the New England area. Disaster declaration received for emergency protective measures in eight counties of the State.	Hillsborough received \$27,500 in FEMA Public Assistance funding for protective measures. Non-essential personnel did not return to work. The EOC was on standby Without power for several days. Up to 20" of	Extreme Temp, Snow, Ice, Wind	FEMA, Hillsborough Hazard Mitigation Committee

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						heavy wet snow, trees downed.		
Regional Hurricane - Hurricane Sandy Oct-Nov 2012	4095 EM-3360	2012	Oct 26-Nov 8	No	Merrimack County and Hillsborough County received a disaster declaration for Emergency Protective Measures. Five counties experienced severe damage from heavy winds and moderate flooding, 218,000 customers without power. Fallen trees and debris closed roads, building and vehicle damage.	Hillsborough likely experienced severe winds, moderate rain, power failures, and tree debris.	Wind, Flood, Severe Storm, Hurricane	FEMA, Nashua Telegraph
Hollis ME Epicenter Earthquake 4.0M 2012 Oct 2012	No	2012	Oct 16	N/A	With the epicenter near Hollis Center, Maine, a 4.0 earthquake was measured and felt not only in Central NH, but throughout New England. Reportedly sounding like a jumbo jet and lasting for 10 seconds, calls came into local Fire Departments inquiring about the event. By two hours later, no calls reporting damages or injuries had been received.	Reports may have been made to the USGS from Hillsborough with an earthquake of this magnitude as it was felt around the Central NH Region.	Earthquake	Concord Monitor
Hopkinton Microburst Jul 2012	No	2012	Jul 17	N/A	About 20,000 electric customers lost power during this summer wind and rainstorm. Power lines down & failure for several days. Trees and debris along roadways required clean up. Four main roads in Hopkinton were blocked for 2-3 days, including South Road, College Hill Road, Hatfield Road, and Thain Road. The 60-80 mph microburst traveled in a north-south direction crossing Route 127 and US Route	N/A although Hopkinton is 2 communities to the east of Hillsborough.	Wind, Downburst, Thunderstorm	Hopkinton Hazard Mitigation Committee, WMUR

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					4/202. Property damage occurred.			
NH Severe Storm and Flooding May 2012	4065 --	2012	May 29-31	N/A for Hillsborough	This declared disaster for Cheshire County. Public Assistance (PA) was available, and Hazard Mitigation Assistance (HMA) became available statewide. Damage per capita was high – Cheshire (\$26.04). <u>Not declared in Merrimack or Hillsborough Counties.</u>	Hillsborough could not apply for or receive PA funding. There were no specific issues in Town noted. Any flooding, treefall or other problems were handled as normal Dept response.	Flood, Storms, Wind, Debris	FEMA, CNHRPC
Allenstown Chemical Bombs Feb 2012	No	2012	Feb	N/A	Six chemical bombs (made with common household chemicals) were found at a NH DOT shed, and others at houses. No damage of consequence occurred.	N/A, although Allenstown is 5 communities to the east of Hillsborough in the Central NH Region	Human	Allenstown Hazard Mitigation Committee 2016
Regional Snowstorm-Halloween Snowstorm Oct 2011	4049	2011	Oct 29-30	\$10,800	FEMA-4049-DR. Towns in Central NH were impacted by this shocking, early severe snowstorm, although a major disaster declaration was not declared in Merrimack County. Halloween festivities were cancelled in most communities, to the heartbreak of young children. In Hillsborough County, damages were at the equivalent of \$5.11 per capita (400,721 people in 2010). The storm was also declared in Rockingham County.	Hillsborough received \$10,800 in FEMA Public Assistance funding for protective measures.	Snow, Extreme Temp	CNHRPC

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Event	Declared Disaster DR-	Year	Date	FEMA Public Assistance	Area Effects Surrounding Hillsborough	Local Effects Occurring in Hillsborough	Hazard Category	Source
Regional Tropical Storm-Tropical Storm Irene Aug-Sept 2011	4026	2011	Aug 26-Sep 6	No	Carroll, Coos, Grafton, and Merrimack Counties suffered severe impacts to roads and bridges because of flooding from Tropical Storm Irene, which also caused power outages. Merrimack County reimbursement to towns was \$4.29 per capita (146,455 people in 2010), a total of \$11m was allocated. Disaster was not declared for Hillsborough County.	Hillsborough had FD station coverage. Undertook limb debris clean up. Damages included localized flooding of storm drains in the Business District and Cooledge Road washout.	Wind, Flood, Severe Storm, Tropical Storm	FEMA, Hillsborough Hazard Mitigation Committee
Regional Bow Route 3A Downburst Sept 2011	4026	2011	Sep 5	N/A	In nearby Bow, a 60mph microburst damaged or destroyed a dozen campers around Route 3A between Grandview and Down Road. No injuries were reported. Telephone service at the Town's Police dispatch center was also disrupted.	N/A, although Bow is 3 communities to the southeast of Hillsborough	Wind, Downburst, Debris Impacted Infrastructure	Union Leader
Regional April Fool's Snowstorm Apr 2011	No	2011	Apr 1	N/A	A Nor'easter snowstorm impacted the State, causing over 30,000 power outages, most by PSNH. Snow fell in depths of up to 8" but stopped by noon. Although dozens of accidents were reported, no serious injuries were reported.	N/A, but Hillsborough likely experienced some snow and inconvenience	Extreme Temp, Snow	wmur.com
Concord Hospital Bomb Threats Oct 2010	No	2010	Oct 1	N/A	A bomb threat was called in to Concord Hospital because of a child custody issue and the group known as the "Oathkeepers." The FBI was contacted, but nothing was found in the Hospital during a bomb sweep. Phone lines were flooded with calls by the Oathkeepers to inhibit using the landlines. The incident was determined to be	N/A, although Concord is 3 communities to the east of Hillsborough	Human, Terrorism	Concord Hazard Mitigation Task Force 2011

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Event	Declared Disaster DR-	Year	Date	FEMA Public Assistance	Area Effects Surrounding Hillsborough	Local Effects Occurring in Hillsborough	Hazard Category	Source
					harassment instead of an actual event.			
Boscawen Epicenter Earthquake 3.4M 2010 Sept 2010	No	2010	Sep 26	N/A	"A magnitude 3.4 earthquake rattled buildings and nerves across much of New Hampshire Saturday night. The quake occurred at 11:28 p.m. and was centered about 10 miles north of Concord, according to the U.S. Geological Survey. State police said they received reports from residents across the state who reported what they thought was an explosion. The quake was felt in places like Fremont, Derry, Durham, Henniker, Penacook, and Raymond. There were no reports of damage." The quake was felt all over the state, Southern Maine, and Massachusetts, but most reports were received from the Central NH region.	Reports may have been made to the USGS from Hillsborough with the epicenter about 15 miles to the northeast in Boscawen.	Earth, Earthquake	Union Leader, USGS
Quebec-Ottawa Earthquake 5.0M (Mercalli VI-VII) Jun 2010	No	2010	Jun 23	N/A	Earthquake lasted about 30 seconds, epicenter in Val-de-Bois Quebec (Ottawa) at a depth of 22 km. The shaking that occurred in Ottawa was rated the strongest in 200 years. Damages occurred in Ottawa. The tremors were felt in Central NH. 288 aftershocks were located.	No known impacts to Hillsborough specifically, but this large quake was felt regionwide.	Earthquake, Earth	CNHRPC, Geological Survey of Canada

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Event	Declared Disaster DR-	Year	Date	FEMA Public Assistance	Area Effects Surrounding Hillsborough	Local Effects Occurring in Hillsborough	Hazard Category	Source
Canadian Wildfires Air Pollution May 2010	No	2010	May 31	N/A	The smoke from the wildfires was seen and smelled across Central NH. On Memorial Day weekend, brush fires from Canada impacted the air quality of New Hampshire Residents from more than 50 wildfires that are burning out of control in Quebec. Over 150,000 acres in central Quebec, north of Montreal and Quebec City, about 500 miles north of Manchester, reduced visibility to 1.75 miles in Concord. No air quality alert was issued, although people with respiratory issues were urged to remain indoors.	Hillsborough likely experienced the effects of this smoke, smog, and fine particulate matter. High elevations would have been most susceptible, as would those who exercised outdoors.	Wildfire, Health (Air Quality)	Union Leader 2010, CNHRPC
Regional Severe Storms and Flooding Mar 2010	1913	2010	Mar 14-31	No	Severe storms and flooding occurred over two weeks and damaged roads and bridges. Merrimack County reimbursement to towns for repair was \$0.28 per capita (146,455 people in 2010), and in Hillsborough County reimbursements were \$1.80 per capita (400,721 people in 2010)	No funding applied for/received.	Flood, Wind	FEMA
Regional Severe Winter Storm Feb-Mar 2010	1892	2010	Feb 23-Mar 3	No	High winds, rain, and snow over a week-long period. Primary impact was debris removal and repair reimbursement for fallen trees and powerlines. In the Concord area, 21,000 Unital customers were out of power.	No funding applied for/received.	Extreme Temp, Wind, Flood	FEMA, Unital

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Event	Declared Disaster DR-	Year	Date	FEMA Public Assistance	Area Effects Surrounding Hillsborough	Local Effects Occurring in Hillsborough	Hazard Category	Source
Vermont Yankee Tritium Contamination Jan 2010	No	2010	Jan 7	N/A	The Vermont Yankee Nuclear Power Plant notified the Vermont Department of Health that groundwater monitoring samples taken in November 2009 contained tritium. An investigation was launched, and a major source of leakage was found in steam pipes inside the Advanced Off-Gas (AOG) drain line to be clogged and corroded. The samples taken show the movement of the tritium contamination in the groundwater into the Connecticut River. Health risks are being investigated.	Hillsborough may be affected in the future as groundwater sources are connected. The Connecticut River travels the NH / VT border.	Radiological, Health (Water Quality)	Vermont Department of Health 2012, CNHRPC
Loudon Pleasant View Greenhouse Fire Jan 2010	No	2010	Jan 21	N/A	Pleasant View Gardens suffered a fire which destroyed about 30,000 square feet of greenhouses, plus a building. The cause is undetermined. A significant commercial fire.	N/A, although Loudon is 4 communities to the northeast of Hillsborough and is also in the Central NH Region	Fire	Loudon Hazard Mitigation Committee 2010
Regional Severe Winter Storm - Ice Storm Dec 2008	1812	2008	Dec 11-23	\$122,200	Ice, snow, rain, and strong winds caused trees to fall on roadways and powerlines all over the State. All 10 NH counties were declared disasters. Merrimack County's reimbursement to towns was the equivalent of \$10.07 per capita and Hillsborough County's damage was \$6.35 per capita. This storm was the catalyst for electric companies to formulate better mitigation strategies, tree trimming programs, and pro-active planning. Crews were called from all over the country and	Hillsborough received \$122,200 in FEMA Public Assistance funding for debris removal and protective measures. The greater part of Hillsborough went several days without electricity and communications. Numerous roads were closed due to downed trees and power lines. Worst ice storm on record. There were widespread power outages that lasted	Extreme Temp, Wind	FEMA, Hillsborough Hazard Mitigation Committee

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Event	Declared Disaster DR-	Year	Date	FEMA Public Assistance	Area Effects Surrounding Hillsborough	Local Effects Occurring in Hillsborough	Hazard Category	Source
					Canada to help repair the utility line damages.	for up to 10 days in Hillsborough.		
Hillsborough Town Office Sabotage Nov 2008	No	2008	Nov	N/A	N/A	The Town Office phone system was compromised. Over 6000 international phone calls were made without the Town's knowledge.	Sabotage, Cyberterrorism, Technological	Hillsborough Hazard Mitigation Committee
Regional Severe Storms and Flooding - Patriot's Day Flood Sept 2008	1799	2008	Sep 6-7	No	In Merrimack County, damage to road systems totaled the equivalent of \$1.48 per capita (146,455 people in 2010) for town reimbursement. Hillsborough County's damage was much higher at \$6.90 per capita (400,721 people in 2010)	No funding applied for/received.	Flood	FEMA
Hillsborough Lightning Strike 2008	No	2008		N/A	Hillsborough is a member of the Capital Area Mutual Aid Fire Company and may have received assistance from surrounding towns.	A lightning strike near the Town Highway garage damaged equipment at the Transfer Station, Police Station and at the Elementary School.	Lightning, Fire	Hillsborough Hazard Mitigation Committee
Hillsborough Jackman Dam Hydro Station Explosion Aug 2008	No	2008	Aug	N/A	N/A	Small explosion at the Jackman Power Station. This caused damage and some power outages	Fire, Explosion, Technological, Power Failure	Hillsborough Hazard Mitigation Committee
Regional Tornado, Severe Winds, Heavy Rains Jul 2008	1782	2008	Jul 24	N/A	An F2-F1 tornado touched down in Rockingham County then proceeded into another county. Then in Merrimack County, the tornado was rated up to an F-3 and killed a woman in Deerfield trapped in a collapsed house. In the county, there was substantial damage totaled the equivalent of \$1.12 per capita (146,455 people in 2010) for the towns' debris removal reimbursement costs. A total of 123 residences	N/A, Hillsborough is in the Central NH Region where this area event occurred. Epsom & Deerfield are 5/6 towns to the east of Hillsborough.	Wind, Tornado	FEMA

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Event	Declared Disaster DR-	Year	Date	FEMA Public Assistance	Area Effects Surrounding Hillsborough	Local Effects Occurring in Hillsborough	Hazard Category	Source
					statewide were affected, with 17 destroyed and another 37 suffering major damage. Damage was estimated to exceed \$10 million. Hillsborough County			
Hillsborough Landslide Summer 2007	No	2007	Summer	N/A	N/A	One of the side slopes of the Rt.9 bypass slid into the roadway. This caused part of the highway and exit ramp to be closed. This was due in part to heavy rain.	Earth, Landslide, Erosion	Hillsborough Hazard Mitigation Committee
Concord Hazardous Materials Flooded May 2007	No	2007	May 27	N/A	Fifty-three businesses were forced to close at the Concord Center on Ferry Street in Concord when state officials discovered more than 70 buckets of formaldehyde, motor oil, roofing tar and cleaning solvents in the flooded basement. There were no reported injuries, but some workers complained of headaches and dizziness.	N/A, although Concord is 3 communities to the east of Hillsborough	Flooding, Technological, Hazardous Materials	Concord Monitor
Regional Severe Storms and Flooding - April Spring Floods Apr 2007	1695	2007	Apr 15-23	\$117,800	Extensive flooding caused by severe storms impacted seven counties, including Merrimack and Hillsborough. Across the region, indirect peak discharge measurements on stream gages on the Suncook River at Short Falls Road in Epsom were 14,100 ft ³ , which was determined to be greater than 100-year flood discharge levels.	Hillsborough received \$117,800 in FEMA Public Assistance funding. Projects were for roads and bridges. Many gravel roads and bridges were washed out, including County Road, Carter Hill Road, Bible Hill Road, Boggy/Melody/Colby Roads intersection and Stowe Mtn Road. A residence in Emerald Lake was destroyed and debris from its structure flowed down stream. Also, propane tanks	Flood, Wind, Debris Impacted Infrastructure	FEMA, USGS Flood of 2007, Hillsborough Hazard Mitigation Committee

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Event	Declared Disaster DR-	Year	Date	FEMA Public Assistance	Area Effects Surrounding Hillsborough	Local Effects Occurring in Hillsborough	Hazard Category	Source
						were dislodged and floating, causing a potential risk to the ELVD community.		
Webster Pillsbury Lake Dam Breach May 2006	1643	2006	May 15	N/A	The Pillsbury Lake Dam in Webster, holding back an artificial lake of about 70 acres, was breached by flooding due to heavy rains. Floodwaters punched out a 20-foot breach in the dam. The dam created the Pillsbury Lake District with about 180 households. The Lake's level fell from 15 feet at its deepest point to about 2 feet at that same point following the event.	N/A, although Webster is 3 communities to the northeast of Hillsborough	Flood, Dam Failure	Concord Monitor
Bow Landslide During Mother's Day Floods May 2006	1643	2006	May 14-17	N/A	Backyard material slid toward a Bow home on Mother's Day catching a family, with one young child and expecting another, by surprise. No one was injured by the mudslide, but thousands of dollars of property damage were caused. The debris and mud that slid and caused the damage came from land that didn't belong to the family. They had to move out for 10 days until a contractor deemed the property safe.	N/A, although Bow is 3 communities to the southeast of Hillsborough	Earth, Landslide, Erosion	WMUR News
Suncook River Avulsion in Epsom May 2006	1643	2006	May 14-17	N/A	The Suncook River through Epsom changed its course during this recent heavy rain event and its resultant flooding. The river shifted hundreds of meters, flowing around two dams, creating about a mile of new river through a sand pit a half mile from its original course, and	N/A, Epsom is in the Central NH Region where this area event occurred, 5 towns to the east of Hillsborough.	Flood, Channel Movement	Concord Monitor

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Event	Declared Disaster DR-	Year	Date	FEMA Public Assistance	Area Effects Surrounding Hillsborough	Local Effects Occurring in Hillsborough	Hazard Category	Source
					leaving a similar length of dry riverbed. The water carved through peat bogs and tore away a corner of a sand excavation pit. Local communities of Epsom, Allenstown, and Hillsborough later dealt with siltation and erosion issues from the new river course			
Regional Severe Storms and Flooding - Mothers Day Flood May 2006	1643	2006	May 12-23	\$26,600	Extensive flooding caused by severe storms impacted seven counties including Merrimack and Hillsborough. The USGS recorded the highest flows on record for several rivers including the Contoocook River in Davisville village, Soucook in Concord, and Piscataquog in Goffstown.	Hillsborough received \$26,600 in FEMA Public Assistance funding roads and bridges and protective measures. Projects included repairing gravel road washouts and culvert upgrades.	Flood, Wind	FEMA
Regional Train Wildfire Apr 2006	No	2006	Apr 29	N/A	A freight train sparked brush fires along tracks in Bow, Hooksett, and Manchester. In Bow, a 50' by 350' fire was spreading toward the woods when officials arrived on the scene. Concord Fire Chief said that fires sparked by trains are not unusual and they are typically caused by exhaust coming out of the stack.	N/A, although Bow is 3 communities to the southeast of Hillsborough	Fire, Technological	WMUR News
Concord Statehouse Iraq Public Unrest Mar 2006	No	2006	Mar 18	N/A	A reported 400 citizens marched in Concord to recognize the 3-year anniversary of the beginning of the war in Iraq. The protestors marched around downtown Concord and finished in front of the statehouse.	N/A, although Concord is 3 communities to the east of Hillsborough	Human, Public Unrest, Civil Disturbance	NH Independent Media Center

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Event	Declared Disaster DR-	Year	Date	FEMA Public Assistance	Area Effects Surrounding Hillsborough	Local Effects Occurring in Hillsborough	Hazard Category	Source
Regional Severe Storms and Flooding - Columbus Day Flood Oct 2005	1610	2005	Oct 7-18	\$97,400	Extensive flooding caused by severe storms impacted five counties. Alstead had several fatalities as the result of dam failure.	Hillsborough received \$97,400 in FEMA Public Assistance funding mostly for roads and bridges but also for protective measures. The projects included repaired washed out gravel roads, culvert upgrades, bridge repair, paved road and shoulders damages repaired. The restaurant Sam Pan's propane tank became dislodged and floated down stream of the Contoocook River.	Flood, Wind, Debris Impacted Infrastructure	FEMA, Hillsborough Hazard Mitigation Committee
Regional Thunderstorms and Lightning Jun 2005	No	2005	12-Jun	N/A	During a thunderstorm, lightning struck and severely damaged the historic Loudon Town Hall on Clough Hill Road. Winds from severe thunderstorm knocked down trees and power lines down in the towns of Warner, Hopkinton, Concord, Bow, Loudon, and Webster in Merrimack County.	Hillsborough likely experienced many lightning strikes, power outages, and heavy rain downfalls. The lightning would have been especially noticeable from the higher elevations.	Thunderstorm, Lightning, Severe Winds	Hillsborough Hazard Mitigation Committee, CNHRPC, Area Hazard Mitigation Committees
Regional Snow Emergency Mar 2005	EM-3211 H	2005	Mar 11-12	\$6,061	Cheshire, Hillsborough, Rockingham, and Sullivan Counties were eligible for emergency protective measures under the Public Assistance program because of this severe winter snowstorm.	Hillsborough did not receive FEMA Public Assistance funding for snow removal and protective measures. In Hillsborough, tree damage was likely severe on the higher elevation roads. The Town was likely without electricity for days. The Highway Department probably worked overtime to clear the roads for residents.	Winter, Extreme Temps, Snow, Debris	Hillsborough Hazard Mitigation Committee, CNHRPC, FEMA
Canterbury Explosion at	No	2005	Jan 23	N/A	A near-fatal explosion occurred at the Gold	N/A, although Canterbury is 4	Fire, Explosion,	Concord Monitor

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Event	Declared Disaster DR-	Year	Date	FEMA Public Assistance	Area Effects Surrounding Hillsborough	Local Effects Occurring in Hillsborough	Hazard Category	Source
Gold Star Sod Farm Jan 2005					Star sod farm in Canterbury. Gasoline fumes ignited a propane heater, triggering a fiery explosion and fire that consumed a large workshop and part of the main storage building. Fire crews from several departments battled the fire and laid sand down as a buffer between a nearby river to prevent contamination as pesticides and other chemicals burned.	communities to the northeast from Hillsborough in the Central NH Region	Technological, Hazardous Materials	
Regional Snow Emergency Jan 2005	EM-3207 M-H	2005	Jan 22-23	N/A	Record and near record snowstorm for 8 NH counties including Merrimack and Hillsborough. Emergency protective measures declared for reimbursement.	Hillsborough did not receive FEMA Public Assistance funding for snow removal. Record snows fell during this time causing many closures. A transportation system shutdown likely occurred in Hillsborough, and Town emergency services were delayed.	Winter, Extreme Temps, Snow, Debris	Hillsborough Hazard Mitigation Committee, CNHRPC, FEMA
Hazard Events 1973- 2004								
Henniker-Hopkinton Epicenter Earthquake 2.2M 2004 Jan 2004	No	2004	Jan 20	N/A	An earthquake measuring 2.2 on the Richter Scale was centered in the Henniker- Hopkinton area. Shaking and noise were reported, but no damage occurred.	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. Reports may have been made to the USGS from Hillsborough with the epicenter less than 5 miles to the east in Henniker/ Hopkinton	Earth, Earthquake	Concord Monitor, January 2004, USGS, Hillsborough Hazard Mitigation Committee

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Event	Declared Disaster DR-	Year	Date	FEMA Public Assistance	Area Effects Surrounding Hillsborough	Local Effects Occurring in Hillsborough	Hazard Category	Source
Henniker-Hopkinton Earthquake 2.2M Epicenter Jan 2004	No	2004	Jan 20	N/A	An earthquake measuring 2.3 on the Richter Scale was centered in the Henniker- Hopkinton town line on Hill Road at a depth of 3.6km.	Residents may have felt the earthquake as a rumble or heard a loud noise. Hopkinton is within 15 miles of Hillsborough.	Earth, Earthquake	Concord Monitor, January 2004, Earthquake Monitor, CNHRPC, earthquake.usgs.gov
Regional Snow Emergency Dec 2003	EM-3193	2003	Dec 6-7	\$17,300	Record snow fall event impacting much of New England. In NH, 8 counties received emergency protective measures, including Merrimack and Hillsborough.	Hillsborough received \$17,300 in FEMA Public Assistance funding for snow removal	Extreme Temp	FEMA
Regional Snow Emergency Feb 2003	EM-3177	2003	Feb 17-18	\$13,600	Record and near record snowstorm for 5 NH counties including Merrimack and Hillsborough. Emergency protective measures declared for reimbursement.	Hillsborough received \$13,600 in FEMA Public Assistance funding for snow removal	Extreme Temp	FEMA
Regional Drought Emergency 2002 Aug 2002	No	2002	Aug	N/A	All counties in the State of NH except Coos County. One of the hottest Augusts on record in Concord along with drought conditions since March made for a high fire danger in New Hampshire. Numerous forest fires were reported, including a 30-acre blaze in New Durham.	N/A, although Hillsborough was likely affected too. The Emerald Lake Village District has water ban information on their website in the event of a drought.	Earth, Fire	Concord Monitor 8/20/02, ELVD website
Regional Snow Emergency Mar 2001	EM-3166	2001	Mar 5-7	\$12,800	Record and near-record snowfall from late winter storm, emergency declaration was issued for protective measures. Merrimack, Hillsborough and 5 other counties were declared eligible.	Hillsborough received \$12,800 in FEMA Public Assistance funding for snow removal	Extreme Temp	FEMA
Regional Central NH Macrobust Jul 1999	No	1999	Jul	N/A	A downburst impacted three counties in New Hampshire, including Merrimack County and the Central NH Region.	High winds caused power outages and tree damage. The Emerald Lake area	Wind, Macrobust	Hillsborough Hazard Mitigation Committees, NH HSEM,

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Event	Declared Disaster DR-	Year	Date	FEMA Public Assistance	Area Effects Surrounding Hillsborough	Local Effects Occurring in Hillsborough	Hazard Category	Source
					It resulted in 2 deaths. Also, two roofs were blown off a tall building in Concord and widespread power outages occurred. The downburst was designated a macroburst (at least 2.5 miles in diameter).	was without power the longest.		Local Haz Mit Committees
Concord Library and NHTI Bombs Oct 1998	No	1998	Oct	N/A	The lit fuse of a bomb left in the Concord Library stacks set off smoke alarms that may have saved the lives of many people. The individual allegedly responsible for the bomb scare left notes complaining about state government. About a dozen buildings were evacuated after the New Hampshire Technical Institute in Concord received an anonymous call warning that three bombs had been placed on campus. This event followed the bomb scares at the Concord Library.	N/A, although Concord is 3 communities to the east of Hillsborough	Human, Terrorism	AP Online 11/01/98, NH Homeland Security and Emergency Management
Hopkinton Gould Hill & Putney Hill Tornado Jul 1998	No	1998	Jul	N/A	A tornado touched down in the Gould Hill and Putney Hill areas in Hopkinton impacting approximately five acres causing trees to be downed and roads to be closed. No injuries were reported.	N/A, although Hopkinton is 2 communities to the east of Hillsborough	Wind, Tornado	Hopkinton Hazard Mitigation Committee
Regional Severe Storms and Flooding Jun-Jul 1998	1231	1998	Jun 12-Jul 2	No	Heavy flooding in six counties, including Merrimack and Hillsborough Counties. Damages of \$3.4m for all counties.	As Hillsborough is within Hillsborough County, it is likely experienced heavy rains and possibly some flooding.	Flood, Wind	FEMA

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Event	Declared Disaster DR-	Year	Date	FEMA Public Assistance	Area Effects Surrounding Hillsborough	Local Effects Occurring in Hillsborough	Hazard Category	Source
Regional Ice Storm of 1998 Jan 1998	1199	1998	Jan 7-25	No	This ice storm was the first to test our statewide and local emergency management systems and utility providers. Tree and infrastructure damage was extensive and power failures lasted up to two weeks in some parts of the state. In The Central NH Region, many lost power for over a week. This ice storm had severe impacts throughout most of the State, with 52 communities impacted. FEMA Disaster Declaration #1199, 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.	Extreme Temp, Ice Storm, Power Failure	History of Hillsborough, NH, 1960-2000, FEMA, US Army Corps of Engineers NH Storms database
NH Mass Casualty/ Terrorism Aug 1997	No	1997	Aug	N/A	Five people were left dead after a series of shootings which began in Bow by a man who was angered over long simmering land disputes. The individual was eventually apprehended in Colebrook, NH.	N/A for Hillsborough specifically, but this tragedy occurred in the Central NH region.	Terrorism, Mass Casualty	NH HSEM, CNHRPC
Regional Severe Storms and Flooding Oct 1996	1144	1996	Oct 20-23	No	Heavy rains caused flooding in six counties, including Merrimack and Hillsborough Counties. Damage totaled \$2.3m for all counties.	As Hillsborough is within Hillsborough County, it is likely experienced heavy rains and possibly some flooding.	Flood	FEMA, NH HSEM
Bradford Milfoil Lake Massasecum Summer 1996	No	1996	Summer	N/A	Milfoil was discovered on the north end of Lake Massasecum in Bradford. A 10-to-11-acre portion of the lake was closed. Several	N/A, although Bradford abuts Hillsborough to the north	Biological, Public Health, Water Quality	Blaisdell Lake Property Owners Association, Inc. August 3, 2002

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Event	Declared Disaster DR-	Year	Date	FEMA Public Assistance	Area Effects Surrounding Hillsborough	Local Effects Occurring in Hillsborough	Hazard Category	Source
					chemical treatments were tried but failed to eradicate the milfoil. Eventually, the weed was harvested.			
Regional Storms and Floods Oct-Nov 1995	1077	1995	Oct 20-Nov 15	N/A	Four NH counties were damaged by excessive rain, high winds, and flooding, including Merrimack (not Hillsborough).	Hillsborough did not apply for or receive FEMA Public Assistance funding. It is likely several gravel roads were washed out in Deering.	Flood	FEMA, Federal Register
Newbury Terrorism/Active Shooter Nov 1993	No	1993	Nov 1	N/A	A shooting at the Newbury Town Hall was ignited by tax and land disputes. Two town workers were killed, another was wounded, and the gunman shot and killed himself.	N/A for Hillsborough specifically, but this tragedy occurred nearby. Newbury is about 40 miles north of Deering. All NH communities were impacted by this terrible event.	Terrorism/Violence, Mass Casualty, Active Shooter	NH HSEM, CNHRPC
Blizzard Mar 1993	EM-3101 M-H	1993	Mar 13-17	\$0	Blizzards, High Winds and Record Snowfall. It is likely the Central NH Region experienced heavy snow, tree fall. Emergency declaration for Merrimack and Hillsborough Counties.	Hillsborough did not apply for or receive FEMA Public Assistance funding for emergency snow plowing. Deering likely experienced power outages throughout town during this storm.	Winter, Extreme Temp, Wind, Utility	NH HSEM, CNHRPC, FEMA, Deering Hazard Mitigation Committee
Regional Severe Storm-Hurricane Bob Aug 1991	917	1991	Aug 18-20	No data available	Public assistance was available for Hillsborough County and 2 other counties (not Merrimack) because of damages caused by Hurricane Bob. The 2 seacoast counties fared the worst.	As Hillsborough is within Hillsborough County, it is likely experienced heavy rains, tree debris, power outages and possibly some flooding.	Wind, Hurricane	FEMA
Regional Flooding and Severe Storm Aug 1990	876	1990	Aug 7-11	No data available	Moderate to heavy rains caused flooding in eight counties, including Merrimack and Hillsborough Counties. Damage totaled \$2.3m for all counties	Heavy rains cause a four-foot sink hole in front of the Sylvania plant on Main Street.	Flood, Wind	FEMA, NH HSEM, History of Hillsborough, NH, 1960-2000
Hillsborough Severe Thunderstorm Jun 1990	No	1990	Jun	N/A	N/A, although this storm likely occurred in other Hillsborough or Merrimack County	A thunderstorm brought hailstones the size of mothballs, and lightning killed a cow at Ervin Lachut's	Lightning, Wind, Hail, Thunderstorm	History of Hillsborough, NH, 1960-2000

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Event	Declared Disaster DR-	Year	Date	FEMA Public Assistance	Area Effects Surrounding Hillsborough	Local Effects Occurring in Hillsborough	Hazard Category	Source
					communities in Central NH.	farm on Cooledge Road.		
Hillsborough Flooding Mar-Apr 1988	No	1988	Mar-Apr	N/A	N/A, although this flood likely occurred in other Hillsborough or Merrimack County communities in Central NH.	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.	Flood, Wind	History of Hillsborough, NH, 1960-2000
Regional Severe Storms and Flooding Mar-Apr 1987	789	1987	Mar 30-Apr 11	No data available	Flooding caused by snowmelt and intense rain was felt in seven counties, including Merrimack and Hillsborough Counties. Nearly \$5m in damages	As Hillsborough is within Hillsborough County, it is likely experienced heavy rains and possibly some flooding.	Flood, Wind	FEMA
Regional Severe Storms and Flooding Jul 1986	771	1986	Jul 29-Aug 10	No data available	Severe summer storms with heavy rains, tornadoes, flash floods, and severe winds, damaged the road network statewide. Disaster declared in Cheshire, Sullivan, and Hillsborough Counties (not Merrimack).	The severe storm caused power outages and downed trees.	Flood, Wind	FEMA, NH HSEM, Hillsborough Hazard Mitigation Committee
Hillsborough Flooding Jun 1984	No	1984	Jun	N/A	N/A, although this flood likely occurred in other Hillsborough or Merrimack County communities in Central NH.	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, Chevrolet	Flood, Wind	History of Hillsborough, NH, 1960-2000

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4 HAZARD RISK ASSESSMENT

Event	Declared Disaster DR-	Year	Date	FEMA Public Assistance	Area Effects Surrounding Hillsborough	Local Effects Occurring in Hillsborough	Hazard Category	Source
						dealership body shop was flooded.		
Sanbornton Epicenter Earthquake 4.5M Jan 1982	No	1982	18-Jan-82	N/A	An earthquake originating near in Sanbornton in Belknap County measured 4.5M and was felt in various locations throughout the State. The area it was felt includes all northern Merrimack County and Concord area communities in Central NH.	An earthquake measuring 4.5 on the Richter scale hit Hillsborough. The quake lasted for forty seconds, but no major damage was reported.	Earthquake	Earthquake rack.com, History of Hillsborough, NH, 1960-2000
Hillsborough Wildfire May 1980	No	1980	17-May-80	N/A	N/A	A forest fire on Thompson Mountain destroyed 60 acres of forest. While the fire may have been started by a campfire, conditions were ripe for the fire to spread rapidly.	Wildfire, Fire	History of Hillsborough, NH, 1960-2000
Concord Beaver Meadow Tornado Jul 1979	No	1979	Jul 27	N/A	In Concord, a small twister was sighted at Beaver Meadow, where 13 trees were toppled, including a 100-foot-tall pine. The duration was about 15-20 seconds.	N/A, although Concord is 3 communities to the east of Hillsborough	Wind, Tornado	Concord Monitor
Blizzard of 1978 Feb 1978	No	1978	Feb 5-7	N/A	RSI Index of Category 5 (Extreme). This snowstorm is described as "a natural disaster of major proportions" and stunned all New England. The storm was caused by an intense coastal Nor'easter that produced winds more than hurricane force and very high snow totals. Most of southern New England received more than three feet of snow, 25-33" in NH and higher throughout New England. Abandoned cars along roadways immobilized infrastructure and blocked major interstates. For over a	Although it is unknown what Hillsborough experienced, it is likely many of the same depths occurred.	Extreme Temperatures, Severe Snow Storms, Windchill, Power Failure	American Meteorological Society, Northeast States Emergency Consortium

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Event	Declared Disaster DR-	Year	Date	FEMA Public Assistance	Area Effects Surrounding Hillsborough	Local Effects Occurring in Hillsborough	Hazard Category	Source
					week, New England remained paralyzed by the storm. All of New Hampshire was impacted. Governor Meldrim Thomson Jr. declared a state of emergency.			
Regional River Ice Jams Mar 1977	No	1977	Mar 14	N/A	In the Central NH region in March of 1977, ice break-up caused a major jam in the Suncook River, causing flooding both in Allenstown and Pembroke. Homes and roads were flooded. More than 100 buildings were evacuated in Allenstown and Pembroke combined. In the State, an ice jam caused major disruption to the road networks because of road washouts.	It is likely this event impacted Hillsborough also on the Contoocook River, but there is no specific recollection by HMC members.	River, Ice Jam, Flood, Winter, Extreme Temps, Debris Impacted Infrastructure	US Army Corps of Engineers, CNHRPC
Hillsborough Beards Brook Ice Jam 1977	No	1977	---	N/A	N/A	An ice jam blocked Beard's Brook causing it to flood for 200 feet.	Ice Jam, Extreme Temperatures, Debris Impacted Infrastructure	History of Hillsborough, NH, 1960-2000
Regional Severe Storms and Flooding Jul 1973	399	1973	Jul 11	No data available	All counties in the State of NH experienced storm damage and were declared disaster areas, including Merrimack and Hillsborough Counties.	No information available	Flood, Wind	FEMA
Quebec Earthquake 4.8M Jun 1973	No	1973	15-Jun	N/A	An earthquake originating near the Quebec border at a scale of 4.8 was felt in various locations throughout NH.	N/A, although some Hillsborough residents may have felt the effects.	Earth, Earthquake	Northeast States Emergency Consortium, CNHRPC
Hazard Events Before 1973								
Regional Earthquake Dec 1970	No	1970	Dec 25	N/A	The origin and magnitude are unknown but likely impacted the Central NH Region.	Some Hillsborough residents may have felt the earthquake effects.	Earth, Earthquake	CNHRPC, Earthquake-track.com, Hillsborough Hazard Mitigation Committee

Event	Declared Disaster DR-	Year	Date	FEMA Public Assistance	Area Effects Surrounding Hillsborough	Local Effects Occurring in Hillsborough	Hazard Category	Source
Hillsborough Tornado Aug 1968	No	1968	Aug 20	N/A	N/A, although it is likely other communities experienced wind damage in the Central NH region in Hillsborough County.	The Hillsborough Town History describes this tornado as “a freak twister, lasting only several minutes, ripped a crazy course through Hillsborough with nightmarish terror and damage.” This tornado inflicted severe tree damage in its path from Bear Hill to the Sodom area in Hillsborough to Weare. It also lifted the roof off a building where 17 girls were camping on East Hillsborough Road. At the Peter Wood Farm, maples planted during the Civil War were uprooted and some automobiles had been picked up. The barn also went down, and debris was scattered all over. A section of the barn was found later near the Weare Reservoir, a mile, and a half away.	Wind, Tornado	Hillsborough Hazard Mitigation Committee
Regional Older Hurricanes 1954-1991	No	1954	to 1991	N/A	Many older hurricanes have impacted New Hampshire including the 1954 – 1991 Hurricanes: Carol on August 31, 1954 (tree and crop damage), Edna on September 11, 1954, Donna on April 12, 1960 (heavy flooding), Doria on August 28, 1971, Bell on August 10, 1976, Gloria on September 27, 1985, and Bob in 1991.	Hurricane Carol (1954) did not cause nearly as much damage as the Hurricane of 1938; however, some damage was done to roads. Several other hurricanes have impacted NH and may have impacted Hillsborough, including Donna (September 1960), Gloria (September 1985), and Bob (August 1991), but their impact was not	Wind, Flood, Power Failure	NH Homeland Security and Emergency Management , Hillsborough Hazard Mitigation Committee

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Event	Declared Disaster DR-	Year	Date	FEMA Public Assistance	Area Effects Surrounding Hillsborough	Local Effects Occurring in Hillsborough	Hazard Category	Source
						severe. Some heavy rains most likely occurred during these events.		
Regional Snowstorm and Rapid Snowpack Melt Mar 1953	No	1953	Mar	N/A	Similar rain or snowstorms and rapid snowpack melt likely impacted the Central NH region. The highest level of water in the Blackwater Dam was measured, with the capacity at 93%. No flooding was reported. Uncertain as to exactly what type of storm caused this effect. A total of nearly 8" of precipitation in March 1953. The Hopkinton-Everett Flood Control Reservoir (1963) has not yet been constructed for this event. Contoocook River flooding was likely experienced	Local river flooding, including the Contoocook River in Hillsborough, likely occurred.	Flood, Debris	FEMA, NH HSEM, US Army Corps of Engineers, CNHRPC
10 Severe Snowstorms, mid 1900s 1940-1978	No	1940	to 1978	N/A	Ten severe snowstorms are documented in south-central New Hampshire during this time span, February 14-15, 1940 (depths over 30" and high winds), February 14-17, 1958 (20-33"), March 18-21, 1958 (22-24"), March 2-5, 1960 (up to 25"), January 18-20, 1961 (up to 25", blizzard conditions), January 11-14, 1964 (up to 12"), January 29-31, 1966 (up to 10"), February 22-28, 1969 (24-98", slow-moving storm), December 25-28, 1969 (12-18"), January 19-21, 1978 (up to 16"). Accumulations ranged from 10-33 inches in the area and even to 98 inches in the western portion of the State.	Although it is unknown what Hillsborough experienced, it is likely many of the same depths occurred for some of these storms.	Extreme Temperatures, Severe Snow Storms, Ice, Windchill, Power Failure	American Meteorological Society

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Event	Declared Disaster DR-	Year	Date	FEMA Public Assistance	Area Effects Surrounding Hillsborough	Local Effects Occurring in Hillsborough	Hazard Category	Source
Regional Earthquake Dec 1940	No	1940	Dec 20-24	N/A	The earthquake was reportedly felt in all of New Hampshire. The greatest earthquake felt in all of New Hampshire caused “a heavy rumble” and “was accompanied by the rattling of windows and the crashing of dishes” in the Central NH region.	Hillsborough residents may have felt shaking or rattling and may have heard loud noises.	Earth, Earthquake	CNHRPC, Local Histories
Hillsborough Hurricane of 1938 Sept 1938	No	1938	Sep 21	N/A	Hurricane made landfall as a 3 on the Saffir-Simpson Scale, killed about 682 people and damaged or destroyed over 57,000 homes. Most deadly New England hurricane. Central New Hampshire was inundated with water. Downed trees caused extensive damage to homes, businesses, and community infrastructure. President Roosevelt ordered emergency aid be sent to NH, including Merrimack County	One of the worst natural disasters to hit Hillsborough was the Hurricane of 1938; the Hillsborough Town History describes the town as a disaster area. According to one town historian, it rained heavily for days preceding the hurricane. The Hillsborough Dam went out. Town History states that the “damage was unbelievable”. It was as if a tidal wave was roaring down the Piscataquog River, flooding fields, roads, taking out bridges, and tearing down trees and buildings. The volume of water washed out the Weare Dam. Roads were flooded, preventing access to the outside world, and shutting down the schools. The extensive flooding in Hillsborough became vital factors in the future flood control measures taken in the State. When this hurricane hit, the	Wind, Flood	Wikipedia, Concord Monitor, Freak Winds of New Hampshire, Hillsborough Hazard Mitigation Committee, History of Hillsborough, NH, 1921-1963

Event	Declared Disaster DR-	Year	Date	FEMA Public Assistance	Area Effects Surrounding Hillsborough	Local Effects Occurring in Hillsborough	Hazard Category	Source
						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. 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		
Hillsborough Flood of 1936 Mar 1936	No	1936	Mar 11-21	N/A	Simultaneous high snowfall totals, heavy rains, and warm weather combined to hit all New England. Floods killed 24 people, caused \$133,000,000 in damage, and made 77,000 people homeless in New England. The great flooding of 1936 resulted from heavy rains and rapid snowpack melt. Snow north of Concord contributed to the higher waters in the Winnepesaukee, Contoocook and Pemigewasset Rivers that were largely responsible for the destruction in Concord and the surrounding	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,	Flood, Ice Jams, Rapid Snowpack Melt	Concord Monitor, Union Leader, Flood Waters, New Hampshire 1936, Army Corps of Engineers Ice Jam Database, History of Hillsborough, NH, 1921-1963

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Event	Declared Disaster DR-	Year	Date	FEMA Public Assistance	Area Effects Surrounding Hillsborough	Local Effects Occurring in Hillsborough	Hazard Category	Source
					area. NH issued boil water warnings to everyone.	but there was extensive property damage.		
Hillsborough Flood of 1921 Jul 1921	No	1921	Jul 4	N/A	N/A, although this flood likely occurred in other Hillsborough or Merrimack County communities in Central NH.	On July 4, 1921 an unusually cold day for summer was also the day of heavy flooding in West Hillsborough. There was a frost in the morning and the temperature did not reach above forty degrees.	Flood, Extreme Temperatures, Cold	Hillsborough Hazard Mitigation Committee
Hillsborough/Deering Wildfire 1911	No	1911	---	N/A	Regional fire, example of mutual aid with Deering	On Sodom Hill, this fire covered five hundred (500) acres and caused \$24,000 in damage, destroying one home, and endangering many others, causing some residents to pack up their belongings in case they had to flee their homes. Residents fought this fire for 3 or 4 weeks before a light rain finally helped to put it out. The Town History states, "James Locke, Hillsborough Fire Warden, was praised for the masterly manner in which he organized the plans, especially with the backfire by Dudley Pond, that culminated in stopping this fire that had seemed beyond all human control." The Hillsborough Town History also describes this as an extremely dry year.	Fire, Wildfire	Deering Hazard Mitigation Committee

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Event	Declared Disaster DR-	Year	Date	FEMA Public Assistance	Area Effects Surrounding Hillsborough	Local Effects Occurring in Hillsborough	Hazard Category	Source
Merrimack County Earthquake Nov 1884	No	1884	Nov 23	N/A	The earthquake was reportedly felt in in an area of 14,000 square miles, in all of Merrimack County. Two moderate earthquakes shook the Merrimack County area, causing damages to foundations.	It was unknown what effects Hillsborough residents experienced, if any.	Earth, Earthquake	CNHRPC, NH Homeland Security and Emergency Management
TOWN ADD OLDER EVENTS HERE								

Source: Compilation of Events by Hillsborough Hazard Mitigation Committee; CNHRPC

Description and Magnitude of Hazards

A compilation of past hazards that have occurred in Hillsborough and the Central NH Region area is provided in the prior Table of **Local and Area Hazard Events**. **Existing and Susceptible Hazard Locations in Town** are areas to watch, areas of particular susceptibility and may be vulnerable to future events. **Potential Future Hazards** are determined based on the past hazard events, possibilities, and existing issues in Town to provide focus to future potential problem areas and to help with mitigation action development and are provided in the **Potential Future Hazards** section.

Each hazard is generally described and then is noted how and where it could occur in Hillsborough. For all hazards examined in this Plan, a table of the **Hazard Locations in Town** and the **Potential Future Hazards** is provided at the end of this Plan Chapter.

Cumulative hazard events were researched using a wide variety of sources for the **original Hillsborough Hazard Mitigation Plan 2004** and the **2010** and **2017 Plan Updates** which were the basis for many of the past disaster events and then were updated to the present day. The **2017 Plan** provided recent information on many of the extreme disasters experienced between **2005-2008**. Sources and techniques included interviewing local townspeople, researching Town Histories and related documents, and collecting information from governmental or non-profit websites. Presidentially declared disasters or other significant hazard events are described for the surrounding area or Merrimack County for the **Hazard Mitigation Plan Update 2022** and some of them may have affected the community. These disasters were also considered by the Committee when determining the risk evaluation.

Committee member experiences, knowledge, and recollections generally comprise the **Local and Area Hazard Events** and **Hazard Locations in Town**. While additional hazards might have occurred in Town, those events in the Plan are what the Committee chose to list, or were familiar with to list, to comprise the hazard events within the in Tables. The same is true for the **Potential Future Hazards** section.

Numeric of Probability and Severity	CONCERN SUMMARY	Numeric of Overall Risk Score
1	LOW	1 - 4.9
2	MEDIUM	5 - 7.9
3	HIGH	8 - 11.9
4	HIGH	12 - 16

EARTH HAZARDS

Earth hazards include geologic events such as the small earthquake NH residents experience. The Central NH area is seismically active and small earthquakes (less than **2.5** magnitude on the Richter Scale) occur about **1-2** times per year. Landslides can occur because of earthquakes, rain, flooding and result in erosion along roadways and watercourses.

Radon is a naturally occurring radioactive gas with carcinogenic properties. The gas is a common problem in many states, including New Hampshire, seeping into homes from basements. 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. Radon is no longer being addressed by the [State of New Hampshire Multi-Hazard Mitigation Plan 2018](#) as no new studies have made specific data available. It is generally known that radon exists throughout in the State and in communities, including the Central NH Region. Arsenic is a new concern that often co-occurs with radon. Radon is known to be present throughout New Hampshire and is addressed on an individual basis, no longer addressed in the **Hillsborough Hazard Mitigation Plan** because of the lack of State monitoring and available action.

There are several types of **EARTH** hazards examined in the **Hazard Identification and Risk Assessment**:

Main Hazard Category	Specific Hazards Included		
EARTH	DROUGHT	EARTHQUAKE	LANDSLIDE Soil, Rockslide or Excavation Areas

Drought

The overall ratings of **Drought** in Hillsborough from the **HIRA** are:

Natural, Technological, Human Hazard Categories	Probability of Occurrence in 10 Years (1-4)	Human Injury Impact (1-4)	Essential Services or Infrastructure Impact (1-4)	Property Damage or Economic Impact (1-4)	OVERALL RISK (1-16)
DROUGHT	4 HIGH	2 MEDIUM	1 LOW	2 MEDIUM	6.7 MEDIUM

A drought is defined as a long period of abnormally low precipitation, especially one that adversely affects growing or living conditions. Droughts are becoming less rare in New Hampshire than they have been in the past. They have different, widespread damages compared with 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 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 and commonly cause diminished water supply because ground water discharge to streams and rivers maintains streamflow during extended dry periods.

In the case of drought, residential (dug wells especially) and Town water supplies would be threatened. The [Hillsborough Water Works](#) has the capability to implement or recommend volunteer water restrictions during dry conditions within the district area. The remaining residences, non-residential buildings and Town facilities rely either on community water systems pumped from bedrock or on individual well water systems which are not easily replenished during periods of drought. During the **2015-2020** drought period, many residences notified the Town of their dug wells going dry. The residents either made private arrangements for potable water or they dug new bedrock wells. All farms, orchards, tree

farms, and conservation areas in Town would be affected by drought. Additionally, wildfires have the potential of being more severe and commonplace during periods of drought, more difficult to contain. The Fire Department uses larger water sources like the Merrimack, Suncook, and Soucook Rivers for pumping into tankers.

Magnitude of Drought

Table 13 displays overall drought magnitude as measured by the US Drought Monitor (USDM) and Palmer Hydrological Drought Index (PHDI), the extent of hydrological drought in the form of long-term, cumulative monthly moisture conditions. The weekly [US Drought Monitor for NH](https://droughtmonitor.unl.edu/AboutUSDM/AbouttheData/DroughtClassification.aspx) can be accessed online. The Palmer indices are developed by algorithms taking into consideration precipitation, temperature data, and the local Available Water Content (AWC) of the soil.

Table 13
US Drought Monitor Intensity Scale

Category	Description	Description of Possible Impacts	Palmer Drought Severity Index (PDSI)
D0	Abnormally Dry	Going into drought: - Short-term dryness, slow planting, growth of crops or pastures Coming out of drought: - Some lingering water deficits - Pastures or crops not fully recovered	-1.0 to -1.9
D1	Moderate Drought	- Some damage to crops, pastures - Streams, reservoirs or wells low, some water shortages developing or imminent - Voluntary water use restrictions requested	-2.0 to -2.9
D2	Severe Drought	- Crop or pasture losses likely - Water shortages common - Water restrictions imposed	-3.0 to -3.9
D3	Extreme Drought	- Major crop/pasture losses - Widespread water shortages or restrictions	-4.0 to -4.9
D4	Exceptional Drought	- Exceptional and widespread crop/pasture losses - Shortages of water in reservoirs, streams and wells creating water emergencies	-5.0 or less

Source: <https://droughtmonitor.unl.edu/AboutUSDM/AbouttheData/DroughtClassification.aspx>
as compiled by CNHRPC, accessed 02-22-19

Earthquake

The overall ratings of **Earthquake** in Hillsborough from the **HIRA** are:

Natural, Technological, Human Hazard Categories	Probability of Occurrence in 10 Years (1-4)	Human Injury Impact (1-4)	Essential Services or Infrastructure Impact (1-4)	Property Damage or Economic Impact (1-4)	OVERALL RISK (1-16)
EARTHQUAKE	2 MEDIUM	1 LOW	1 LOW	1 LOW	2.0 LOW

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 possibly snow avalanches, which are not considered relevant to Hillsborough's geography. 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 scales such as the Richter scale and Mercalli scale. Geologic events are often associated with California, but New England is considered a moderate risk earthquake zone. New Hampshire experiences regular, minor earthquakes with its bedrock geology.

Magnitude of Earthquake

Earthquake hazard magnitude can be measured by the Richter Scale as shown in **Table 14**, just as its intensity can be measured by the Modified Mercalli Instrumental Intensity (MMI) scale. The two scales do not correlate consistently among sources but utilizing a combination of scales and descriptions on USGS and NOAA sites, **Table 14** approximates the Richter to Mercalli comparison. For practical purposes, descriptions of potential impacts to people, furnishings, the built environment and the natural environment are provided to better place earthquake magnitude in perspective.

Table 14

Modified Mercalli and Richter Magnitude Scales

Approx Richter Magni- tude Scale	Mercalli Instru- mental Intensity Scale	Damage Category	Perceived Shaking	Potential Impacts			
				People's Reaction	Furnishings	Built Environment	Natural Environment
< 3	I	Instrumental	Not felt	Not felt.	N/A	Passing truck vibrations and noises	Changes in level and clarity of well water are occasionally associated with great earthquakes at distances beyond which the quakes are felt by people
3 – 3.4	II	Just Perceptible	Weak	Felt by a few.	Delicately suspended objects may swing.	N/A	Trees and bodies of water sway.
3.5 - 4	III	Slight	Weak	Felt by several. Vibrations like a truck passing.	Hanging objects may swing appreciably. Vehicles rocked slightly.	N/A	N/A
4.1 – 4.4	IV	Moderate	Light	Felt by many. Sensation like heavy truck striking building.	Dishes rattle. Vehicles rocked noticeably.	Walls creak, windows rattle.	N/A
4.5 – 4.8	V	Rather Strong	Moderate	Felt by nearly all. Frightens a few.	Pictures swing out of place; small objects move; a few objects fall from shelves within the community.	A few instances of cracked plaster and cracked windows in the community.	Trees and bushes shaken noticeably.
4.9 – 5.4	VI	Strong	Strong	Frightens many. People move unsteadily	Many objects fall from shelves.	A few instances of fallen plaster, broken windows and damaged chimneys within the community.	Some fall of tree limbs and tops, isolated rockfalls and landslides, and isolated liquefaction.
5.5 - 6	VII	Very Strong	Very strong	Frightens most. Some lose balance.	Heavy furniture overturned	Damage negligible in buildings of good design and construction but considerable in some historic, poorly built or badly designed structures; weak chimneys broken at roof line, fall of unbraced parapets.	Tree damage, rockfalls, landslides, and liquefaction are more severe and widespread with increasing intensity. Water is stirred and muddy.
6.1 – 6.5	VIII	Destructive	Severe	Many find it difficult to stand	Very heavy furniture moves conspicuously.	Damage slight in buildings designed to be earthquake resistant but	N/A

4 HAZARD RISK ASSESSMENT

Approx Richter Magni- tude Scale	Mercalli Instru- mental Intensity Scale	Damage Category	Perceived Shaking	Potential Impacts			
				People's Reaction	Furnishings	Built Environment	Natural Environment
						severe in historic or some poorly built structures. Widespread fall of chimneys, walls and monuments. Powerlines fallen.	
6.6 - 7	IX	Ruinous	Violent	Some forcibly thrown to the ground	N/A	Damage considerable in some buildings designed to be earthquake resistant; buildings shift off foundations if not bolted.	N/A
7.1 – 7.3	X	Disastrous	Extreme	N/A	N/A	Some well-built wooden structures destroyed. Most ordinary masonry structures collapse; damage moderate to severe in many buildings designed to be earthquake resistant. Dams destroyed.	N/A
7.4 – 8.1	XI	Very Disastrous	N/A	N/A	N/A	Few if any masonry structures remain standing. Bridges destroyed. Rails bent greatly. Wide cracks in ground. Pipelines break	Waves seen on the ground
> 8.1	XII	Catastrophic				Total damage. Lines of sight and level are distorted. Objects thrown into air.	Waves seen on the ground

Source: National Oceanic and Atmospheric Administration (NOAA), USGS and other sources compiled by CNHRPC Feb 2021

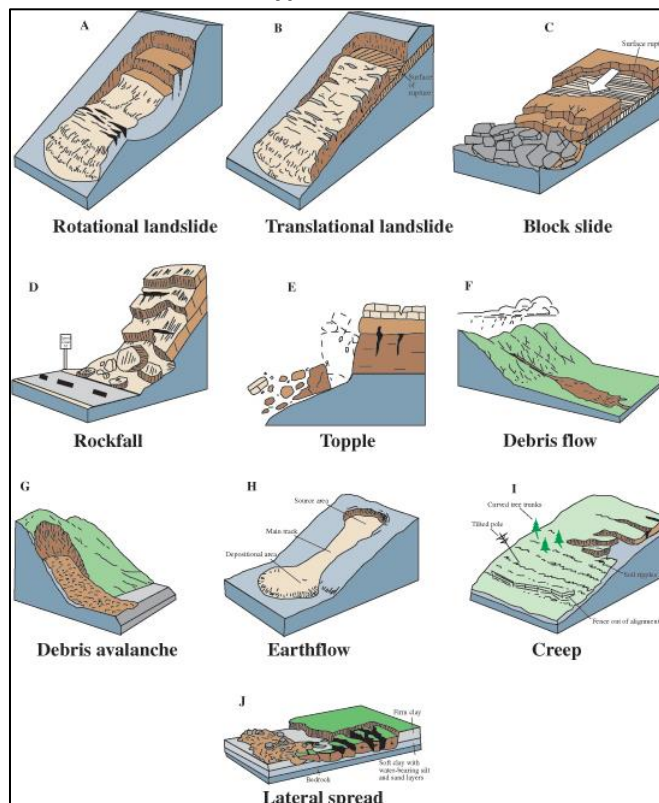
Landslide

The overall ratings of **Landslide** in Hillsborough from the **HIRA** are:

Natural, Technological, Human Hazard Categories	Probability of Occurrence in 10 Years (1-4)	Human Injury Impact (1-4)	Essential Services or Infrastructure Impact (1-4)	Property Damage or Economic Impact (1-4)	OVERALL RISK (1-16)
LANDSLIDE	1 LOW	1 LOW	1 LOW	1 LOW	1.0 LOW

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. Erosion of soil may also contribute to landslides. **Landslides** could damage or destroy State roads or local Class V roads, electrical and telephone lines, buildings, sewers, bridges, dams, forests, parks, and farms and landslides are dangerous to people. A display of different types of landslides is shown in **Figure 6**.

Figure 6
Basic Types of Landslides



Source: US Geological Survey (USGS)

Magnitude of Landslide

There is no known standardized measurement of landslide magnitude available.

EXTREME TEMPERATURE HAZARDS

Extreme temperature hazards include diverse hazards such as severe cold or windchill, excessive heat, and heatwaves. Excessive heat or extreme cold can create other hazards such as public health issues, utility outages. The severity of these hazards is influenced by New Hampshire's changing climate and severe weather systems. This category is meant to encompass all the hazards which can be influenced by the extreme weather temperatures that New England, New Hampshire, the Central NH Region, and Hillsborough are experiencing.

There are several types of **EXTREME TEMPERATURE** hazards examined in the **Hazard Identification and Risk Assessment**:

Main Hazard Category	Specific Hazards Included
EXTREME TEMPERATURES	EXTREME TEMPERATURES Excessive Heat, Heat Wave, Cold or Wind Chill

The environmental temperature spectrum is addressed under extreme temperatures, from very cold to very hot.

The overall ratings of **Extreme Temperatures** in Hillsborough from the **HIRA** are:

Natural, Technological, Human Hazard Categories	Probability of Occurrence in 10 Years (1-4)	Human Injury Impact (1-4)	Essential Services or Infrastructure Impact (1-4)	Property Damage or Economic Impact (1-4)	OVERALL RISK (1-16)
EXTREME TEMPERATURES Excessive Heat, Heat Wave, or Cold or Wind Chill	4 HIHG	4 HIGH	1 LOW	3 HIGH	10.7 HIGH

Extreme Heat or Heatwave

A heat wave is a period of abnormally and uncomfortably hot and unusually humid weather that typically lasts two or more days. The National Weather Services' Heat Index is used to measure humidity against temperature to develop a "real feel" temperature. Heat disorders on the body are quick and can be deadly. These now normal hot temperatures in the summer are commonly known as **excessive heat**.

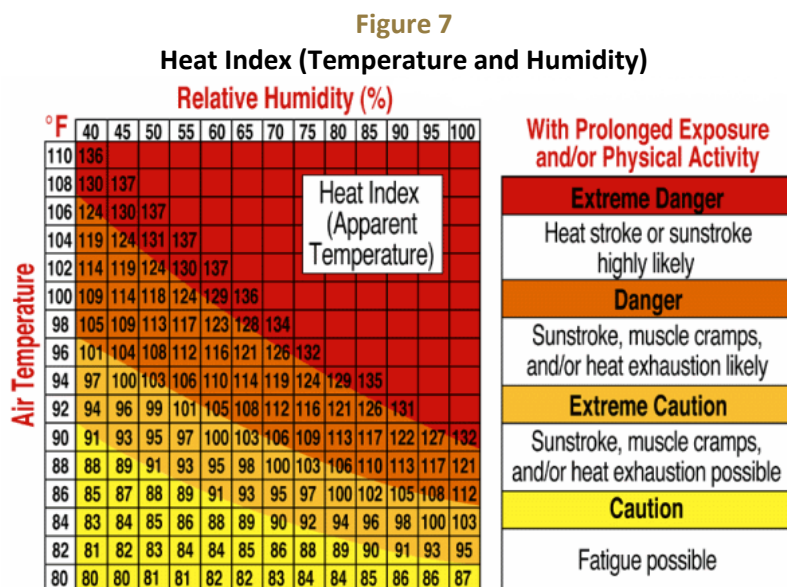
The National Weather Service categorizes a **Hot Day** when temperatures reach **90°** or warmer. An official **Heat Wave** is defined as three or more consecutive days with the temperature reaching or exceeding **90°**.

Extreme heat weather is forecasted with the following levels of high temperatures. **Excessive Heat Outlooks** are issued when the potential exists for an excessive heat event in the next **3-7** days. An Outlook provides information to those who need considerable lead-time to prepare for the event.

<p>🔥 Excessive Heat Watch</p> <p>BE PREPARED</p>	<p>A Heat Watch is issued when conditions are favorable for an excessive heat event in the next 24 to 72 hours. A Watch is used when the risk of a heat wave has increased but its occurrence and timing is still uncertain.</p>
<p>🔥 Excessive Heat Warning</p> <p>BE AWARE</p>	<p>An Excessive Heat Warning is issued within 12 hours of the onset of extremely dangerous heat conditions. The general rule of thumb for this Warning is when the maximum heat index temperature is expected to be 105°F or higher for at least 2 days and nighttime air temperatures will not drop below 75°F; however, these criteria vary across the country, especially for areas not used to extreme heat conditions. If you don't take precautions immediately when conditions are extreme, you may become seriously ill or even die.</p>
<p>🔥 Heat Advisory</p> <p>TAKE ACTION</p>	<p>A Heat Advisory is issued within 12 hours of the onset of extremely dangerous heat conditions. The general rule of thumb for this Advisory is when the maximum heat index temperature is expected to be 100°F or higher for at least 2 days, and nighttime air temperatures will not drop below 75°F; however, these criteria vary across the country, especially for areas that are not used to dangerous heat conditions. Take precautions to avoid heat illness. If you don't take precautions, you may become seriously ill or even die</p>

Magnitude of Excessive Heat of Heat Wave

Excessive heat is measured by the [NWS Heat Index and the NWS Excessive Heat Warning Classifications](#). As both the air temperature and the humidity rise, so will the danger level to people. Heat disorders will become more likely with prolonged exposure or strenuous activity as shown in **Figure 7**.



Source: weather.gov

The **Caution** stage describes how fatigue is possible, while **Extreme Caution** temperatures can result in sunstroke, muscle cramps, or heat exhaustion. The **Danger** temperatures could cause sunstroke, while at the **Extreme Danger** temperatures, heatstroke or sunstroke is likely according to the humidity and temperature Heat Index. Since heat index values were devised for shady, light wind conditions, exposure to full sunshine can increase heat index values by up to **15°F**. Also, strong winds, particularly with very hot, dry air, can be extremely hazardous.

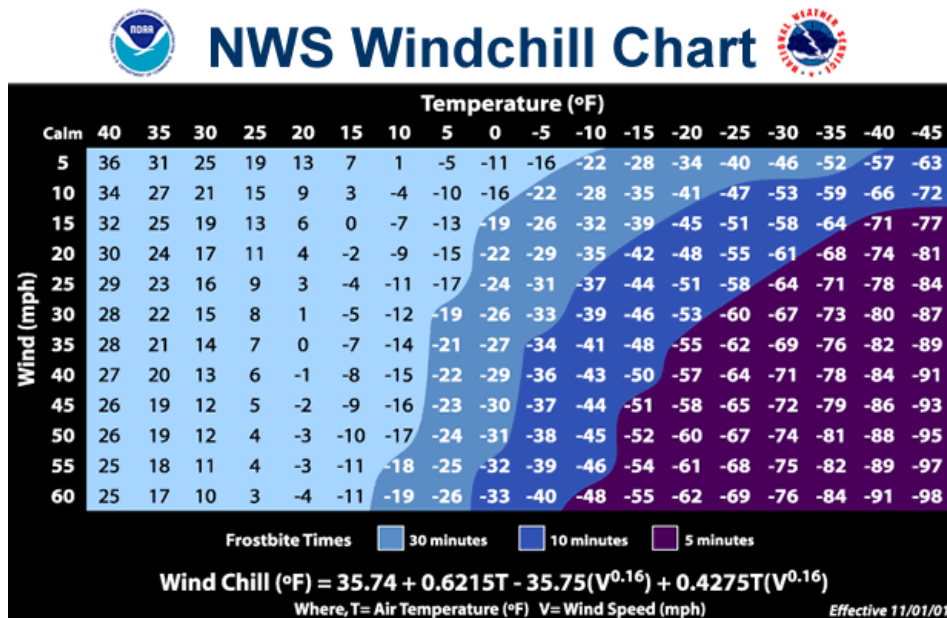
Extreme Cold or Wind Chill

Extreme cold temperatures are associated with continental Arctic air masses. The actual temperatures reached depend specifically on the nature of the cold air mass and where it originated. In general, those from the Arctic regions are the coldest. Though cold temperatures are dangerous, they become more so in conjunction with strong winds. The combination produces a wind-chill factor, which is heat loss measured in Watts per meter squared (Wm-2). A wind-chill factor of **1400** Wm-2 is equivalent to a temperature of **-40° F**. At **2700** Wm-2, exposed flesh freezes within a half-minute.

Magnitude of Extreme Cold or Wind Chill




Extreme cold magnitude can be measured for **windchill** using the **NWS Windchill Temperature (WCT) Index** as displayed in **Figure 8**, measuring the wind and temperature leading to how quickly frostbite can occur. The **extreme cold weather** warning stages describe the potential impacts of the weather.

Figure 8
Windchill Temperature (WCT) Index







Source: [National Weather Service](https://www.weather.gov/eaa/windchill)

Cold weather warnings incrementally warn people of the dangers of **extreme cold**. The [National Weather Service](#) provides watches, advisories, and warnings.

 Wind Chill Watch BE PREPARED	NWS issues a wind chill watch when dangerously cold wind chill values are possible. As with a warning, adjust your plans to avoid being outside during the coldest parts of the day. Make sure your car has at least a half tank of gas and update your winter survival kit.
 Wind Chill Advisory BE AWARE	NWS issues a wind chill advisory when seasonably cold wind chill values, but not extremely cold values, are expected or are occurring. Be sure you and your loved ones dress appropriately and cover exposed skin when venturing outdoors. A Wind Chill Advisory is issued for New Hampshire when wind chill values are expected to be -20°F to -29°F and winds are greater than 5 mph .
 Wind Chill Warning TAKE ACTION	NWS issues a wind chill warning when dangerously cold wind chill values are expected or are occurring. A Wind Chill Warning is issued for New Hampshire when wind chill values are expected to be -30°F and winds are greater than 5 mph .

In addition to cold winds, the National Weather Service provides **extreme cold** guidance for several stages of weather alerts that are usually directed towards vegetation and crops. However, these freezing stages can also apply to watercourses, to animals kept outdoors or in barns, and to infrastructure such as bridges, dams, and roads (“black ice”).

 Frost Advisory BE AWARE	A Frost Advisory is issued when areas of frost are expected or occurring, posing a threat to sensitive vegetation. Frost develops on clear, calm nights and can occur when the air temperature is in the mid-30°Fs. Each plant species has a different tolerance to cold temperatures.
 Freeze Watch BE PREPARED	NWS issues a Freeze Watch when there is a potential for significant, widespread freezing temperatures (below 32°F) within the next 24-36 hours. A freeze watch is issued in the autumn until the end of the growing season and in the spring at the start of the growing season.
 Freeze Warning TAKE ACTION	When temperatures are forecasted to go below 32°F for a long period of time, NWS issues a Freeze Warning . This temperature threshold kills some types of commercial crops and residential plants.
 Hard Freeze Warning TAKE ACTION	NWS issues a Hard Freeze Warning when temperatures are expected to drop below 28°F for an extended period of time, killing most types of commercial crops and residential plants.

The **extreme cold** is difficult to define because what constitutes **extreme cold** varies in different parts of the country. Generally, in New Hampshire **extreme cold hazards** can arise through a combination of wind chill, below freezing cold temperatures, and winter storm events. In the Northeast, **extreme cold** means temperatures below zero (**-0°F**). Extended **extreme cold** durations are often referred to as cold snaps.

Although New Hampshire residents are used to frosts, freezes and vegetation protection, **extreme cold** may cause water pipes to freeze and burst in homes that are poorly insulated or without enough heat. The demand for additional heating fuel is necessary during **extreme cold** events, and often electricity failure is experienced during winter storms with **extreme cold**. Exposure to cold conditions can cause frostbite or hypothermia and become life-threatening. Infants, children, and elderly people are most susceptible. Most New Hampshire households are become used to winter storm events and use woodstoves, or propane or electric generators to keep homes warm during extreme cold when power failure occurs. Recommendations are to maintain at least **72** hours' worth of fuel, food, water, medical supplies, medications, and warm clothing in a storm emergency kit as well as to keep vehicles fueled.

Frostbite is damage to body tissue caused by **extreme cold**. A wind chill of **-20°F** will cause frostbite in just **30** minutes. Frostbite causes a loss of feeling and a white or pale appearance in extremities, such as fingers, toes, ear lobes or the tip of the nose. Additional exposure can turn the appendage purple, a dangerous condition. If symptoms are detected, get medical help immediately. If help must wait, slowly re-warm affected areas. However, if the person is also showing signs of hypothermia, warm the body core before the extremities.

Hypothermia is a potentially deadly condition when the body temperature drops to less than **95°F** through exposure to **extreme cold**, or extended cold or water submersion. For those who survive, there are likely to be lasting kidney, liver and pancreas problems. Warning signs include uncontrollable shivering, memory loss, disorientation, incoherence, slurred speech, drowsiness and apparent exhaustion. Take the person's temperature and if below **95°F**, seek medical care immediately. If help must wait, place the person into a lukewarm bath to warm the core gradually.

FIRE HAZARDS

Fire can be caused by several agents and can spread rapidly to consume property and endanger lives. This **2022 Plan** examines **lightning**, and **wildfire** (natural) fire sources and places other **fires (vehicles, structure, arson, explosions)** with **Technological Hazards**.

Wildfire is a significant concern and can quickly get out of control without good infrastructure, easily accessible forested backlots and practiced procedures. Lightning or human folly can cause wildfire. Locations of older narrow graveled roads, densely packed residential areas, cul-de-sacs, and roads or areas of Town with only **1** access/egress are among the most vulnerable locations for fire and wildfire hazards. Rural, forested areas of the community or recreation and conservation areas are often the most vulnerable to both **wildfire** and **lightning**.

There are several types of natural **FIRE** hazards examined in the **Hazard Identification and Risk Assessment**:

Main Hazard Category	Specific Hazards Included	
FIRE	WILDFIRE Brushfire, Outdoor Fires or Accidental	LIGHTNING

Wildfire

The overall ratings of **Wildfire** in Hillsborough from the **HIRA** are:

Natural, Technological, Human Hazard Categories	Probability of Occurrence in 10 Years (1-4)	Human Injury Impact (1-4)	Essential Services or Infrastructure Impact (1-4)	Property Damage or Economic Impact (1-4)	OVERALL RISK (1-16)
WILDFIRE Brushfire, Outdoor Fires or Accidental	4 HIGH	3 HIGH	1 LOW	2 MEDIUM	8.0 HIGH

Wildfire is defined as any unwanted and unplanned fire burning in forest, shrub or grass. Wildfires are frequently referred to as forest fires, brush fires, shrub fires or grass fires, depending on their location and size. They often occur during drought and when woody debris on the forest floor is readily available to fuel the fire. The threat of wildfires is greatest where vegetation patterns have been altered by past land-use practices, fire suppression and fire exclusion. Because fire is a natural process, fire suppression can lead to more severe wildfires due to vegetation buildup. With the Town's conservation lands, **wildfire** seems particularly relevant. The burning of brush, permitted or not, can become an uncontrollable brushfire in dry or unsuitable conditions.

Increased severity over recent years has decreased capability to extinguish wildfires. Wildfires are unpredictable and usually destructive, causing both personal property damage and damage to community infrastructure and cultural and economic resources.

Magnitude of Wildfire






Although there are several potential indices, the current standard of measuring wildfire magnitude is utilizing the National Wildfire Coordinating Group (NWCG)'s wildfire classification scale. **Table 15** displays the wildfire classification size per the number of acres burned.

Table 15
National Wildfire Coordinating Group Wildfire Classification Scale

Fire Class	Sizes in Acres
Class A	1/4 acre or less
Class B	> 1/4 acre to < 10 acres
Class C	10 acres to < 100 acres
Class D	100 acres to < 300 acres
Class E	300 acres to < 1,000 acres
Class F	1,000 acres to < 5,000 acres
Class G	5,000 acres or more

Source: National Wildfire Coordinating Group

The [New Hampshire Department of Natural and Cultural Resources Division \(NHDNCR\) of Forest and Lands \(DFL\)](#) helps to promote daily fire danger ratings which community members can readily understand. The Fire Department posts the information in a prominent location, at the Fire Station. The **National Fire Danger Rating System (NFDRS)** categories are as follows:

 Low GREEN	Fire starts are unlikely. Weather and fuel conditions will lead to slow fire spread, low intensity and relatively easy control with light mop-up. Controlled burns can usually be executed with reasonable safety.
 Moderate BLUE	Some wildfires may be expected. Expect moderate flame length and rate of spread. Control is usually not difficult and light to moderate mop-up can be expected. Although controlled burning can be done without creating a hazard, routine caution should be taken.
 High YELLOW	Wildfires are likely. Fires in heavy, continuous fuel such as mature grassland, weed fields and forest litter, will be difficult to control under windy conditions. Control through direct attack may be difficult but possible and mop-up will be required. Outdoor burning should be restricted to early morning and late evening hours.
 Very High ORANGE	Fires start easily from all causes and may spread faster than suppression resources can travel. Flame lengths will be long with high intensity, making control very difficult. Both suppression and mop-up will require an extended and very thorough effort. Outdoor burning is not recommended.
 Extreme RED	Fires will start and spread rapidly. Every fire start has the potential to become large. Expect extreme, erratic fire behavior. NO OUTDOOR BURNING SHOULD TAKE PLACE IN AREAS WITH EXTREME FIRE DANGER.

Lightning

The overall ratings of **Lightning** in Hillsborough from the **HIRA** are:

Natural, Technological, Human Hazard Categories	Probability of Occurrence in 10 Years (1-4)	Human Injury Impact (1-4)	Essential Services or Infrastructure Impact (1-4)	Property Damage or Economic Impact (1-4)	OVERALL RISK (1-16)
LIGHTNING	4 HIGH	1 LOW	1 LOW	2 MEDIUM	5.3 MEDIUM

The [NOAA National Severe Storms Laboratory defines lightning](#) as: a giant spark of electricity in the atmosphere between the clouds, the air, or the ground. In the early stages of development, air acts as an insulator between the positive and negative charges in the cloud and between the cloud and the ground. When the opposite charges build up enough, this insulating capacity of the air diminishes, forming a rapid discharge of electricity (lightning). The flash of lightning temporarily equalizes the charged regions in the atmosphere until the opposite charges build up again.

All thunderstorms contain lightning, but not all lightning is caused by thunderstorms. Lightning can also be seen during volcanic eruptions, surface nuclear detonations, and heavy snowstorms. 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 strikes can cause death, injury, and property damage. Lightning is often referred to as the “underrated killer.” Lightning can strike where it is not raining, or even before rain reaches the ground.

There are four main types of lightning:

- ➞ Cloud-to-ground (CG) strike is the most common type of lightning, reaching toward the surface.
- ➞ Cloud flashes like intra-cloud (IC) or sheet lightning occur either in the same cloud or from cloud-to-air (CA) and do not reach the ground.
- ➞ Cloud-to-cloud (CC) or spider lightning travel among and illuminate multiple clouds.
- ➞ Transient luminous events (TLE) are rarely observed from the ground and occur in the high atmosphere above the storms.

Where the CG lightning will strike downward, a channel current of **1-2** inches develops toward the earth’s surface. As lightning nears the ground, objects like trees, telephone poles, and buildings start sending up static electricity sparks to meet this channel. Taller objects such as trees and historic buildings with cupolas, or hills are more likely than the surrounding ground to produce one of the connecting sparks and so are more likely to be struck by lightning. Yet lightning can strike the ground in an open field even if the tree line is nearby. The National Weather Service more provides information about [lightning safety](#).

Magnitude of Lightning

Lightning can be measured to determine how likely it may be for starting fires. Using a Level system of **1** to **6** corresponding with storm development and the number of lightning strikes, the [Lightning Activity Level \(LAL\)](#) measures the magnitude of lightning strikes as displayed in **Table 16**.

Table 16
Lightning Activity Level (LAL)

Level 1-6	LAL Cloud and Storm Development	Cloud to Ground Strikes per 5 Minutes	Cloud to Ground Strikes per 15 Minutes
LAL 1	No thunderstorms.	n/a	n/a
LAL 2	Isolated thunderstorms. Light rain will occasionally reach the ground. Lightning is very infrequent, 1 to 5 cloud to ground strikes in a 5- minute period.	1 to 5	1 to 8
LAL 3	Widely scattered thunderstorms. Light to moderate rain will reach the ground. Lightning is infrequent, 6 to 10 cloud to ground strikes in a 5-minute period.	6 to 10	9 to 15
LAL 4	Scattered thunderstorms. Moderate rain is commonly produced. Lightning is frequent, 11 to 15 cloud to ground strikes in a 5-minute period.	11 to 15	16 to 25
LAL 5	Numerous thunderstorms. Rainfall is moderate to heavy. Lightning is frequent and intense, greater than 15 cloud to ground strikes in a 5-minute period.	> 15	> 25
LAL 6	Dry lightning (same as LAL 3 but without rain). This type of lightning has the potential for extreme fire activity and is normally highlighted in fire weather forecasts with a Red Flag Warning.	6 to 10	9 to 15

Source: National Weather Service

FLOOD HAZARDS

Floods are defined as a temporary overflow of water onto lands that are not normally covered by water. Flooding results from the overflow of major rivers and tributaries, storm surges, and/or inadequate local drainage. Floods can cause loss of life, property damage, crop/livestock damage, and water supply contamination. Floods can also disrupt travel routes on roads and bridges. However, floods can be beneficial to the low lying agricultural areas which are used for active farm and by enriching the soil.

Floodplains are usually 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**. This phrase means that there is a **1%** chance of a flood of that size happening in any single year. The **500-year** floods are phrased as **0.2%** annual chance of flood.

Inland floods are most likely to occur in the spring due to the increase in rainfall and melting of snow; however, floods can occur at any time of year. A sudden thaw during 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 drain. Flooding is the most common natural disaster to affect New Hampshire, a common and costly hazard.

Dam Breach, Release or Failure has a close relationship with **Flood Hazards**, uses the NH DES Dam Hazard Classification categories, and has therefore been rated along with the natural hazards.

There are several types of **Flood Hazards** examined in the **Hazard Identification and Risk Assessment**:

Main Hazard Category	Specific Hazards Included	
FLOOD	INLAND FLOODING Rains, Snow Melt, or Flash Floods	RIVER HAZARDS Ice Jams, Scouring, Erosion, Channel Movement or Debris
	DAM FAILURE Water Overtop, Breach, Beaver, etc.	

Inland Flooding

The overall ratings of **Inland Flooding** in Hillsborough from the **HIRA** are:

Natural, Technological, Human Hazard Categories	Probability of Occurrence in 10 Years (1-4)	Human Injury Impact (1-4)	Essential Services or Infrastructure Impact (1-4)	Property Damage or Economic Impact (1-4)	OVERALL RISK (1-16)
INLAND FLOODING Rains, Snow Melt or Flash Floods	4 HIGH	2 MEDIUM	2 MEDIUM	2 MEDIUM	8.0 HIGH

Inland flooding hazards from storms, spring temperatures, rains and more can be measured by Special Hazard Flood Areas (SFHAs) and river gage flood stage heights.

Magnitude of Inland Flooding

Flooding magnitude, or how severe flooding could occur in Hillsborough, can be measured by the following SFHA Flood Zone scale in **Table 17**. “Flood” encompasses all types of flooding including **Rains, Snow Melt, Floods and Flash Floods** and is often the result of other natural hazards, such as **Tropical and Post Tropical, Severe Storms**, etc.

Special Flood Hazard Areas (SFHAs)

Base Flood Elevations (BFEs) are abundant within Central NH along the **Merrimack River, Contoocook River, Blackwater River, Warner River, Soucook River, and Suncook River** on the DFIRMs of **2009** (Hillsborough County) and **2010** (Merrimack County). In Hillsborough (**#330119**) New Hampshire (**33011C**), there are several DFIRMs identifying floodplains. DFIRM panels are not printed when floodplains are not present in an area.

DFIRMs illustrate the location of floodplains as a significant upgrade from the previous series of outdated paper maps, known as FIRMs. These new **2010** maps for Hillsborough are now set on an aerial photography background that displays roads, buildings, forested areas, waterbodies and watercourses. Hillsborough’s Zoning Ordinance references the **2010** maps appropriately as the official DFIRMS. The general Flood Zone types appear in **Table 17**.

Table 17
Special Flood Hazard Area (SFHA) Zones on 2010 DFIRMS

Special Flood Hazard Areas on Hillsborough DFIRMs	
Zone A	1% annual chance of flooding <ul style="list-style-type: none"> • 100-year floodplains <i>without</i> Base Flood Elevations (BFE)
Zone AE (with or without floodways)	1% annual chance of flooding <ul style="list-style-type: none"> • 100-year floodplains <i>with</i> Base Flood Elevations (BFE) • some identified as floodways with stream channel and/or adjacent floodplain areas • areas must be kept free of encroachment so 1% annual chance of flood will not substantially increase flood height
Zone X	0.2% annual chance of flooding <ul style="list-style-type: none"> • 500-year floodplain <i>without</i> Base Flood Elevations (BFE) • sheet flow flooding less than 1-foot deep • stream flooding where the contributing drainage area is less than 1 square mile • areas protected from 100-year floodplains by levees • OR areas determined to be outside the 0.2% annual chance of flood (see DFIRMs)

Sources: FEMA and NH Geographically Referenced Analysis and Transfer System (NH GRANIT) websites

Hillsborough DFIRMs can be viewed online at and downloaded from the [NH Geographically Referenced Analysis and Transfer System \(NH GRANIT\)](#) website. Alternatively, the DFIRMs' respective paper FEMA 2010 Floodplain Maps in the Town Office could be consulted. Should the **Zone A** or **Zone X** or **Zone AE** flood to either the **100**-year or **500**-year level, the DFIRM areas will help **measure the location of the floodplain and potential magnitude of the flood.**

Rapid Snowpack Melt

Warm temperatures and heavy rains cause rapid snowmelt. The water cannot seep into the frozen ground in early spring and so it runs off into streets and waterways. Quickly melting snow coupled with moderate to heavy rains are prime conditions for flooding.

There is the possibility of damages from the rapid snowpack melt because of the flooding from the **Merrimack River, Soucook River, or Suncook River** and the various brooks along the roads, roadside wetlands, and from the culverts directing the watercourses. Locations in Hillsborough that may be vulnerable to rapid snowpack melt include undersized or unmaintained culverts, roads, driveways, slopes, yards or fields, or any of the Town's fast moving brooks or drainage areas. Damage to roads is expected.

Magnitude of Rapid Snowpack Melt

Rapid snowpack melt is a type of flooding. On its own, it has no known magnitude measurement. However, the hazard can share **Flooding's** Special Flood Hazard Areas (SFHAs) table or the list of road washouts found later in this **4 HAZARD RISK ASSESSMENT** chapter.

River Hazards

There are several types of **RIVER** hazards examined in the **Hazard Identification and Risk Assessment:**

Main Hazard Category	Specific Hazards Included
RIVER	RIVER HAZARDS Ice Jams, Scouring, Erosion, Channel Movement or Debris

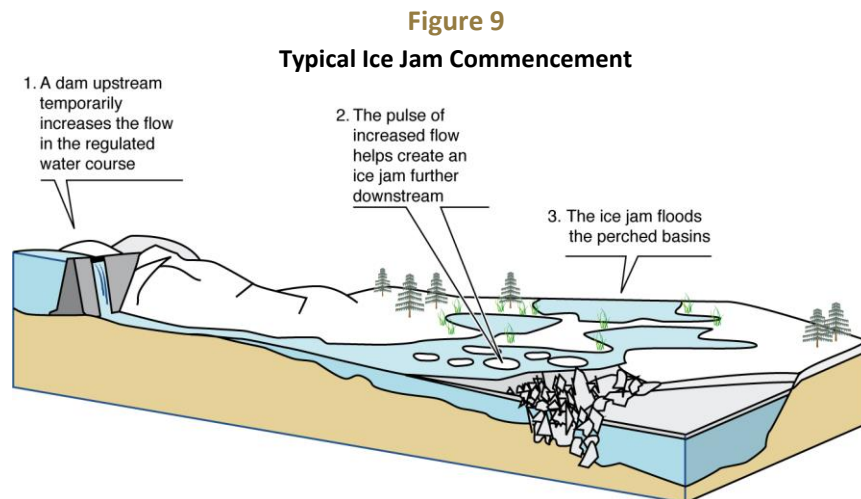
River hazards are considered different from flooding in this **Hazard Mitigation Plan**. They include ice jams, scouring of banks and infrastructure, erosion of banks and shoreline, channel movement, and woody material debris. These types of incidents could occur on large brooks or other watercourses as well as rivers.

The overall ratings of **River Hazards** in Hillsborough from the **HIRA** are:

Natural, Technological, Human Hazard Categories	Probability of Occurrence in 10 Years (1-4)	Human Injury Impact (1-4)	Essential Services or Infrastructure Impact (1-4)	Property Damage or Economic Impact (1-4)	OVERALL RISK (1-16)
RIVER HAZARDS Ice Jams, Scouring, Erosion, Channel Movement or Debris	2 MEDIUM	1 LOW	2 MEDIUM	1 LOW	2.7 LOW

River Ice Jams

Rising waters in early spring often break ice into chunks, which float downstream, pile up and cause 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. A visual of how ice jams often form is displayed in **Figure 9**.



Source: USGS, Internet Accessed May 2015

Magnitude of River Ice Jams

There is no known widely-used magnitude scale for **river ice jams**. River ice jams can cause debris impacted infrastructure when they apply pressure to bridges and dams.

The US Army Corps of Engineers (ACOE) maintains the [Ice Jam Database, Bulletins & Surveys](#) website which locates where known ice jams are presently occurring and where they have occurred in the past. Reports can be generated in various formats so emergency responders can identify the locations of prior ice jams and begin to mitigate the effects of future events.

River Ice Jams in Hillsborough

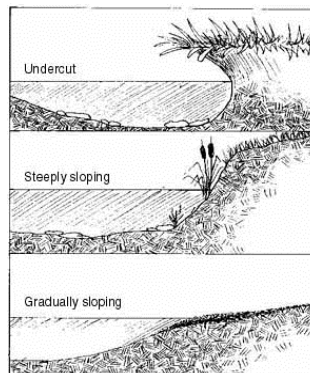
Ice jams have been known to have occurred in the past in sections along the Contoocook River but not in Hillsborough although the potential exists. An ice jam on Beards Brook caused flooding for 200' in the 1980s. Major rivers, including Contoocook, North Branch, Beard Brook and Sand Brook have flow which could have potential ice form and movement during high water levels in spring and during severe rain fall. **River ice jams** may have future potential to occur on the (Contoocook River) Route 9/202 overpass or the (Beard Brook) NH Route 9 overpass, or road, bridge, dam and property damages may occur, such as the Bridge Street Dam and Stone Arch Bridge Park on Contoocook River.

Fluvial Erosion, Bed Scouring and Channel Movement

Fluvial erosion is the wearing away of the river/stream bank and floodway. Bed scouring is the wearing away of the bed of the river or stream, typically shown as a pool type formation at downstream culvert outflows. Watercourses with high elevation change (stream gradient) are particularly prone to flash-flooding conditions and most vulnerable to erosion and scouring. During flooding or even high flow events, rivers can erode their banks and migrate into their floodplains. A migrating river, when channel movement is occurring, has the potential to impact nearby structures (berms, dams, buildings, etc.) or infrastructure such as river or stream crossings (culverts and bridges) or transportation features (roads, drainage structures, rail, etc.) in its migration path.

Fluvial geomorphology is the study of how processes of flowing water in rivers work to shape river channels and the land around them. Fluvial assessments are a collection of field data undertaken within designated river reaches. A **river reach** is a length of stream that has characteristics similar enough that condition data collected within that length is representative of the entire reach. **Figure 10** displays visual bank erosion characteristics. In Hillsborough, fluvial geomorphology is most pertinent to the **Merrimack River, Soucook River, and the Suncook River.**

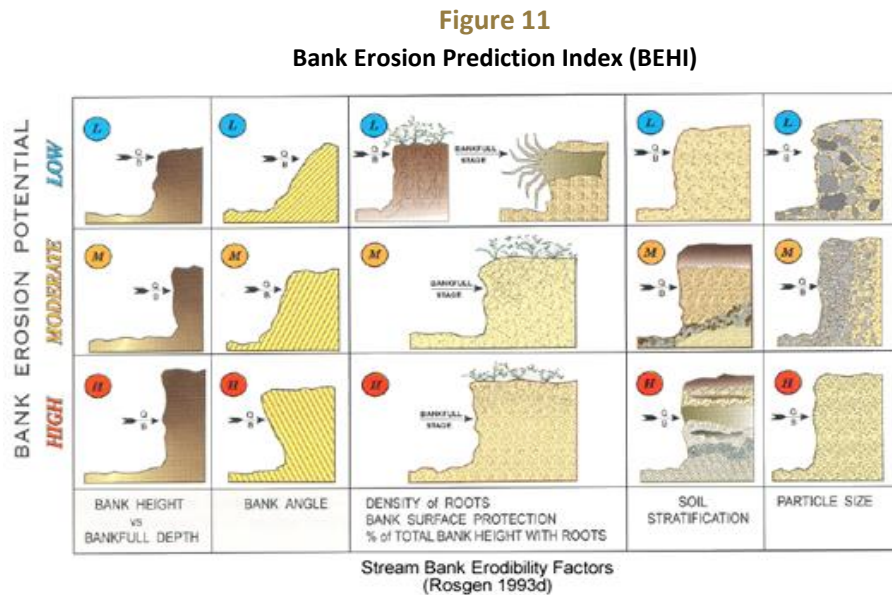
Figure 10
Bank Erosion Characteristics



Source: US Geological Survey (USGS)

Magnitude of (Fluvial) Riverbank Erosion

River and streambank erosion magnitude can be measured by the US EPA Bank Erosion Prediction Index (BEHI), which is used with the Near Bank Stress (NBS) quantification. Taken into consideration for the BEHI are the bank height versus bankfull depth, bank angle, density of roots, soil stratification, and particle size at a river reach. **Figure 11** displays the visual version of the index.



Source: US Environmental Protection Agency (US EPA)

Dam Failure

Dam breach and the resulting failure cause rapid loss of water that is normally impounded by the dam. These kinds of floods are extremely dangerous and pose a significant threat to both life and property as they are quick, unexpected, and if they occur during a flooding event, dam failures can overload an already burdened water channel.

The overall ratings of **Dam Failure** in Hillsborough from the **HIRA** are:

Natural, Technological, Human Hazard Categories	Probability of Occurrence in 10 Years (1-4)	Human Injury Impact (1-4)	Essential Services or Infrastructure Impact (1-4)	Property Damage or Economic Impact (1-4)	OVERALL RISK (1-16)
DAM FAILURE Water Overtop, Breach, Beaver, etc.	1 LOW	4 HIGH	4 HIGH	4 HIGH	4.0 LOW

Magnitude of Dam Failures

Although dam failure is considered a **Technological Hazard**, it is often a secondary hazard caused by flooding conditions and has been rated along with the natural hazards. Classifications of dams and their magnitude of failure can be measured by the [NH DES Dam Hazard Classifications](#) shown in **Table 18**.

Table 18
New Hampshire Dam Hazard Classifications

Dam Classification		
NON-MENACE Structure		Inspection
NM	Means a dam that is not a menace because it is in a location and of a size that failure or misoperation of the dam would not result in probable loss of life or loss to property, provided the dam is: *if certain criteria are met	Every 6 years *
	<ul style="list-style-type: none"> ○ Less than six feet in height if it has a storage capacity greater than 50 acre-feet; ○ Less than 25 feet in height if it has a storage capacity of 15 to 50 acre-feet. 	
LOW Hazard Structure		Inspection
L	Means a dam that has a low hazard potential because it is in a location and of a size that failure or misoperation of the dam would result in any of the following:	Every 6 years
	<ul style="list-style-type: none"> ○ No possible loss of life. ○ Low economic loss to structures or property. ○ Structural damage to a town/city road or private road accessing property other than the dam owner's that could render the road impassable or interrupt public safety services. ○ The release of liquid industrial, agricultural, or commercial wastes, septage, or contaminated sediment if the storage capacity is less than two-acre-feet and is located more than 250 feet from a water body or water course. ○ Reversible environmental losses to environmentally-sensitive sites. 	
SIGNIFICANT Hazard Structure		Inspection
S	Means a dam that has a significant hazard potential because it is in a location and of a size that failure or misoperation of the dam would result in any of the following:	Every 4 years
	<ul style="list-style-type: none"> ○ No probable loss of lives. ○ Major economic loss to structures or property. ○ Structural damage to a Class I or Class II road that could render the road impassable or otherwise interrupt public safety services. ○ Major environmental or public health losses, including one or more of the following: <ul style="list-style-type: none"> ◆ Damage to a public water system, as defined by RSA 485:1-a, XV, which will take longer than 48 hours to repair. ◆ The release of liquid industrial, agricultural, or commercial wastes, septage, sewage, or contaminated sediments if the storage capacity is 2 acre-feet or more. ◆ Damage to an environmentally-sensitive site that does not meet the definition of reversible environmental losses. 	
HIGH Hazard Structure		Inspection
H	Means a dam that has a high hazard potential because it is in a location and of a size that failure or misoperation of the dam would result in probable loss of human life from:	Every 2 years
	<ul style="list-style-type: none"> ○ Water levels and velocities causing structural failure of a foundation of a habitable residential, commercial, or industrial structure, which is occupied under normal conditions. ○ Water levels rising above the first floor elevation of a habitable residential, commercial, or industrial structure, which is occupied under normal conditions when the rise due to dam failure is greater than one foot. ○ Structural damage to an interstate highway, which could render the roadway impassable or otherwise interrupt public safety services. ○ The release of a quantity and concentration of material, which qualify as "hazardous waste" as defined by RSA 147-A:2 VII. ○ Any other circumstance that would more likely than not cause one or more deaths. 	

Source: NH Department of Environmental Services (NHDES) Dams Bureau [Fact Sheet WD-DB-15](#), 2012

PUBLIC HEALTH HAZARDS

Public health issues can be measured in many ways. Students and the elderly are vulnerable to seasonal health outbreaks as they tend to congregate in large numbers and in shared environments where physical contact is common. Large groups can make bioterrorism more effective.

It is difficult to predict where an epidemic would occur due to human, mosquito and wildlife mobility. Commonly occurring epidemics following extreme heat or cold can include **influenza**, norovirus, rhinovirus (viruses), Lyme disease, Anaplasmosis and Babesiosis, Borrelia miyamotoi or Powassan (tickborne diseases), Eastern Equine Encephalitis (EEE), West Nile, Jamestown Canyon Virus or Zika (arboviral, mosquito-borne diseases) and any could occur in Hillsborough. The Town has swampy areas around its rivers, wetlands and brooks which are prime breeding ground for **mosquitoes**. Large deer herds that roam can carry **deer ticks** in the Town's heavily forested sections and into State Forests. The **coronavirus** global pandemic is contagious between humans in aerosol /droplet form and is much more contagious and deadly than influenza.

Other wide-spread public health hazards include **water quality degradation** (failing septic systems, flooding, pipes breaking, runoff, haz mat spills) that could sicken residents using the public water supplies (those serving over 25 people), dug wells or bedrock wells, or could cause aquatic and wildlife deaths. Epidemics could result from water quality issues.

Air quality could decline from ground-level ozone or fine particulates and is monitored by the [NH Department of Environmental Services](#). Air Quality Action Days are announced when monitoring sites report poor breathing air.

Food-borne illnesses could result from improperly handled or cooked food, either at home or at restaurants, cafeterias, or from markets or farms.

There are several types of **PUBLIC HEALTH** hazards examined in the **Hazard Identification and Risk Assessment**:

Main Hazard Category	Specific Hazards Included
PUBLIC HEALTH	PUBLIC HEALTH Infectious Diseases, Air & Water Quality, Biological, Addiction, Arboviral or Tick-borne

Most of these diseases can cause epidemics transmitted through food, water, environment, or personal contact. An epidemic could also result from bioterrorism, whereby an infectious agent is released into a susceptible population. Drug addiction is reportedly high in New Hampshire and is considered a public health hazard. There are many facets public health hazards could take in Hillsborough. The Town of Hillsborough is an active member of the [Capital Area Public Health Network](#) and has a designated Point of Dispensing (POD) location at the NH Technical Institute Community College in Concord.

The overall ratings of **Public Health** in Hillsborough from the **HIRA** are:

Natural, Technological, Human Hazard Categories	Probability of Occurrence in 10 Years (1-4)	Human Injury Impact (1-4)	Essential Services or Infrastructure Impact (1-4)	Property Damage or Economic Impact (1-4)	OVERALL RISK (1-16)
PUBLIC HEALTH Infectious Diseases, Air & Water Quality, Biological, Addiction, Arboviral, or Tick-borne	4 HIGH	4 HIGH	2 MEDIUM	2 MEDIUM	10.7 HIGH

Coronavirus (Respiratory Infectious)

Coronaviruses are a large family of viruses, but only several types are known to commonly cause infections in people, with these common human coronaviruses usually causing mild to moderate respiratory illness (like the common cold). Newer human coronaviruses, like Severe Acute Respiratory Syndrome (SARS), Middle Eastern Respiratory Syndrome (MERS), and the COVID-19 can cause more severe symptoms. The COVID-19 is originally thought to have spread from animals to humans, but now person-to-person spread is occurring. The virus is spread through the air by coughing and sneezing; by close personal contact, such as touching or shaking hands; and by touching an object or surface with the virus on it, then touching mouth, nose, or eyes before washing hands.

The NH Department of Health and Human Services maintains a [COVID-19 dashboard website](#) with current information, statistics, legislation, and testing locations, and resources. Social distancing (staying at least **6** feet away from people outside of one's household), wearing cloth facial masks, sanitizing hands, monitoring for symptoms, working from home, remote schooling, and staying at home when possible are the ways to fight the COVID-19. Yet, one year into the pandemic (**Mar 2020-Mar 2021**), NH residents are feeling stifled and as restrictions ease, a surge of new cases occurs even as vaccines are administered.

Within the last **14** days (**October 1-14, 2021**), **44** Town of Hillsborough residents have tested positive for the deadly respiratory coronavirus COVID-19. During this same time, **923** Merrimack County residents have tested positive. In New Hampshire, new cases total **7,276** within the last **14** days. Since **March 2, 2020**, a total of **128,047** NH residents have tested positive for COVID-19. Of these, **13,128** cases are Merrimack County residents. A grand total of **674** Town of Hillsborough residents to date have tested positive for COVID-19. Although vaccinations began in **December 2020** over a planned phasing process for New Hampshire residents, only **54.7%** of the state's population is fully vaccinated as of **October 14, 2021**. See **Figure 12** for case details.

To date as of **October 2021**, with over **45 million** positive cases in our country, over **730,000** people have died in the United States alone from COVID-19 complications. Globally, nearly **242 million** people have tested positive and nearly **5 million people** have died to date per the [Johns Hopkins Coronavirus Resource Center](#). The pandemic is ongoing as of the writing of this **Plan** and will be a serious long-term problem for humans, especially as new variants in the coronavirus emerge and coronavirus may be becoming endemic.

Figure 12

Current New 14 Days NH COVID-19 Cases and Cumulative (Total) NH COVID-19 Cases through 10-14-21

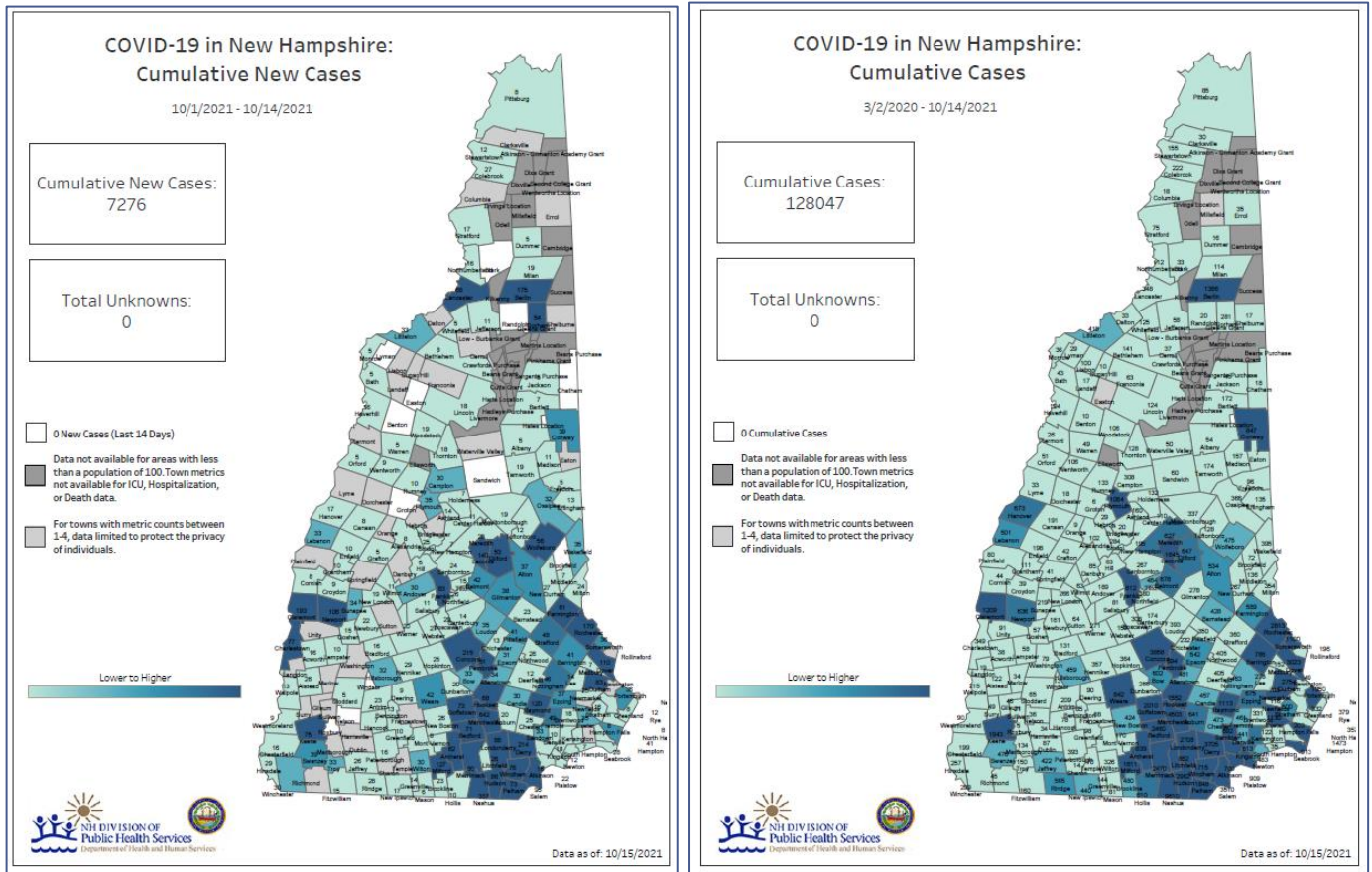
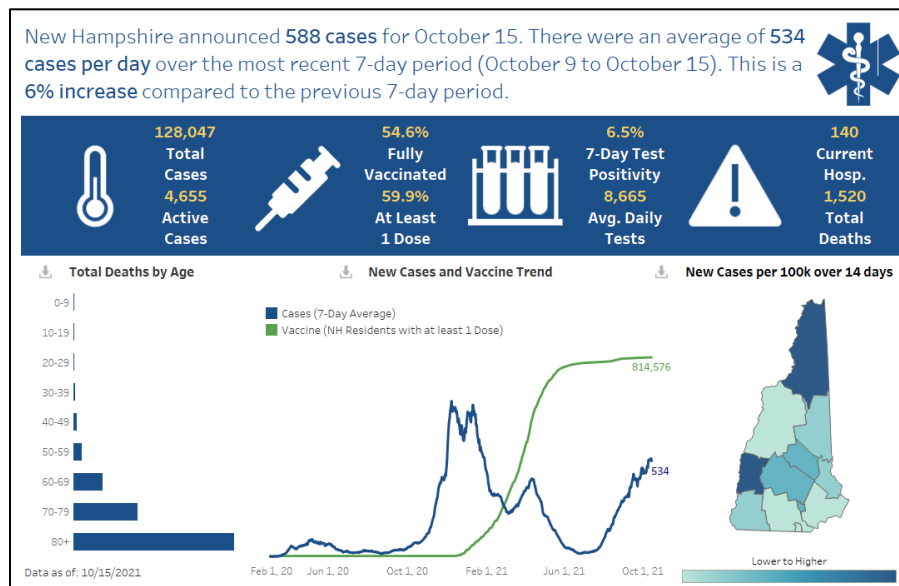


Figure 13

NH COVID-19 Statistics Overview



Source for Figures: NH Division of Health and Human Services
Dashboard COVID-19

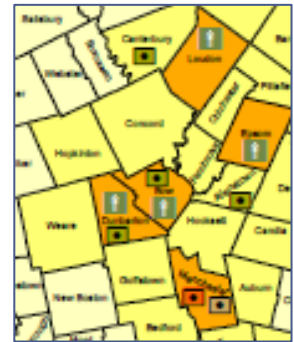
<https://www.nh.gov/covid19/>

Influenza (Respiratory Infectious)

A magnitude scales for **Pandemic Severity Index (PSI) for Influenza** and resulting Community Mitigation Strategies is available from the US Center for Disease Control (US CDC). The [State of New Hampshire Influenza Pandemic Public Health Preparedness and Response Plan 2007](#) included the **PSI for Influenza** classification system and the Community Strategies. As a growing high-density community, Hillsborough may be particularly vulnerable to influenza.

Arboviral Transmission Diseases

New Hampshire developed guidelines for phased response to the arboviruses (mosquito-borne) Eastern Equine Encephalitis (EEE) and West Nile Virus (WNV) and Jamestown Canyon Virus (JCV). Annually, the [NH DHHS publishes the State of New Hampshire Arboviral Illness Surveillance, Prevention, and Response Plan 2021](#) and its associated [Arboviral Risk Map 2021](#). Risk Categories determine human illness probability and the recommended response to outbreaks. Regionally, cases of Jamestown Canyon Virus (JCV), human Jamestown Canyon Virus (JCV), and West Nile Virus (WNV) have made appearances in 2020 and 2021.



The new [State of New Hampshire Zika Virus Response Plan 2018](#) describes Response Phases **0** to **3** and is written like an Emergency Operations Plan Annex for emergency responders to follow.

The NH DHHS and the Capital Area Public Health Network should be notified of all public health emergencies, no matter the type of threat.

Tick-borne Transmission Diseases

Tick-borne diseases are increasing in New Hampshire, and now include Lyme Disease, Anaplasmosis, Babesiosis, Powassan Virus, and more. These are all carried by the black legged tick in New Hampshire. The State has currently stopped producing annual maps and updates of tick-borne disease locations, but they have other resources available such as the [2015 State of NH Tickborne Diseases Prevention Plan](#). Check back here at the NH Department of Health and Human Services for future updates: <https://www.dhhs.nh.gov/dphs/cdcs/lyme/index.htm>. No increase in Lyme Disease in Hillsborough residents has been noted.

Air and Water Quality Decline

The [NH DES Drinking Water and Groundwater Bureau](#) administers the federal Safe Drinking Water Act and NH statutes to protect public water systems, drinking water sources and groundwater supplies to help maintain safe **water quality** for drinking. NHDES calculates Total Maximum Daily Load (TMDL) reports of pollutants for the state's water every two years.

Water quality hazards such as radon, arsenic, uranium Per- and polyfluoroalkyl substances (PFAS) industrial chemicals, cyanobacteria, coliform bacteria, lead and copper in public water systems, are constantly being tested for and when found, monitored. Once these enter the groundwater (aquifers) system, they are extremely difficult to mitigate. Various publications describe the NHDES efforts understand how damage to infrastructure from natural hazards such as **Inland Flooding** and spring **snow melt** runoff can occur to create more resilient water systems.

Air quality is a particular danger to the young, elderly people, and those with Chronic Obstructive Pulmonary Diseases (COPD), asthma and other breathing diseases. Ground level ozone and particle pollution are monitored, reported and forecasted for New Hampshire counties. The [Map of Current Air Quality](#) changes daily and is coded to [US EPA's Air Quality Index](#). Air Quality Action Days are announced when the air quality becomes Moderate, Unhealthy or Hazardous. Transportation such as I-89 and I-93, large local industries such as Merrimack Station and Wheelabrator contribute to Central NH Region air pollution, but New Hampshire is impacted by industries and wildfires across the United States and Canada. Greenhouse gases from industrial pollution and manufacturing contributes to poor **air quality**.

The NH DHHS maintains [NH Health WISDOM](#), a database of public health data for air quality, childhood lead, cancer, asthma, tickborne disease, radon, and more. Many public health threats in New Hampshire have indices, monitoring, and data recording. The NH Department of Health and Human Services (NH DHHS) <https://www.dhhs.nh.gov/> is a good resource to determine what diseases are most prominent.

Biological Infestation

Depending on the type of biological invasive species, a different State department monitors and reports their appearance within New Hampshire.

Invasive Insect Pests

The [NH Department of Agriculture, Markets and Foods Division of Plant Industry's](#) mission is to promote and protect plant health by curtailing the spread of dangerous insects, diseases and weeds moved in commerce. A biological pest, the [Emerald Ash Borer](#), has consumed most of the Central NH Region's ash trees. Only a minority have not been infected. Active logging operations are asked to identify them. The problem has been increasing over the years in Merrimack County and surrounding areas.

Invasive Land Plants

Invasive plants like need to be managed or removed. The [NH Department of Agriculture, Markets and Foods Division of Plant Industry](#) (NHDAMF) also regulates invasive upland plants: It is illegal in New Hampshire to collect, transport, sell, distribute, propagate or transplant any living or viable portion of any listed prohibited invasive plant species including all of their cultivars, varieties, and specified hybrids.

Invasive Aquatic Plants and Insects

The NHDES hosts an [invasive aquatic species program](#) and maintains a [statewide map of the invasive aquatic plant infestations](#) along with an accompanying [list of infested waterbodies](#). and invertebrate pest species and [NH Fish and Game](#) regulating invasive aquatic invertebrates. For public waters throughout the region, the NHDES Volunteer Rivers AP and NH Lakes Association can check help monitor [invasive water species](#).

Public Beach Monitoring

The NH Department of Environmental Services [Public Beach Inspection Program](#) regularly tests public beaches, both freshwater and saltwater, for the presence of bacterias, like cyanobacteria and e. coli, and dangerous species like jellyfish. Cyanobacteria advisories are issued when there are blooming conditions and cyanobacteria cell concentrations exceed 70,000 cells/ml in recreational waters. Freshwater beach standards for e. coli is 1 sample > 158 counts/100 ml.

Hillsborough does not have to worry about **milfoil** infestation because it does not have public ponds of 10 acres or greater. Rivers can carry invasive species like **zebra mussels**. The public beach at White Sands on the Merrimack River could be subject to such biological hazards. The [NHDES OneStop](#) data resource center can be accessed to provide reports on potential water hazards.

Opioid Endemic

New Hampshire has seen a rise in the number of heroin and opioid deaths over the last few years. Even Hillsborough has been subject to additional calls for service for overdose. Along with the use of these substances is a commensurate amount of buying and/or making of illegal drugs. The State has made national headlines in 2014, 2015 and 2016 for its problems with overdoses and its public recognition of the problem. A particular concern to Hillsborough officials and Tri-Town Ambulance workers is the illegal drug usage and overdosing that is occurring in the community. By 2021, misuse of opioids had declined tremendously in comparison with previous years.

Magnitude of Public Health

The [2018 State Multi-Hazard Mitigation Plan](#) includes **Infectious Diseases** as a natural hazard. From this resource, the definition and extent of the potential magnitude of public health threats are identified as follows. These disease levels are described at the [US Center for Disease Control](#) (CDC) and included measures New Hampshire has been practicing for COVID-19, including masking, social distancing, staying at home, and quarantine.

The magnitude and severity of infectious diseases are described by its speed of onset (how quickly people become sick or cases are reported) and how widespread the infection is. Some infectious diseases are inherently more dangerous and deadly than others, but the best way to describe the extent of diseases relates to the disease occurrence:

§ Sporadic	Disease that occurs infrequently and irregularly.
§ Endemic	(Baseline) Constant presence and/or usual prevalence of a disease or infection agent in a population within a geographic area.
§ Hyperendemic	The persistent, high levels of disease occurrence in the area.
§ Cluster	The aggregation of cases grouped in place and time that are suspected to be greater than the number expected, even though the expected number may not be known.
§ Epidemic	An increase, usually sudden, in the number of cases of a disease above what is normally expected in the population of the area.
§ Outbreak	The same as epidemic, but over a much smaller geographical area.
§ Pandemic	An epidemic that has spread over several countries or continents, usually affecting many people.

SOLAR STORMS HAZARDS

Solar storms and space weather is a new addition to the **Hazard Mitigation Plan** and can refer to solar flares, coronal mass ejections, high-speed solar wind, or geomagnetic storms. Solar activity can occur for as short a duration as a few minutes to several hours and create resulting effects on the Earth for weeks. When a geomagnetic storm occurs, high speed solar winds penetrate the Earth's magnetosphere and can decrease the Earth's magnetic field for several hours.

There are several types of **SOLAR STORMS** hazards examined in the **Hazard Identification and Risk Assessment**:

Main Hazard Category	Specific Hazards Included
SOLAR STORMS	SOLAR STORMS AND SPACE WEATHER Solar Winds, Geomagnetic Storms (Aurora Borealis), Solar Radiation or Radio Blackout

A significant danger from solar storms is the potential communications and electronics disruption. Satellites, vehicles, radios, airplanes, cell phones, computers, power lines and the internet have the capability for temporary cessation because of solar winds. Solar radiation can become a personal radiation hazard the closer one is to the stratosphere, especially on planes. Satellites, navigation, and electricity are sensitive to geomagnetic storms, which can cause electrical current surges in power lines, interference in the broadcast of radio, television, and telephone signals, and problems with defense communications.

The overall ratings of **Solar Storms** in Hillsborough from the **HIRA** are:

Natural, Technological, Human Hazard Categories	Probability of Occurrence in 10 Years (1-4)	Human Injury Impact (1-4)	Essential Services or Infrastructure Impact (1-4)	Property Damage or Economic Impact (1-4)	OVERALL RISK (1-16)
SOLAR STORMS AND SPACE WEATHER Solar Winds, Geomagnetic Storms (Aurora Borealis), Solar Radiation or Radio Blackout	1 LOW	1 LOW	1 LOW	1 LOW	1.0 LOW

Magnitude of Solar Storms

Many in residents in the Central NH region enjoy the aurora borealis viewed from Mount Kearsarge, visible to Hillsborough in the north, although when this phenomenon occurs a geomagnetic storm is reaching New Hampshire. Emergency response personnel could monitor these storms from the Mount Kearsarge Fire Tower in Warner or from Pat's Peak in Henniker, or possibly the Oak Hill Fire Tower in Loudon. NOAA's Space Weather Prediction Service <https://www.swpc.noaa.gov/> provides 3-day outlooks on solar storms. Magnitude scales for **Radio Blackout (R)**, **Geomagnetic Storms (G)** and **Solar Radiation Storms (S)** are provided in **Table 19**.

Table 19
Solar Storms Magnitude Scales

Magnitude Scale	Description	Effect of Space Storm	Average Frequency (1 cycle = 11 years)
GEOMAGNETIC STORM (G)			
G1 Geomagnetic	Minor	<ul style="list-style-type: none"> ✦ Power systems: Weak power grid fluctuations can occur. ✦ Spacecraft operations: Minor impact on satellite operations possible. ✦ Other systems: Migratory animals are affected at this and higher levels; aurora is commonly visible at high latitudes (northern Michigan and Maine). 	1700 per cycle (900 days per cycle)
G2 Geomagnetic	Moderate	<ul style="list-style-type: none"> ✦ Power systems: High-latitude power systems may experience voltage alarms, long-duration storms may cause transformer damage. ✦ Spacecraft operations: Corrective actions to orientation may be required by ground control; possible changes in drag affect orbit predictions. ✦ Other systems: HF radio propagation can fade at higher latitudes, and aurora has been seen as low as New York and Idaho (typically 55° geomagnetic lat.). 	600 per cycle (360 days per cycle)
G3 Geomagnetic	Strong	<ul style="list-style-type: none"> ✦ Power systems: Voltage corrections may be required, false alarms triggered on some protection devices. ✦ Spacecraft operations: Surface charging may occur on satellite components, drag may increase on low-Earth-orbit satellites, and corrections may be needed for orientation problems. ✦ Other systems: Intermittent satellite navigation and low-frequency radio navigation problems may occur, HF radio may be intermittent, and aurora has been seen as low as Illinois and Oregon (typically 50° geomagnetic lat.). 	200 per cycle (130 days per cycle)
G4 Geomagnetic	Severe	<ul style="list-style-type: none"> ✦ Power systems: Possible widespread voltage control problems and some protective systems will mistakenly trip out key assets from the grid. ✦ Spacecraft operations: May experience surface charging and tracking problems, corrections may be needed for orientation problems. ✦ Other systems: Induced pipeline currents affect preventive measures, HF radio propagation sporadic, satellite navigation degraded for hours, low-frequency radio navigation disrupted, and aurora has been seen as low as Alabama and northern California (typically 45° geomagnetic lat.). 	100 per cycle (60 days per cycle)
G5 Geomagnetic	Extreme	<ul style="list-style-type: none"> ✦ Power systems: Widespread voltage control problems and protective system problems can occur, some grid systems may experience complete collapse or blackouts. Transformers may experience damage. ✦ Spacecraft operations: May experience extensive surface charging, problems with orientation, uplink/downlink and tracking satellites. ✦ Other systems: Pipeline currents can reach hundreds of amps, HF (high frequency) radio propagation may be impossible in many areas for one to two days, satellite navigation may be degraded for days, low-frequency radio navigation can be out for hours, and aurora has been seen as low as Florida and southern Texas (typically 40° geomagnetic lat.). 	4 per cycle (4 days per cycle)
SOLAR RADIATION (S)			
S1 Solar Radiation	Minor	<ul style="list-style-type: none"> ✦ Biological: None. ✦ Satellite operations: None. ✦ Other systems: Minor impacts on HF radio in the polar regions. 	50 per cycle
S2 Solar Radiation	Moderate	<ul style="list-style-type: none"> ✦ Biological: Passengers and crew in high-flying aircraft at high latitudes may be exposed to elevated radiation risk. ✦ Satellite operations: Infrequent single-event upsets possible. ✦ Other systems: Small effects on HF propagation through the polar regions and navigation at polar cap locations possibly affected. 	25 per cycle
S3	Strong	<ul style="list-style-type: none"> ✦ Biological: Radiation hazard avoidance recommended for astronauts on EVA; passengers and crew in high-flying aircraft at high latitudes may be exposed to radiation risk. 	10 per cycle

4 HAZARD RISK ASSESSMENT

Magnitude Scale	Description	Effect of Space Storm	Average Frequency (1 cycle = 11 years)
Solar Radiation		<ul style="list-style-type: none"> ✦ Satellite operations: Single-event upsets, noise in imaging systems, and slight reduction of efficiency in solar panel are likely. ✦ Other systems: Degraded HF radio propagation through the polar regions and navigation position errors likely. 	
S4 Solar Radiation	Severe	<ul style="list-style-type: none"> ✦ Biological: Unavoidable radiation hazard to astronauts on EVA; passengers and crew in high-flying aircraft at high latitudes may be exposed to radiation risk. ✦ Satellite operations: May experience memory device problems and noise on imaging systems; star-tracker problems may cause orientation problems, and solar panel efficiency can be degraded. ✦ Other systems: Blackout of HF radio communications through the polar regions and increased navigation errors over several days are likely. 	3 per cycle
S5 Solar Radiation	Extreme	<ul style="list-style-type: none"> ✦ Biological: Unavoidable high radiation hazard to astronauts on EVA (extra-vehicular activity); passengers and crew in high-flying aircraft at high latitudes may be exposed to radiation risk. ✦ Satellite operations: Satellites may be rendered useless, memory impacts can cause loss of control, may cause serious noise in image data, star-trackers may be unable to locate sources; permanent damage to solar panels possible. ✦ Other systems: Complete blackout of HF (high frequency) communications possible through the polar regions, and position errors make navigation operations extremely difficult. 	Fewer than 1 per cycle
RADIO BLACKOUT (R)			
R1 Radio Blackouts	Minor	<ul style="list-style-type: none"> ✦ HF Radio: Complete HF (high frequency) radio blackout on the entire sunlit side of the Earth lasting for a number of hours. This results in no HF radio contact with mariners and en route aviators in this sector. ✦ Navigation: Low-frequency navigation signals used by maritime and general aviation systems experience outages on the sunlit side of the Earth for many hours, causing loss in positioning. Increased satellite navigation errors in positioning for several hours on the sunlit side of Earth, which may spread into the night side. 	2000 per cycle (950 days per cycle)
R2 Radio Blackouts	Moderate	<ul style="list-style-type: none"> ✦ HF Radio: HF radio communication blackout on most of the sunlit side of Earth for one to two hours. HF radio contact lost during this time. ✦ Navigation: Outages of low-frequency navigation signals cause increased error in positioning for one to two hours. Minor disruptions of satellite navigation possible on the sunlit side of Earth. 	350 per cycle (300 days per cycle)
R3 Radio Blackouts	Strong	<ul style="list-style-type: none"> ✦ HF Radio: Wide area blackout of HF radio communication, loss of radio contact for about an hour on sunlit side of Earth. ✦ Navigation: Low-frequency navigation signals degraded for about an hour. 	175 per cycle (140 days per cycle)
R4 Radio Blackouts	Severe	<ul style="list-style-type: none"> ✦ HF Radio: HF radio communication blackout on most of the sunlit side of Earth for one to two hours. HF radio contact lost during this time. ✦ Navigation: Outages of low-frequency navigation signals cause increased error in positioning for one to two hours. Minor disruptions of satellite navigation possible on the sunlit side of Earth. 	8 per cycle (8 days per cycle)
R5 Radio Blackouts	Extreme	<ul style="list-style-type: none"> ✦ HF Radio: Complete HF (high frequency) radio blackout on the entire sunlit side of the Earth lasting for a number of hours. This results in no HF radio contact with mariners and en route aviators in this sector. ✦ Navigation: Low-frequency navigation signals used by maritime and general aviation systems experience outages on the sunlit side of the Earth for many hours, causing loss in positioning. Increased satellite navigation errors in positioning for several hours on the sunlit side of Earth, which may spread into the night side. 	Less than 1 per cycle

Source: <https://www.swpc.noaa.gov/noaa-scales-explanation>

WIND HAZARDS

Severe wind is likely to occur throughout all seasons. Significantly high winds occur especially during hurricanes, tornadoes, downbursts, winter storms, and thunderstorms any time of the year. Falling objects and downed power lines are dangerous risks associated with high winds. Property damage and downed trees are common during high wind occurrences. All utilities, including power lines, are at risk and their damage or destruction would create a hazard to the Town. A communications interruption or failure resulting from damage to telecommunications towers could affect the capabilities of emergency personnel to respond to the hazard event. Often with wind events, precipitation accompanies, increasing the danger of the hazard.

There are several types of **WIND** hazards examined in the **Hazard Identification and Risk Assessment**:

Main Hazard Category	Specific Hazards Included	
WIND	HIGH WIND EVENTS Wind, Thunderstorms, Hail, Downbursts, Tornadoes or Debris	TROPICAL AND POST-TROPICAL CYCLONES Hurricanes, Tropical Storms or Tree Debris

High Wind Events

High wind events can take the form of severe winds, rainstorms, thunderstorms, tornadoes, and downbursts.

The overall ratings of **High Wind Events** in Hillsborough from the **HIRA** are:

Natural, Technological, Human Hazard Categories	Probability of Occurrence in 10 Years (1-4)	Human Injury Impact (1-4)	Essential Services or Infrastructure Impact (1-4)	Property Damage or Economic Impact (1-4)	OVERALL RISK (1-16)
HIGH WIND EVENTS Wind, Thunderstorms, Hail, Downbursts, Tornadoes or Debris	4 HIGH	2 MEDIUM	2 MEDIUM	2 MEDIUM	8.0 HIGH

Severe Wind, Rainstorms and Thunderstorms

More commonly experienced are **severe windstorms**, **rainstorms** and **thunderstorms**. The severe windstorms occur during all months of the year while the thunderstorms tend to erupt during periods of humidity. On occasion, precipitation in the form of rain or hail is experienced during these storms. Rainstorms bring can flooding and high winds. **Thunderstorms** can also bring lightning and hail hazards in addition to severe winds and flooding.

There are several **types of thunderstorms**: **ordinary cell** – short lived and not severe, brief rain and lightning; **multi-cell cluster** – several cells working as one, garden-variety storms lasting up to an hour with hail, strong winds, brief tornadoes, and/or flooding; **multi-cell line (squall line)** – group of thunderstorms extending laterally for hundreds of miles long but only 10-20 miles wide; **supercell- single cell** -

thunderstorm lasting for hours, characterized by updrafts over 100 mph with giant hail and tornados, high precipitation and flash flooding.

Magnitude of Severe Wind and Thunderstorms

The majority of the severe wind events Hillsborough experiences are not hurricanes but are severe windstorms or thunderstorms. Thunderstorms are common in New Hampshire, particularly during the hot weather months. The National Weather Service (NWS) has recently revised its storm warning criteria to better convey the severity and potential impacts from thunderstorm, winds, and hail. The new Impact-Based Warning format uses bullet points issued by the NWS for Severe Thunderstorm Warnings (SVR), Severe Weather Statements (SVS), and Tornado Warnings (TOR) to organize and consolidate public warnings to identify the Hazard, Source, and Impact & Location of hazards in these alerts. A summary of the thunderstorm damage threats is provided in **Table 20**.

Table 20
Damage Threats for Severe Thunderstorm Warnings



Thunderstorm Damage Threat	Wind >	Hail Diameter >	Wireless Emergency Alert (WEA)	Impact
Base (Normal Severe Thunderstorm)	> 58 mph (60 mph will appear in the warning)	>1" Inch (US Quarter)	No	Damage expected to be at base level.
Considerable	> 70 mph	>1.75" (Golf-ball)	No	People and animals outdoors will be injured. Hail damage to vehicles is expected. Expect considerable tree damage. Wind damage is also likely to mobile homes, roofs, and outbuildings, and powerlines.
Destructive	> 80 mph	>2.75" (Baseball)	Yes	People and animals outdoors will be severely injured. People should move to an interior room on the lowest floor of a building. Expect shattered windows, extensive damage to roofs, siding, and vehicles. Expect downed trees and powerlines.

Source: National Weather Service [New Damage Threat Categories for Severe Storm Warnings](#), 2021

The NWS Storm Prediction Center issues [Day 1, 2 and 3 severe weather outlook](#) forecasts with risk categories up to 3 days out. They consist of 6 categories: 0- Thunderstorm, 1-Marginal, 2-Slight, 3-Enhanced, 4-Moderate and 5-High and are color-coded from an easy green to an escalated pink. A Level 1 Marginal risk consist of isolated and short-lived severe thunderstorms that have limited intensity; usually these storms will have winds between 40-60 mph, hail up to 1" and is a low tornado risk. A Level 2 Slight risk involves scattered severe storms that are also short-lived with isolated intensity; that consist of 1-2 tornadoes possible, strong winds and wind damage. A Level 3 Enhanced risk deals with numerous and persistent severe storms with a few intense ones; that produce a few tornadoes and several reports of wind damage. A Level 4 Moderate risk thunderstorm will have widespread and long-lived severe storms that are long-lived and intense; that include strong tornadoes, widespread wind damage and large hail. A Level 5 High risk thunderstorm is widespread, long-lived and are very intense storms involved in a tornado outbreak or significant wind damage such as straight-line winds (derechoes). **Figure 14** displays these categories:

Figure 14
Severe Thunderstorm Risk

Understanding Severe Thunderstorm Risk Categories

THUNDERSTORMS (no label)	1 - MARGINAL (MRGL)	2 - SLIGHT (SLGT)	3 - ENHANCED (ENH)	4 - MODERATE (MDT)	5 - HIGH (HIGH)
No severe* thunderstorms expected	Isolated severe thunderstorms possible	Scattered severe storms possible	Numerous severe storms possible	Widespread severe storms likely	Widespread severe storms expected
Lightning/flooding threats exist with <u>all</u> thunderstorms	Limited in duration and/or coverage and/or intensity	Short-lived and/or not widespread, isolated intense storms possible	More persistent and/or widespread, a few intense	Long-lived, widespread and intense	Long-lived, very widespread and particularly intense
					

* NWS defines a severe thunderstorm as measured wind gusts to at least 58 mph, and/or hail to at least one inch in diameter, and/or a tornado. All thunderstorm categories imply lightning and the potential for flooding. Categories are also tied to the probability of a severe weather event within 25 miles of your location.



National Weather Service

www.spc.noaa.gov

Source: <https://www.spc.noaa.gov/> 2021



Tornadoes

Significantly high winds that occur especially during hurricanes, winter storms, and thunderstorms, but can also exist independent of other storms. 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.

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 if they touch down, they become a force of destruction.

Tornadoes produce the most violent winds on earth, at speeds of **200** 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.

Magnitude of Tornadoes

A tornado occurring in Hillsborough would cause considerable damage. Roofs could be torn off frame houses; dams could be damaged; large trees snapped or uprooted; and light object missiles would be generated by an **EF-2** Tornado. Tornado magnitude is measured by the [Enhanced Fujita \(EF\) Scale](#), a 2007 update from the original F-scale (Fujita Scale) and is provided in **Table 21**.

Table 21

Enhanced Fujita (EF) Scale

EF Rating	3-Second Gust mph
EF0	65-85 mph
EF1	86-110 mph
EF2	111-135 mph
EF3	136-165 mph
EF4	166-200 mph
EF5	over 200 mph

Source: National Oceanic and Atmospheric Administration (NOAA) Storm Prediction Center

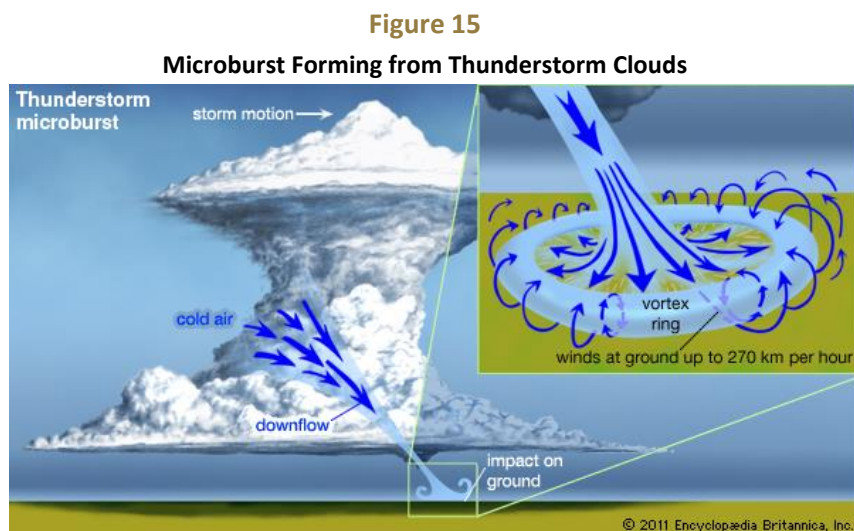
<https://www.weather.gov/oun/efscale>

The center and northern sections of the Town are forested and its Class V and Class VI gravel roads run the risk of isolation through **debris impacted infrastructure** (trees down on roads and powerlines) after a **tornado**, resulting in **power failure** with little emergency access until the way is cleared. Wooded and forested sections of Town are vulnerable to tree fall. One-egress roads and remote neighborhoods are especially at risk to the impacts of high wind events, including tornadoes.

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 are capable of producing winds of up to **175** mph and are life threatening. Downbursts are quite common during Central NH's hot weather months. The "dry" microbursts or macrobursts are strong downdrafts known to occur in Central New Hampshire almost annually, but the "wet" microbursts accompanied by rain are uncommon in the Northeast.

Downbursts of both sizes can produce strong wind shear, large changes in wind speed and direction over a short distance. Trees are regularly snapped off in a singular direction by a macroburst or microburst. Downbursts typically originate from thunderstorm clouds, with air moving in a downward motion until it hits the ground level and then spreads outward in all directions. In fact, the wind pattern of a downburst is the opposite of a tornado's wind pattern, shown in **Figure 15**.



Source: Internet (Encyclopedia Britannica)

Another wind with thunderstorm squall lines is a **derecho**. Derechos are straight-line winds associated with a downburst. They blow out in front of the squall line and are the strongest winds created by the downburst. This happens because the movement of the storms is already in that direction. Derechos can be as large as **200** miles wide with gusts of at least **58** mph. They can last up to **12** hours or more and are associated with very strong straight-line winds. Derechos can knock over trees and power lines and cause rain and lightning to come from all directions.

Magnitude of Downbursts

Downburst magnitude is rated on the same **Enhanced Fujita (EF)** scale as tornadoes. In addition, downbursts fall into two categories:

- microburst, which covers an area less than **2.5** miles in diameter and
- macroburst, which covers an area equal to or greater than **2.5** miles in diameter.

Debris Impacted Infrastructure

The immediate result of severe wind events becomes another hazard, **debris impacted infrastructure**. The infrastructure could include roads, culverts, powerlines, utility lines, water towers, bridges or dams. Infrastructure could also be the natural infrastructure, such as rivers, ponds, lakes and brooks.

Typically, trees and woody material and debris are blown down from **severe wind events** causing **debris impacted infrastructure**. Watercourses, including the rivers, brooks, intermittent streams, and ditches alongside roads, and stationary waterbodies such as lakes, ponds, wetlands, swamps, bogs, and wet meadows receive trees, leafy material and other debris and can then **flood** their banks, **overflow culverts**, or cause **road washouts** during certain conditions. Trees and limbs falling on power lines, substations, or communications towers cause **power failure** and **live wire danger**. Trees and limbs falling onto roadways can **road blockages** and **transportation crashes**. Debris from wind could include roofs, siding, shingles, and more from buildings which can cause potential human injury as well as **road blockages**, **power failure** and **live wire danger**.

These features inventoried in **APPENDIX A Critical and Community Vulnerability Assessment** are those which should be watched carefully before and after storms and should be checked and maintained regularly to reduce the risk of significant **debris impacted infrastructure** events. **Erosion** along the rivers can cause scouring to infrastructure such as bridge abutments, and woody debris can flow downstream to become hazards to the landowners who have shoreland frontage.

Most dams and bridges could experience **debris impacted infrastructure**. Debris generated during storms and winds could continue for many years. This woody material debris is a concern during and after storm events. For emergency removal, the Town could contact the NH Department of Environmental Services and remove the trees right away, obtaining a “retroactive permit” during emergency situations.

Bridges vulnerable to debris dislodged during storm events may be eligible for NH Bridge Aid funding to help rehabilitate these bridges. All outlying roads are susceptible to tree fall and downed powerlines from **severe wind events**.

Magnitude of Debris Impacted Infrastructure

There is no standardized scientific scale for debris impacted infrastructure. However, the [US Federal Highway Administration](#) rates the potential for river/brook debris delivery to the infrastructure site and

for river/brook accumulation across an infrastructure span. These can be utilized for hydrologic debris impacted infrastructure measurements.

Tropical and Post-Tropical Cyclones

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. River and flooding due to heavy rains is a risk to Hillsborough during hurricanes. Numerous hurricane events in recent history have occurred in the State, region, and the local area surrounding Hillsborough that may have also had an impact on the Town.

The overall ratings of **Tropical and Post Tropical Cyclones** in Hillsborough from the **HIRA** are:

Natural, Technological, Human Hazard Categories	Probability of Occurrence in 10 Years (1-4)	Human Injury Impact (1-4)	Essential Services or Infrastructure Impact (1-4)	Property Damage or Economic Impact (1-4)	OVERALL RISK (1-16)
TROPICAL AND POST-TROPICAL CYCLONES Hurricanes, Tropical Storms or Tree Debris	2 MEDIUM	2 MEDIUM	2 MEDIUM	3 HIGH	4.7 LOW

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. The floods and high winds can result in loss of life and property. Hurricanes, high wind and rain events, and thunderstorms can damage Hillsborough just like any other community in Central New Hampshire. Forested lands and trees along the transportation infrastructure can be blown down across roads; the above-ground powerlines along the sides of the road can be snapped either by trees or high winds and fall onto the roads or nearby objects; and runoff flooding and stream/brook and river flooding can occur because of hurricanes and severe storms.

Magnitude of Hurricanes and Tropical Storms

The [Saffir-Simpson Hurricane Wind Scale](#) measures the magnitude of wind event on a **1** through **5** rating basis. The definitions of Category **1** through **5**'s sustained wind miles per hour and their respective threats to people, different types of homes, shopping centers, trees, power lines, water, and more are displayed in **Table 22**.

Table 22

Saffir-Simpson Hurricane Wind Scale

Category	Sustained Winds	Types of Damage Due to Hurricane Winds
1	74-95 mph	Very dangerous winds will produce some damage: Well-constructed frame homes could have damage to roof, shingles, vinyl siding and gutters. Large branches of trees will snap and shallowly rooted trees may be toppled. Extensive damage to power lines and poles likely will result in power outages that could last a few to several days.
2	96-110 mph	Extremely dangerous winds will cause extensive damage: Well-constructed frame homes could sustain major roof and siding damage. Many shallowly rooted trees will be snapped or uprooted and block numerous roads. Near-total power loss is expected with outages that could last from several days to weeks.
3 major	111-129 mph	Devastating damage will occur: Well-built framed homes may incur major damage or removal of roof decking and gable ends. Many trees will be snapped or uprooted, blocking numerous roads. Electricity and water will be unavailable for several days to weeks after the storm passes.
4 major	130-156 mph	Catastrophic damage will occur: Well-built framed homes can sustain severe damage with loss of most of the roof structure and/or some exterior walls. Most trees will be snapped or uprooted and power poles downed. Fallen trees and power poles will isolate residential areas. Power outages will last weeks to possibly months. Most of the area will be uninhabitable for weeks or months.
5 major	157 mph or higher	Catastrophic damage will occur: A high percentage of framed homes will be destroyed, with total roof failure and wall collapse. Fallen trees and power poles will isolate residential areas. Power outages will last for weeks to possibly months. Most of the area will be uninhabitable for weeks or months.

Source: National Oceanic and Atmospheric Administration (NOAA)

WINTER HAZARDS

Ice and snow events typically occur during the winter months and can cause loss of life, property damage, and tree damage. Severe winter storms, including Nor'easters, typically occur during January and February. However, winter storms can occur from late September through late May. Numerous severe winter events in recent history have occurred in the State, region, and the local area surrounding Hillsborough that may have also had an impact on the Town. Unlike the relatively infrequent hurricane, New Hampshire generally experiences at least several Nor'easters each year with varying degrees of severity. They form along the East coast as warm air from the Atlantic Ocean collides with cold arctic winds to the north and west. A hurricane, the nor'easter's warm-weather counterpart, differs in that it has a narrow range of strong winds around a warm, low-pressure core—nor'easter winds are more dispersed around a cold, low-pressure center.

There are several types of **WINTER** hazards examined in the **Hazard Identification and Risk Assessment**:

Main Hazard Category	Specific Hazards Included
WINTER	SEVERE WINTER WEATHER Snow, Ice, Blizzard or Nor'Easter

Although avalanche appears in the *State of New Hampshire Multi-Hazard Mitigation Plan 2018*, this winter hazard is not believed relevant to Hillsborough's geography and development.

The overall ratings of **Severe Winter Weather** in Hillsborough from the **HIRA** are:

Natural, Technological, Human Hazard Categories	Probability of Occurrence in 10 Years (1-4)	Human Injury Impact (1-4)	Essential Services or Infrastructure Impact (1-4)	Property Damage or Economic Impact (1-4)	OVERALL RISK (1-16)
SEVERE WINTER WEATHER Snow, Ice, Blizzard or Nor'Easter	4 HIGH	2 MEDIUM	2 MEDIUM	2 MEDIUM	8.0 HIGH

Severe Winter 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.

An ice storm involves rain, which freezes upon impact. Ice coating at least **¼"** in thickness is heavy enough to damage trees, overhead wires, and similar objects. Ice storms also often produce widespread power outages.

A Nor'easter is 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.

Extreme cold temperatures are associated with continental Arctic air masses. The actual temperatures reached depend specifically on the nature of the cold air mass and where it originated. In general, those from the Arctic regions are the coldest. Though cold temperatures are dangerous, they become more so in conjunction with strong winds. The combination produces a wind-chill factor – heat loss measured in Watts per meter squared (Wm^{-2}). A wind-chill factor of **1400** Wm^{-2} is equivalent to a temperature of **-40** degrees F. At **2700** Wm^{-2} , exposed flesh freezes within a half-minute.

Heavy snow can immobilize a region, strand commuters, stop the flow of supplies, and disrupt emergency responders. Accumulations of snow can knock down trees and power lines and cause some roofs to collapse. Homes and farms may be isolated for days and unprotected livestock may be lost while businesses either close or are open with reduced hours. The cost of snow removal, repairing damages, and the loss of business can have severe economic impacts on New Hampshire communities.

Winter precipitation includes the following types of weather and is summarized in **Figure 16**:










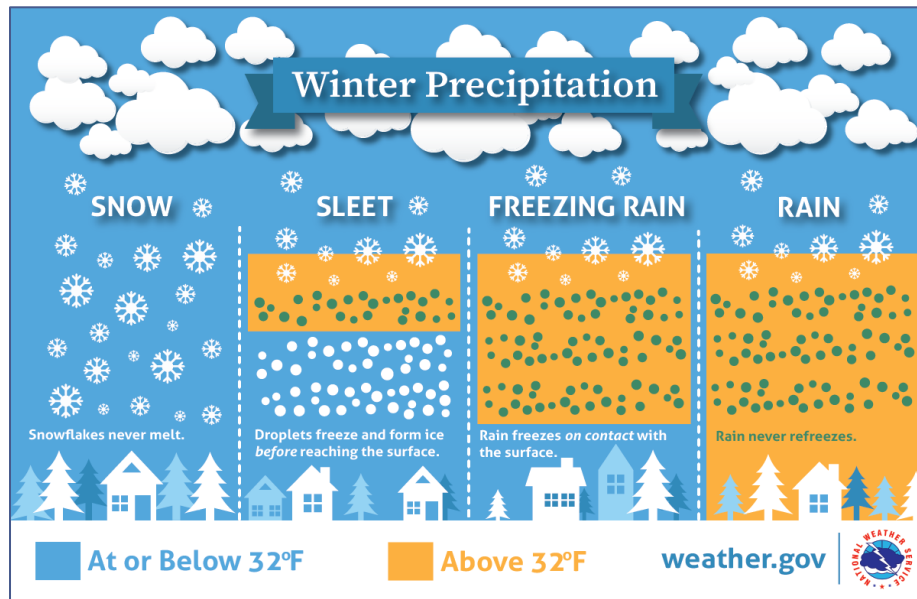
-  **Blizzard:** Winds of 35 mph or more with snow and blowing snow reducing visibility to less than $\frac{1}{4}$ mile for 3 hours or more.
-  **Blowing Snow:** Wind-driven snow that reduces visibility. Blowing snow may be falling snow and/or snow on the ground picked up by the wind.
-  **Snow Squalls:** Brief, intense snow showers accompanied by strong, gusty winds. Accumulation may be significant.
-  **Snow Showers:** Snow falling at varying intensities for brief periods of time. Some accumulation is possible.
-  **Snow Flurries:** Light snow falling for short durations with little or no accumulation.
-  **Freezing Rain:** Occurs when the layer of freezing air is so thin, raindrops do not have enough time to freeze before reaching the ground.
-  **Sleet:** Frozen raindrops occurs when the layer of cold, freezing air along the surface is thicker than the warmer air above. This causes the raindrops to freeze before reaching the ground.
-  **Ice Storm:** Results in the accumulation of at least .25" of ice on exposed surfaces. Creates hazardous driving and walking conditions, and tree branches and powerlines can easily snap under the weight of the ice.
-  **Lake Effect Storm:** Cold, dry air mass moves over the Great Lakes regions, picking up moisture from the Great Lakes. This air, now full of water, dumps the water as snow in areas to the south and east of the Lakes.

Figure 16
Types of Winter Precipitation



Source: https://www.weather.gov/bou/winter_wx_preparedness_week

Recent Severe Winter Weather in New Hampshire

In March **2018**, New Hampshire was hit by **4** cyclonic Nor'easters in a row over a **2-** week period because of the changing climate, in a recurring snow-and-melt cycle. 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.

- March 2-3, 2018 – Seacoast flooding, Concord wind gusts 36 mph, about 1"
- March 7-8, 2018 – Concord 11"
- March 12-14, 2018 – Concord 11", Epsom 23"
- March 22, 2018 – Concord 3"

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 experience **power failure** and use candles, portable gas stoves, generators, and flammable sources of heat and light.

Magnitude of Severe Winter Weather

Severe winter weather magnitude can be measured using several different scales and indices including the Winter Storm Severity Index (WSSI), the NCDC Regional Snowfall Index (RSI) for the Northeast and forecasted weather advisories.

Figure 17 displays the [NOAA Weather Prediction Center's Winter Storm Severity Index \(WSSI\)](#), a 1-5 color-coded indices from 0- No Impacts to 5- Extreme Impacts, which is used on the winter maps to predict storms 1-3 days out. Users are advised the WSSI does not depict official warnings.

Figure 17

Potential Winter Storm Impacts

Winter Storm Severity Index (WSSI)

Potential Winter Storm Impacts	
	No Impacts Impacts not expected.
	Limited Impacts Rarely a direct threat to life and property. Typically results in little inconveniences.
	Minor Impacts Rarely a direct threat to life and property. Typically results in an inconvenience to daily life.
	Moderate Impacts Often threatening to life and property, some damage unavoidable. Typically results in disruptions to daily life.
	Major Impacts Extensive property damage likely, life saving actions needed. Will likely result in major disruptions to daily life.
	Extreme Impacts Extensive and widespread severe property damage, life saving actions will be needed. Results in extreme disruptions to daily life.

The [Regional Snowfall Index \(RSI\) for the Northeast](#) is used to categorize significant snowstorms. The RSI ranks snowstorm effects on a scale from **1** to **5**, similar to the Enhanced Fujita Scale for tornadoes or the Saffir-Simpson Hurricane Wind Scale for hurricanes. The RSI differs from these other indices because it includes population, a social component. The RSI is based on the spatial extent of the storm, the amount of snowfall, and the juxtaposition of these elements with population. The Regional Snowfall Index (RSI) displayed in **Table 23** is a measurement of the magnitude of a snowstorm in the Northeast, which includes New Hampshire.

Table 23

Regional Snowfall Index (RSI) for the Northeast

Storm Category	RSI Value	Snow Description
1	1-3	Notable
2	3-6	Significant
3	6-10	Major
4	10-18	Crippling
5	18.0+	Extreme

Source: www.ncdc.noaa.gov/snow-and-ice/rsi/

(adapted by CNHRPC)

Several types of public alert warnings are issued to people have a chance to prepare and respond accordingly to the winter weather threat. Winter warnings are the most serious alert and represent different types of storms on the way as displayed in **Table 24**.

❄ Winter Watch BE PREPARED	Issued in the 24 to 72 hour forecast timeframe when the risk of a hazardous winter weather event has increased (50 to 80% certainty). It is intended to provide enough lead time so people can prepare.
❄ Winter Advisory BE AWARE	Advisories are issued when a hazardous winter weather event is occurring, is imminent, or has a very high probability of occurrence (generally greater than 80%). An advisory is for less serious conditions that cause significant inconvenience and, if caution is not exercised, could lead to situations that may threaten life and/or property.
❄ Winter Warning TAKE ACTION	Warnings are issued when a hazardous winter weather event is occurring, is imminent, or has a very high probability of occurrence (generally greater than 80%). A warning is used for conditions posing a threat to life or property within the next 12-36 hours.

Table 24

Winter Weather Warning Events

Warning Type	Criteria	Description for Next 12-36 Hours
Blizzard Warning	Gusts >= 35 mph, visibility <1/4 mile	Blizzard event is imminent or expected in the next 12 to 36 hours. Sustained wind or frequent gusts greater than or equal to 35 mph will accompany falling and/or blowing snow to frequently reduce visibility to less than 1/4 mile for three or more hours.
Ice Storm Warning	½" ice over 50% of area	An ice storm event is expected to meet or exceed local ice storm warning criteria in the next 12 to 36 hours. Criteria for ice is 1/2 inch or more over at least 50 percent of the zone or encompassing most of the population.
Winter Storm Warning	7" snow in 12 hrs, or 9+ snow in 24 hrs over 50% of area	A winter storm event (heavy sleet, heavy snow, ice storm, heavy snow and blowing snow or a combination of events) is expected to meet or exceed local winter storm warning criteria in the next 12 to 36 hours. Criteria for snow is 7 inches or more in 12 hours or less; or 9 inches or more in 24 hours covering at least 50 percent of the zone or encompassing most of the population. Use "mid-point" of snowfall range to trigger warning (i.e 5 to 8 inches of snow = warning). Criteria for ice is identical to Ice Storm Warning.
Lake Effect Snow Warning	7" snow in 12 hours, limited area	A lake effect snow event is expected to meet or exceed local lake effect snow warning criteria in the next 12 to 36 hours. Widespread or localized lake induced snow squalls or heavy snow showers which produce snowfall accumulation to 7 or more inches in 12 hours or less. Lake effect snow usually develops in narrow bands and impacts a limited area within a county or forecast zone. Use "mid-point" of snowfall range to trigger warning (i.e 5 to 8 inches of snow = warning).
Wind Chill Warning	Low temps to -25°F	Wind chill temperatures are expected to meet or exceed local wind chill warning criteria in the next 12 to 36 hours. Wind chill temperatures may reach or exceed -25°F.

Source: [Weather.gov](https://www.weather.gov), 2021

TECHNOLOGICAL HAZARDS

Many technological hazards could be construed as secondary hazards, as they often occur as the result of a primary (natural) hazard. For example, **power failure** or **transportation accidents** (technological) can result from severe winter weather (natural). Scientific measures of magnitude are generally not available for individual technological hazards, but they are provided for **debris impacted infrastructure** and **dam failure** which are closely related to **flooding** and for **hazardous materials spills** and **radiological incident**.

One of the technological hazards has been rated along with the natural hazards within the **Hazard Identification and Risk Assessment**. There are several specific hazards of the **TECHNOLOGICAL** hazard category examined in the **HIRA**:

Main Hazard Category	Specific Hazards Included			
TECHNOLOGICAL	AGING INFRASTRUCTURE Bridges, Culverts, Roads, Pipes or Underground Lines	DAM FAILURE Water Overtop, Breach, Beaver, etc.	FIRE Vehicle, Structure, Arson or Conflagration	HAZARDOUS MATERIALS Haz Mat Spills, Brownfields or Trucking
	LONG TERM UTILITY OUTAGE Power, Water, Sewer, Gas, Internet, Communications or Live Wire Danger			

Magnitude of Technological Events

The magnitudes of technological hazards are not addressed in this Plan. Technological events could have rating systems within their sphere of influence, but these are outside the scope of this **Hazard Mitigation Plan**. More information is provided for reference as needed for some of these technological hazards.

Aging Infrastructure

Infrastructure of a community includes its roads, sidewalks, bridges, culverts, water lines, sewer lines. Those components such as electric lines, telecommunications towers and dams are not considered in this section because they are not usually municipal-owned. The State of New Hampshire maintains responsibility for NH 106, NH 28, and US 3 in Hillsborough. The Town is responsible for **50 miles** of local Class V gravel and paved roadways, sidewalks, as well as the bridges and culverts. Communities in New Hampshire are faced with the dilemma of poor conditioned infrastructure with not enough funding to pay for rehabilitation, even with grants from the NH Department of Transportation (NHDOT) for roads and bridges and revolving loans from the NH Department of Environmental Services for water infrastructure.

Aging infrastructure creates hazards to people, through **transportation crashes**, **public health water quality crisis**, weakened bridges during **flooding** events, undersized culverts unable to accommodate storm water, and more.

Bridges, Culverts, Roads

Debris impacted infrastructure regularly occurs along the Central NH Region's rivers and streams and also along roadways. Rivers or brooks flowing under bridges or through culverts could get clogged or damaged by woody material or leaves in the watercourse. Culvert maintenance is particularly important before and during heavy rainfall and floods. Tree limbs falling onto power lines and onto roadways, disrupting both electricity and the roadway, occur during wind or winter storms.

Some of the gravel Town roads in Hillsborough are constructed using ditching instead of storm drains. The Town is required to develop and maintain MS4 stormwater regulations, which it has done. Some of the Town maintained roads are gravel, enabling easier maintenance and washout repair. Bridges and dams are described in the **APPENDIX A Critical and Community Vulnerability Assessment**.

Fire (Arson, Vehicle, Structure)

Fires which are not natural hazards are often associated with vehicles, structures or hazardous materials spills, or sometimes an explosion. These are considered **Technological Hazards**. Arson, the deliberate setting of a fire as an act of sabotage or mischief is a **Human Hazard** but is contained in this section for convenience. No magnitude scales were defined for these types of non-natural fires.

Hazardous Materials

Hazardous materials and hazardous wastes contain properties that make them potentially dangerous or harmful to humans. They can be liquids, solids, contained gases or sludge. Hazardous wastes can be the by-product of manufacturing, as well as discarded commercial products. Most households contain cleaning agents that become hazardous waste when disposed of improperly. Chemicals have numerous benefits but can also cause hazards during their production, storage, transportation, use or disposal.

Hazardous materials can have adverse health related effects and may even cause death in certain cases. In addition, hazardous materials may damage homes, businesses and other property, as well as natural ecosystems. Chemical accidents in plants or chemical spills during transportation may often release hazardous chemicals.

The risk from hazardous materials spills or releases into groundwater is present if consumers and homeowners make irresponsible decisions regarding the disposal of household chemicals. These household chemicals can contaminate drinking water in wells and cause damage to various ecosystems. Most people contaminate without being aware that they are doing so. Further education may be needed to reduce hazardous waste contamination. The necessity for continuing the program of holding biennial municipal Household Hazard Waste (HHW) collection days is crucial to helping to maintain a healthy environmental for Hillsborough's residents.

Long Term Utility Outage

Utilities systems exist everywhere and are subject to damage from construction work, accidents and extreme weather. Many utilities are protected by back-up generators to prevent failure, whatever the cause may be. Nuclear power plants produce roughly **20%** of the nation's power, they exist in nearly all states and 3 million Americans live within **10** miles of a nuclear power plant. The greatest risk to life resulting from a nuclear power plant failure is radiation contamination resulting from radiation release into the environment. People in the immediate vicinity are at greatest risk of radiation contamination. Another common source of energy, coal, can be potentially hazardous because coal power plants emit chemicals such as mercury and sulfur dioxide.

Any service-providing businesses in Town (gas station, bank, fast food, convenience, etc.) would rely on electricity provided by powerlines, and in many cases, enterprise comes to a standstill during disaster events. Aging, vulnerable populations are at greatest risk in rural Hillsborough from the effects of **power/utility failure** and **communications failure**. A few individuals in Town require oxygen and power failure and the likely accompanying communications systems failure would comprise the most vulnerable populations. The Fire and Rescue Department and Police Department conduct welfare checks for many residents known to be in need.

As a rule of thumb, all residents should be able to shelter in place in their homes for up to **3** days or **72** hours, gathering needed supplies and water ahead of time. **Power failure** can cause inconvenience, loss of economy, extra Town expenditures and staffing, and could restrict emergency response because the typical power failure is a secondary hazard caused by natural weather event. This problem is applicable to the **High Wind Events** and **Winter Weather** hazard events described earlier as well as **Debris Impacted Infrastructure** and **Transportation Crash** hazard events in the following sections.

Electricity

New Hampshire contains nuclear, coal and natural gas power plants. There is only one (1) coal power plant in New Hampshire, the Merrimack Station in Bow, currently owned by Granite Shore Power, formerly owned by Eversource and Public Service of New Hampshire. As of **2018**, the Merrimack Station is partially decommissioned, only operating when there is a need for additional kilowatt hours in the area. The Station requires **24** hours to become operational, then ceases firing when there is no additional electrical demand. The Merrimack Station is the largest coal-fired electrical generating station and when it was operating around the clock, supplied power to **190,000** households. Coal fuel generated only **7%** of the State's electricity in **2016**. Much of the State's electricity (**56% in 2016**) is provided by the Seabrook nuclear power reactor.

In the harsh environment that New Hampshire residents are subjected to, power and utility failures on an isolated level are commonplace. During nearly every heavy snowstorm, ice storm, or other severe weather event, customers can easily lose power and/or other utilities. Hillsborough is served by Eversource and Unitil.

Communications Systems Failure

Communications systems, like utilities, are found everywhere and are subject to damage by construction work, severe weather and traffic accidents. Because communications systems depend on electricity, any power outage may cause an interruption in a communications system. In addition, many communications systems have buried cables which are particularly vulnerable to being cut. Communications systems interruptions can negatively impact a region, town, neighborhood or household in the case of a natural disaster, catastrophe or other emergency. Power lines often share cables and poles with communications systems. When power fails, cable, telephone and radio services frequently fail as well.

Telecommunications towers often carry local, regional, county, state and sometimes federal antennas that relay emergency communications. In addition, personal cellular communications are often co-located at the same tower. When a major communications tower is out of service, its impacts are widespread. In some Central NH Regional municipalities, the existing towers do not provide coverage to the entire community and create dead zones. This is particularly dangerous to people without landlines or when emergency services are necessary. Regional and state communications are often co-located on the tower upon which Town's emergency communications are based (Plausawa Hill). The Town is a member of the Capital Area Mutual Aid Fire Compact which is a centralized communications hub for emergency fire and medical communications. The CAMAFC has redundancy sharing with the Lakes Region Fire Mutual Aid Compact.

HUMAN HAZARDS

Events of human nature include terrorism (ecological, cyber and chemical), sabotage/vandalism, hostage situations, and civil unrest. These are often “behind the scenes” hazards that local Police Departments handle on a regular basis. These events are all caused by direct human action. Mass casualty incidents, caused by any number of hazards, would also be addressed as a human hazard. Cyber events, while a technological hazard, are considered another type of artificial, human-developed hazard.

There are several types of **HUMAN** hazards examined in the **Hazard Identification and Risk Assessment**:

Main Hazard Category	Specific Hazards Included			
HUMAN	TRANSPORTATION CRASH Vehicle, Airplane, Helicopter, Rail, Interstate, Pedestrian or Bicycle	MASS CASUALTY INCIDENT As a result of any hazard event	TERRORISM/VIOLENCE Active Shooter, Hostage, Public Harm, Civil Disturbance/Unrest, Politically Motivated Attacks, Incendiary Devices, Sabotage or Vandalism	CYBER EVENT Municipal Computer Systems Attack, Cloud Data Breach, Identity Theft, Phishing, Ransomware or Virus

Human Hazards are examined by descriptions of the types of hazards and in the **Potential Future Hazards**. Scientific measures of magnitude are not available for individual human hazards.

Transportation Crashes

Automobile crashes could occur on any roadway in the Central NH region. A major accident would have the greatest impact for travelers on Interstates 93, 393 or 89; on US Route 202, US Route 4/202 or US Route 3; on NH Route 3A, NH Route 9, NH Route 13, NH Route 28, NH Route 31 NH Route 49, NH Route 77, NH 103, NH Route 106, NH Route 107, NH 114, NH Route 127, NH Route 129 and NH Route 132 or on their bypasses, interchanges, Exits and on/off ramps. These are high speed corridors with high traffic volumes. Many local roads allow for residential and commuter vehicles at low speeds. A vehicle-pedestrian or vehicle-bicycle crash has a greater casualty rate on the local and state roads as different road users use the same limited space.

In the region, the railroad lines along the Merrimack River create the potential for a (railcar) transportation accident. Trains could potentially derail, causing injuries or fatalities and hazardous materials spills. In the Central NH Region, the Concord-Lincoln Line runs **73** miles between Concord and Lincoln. The New Hampshire Maine Line runs between Concord, Nashua and Lowell, MA. Several communities through which these lines travel have expressed the concern about hazardous material spills due to transportation crashes or sabotage. Concord Municipal Airport is a small airport in the Central NH region used by private small planes, but Manchester-Boston Regional Airport (MHT) can be accessed via

NH 28 or US 3 in about 30 minutes. Air traffic can also be hazardous to the region's citizens. Small local helipad sites increase the chances for a possible aviation crash, especially in the higher elevations around Mount Kearsarge and Pat's Peak. With the technological prominence of personal drones that can be flown within site of the user, possibilities for drone crashes with people or vehicles increase.

Mass Casualty Incident

Mass casualty is the situation for which local, regional, state and national personnel train for treating large numbers of people who are injured from any natural, human or technological disaster. The Central NH Region has many partners for mass casualty training and preparation. [Capital Area Public Health Network](#) (CAPHN) works to promote, protect, and improve the health and well-being of communities within the Capital Area of New Hampshire through the proactive, coordinated, and comprehensive delivery of essential public health services. These include substance misuse prevention, suicide prevention, public health emergency preparedness, vaccinations, and more. The staff works with area emergency management directors. Across New Hampshire, there are **13** regional public health networks.

Concord Hospital is a **295**-licensed beds (plus **238** staffed beds) facility and the only trauma center in the Central NH Region. New London Hospital (**25** critical access beds, **58** long term care beds) and Franklin Regional Hospital (**25** critical access beds) are smaller hospitals in Merrimack County. In Laconia, the Lakes Region General Hospital (**137** beds) has a trauma center. The Dartmouth-Hitchcock Medical Center (**396** beds) in Lebanon has a trauma center and is New Hampshire's only and teaching hospital. The closest hospital to Hillsborough is the private [Monadnock Community Hospital in Peterborough](#). Mass casualty preparedness is a situation regularly trained for by hospital employees.

The [New Hampshire Hospital Association](#) provides leadership through advocacy, education and information in support of its member hospitals and health care delivery systems. The NHHA has an encourages its members to develop hospital emergency plans and staffs an Emergency Preparedness Coordinator position to plan for such events. **Mass casualties** of the magnitude that can be expected with a disaster related to terrorism or other incidents demand an expanded role for hospitals. They must be supported by their communities as they attempt to protect the facility, its patients and personnel while attending to the victims of a disaster. The NHHA has a mutual aid network designed to work together during times of crisis.

Terrorism/Violence

The use of force or violence against people to create fear, cause physical harm and/or intimidation or for reasons of ransom. Terrorists often make threats to create fear and change public opinion. Cyber terrorism consists of hackers who threaten the economy by attacking the intricate computer infrastructure, affecting business and communication. Biological and chemical terrorism refers to those infectious microbes or toxins used to produce illness or death in people or animals. Large groups or close quarters of people can make bioterrorism more effective. Terrorists may contaminate food or water, thus

threatening an unprotected civilian population. Eco-terrorism refers to the destruction of property by persons who are generally opposed to the destruction of the environment or to make a visible argument against forms of technology that may be destructive to the environment.

Sabotage/Vandalism

Sabotage is a deliberate action aimed at someone or some institution to weaken that person's or institution's integrity and reputation through subversion, destruction, obstruction, or disruption. Sabotage may occur in war, a workplace, in the natural environment, as a crime, in politics or as a direct attack against an individual. Vandalism is the willful defacement or destruction of property.

Hostage Situation

A **hostage situation** is an incident where innocent civilian(s) are held by someone or some group of persons demanding something from third party not related to the individual(s) being held hostage to ensure the fulfillment of certain terms. Often, a hostage situation results from a domestic dispute.

Civil Disturbance/Public Unrest

This hazard refers to types of disturbances that are caused by a group of people, often in protest against major socio-political problems including sit-ins or protests against wars and any general and public expression of outrage against a political establishment or policy. Many instances of **civil disturbance** and public unrest are quelled by a use of force from police. Participants may be victims of personal injury in severe cases. The most probable locations of larger civil disturbance and/or protest in New Hampshire are at the State House in Concord and at the universities and colleges. They have also occurred at political locations, such as feminist health centers or political party headquarters.

Bioterrorism

Biological hazards can also be caused by bioterrorism, the deliberate release of viruses, bacteria, or other germs (agents) used to cause illness or death in people, animals, or plants. The [US Center for Disease Control \(US CDC\)](#) has categorized the bioterrorism agents into priority Categories **A**, **B** or **C**, indicating how easily they can be spread and the severity of illness or death they cause. The bioterrorism Categories measure the risk of transmission of infectious organisms, germs, or pathogens but does not include chemicals.

Cyber Event

While **cyber events** could be considered technological hazards, they are deliberately initiated by a person or group of people, thus falling into the human hazard category. Cyberattacks are malicious attempts to access or damage a computer system. These events are socially- or politically- motivated attacks carried out primarily through the Internet. Cyberattacks target the general public or national and corporate organizations and are carried out through the spread of malicious programs (viruses), unauthorized web access, fake websites, and other means of stealing personal or institutional information from targets of

attacks, causing far-reaching damage. **Cyberattacks** are oriented toward organizations, services, and individuals to obtain private, technical, and institutional information, and other intellectual assets for the purpose of vandalism or monetary gain.

As computer crimes, they can cause serious consequences to those against which this threat is used. The cyber events range from more harmless such as website hacking, to personally harmful such as identity theft to more dangerous, such as those that cripple critical infrastructure. Cyber events cause harm to people or property and can generate fear. Much of the infrastructure upon which the State of NH relies is automated and could be subject to cyberattacks. These could include the government, military, communications systems, utilities, fuel, electrical systems, nuclear power plants, transportation systems, financial systems, emergency medical services and more.

On a municipal level, computer systems data storage, transmission of emergency communications, daily operations and monitoring or financial information, could be disrupted or be redirected to the perpetrators. Information Technology (IT) **cybersecurity** is paramount, as is employee training, to reduce the incidence of malware, phishing, SQL injection, man-in-the-middle attack, zero-day exploit, and other techniques to gain access to systems. With our society's increasing reliance on electronic devices and computers, Hillsborough's local government and residents should be prepared to address **cyber events** in the various and growing forms they take.

Potential Future Hazards

After the inventory of hazard types and past hazards in Town, a list of hazards which currently exist or need to be monitored in Hillsborough has been completed along with potential future hazards that could occur in the same or other areas. This unique listing of **Potential Future Hazards** was compiled so the Town can be aware of areas that might need to be watched for recurring hazardous problems or that may experience some of these hazards for the first time. The listing was developed by knowledge of the Hazard Mitigation Committee and past experiences of hazards. Past locations of hazard events, where they exist for each hazard, are listed under the individual hazard narratives in the previous section. The existing and susceptible hazard locations are taken from the **Hazard Identification and Risk Assessment (HIRA)**. With this existing and potential future knowledge listed side by side, it becomes easier for a community to plan mitigation measures for the most prominent hazard events in Town.

Potential future hazards in **Table 25** indicate locations in the community where a hazard event could occur and how that hazard could impact the Town. The **Overall Risk** score between **1-16** for the **14** rated hazards from the **HIRA** is provided to understand the scale of risk to Hillsborough from all natural hazards. Also from the **HIRA** is whether or not each hazard event occurred within the last **5** years in Hillsborough, indicated by either ***Events(s) Within Last 5 Years***, ***ANNUAL Occurrences Within Last 5 Years***, or ***NO Event(s) Within Last 5 Years*** beneath each *Hazard Category*. The magnitude or extent scale where available from previous **4 HAZARD RISK ASSESSMENT** descriptions enable possible effect measurement of the noted Hillsborough locations.

Table 25
Potential Future Hazards

Hazard Risk Assessment Hazards	Overall Risk	Potential Future Hazards – Locations and Impacts	Magnitude/ Extent Measurement Scales
DAM FAILURE Water Overtop, Breach, Beaver, etc. *Event(s) Within Last 5 Years*	4.0 LOW	<ul style="list-style-type: none"> The High Hazard (H) Hillsborough and Significant (S) Hazard and the Low (L) Hazard have the potential of flooding during a strong flooding event. Jackman Dam has breached before. Several Non-Menace dams are located along Contoocook River and its tributaries, and the multiple brooks found in town. A potential future breach of the High Hazard Jackman dam could flood the entire downtown and business district in minutes. Similarly, Emerald Lake Village District outlet homes and roads would be flooded. Beaver dams carry a high probability of flooding and potential for breakage. Beaver dams are located throughout the Town and depending on size and location, could cause significant damage to roads if the natural dams breach. The Public Works Department regularly breaks up smaller, temporary dams and relocates the beavers. 	♦ NHDES Dam Classifications
DROUGHT	6.7 MEDIUM	<ul style="list-style-type: none"> During future drought events, agricultural farms, orchards, nurseries, and tree farms run the risk of high damage from droughts 	♦ US Drought (D-scale)

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Hazard Risk Assessment Hazards	Overall Risk	Potential Future Hazards – Locations and Impacts	Magnitude/ Extent Measurement Scales
Event(s) Within Last 5 Years		<p>which also brings economic consequences. Some farms are homestead farms which provide food and income for owners. Crop and livestock loss are consequences of droughts in these locations. In Hillsborough, agricultural operations include multiple farms, orchards, nurseries, livestock, including), and others. When hayfields die off, livestock animals in Town cannot easily be locally fed. See APPENDIX A for the list.</p> <ul style="list-style-type: none"> • Drought has been a continuing problem and is expected to periodically occur in the future, the downtown village area of Hillsborough is served by a municipal water supply for which mandatory restrictions can be enacted. Private homeowner wells will continue to go dry especially at the higher elevations. When this occurs, the owners typically have a new well dug. Emerald Lake Village District wells go dry annually and water moratoriums have been declared. Water must be purchased for ELVD residents from the Water & Sewer Commission. • Town fire ponds and dry hydrants are found throughout the community, but over time they may dry up from drought. The Fire Department uses an alternate source of water such from the rivers instead of drawing from the water hydrants. Potential drought conditions result in increased risk of brush fire with dry vegetation. 	Monitor Intensity Scale
EARTHQUAKE *NO Event(s) Within Last 5 Years*	2.0 LOW	<ul style="list-style-type: none"> • Since Hillsborough is located near active but mild seismic regions, residents are expected to feel the larger future earthquakes, but any damages should be minor. • Locations to watch include historic buildings and essential Town facilities. Although the buildings may receive little damage from earthquakes, they should be carefully monitored because the buildings are structurally larger, typically contain numerous people, may contain vulnerable populations, and are critical to the Town's operations and culture. • Damage to utility poles and wires, roadways and infrastructure could be significant. Aboveground poles, underground electric lines, underground gas, water, and sewer lines could be susceptible. 	<ul style="list-style-type: none"> ◆ Richter Magnitude Scale ◆ Modified Mercalli Intensity Scale
EXTREME TEMPERATURES Excessive Heat, Heat Wave, or Cold, Wind Chill *Heat Event(s) Within Last 5 Years* *NO Cold Event(s) Within Last 5 Years*	10.7 LOW	<ul style="list-style-type: none"> • Excessive heat and extreme cold will continue to be problematic for Hillsborough residents. There are many group facilities, multi-family housing, manufactured housing parks, and the Schools containing seniors, children, vulnerable and/or marginalized populations. The Fire Department and Police Department should continue to check on at-risk residents when possible. • Should the temperature remain high (or low), the town shelter, Hillsborough-Deering Middle School could be opened as a temporary cooling (or warming) center. Additional shelters could be opened for cooling purposes without formal School District, Red Cross, and/or Capital Area Public Health Network assistance. 	<ul style="list-style-type: none"> ◆ NWS Heat Index ◆ NWS Excessive Heat Warnings ◆ NWS Windchill Index ◆ NWS Freeze Warnings
HIGH WIND EVENTS Wind,	8.0 HIGH	<ul style="list-style-type: none"> • All of Hillsborough will experience future severe wind, rainstorms, and thunderstorms often with lightning, particularly common in the summer months. In addition, tornadoes and downbursts are 	<ul style="list-style-type: none"> ◆ Enhanced Fujita (EF) Tornado Scale

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Hazard Risk Assessment Hazards	Overall Risk	Potential Future Hazards – Locations and Impacts	Magnitude/ Extent Measurement Scales
Thunderstorms, Hail, Downbursts, Tornadoes, Debris <i>*Event(s) Within Last 5 Years*</i>		<p>anticipated in the future based on past areal events. Flooding, debris, and property damage will accompany these events. Electrical power (Eversource) is disrupted during most wind-related events. The main telecommunications tower and antennas on Hall and Bible Hill roads, water and sewer pumping stations for both the Town and the Emerald Lake Village District, Eversource electric lines and substations, and transmission lines could be damaged by High Wind events.</p> <ul style="list-style-type: none"> • The whole Town could be impacted by a tornado or downburst. Winds alongside the Contoocook River, in the downtown village area, or along US 202 and NH 9, NH 149 or NH 31 could be strong, as tornadoes travel through flat areas and valleys. These cover much of the geography of the Town, where people and vulnerable facilities would be at risk. • Future high wind events will likely endanger roadways and utility lines from falling trees and limbs. US 202 and NH 9, NH 149 or NH 31, West Main Street, Center Road and East Washington Road are critical local routes that lead to hundreds of residences. Other Class V town roads may be suitable for temporary commuter detour traveling but most of them are gravel and hilly and are in danger of tree fall during high wind events. Others lead to unmaintained Class VI roads. These steep slopes and hillsides leading to homes. • Much of the Town north of US 202 is wooded and forested. The defined historic districts are located on East Washington Road and River Street with essential Town services and historic facilities along West Main and School Streets. Sections would be difficult to access with trees and power lines down on the residential roads. High density developed areas such as the downtown village area, the Emerald Lake Village District, or many of the manufactured housing parks can have greater impacts from a potential high wind event. Should a downburst or tornado run through the recreational areas and current use lands, recreationalists would likely need assistance if a severe weather event was unexpected. • Older historic or wooden buildings include public and private buildings (historic homes), Churches, Old Schoolhouses, historical monuments, and cemeteries throughout Town may be more vulnerable to wind damage because of their age and type of construction. 	<p>◆ NWS Thunderstorm Risk Categories</p> <p>◆ NWS Damage Threats for Severe Thunderstorm Warnings</p>
INLAND FLOODING Rains, Snow Melt or Flash Floods <i>*Event(s) Within Last 5 Years*</i>	<p>8.0 HIGH</p>	<ul style="list-style-type: none"> • Future flooding is expected in Hillsborough, whether from storm events or snowpack melt. The Contoocook River, North Branch River, Brooks, unnamed streams, and culverts have the potential to flood their banks. Rain events are concurrent with beaver dam events and culvert washouts, a compounded problem. <p>Wide floodplains of the Contoocook River result in expanded flooding and damage from North Branch River, Shedd Brook, and other large brooks are likely. The towns floodplain locations</p>	<p>◆ Special Flood Hazard Areas (SFHAs) on 2010 Digital Flood Rate Insurance Maps (Zones A, AE, X)</p> <p>◆ Flood Action Stages (River Gages)</p>

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Hazard Risk Assessment Hazards	Overall Risk	Potential Future Hazards – Locations and Impacts	Magnitude/ Extent Measurement Scales
		<p>potentially threaten high density areas such as the downtown village area and the Emerald Lake Village District.</p> <ul style="list-style-type: none"> Some of the Town’s roads have steep slopes and tend to washout during storm events. The community has unnamed brooks that flow under roads that would become impassible during heavy rainfall and resultant flooding conditions. Regularly washout locations are identified and are anticipated to do so in the future from spring snow melts or heavy rainfall at least until repaired. Bridges likely have come close to flooding, with water flowing just underneath the decking. The historic stone arch bridges are more likely to flood or be damaged due to their age and design. Newer bridges are elevated from the banks, so flooding would have to be significant to overtop. See also the Special Flood Hazard Areas (floodplains), Waterbodies, and Road Washouts sections for details. The SFHAs and road washout areas are anticipated to flood in the future during extreme events. 	
LANDSLIDE Soil, Rockslide or Excavation Areas *NO Event(s) Within Last 5 Years*	1.0 LOW	<ul style="list-style-type: none"> Generally, vegetation and best operational practices of excavation sites in Hillsborough are good at preventing landslides or rockslides. Sites include the commercial excavation operations, some of which has been reclaimed. Potential future landslides are not expected to occur at the excavation sites in Town, although slides are possible under the right conditions. The Town has numerous hills over 800’ in elevation or on slopes greater than 15%, most of them with roadways leading to homes. The Contoocook River’s sandy banks are easily erodible and with powerful flooding could experience bank failure and landslide. This would potentially impact roadways along the Contoocook River. Roads with steep ditching or embankments will remain vulnerable to landslide in the future. Road washouts and flash-flooding of gravel or paved roads could cause landslides. Gravel roads with ditching in Hillsborough could be subject to landslide conditions (see Inland Flooding). Blasted State or US Routes can have landslide (small rocks land on the roadway occasionally). Landslide is an uncommon hazard but one that could cause property damage, otherwise the Town is not particularly susceptible. 	<p>◆ No known widely-used scale measuring the magnitude of landslides</p>
LIGHTNING *Event(s) Within Last 5 Years*	5.3 MEDIUM	<ul style="list-style-type: none"> Future lightning strikes may cause damage to large tax-exempt facilities and buildings without lightning rods may also be susceptible in cleared areas or on the high hills. Conflagration could start at these denser facilities because of lightning strike and be most dangerous. Other structures and homes located in the populated areas would be most vulnerable to the power surges and outages caused by these strikes, especially those high-density populations in proximity to wooded and forested areas. The potential for resulting wildfire and conflagration is high in these densely populated areas. 	<p>◆ Lightning Activity Level (LAL)</p>

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Hazard Risk Assessment Hazards	Overall Risk	Potential Future Hazards – Locations and Impacts	Magnitude/ Extent Measurement Scales
		<ul style="list-style-type: none"> • Town essential facilities buildings, construction/lumber businesses, and the hazmat or fuel businesses (businesses with potentially hazardous materials onsite such as fuel, gasoline, natural gas, propane) and used fluids (various automotive repair shops) could each be vulnerable to lightning and fire. The Town Public Works Garage, Transfer Station, and National Guard operations could be vulnerable to lightning strike. • The higher elevations north of US 202 and NH 9 may be susceptible to lightning. • Outdoor utilities and antennas are highly vulnerable to future lightning strike, such as the telecommunications tower, electric lines, and telephone switching stations, repeaters, Town and Emerald Lake Village District water towers, and other communications equipment. • Forested areas and open recreation fields can be dangerous to people and property. Trees are often struck. These include the public Town lands and State Forests, conservation areas, and points of higher elevation which can be dangerous to people and property if struck by lightning. Outdoor recreational and gathering places could be vulnerable to lightning. Some locations cannot be easily accessed by emergency vehicles, whether to fight the fire or remove people from harm's way. 	
PUBLIC HEALTH Infectious Diseases, Air & Water Quality, Biological, Addiction, Arboviral, or Tick-borne <i>*Event(s) Within Last 5 Years*</i>	10.7 HIGH	<ul style="list-style-type: none"> • Public health issues may occur in the community in the future during warm or cold months. For indoor contamination, the highest risk facilities for pick-up or transfer of viruses and bacteria can include the: Hillsborough Schools, Churches, Hillsborough House Nursing Home Assisted Living, and Town Hall. Food-borne illness can be transferred at eateries. More often in the winter, residents of Hillsborough in close quarters may get sick from different viruses. • Outdoor susceptibility to arboviral and tickborne diseases is expected to grow. Hillsborough is a highly rural community with many waterbodies, wetlands, and other swampy areas for these arthropods to thrive. The wet areas, vernal pools and the many public trails on conservation lands can also enable transmission. Several animal farms are in the area and can contribute to infection. • Air quality warnings from Canadian fires and drifting smog do little to prevent particulate inhalation by Hillsborough's more vulnerable populations and outdoor enthusiasts. • Banks of the Contoocook River, Manahan Park on Franklin Pierce Lake, and any other watercourse or waterbody used as beaches may expose people to cyanobacteria or E.Coli. The public canoe launches/ beaches can be shut down in the future due to high bacteria levels, and this situation is one to watch during the warm season in July-August. • Much of West Main Street and its high density and businesses are situated close to high transmissivity aquifers. Potential 	◆ CDC Infectious Disease Levels Scale

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Hazard Risk Assessment Hazards	Overall Risk	Potential Future Hazards – Locations and Impacts	Magnitude/ Extent Measurement Scales
		<p>environmental damage to water quality by trucking, fuel spills, and long-term exposure is a concern. Thousands of Hillsborough and area residents could obtain water from these aquifers.</p> <ul style="list-style-type: none"> The Town's local Point of Dispensing (POD) is located at the Town Shelter, Hillsborough-Deering Middle School. Hillsborough is a member of the Capital Area Public Health Network, which will assist the Town in times of public health crisis. 	
RIVER HAZARDS Ice Jams, Scouring, Erosion, Channel Movement or Debris <i>*Event(s) Within Last 5 Years*</i>	2.7 LOW	<ul style="list-style-type: none"> Future ice jams in the Contoocook River could be expected. Roads within the Rivers' floodplain areas could in the future be subject to ice jam damage. A potential ice jam on the Contoocook Could jam the US 202 and NH 9 Overpass or the Beard Brook NH 9 Overpass. Other sites potentially susceptible to debris impacting infrastructure could be the Bridge Street Dam, Stone Arch Bridge Park, and Jackman Dam at Franklin Pierce Lake Reservoir. Wide floodplains along the Contoocook River could become inundated, and evacuations might be necessary. The Contoocook flows through the downtown Hillsborough village area. Flooding, erosion, and channel movement has the potential to occur on West Main Street, West Mill Street, River Street, Bear Hill Road, Henniker Street, Contoocook Falls Road, Old Railroad Drive and at Grimes Field. Property damage and personal injuries could occur. Numerous brooks and waterbodies in Hillsborough have the potential to flood, erode, and experience channel movement as well. The Emerald Lake Village District is potentially the property most vulnerable due to its density and proximity to a waterbody. Floating debris down Rivers and brooks can accumulate at bridges and dams during future flooding events. 	<ul style="list-style-type: none"> ◆ EPA Bank Erosion Risk Index
SEVERE WINTER WEATHER Snow, Ice, Blizzard or Nor'Easter <i>*Event(s) Within Last 5 Years*</i>	8.0 HIGH	<ul style="list-style-type: none"> It is extremely likely that Hillsborough will be impacted by severe winter weather in the future. Damage and serious conditions can result in all areas of the community. Areas above 800 feet (See Map 1), the remote, forested, and difficult to access areas are among the most vulnerable areas to ice and snow conditions. As severe winter conditions are expected to continue in the future and to increase in severity, concerns remain regarding safety on roads, especially in narrow, straight areas and at intersections. Many local roads have a sharp incline/decline and cars have trouble traveling the roads during winter conditions, especially when icy. See the Table of One Egress/Cul-de-Sac Roads in Town. Public Works Department keeps up with the snowfall on the Town roads, but ice storms require more time and resources to keep the roads safe. During the winter months, the crew sees regular severe warming and snowmelt which then freezes to ice. With the changing climate, this situation is anticipated to grow in the future. Areas of concern during winter weather include the more highly traveled roads – US 202 and NH 9, NH 149, NH 31, West Main Street, 	<ul style="list-style-type: none"> ◆ Potential Winter Storm Severity Index (WSSI) ◆ NCDC Regional Snowfall Index (RSI) for Northeast ◆ NWS Winter Weather Warning Events

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Hazard Risk Assessment Hazards	Overall Risk	Potential Future Hazards – Locations and Impacts	Magnitude/ Extent Measurement Scales
		<p>and Center Road. Power outages and isolation may occur from heavy snow loads and downed trees on roads.</p> <ul style="list-style-type: none"> • The Town facilities buildings, Town Hall, Library, Police and Fire Stations, Public Works Garage, Highway Department and Transfer Station, Loon Pond Reservoir Water Treatment Facility, Hillsborough Wastewater Treatment Plant, and Emerald Lake Village District Main Pump House Facility and Water Treatment Facility must be able to function during severe winter events. Personnel driving to and from these facilities must travel on the main roads. • During future storms, some historic buildings or Town facilities with large or flat roofs, barns or sheds, and older manufactured homes may be vulnerable to heavy snow loads or other events that could cause the roof to collapse. Flat roofs can be a problem with snow-loading. • The Hall and Bible Hill road telecommunications towers and antennas, Eversource electric lines and switching stations as well as Department building antennas could be highly impacted from future snow, ice, and blizzards. 	
SOLAR STORMS AND SPACE WEATHER Solar Winds, Geomagnetic Storms (Aurora Borealis), Solar Radiation or Radio Blackout *NO Event(s) Within Last 5 Years**	1.0 LOW	<ul style="list-style-type: none"> • The aurora borealis has been photographed on nearby Mount Kearsarge in Warner 10 miles to the north due to geomagnetic storms. These types of events are likely to recur. At this time, the Town is aware of potential impacts to its communications and electrical systems to its Town and School facilities but has rated the hazard unlikely to cause damages. • Eversource high tension power lines or telephone/fiber switching stations could be impacted in the future by a geomagnetic event as could Town Department radios, base station, cellular phones, and VOIP that use emergency communications. • Hillsborough is a member of Capital Area Mutual Aid Fire Compact dispatch which in 2020 combined with Lakes Region Mutual Aid dispatch. The Police Department uses the Merrimack County Sheriff's Office dispatch. Other Town staff (Highway, Town Office, and residents) rely on non-locally owned cell towers with national service provider antennas. Repeaters on the tower require backup generator maintenance and operation, which is out of local control. 	♦ NOAA Geomagnetic Storms Scale ♦ NOAA Solar Radiation Storms Scale ♦ NOAA Radio Blackouts Scale
TROPICAL AND POST-TROPICAL CYCLONES Hurricanes, Tropical Storms or Tree Debris *NO Event(s) Within Last 5 Years*	9.0 High	<ul style="list-style-type: none"> • The last tropical and post tropical storm to impact Hillsborough was Hurricane Sandy in 2012. There will be future tropical cyclones to impact Hillsborough. Although the vulnerable areas are spread all over Town instead of more site- specific, the facilities and locations at greatest risk are shared with High Wind Events and Inland Flooding above. 	♦ Saffir-Simpson Hurricane Wind Scale
WILDFIRE Brushfire, Outdoor Fires or Accidental	8.0 HIGH	<ul style="list-style-type: none"> • Although few substantial wildfires have impacted Hillsborough since the last Plan, the potential exists for large fires in remote or difficult to access locations in the future. Drier foliage, slash on the 	♦ NWCG Wildfire Classification

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Hazard Risk Assessment Hazards	Overall Risk	Potential Future Hazards – Locations and Impacts	Magnitude/ Extent Measurement Scales
Event(s) Within Last 5 Years		<p>ground, one-egress roadways, in the conservation lands and in private woodlots could mean both future severe fires and difficulty accessing these fires should the need arise. As a member of the Concord Area Fire Mutual Aid Compact, the Town regularly provides other communities with mutual aid for wildfires and would receive aid in turn.</p> <ul style="list-style-type: none"> The public conservation lands and trail systems are heavily used and may be the primary concern for future wildfires. Town Forests, Fox State Forest, Chute Forest, Low State Forest, and the Emerald Lake Village District are more prone to potential wildfire due to tree density. Numerous neighborhoods with about 1,500 people are surrounded by woods and have only one egress/access route. The Town is dotted with these cul-de-sac and one-egress residential roads (Class V, Class VI and private) in the Wildland Urban Interface which have limited emergency access. Northern Hillsborough and the unmaintained roads are particularly vulnerable to wildfire. Hillsborough is heavily wooded, with difficult, remote areas and many slopes. 2020 land use indicates the forest areas are declining, but additional lands are residential with wooded unbuilt area. Any residential area within Town could be particularly prone to wildfire since all are situated in rural and wooded locations. Most new subdivisions which are approved occur on sloped wooded areas, but most are required to have an adequate cistern or flowing water supply for firefighting. A lot of slash remains on the ground. See also Lightning. 	<p>◆ National Fire Danger Rating System</p>
TECHNOLOGICAL AND HUMAN HAZARDS			
AGING INFRASTRUCTURE Bridges, Culverts, Roads, Pipes or Underground Lines *Event(s) Within Last 5 Years*	not scored	<ul style="list-style-type: none"> Most of the Town's infrastructure is aging and only able to be replaced on a priority basis. Therefore, any future natural hazard could render the culverts, ditching, and drainage systems vulnerable. Hillsborough owns many bridges that are failing and redlisted, including bridges over Beards Brook, Bear Brook, and Sand Brook. Non-redlisted bridges and the historic stone arch bridges in town are also aging and could be subject to future floods, ice, transportation crashes or debris impacted infrastructure. See APPENDIX A for the list. There are municipal water lines, wastewater lines, stormwater lines, and natural gas lines. Future hazard events such as earthquakes, floods, hard freezing and continued aging infrastructure will make any existing problems worse. See the list of Road Washouts for a list of culverts susceptible to future floods, ice jams, debris, and other hazards as well as the Action Plan to address them. 	N/A

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Hazard Risk Assessment Hazards	Overall Risk	Potential Future Hazards – Locations and Impacts	Magnitude/ Extent Measurement Scales
		<ul style="list-style-type: none"> The Town's 66 miles of roads often difficult to maintain, upgrade and rehabilitate because of lack of funding. Only the priority roads are upgraded. The Town Public Works Dept Budget will only stretch to the immediate priorities, while flooding events and severe winter weather are anticipated to increase and impact multiple roads during each event. Asset management and inventories are available for most Town infrastructure, including RSMS for roads. 	
FIRE Vehicle, Structure, Arson or Conflagration <i>*Event(s) Within Last 5 Years*</i>	not scored	<ul style="list-style-type: none"> The previously noted higher density areas could be subject to potential conflagration which would have devastating effects on the entire community. Drought conditions increase dryness and flammability. Serious vehicular fires resulting from crashes could occur, especially on US 202 and NH 9, NH 149, or NH 31 where speeds are faster, and more delivery vehicles travel. Some delivery vehicles carry fuel (gasoline, diesel, propane, natural gas, flammable haz mat) to local businesses. The multiple construction, excavation, lumber, automotive and fuel businesses in Town could be subject to potential explosions or fires (see APPENDIX A for the list). Significant risks include Barrett and Gould (Osram Annex), JB Vaillancourt, Rymes Fuel, PMH Auto Repair, SC Auto Repair, New England Development, and local gas stations. Vacant structures, vacant housing units, housing run by absentee landlords, unmaintained housing, or similar commercial structures run a greater risk of arson than occupied or well-kept premises. Seasonal buildings or buildings in densely populated areas such as the Emerald Lake Village District or residential manufactured home parks carry a greater potential for fire. Conservation areas and public trails may carry the significant risks and damages of any future arson or accidental fire. 	N/A
HAZARDOUS MATERIALS Haz Mat Spills, Brownfields or Trucking <i>*Event(s) Within Last 5 Years*</i>	not scored	<ul style="list-style-type: none"> Transportation of hazardous materials on US 202 and NH 9, NH 149 or NH 31 could be an everyday occurrence through Hillsborough. In the future, delivery trucks could rollover to spill their contents (fuel, liquids, propane, solids, etc) onto these significant roadways. High traffic volumes would contribute to secondary crashes and long detours. Should a future haz mat spill occur in Hillsborough, not only could the contents of the spill reach the adjacent Contoocook River, North Branch River, or brooks, but also downtown Hillsborough village area or other at-risk resident populations would need to be immediately evacuated or the decision to shelter in place would need to be made and conveyed to occupants. Several occupational facilities in Town handle, store, or use hazardous materials. Any of these facilities could have a spill at their site or during transport which could result in a spill. Key sites include 	N/A

4 HAZARD RISK ASSESSMENT

Hazard Risk Assessment Hazards	Overall Risk	Potential Future Hazards – Locations and Impacts	Magnitude/ Extent Measurement Scales
		<p>any fuel stations, auto repair shops, excavation sites, or construction businesses. See APPENDIX A for the full list.</p> <ul style="list-style-type: none"> Existing and future potential brownfields sites such as old mills along the rivers, vacant or former industrial properties, salvage yards and illegal junkyards may exist and pose future danger to new property owners or river users in the area. The Town should be aware of and inventory these locations. 	
LONG TERM UTILITY OUTAGE Power, Water, Sewer, Gas, Internet, Communications or Live Wire Danger <i>*Event(s) Within Last 5 Years*</i>	not scored	<ul style="list-style-type: none"> Aboveground electric lines in Hillsborough make the Town particularly vulnerable to outage during future disaster events. High tension transmission lines run through the Town. Utilities (Eversource, Granite State Telephone, TDS) may be restored to the most critical areas first, the Town facilities, before the more remote locations in Hillsborough have utilities restored. The most Town facilities have backup generator when electricity fails, but long-term solutions are necessary when outages over 3 days occur. There are several miles of underground water, gas, and sewer lines in Hillsborough from which a strategic break could isolate all those connections at the far end of the line. The same is potentially true of the water and sewer utilities in the Emerald Lake Village District. Long-term future electricity outages may impact the rural residents and the schools most heavily. Many Hillsborough residences own generators for their homes or have solar panels and are prepared for several days of no utilities to their homes during future storms. Additionally, older residents including those at Hillsboro House Nursing Home Assisted Living are potentially effected more heavily during an outage. The telecommunications towers located on Hall and Bible Hill roads, contain cellular antennas, CAFMAC, County, State, and federal repeaters may be disrupted during future storm events. Local antennas are located on Town Department buildings and are especially vulnerable. Essential communications may be paused until redundant capabilities are reestablished in the region. 	N/A
TRANSPORTATION CRASH Vehicle, Airplane, Helicopter, Rail, Interstate, Pedestrian or Bicycle <i>*ANNUAL Occurrences Within Last 5 Years*</i>	not scored	<ul style="list-style-type: none"> With US 202 and NH 9, NH 149, and NH 31 all running through Hillsborough, the Town's Fire Dept and Police Department are often the first to respond to the vehicle crashes experienced on these main State and local roadways. These routes are used heavily by commuters as they travel through Hillsborough to their destinations. Crashes may increase over time, especially when conditions become icy from winter snow melt for the fast highways and greater numbers of vehicles use the roads. The Town maintained roads, Class VI unmaintained roads and private roads can have elevation changes that will continue to make travel difficult in the future in snowy, icy, flooded, or debris blockage conditions. See Winter Hazards for the list. Any time of year, dangerous intersections become more difficult to navigate with 	N/A

4 HAZARD RISK ASSESSMENT

Hazard Risk Assessment Hazards	Overall Risk	Potential Future Hazards – Locations and Impacts	Magnitude/ Extent Measurement Scales
		<p>heavy winds, rain, treefall, or flooding hazards and could cause crashes.</p> <ul style="list-style-type: none"> The downtown Hillsborough village area is one place where vehicle/pedestrian or bicycle crashes could occur in the future. Other locations include pedestrians walking along West Main Street, and sidewalks and crosswalks near the schools. With high speeds in most of the areas, bikes and pedestrian have the potential for serious crashes with vehicles. With the increased usage of private drones for personal or commercial use, the future potential for their crashing in populated areas or causing vehicular crashes is anticipated to rise. 	
MASS CASUALTY INCIDENT As a result of any hazard event *NO Event(s) Within Last 5 Years*	not scored	<ul style="list-style-type: none"> Large groups of people are regularly located at the Town Hall, the Schools, and the NH Army National Guard which may be where a future mass casualty event (incidents exceeding d the Tri-Town Ambulance capacity) could occur because of any other type of hazard event. Hillsborough is a vibrant community with active groups and social calendars. Events such as political candidate visits, Hillsborough School District sporting events, School Board meetings, Town Meeting, Church events, and other community gatherings could set the location for future mass casualty incidents. Concord Hospital is 25 minutes from Pembroke and is the closest hospital with a trauma center. There are few private practice doctors and dentists in Town to assist with mass casualty incidents. During times of mass casualty, it is likely the communications network will be overloaded. Residents may not be able to telephone, and emergency responders could have difficulty reaching assistance. The Town Hall, Schools, Fire Department, Tri-Town Ambulance, and Police Department phone lines could be jammed with callers. During this time, the Town website should be updated regularly. 	N/A
TERRORISM/ VIOLENCE Active Shooter, Hostage, Public Harm, Civil Disturbance/ Unrest, Politically Motivated Attacks, Incendiary Devices, Sabotage or Vandalism *Events(s) Within Last 5 Years*	not scored	<ul style="list-style-type: none"> It is possible the Town could be the target of an act of terrorism based on current national trends. Possible susceptible non-municipal targets could include strategic facilities like the NH Army National Guard, churches, or the Schools. The municipal facilities in Hillsborough, Town Hall, Library, Police and Fire Departments, Public Works Garage, Transfer Station, or Wastewater Treatment facilities have a risk of terrorism or violence. Vandalism of Town cemeteries may also occur. Future hostage situations are isolated events and are nearly impossible to predict. The sites where this potential exists could include those listed above under Terrorism, the high density housing neighborhoods (see Severe Winter Weather) and everyday domestic situations. Isolated incidents of violence could occur in the remote forested areas and trails of those Forests, state lands, and conservation lands listed in the Lightning section. 	N/A

Hazard Risk Assessment Hazards	Overall Risk	Potential Future Hazards – Locations and Impacts	Magnitude/ Extent Measurement Scales
		<ul style="list-style-type: none"> • Large scale incidents of civil disturbance and public unrest are possible in Hillsborough, but unlikely based upon the local facilities. However, the Town’s participation in the Central NH Special Operations Unit enables Hillsborough’s mutual aid assistance where needed. • Bomb threats at the schools are a possibility based on current attitudes and trends. The bridges, dams and cultural landmarks could be subject to terrorist threats or bombs that disrupt major travel routes. • Any future sabotage of local utilities, Eversource lines, high tension power lines, stormwater systems, water and sewer lines, gas lines, pump stations, telecommunications towers, telephone and internet substations, or the local High, Significant and Low Hazard dams could cause an immense amount of damage in Hillsborough. 	
CYBER EVENT Municipal Computer Systems Attack, Website Overtake, Cloud Data Breach, Telephone Rerouting, Identity Theft, Phishing, Ransomware, Virus or Phone Scams *ANNUAL Occurrences Within Last 5 Years*	not scored	<ul style="list-style-type: none"> • The entire Town – residents, businesses, municipal, School District, and state facilities- could be subject to future cyber events. Cyberattacks could target their websites, computer systems, cloud data systems, archival records, or use email phishing or related techniques to install ransomware, etc. The Town Hall, Library, Departments, Schools, Water Works, Wastewater Treatment, any technology businesses would be high-value targets for their software and their archival systems. • Email scams, phone scams, door-to-door canvassing, and identity theft are likely to continue in the future, causing regular problems for residents and businesses. These scams are more likely to impact the Town’s senior residents. Significant future damage could be done to municipal and School systems, in addition to tech businesses and other facilities located in Town. Private businesses targeted could create a negative economic impact on the community. 	N/A

Source: Hillsborough Hazard Mitigation Committee

Although there are many potential hazards in Hillsborough’s future, the community is knowledgeable about where some of the worst occurrences might result with this descriptive **Potential Future Hazards** inventory. A comprehensive, specific community facility inventory that indicates each site’s **Primary Hazard Vulnerabilities** is found next in **5 COMMUNITY VULNERABILITY ASSESSMENT**.

INLAND FLOODING

Flooding is a more easily locatable hazard as waterbodies can be used to approximate the range of future potential flooding areas. The Special Flood Hazard Areas, waterbodies, and road washout locations are listed in detail below for Hillsborough.

Special Flood Hazard Areas (SFHA)

There are active **18** Digital Flood Insurance Rate Maps (DFIRMs) in Hillsborough from the **September 2009** updated set, plus **2** more DFIRMs which do not have flood zones or watercourses. Base Flood Elevations (BFEs) are abundant along the **Contoocook River**, **North Branch River**, and **Beard's Brook** on the DFIRMs. **Shedd Brook**, **Sand Brook** and **Black Pond** round out the **BFE** flood panels.

The primary DFIRM panels identifying floodplains in Hillsborough (Community **#330090**) are along the **Contoocook River**, **North Branch River**, **Beards Brook**, **Sand Brook**, **Black Pond Brook**, and **Shedd Brook**: **#0126D**, **#0127D**, **#0131D**, **#0132D**, **#0151D**, **#0038D**, **#0039D**, **#0045D**, **#0044D**, **#0063D**, **#0017D**, **#0036D** and **#0037D**. These (**13**) DFIRMs include regular **BFEs** along their watercourse spans through Town and have SHFA **Zone AE** (**1%** annual risk of flooding) with floodways mapped out. These DFIRM panels are highlighted green in **Table 26**.

Three (**3**) more DFIRM panels display only the **1%** annual risk of flooding without floodways, SHFA **Zone A** (**100-year**): **#0020D**, **#0009D**, and **#0035D**. Two (**2**) other DFIRMs on **#0016D** and **#0030D** display **Zone X** locations of **0.2%** annual risk of flooding (**500-year**). One (**1**) DFIRM (**#0128D**) did not have SFHAs in Town and the last (**1**) DFIRM panel **#0016D** was not printed because there are no SFHAs to map. They also appear in **Table 26** to complete the SFHA portrait of the community.

Table 26

Locations of Hillsborough Special Flood Hazard Areas (SFHA) on 2009 DFIRMS

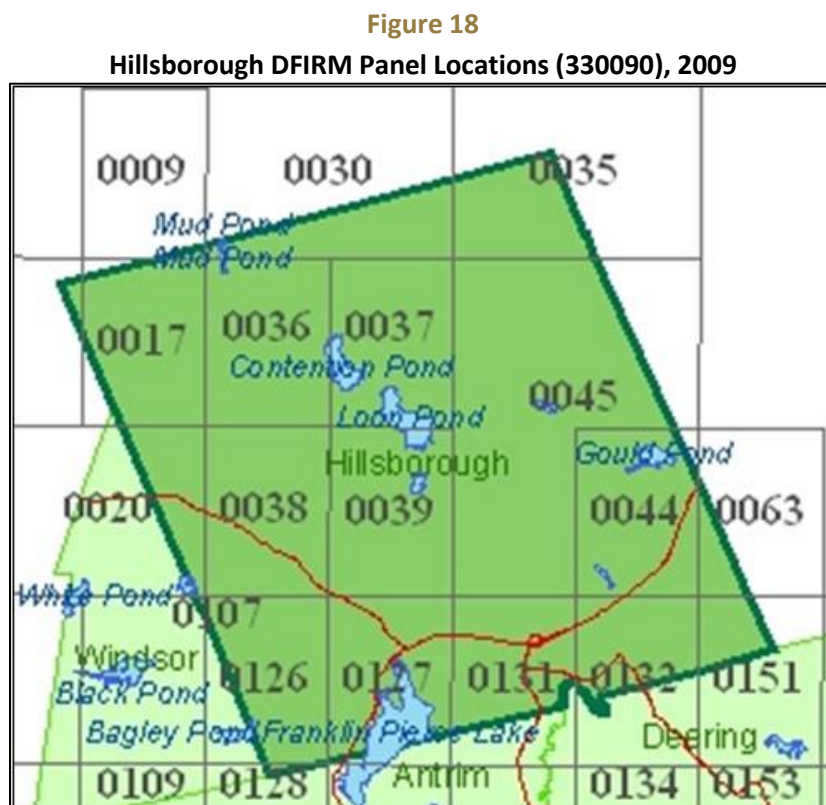
Panel NH (33011C)	Flood Zones in Hillsborough (330090)	Base Flood Elevations (BFEs)	Water Body Areas in Floodplains	Community of Hillsborough Geographic Location
#0126D	AE, X - Black Pond Brook. A - Bagley Brook.	Black Pond Brook- 976' -> 944'	Black Pond Brook, Bagley Brook	Western-southwest edge of Town bordering Windsor. Area contains Hall Road, Sulphur Hill Road.
#0127D	AE, X - Beard Brook, Shedd Brook, North Branch River. A - Jackman Reservoir/ Franklin Pierce Lake, Bagley Brook. X - Sulphur Brook, Jackman Reservoir/ Franklin Pierce Lake.	Beard- 637' Shedd- 747' -> 641' N Branch- 740' -> 673'	Beard Brook, Shedd Brook, Jackman Reservoir/ Franklin Pierce Lake, North Branch River, Sulphur Brook, Bagley Brook.	South-southwestern edge of Town bordering Antrim. Area includes West Main Street, Keene Road, Jackman Reservoir/Franklin Pierce Lake.
#0131D	AE, X - Beard Brook, Shedd Brook,	Beard- 637' -> 597' Shedd-	Beard Brook, Shedd Brook, Contoocook	Southern central edge of Town bordering Antrim and Deering.

Panel NH (33011C)	Flood Zones in Hillsborough (330090)	Base Flood Elevations (BFEs)	Water Body Areas in Floodplains	Community of Hillsborough Geographic Location
	Contoocook River, North Branch River.	641' -> 632' Contoocook-595' -> 594' N Branch-673' -> 595'	River, North Branch River.	Contains West Main Street, Saw Mill Road, US Route 202
#0132D	AE, X - Contoocook River. A - Unnamed Streams (Longwoods to Deering Center Rd). X - Unnamed Streams (W & E of Longwoods Rd).	Contoocook-594' -> 557'	Contoocook River, Multiple Unnamed Streams	Southeastern edge of Town bordering Deering. Contains Main Street, Route 149, Deering Center Road, Longwoods Road.
#0151D	AE, X - Contoocook River flooding effects.	Contoocook-557'	Flooding effects from Contoocook River	Southeastern corner of Town bordering Deering and also Henniker in Merrimack Cty.
#0038D	AE, X - Black Pond Brook. A - Shedd Brook. X - Unnamed Stream, Unnamed Wetland	Black Pond-945' -> 851'	Black Pond Brook, Shedd Brook, Unnamed Stream, Unnamed Wetland	Western central area of Town including Second NH Turnpike, Poverty Plains Road, Stow Mountain Road, Gleason Falls Road, Windsor Road, Farley Road.
#0039D	AE, X - Shedd Brook, Beards Brook. A - Loon Pond, Unnamed Wetland	Beards-816' -> 627' Shedd-845' - 748'	Shedd Brook, Beards Brook, Loon Pond, Unnamed Wetland	Central-western area of Town, includes Gleason Falls Road, East Washington Road, Shedd Road.
#0045D	AE - Beards Brook, Unnamed Stream. A - Lyman Robins Brook, Sand Brook, Nelson Brook. X - Unnamed Wetland.	Beards & Unnamed-637'	Beards Brook, Lyman Robins Brook, Sand Brook, Nelson Brook, Unnamed Stream, Unnamed Wetland	Central-eastern section of Town to eastern border with Henniker. Area contains Center Road, Concord End Road, North Road, Bog Road.
#0044D	AE, X - Sand Brook, Gould Pond, Contoocook River.	Sand - 671' -> 555' Contoocook-557' -> 555'	Contoocook River, Sand Brook, Gould Pond aka Emerald Lake.	Southeastern area of Town bordering Merrimack County town of Henniker. Area contains Old Henniker Road, Hillsborough Bypass, Emerald Lake Village.
#0063D	AE, X - Contoocook River.	Contoocook-556' -> 553'	Contoocook River	Southeastern edge of Town bordering Henniker in Merrimack County. Contains Old US Route 202 & NH 9.
#0017D	AE, X - Beards Brook. A - Tributary C. X - Island Pond Brook, Unnamed Wetland.	Beards-864' -> 846'	Beards Brook, Tributary C, Island Pond Brook, Unnamed Wetland.	Northwestern edge to Western edge area, includes Jones Hill Road, East Washington Road.
#0036D	AE, X - Beards Brook. A - Carter Pond, Tributary A,	Beards-846' -> 817'	Carter Pond, Tributary A, Tributary C,	Central-northwestern area, contains East Washington Road, Coolidge Road

Panel NH (33011C)	Flood Zones in Hillsborough (330090)	Base Flood Elevations (BFEs)	Water Body Areas in Floodplains	Community of Hillsborough Geographic Location
	Tributary C, Contention Pond.		Beards Brook, Contention Pond.	
#0037D	AE, X - Beards Brook. A - Contention Pond, Loon Pond.	Beards- 817' -> 816'	Beards Brook, Contention Pond, Loon Pond	Central-northeastern area, contains East Washington Road, County Road
#0020D	A - Shedd Brook	N/A	Shedd Brook	Western edge of Town bordering Windsor. Area contains Second NH Turnpike, Valhalla Farm Road.
#0016D	X - Island Pond Brook	N/A	Island Pond Brook	Northwestern corner, borders Washington and Sullivan County.
#0009D	A - Tributary C.	N/A	Tributary C	Northern edge, west of Mud Pond bordering both Merrimack (Bradford) and Sullivan (Washington) Counties.
#0030D	X - Unnamed Stream.	N/A	Unnamed Stream	Northern-central edge, Unnamed Stream along County Road, bordering Bradford in Merrimack County.
#0035D	A - Lyman Robins Brook	N/A	Lyman Robins Brook	Northeastern corner, borders Bradford and Henniker in Merrimack County. Area contains Carter Hill Road, Colby Hill Road, Kimball Road.
#0128D	N/A	N/A	N/A	Southwestern corner of Hillsborough bordering Antrim and Windsor.
#0107D	Panel not printed	N/A	N/A	Very small western edge of Hillsborough bordering Windsor.
A = 1% annual chance, no BFE (100-year) AE = 1% annual chance, Floodway with BFE (100-year) X = 2% annual chance (500-year)				BFE = Base Flood Elevation Primary DFIRM Panel # 05-25-2009 DFIRMS

Sources: FEMA and [NH Geographically Referenced Analysis and Transfer System \(NH GRANIT\)](#) websites

Figure 18 displays the relative location of each of the DFIRM panels in the community used in **Table 26**. This set of DFIRMs is excerpted from the *Hillsborough County Flood Insurance Study (FIS) of 2009*. The graphic illustrates the numbering system of the DFIRMs and how they are not consecutive.

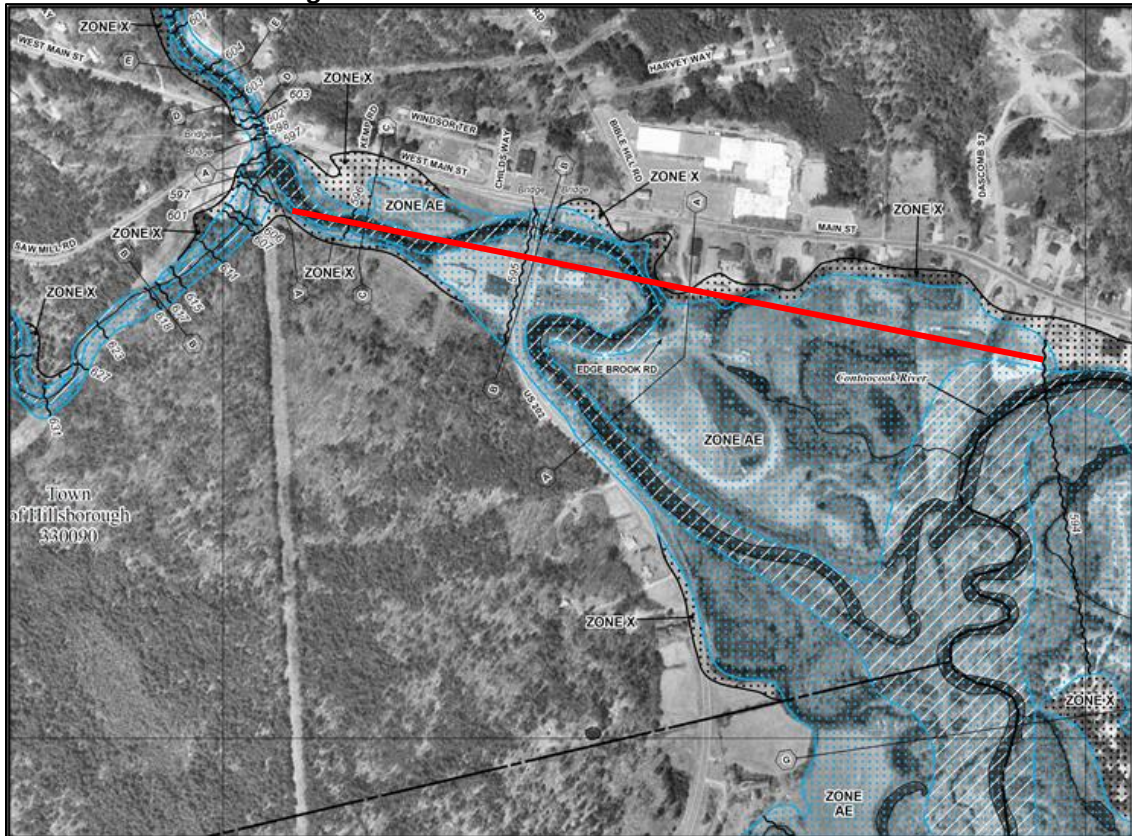


Source: Hillsborough DFIRMS can be downloaded at <https://granit.unh.edu/dfirms>, last accessed 10-21

Figure 19 displays an example of a DFIRM's zoomed-in view of the **Contoocook River** floodplain over West Main Street. US 202 travels in a north-south direction and is partially covered by the floodplain. The **North Branch River**'s confluence with **Beard Brook** and the **Contoocook River** is shown flowing under West Main Street, Beard Road and Sawmill Road under two bridges. The rest of the **Zone AE 1%** annual chance floodplain and the Contoocook River flows east covering much of the downtown Business District. Within this section, the **Contoocook River** is designated as **Zone AE (1% annual chance with BFEs)**, **Zone AE with Floodway (1% annual chance, channelized)**, and **Zone X (0.2% annual chance)**.

Figure 19

Zoom View of Hillsborough Contoocook and North Branch Rivers DFIRM Panel Location #0131D



Source: FEMA DFIRMS 2009 for Hillsborough NH, #0131D

Knowing the Base Flood Elevations (BFE) can help understand a river's possible inundation area. For instance, the **North Branch River**'s BFE at its confluence is **607'** while **Beard Brook** enters at **597'** and the **Contoocook River** forms at **597'** on Panel **#0131D**. As the **Contoocook River** flows east toward Panel **#0132D**, the river's elevation is **594'**, only a **3'** decline over more than **4,000'** linear feet. The Town is aware of this potentially significant future flood risk. This examination can be used by the Town to learn where the most severe inundation flooding could occur within the community for any of the **BFE Floodways**, knowing that new development may have occurred since this 2009 mapping.

Waterbodies

Hillsborough is unique in the Central NH Region because it hosts multiple large rivers, brooks, ponds, as well as wetlands and smaller brooks throughout the community. The conjoined **Contoocook River** and **North Branch River** flow northeast along the southern border of Hillsborough. These large watercourses and numerous individual brooks and ponds in Hillsborough contribute to flooding these and other areas in Town. These rivers, brooks, ponds and wetlands in Hillsborough will contribute to future potential flooding in these and other areas:

🔄 **Watercourses:** **Contoocook River, North Branch River, Beards Brook, Shedd Brook, Sand Brook, Bagley Brook, Sulphur Brook, Black Pond Brook, Lyman Robins Brook, Nelson Brook, Tributary A, Tributary C, Island Pond Brook.**

🔄 **Waterbodies:** **Emerald Lake (Gould Pond), Jackman Reservoir/ Franklin Pierce Lake, Loon Pond, Carter Pond, Contention Pond.**

Road Washouts

Some of the local Town Class V maintained roads in Hillsborough are constructed using ditching; storm drains are found along the densely developed paved business district area. The Emerald Lake Village District has experienced washouts along the roads and bridges. About **66 miles** of the Town maintained (Class V) roads are located throughout Hillsborough, some of which are gravel and along steep slopes. Regular road washouts currently include:

- | | |
|---|-------------------------|
| ➤➤ West Mill Street | ➤➤ Coolidge Road |
| ➤➤ High Tide Restaurant (Henniker Rd) | ➤➤ Bog Road |
| ➤➤ Emerald Lake Village District, | ➤➤ Route 31 |
| ➤➤ Sand Brook (Flash Flood), | ➤➤ Stowe Mountain Road |
| ➤➤ Grimes Field, | ➤➤ Mill Street |
| ➤➤ Loon Pond Area, | ➤➤ Bear Hill Road |
| ➤➤ Lower Village and properties along the | ➤➤ Bridge Street Bridge |
| North Branch River | |

Many of the above culvert upgrades have been developed into Actions, with many culvert and drainage projects undertaken annually.

However, the wide Contoocook River floodplain, its confluence with the North Branch River, the large Beards Brook, Sand Brook, Black Pond Brook, and Shedd Brook watercourses and the presence of several lakes and ponds makes the Town particularly susceptible to flooding. The following areas have been identified by the Hazard Mitigation Committee as being immediately susceptible to the impacts to **flooding**:

- **Emerald Lake Village District homes and Gould Pond (Emerald Lake)**
- **Downtown Hillsborough- Central Business District/West Main Street/Lower Village (from both the Jackman Reservoir/Franklin Pierce Lake and the Contoocook River)**
- **Areas of Beard Brook and Sand Brook**
- **Grimes Field**
- **Upper Village (Black Pond Area)**

Steep Slopes

Hillsborough's geography is unique in the Central NH region in that it has nearly a dozen named large hills and mountains, plus scores of very steep unnamed hills, plateaus, promontories, ridges, slopes and elevation changes. There are **10** named hills with elevations ranging from **853'** to **1,765'** above sea level.

Bible Hill	853'	Peaked Hill	1,020
Campbell Mountain	1,391'	Rowe Hill	(summit in Bradford)
Jones Hill	1,631	Stowe Hill	1,578
Kimball Hill	1,266'	Sulphur Hill	1,257
Monroe Hill	1,155'	Thompson Hill	1,765'
Murdough Hill	1,329'		

These steep hills and the roads climb up them or that wind around them to rural homes will inadvertently help facilitate inland flooding. The bridges at bottom of the roads or at intersections may washout more frequently. Ditching alongside gravel Class V maintained roads may frequently wash silt and gravel down and may clog culverts more frequently, requiring constant maintenance.

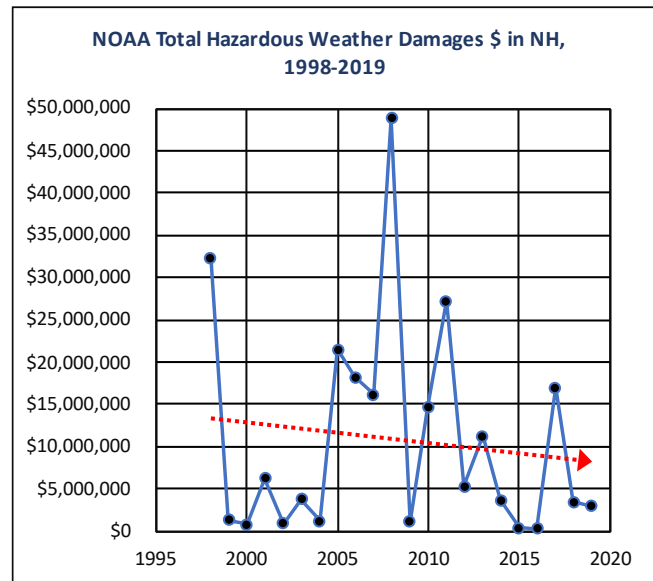
Local Climate and Extreme Weather

In the State and the Central NH Region, like any other areas, exist our own “micro-climate” areas that can be analyzed for future susceptibility to disasters and hazard events. New Hampshire has obtained high costs of damage over time due to hazardous weather and declared disasters. A review of the state and area history can provide a perspective on what Hillsborough can expect to see in terms of extreme weather in the future.

Table 27

Summary of Hazardous Weather Fatalities, Injuries, and Damage Costs in NH, 1998-2019

Year	Fatalities	Injuries	Total Damages \$ in Million
2019	0	0	\$2.98
2018	2	9	\$3.4
2017	0	0	\$17.0
2016	1	1	\$0.27
2015	2	34	\$0.37
2015	0	2	\$3.7
2013	0	30	\$11.3
2012	1	4	\$5.28
2011	1	2	\$27.3
2010	1	6	\$14.63
2009	1	0	\$1.13
2008	2	5	\$48.9
2007	0	3	\$16.15
2006	1	9	\$18.2
2005	4	9	\$21.5
2004	0	11	\$1.2
2003	2	29	\$3.8
2002	0	7	\$0.9
2001	0	2	\$6.2
2000	2	6	\$8.0
1999	3	17	\$1.3
1998	1	23	\$32.4



Source: National Oceanic and Atmospheric Administration, last accessed 03/21.

Adjusted for inflation [Consumer Price Index CPI]

<https://www.weather.gov/hazstat/>

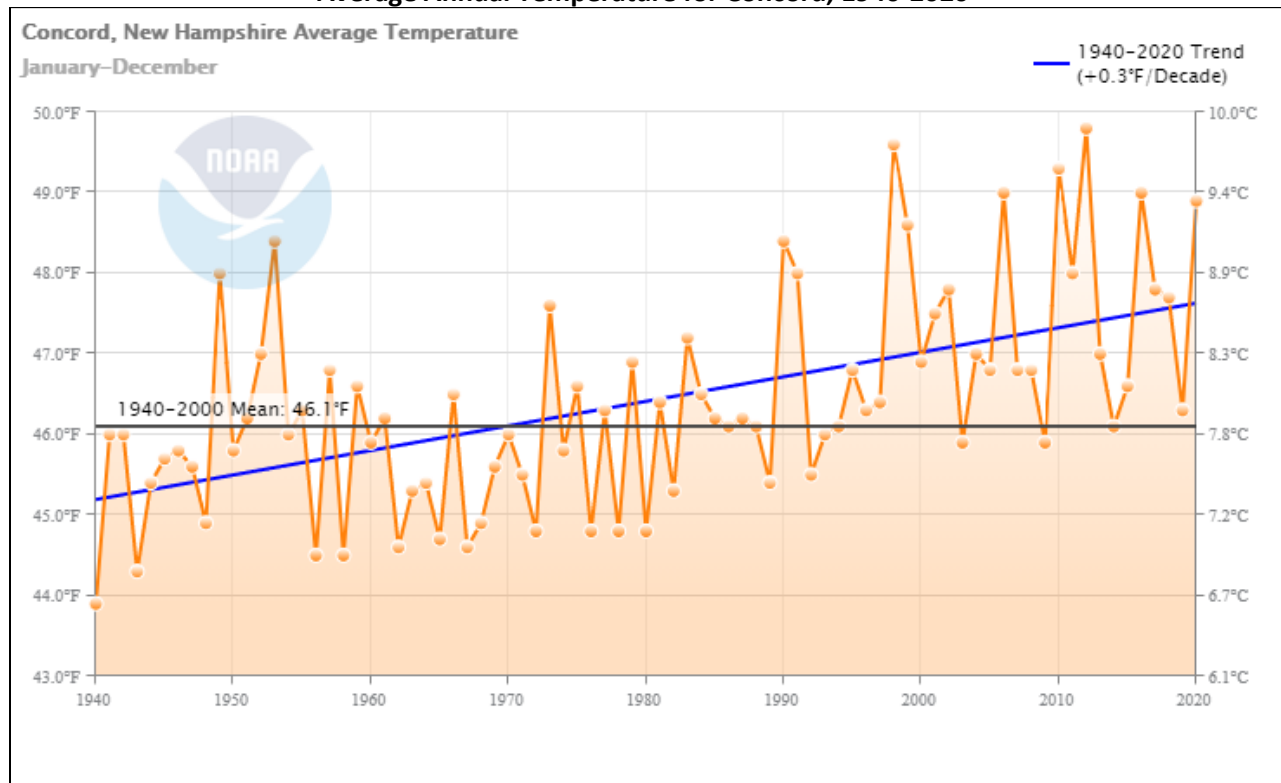
Injuries to people and the costs of damages in New Hampshire have slightly decreased from hazardous weather over the last 20 years according to the trendline displayed in the associated chart for Table 27. Between 1998-2008, this slight decline in injuries and damages can be generally applied to the major disasters declared in the State. The highest damage costs

correlate to the 1998 (\$32m) and 2008 (\$49m) ice storms. The number of injuries and fatalities have a less distinct association, with the highest casualties shown in 2015 (36), 2013 (30) and 2003 (31). However, the single greatest number of fatalities during this time period occurred in 2005 (4), likely during the time of the Oct 2005 Columbus Day Floods that struck the southwestern section of the State very hard.

The Central NH Region's weather history is summarized to provide a view of the trends around the Concord area where some weather measurements have been taken at the Concord Airport since 1868. Hillsborough is geographically close to the City of Concord (within 5 miles) and these measurements should have some reasonable basis in Hillsborough, while small unique microsystems are found throughout the region particularly at higher elevations. As the closest large and longest active weather station, and for CNHRPC region continuity, the Concord measurements will be used for Hillsborough.

Figure 20 displays Concord's average annual temperature (Jan-Dec) between 1940 (43.7°F) and 2020 (48.9°F) with a mean temperature over the 1940-2020 period of 46.1°F. The warmest years were 2012 with a 3.7°F departure from normal, 1998 at 3.5°F departure, 2010 at 3.2°F departure, followed by 2016 at 2.9°F departure from the normal mean 46.1°F. As with typical New Hampshire weather, the seasonal temperatures can vary year after year and without obtaining an average, changes are difficult to see. The coolest years were 1940 at 43.9°F, 1943 at 44.3°F, 1956 and 1958 at 44.5°F, followed by 1962 and 1967 tied at 44.6°F. The displayed trend line allows a definitive way of averaging all temperatures and illustrates an average +0.3°F temperature increase trend per decade and the increase of about 2.4°F total during this 80-year period in Concord.

Figure 20
Average Annual Temperature for Concord, 1940-2020



Source: National Oceanic and Atmospheric Administration, last accessed online 03-31-21

https://www.ncdc.noaa.gov/cag/city/time-series/USW00014745/tavg/12/12/1940-2020?base_prd=true&begbaseyear=1901&endbaseyear=2000&trend=true&trend_base=10&begtrendyear=1895&endtrendyear=2021

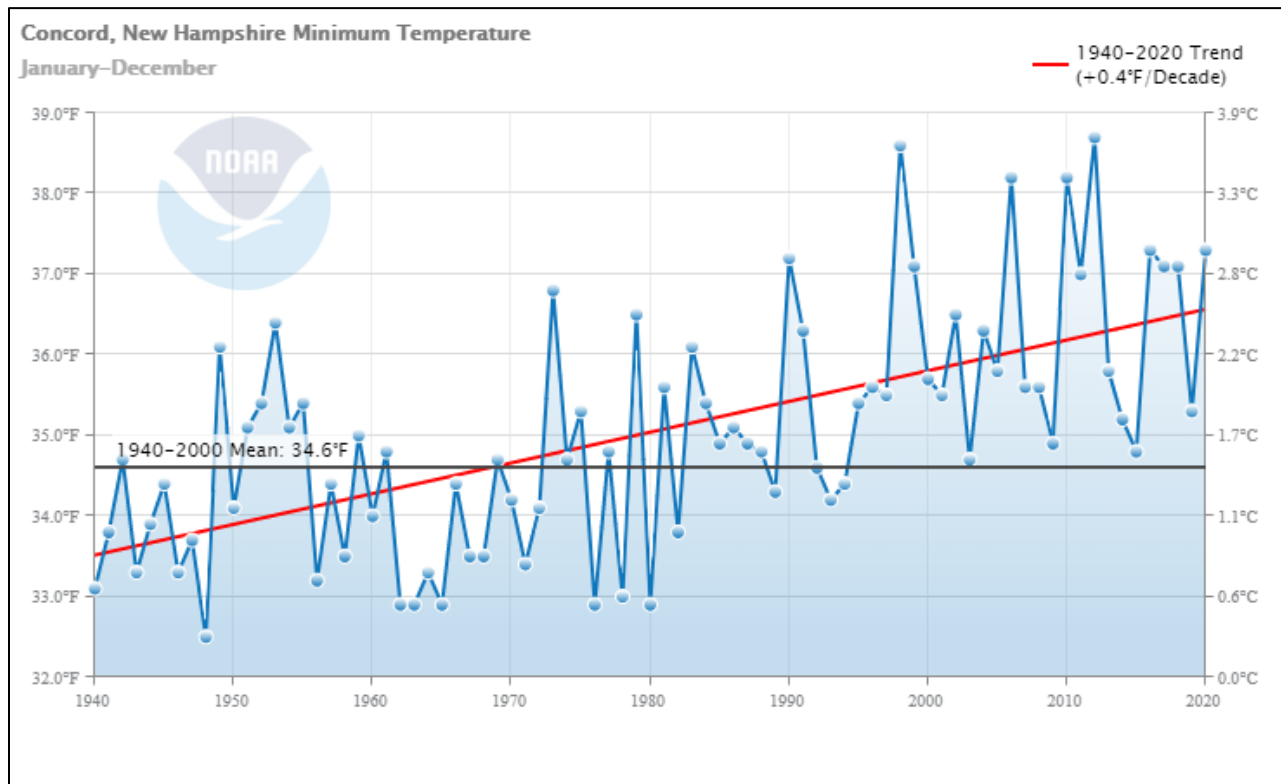
Another way to evaluate how the temperatures is to measure the minimum annual temperatures and maximum annual temperatures are changing. Both the coldest and the hottest temperatures are growing warmer in the Central NH region, which includes Hillsborough.

Figure 21 displays the *minimum* average temperatures for Concord, with a mean (average) of **34.6° F** for **1940-2020**. In **2020**, the *minimum* average temperature was **37.3° F**, as compared to the **1940** *minimum* average temperature of **33.1° F**. Within this 80-year period, the *lowest* minimum was **32.5° F** in **1948**, followed by **32.9° F** (**1962, 1963, 1965, 1976, 1980**), **33.07° F** (**1978**), followed by **33.1° F** (**1940**). The *highest* minimums were in **2012** (**38.7° F**), **1998** (**38.6° F**), tied in **2006** and **2010** (**38.2° F**), followed by **2016** and **2020** (**37.3° F**). In fact, the top **10** highest *minimums* have occurred since **1990** during the nearly **80**-year data span, indicating the coldest temperatures are growing warmer.

The trend line indicates a **+0.4° F** increase per decade between **1940-2020**, about a **+3.2° F** increase in minimum average temperatures.

Figure 21

Minimum Average Temperatures for Concord, 1940-2020



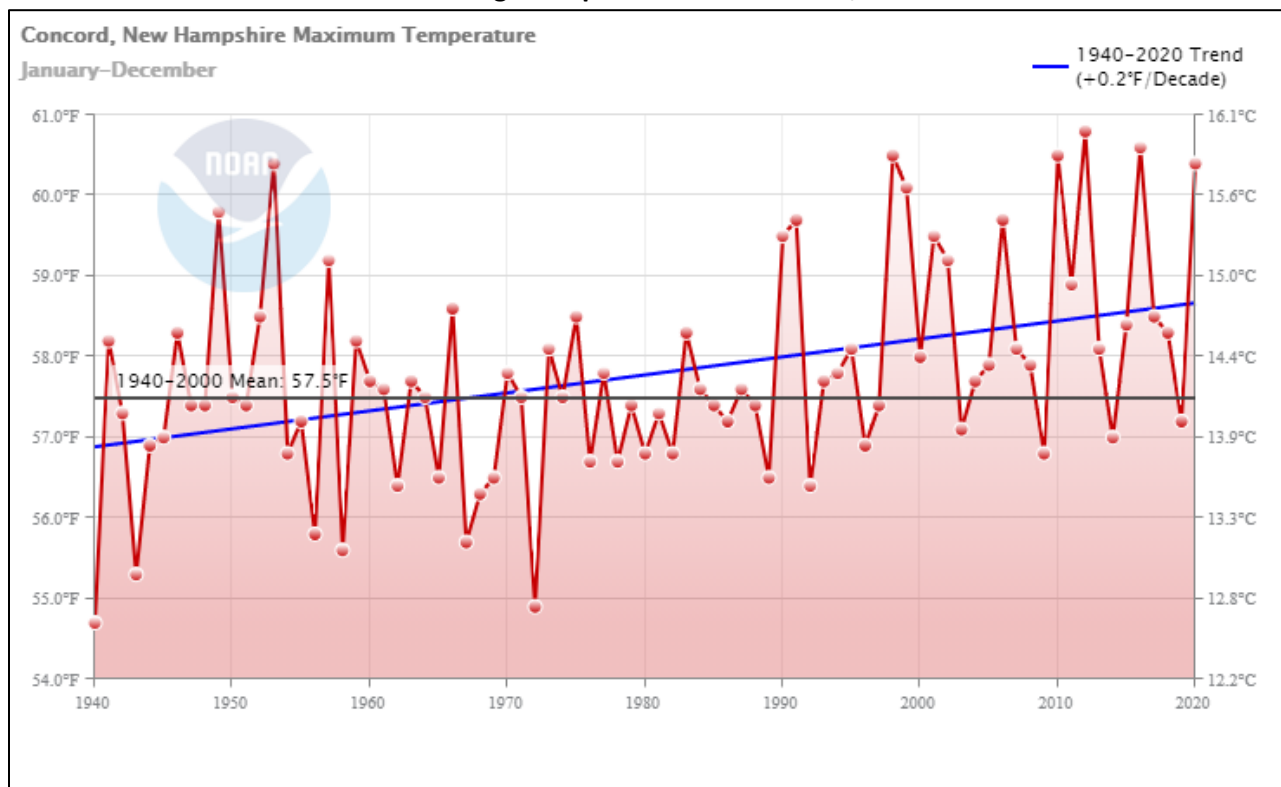
Source: National Oceanic and Atmospheric Administration, last accessed online 03-31-21

Figure 22 displays the *maximum* average temperatures between **1940-2020**, with a mean (average) of **57.5° F** annually. In **1940**, highest *maximum* average temperature was **54.7° F** while in **2020** the highest *maximum* was **60.4° F**. The lowest *maximums* were **54.7° F** in **1940**, **54.9° F** in **1972**, **55.3° F** in **1943**, **55.6° F** in **1958**, **55.7° F** in **1967** followed by **55.8° F** in **1956**. The highest *maximums* in Concord were **60.8° F** in **2012**, **60.6° F** in **2016**, **60.5° F** in **1998** and **2010**, **60.4° F** in **1953** and **2020**, followed by **60.1° F** in **1999**. Eight (**8**) of the top **10** highest *maximums* have occurred since **1990** during the **80-year** data span. These numbers indicate the hottest temperatures in the Central NH Region are growing warmer.

The **+0.2° F** trendline per decade results in a **+1.6° F** increase in the maximum average temperatures.

Figure 22

Maximum Average Temperatures for Concord, 1940-2020

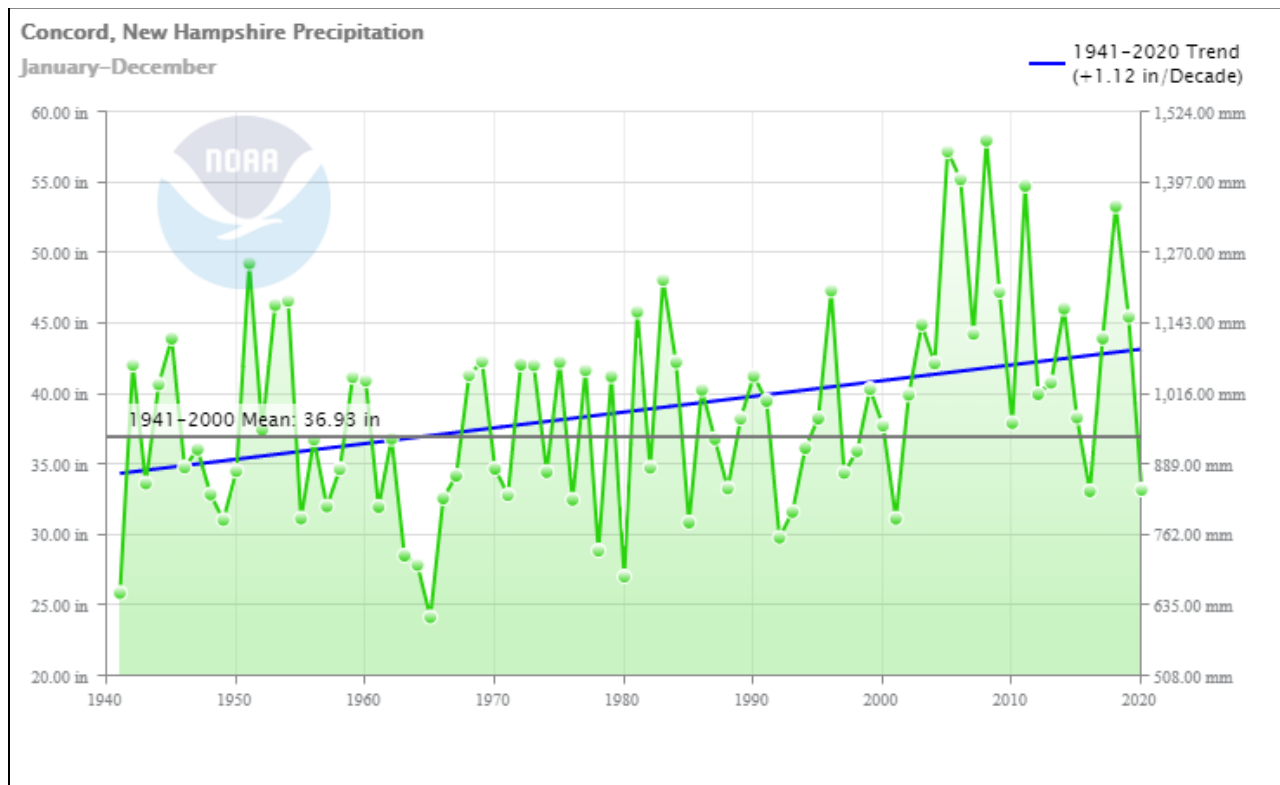


Source: National Oceanic and Atmospheric Administration, last accessed 03-31-21

For precipitation (rain) changes, **Figure 23** displays Concord's average annual Jan-Dec precipitation rates between **1941** and **2020**. Varying seasonal rainfall amounts continue over the decades. The mean annual precipitation during this period is **36.93"** annually. In **1941**, the amount of precipitation was **25.91"** while in **2020** the precipitation totaled **33.23"**. The wettest year in Concord was **2008** at **58.00"**, **2005** at **57.22"** and **2006** at **55.24"**, **2011** at **54.78"**, **2018** at **53.33"**, followed by **1951** at **49.29"**. The years with the least amount of rainfall were **1965** at **24.19"**, **1941** at **25.91"**, **1980** at **27.07"**, **1964** at **27.90"**, **1963** at **28.56"**, followed by **1978** at **28.91"**.

The trend line serves the same purpose to illustrate an increase of **1.12"** in precipitation per decade, or about a **+8.9"** increase in the annual average precipitation during this **80-year** period from **1941-2020** in Concord. Hillsborough will have experienced similar conditions.

Figure 23
Average Annual Precipitation for Concord, 1941-2020



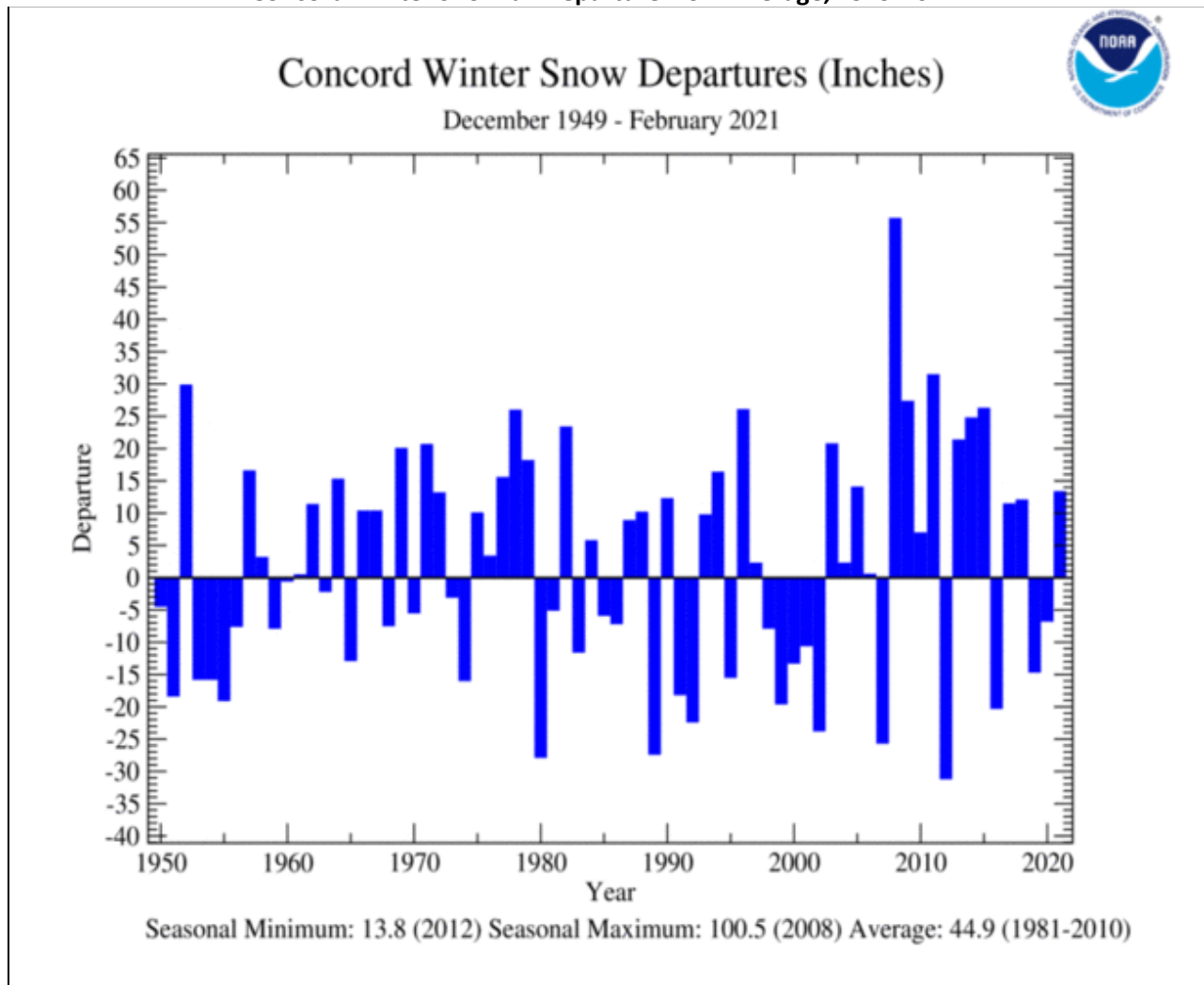
Source: National Oceanic and Atmospheric Administration, last accessed 03-31-21

Displayed in **Figure 24** is the departure from normal snowfall instead of actual inches per year, using a “30-year normal” period as the baseline, which for **1981-2010** is **44.9”** of snowfall annually in Concord.

The amount of recent annual snowfall has significant departures from normal. From **Jan-Dec 2020**, **58.2”** of snowfall occurred, which is **13.3”** higher than what normally falls (**44.9”**). Since **1949**, the year with the highest amount of snowfall was **2008** with **100.5”** and the lowest snowfall was **13.8”** in **2012**.

Figure 24

Concord Winter Snowfall Departure from Average, 1949-2021



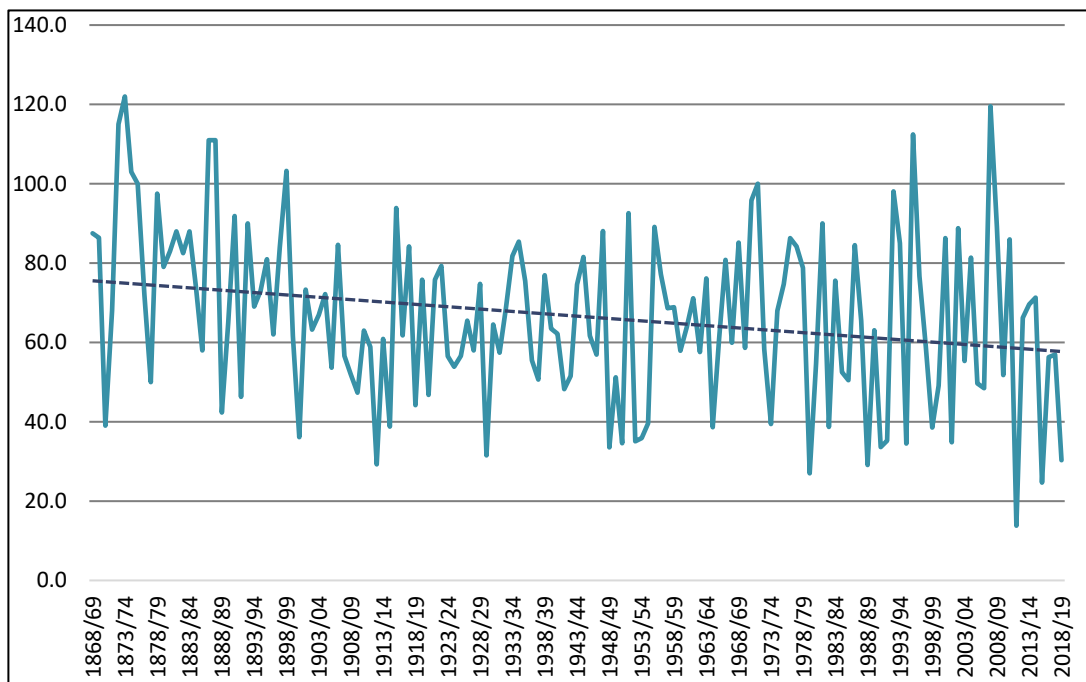
Source: National Oceanic and Atmospheric Administration, National Climate Report February 2021

<https://www.ncdc.noaa.gov/sotc/national/202102/supplemental/page-5>

<https://www.ncdc.noaa.gov/monitoring-content/sotc/national/2021/feb/Concord.gif> last accessed 03-31-21

The National Oceanic and Atmospheric Administration (NOAA) seasonal snowfall totals were compiled by CNHRPC for Concord, where snowfall data gathering began in **1868**. **Figure 25** displays the snowfall every **5** years and includes a trendline that indicate annual seasonal snowfall has decreased by nearly **20"** since **1868**. The years with the highest snowfall accumulations were **1873/74 (122.0")**, **2007/08 (119.5")**, **1872/73 (115.0")** and **1995/96 (112.4")**. The years of lowest accumulations were **2011/12 (13.8")**, **2015/16 (24.7")**, **1979/80 (27.0")**, and **1988/89 (29.1")**.

Figure 25
Seasonal Snowfall Totals for Concord, 1868-2019



Source: National Oceanic and Atmospheric Administration Data as compiled by CNHRPC, 03-19

Five (5) of the top 10 lowest snow accumulations occurred since 1990. The **2018/19** season ended with **30.3"**, ranking **6th** out of **151** years of records. Hillsborough is geographically close to Concord (**30** miles) and likely shares similar snowfall accumulation trends over time.

IMPACTS OF CLIMATE CHANGES IN SOUTHERN NEW HAMPSHIRE

This climate data may certainly be relevant to the entire Central NH Region which includes the Town of Hillsborough. The Central NH region climate summation is that the **temperature is getting warmer**, the **precipitation is increasing**, and the **snowfall is decreasing** according to the National Oceanic and Atmospheric Administration's data collection at the Concord airport. There are no indications to see these trend lines reverse in the future.

The Southern NH Climate Change Assessment, formally entitled *Climate Change in Southern New Hampshire: Past, Present, and Future, 2015* by Climate Change Solutions of New England under the University of New Hampshire, reviewed current climate conditions and projected future conditions of Southern New Hampshire under potential low and high emission scenarios. The Central NH Region and the Town of Hillsborough are within

southern New Hampshire. The past and future Southern NH climate overview is illustrated in **Figure 26**.

As a result of anticipated extreme weather continuing and climate changes in Central NH and Hillsborough, consideration should be given for potential impacts to the community. Several new issues are considered, including public health, natural environment disruption, declining forest health, fewer recreational opportunities, risks to the built environment, transportation system maintenance, aging stormwater infrastructure, decreasing water resources and changing food and agriculture, which may result from climate change. For more information on these topics, refer to the *Central NH Regional Plan 2015*.

Figure 26

Southern NH Climate Assessment Projections

Past Data and Future Climate Overview

SOUTHERN NH CLIMATE ASSESSMENT Projections

TEMPERATURE

What have we seen since 1970?

- Average maximum temperatures have warmed by 2.0°F (spring, fall and summer) and 2.9°F (winter)
- Average minimum temperatures have warmed by 3.2°F (spring, fall and summer) and 6.1°F (winter)

What can we expect in the future?

- Summers will be hotter: 16-47 days above 90°F
- Winters will be warmer: 20-45 fewer days below 32°F

RAINFALL

What have we seen since 1970?

- Annual precipitation has increased by 8-22%
- Frequency and magnitude of extreme events

What can we expect in the future?

- Precipitation annual average will increase: 15-20%
- More frequent and severe flooding

SNOW

What have we seen since 1970?

- Fewer days with snow cover
- Lake ice-out dates occurring earlier

What can we expect in the future?

- Significant decrease of 20-50% in number of snow covered days

Source: UNH Climate Solutions of New England, 2015

More Human Health Emergency Events

- ☞ Illnesses such as heatstroke, fainting, and heat exhaustion.
- ☞ Excess heat especially dangerous for the aging population and residents without air conditioning.
- ☞ Increase in greenhouse gas emission, energy demand, and air conditioning use and cost.
- ☞ More favorable conditions for insects carrying viruses and diseases, such as West Nile Virus.
- ☞ Increases risk of waterborne illnesses caused by pollutants entering the town's water supply, commonly through stormwater runoff and sewage overflow.
- ☞ Infrastructure failure by adding additional stress, leading to potential injury or loss of life.
- ☞ More air pollution, leading to asthma and breathing disorders.
- ☞ Vulnerable populations require more assistance.

Natural Environment Disruption

- ☞ Too much water and/or lack of water can disrupt trees and plants natural growing cycle, potential leading the tree, plant, and surrounding area to die.
- ☞ Additional water and drought conditions affect wetland discharge, stream flow, and water quality, affecting the habitat's quality of life and species' health within the area.
- ☞ Debris will be a result of harsh flooding, including trash and downed trees, polluting waters, harming habitats, and damaging property and infrastructure.






Declining Forest Health

- ☞ Large weather events such as heat stress, drought, and periods of winter thaw followed by intense cold can lead to loss of trees.
- ☞ Become susceptible to invasive species and diseases, such as the Hemlock Woolly Adelgid.
- ☞ Loss of trees can have a direct impact on portions of the region's economic components, including declining tourism.




Fewer Recreation Opportunities

- ☞ Weather Impacts on Recreational Trails such as debris, flooding and erosion.
- ☞ Snowmobiling, ice fishing, snow shoeing, skiing and snowboarding provide numerous sources of winter recreation and winter tourism, enhancing the quality of life and economy, will be affected with shorter seasons.





Risks to the Built Environment

-  Critical infrastructure such as roads, bridges, culverts, stormwater drainage systems, water and wastewater treatment facilities, natural gas lines, electric lines and poles might be at risk of severe damage or failure if the anticipated extreme weather events occur.
-  Damaged infrastructure cannot provide services to homes and businesses, disrupting the economy and may endanger public health.
-  Culverts are at risk to extreme precipitation events, including rain, snow, and ice.
-  Residents who experience damage with flooding to their homes and personal belonging may lack proper flooding insurance, placing the resident in financial hardship.
-  Dams with High Hazard and Significant Hazard classifications are the most likely to cause the largest amount of damage or loss of life. Dam operators may quickly release water without notification to municipalities.



Increasing Municipal Transportation Systems Maintenance Needs

-  Volume of flooding is expected to increase, potentially closing roads and increasing the travel time for drivers and increasing the cost and energy use.
-  Flooding can also cause damage to pavement and embankments, increasing maintenance, repair, and replacement costs to municipalities.
-  Extreme precipitation will also increase erosion, decreasing certain infrastructure components design life span.

Aging and Inadequate Stormwater Infrastructure

-  Stormwater infrastructure such as catch basins, pipes, discharge points, and culverts that redirect stormwater runoff can be impacted by flooding and cannot perform their function.
-  Blocking of water can lead to flooding of the area and roadways, potentially leading to the closure of nearby roads.
-  Components of stormwater infrastructure are outdated, and increased flows are added stress to the system, more money to maintain and higher replacement costs.
-  Increased development with increased amounts of impervious surface adds the volume of stormwater runoff within more urban area.

Decreasing Water Resources

-  Water quality and quantity are both threatened by projected changing weather events, with threats of flooding, drought, erosion and stormwater runoff.
-  By preventing groundwater from replenishing, additional runoff and sediments can lead to intensify flows in rivers and streams with higher contamination levels of unwanted nutrients and pathogens.

- ☞ Additional water treatment may be necessary, potentially overloading treatment systems.
- ☞ Contamination can pollute sewage, threatening the performance of wastewater treatment facilities.
- ☞ Increased occurrences in flooding can also intensify flows, causing overloading of treatment system.
- ☞ When the ground is frozen, rapid snow melt from warm days or intense rain is not able to infiltrate the ground, leading to drought conditions.

Changing Food and Agriculture Production

- ☞ Merrimack County is the top county in the State for agriculture sales of higher temperatures will promote a longer growing season for most crops, benefiting a larger number of local crops.
- ☞ Negative impacts can potentially alter the region to a climate not suitable for growing valuable local crops such as apples and blueberries.
- ☞ Temperature are expected to slow weight gain and lower the volume of milk produced by dairy cows.
- ☞ Higher overnight temperatures are anticipated to prevent the dairy cows and cattle from recovering from heat stress.
- ☞ Warmer temperatures and increase in carbon dioxide in the air creates a more ideal environment for pests and weeds, potentially increasing the use of herbicides and pesticides on crop.

This is a sampling of how changing climate and severe weather impacts can affect communities in New Hampshire, in the Central NH Region and in Hillsborough. Consideration should be given to applicable items during the development and update of the **Hazard Mitigation Plan**, as Actions are completed, and as new Actions are developed for the **Mitigation Action Plan**.

Hillsborough's Hazard Vulnerability Changes Since the 2017 Plan

The locations of where people and buildings are concentrated now or where new lands may be developed have been considered as compared to the changing locations of potential natural hazards in order to best mitigate potential property damage, personal injury or loss of life. These factors assist the community with determining whether Hillsborough's vulnerability to natural hazard events has changed in any way since the **2017 Plan**. Facilities and their locations with vulnerabilities to specific natural hazards are listed in **APPENDIX A Critical and Community Facilities Vulnerability Assessment**.

There have been population *decreases* and housing *increases* over the last **5** years from **2 COMMUNITY PROFILE**, but aging citizens and individuals with limited access and functional needs require more services and assistance. Traffic continues to increase within Town because of the US 4/202, NH 9, NH 31, and NH 149 commuter routes through Hillsborough. The need for volunteers increases annually as fewer younger people are joining Town Boards and Committees and finding new people volunteer to serve is difficult. Existing volunteers typically continue their services for many years. Membership in the Capital Area Fire Mutual Aid Compact (CAFMAC) Dispatch has enabled for faster emergency response for Fire Department and Ambulance needs. The Town has access to the Central NH Hazardous Materials Response Team and the Central NH Special Operation Unit for special incidents, which creates more training opportunities available. Membership in the Capital Area Public Health Network enables organized public health assistance while membership in the NH Public Works Mutual Aid program enables shared Public Works Department labor and vehicles from across the State during times of need.

THE TOWN'S STATEMENTS OF VULNERABILITY CHANGE

2022

Natural Disasters and Severe Weather Vulnerability The Town's overall vulnerability to natural disasters **is believed to have STAYED THE SAME over the last 5 years**. Factors considered include its steady population growth and aging population, the changing climate and weather impacts, and continuing disasters and hazard events, and economic fluctuations due to COVID-19. Natural hazard vulnerability is offset by less road flooding, less debris and faster damage repair, regular infrastructure improvements and upgrade, more development, and good preparation and mitigation to date, keeping up with improvements.

Changing Climate

The Town is experiencing increasing temperatures, more rain, less snow, and storms are bigger. Hillsborough's topography is exceptional and unique in the Central NH region, with a geography of scores of very steep unnamed hills, plateaus, promontories, ridges, slopes and elevation changes. There are **10** named hills with elevations ranging from **853'** to **1,765'** above sea level. Residents live on many of hills accessed by roads with

steep slopes. Inherently, these steep slopes and the roads following at the bottom ridgelines will mean drainage system problems. The frequency of torrential downpours has increased which impacts the Contoocook River at **597'** and the North Branch River at **597'** in elevation, the large brooks in Town like Beard's Brook, Shedd Brook, Black Pond Brook, and Sand Brook, and waterbodies like Emerald Lake (Gould Pond), Loon Pond, Contention Pond and Franklin Pierce Lake (Jackman Reservoir) are filled higher and more quickly. These downpours often wash out or erode portions of gravel roads, ditches, and drainage systems. Yet floods have not recently reached the **100**-year storm event level. The rain that is unable to percolate in the cold months or during the torrential downpours washes out some of the **66** miles of Town Class V maintained roads. Increased traffic accidents result from the weather and road conditions.

More frequent, heavy rain occurs, and although the roads are mostly good now, washouts continue to occur. With the steep slopes of some of the roads north of NH 9/ Main Street, Hillsborough will always have washout conditions during heavy rain or snowmelt. The Jackman Reservoir Dam may be the single largest hazard to Hillsborough residents if the dam fails or breaches from too much water.

Tree debris along roads is a regular occurrence during high wind, storm, or severe winter weather. The Town undertakes tree trimming to mitigate future hazards and Eversource also proactively trims potentially hazardous trees, yet the Town is so forested, storms always cause treefall and powerlines down.

The extreme weather **since the last Plan has** brought more rain and washouts, more significant or damaging weather events to aging infrastructure (road, bridges, water, sewer, and Town services). Town and Emerald Lake Village District Infrastructure upkeep is expensive to maintain and upgrade. Hillsborough will not be able to adequately continue optimal services and infrastructure upgrades with future housing growth and predicted population increases without increased funding, additional staffing, and new equipment.

Economic Changes

Some of the downtown Business District's retail and services were closed or otherwise impacted between **9-15** months or more from the Governor's Stay at Home Executive Order in the beginning of the COVID-19 pandemic. Most business relies on Hillsborough resident and commuter spending, both of which declined between **March 2019** and **June 2021**, when the Order ended. There are more vacant storefronts and former businesses in **2021** than there were in **2016**.

In years when the economy is good, housing growth will occur as many new businesses are established in the commercial districts. In the Town there are dozens of active retail, commercial, and industrial businesses primarily located in the commercial districts.

There is also an unknown number of home-based businesses. The number of home occupations and home businesses increased in 2022 because of COVID-19 and several types of home businesses are permissible throughout the community. A diverse tax base enhances funding for long-term mitigation planning projects. Class VI gravel roads and conservation land trails are used for bicycling and walking and by recreational motor vehicles.

Most Hillsborough residents commute to work, reaching Concord, Manchester or Keene within 30 minutes. Today, the option to telecommute is growing stronger. There are many local employment opportunities available in Hillsborough, although most highly educated workers commute much further using US 4/202 NH 9 and I-89 or I-93 to access Lebanon, Nashua, Plymouth, and the greater Boston metro area locations.

Rural Community Recreational Tourism

There is a significant opportunity for recreational tourism, which has fluctuated in Town. Fox State Forest in central Hillsborough is immense, covering **1,440** acres. A sprawling multi-use trail system with several parking areas and a visitor's center/Fox Headquarters building invite people to hike, bike, motorbike, OHRV, and ride horses on the different trails. Hillsborough also hosts nearly half of the **1,748** acre Low State Forest at the Bradford town line. This incredibly steep property is in the wilderness away from roads and does not contain public trails. The NH Dept of Natural and Cultural Resources (DNCR) owns these two state forests which are managed by the NH Division of Forests and Lands. The Farrar Marsh Wildlife Management Area (WMA) is owned by the NH Fish and Game and much of its **627** acres is wetlands. The WMA, comprised of several parcels, is fully contained within Hillsborough and is situated along the Henniker town line. There are no public trails or parking areas.

The Hillsborough Recreational Rail Trail begins at Union Street and runs 8 miles along the Contoocook River to Bible Hill Road in Bennington. The Rail Trail is a draw for out-of-towners. Trails maps are available online at www.nhstateparks.org. During the COVID-19 pandemic from **2019-2021**, Fox State Forest, Contoocook Riverwalk, and Hillsborough Rail Trail saw more trail use as residents and visitors needed to leave their homes after long months in isolation and social distancing. These activities may have led to more spending in Town because of the recreational economy.

The Town beaches (Manahan Park especially) and private Emerald Lake beaches could have seen problems increase (algae blooms, e. coli, aquatic invasive species) because of higher usage during the 2019-2021 season.

Despite these destinations, there are few Bed and Breakfast establishments in Hillsborough which could accommodate visitors, and there are few restaurants to cater to this crowd.

Town Demographics and Housing Changes

The Town is at greater risk from not only the natural hazards, but also from the changing population characteristics in Hillsborough. The **2020** Census found a population decline of **-1.2% (-72 people)**, while housing units continued to grow has slowed to **+9.5% (+276 units)** to date. This net result shows the Town's new low of **1.9** people per housing unit in **2020**, down from **2.1** people per housing unit from **1980-2010**. Fewer new residents are moving into Hillsborough or are born to residents.

The younger generation leaves the local school system for college and greater employment opportunities and does not often return to the Town after completing their college degrees. In-migration of young college-educated professionals (Millennial Generation) are moving back to Hillsborough to live with their parents because of pandemic-related issues, encouraged by proximity to Concord and Manchester (30-minutes), and because of the current high housing costs, both rental and purchase price. There are few jobs in Hillsborough and the surrounding area available for highly educated young people, but there are hundreds of jobs available to high school graduates.

There is a higher demand for Accessory Dwelling Units (ADU) on single family homes, with adult children (Generation X) sharing living space with their parents, usually with parents in the ADU, creating multi-generational housing. Other multi-family housing developments could be considered, containing smaller units have been built to fulfill certain housing needs, such as for those over 55 in age. These lower cost units are in high demand, are listed at market rate, and both the elderly/retired and young families compete for this housing.

The townspeople are aging and the need for services increases, although trends have been noted that people who have lived in Hillsborough for decades may be moving out for assisted or independent living services elsewhere. There is little availability for residents to downsize to the smaller sized single-level, ranch style homes which the aging population is looking for. Senior programs and classes are available at the Greater Hillsborough Senior Services Center. The Town offers emergency Fire, Ambulance, and Police services seven days per week and with on-call, 24 hours per day availability. The Town of Hillsborough continues to have a strong volunteer ethic for Town Committees and Boards and organizations.

Infrastructure Changes

With a growing older population, the Town of Hillsborough may be challenged to raise taxes for mitigation projects. **The ability of the infrastructure to meet the Town's needs remains difficult.** For instance, limited funding is available to upgrade the Town's Class V roads (**66** miles). The Town owns but is not responsible for the maintenance of nearly **17**

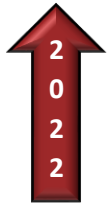
miles of Class VI Town roads. Private roads comprise over **27** miles in Town. Mitigation Actions were developed for many aspects of Town infrastructure, yet over the last **5** years, there was not enough funding or the staffing capability to see many of the infrastructure projects through to completion.

The Town Offices are located at 27 School Street in the former courthouse. Parking is available in a municipal lot across the street. The Fire Station on Central Street houses the Fire Department, Rescue Dept (Ambulance), and the Emergency Operations (EOC) Center. The Police Station and Public Works Garage are located in newer buildings on Municipal Drive. For all Departments, budgets are limited for infrastructure upgrades. The Town has multiple Capital Reserve Funds (CRFs) and Expendable Trust Funds (ETFs) and the Town maintains an active CIP, but because funding comes from taxation, budgets are limited to approval from residents at annual Town Meetings, and the occasional state funding and state and federal grant opportunities.

The burden on the Town's aging infrastructure is increasing with no end in sight. – Hillsborough has various red listed bridges, and the high upkeep and rehabilitation costs of Town roads, bridges and buildings are challenging to fund. Services provided to the public by the various departments of the Town are increasingly difficult to fund while attempting to keep the Town's portion of the property tax rate level. The Water and Sewer Commission's facilities, pump houses, and underground pipes will require maintenance and upgrade. The Emerald Lake Village District's water system cannot accommodate current needs, with too little too old infrastructure for the number of people it supports. Hillsborough's remaining stone arch bridges are cultural treasures yet must accommodate commuter traffic and cost much more to maintain and upgrade. Not enough funding through taxation is available to repair the existing infrastructure, and grant funds are competitive and require staff management and completion time. Most of Hillsborough's paved road infrastructure, culverts, and bridges age **5** years with every **Plan** without upgrades.

Overall Natural Hazards Vulnerability

With these risks, **Hillsborough is equally vulnerable from natural hazards now in 2022 as compared to 2017.** Existing protections arise from select infrastructure and service improvements to past vulnerable areas which were identified and mitigated where feasible by the Public Works Department, Emergency Management, Police Department, Fire Department, and Town Administration. The Town was assisted by the State of New Hampshire and memberships agreements with organizations and neighboring towns for aid. Balancing the changing climate and potential for hazard events, **Hillsborough's overall natural hazards vulnerability has STAYED THE SAME over the last 5 years.**



Human and Technological Disasters Vulnerability The Town's overall vulnerability to human and technological incidents **is believed to have INCREASED over the last 5 years** with the potential for great technological escalation in the future. Although the Town is better protected than in the past through partnerships and best practices, updated SOPs, regular Information Technology (IT) improvements to combat human hazards, and tightened informational technology services and updates protecting data, the Town remains vigilant regarding human and technological hazards.

Human Hazards Vulnerability

Human hazards are unpredictable to a large degree, but preparedness can enable faster, more appropriate emergency response. The School District conducts active threat drills (2x per year), fire drills (10x year), and bus evacuation drills periodically during normal operation years. The District reviews its Emergency Operations Plan and procedures annually. Emergency Management, Fire, Police, Ambulance often participate in municipal drills and the school drills. All emergency response personnel regularly participate in the newest training related to human hazards.

The Fire Department call volume and Police Department call volume have increased since **2017**. More human hazards have been experienced in the Town, but none that are especially alarming. At the Hillsborough local and private Schools, the increased use of social media is believed to increase the volatile situations and bullying handled by emergency response personnel responding to an increase in mental health crisis calls by younger residents.

Stress levels in the community have increased as noticed by Departments and the School District. The COVID-19 pandemic has helped to polarize residents by decisions mandated for health and safety. Mental health and substance abuse issues need to be addressed. Higher stress can result in serious human hazard events such as active threat, kidnapping, hostage situations, civil disturbance, or public harm.

Technological Hazards Vulnerability

The Town's core financial business software operates "in the cloud" with redundant backups available as a safeguard. Most Department files are saved to a local server and backed up to the cloud. A contracted IT company is responsible for maintaining the Town's local server. The files, email, internet, website, in the cloud are maintained by software provider. The Town system is fairly safe from cyber-attack because their technology is automated under highly secure software and hardware.

While the Town and School cybersecurity has increased, like anti-phishing and malware installation, new technological hazards will continue to be developed and utilized and

may be directed toward Hillsborough, which is not anticipated to be able to keep pace with advanced, changing technological risk. Valid concerns include Town database and website hacking although Departments have redundant back-up systems to the cloud by using outside software providers. While use of technology increases efficiency, the increased reliance on cell phones, electronics, electricity and technology also makes Hillsborough's population and Schools more vulnerable to the effects of cyberattacks.

Software also helps monitor the Wastewater Treatment Facility and Loon Pond Water Treatment Facility in Hillsborough, both of which serve the Town. A breach in either of these facilities could result in a public health crisis or personal data loss.

Widescale cyberattack to the New England power grid would also impact Hillsborough. Solar storms and geomagnetic storms could have similar effects.

Overall Human and Technological Hazards Vulnerability

The Town itself is better protected from human hazards by partnerships among Town Departments, Hillsborough School District, mutual aid agreements, and emergency response and membership with the Capital Area Mutual Aid Fire Compact (CAMACF). However, **with the future technological factors considered, the Town's vulnerability to these hazards has INCREASED and is anticipated to continue increasing to 2027 and perhaps indefinitely.**

FUTURE DEVELOPMENT IN HILLSBOROUGH

Many of the Town's roads and homes are located in remote locations, but many are located in the downtown Business District and residential communities like the Emerald Lake Village District. Many homes were newly constructed since the **2017 Plan**. Hillsborough is accessible via the primary US 4/202 NH 9, NH 31 and NH 149 corridors and local connector roads. Residents are aging and employed adults either work from home or commute along to Concord, Keene, Nashua, Manchester, or Lebanon or points within or beyond. Since much of the easily developable land in Town has already been built or subdivided, future developments may occur on the (upgraded) Class VI Roads, lots built on backlands, near **wetlands** or **steep slopes**, or in-fill development in the downtown Business District. **Floods, landslides, erosion, and fires** could occur in these potential residential areas. **Severe winter weather, storms and wind events** on these hilly locations will bring trees down on roadways, interrupt **power and communication** services and will **flood** ditches and **wash out** roads.

Several large businesses are located in Hillsborough. Infill development between the existing built areas could guide residential and light retail development as mixed-use in the community. Multiple state forests and conservation easements protect some of Hillsborough's land from development. **Large-scale commercial and mid- to large scale residential developments** are not expected to occur in Hillsborough in

the future. Some multi-unit housing infill development may be seen just north of the existing built areas of West Main Street and Main Street.

The risk of **Contoocook River flooding** is always present. Most of Hillsborough's commercial and retail development is in or adjacent to the **1%** annual chance floodplain. The higher elevations in Town on hilltops or ridges will help to channel floodwater to the lowest elevations, brooks leading to West Main Street and Main Street. The most remote Class VI locations are not protected against severe impacts of **wildfire** and **lightning**, and all wildland urban interface housing could be vulnerable to **wildfire**, **severe winter weather**, **storms**, and **flooding of local roads**. There remains the potential for subdivisions in the future when the lots change hands to younger generations ("legacy parcels") if the largest parcels are not placed under conservation. Conservation land is preferable by the Town.

When developments come before the Planning Board, potential hazards including **flooding**, **fire**, **traffic accidents**, and **evacuation** are regularly considered. New multi-family housing, Tiny Homes, Accessory Dwelling Units (ADUs), age 55+ housing, or mixed-use zones with apartments may be the next wave of housing development. The existing roads and bridges experiencing **erosion** and **flooding** will need to be upgraded for additional usage. The Town will continue to grow and change, and attention should be focused on the hazards any new development could face during the consideration process. Techniques to mitigate identified hazards could be undertaken before the facilities are sited and constructed.

The main natural hazards for this community remain **wildfire**, **flood**, **severe wind events (including tropical)**, **severe winter weather**, **debris impacted infrastructure** (trees down on powerlines and trees/powerlines down on roads), **aging infrastructure** (water & sewer) and **utility failures (power outages)**. The Town will need to ensure Town services are not eclipsed by the needs of new development. Any future development in Town could be vulnerable to the various natural hazards identified previously. A few agricultural operations are present. New (or replacement) buildings and infrastructure and potential future development appear in **APPENDIX A Critical and Community Facility Vulnerability Assessment**.

5 COMMUNITY VULNERABILITY ASSESSMENT AND LOSS ESTIMATION

The Hazard Mitigation Committee developed and/or updated as needed each of the assets tables within this Chapter. Sites were added or removed, and contact information was revised. Modifications were made to the **Primary Hazard Vulnerability** column to reflect changes over the last five years. Revisions were made to the future development section, which now includes a clear table. The Plan's maps were also updated from the **Hillsborough Hazard Mitigation Plan 2017**.

The identification of Critical and Community Facilities within Hillsborough is integral to determining what facilities may be at risk from a natural disaster. Every Critical and Community Facility can be damaged by multiple hazards listed in **4 HAZARD RISK ASSESSMENT**. A tabular inventory of facilities in Hillsborough is provided in **APPENDIX A Critical and Community Facilities Vulnerability Assessment**. The **911 Street Address** and **Phone** number of each facility is supplied, the assessed **Structure Replacement Value \$**, and the **Primary Hazard Vulnerabilities** to which the facility is most susceptible are listed. The hazards identified are primarily natural disasters but regularly include the technological (and secondary disasters) such as power failure and communications systems failure as well as human hazards such as vandalism/ sabotage.

Most sites appear on **Map 3: Critical and Community Facilities** and **Map 4: Potential Hazards and Losses**.

Potential dollar losses for each of the facilities' **Structure Replacement Value \$** (not land) have been obtained through the Apr 2021 assessing software and the 2020 MS-1 Summary of Inventory Valuation to provide a starting point of the financial loss possible should these structures become damaged or require replacement. These community facility losses are estimated for the value of structure and does not include land (unless indicated), contents, or infrastructure.

Problem Statements were then generated for each type of facility when issues were identified by the Hazard Mitigation Committee during discussion of the facility characteristics and **Primary Hazard Vulnerabilities**. These **Problem Statements** are listed here.

Potential dollar losses to buildings in the Hillsborough from flooding and other natural hazards are provided using the methods described in the chapter. The Town's participation in the National Flood Insurance Program (NFIP) offers a way for individuals to obtain insurance coverage for flooding. The Town's history with NFIP claims and repetitive losses are examined.

The Chapter provides an inventory of the **Community Facilities** and **Critical Facilities** and the most prevalent hazards to which they are vulnerable. Potential structure damage loss is also provided. The detailed information is available in **APPENDIX A Critical and Community Facilities Vulnerability**

Assessment:

Facility Name	Street Address (911)	Phone	Structure Replacement Value* \$	Primary Hazard Vulnerabilities
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Critical Facilities

Critical Facilities are categorized as those Town or State buildings or services that are first responders in a disaster or that are required to keep the community running during a disaster. The personnel in the Hillsborough Town Department facilities, the Town Offices, Fire and Rescue Department, Police Department, Highway Department, and Transfer Station, provide the services necessary for coordinating everyday activities and for emergency response. Other critical partners such as the Schools District provide essential services. Many staffed and unstaffed support facilities are in Hillsborough, such as Historical Society, Fuller Public Library, National Guard, Wastewater Treatment Facilities, Emerald Lake Village District Main Beach Meetinghouse, Emerald Lake Village District Water Treatment Facility and Pumping Station, and more. Maintained roads, dams, and bridges are required for safe operation during both normal times and hazard events. Utilities or utility features such as cisterns, culverts, dry hydrants, telecommunications towers, phone, and internet switching stations, and electric transmission lines are included because of the essential communication and utility services provided, and their significant impact on Hillsborough residents when they fail. Other **Critical Facilities** would include educational facilities, medical facilities, and emergency shelters.

Many critical facilities are located in Hillsborough. The assessed structure/building only value is provided for each facility where available, otherwise estimates are provided to help ascertain the financial impact a disaster can have on the community. However, the assessed structure valuation does not reflect actual structure replacement (rebuilding) which would likely far exceed the valuations in many cases. To view the detailed **Critical Facilities** sites and tables, see **APPENDIX A**. Most of these facilities appear on [Map 3: Community and Critical Facilities](#).

Essential Facilities include: Hillsborough Fire Station, Hillsborough Police Station, Hillsborough Town Hall, Public Works Garage, NH DOT State Highway Shed, National Guard Armory, and Hillsborough Highway Department and Transfer Station. **Assessed structure (only) valuation for these essential facilities total \$12m.**

Utilities include: Center Road Eversource Switching Station, Granite State Telephone, Granite State Telephone Telecommunications Tower, TDS Switching Station, TDS Telecom, Telecommunications Tower (Town), Hosiery Mill Power Dam, Jackman Substation (Eversource), Jackman Hydro Station Electric Generation (HSE Jackson Hydro LLC), Municipal Solar Array 1Mw (Lease), Bible Hill Water Supply Storage Tank, Eversource Water Tower, Hillsborough Wastewater Treatment Plant, Loon Pond Reservoir Water

Treatment Facility, Town Water Infrastructure, Wastewater Pump Stations (2), Wastewater Sewage Infrastructure, Beard Brook Cistern, Bold Mill Village Development Cistern, Bradford Cistern, Cooledge Road Dry Hydrant, Emerald Lake Dry Hydrant, Farmsteads of New England Cistern (Private), Madison Circle Cistern, Main Beach Dry Hydrant, Tractor Supply Cistern (Private), Upper Stowe Mtn Road Dry Hydrant, Valhalla Farm Cistern, ELVD Hummingbird Well, ELVD Mary Rowe Well, ELVD Meetinghouse Well, ELVD Patten Hill Wells (2), ELVD Pattern Hill Wells (3), ELVD Water Infrastructure, ELVD Water Storage Tank and Main Pump House Facility, ELVD Eastman Park Well, ELVD Water Treatment Facility.

Assessed structure (only) valuation for these utilities facilities total \$100.8m.

Dams include: **1 High Hazard (H) Dam-** 116.04 Jackman Reservoir Dam (Murray) on North Branch Contoocook River, **1 Significant Hazard (H) Dam-** 116.22 Hillsborough Sewage Lagoon Dam (Town), **2 Low Hazard (L) Dams-** 116.01 Hosiery Mill Dam (Town) on the Contoocook River, 116.20 Farrar Marsh Dam (NHF&G) on Sand Brook, **Non-Menace (NM) Dams-** 116.05 Posse Nissen Pond Dam (Hillsboro Camp Inc) on Shedd Brook, 116.07 Nichols Brook Dam (Rosewald Farms) on Nichols Brook, 116.09 Fox State Forest Dam 2 (NH DRED) on a Tributary of Contoocook River, 116.15 Jackson Brook Dam (Bruce) on Molly Jackson Brook, 116.17 Wildlife Pond Dam (Jones) on a Tributary of Shedd Brook, 116.18 Recreation Pond Dam (Tracy) on a Tributary of Beard Brook, 116.19 Farm Pond Dam (Gibson) on a natural swale, 116.21 Jones Dam (Jones) on Shedd Brook, 116.23 Inchcape Plaza Detention Pond Dam (Knapton) from runoff, 116.24 Sprague Dam (Sprague) on an unnamed stream, 116.25 Oxbow Campground Pond Dam (Oxbow Campground Inc) on an unnamed brook, 116.26 Wildlife Pond Dam on an unnamed brook. **Estimated structure (only) repair values for these dams total \$12.5m.**

Bridges include: **21 Town Bridges:** 056/144 Sleeper Road Over Beard Brook, 061/102 Cooledge Road over Shedd Brook, 061/139 Cooledge Road over Beards Brook, 062/143 Washington Road over Cedar Brook, 072/136 East Washington Road over Brook, 083/124 Danforth Corners over Beard Brook, 088/093 Gleason Falls Road over Beard Brook, 089/064 Shedd Road over Shedd Brook, 089/093 Gleason Falls Road over Beard Brook, 092/090 Beard Road over Beards Brook, 093/044 Second NH Turnpike over Brook, 093/045 Second NH Turnpike over Brook, 100/070 Jones Road over beards Brook, 107/056 Beard Road over Beards Brook, 111/042 Old NH 9 over Beards Brook, 112/042 Saw Mill Road over Beards Brook, 146/102 Colby Road over Nelson Brook, 152/095 Bog Road over Sand Brook, 154/084 Old US 202 over Contoocook River, 154/113 Bog Road over Sand Brook, 171/064 Contoocook Falls Road over Contoocook River. **2 Emerald Village District Bridges:** 158/080 Red Fox Crossing over Nelson Brook, 169/081 Emerald Drive over Gould Pond Outlet. **14 State Bridges:** 071/072 NH 31 over Black Pond Brook, 110/051 NH 9 over Beard Brook, 116/050 Bible Hill Road over NH 9 Ramp A, 117/035 US 202 over North Branch Contoocook River, 118/035 Sawyer Bridge Bypassed Historic over North Branch River, 118/045 Bible Hill Road over US 202, 128/049 US 202/NH 9 over Recreational Trail, 137/051 Center Road over US 202/NH 9, 144/033 NH 149 over Contoocook River, 146/053 US 202/NH 9 over Recreational Trail, 157/056 Old Henniker Road over US 202/NH 9, 165/060 US 202/NH 9 over Eastern Connector, 170/071 US **202/NH 9 over Sand Brook.** **Estimated structure (only) rehabilitation values for these bridges total \$64.1m.**

Shelters, Schools, and Medical Facilities include: Hillsboro-Deering Elementary School, Hillsboro-Deering High School, Hillsboro-Deering Middle School (Town Shelter with Deering and Windsor), Hillsborough Christian School, Hillsboro-Deering School District SAU Office, Stonebridge Montessori School, Bara Dental, Monadnock Orthodontics, Brookside Counseling, Concord Hospital – Hillsborough Deering Family Health, Foxbend Veterinary Clinic, Lee Chiropractic, Puleo Dental. **Assessed structure (only) valuation for these schools, medical facilities, and shelters (Middle School only) total \$81.2m**

PROBLEM STATEMENTS AND EVALUATION

During discussion of these **Critical Facilities**, the Hazard Mitigation Committee identified specific issues or problems that could be further evaluated. **Problem Statements** were developed after ascertaining the **Primary Hazard Vulnerabilities** to the sites and known existing issues. These potential hazards were typically those from the **Hazard Risk Assessment**. The Committee also evaluated these statements to determine whether mitigation actions could be developed.

Essential Facilities Table

- ⊙ The Town Hall and Transfer Station have no emergency power during electric outages. These are the only 2 Town buildings without a generator. Estimated cost could be \$15,000 each for Town Hall and Transfer Station Portable Generators.
- ⊙ There is limited storage for Town fuel. Town facilities can store only 48 hours of fuel (propane and diesel) in aboveground tanks for their generators. Each facility has 1 week of heating oil fuel in aboveground tanks.
- ⊙ *INFO:* Several of the Departments with generators (FD/PD/EM/HD) may have diesel or gasoline portable generators. Other Departments may have propane or natural gas fueled generators. Eventually all Town Department generators should use only one or two fuel types for ease of refill.
- ⊙ *INFO:* The Town can visit State of NH pumps (Unleaded gasoline and Diesel) which has a generator on site.
- ⊙ *INFO:* There is potential for a power supply from solar arrays. The municipal solar array located at the Transfer Station does not provide electricity to municipal buildings.
- ⊙ *INFO:* The Town has contacted a supplier for fuel.

Utilities Table

- ⊙ Aging municipal water and sewer system pipes should be considered for upgrade and replacement.
- ⊙ There is a security risk at the Town's Bible Hill telecommunications tower which contains critical town, county, state, and repeating equipment. Although the site has a fence and a lock, there is a potential for vandalism or sabotage. There is no generator on site if electricity to the array fails.
- ⊙ Better security of the municipal water system is needed. Sabotage, biological hazards, and hazardous materials could be a problem. The reservoir is an open pond around which people live and has no

security. Restrictions on boating, swimming, and gas motors are posted but there is little oversight and a large risk of water source contamination. Pond residents notify the Police Department Neighborhood Crime Watch as necessary.

- ⊙ The infrastructure for the ELVD water system is aging and is insufficient to meet the needs of the current population. Broken pipes and leaks are common. Most residents are full time and there is potential for more future development.
- ⊙ Some areas of Town lack cellular service. Including north of old Hillsborough Center and the East Washington Road corridor north to Bradford. Verizon may not have coverage in these areas, but AT&T would.
- ⊙ Many rural roads do not have sufficient broadband or fiberoptic, including East Washington Road. Towns have grouped together to provide their own service to residents and satellite internet options are available.
- ⊙ Schools enacted remote learning but not all resident children could connect to broadband as necessary to participate.
- ⊙ *INFO:* It is unlikely more communication towers will be built currently.

Dams Table

- ⊙ If Jackman Dam fails (Franklin Pierce Lake), downstream could experience disastrous impacts. Dam Road, Sawmill Road, Keith Road, Municipal Drive, and the Main Street areas could be flooded. This densely populated area also contains many potentially hazardous waste facilities. Changes to the North Branch River and possibly the Contoocook River floodplain could also occur.
- ⊙ Beaver use of culverts to build dams clogs culverts often resulting in intense water flow if breached causing flood conditions.
- ⊙ *INFO:* Town Reviews the DEAPs with the state
- ⊙ *INFO:* Town Highway Department must maintain constant vigilance of the roads and beaver activity. On average four beaver dams per year require removal.

Bridges Table

- ⊙ Municipal funding for bridge repair and the associated permitting requirements is too costly and difficult to obtain by taxation, resulting in less bridge work complete and could result in catastrophic bridge failure.
- ⊙ The Town allocates annual funding to the Bridge Maintenance Capital Reserve Fund (CRF) but requires more state funding than what is available to perform necessary bridge maintenance.
- ⊙ Maintenance of the Town's historic stone arch bridges is more expensive than typical bridge repair.
- ⊙ *INFO:* The State Bridge Fund is not adequately funded for communities like Hillsborough which has multiple bridges in need of maintenance and rehabilitation.

Shelters, Schools and Medical Facilities Table

- ⦿ The Middle School generator only runs the heating plant, walk-in freezer, and refrigerator. Electricity is not available if there is a power failure.
- ⦿ The Middle School is not adequate for use as a Town Shelter but could be used as a temporary warming facility. The High School has been used (2008) as an emergency overnight shelter with the Red Cross but layout issues predicate the Middle School as the main shelter.
- ⦿ All Schools are located adjacent to US 202/NH 9 meaning any incident (active threat, haz mat, crash) at a school or on the highway could result in evacuation complications.
- ⦿ Schools practice both internal and off-campus evacuation drills. Evacuation plans, incident scenarios, and drills are needed for immediate situations at the Schools along US 202/NH 9.
- ⦿ Schools may not be able to operate normally onsite during a public health event, such as the COVID-19 Pandemic. Public health plans and alternative schooling plans should be developed and shared with the public in the event of future public health epidemics and pandemics.

Many of these problem statements were developed into Actions discussed later in **7 PRIOR ACTION STATUS** and **8 MITIGATION ACTION PLAN**.

CULVERT UPGRADES

A table of culverts in need of upgrade could appear in multiple sections, such as the **Critical and Community Facility Vulnerability Assessment (APPENDIX A)** or with the **Aging Infrastructure** technological hazard. Instead, as critical facilities, they are included here once within this section and also appear within the **Mitigation Action Plan 2022**. Culverts (including box culverts, often considered “almost bridges”) are responsible for carrying large volumes of water safely under roadways, and with the prior severe flooding events it is necessary to keep Town infrastructure in good condition.

Like most communities, the Town of Hillsborough has hundreds of culverts and is not known to have a mapped inventory. The Highway Department maintains multiple Town culverts daily (debris removal, clearing, repairs) and attempts to keep pace with culvert upgrades. Yet upgrading all culverts that require this action in the next 5 years would be unrealistic. A prioritization of the culverts in greatest need of upgrade is necessary.

Table 28 displays Hillsborough’s initial listing of culverts in need of most urgent upgrade and approximately when the upgrades should occur. The intent is to upgrade all of these failing culverts with either open box culverts or appropriately-sized PVC culverts, respectively. The estimated cost for these projects reaches well over **\$1.3m** for materials, permitting, study and design. Labor for the smaller projects is performed by Town staff and is usually considered an in-kind cost. For larger projects, contracted engineering, design and permitting may need to occur and would be included in the respective cost estimates. The optimal timeframe for these upgrades to protect the Town from **Inland Flooding, River Hazards** and **Aging Infrastructure** is between **2022-2027** which is within the span of this **2022 Plan**.

Table 28
Town-Owned Culverts in Need of Upgrade Through 2027

Action #	Location of Culvert(s) to Upgrade	# of Culverts	Intersecting Water	Issue(s) with the Culvert(s)	Upgrade Diameter Inches	Estimated Upgrade Year	Total Approx \$ Cost for All
#03-2011	Jones Rd	N/A	Various	Culverts are debilitated	10"	2022	\$100,000
#04-2011	Stowe Mt Road	N/A	Smith Pond Brook	Culverts are debilitated, too small, rotting	48" or box culvert	2024-2025	\$200,000
#07-2011	County Road	N/A	Nelson Brook	Culverts are debilitated, rotting	N/A	2024-2025	\$100,000
#08-2011	Rehabilitate or Reconstruct Roads in Town on an Annual Basis to Reduce the Impacts of Flood and Erosion	N/A	Various	Culverts are debilitated	N/A	2022-2023	\$250,000
#66-2021	Beard Road	N/A	Various	Culverts are debilitated	10"	2022-2023	\$50,000 - \$75,000
#67-2021	Stowe Mountain Road and County Road	N/A	Smith Pond Brook, Nelson Brook	Culverts are debilitated	N/A	2024-2025	\$50,000 - \$75,000
	Bog Road (Concord End)	1	Sand Brook	Too small, need box culvert and is rotting out	Box	2020	\$500,000
	Current pricing is about \$1,200/ 20' culvert pipe black solid (driveway size)						
Totals							\$1.3m

Source: Hillsborough 2021 Mitigation Action Plan, Public Works Department Sept/Dec 2021

This table can help the Town develop a formalized culvert upgrade and maintenance planning document. Mapped drainage facilities permit data to be collected and is easily revised and updated. Instant access to culvert and drainage information can be of valuable assistance during **flooding** events, such as **run-off**, **overtop flooding conditions** and **road washouts**. On an annual basis, a culvert maintenance plan can help guide the Town's decisions of priority replacement, maintenance, and monitoring of culverts and drainage facilities. Budgeting is clearer and may be more successful at Town Meeting with such a plan.

Some of the culverts listed in **Table 28** have been developed into **Mitigation Action Plan** items in **8 MITIGATION ACTION PLAN**.

Like all communities, the Town owns and maintains hundreds of culverts. Most of the culverts are maintained (debris removal) on a regular basis and are upgraded when a specific need arises, such as a

flood event which causes road erosion or washout. A comprehensive inventory of culverts and culvert conditions was conducted. The Town is currently working to transcribe these notebook-written locations into an editable Excel document, with the goal of developing a Culvert Maintenance Plan.

MOST VULNERABLE ROADS AND NEIGHBORHOODS

The Town of Hillsborough has about **128.2** total miles of roadway including **66** miles of Town maintained Class V (both paved and unpaved roads), **62.5** miles unmaintained Class VI roads, private roads and State highways. Many of these roads are remote, have significant elevation changes, or are dead-end roads or cul-de-sacs with only one way in and one way out. Hillsborough residents reside in neighborhoods, such as the Business District or the Emerald Lake Village District, subdivisions, and within cul-de-sacs. When trees and powerlines fall onto roads or floods or wildfire hazards are occurring, evacuation of most of these neighborhoods would be difficult. The Town's road mileage, classification, and surface type are displayed in **Table 29**.

Table 29

Town Road Length and Classification

Hillsborough Roads Legislative Classification	Total Length in Miles	Percentage of Total Road Network
Class I (State Primary Highway)	7.3	5.7%
Class II (State Secondary Highway)	10.2	8.0%
Class III (State Recreational)	--	--
Class IV (Urban Maintained)	--	--
Class V (Town Maintained)	66.0	51.5%
Class VI (town Unmaintained)	17.3	13.5%
Private	27.4	21.4%
Totals	128.2	100.0%

Source: NHDOT Mileage by Town and Legislative Class, released 2021

The Town of Hillsborough is responsible for **66** miles of Town owned roads, some of which are paved and some of which are unpaved. Compared to other small-sized Central NH region communities, the Town of Hillsborough hosts fewer than average roadway miles. Over **27** miles are private roads maintained by property owners, and anyone living on the **17.3** miles of Class VI road is responsible for their maintenance.

ONE-EGRESS ROADS AND CUL-DE-SACS

The Town of Hillsborough has about **66.0** miles of Town maintained Class V roadway, many of which are dead-end roads or cul-de-sacs with only one way in and one way out. The Town Class VI unmaintained roads and private roads which are maintained by property owners are not included in this list. With only the one-egress Class V roads, **46** roads or road sections are concerning - approximately **292** homes with **500-600** residents live along these roads which have no secondary means of egress. Awareness of

potential vulnerabilities may help with evacuation and other emergency planning as well as long term mitigation projects in these areas. Evacuation of many of these neighborhoods, most of which are forested, rural, and steep, would be difficult. All identified one-egress roads are displayed in **Table 30**.

Table 30
One-Egress Roads (Dead End) and Cul-de-Sacs

One-Egress (One Access/ Exit) Road Name	Road Class (Class V, Class VI or Private)	Specific Hazard Concerns	Condition (Good, Fair or Poor)	Approx. Length in Feet	Approx. # of Homes on Rd	Neighborhood Name (If Applicable)
Attwood Rd	Class V	Tree Fall, Winter	Fair	1,000	2	
Bethel Rd	Class V	Flood, Erosion, Tree Fall, Winter	Good	400	1	Bethel Farm
Bog Rd	Class V	Flood, Erosion, Tree Fall, Winter	Good	13,000	15	From Corner to Carter Hill
Bradford Circle	Class V	Flood, Erosion, Tree Fall, Winter	Good	1,000	10	
Breezy Point	Class V	Flood, Erosion, Tree Fall, Winter	Poor	770	10	
Butler Ave	Class V	Flood, Erosion, Tree Fall, Winter	Good	290	3	
Carter Hill	Class V	Flood, Erosion, Tree Fall, Winter	Good	7,100	6	
Clark Rd	Class V	Flood, Erosion, Tree Fall, Winter	Good	450	4	
Concord End Rd	Class V	Flood, Erosion, Tree Fall, Winter	Good	1,500	3	Off of Center Rd by Fox Forest
Concord End Rd	Class V	Flood, Erosion, Tree Fall, Winter	Good	1,200	2	Off of Flint Rd "Donkey Farm"
Concord End Rd	Class V and Class VI	Flood, Erosion, Tree Fall, Winter	Good	3,000	5	Off of Colby Rd
Concord End Rd	Class V	Flood, Erosion, Tree Fall, Winter	Good	3,000	7	Off Of Bog Rd
County Rd	Class V	Flood, Erosion, Tree Fall, Winter	Good	16,000	30	
Dascomb Rd	Class V	Tree Fall, Winter	Good	400	4	
Deer Lane	Class V	Flood, Erosion, Tree Fall, Winter	Good	900	4	
Engelwood	Class V	Flood, Erosion, Tree Fall, Winter	Good	600	5	
Farley Rd	Class V	Flood, Erosion, Tree Fall, Winter	Good	1,800	5	
Harvey Way	Class v	Flood, Erosion, Tree Fall, Winter	Fair	1,300	9	
Hill St	Class V	Flood, Erosion, Tree Fall, Winter	Good	960	12	
Hoyt Lane	Class V	Flood, Erosion, Tree Fall, Winter	Good	280	7	
Intervale Dr	Class V	Flood, Erosion, Tree Fall, Winter	Good	420		Commercial Zone w/possible flood issue
Kimball Hill Rd	Class V and Class VI	Flood, Erosion, Tree Fall, Winter	Good	4,000	7	
Lincoln Circle	Class V	Flood, Erosion, Tree Fall, Winter	Good	500	6	
Madison Circle	Class V	Flood, Erosion, Tree Fall, Winter	Good	1,500	22	
Manahan Park	Class V	Flood, Erosion, Tree Fall, Winter	Fair	1,500		Local park with only one land access
Merrell Rd	Class V	Flood, Erosion, Tree Fall, Winter	Fair	1,000	6	
Miller Rd	Class V	Flood, Erosion, Tree Fall, Winter	Good	550	1	
Moore Rd	Class V	Flood, Erosion, Tree Fall, Winter	fair	500	2	
Mountainside Dr	Class V	Flood, Erosion, Tree Fall, Winter	Good	900	40+	
Norton Dr	Class V	Flood, Erosion, Tree Fall, Winter	Good	950	3	
Old Drift Way	Class V	Flood, Erosion, Tree Fall, Winter	Fair	1,700	12	

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One-Egress (One Access/ Exit) Road Name	Road Class (Class V, Class VI or Private)	Specific Hazard Concerns	Condition (Good, Fair or Poor)	Approx. Length in Feet	Approx. # of Homes on Rd	Neighborhood Name (If Applicable)
Old Railroad Drive	Class V	Flood, Erosion, Tree Fall, Winter	Good	800	4	
Park Place	Class V	Flood, Erosion, Tree Fall, Winter	Good	200	5	
Patten Hill Rd	Class V	Flood, Erosion, Tree Fall, Winter	Good	2,500	21	
Ray Rd	Class V	Flood, Erosion, Tree Fall, Winter	Good	800	2	
Robins Rd	Class V	Flood, Erosion, Tree Fall, Winter	Good	2,100	2	
Schwartz Ave	Class V	Flood, Erosion, Tree Fall, Winter	Good	925	5	
Sleeper Rd	Class V	Flood, Erosion, Tree Fall, Winter	Good	4,100	8	
Stowe Mountain Rd	Class V	Flood, Erosion, Tree Fall, Winter	Good	2,100	7	Upper Stowe Mtn house #s 376-494
Valhalla Farm Rd	Class V	Flood, Erosion, Tree Fall, Winter	Fair	1,800	11	
Wall St	Class V	Flood, Erosion, Tree Fall, Winter	Good	215	3	
Washington Circle	Class V	Flood, Erosion, Tree Fall, Winter	Good	900	11	From Jeffeson Dr to cul-de-sac
Webster Circle	Class V	Flood, Erosion, Tree Fall, Winter	Good	230	5	
Windsor Rd	Class V	Flood, Erosion, Tree Fall, Winter	Good	5,200	20+	From Stowe Mtn Rd to Windsor T/L
Woodlawn Ave	Class V	Flood, Erosion, Tree Fall, Winter	Good	300	2	
Wyman St	Class V	Flood, Erosion, Tree Fall, Winter	Good	360	3	
Total Feet Town Class V One-Egress Roads:				91,000.0	292	Vulnerable Homes
Total Miles Town Class V One-Egress Roads:				16.2		

Source: Hillsborough Highway Department December 2021

Community Facilities

The **Community Facilities** inventoried in **APPENDIX A** are generally vulnerable to disasters and in need of careful consideration. Some facilities contain vulnerable populations, other community facilities are neighborhoods, roads with many homes or roads with only one access, places where people gather, the economic assets of the community, buildings or sites that contain the history of the town, or facilities which could release hazardous materials during hazard or disaster events. While **Critical Facilities** are strong with emergency preparedness and mitigation measures, **Community Facilities** are typically not as well attuned to these issues and would require more emergency services, and perhaps the first check, during a hazard event disaster.

Vulnerable Populations include: Barrett's Manufactured Housing Park [16 sites], Bear Hill Manufactured Housing Park [7 sites], Stonebridge Cooperative Manufactured Housing [44 sites], Rocky Valley RV Park [~34 units], Farmsteads of NE Adult Assisted Living [26 residents], Hillsboro House Nursing Home Assisted Living (School Street Associates) [33 beds], Mapleleaf Village Senior Subsidized Housing (EJL Management) [44 units], 1830 House Motel [13 units], 19 Bridge Street (MBF Enterprises) [14 units], Bear Hill Motel [4 units in Hillsborough], Bear Hill Rd Apartments (RNC Realty) [12 units], Contoocook Mills Apartments (Operman) [30 units], Woodlawn Avenue Apartments (Keystone Management) [24 units], Apartments (RNC Realty) [12 units], Willow Rock Apartments (Keystone) [40 units], Garden Gate Condominiums [~44 units], Hillsborough Child Development Center, Stonebridge Preschool and Daycare [20 children].

Assessed structure (only) valuation for these vulnerable population facilities total \$17.3m.

Economic Assets include those **businesses and services** that employ a large number of people or contribute to the local economy: Dollar General, Family Dollar, Hillsboro Chrysler, Hillsborough Ford, Morse Sporting Goods, Osram Sylvania Plant, Sanel Auto Parts, Shaw's Grocery Store, Tractor Supply, Wyman's Used Sales (Auto), Riverside Precision Sheet Metal, Hillsborough House of Pizza, Sampan Restaurant, Taco Byondo Restaurant, Tooky Mills Restaurant & Pub, Livingstons Auto and Arctic Cat, Dieselz Vehicles Sales and Service, U-Haul Vehicle and Trailer Rentals (2 locations), Tire Warehouse, McDonalds, Subway, Kat's Corner Convenience Store and Lunch Counter, Dunkin Donuts (2 locations), Yanni's Pizza Walk In, Ming Du Chinese Restaurant Walk In, Domino's, Mama's on the Run Breakfast Diner, Mediterano Restaurant, High Tide Restaurant, Two Girls Bakery, Hannah's Diner. **AGRICULTURAL:** Mellen Patch Blueberry Orchard, Hunt's Sugar House, Fireside Flower Farm, Pam's Plants and Flowers, Tom and Robin's Garden (Flowers, Plants, Produce), Three Oaks Farm (Logging). See also **Hazardous Materials** facilities. Only some structure valuations were available (no agricultural). **Assessed structure (only) valuation for these economic asset facilities total \$45.5m.**

Hazardous Materials Facilities include: Achille's Agway, Aubuchon Hardware, Barrett and Gould (Osram Annex), Cumberland Farms, First Student School Bus Storage, Parking and Maintenance, Hillsboro Food and Beverage, Hillsborough Municipal Landfill, Irving Gas, JB Vaillancourt, Mobil Gas, New England

Development (Diesel Truck Repair), O'Reilly VIP Auto Parts Retail, Tires and Repair, PMH Auto Repair, Rymes Fuel, SC Auto Repair, Sunoco, William's Store (Convenience, Kerosene, and Gas). See also **Economic Asset** facilities. Only some structure valuations were available. **Assessed structure (only) valuation for these hazardous material facilities total \$6.35m.**

Cemeteries and Churches include: CHURCHES: Hillsboro Baptist Church, Hillsboro Bible Fellowship, Hillsboro United Methodist Church, Smith Memorial Congregational Church, St. Mary's Catholic Church, Valley Bible Chapel. CEMETERIES: Bear Hill Cemetery, Bible Hill Cemetery, Clark Cemetery, Codman Cemetery, Cooledge Cemetery, Dascomb Cemetery, Farrar Cemetery, Gerry Cemetery, Harvey Memorial Cemetery/St. Charles, Hillsborough Center Cemetery, Kimball Cemetery, Kimball Hill Cemetery, Monroe Cemetery, Pine Hill and Maple Avenue Cemetery, Preston Cemetery, Robbins Cemetery, St. Mary's Cemetery (Private), Life Forest (Private – Alternative Burial Site for Cremated Remains). **Assessed structure (only) valuation for church facilities and headstone replacement estimates for cemeteries (\$50k each) total \$3.85m.**

Historic Sites and Buildings include: Bear Hill National Historic District, Beehive Oven (Part of Kemp Park), Franklin Pierce Homestead Museum, Hillsborough Center Congregational Church (Land Town-owned, leased to private, part of Hist.Dist.), Hillsborough Historic District (Zoning), Kemp Memorial Museum (Private), Kemp Park Museum (Town), Old Methodist Church (Town owned, part of Hist.Dist.), Mill National Historic District, Old Goodale Schoolhouse Converted to Private Residence (Reed), Union Chapel (Historic). See also **Recreational and Gathering Sites**. Only some structure valuations were available. **Assessed structure (only) valuation for these historic facilities total \$1.3m+.**

Recreational and Gathering Sites of both land and buildings include: American Legion, Angus Lea Golf Course, Hillsborough Masonic Temple, Hillsboro Masonic Temple, Hillsboro Family Center (Moose Lodge), Grimes Field, Community Building/Fuller Public Library (historical building), Manahan Recreation Facility (Town Beach), Historical Society Museum (inside old Fire Station), Fox State Forest (NHDRED), Beards Brook Recreation Area (Town Beach), Wall Street Fitness Club with Storage Area, Fireman's Field Training Area (available for rent), Eastman Park Beach (ELVD), Hummingbird Beach (ELVD), Red Fox Crossing Park/Bench (ELVD), Emerald Beach (ELVD), Meetinghouse Main Beach (ELVD. Some of these sites can be **Economic Assets** to the Town even if the land is untaxable. Only some structure valuations were available. **Assessed structure (only) valuations for the recreational facilities total \$2.1+.**

Future Development includes mostly residential development potential as most of the land in Hillsborough is rural. FUTURE DEVELOPMENTS As of **11-21**, there are several approved but unbuilt developments or potential developments according to the Planning Board: Old Mill Farm (23 House Lots), Partners Farm (Partially Revoked, 1 Single Family House Lot), Plaza and Housing (Multi-complex of grocery, restaurant, and retail stores with 65 units of 55 older units).

LARGE LOTS with DEVELOPMENT POTENTIAL & LEGACY PARCELS, Parenau Trust (146 acres), Gullage House Lot (151 acres), Patenaude Trust (138 acres). There are many more large family legacy parcels which could be identified with an inventory. MAJOR LOTS IN HILLSBOROUGH FOR SALE 7-21: lots for sale during this snapshot include: Windsor Road Lot (369 acres), Bog Road Lots 1-6 (19 acres), West Main St Lot (10 acres), Harvey Way Lot (18 acres), Henniker Street Lot (9 acres), Henniker Street Lot (2 acres), West Main Street Lot (0.2 acres), Sleeper Road Lot (30 acres), Henniker Street Lot (10 acres), Old Henniker Road Existing Manufactured Housing Lot – Stonebridge Cooperative (39 units). **Assessed valuation for the Potential/Approved PB Developments (LAND) Legacy Parcels (LAND) and Lots for Sale properties (LAND) only totals \$7.1m.**

PROBLEM STATEMENTS AND EVALUATION

During discussion of these Community Facilities, the Hazard Mitigation Committee identified specific issues or problems that could be further evaluated. **Problem Statements** were developed after ascertaining the **Primary Hazard Vulnerabilities** to the sites and known existing issues. These potential hazards were typically those from the **Hazard Risk Assessment**. The Committee also evaluated these statements to determine whether mitigation actions could be developed.

Vulnerable Populations Table

- ⊙ Many of the manufactured home parks, apartment buildings, and congregate care facilities have one egress/limited access. In the event of an emergency both mass evacuation and ensuring Town emergency service aid reaches residents would be difficult.
- ⊙ The most vulnerable populations live in densely populated areas (apartment buildings, condos, or manufactured home parks) making evacuations more difficult, especially because historically fewer cars are owned by residents of these areas.
- ⊙ Vulnerable populations are more susceptible to human hazards, especially public health issues.
- ⊙ Around 75% of manufactured homes are constructed under older, non-current building codes, and nearly all are not anchored to the ground. They are extremely vulnerable to heavy wind events, fire conflagration, and snow load building collapse. Only homes purchased and placed within the last 3-5 years are required to be anchored.
- ⊙ In Town propane tanks of all size (grills and utility) are not anchored to the ground. During heavy wind, tropical or flooding events, they can become explosion threats.
- ⊙ INFO: Fire and Police Departments review Planning Board applications and provide comments prior to their approval.
- ⊙ INFO: Authority for manufactured home park inspections is through Fire Code and Life Safety Code and may require three or more unit inspections and recommendations.
- ⊙ INFO: NHDOT may make a permitting inspection of manufacturing homes prior to moving the building on roadways.

- ⊙ *INFO:* Any used manufactured homes would have to meet current building codes before it is in Hillsborough.
- ⊙ *INFO:* New propane tanks are permitted. Addresses are known and categorized in an Excel file for the last 5 years, but they are not in a database or on a map. Tanks should be included on property cards.
- ⊙ *INFO:* There are estimated 50 private solar arrays in Town in 2021. When a solar array does not register grid power, it shuts down (microinverters). Main inverters produce power when the sun shines. Electrocuting is a potential hazard to fire fighters.

Economic Assets Table

- ⊙ Subway plaza, High Tide Restaurant, Rymes Gas Station are within the floodplain. Evacuation difficulties, potential for underground tank leak or unanchored tanks to float, and property damage are all more likely due to location.
- ⊙ Downtown businesses near to the floodplain would be affected by dam failure.
- ⊙ All gas stations are electric so in the event of a power failure residents and Town Departments would not have access to gas. Gas is needed as a fuel source for many backup generators.
- ⊙ *INFO:* Loss of local retail economy has far reaching impacts. During public health events, winter weather events, flooding, or tropical and post-tropical storms, the lack of patronizing of local business can be harmful. About five businesses closed due to the pandemic and the local economy suffered as a whole.

Hazardous Materials Table

- ⊙ Town may not be aware of the exact materials businesses have on site or are transporting on the roads.
- ⊙ Unanchored propane tanks will float away during flood events causing explosion hazards.
- ⊙ *INFO:* Sabotage is a concern with tanks and fuel storage.

Cemeteries & Churches Table

- ⊙ There are multiple cemeteries in the floodplains below the Jackman Dam, Downtown, Grimes Field, Church Street, and around Town.
- ⊙ Occasional vandalism and theft of grave markers is a concern. Damaged stones and dug up graves, settlement, tree debris during storms can all occur. Town has a satisfactory maintenance contractor for all Town cemeteries.
- ⊙ *INFO:* Police Department makes patrols and trees are all cut back.

Historic Sites & Buildings Table

- ⊙ Many historic sites are in the floodplain (Beehive Oven), and it's impossible to replace these resources if they are destroyed. These sites are challenging and expensive for the Town to maintain.
- ⊙ Vandalism, such as spray painting, is a continuing problem at historic sites.

Recreation & Gathering Sites Table

- ⊙ Bacteria (E. Coli) levels at Manahan Beach on Jackman Reservoir/Franklin Pierce Lake and Beard's Brook Beach have caused beach closings due to potential public health hazards.
- ⊙ There is a growing potential for mosquito-borne illnesses at recreation areas and on the waters in Town.
- ⊙ Advisory instructions have been issued from the State to not consume fish from Jackman Reservoir/Franklin Pierce Lake more than twice per month due to mercury content.
- ⊙ Cyanobacteria at Manahan Beach has been addressed due to overfertilization by riverfront property owners.
- ⊙ *INFO:* Town Public Library has had renovations and The Kemp Park Museum was constructed in the last 5 years.

Future Development Table

- ⊙ Town infrastructure and services are not able to keep up with the level of development.

Many of these problem statements were developed into Actions discussed later in **7 PRIOR ACTION STATUS** and **8 MITIGATION ACTION PLAN**.

Potential Losses from Natural Disasters

Natural disasters, including floods, wind events, severe winter storms and ice storms, secondary disasters as a result of the natural disasters (such as power loss) and to a lesser degree, human and technological hazards as documented in **4 HAZARD RISK ASSESSMENT** have occurred in Hillsborough. This section estimates Town-wide structure/building damage in Town from natural hazard events. It is difficult to ascertain the amount of damage caused by a hazard because the damage will depend on the hazard's location and magnitude, making each hazard event somewhat unique. Human and technological hazards are typically even more incalculable. Human loss of life was not included in the potential loss estimates for natural hazards, but could be expected to occur, depending on the severity of the hazard.

While this Plan focuses on being pro-active in those geographic areas of Hillsborough most prone to recurring hazards (like flooding), some initial estimates of measurable property damage and building damage have been discussed by utilizing simple techniques such as the numbers of structures and assessed valuation. This two-dimensional approach of calculating dollar losses from tangible structures offers a basic yet insightful tool to begin further loss estimation analyses.

TOOLS FOR COMMUNITIES WITH GIS

For gauging more three-dimensional estimation of damages, FEMA has developed a software program entitled HAZUS-MH (for multi-hazard), which is a powerful risk assessment software program for analyzing potential losses from floods, hurricane winds and earthquakes. In HAZUS-MH, current scientific and engineering knowledge is coupled with the latest Geographic Information Systems (GIS) technology to produce estimates of hazard related damage before, or after, a disaster occurs. Developed for ARCGIS which produced the *Maps* for this Plan, HAZUS-MH takes into account various effects of a hazard event such as:

- Physical damage: damage to residential and commercial buildings, schools, critical facilities, and infrastructure;
- Economic loss: lost jobs, business interruptions, repair and reconstruction costs; and
- Social impacts: impacts to people, including requirements for shelters and medical aid.

Federal, State and local government agencies and the private sector can order HAZUS-MH free-of-charge from the FEMA Distribution Center. Hillsborough should first ascertain whether a municipal geographic information system (GIS) of hardware and software is appropriate, and if so, consider training staff to perform models. With many Town existing and under-development infrastructure GIS data layers available, HAZUS-MH could prove very helpful for estimating losses for the community on a disaster-specific basis. However, much staff time is necessary to train staff and maintain a GIS system. Official map generation is typically subcontracted out to other agencies now, including the mapping and appraisal companies used by the Town and the Central NH Regional Planning Commission who developed the *Maps* for this **Hazard Mitigation Plan**.

METHODS OF POTENTIAL DOLLAR LOSSES BY NATURAL HAZARDS

A more manageable technique was used for loss estimation for the purposes of this **Hazard Mitigation Plan Update**. Natural hazard losses are calculated based on dollar damage ranges over the entire community, or in the case of flooding, buildings in the Special Flood Hazard Areas (SFHAs) are counted and their value is collected. The number of total parcels in the community as of **June 2021** is **3,880**. Using Hillsborough's MS-1 **2021** valuation data, **the total assessed value of all residential and non-residential structures ONLY in Hillsborough (\$375,526,800)** is the basis for loss estimation calculations. *Land and utilities are not included here.*

Potential Building Dollar Losses by SFHA Flooding

Using geographic information system (GIS) technology, parcels with buildings within the floodplain were identified using Hillsborough's online digital tax maps developed by AxisGIS in **March 2021** that contained assessing data, and geospatially overlaid this data with the **2009** FEMA Digital Flood Insurance Rate Maps (DFIRMs) digital map. An intersection operation identified all the parcels with buildings in the SFHAs, although this evaluation does not determine whether the building itself is situated within floodplain boundaries. **Building Type** was characterized into one of four categories, single-family homes, multi-family homes, manufactured homes, and non-residential buildings. Building number and value were excerpted from the assessing database. **Table 31** summarizes this data. *Land value, building contents value and infrastructure were not considered in these calculations.*

*721 primary buildings were identified by address in 2021 as located within the in the Special Flood Hazard Areas (SFHAs). Hillsborough parcels and assessing data can be found at www.axisgis.com/HillsboroughNH. This is an increase of +99 buildings since the **2017 Plan** if the data sources and interpretation remain consistent.*

Table 31
Building Value in the Special Flood Hazard Areas (SFHAs)

Building Type	Number of Buildings	Total Value of Buildings in SFHA	Average Replacement Value	201 Plan Number of Buildings
Single Family Homes	571	\$57,344,900	\$100,429	478
Multi-family Homes	10	\$1,335,700	\$133,570	10
Manufactured Homes	63	\$1,677,600	\$26,629	60
Non-Residential Buildings	77	\$42,139,200	\$547,262	74
Totals	721	\$102,497,400	-----	622

Sources: AxisGIS Town Assessing, Dec 2021, www.axisgis.com/HillsboroughNH

In **Table 32**, digital analysis and human interpretation identified **571** single family residential homes, **10** multi-family homes, **63** manufactured homes, and **77** non-residential buildings are situated within the Special Flood Hazard Areas (SFHAs). As the Town's total number of **2020** housing units is estimated at **3,172**, about **20.3%** of Hillsborough's residences seem to be located in a floodplain area. The average replacement value is **\$100k** for a single-family home or **\$133k** for a multi-family home, **\$27k** for a manufactured home, or **\$547k** for a non-residential building in the SFHA. The total value of all buildings in the Special Flood Hazard Areas from this analysis is about **\$102.5m**.

There are alternative ways to calculate potential SFHA losses. In the following tables, the average building replacement value was calculated by adding the assessed values of all structures in the special flood hazard areas and dividing by the number of structures. 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.

The costs for repairing or replacing infrastructure such as bridges, railroads, power lines, roads, drainage systems, telephone lines, or natural gas pipelines, land destruction, and the contents of structures are not included in these building damage estimates.

Table 32 represents the **worst case scenario of all** single-family homes, multi-family homes, manufactured homes, and non-residential buildings within the Special Flood Hazard Area that are damaged by a flood hazard event.

Table 32

Dollar Damage Ranges for Total Buildings in Special Flood Hazard Areas (SFHA)

Building Type	Total Value of Buildings in SFHA	Total Value of Potential Damages in SFHAs by Respective Building Type		
		Eight-Foot Flood 49% Damage	Four-Foot Flood 28% Damage	Two-Foot Flood 20% Damage
Single Family Homes	\$57,344,900	\$28,099,001	\$16,056,572	\$11,468,980
Multi-Family Homes	\$1,335,700	\$654,493	\$373,996	\$267,140
Manufactured Homes	\$1,677,600	\$822,024	\$469,728	\$335,520
Non-Residential Buildings	\$42,139,200	\$20,648,208	\$11,798,976	\$8,427,840

Sources: See **Table 32**; FEMA

If all **571** single family homes were damaged by a **Two-Foot Flood (20% Damage)**, the dollar damage to the *buildings* could be **\$11.5m** while an **Eight-Foot Flood (49% Damage)** could cause **\$28.1m** in *building* damage. If all **10** multi-family homes identified in the SFHA were damaged by a **Two-Foot Flood (20% Damage)**, the damage could be **\$256k** for *buildings* only, while an **Eight-Foot Flood** could cause **\$655k** in *building* damage. If all **77** nonresidential buildings in the SFHA were damaged by a **Two-Foot Flood**, the

dollar damage to the *buildings* only could be **\$8.4m**, while an **Eight-Foot Flood** could cause **\$20.6m** in *building* damage. Dollar damage estimations vary according to the standard percentages of damage levels associated with flooding levels set by FEMA.

Table 33 also represents the **worst case scenario, but of individual** single-family homes, multi-family homes, manufactured houses, and non-residential buildings within the Special Flood Hazard Area that are damaged by a flood hazard event.

Table 33

Dollar Damage Ranges for Individual Buildings in Special Flood Hazard Areas (SFHA)

Building Type	Average Value of Individual Buildings in SFHA	Individual Value of Potential Damages in SFHAs by Respective Building Type		
		Eight-Foot Flood 49% Damage	Four-Foot Flood 28% Damage	Two-Foot Flood 20% Damage
Single Family Homes	\$100,429	\$49,210	\$28,120	\$20,086
Multi-Family Homes	\$133,570	\$65,449	\$37,400	\$26,714
Manufactured Homes	\$26,629	\$13,048	\$7,456	\$5,326
Non-Residential Buildings	\$547,262	\$268,159	\$153,233	\$109,452

Sources: See **Table 32**; FEMA

One (1) single family home could accrue **\$20k** when damaged by a **Two-Foot Flood** while an **Eight-Foot Flood** could cause **\$42k** in *building* damages only. One (1) multi-family home compares at **\$27k** for a **Two-Foot Flood** in *building* damages only and at **\$134k** for an **Eight-Foot Flood**. One (1) manufactured home compares at **\$5k** for a **Two-Foot Flood** in *building* damages only and at **\$13k** for an **Eight-Foot Flood**. One (1) non-residential building in the SFHA is could have **\$110k** in *building* damages for a **Two-Foot Flood**, while experiencing **\$268k** in *building* only damages for an **Eight-Foot Flood**.

Although not an accurate assessment, these dollar damage ranges for **Inland Flooding** in the designated floodplains (SFHAs) provide a general sense of the scale of potential disaster and financial need in the community during flooding events.

Potential Building Dollar Losses by Other Natural Hazards

Flooding is often associated with heavy rains and flash floods, hurricanes, ice jams, rapid snow melting in the spring, and culvert washouts. These are all types of flooding hazards discussed or evaluated previously but can also occur outside of the SFHAs.

Building damage by natural disasters in New Hampshire is not limited to SFHA flooding alone, which is easier to quantify and predict. Simple calculations can be made based upon generalizations of a disaster impacting a certain percentage of the number of buildings in the Town. The **MS-1 2021** assessed value of all residential, commercial, and industrial structures in Hillsborough is **\$375,526,800** (no land) on **3,880**

parcels. Disaster damages are often illustrated in the following section utilizing a percentage range of town-wide building damage.

*At **3,172** housing units in Hillsborough counted in the preliminary **2020** US Census, any type of wide-spread disaster impacting **10%** of housing units would yield **317** damaged homes.*

The inventory of Town sites or buildings in **APPENDIX A Critical and Community Facilities Vulnerability Assessment** indicates which hazards each site is most susceptible to and provides its assessed valuation. This dollar value can be used as a damage estimate from the natural hazard events listed below. Yet the potential losses discussed in this section involve all buildings across the community to provide a more distinct portrait of potential losses using the assessed valuation of all town buildings. Damages from natural hazards to anything other than buildings, such as infrastructure, land, humans or building contents, are not examined here. Specific individual studies would be needed to assess more detailed scenarios. Following are potential building-only dollar damages from select natural hazards.

Drought

Drought is often declared on state-wide or region-wide basis, and sometimes by individual town. Dollar damage caused by drought would be difficult to quantify but would most likely impact the agricultural and economic base of a community. Although everyone could be charged to conserve water, agriculture and forestry operations would be most affected and the risk of wildfire increases.

As physical damage is usually isolated to specific locations, the effects of potential disasters at certain facilities could be researched utilizing the Town's assessor's database for valuation on targeted land. Agricultural and forested lands may be among the most affected by drought. Many farm operations have been inventoried in Hillsborough. People who rely on private well water have found their dug wells running dry in **2015-2016** and again in **2018** and **2020** and have needed to dig bedrock wells. Agricultural operations run the risk of high damage from **drought** which also brings economic consequences. In Hillsborough, these areas include maple tree crops, livestock, produce, orchards, tree farms and hay fields. Conservation land forests in Town are also susceptible to loss and fire during **drought** conditions.

These lands could be vulnerable to **droughts** and physically and may become economically damaged by these long-term droughts. A dollar estimate is incalculable.

Earthquake or Landslide

Earthquakes can cause buildings and bridges to collapse, disrupt water supplies, electricity and phone lines and are often associated with **landslides** and **flash floods**. Buildings that are not built to a high seismic design level or are large in size could be susceptible to structural damage. Large facilities or historic buildings including the Library, Town Hall, historic churches, the manufactured housing parks, and the densely populated locations are particularly at risk because of building sizes, building age, and/or their

large numbers of people contained within. West Main Street travels over several bridges including the Contoocook River and serves as a local highway for a great number of people.

Loss of infrastructure or other community buildings or highways could result in fewer services available to residents or reduce the ability to evacuate. Buildings which are located on or near the sides of river and stream banks or that are located on a hill over **25%** could be subject to **landslide** triggered by rains or **erosion**. The Central NH Region area of Boscawen, Canterbury, Webster, Hopkinton (Contoocook), Henniker, Hillsborough, Salisbury, and Warner (Davisville) hosts frequent epicenters of deep earthquakes.

With a scenario range of **0.5%** to **1%** of buildings damaged throughout the Town, an **earthquake** or **landslide** could potentially cause up to **\$1.9m** to **\$3.8m** in building-only damage costs, not including contents, infrastructure, or land.

Extreme Temperatures

Excessive heat and **extreme cold** can harm property, such as landscaping and agriculture, or infrastructure. People will draw more water from their wells to help alleviate these conditions. Extreme heat can sicken people, causing sunstroke, heat exhaustion and dehydration if the environment is not cool enough or water intake is too low. Conversely, extreme cold can cause hypothermic conditions. In this manner, neither extreme heat nor cold is measurable for dollar damage. Hillsborough has many vulnerable populations, including public and private Schools, multi-family neighborhoods, manufactured housing parks, remote neighborhoods on cul-de-sacs, youth programs, and more. The local Recreation Center is open to residents and there are a few independent living communities for 55+ and older. A detailed inventory of **Vulnerable Populations** can be undertaken by the Town and regularly updated which can be used by emergency responders to ensure susceptible people remain healthy. Dollar damage estimates are not feasible for **extreme temperature** hazards.

High Wind Events or Tropical and Post-Tropical Events

The high wind event storms include the **wind events**, **flooding** and **lightning**, but can also just be simply severe winds, downbursts, tornadoes, or hurricanes. When summer **rainstorms** or **thunderstorms** occur, they are often regional in nature, but could just as commonly be localized in some areas, easily identifiable when one section of a roadway is dry and another section of the same road is wet. Sometimes **hail** accompanies these storms. **Thunderstorms** and **rainstorms** are more likely to damage trees, powerlines or crops than buildings, which are more readily damaged by downbursts, tornadoes and hurricanes. These storms typically cover most of, if not the entire, Town, as **winds** and **storms** are large enough and blow through to impact multiple New Hampshire counties. High wind events could be particularly fierce in areas along the Contoocook River, Jackman Reservoir, Emerald Lake, Downtown Village, and at higher elevations. The Town typically clears trees from the same roads each storm (wind, snow, ice, etc).

With a scenario range of **1%** to **5%** of buildings damaged by wind events throughout the Town, a wind event could potentially cause up to **\$3.9m** (for more localized **downburst**, **high winds** and **hail**, or **tornadoes**) to **\$18.8m** (for more damaging and widespread **tropical storms and hurricanes**) in building-only damage costs, not including contents, infrastructure, or land.

Lightning

Damage caused by **lightning** would not be Town-wide because it typically strikes in smaller areas. Few places in Hillsborough are at specific risk but lightning strikes can cause fires. Damages will vary according to the value of the structure and home and the contents inside, and dollar amounts would depend on if the hazard hit an area with a high density of buildings. Specific sites which would cause the greatest impact if struck by **lightning** include conflagrations in the Central Business District area, Downtown Village area, Emerald Lake Village District, high density multi-family neighborhoods around the wildland urban fire interface areas, manufactured housing parks, cul-de-sac neighborhoods; high elevations; densely populated buildings including the Schools; historic buildings including private homes. Town Facilities like the Public Works Garage, Town Offices in the Library, Fire and Rescue Department, Police Department and Transfer Station are necessary for governmental function and provision of basic services.

The Town's utilities, including powerlines, high tension powerlines, telecommunications tower, switching stations, telephone lines and broadband cable internet service, gas lines, water and wastewater facilities and their software control systems, as well as the municipal and School computer systems, are vulnerable to **lightning strike**. Tall buildings could be vulnerable without lightning rods.

With a scenario of **0.5%** of buildings damaged throughout the Town, a **lightning strike** could potentially cause up to **\$1.9m** in building-only damage costs alone, not including contents, infrastructure, land, or additional damage through fire spreading.

Public Health

Dollar damage estimates are not feasible for public health hazards, with such a variety of potential issues, locations, and populations.

River Hazards

Ice jams on the **Contoocook River**, **North Branch River**, **Beard Brook**, or another one of the larger brooks would be a major cause of **flooding** which could recur in the future. Woody material causing **debris impacted infrastructure** may be more likely to impact bridges than ice jams, especially any the structurally deficient State or Town bridges. Several bridges or roads span across the rivers, named brooks and many unnamed brooks. Small brooks culverts and drainage systems offer additional opportunity for ice jams, debris blockage, and more. The **2023-2032 NH Department of Transportation Ten Year Plan (TYP)** provides many examples of basic cost estimates bridge replacement and rehabilitation.

This average figure of **\$750,000** can be used for one (1) local bridge *replacement* in Hillsborough due to the physical damage caused by **river ice jams** or **debris impacted infrastructure**. The same bridge damaged by **ice** or **debris** which only requires *rehabilitation* could cost **\$500,000**.

Another way to view potential **river hazard** damages is if half (286) of the 571 single family homes in the floodplain were damaged by **Two-Foot Flooding (20% Damage)** resulting from **river ice jams** or **debris**

impacted infrastructure, there could be up to **\$11.5m** in *building* damage costs, not including contents, infrastructure or property.

Winter Weather

Heavy **snow loads**, **icy conditions**, **extreme cold**, **wind chill**, and the secondary hazards (including **power failure**, **transportation accidents** and **debris impacted infrastructure**) are result of **winter storms**. Storms with these conditions have been felt in Hillsborough in the past. These hazards and secondary impacts are a risk to the community, including isolation, more falls and personal injury (especially by the older residents), and the potential for roof collapse. The most remote locations in Hillsborough, wooded and forested sections vulnerable to tree fall, include the entire Town. Damage caused by this type of hazard varies according to wind velocity, snow accumulation, tree/limb fall and duration.

With a scenario range of **1% to 5%** of buildings damaged throughout the Town, **severe winter storms** could potentially cause up to **\$3.9m** to **\$18.8m** in building-only damage costs.

Solar Storms and Space Weather

Dollar damages to structures are not measurable from solar winds, radio blackout, or geomagnetic storms. These hazards impact utilities such as communication systems, electric grids, and technology. The Town, School, Loon Pond Water Treatment, Wastewater Treatment Facility and local, regional, state and county technology are vulnerable to **solar storms**, such as computer systems, emergency response dispatch systems, electricity, internet, satellite dishes, emergency repeater antennas, solar array grid inversion, and software programming interruption that upkeeps essential functions. Although a potential natural hazard, dollar damage estimates are not feasible for solar storms and space weather.

Wildfire

The risk of **wildfire** 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. Humans can contribute by accidents in the woods or dry fields, or by the deliberate setting of **fire** in a structure. The heavily forested woodlands of Town are often remote locations and difficult to access by emergency vehicles. Some of these locations are large State Forests on which the Town has no jurisdiction. Subdivisions in remote hilltop locations and on private, cul-de-sac or non-Town maintained roads are especially vulnerable to wildfire impacts.

The public access conservation lands and their trails offer wonderful recreational opportunities for residents and visitors. Forests and woodlands are particularly vulnerable to **wildfire** because accidental human-caused fires could occur. Remote fires might not be reported until they become large enough to be spotted. 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.

With a scenario of **1.0%** of buildings damaged in the Town, a **wildfire** could potentially cause up to **\$3.8m** in *building*-only damage costs, not including contents, infrastructure, or land.

National Flood Insurance Program (NFIP)

In 1968, Congress created the National Flood Insurance Program (NFIP) to help provide a means for property owners to financially protect themselves. The NFIP offers flood insurance to homeowners, renters, and business owners if their community participates in the NFIP. Participating communities such as Hillsborough agree to adopt and enforce ordinances that meet or exceed FEMA requirements to reduce the risk of flooding. For more information on the National Flood Insurance Program, visit <https://www.floodsmart.gov/why/why-buy-flood-insurance>.

The initial identification of Hillsborough's Flood Hazard Boundary Maps was produced on **May 10, 1974**, and later the first Flood Insurance Rate Maps (FIRM) were developed on **June 15, 1979** and included the Special Flood Hazard Areas (SFHAs). The Town entered the regular phase of NFIP membership on **this date**. Hillsborough's first Flood Insurance Study (FIS) was produced in **December 1978**. No amended FIS or FIRMs were developed for the Town until over four decades later, consistent with other Central NH Region communities.

In the present day, Hillsborough's effective FIRMs are digital (DFIRMs) dated **September 9, 2009** as is the Hillsborough County Flood Insurance Study (FIS) which includes Hillsborough (community #330090); individual community FIS are no longer being developed. These **2009** newest documents were adopted by the Board of Selectmen, supersede all previous NFIP documentation, and are placed into the Town Zoning Ordinance. **Table 34** summarizes the historical background of the Town's NFIP effective dates.

Table 34
NFIP History of Hillsborough – Effective Dates

Version	Flood Insurance Study (FIS)	Flood Insurance Rate Maps
Original	December 1978	June 15, 1979
Current	September 5, 2009	September 5, 2009

Source: FEMA Hillsborough County Flood Insurance Study (FIS) Table 9 & Bibliography, 2009

HILLSBOROUGH'S NFIP STATISTICS

In **Table 35** is a cumulative history of the trends and overall totals of flood insurance policies and losses of those property owners utilizing the NFIP insurance in Town. Four snapshots in time, one from each of Hillsborough's **Hazard Mitigation Plan** versions, display the number of NFIP policies in force and paid loss statistics between **December 2003 – April 2019**, the last date of accessible data.

Table 35
History of NFIP Policy and Paid Loss Statistics

Report Date	Policies in Force	Insurance in Force	Number of Paid Losses Since 1979	Total Losses Paid Since 1979
Dec 2003	14	\$5,246,100	14	\$32,637
Feb 2009	42	\$6,975,900	31	\$441,130
Mar 2016	37	8,213,600	32	\$475,071
Sep 2021	---	---	31	\$505,722

Source: Hillsborough Hazard Mitigation Plans, FEMA last accessed 09-18; Policies in Force Data no longer publicly available by Town <https://www.fema.gov/openfema-data-page/fima-nfip-redacted-policies-v1>

From **Table 35**, in **Dec 2003** prior the severe flooding event period of **2005-2008**, **14** properties in Hillsborough were covered by NFIP flood insurance and **14** claims had been paid since **1979**. By the **2009 Plan** after the flooding period, the number of policies nearly tripled to **42** with **31** losses paid. By **Mar 2016**, policies had decreased to **37** while the paid losses increased to **32**. By **April 2019**, the latest available data for policies was no longer available. At this date, Hillsborough property owners had only **31** paid losses totaling over **\$505m**. There must have been a data reporting inaccuracy at one time, since the number of paid losses and total losses paid had changed by **April 2019**.

Since the **2017 Plan**, the last available the number of properties (policies) covered by flood insurance was available, was only **37** policies in the community. Normally, the number of policies would fluctuate, influenced by the number of current severe flooding events, recent changes in flood insurance regulation, the higher cost of insurance, uncertainty about exact floodplain location, mortgage requirements, the changing real estate market, and assumptions that flood insurance is unnecessary if one's property is outside of the floodplain. Since there has been no recent severe flooding, fluctuation did occur in Hillsborough and is remaining consistent.

Table 35 also illustrates that while the property owners anywhere in the entire Town of Hillsborough are eligible to purchase flood insurance for their property, only **37** properties out of the **3,880** total parcels in the entire community are insured against flooding. As described previously, a total of **721** parcels with homes and non-residential buildings seem to be at least partially situated in the Special Flood Hazard Areas (SFHA).

Assuming the 37 NFIP policy properties are within the SFHA, then 5.1% of buildings in the floodplain are insured against flooding.

Virtually all of Hillsborough’s buildings and properties are uninsured for when the next flooding event occurs. **Inland Flooding** conditions can occur anywhere in the community due to runoff, debris impacted infrastructure (culverts), drainage overflow, rapid snowpack melt, road washouts, beaver dam breaks, heavy rains, etc. which are not limited to the floodplain (SFHAs) areas and are not covered by homeowner’s insurance or any other insurance than National Flood Insurance Program (NFIP) flood insurance. Buildings and properties are also vulnerable to **River Flooding** from the **Contoocook River**, **North Branch River**, and the large brooks.

REPETITIVE LOSS PROPERTIES

A specific target group of properties is identified and serviced separately from other NFIP policies when repetitive losses occur on the same properties. The group includes every NFIP-insured property that, since **1979** and regardless of any change(s) of ownership during that period, has experienced four or more paid flood losses of more than \$5,000 each or two or more separate claim payments (building payments only) where the total of the exceeds the current value of the property. Two of the claim payments must have occurred within 10 years of each other. 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 **1979**.

As of **April 2018**, Hillsborough had a total of **3** remaining repetitive loss properties according to records kept by the Federal Emergency Management Agency and supplied by the NH Office of Planning and Development (NH OPD). **Table 36** displays the general repetitive loss data:

Table 36
Number of Repetitive Loss Properties

Building Type	Number of Repetitive Loss Properties as of 04-18
Single Family	3
Multi-Family	0
Non-Residential	0
Total Properties	3

Source: NH Office of Planning and Development (NH OPD) on behalf of FEMA, April 2018

These RPL data records are confidential for the property-specific information they contain. Repetitive losses are determined by any repetitive damage claims on those properties that hold flood insurance through the NFIP. Should repetitive losses occur, the Town could consider participating in voluntary property acquisition (“buyouts”) which would eliminate the threat to several homes by incorporating newly vacant land into the Town’s flood storage capacity.

FLOODPLAIN ORDINANCE

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 Regulation / Site Plan Review requirements for land designated as Special Flood Hazard Areas (SFHAs). Flood insurance is available to any property owner located in a community participating in the NFIP.

Community Assistance Visits in Hillsborough

A Community Assistance Visit (CAV) is a process required by the National Flood Insurance Program (NFIP) as a way of reviewing a town's compliance with established floodplain regulations to be sure that they meet NFIP requirements. If the Town is not in compliance with regulations in any way, the officials that conduct the CAV provide assistance and guidance to assist with correcting any violations.

Since the NH Office of Planning and Development (NH OPD) identified Hillsborough as a repetitive loss community, which is based upon **Table 36** data, Hillsborough is classified as a Tier 1 community. For a Tier 1 community that has experienced repetitive losses, a new CAV will be undertaken every five years or if there is a severe flooding event. For towns without any repetitive losses, they are classified as Tier 2 where a telephone call may be made to the Town every 5-10 years or otherwise as needed when so classified.

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.

In **2008**, another CAV was conducted in Hillsborough which reviewed progress from the previous **2001** CAV and considered new NFIP policies. A few small Floodplain Ordinance corrections were made in **2008**. This was the last known CAV, although a follow-up telephone call may have been made by NHOEP after **2012** to review Land Use Department procedures and the contents of the Floodplain Ordinance, Subdivision Regulations and Site Plan Review Regulations. Following this basic schedule, another call would be anticipated around **2025**.

Any minor problems with the floodplain management regulations or process was rectified. When the next severe flood occurs, a CAV should be made by NH OPD to request a review of zoning compliance procedures and the contents of the Floodplain Development Ordinance, Subdivision Regulations and Site Plan Review Regulations.

Floodplain Development District Ordinance

The Town of Hillsborough has a Floodplain Development District and has adopted all the required FEMA revisions to its ordinance, the last of which were **March 2008** to correct language and in **2009**, when the Town adopted the new FEMA effective Digital Flood Insurance Rate (DFIRM) maps dated **September 25, 2009**. In **March 2009**, the Town also adopted the amended Floodplain Development Ordinance incorporating the necessary FEMA revisions.

The **2021** Hillsborough Floodplain Development Zoning Ordinance contains the elements requested to date by FEMA and the NH Office of Planning and Development's Floodplain Management Program. A Floodplain Develop Overlay District map is available at the Town's Community Development and Planning Office. An excerpt of the Floodplain Ordinance is displayed in **Figure 27**.

Figure 27

Latest National Floodplain Development Zoning Ordinance

ARTICLE VIA. Floodplain Development
[Added 3-9-1999 ATM by Art. 3; amended 3-13-2002 ATM by Art. 2, Question #2; 3-13-2007 ATM by Art. 5]
§ 229-38. Title; Purpose; Construal of Provisions
This article, adopted pursuant to the authority of RSA 674:16 shall be known as the "Hillsborough Floodplain Development Ordinance." The regulations in this article shall overlay and supplement the regulations in the Hillsborough Zoning Ordinance, and shall be considered part of the Zoning Ordinance for purposes of administration and appeals under state law. If any provision of this article differs or appears to conflict with any provision of the Zoning Ordinance or other ordinance or regulation, the provision imposing the greater restriction or more stringent standard shall be controlling.
§ 229-39. Applicability; Maps
[Amended 8-11-2009]
The following regulations in this article shall apply to all lands designated as special flood hazard areas by the Federal Emergency Management Agency (FEMA) in its "Flood Insurance Study for the County of Hillsborough, N.H." dated September 25, 2009, or as amended, together with the associated Flood Insurance Rate Maps, dated September 25, 2009, or as amended, which are declared to be a part of this article and are hereby incorporated by reference.
§ 229-40. Definitions
The following definitions shall apply only to this article, and shall not be affected by the provisions of any other ordinance of the Town of Hillsborough:
AREA OF SPECIAL FLOOD HAZARD
The land in the floodplain within the Town of Hillsborough subject to a one-percent or greater chance of flooding in any given year. The area is designated as Zone A or AE on the Flood Insurance Rate Map.
BASE FLOOD
The flood having a one-percent possibility of being equaled or exceeded in any given year.
BASEMENT
Any area of a building having its floor sub grade on all sides.
BUILDING
See "structure."
Amended March 9, 2021
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Source: Section of Hillsborough Zoning Ordinance March 2021

NFIP Familiarity in Hillsborough

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.

Ongoing attention and familiarity with the NFIP will keep Town staff and volunteers in top form. In order to reduce flood risks, the Building Inspector, Town Assessor, Town Administrator, Town Planner, volunteer Planning Board members, and other Town staff whose duties include review/inspection of development or construction, should be familiar with the Floodplain Ordinance and the NFIP.

Because of their unique position to ensure development conforms with ordinances prior to approval, the Planning Board should be familiar with NFIP policies, especially those regulations that are required to be incorporated into the Subdivision and Site Plan Review regulations. A workshop sponsored by the NH Homeland Security and Emergency Management (NHHSEM) or the NH Office of Planning and Development (NH OPD) would be appropriate to educate current staff and volunteers. New online courses by FEMA for floodplain management, mapping, elevation certificates and more are available at no charge. For online training taken at the convenience of the individual, see the [*FEMA Emergency Management Institute's*](#) current training course index for flooding:
<https://training.fema.gov/is/searchis.aspx?search=NFIP>.

An essential step in mitigating flood damage is Town and property owner participation in the NFIP. Hillsborough should work to consistently enforce NFIP compliant policies to continue its participation in this program. Town staff field property owners asking for assistance because their mortgage lenders are requiring proof that the properties in question are not located in a Special Flood Hazard Area to determine whether NFIP flood insurance is required. The only way to rectify this issue is to have a survey completed of the property to complete a Certificate of Elevation to keep on file at the Town Office. If the property is shown to be located out of the floodplain, a Letter of Map Amendment should be completed by the owner or by the Town to ensure future flood maps are corrected.

When possible, Town staff should try to promote flood insurance to property owners in Town; only **37** properties out of the **3,880** parcels in Hillsborough are protected by flood insurance and currently take advantage of the NFIP insurance opportunity. Informational links for the public on flood topics could be located on the Town's website at <https://www.town.hillsborough.nh.us/>.

6 CAPABILITY ASSESSMENT

Local mitigation capabilities are existing authorities, plans, ordinances, policies, mutual aid, programs, staffing, technical skills and assets, funding, outreach, public education, and resources that reduce hazard impacts or that could be used to help implement hazard mitigation activities. These capabilities were inventoried for the **Hillsborough Hazard Mitigation Plan Update 2022**.

The **Capability Assessment** contains an inventory of locally-important existing mitigation support activities, or capabilities, which have a positive impact on the way hazard events are handled within the community. Most capabilities are not hazard mitigation Actions but support the Action Plan and help decrease the community's hazard risk. These community-strengthening capabilities are not STAPLEE-rated (Social Technical Administrative Political Legal Environmental and Economics questions) like the Actions, but instead the capabilities serve to sustain and assist the community to maintain and accomplish its hazard mitigation Actions and priorities. Selected **Future Improvements** (mitigation-oriented) to some of these capabilities have the potential to be considered as Actions in **7 POTENTIAL**

ACTION EVALUATION and 8 MITIGATION ACTION PLAN.

CAPABILITY ASSESSMENT TABLES

Planning and Regulatory

- Plans and Planning Documents
- Building Codes, Permitting, Inspections
- Land Use Ordinances, Regulations

Administrative and Technical

- Administrative Programs, Policies, Mutual Aid Agreements, Partnerships, Operations, Procedures
- Staff and Volunteers
- Technical Skills, Training, Drills
- Assets, Security, Resources (Specialized Equipment)

Financial Resources

- Financial Programs or Funding Resource for Hazard Mitigation Projects
- Future Financial Resources to Explore for Haz Mit Projects

Education and Outreach

- Public Outreach Program, Educational Activity, Notifications

There are four overall Capabilities considered for which an inventory of mitigation support items was identified by the Hazard Mitigation Committee, **Planning & Regulatory, Administrative and Technical, Financial Resources, and Education and Outreach**.

Each Capability had inventoried the latest version or adoption Date; a Description of the item; the location of the capability in Town; the Level of Effectiveness of the Capability; which Department, Board or other has Responsibility for the capability; what Changes were made to the capability since the **2017 Hazard Mitigation Plan**; and Future Improvements to the Capability.

Town Capabilities

A summary of the items within the four Capability tables is provided here to offer a portrait of resources Hillsborough has at hand to assist with mitigation. Careful consideration of each Capability's **Level of Effectiveness** helped the Departments to determine any clear **Future Improvements** to undertake. Many of the Town's Capabilities involved existing plans, procedures, reports, policies, regulations, and resource documents from individual Departments. These plans and documents were reviewed and incorporated into the **Capability**

Assessment. Future Improvements to these documents were identified and many later became Action items in **8 MITIGATION ACTION PLAN**. Capabilities of all Town Departments and the School District as related to hazard mitigation are detailed within the following tables.

Level of Effectiveness	Description
High	Capability is working well and is regularly followed
Moderate	Capability could use some revisions but is followed
Low	Capability is not working and needs revisions

DEPARTMENT ABBREVIATION KEY:

Primary Mitigation Department	
BI	Building Inspector
BOS	Board of Selectmen
CC	Conservation Commission
ELVD	Emerald Lake Village District
EM	Emergency Management
FD	Fire & Rescue Department
HD	Highway Department
HO	Health Officer
PB	Planning Board
PD	Police Department
PR	Parks & Recreation Comm
SD	School District
TA	Town Administration
WS	Water & Sewer Commission

PLANNING AND REGULATORY CAPABILITIES

The planning and regulatory capabilities displayed in **Table 37** are the plans, policies, codes, and ordinances that reduce the risks or impacts of hazards. There are **3** categories: **Plans and Planning Documents; Building Codes, Permitting, and Inspections;** and **Land Use Ordinances, Regulations, and Town Ordinances.** Most of the documents listed below are the Town's documents, but others are School, local, regional, state and federal which support the Town's the hazard mitigation goals, objectives, and/or Actions.

Table 37

Planning and Regulatory Capabilities

Latest Adoption or Version Date	Capability Assessment: Planning and Regulatory Resources	Description Related to hazard mitigation planning and coordination	Location of Capability Entire Town or Selected Areas	Level of Effectiveness	Responsibility	Changes Since Last Haz Mit Plan (2017)	Future Improvements to Capability
HILLSBOROUGH PLANS AND PLANNING DOCUMENTS							
2021	BOS Jackman Reservoir Dam Plan (Eversource)	A plan was completed to assess the hazards associated with Jackman Reservoir Dam and the Town's response actions. Known locally as Pierce Lake in Town, not Jackman. Reservoir. Owned by Eversource	Jackman Reservoir Dam	Moderate	Board of Selectmen	New owners: HSE Hydro NH Jackson LLC.	Encourage Town Departments and First Responders to Become Familiar with Jackman Reservoir Dam Emergency Response Plan
December 2014	CC Natural Resource Inventory	Evaluates water, wildlife habitat, soil, aquifer, bedrock, flora, etc resources in and provides maps of resources and evaluates wetlands by importance	Entire Town	Moderate	Conservation Commission	Used to plan acquisition of Conservation properties and to review development proposals	In next year will be commissioning a scientific investigation of whether a wetlands ordinance is needed. A ten year update to the NRI is due in 2024.
2021	ELVD Emerald Lake Village District Emergency Management Plan	Emergency Plan was updated in 2021 and supersedes the previous 2014 plan. Identifies system notifications, chain of command, contacts, emergency notification, system components, restrictions.	Emerald Lake Village District	High	ELVD Commission	Followed Plan during emergencies and updated in 2021	Encourage continued rehearsal of Emergency Plan
Feb 2017	EM Hazard Mitigation Plan Update	Latest FEMA approved Haz Mit Plan was approved in February 2017 and lapses in Feb	Entire Town	High	Emergency Management	Upgraded culverts, completed several	Establish a permanent Hazard Mitigation

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6 CAPABILITY ASSESSMENT

Latest Adoption or Version Date	Capability Assessment: Planning and Regulatory Resources	Description Related to hazard mitigation planning and coordination	Location of Capability Entire Town or Selected Areas	Level of Effectiveness	Responsibility	Changes Since Last Haz Mit Plan (2017)	Future Improvements to Capability
	(5-Year)	2022. Haz Mit Committee (HMC) should be permanent, meeting quarterly for minor updates to the Plan and to oversee action completion.				actions from 2017.	Committee to implement the haz mit plan to ensure actions are completed and the Plan is evaluated
Current to date as of 09-19	EM Emergency Operations Plan	Updated EOP, ESFs included, WebEOC, NIMS training, 2015 template	Entire Town	Moderate	Emergency Management	Document has been updated completely.	Need to review with all affected parties
Current to date as of 09-19	EM Designated Shelter Plan	High School is now a regional shelter due to back-up power capacities and shower facilities. Planning with FEMA, NHDHS and Red Cross. Also a shelter for other towns, but need to write up agreements	Hillsborough High School	High School	Emergency Management	There is a new agreement in place	Install an adequate generator in the Middle School as back up.
Not available	EM Osram Sylvania Business Emergency Management Plan (private)	Internal business plan on several dozen potential incidents with plans in place to continue business	Osram Sylvania	High	Osram Sylvania (private)	Updated annually through 2017. No update since then.	Encourage continued rehearsal of EMP
Not available	EM Shaws Business Emergency Management Plan (private)	Internal business plan on several dozen potential incidents with plans in place to continue business	Shaws	N/A	Shaws (private)	Private business, so any updates unknown. No update since 2017.	Obtain Shaws EOP for the Town's emergency response personnel.
Not available	EM Concord Hospital Family Health Business Emergency Management Plan (private)	Internal business plan on several dozen potential incidents with plans in place to continue business	Concord Hospital Family Health	N/A	Concord Hospital Family Health (private)	Private business, so any updates unknown. No update since 2017	Obtain the CH Family Health EOP for the Town's emergency response personnel.
Current to date as of 12-21	HD Culvert Replacement Plan	Developed by NH DOT inspect large culvert/bridges once per year. PWD is currently obtaining a GIS program from UNH	Culverts, roadways	High	Highway Department	Replaced & upgraded many sets of culverts, with some open bottom box culverts	Undertake a formal inventory of culverts and add them to the town map via GIS
2018-2023	PB	Can contain haz mit Actions funded in CIP,	Entire Town	Moderate	Planning Board	Increased funds into	Update the CIP to 2023.

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Latest Adoption or Version Date	Capability Assessment: Planning and Regulatory Resources	Description Related to hazard mitigation planning and coordination	Location of Capability Entire Town or Selected Areas	Level of Effectiveness	Responsibility	Changes Since Last Haz Mit Plan (2017)	Future Improvements to Capability
	Capital Improvement's Program	infrastructure improvements. Outlines future spending for fire, police, highway, and planning among other depts. CIP ensures future needs for are considered. Developed new capital reserves for FD equip, Building Maintenance, Bridge Fund.				CRFs of several funds, including those related to mitigation and building upgrades.	Incorporate the more expensive HMP mitigation projects into the CIP and allocate expected funding.
2018	PB Master Plan	Improve Town infrastructure, protect environmental, guideline for Depts, basis for ordinances and regulations. Groundwater Protection Ordinance developed & adopted 3/12/19. Excavation Regulations were recommended. Pedestrian safety and sidewalk improvements recommended. Incorporate best management practices for stormwater management.	Entire Town	Moderate	Planning Board	The Master Plan was updated and approved by the Planning Board on October 3, 2018	Use Implementation Plan chapter to guide improvements and action implementation. Attempt to update 1 or more sections yearly instead of undergoing a full update every decade. Explore developing Excavation Regulations
Nov 2021	SD School District Emergency Management Plan (School)	Emergency response plan covers all schools. Each building has specific plan of evacuation routes, etc.	School District	High	School District	Updates plans annually, held drills, revised evacuation sites	Update to include Standard Response Protocol, Building, Mapping audits of each building completed by Scott Lamberton, investigating funding ALERT
2018	WS Evaluation on Norton Drive for Potential Flooding of WWTF	Evaluated the WWTF on Norton Drive for potential Flooding utilizing FEMA Flood mapping. New 5-year permit issued 2019 with increased discharge allowed	WWTF on Norton Drive	Low	Water & Sewer Commission	Document was completed; New permit issued 2019, new FEMA maps are followed	Examine cost and feasibility of future construction of levees or embankments

Latest Adoption or Version Date	Capability Assessment: Planning and Regulatory Resources	Description Related to hazard mitigation planning and coordination	Location of Capability Entire Town or Selected Areas	Level of Effectiveness	Responsibility	Changes Since Last Haz Mit Plan (2017)	Future Improvements to Capability
HILLSBOROUGH BUILDING CODES, PERMITTING, INSPECTIONS							
2015 Edition	BI State Building Code	Contains a suite of residential, commercial, plumbing, electrical, mechanical, energy, and existing buildings, designed to ensure that buildings are constructed well. Should withstand natural hazards better	Entire Town	Moderate	Building Inspection	Inspector skills have been utilized (building/construction), enforcement improved. No change since 2017	Future expansion of staff based on need.
September 25, 2009	BOS FEMA Flood Insurance Rate Maps	New Maps adopted by Town in 2009, used for Contoocook River, streams, brooks	Floodplains	High	Board of Selectmen	Using paper maps, use digital maps online	Integrate FP maps into Town GIS program
Current to date as of 8-21	FD Inspection of Assembly Places	Part of enforcement of the state life safety code. Program ensures that public assembly places are properly constructed, and thus are likely to withstand a natural hazard. Includes Windsor	Entire Town	Moderate	Fire Department	Have added inspector but still need more help	Need more inspectors to help with overwhelming workload
2015 Edition	FD State Fire Code	Sets construction standards related to life safety, fire prevention, fuel, and gas by NH Depart of Safety and National Fire Protection Assn.	Entire Town	Moderate	Fire Department	Requirement added for occupancy inspection in apartments. Units with residential occupancy require floor protection from basement.	Ensure future updates include tiny home accommodations.
2021	HO NHDHHS Health Officer's Manual	Contains a group of health related State RSAs including, bedbugs, housing standards, infectious diseases, trash, nuisance, etc	Entire Town	High	Health Enforcement	Changes to NH RSA 128 implemented in 2021: includes training to be provided by NH DHHS to all Town Local Health Officers and reporting to the local	Ensure compliance with RSA 128

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Latest Adoption or Version Date	Capability Assessment: Planning and Regulatory Resources	Description Related to hazard mitigation planning and coordination	Location of Capability Entire Town or Selected Areas	Level of Effectiveness	Responsibility	Changes Since Last Haz Mit Plan (2017)	Future Improvements to Capability
						governing body and NH authorities.	
Aug 2019	WS Wastewater Treatment Facility Permit	A new permit is required every 5 years. A new sewer discharge permit, daily maximum flow from the wastewater treatment facility (WWTF) on Norton Drive into the Contoocook River will increase from 475,000 gallons to 600,000 gallons	Norton Drive on Contoocook River	High	Water & Sewer Commission	Prepared application for new permit, received 5-year permit with conditions	Fulfill conditions, seek to improve capacity and services
HILLSBOROUGH LAND USE ORDINANCES, REGULATIONS							
3/7/16	BOS Seasonal Restrictions on Class VI Highways	Permits Selectmen to post roads to restrict access during vulnerable times	Class VI Roads	High	Board of Selectmen	Post roads every spring. No changes since 2017	Post roads based upon seasonal needs and conditions
03-10-15	PB Stream and Shoreline Protection Ordinance (Zoning)	Prohibits building or impervious surface construction within 75' of the average mean high water level of any lake, pond or stream with normal year round flow.	Waterbodies	High	Planning Department	No changes since 2017. Updated in 2015: include "impervious surface" prohibited within 75' of high water mark. Many Variances granted from this provision	There will be further monitoring and review of this ordinance. There needs to be a way to adapt it that so many variances would not be necessary or granted.
03-13-02	PB Telecommunications Tower Ordinance (Zoning)	Sets maximum height for cell towers. This ordinance can ensure that towers are placed where they will receive and create the least amount of damage in a natural hazard event such as a windstorm	Entire Town	High	Planning Board	No changes since 2017. Discussion about reviewing current ordinance and updating when needed	Ordinance is out of date and needs to be updated to reflect current FCC laws
08-11-09	PB Floodplain Development Ordinance	Complies with NFIP, updated 2009. Standard NFIP ordinance. The ordinance requires new structures in the	Floodplains	High	Planning Department	No changes since 2017. Applied ordinance to PB	Update the Floodplain Ordinance when federal changes are necessary

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6 CAPABILITY ASSESSMENT

Latest Adoption or Version Date	Capability Assessment: Planning and Regulatory Resources	Description Related to hazard mitigation planning and coordination	Location of Capability Entire Town or Selected Areas	Level of Effectiveness	Responsibility	Changes Since Last Haz Mit Plan (2017)	Future Improvements to Capability
	(Zoning Ordinance)	floodplain to meet certain standards. Does not prevent construction. nor applies to non-substantial improvements				applications. Appears to be effective	
03-09-10	PB Small Wind Energy Systems	Purpose to provide for small wind energy systems in appropriate locations while balancing the desirability of alternate energy sources and considering impacts	Entire Town	Moderate	Planning Department	No changes since 2017. Applied ordinance to PB applications	Review and monitor, but no changes to the Ordinance are now under consideration
03-10-81	PB Waterfront Development Ordinance (Zoning)	States minimum frontage of 50', 400 sqft of beach area, and 200 sqft of parking area per dwelling unit/lot. Docks every 15' of shoreline, building setback at least 75' of shoreline, and Loon Pond 200' building setback	Waterbodies in Town	Moderate	Planning Board	No changes since 2017. Applied ordinance to PB applications. Appears to be sufficient	Language needs to be reviewed to ensure protections are sufficient.
03-09-2021	PB Zoning Ordinance	Originally enacted 03-02-76, amended regularly, and recodified 03-14-89. Purpose of promoting the health, safety and general welfare of the community. Regulations consider character and suitability for uses of areas in Town, conservation of buildings and encouragement of most appropriate uses.	Entire Town	Moderate	Planning Board	Reviewed and updated yearly by the Planning Board	Review and update the zoning ordinance annually.
03-14-06	PB Cluster Development Ordinance (Zoning)	Ordinance discourages sprawl, facilitate economical provision of public services, provides more efficient land use of land in harmony with natural characteristics, preserves more usable open space	Entire Town	Moderate	Planning Board	No changes since 2017. Applied ordinance to PB applications	Modify language to ensure designated "open space" must be contiguous. Under consideration for 2022
8/16/2006	PB Road Design and Construction Standards	Specifies method of construction and materials. Contains NH DOT roadway and drainage standards.	Entire Town	High	Planning Board with Highway Department, Board of Selectmen	Applied standards to No Changes since 2017. PB applies regulations	Updates to Subdivision Regs include updating road & driveway standards under

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6 CAPABILITY ASSESSMENT

Latest Adoption or Version Date	Capability Assessment: Planning and Regulatory Resources	Description Related to hazard mitigation planning and coordination	Location of Capability Entire Town or Selected Areas	Level of Effectiveness	Responsibility	Changes Since Last Haz Mit Plan (2017)	Future Improvements to Capability
	(Subdivision Regulations)					to applications	consideration for 2022
01-08-12	PB Site Plan Review Regulation Requirements	Regulate development of large residential properties and commercial properties. Includes design and landscaping standards that support water infiltration	Entire Town	Moderate	Planning Board	No changes since 2017. Exempt Change of use amended 2016	Planning Board will be reviewing and consider updates in 2022
April 2010	PB Subdivision Regulation Requirements	Regulates residential development. Contains Section 201-7 Special Flood Hazard Areas to ensure more stringent application procedures are followed	Entire Town	Moderate	Planning Board	No changes since 2017. Applied regulations to PB applications	Planning Board will be reviewing and consider updates in 2022
03/09/21	PB Large Wind Energy System Ordinance	Provides for the development and use of wind power as an alternative energy source, while protecting public health, safety, property values, wildlife, while controlling sound pressure Levels and electromagnetic interference.	Entire Town	Moderate	Planning Department	Adopted as a new ordinance 3/21	Review and update on a regular basis. No changes are now under consideration
03/09/21	PB Solar Collection System Ordinance	Ordinance includes solar energy collection systems and distributed generation resources in appropriate locations, while protecting public's health, safety and welfare.	Entire Town	Moderate	Planning Department	Adopted as a new ordinance 3/21	Review and update on a regular basis. No changes are now under consideration

Source: Hillsborough Hazard Mitigation Committee

ADMINISTRATIVE AND TECHNICAL CAPABILITIES

The administrative and technical capabilities in **Table 38** include policies, mutual aid agreements, partnerships, standard operating procedures, training, skills and tools that can be used for mitigation planning and to implement specific mitigation actions. Smaller jurisdictions without local staff resources often rely on public or shared resources. There are **3** categories: **Administrative Programs, Policies, and Partnerships; Technical Skills, Training and Drills;** and **Assets, Security and Resources.**

Table 38

Administrative and Technical Capabilities

Latest Adoption or Version Date	Capability Assessment: Administrative and Technical	Description Related to hazard mitigation planning and coordination	Location of Capability Entire Town or Selected Areas	Level of Effectiveness	Responsibility	Changes Since Last Haz Mit Plan (2017)	Future Improvements to Capability
HILLSBOROUGH ADMINISTRATIVE PROGRAMS, POLICIES, MUTUAL AID AGREEMENTS, PARTNERSHIPS, OPERATIONS, PROCEDURES							
2021	CC Conservation Commission Acquisition of Easements	NRI outlines areas for primary conservation	Entire Town	Moderate	Conservation Commission	Transferred 2 easements in exchange for Conservation Land	Purchase or Obtain Key Conservation Lands for Permanent Preservation
Current as of 2021	ELVD Policy for Clearing Downed Trees Along Roads	Downed trees are cleared from the roads during weather events. Because of the compact nature of the District and lack of evacuation options, the roads must be kept clear.	Emerald Lake Village District	High	ELVD Commission	Commission clears trees from mile of private roads. PD helps clear if they can do so	Remove trees and debris from roads (ELVD)
As of 09-21	EM EOC in Fire Department	Emergency Command Center in the Fire Dept. Have antennas, Radios, computers, satellite television, telephone lines, emergency shelter trailer, generator, barriers.	Fire Department	High	EMD	Acquired I-Pads	Need to renovate or replace the Fire Station
Current as of 2021	EM Multi-Departmental Drills	Shelter drill, fatal car crash reality drill undertaken lately (Project Crash) in 2012	High School	High	Emergency Management Department	Shelter Drill Anticipated in 2022	Work with schools to fine tune evacuation plans
Current as of 2020	EM Communication Among Town Departments	Work cooperatively during emergencies. Use cell phones and digital radio and personal communication. Multi-channel frequencies.	Entire Town	High	Multi-Departmental	Weekly communication during the pandemic.	Ongoing review EOP's Communication Emergency Support Function (ESF) for direction

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Current as of 2021	ELVD Policy for Clearing Downed Trees Along Roads	Downed trees are cleared from the roads during weather events. Because of the compact nature of the District and lack of evacuation options, the roads must be kept clear.	Emerald Lake Village District	High	ELVD Commission	PD helps clear if they can do so	Remove trees and debris from roads (ELVD)
2009	FD Fire Investigation Program NFPA 921	Find origin/cause of fires. One staff member is trained for this. This program can help find the cause of natural or man-made fires or a combination of both. Includes Windsor	Entire Town, Windsor	Moderate	Fire Department	Added investigator who is shared with the Police Department	Need to update SOG Origin Cause for investigations
January 2021	FD Fire & Rescue Mutual Aid Agreement	Also includes Windsor. Member of Capital Area Fire Compact, renews annually, also agreements with Henniker, Deering and Antrim.	Entire Town, Windsor, Henniker, Deering, Antrim, Capital Area Fire Compact	High	Fire Department	New Mutual Aid agreement with all Capital Area Compact towns.	Currently reviewing run card
January 2020	FD Fire Department Standard Operating Guidelines (SOGs)	Standard Operating Guidelines recently updated, emergency response, operations, support, incident command	Entire Town, Windsor	Moderate	Fire Department	SOGs updated about every 3 years	Review and add to SOGs, including Active Shooter for school, Fire Department and Police.
2021	FD Resource List of Supplies	Fire Department would like to have an updated list of where to get certain supplies in an emergency. This list could be quickly referenced if supplies were needed.	Entire Town	Moderate	Fire Department	Now included in EOP	Transfer info from current system to cloud.
Current as of 2021	FD On-Call Fire Rescue Coverage	On-call Fire Rescue Coverage, 46-ish people total for Fire & Rescue, different levels responding to all calls. Paid on call staff during nights/weekends & holidays	Entire Town, Windsor	High	Fire Department	Have 3 paid 8 hour shifts, when previously had on-call	Recruit new volunteers to the Fire Department
Current as of 2021	FD Cistern Program	Fire Dept asks for a cistern when housing development reaches a	New Developments	High	Fire Department	Cistern Capacity changed from	Work with Building Inspector to

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		certain number of units, perhaps 6				16,000 to 30,000 for new developments	ensure collaboration.
2019	HD Eversource Procedure on Tree or Limb Down Reporting	FD, PD, DPW need to follow the Eversource FirePoliceSafety (FPS) reporting procedure on a priority basis. FPS1: life threatening, imminent danger. FPS2: hindering emergency operation. FPS3: non-life threatening electrical hazard.	Roadways	Moderate	Multi Department	Eversource Community Relations provided laminated copies of Priority Call system to Safety Facility in Fall 2019. Can provide more upon request, for use by first responders only.	FD, PD, DPW to attend regional Eversource Electrical Hazard Training in future
1980	HD Snow and Ice Chapter 189	Cannot put snow in the road, cannot push across the road is a state law	Roadways	High	Highway Department	Followed policy in storms. PD enforces when necessary	Follow state law and review Town policy bi-annually
Current as of 12-21	HD Culvert and Storm Drain Maintenance Program	Highway Department maintains systems and identifies areas that need improvement reactively. No written program	Roadways	Moderate	Highway Department	Maintained and upgraded storm grades on a regular basis	Develop an annual written culvert and storm drain maintenance program to prioritize location response
January 2021	HD Highway Departments Mutual Aid Agreements	Member of NH Public Works Mutual Aid Compact. Hillsborough, Washington, Deering, Bradford, Antrim, and Henniker help each other. This policy allows Hillsborough to receive roadway help in all types of storms. New member 2016.	Regional and State Mutual Aid	High	Highway Department	Participated in network all five years.	Participate in network annually, assist other HDs when requested
Nov 2021	HD General Road Maintenance Program	Every year \$250,000 is spent on road reconstruction. This is the primary means of improving roads. Improved roads are less	Roadways	Moderate	Highway Department	Monitored financial needs of Town roads and maintained and improved	Place road maintenance program improvements into the updated CIP

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		susceptible to flooding and washouts.				as funds allowed	
December 2015	HD Procedure for Utilizing a Rental Bulldozer for Emergency Clean Up	The Town has a practice of utilizing a rental bulldozer for emergency clean up, so the process of obtaining one is quick and efficient. A bulldozer is used to clear roads of debris or build berms in the case of flooding.	Entire Town	High	Highway Department	December 2015 bought one at federal surplus	Perform regular maintenance to keep in working order
2021 Ongoing	PD Police Department Local Mutual Aid Agreements	Renewed every two years with surrounding towns. This policy provides additional police personnel in case of emergencies, such as criminal events, road closures and evacuations due to natural hazards	Henniker and Washington Antrim Deering Bennington Windsor, Stoddard	High	Police Department	MUA used at least weekly, if not daily. Hills usually provides to other towns. Additional towns added. Continual improvement.	When Henniker and Washington Chiefs leave in the near future, they will need to be re-signed
2021	PD Hillsborough County Mutual Aid	All Chiefs in the County sign for mutual aid	Hillsborough County	High	Police Department	MUAs are among Chiefs, so have had to re-sign whenever Chiefs change	Participate in county mutual aid.
Current as of 2021	PD Police Department Standard Operating Procedures (SOPs)	Follow General Policies & Rules of Conduct, and have training at Police Academy, in-service training 8 hours per year, and firearms yearly, CPR, first aid, batons every 2 years etc. Training: Diversity and Inclusion Culture Dynamics, De-escalation, Ethics duty to intervene implicit bias	Entire Town	Moderate	Police Department	Police Dept follows regularly	Review and update community policing policy and citizen complaint policy
As of 09-21	PD Police Department Detail Policy	Policy includes a list of roads in Town that require Police detail for construction or utility work or public events, interfering with regular traffic flow. Sometimes flaggers are needed, has not been used.	Roadways	Low	Police Department	No Change since 2017	Develop a Police Dept Detail Policy to Guide Assistance on Utility Work and Traffic Redirection
Summer 2019	PR	Now held annually, 6 per year held at Manahan	Manahan Beach	High	Waterfront Supervisor	New AED this year	Perform annual

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	Lifeguard Drills	Beach. Staffed by Parks and Recreation Commission.					equipment tests and beach safety tests
2021-2022	SD School Emergency Drills	Have practiced lock downs and evacuations. This program teaches kids how to evacuate schools in case of an emergency; such emergencies could be man-made or natural hazards. School Student Guidebook summarizes these. New COVID-19 pandemic addendum	Elementary, Middle and High Schools	High	Police Department, Fire Department, and School District	Held fire drills, preparedness drills, evac drills annually. Update student handbook annually. Included Hills FD & PD in some drills. COVID-19 Addendum	Need to conduct mock campus evacuation drill (School)
2014	SD Cellular Phone Booster at High School Town Shelter	School previously did not have cell signal during disaster and sheltering events. Booster device boosts everyone's signal	High School	High	Emergency Management Department	Regular and consistent use of booster of student and staff phones.	Works fine at this time, Review effectiveness of technology
HILLSBOROUGH STAFF AND VOLUNTEERS							
6 members + 1 alternates Volunteers As of 09-21	CC Conservation Commission	1 regular & 1 alternate vacancy. members monitor conservation properties annually, review NHDES and PB apps	Town Office	High	Conservation Commission	Monitored and had surveyed conservation easements & properties. Developing trails.	Seek appropriate parcels for acquisition as funding allows. Expand Trails
1 Volunteer As of 09-21	EM Emergency Management Director	1 paid stipend position	Fire Department	Moderate	Fire Department	Position went from volunteer to paid position	Allow future expansion of scope of responsibility
1 Staff As of 09-21	EM Deputy EMD	Also the Fire Chief	Fire Department	Moderate	Fire Department	Pandemic made execution of duties more difficult	Further education.
17 Staff & Volunteers As of 09-21	EM Hazard Mitigation Committee	Staff & volunteer of around 17 meets to update Plan	Fire Department	Moderate	Emergency Management	New Committee appointed	Should have more representation from other Depts like Water and Sewer, ELVD and School

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1 Staff As of 09-21	FD Fire Department Chief	1 FT,	Fire Department	High	Fire Department	Continual education.	Like to have someone for Rescue Director position instead of Fire Chief
35 Paid Call As of 09-21	FD Fire Fighter Level 1, 2, 3	Get paid hourly for level of training. Most have been trained to Firefighter Level 2 80%	Fire Department	Moderate	Fire Department	More recruitment and retention since 2011	Recruitment and improving morale
1 Staff As of 09-21	FD Medical Director	Also the Fire Chief	Fire Department	Moderate	Fire Department	Pre-hospital and narcotics agreement done every 3 years	Like to have someone for position instead of Fire Chief
17 Paid As of 09-21	FD Ambulance EMTs and Paramedics	2 EMR (First Responders), 11 EMTs, 3 AEMTs, 2 Paramedics,	Fire Department	Moderate	Fire Department	More paramedics	More personnel, all levels
11 Total Staff As of 11-21	HD Highway Road Crew	7 Full Time, 4 Seasonal	Highway Department	Moderate	Highway Department	Management Change	Maintain staffing level
1 Staff As of 11-21	HD Highway Department Supervisor	1 Full Time	Highway Department	High	Highway Department	New Road Agent 08-21 after current Road Agent retired.	New Road Agent is receiving training.
2021-8 Volunteers As of 09-21	PB Volunteer Planning Board	6 members, 1 alt, 1 Selectmen ex-officio	Town Office	Moderate	Planning Board	Planning Board has fewer alternates now that the Board should have	Need 4 more alternate members
1 Staff As of 09-21	PD Police Department Chief	1 FT	Police Department	High	Police Department	No Change since 2017	Monitor the effectiveness and review status
31 Staff As of 09-21	PD Police Officers & Staff	31 include Officer, dispatchers, civilian employees	Police Department	Moderate	Police Department	Hired an attorney as a prosecutor. We have one detective in Hillsborough County Street crimes task force	Adding 2 patrol officers in a couple of years
2 Staff As of 09-21	TA Health Officer	2 PT staff, Welfare Admin, Building Inspector Reactive dept, are not	Town Office	High	Town Administration	State passed RSA 128 changes to ensure up to	Attend new health officer trainings that DHHS is

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		actively enforcing, rely on State Statutes				date training for all health officers.	required to provide
8 Staff As of 09-21	TA Safety Committee	8 staff members on Committee including management and hourly employees	Town Office	Low	Town Administration	Have been meeting.	Update our safety
9 Staff As of 09-21	TA Administration and Finance Department	9 FT, with 1 PT Assessor on contract	Town Office	High	Town Administration	Made Building Inspector full time	Add a part time staff member to work exclusively with Town Administrator
3 Volunteers As of 09-21	TA Board of Selectmen	3 Elected Officials	Town Office	High	Town Administration	Elected Officials Change	We need continuity on the Board
1 Staff As of 09-21	TA Planning and Land Use Department	FT, works with Planning Board, Zoning, Economic Development Committee	Town Office	Moderate	Town Administration	Purchased and receiving training on ESRI mapping program	Become proficient in ESRI GIS mapping program and create town maps
3 Staff and ~23 volunteers	PR Parks and Recreation Commission	Parks and Rec have many programs, including summer camp at Manahan Park, youth diversion programs increasing steadily	Parks, Grimes Field, Manahan Beach	Moderate	Parks and Rec Comm	Held summer programs, successful Project Genesis doubled the number of youths to 41 in 2019 program	Consider improvements to parks like Grimes Field
HILLSBOROUGH TECHNICAL SKILLS, TRAINING, AND DRILLS							
80 As of 09-21	EM CPR Certification	80 Town staff earned CPR certifications	Entire Town	Moderate	Various Departments	All summer staff required to have certification.	Maintain CPR certifications and train new staff.
9 As of 09-21	FD Improved Technical Rescue Training	Ongoing technical rescue training is on annual basis	Fire Department	High	Fire Department	Ongoing training	Train staff and in newest techniques and equipment.
1 Full time and 42 Paid on-call As of 09-21	FD Member Skills Training	Almost all firefighters (43 members, three of which are full-time including a Fire Chief) are at Firefighter Level I. This	Entire Town	Moderate	Fire Department	21 people trained to fire fighter level 2. Two people to	Maintain high level of training. Improve technical

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		training reduces the impact of fire damage on people and property by ensuring that fire fighters are prepared to respond. Also includes Windsor				fire fighter level 3	rescue training as well as EMS training
21 As of 09-21	FD Hazardous Materials Skills Training	Firefighters in Hillsborough are often trained to DCON level. 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	Entire Town	Moderate	Fire Department	Continue training with Capital Area Hazmat Team. Chief is on the Board of Directors of Capital area Haz Mat Team	Hazardous materials team needs to be updated
17 As of 09-21	FD EMT/Paramedic Skills Training	Currently have 8 EMT, 3 AEMT, 2 Paramedics. The training reduces the impact of natural hazards on human life. Example: if someone is seriously hurt during an ice or snow event, local fire fighters are trained to respond. Also includes Windsor	Entire Town	High	Fire Department	Continued Per Diem coverage.	Recruit and retain more personnel.
6 As of 11-21	HD Highway Department Training on Driver Safety Class	One member attended driver safety class as needed	Entire Town	Moderate	Highway Department	HD staff took the necessary classes.	Train staff as necessary for certifications on the newest equipment & techniques
6 As of 11-21	HD Highway Department Training on Use of Chain Saws	Can learn safety and operation of chain saws (by professional loggers) during tree and limb debris clearing after storms	Entire Town	High	Highway Department	HD staff takes the necessary classes as needed	Train staff as necessary for certifications on the newest equipment & techniques
16 As of 09-21	PD Active Threat Training	State sponsored training for general awareness. While designed for human-made disasters, this training has applicability to natural hazards	Entire Town	Low	Police Department	Federal Training. Own instructors on staff	Ongoing training related
1 pilot As of 09-21	PD UAV (Drone) and Pilot	Air-born reconnaissance VR, Thermal Imaging mapping is completed with drone.	Entire Town	High	Police	New Program in 2020 or 2021.	Add more pilots, training programs.

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70 As of 09-21	TA Town Staff Trained in ICS and NIMS	Town Administrator trained in ICS & NIMS 200-700	Entire Town	Moderate	Department Heads	New staff have been trained as old staff have left	Ensure the appropriate staff has this training.
4 As of 11-21	TS Transfer Station Employee Training	Attend classes on haz waste, C&D, mixed paper, fire, etc held by NHDES. To maintain certification, employees have to attend one workshop a year. One is certified in Haz Mat.	Transfer Station	High	Highway Department	Additional certified Scale Master	Train as dictated by DES
HILLSBOROUGH ASSETS, SECURITY, AND RESOURCES (SPECIALIZED EQUIPMENT)							
As of 09-21	ELVD Water Source Protection During Power Outages	During power outages, all water sources are protected by generators. Generators are serviced twice a year and on an emergency basis as needed. Also have 2 gas generators as backup.	ELVD	High	ELVD Board of Commissioners	Used generators during power outages. Maintained, serviced, and tested generators.	Service twice a year and as needed.
80 As of 09-21	EM Emergency Management ANSI IV Vests	By end of 2009 it is anticipated that all emergency/public service personnel will be issued ANSI III compliant vests	Fire Department	High	Emergency Management	Upgraded to newer version of this equipment	Compliance with Federal mandates
1 As of 09-21	EM EOC Base Station Digital Radio	Hillsborough was awarded a base station digital radio system for the EOC	EOC	Moderate	Emergency Management	Annual testing	Need to upgrade the radio equipment.
74 As of 09-21	EM Multi-Department Digital Radio Upgrades	Installed a digital mobile in Highway Loader and portables were issued to Town officials and EMD	Mobile in PWD, other Portables	Moderate	Emergency Management	Replace radios as needed	Purchase 25 new portable radios and 15 mobile radios for improved communications of emergency services for FD
2 As of 09-21	FD Advanced Life Support Ambulance	Two ALS ambulances provide mutual aid to surrounding towns. Having an Advanced Life Support Ambulance reduces the impact of natural hazards on human life. Some towns	Fire Department	Moderate	Fire Department	Purchased of new ambulance.	Recruitment and retention of staff

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		in the region do not have ambulances					
1 As of 09-21	FD Installed Generators at Fire Dept	Gives department the ability to maintain emergency communication during activation of EOC or any other loss of electricity.	Fire Station	High	Fire Department	New unit installed to replace old	Maintain and test.
8 As of 09-21	FD Portable Generators	Has 8 portables. Portable generators and Mobile for emergencies at night. These generators can be used to keep vital offices open or light emergency sites at night in the case of natural hazards	Entire Town	High	Fire Department	Maintained and tested.	FD & PD together would like to purchase one 25,000 Kw portable on a trailer with portable lighting
29 As of 09-21	FD Interoperability Radio Grant	20 mobile radios provided by the state allow for communication between every fire and rescue team. This equipment allows all of the fire and rescue staff across the state to communicate and respond better to all emergencies	Mobile in FD Vehicles	High	Fire Department	Updated 3 of the 20 outdated radios.	More radios need to be available for distribution
35 As of 09-21	HD Barricades	New 10' barricades for road closure and traffic detouring	Roadways	High	Highway Department	Purchased new barricades Purchased new traffic cones	PD will be given access to barricades on hand, FD, PD and HD have their own traffic cones
1 As of 09-21	PD External Automatic Defibrillators (AEDs)	Have one inside the building. This equipment helps police respond to injured people in natural and human made emergencies	Mobile in Police Vehicles	Moderate	Police Department	Some units have expired. Now full time EMS staff	Should ideally have a total of nine (9) AEDs
1 As of 09-21	PD Communications Tower	Maintained and monitored the communication tower to allow Police to communicate better in case of an emergency	Crotched Mountain	High	Police Department	Leased space on an existing tower instead of building new	Evaluate need to upgrade transmission capability

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13 As of 09-21	PD Level C Protection Suits	Gas masks and suits that are at an appropriate level of protection for police. 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 Department	Low	Police Department	This equipment has fallen out as it is obsolete and expired.	Need new equipment.
13 School AEDs As of 11-21	SD Public Schools Automatic Defibrillators (AEDs)	Elementary/SAU Building has 4, they are located: outside health office, gym hallway, 5th grade hallway and SAU. Middle School has 3, located at: outer wall of Gym, one located at the end of the 7 th grade wing, one inside health office. High School has 3, they are located: Gym hallway, second floor top of ramp and inside nurses office. Athletic Dept. has 2 portable AED's kept in athletic trainer's office but are often off campus at events. Alt School has 1 in main entry way.	3 Public Schools	High	School District	Purchased AEDs as needed	Keep the proper number of working AEDs in schools, test them and provide some training to teacher staff.
1 As of 11-21	SD High School Emergency Generator	High School is designated emergency shelter	High School	High	School District and Emergency Management	Nothing new to the generator however the hot water system was upgraded	District will maintain and test to ensure readiness
As of 09-21	TA Mapping of Tax Parcels by CAI Under Contract	Provides layout of all parcels in town. Digital tax parcel maps can overlay onto critical facility sites and hazard event areas	Entire Town	High	Town Administration	Contracted with new company to maintain maps	Update and clarify maps yearly.
As of 09-21	TA Relocated the IT Center and Property Records	The secure setting lessens the threat to or sabotage of public records.	Town Office	High	Board of Selectmen	Stored additional data in a cloud based system offsite Obtained Dual	Work on getting property file information on Docuware

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						authentication identification system to secure remote connections.	cloud based system.
9 staff As of 09-21	TA New Town Office	Obtain or build a new single level Town Office complex with appropriate space and safety and defensive posture.	Town Office	Moderate	Board of Selectmen	We continue to find the current building does not provide adequate space and safety for staff and patrons.	Obtain or build a new single level Town Office complex with appropriate space and safety and defensive posture.
12 As of 09-21	TA Employee Panic Buttons	Panic buttons are used Town Office & Water & Sewer & Southern NH Services employee	Town Office	High	Board of Selectmen	Batteries replaced and tested once every year	Test the employee panic buttons on an annual basis.
8' Tall As of 2017	WS Chain Link Security Fence around the Bible Hill Reservoir	Chain Link Security Fence around the Bible Hill Reservoir	Bible Hill Reservoir	Moderate	Water & Sewer Commission	No changes since 2017.	Maintain and repairs as needed.
8.5' Tall As of 2017	WS Chain Link Security Fence around the WWTF	Chain Link Security Fence around the WWTF	WWTF	Moderate	Water & Sewer Commission	No changes since 2017.	Maintain and repairs as needed
9' Tall As of 2017	WS Chain Link Security Fence at around the Water Treatment Facility Filters	Chain Link Security Fence at around the Water Treatment Facility Filters	Water Treatment Facility	Moderate	Water & Sewer Commission	No changes since 2017.	Maintain and repairs as needed

Source: Hillsborough Hazard Mitigation Committee

FINANCIAL CAPABILITIES

The financial resources in **Table 39** available for hazard mitigation projects are those the Town has access to, has used in the past, or may be eligible to use in the future for hazard mitigation projects. These often include FEMA Public Assistance Grants (Disaster Recovery Costs), Warrant Articles, Town Capital Improvements Program (CIP) Project Funding, Department Operating Budgets, Bonds and FEMA and NH Department of Transportation grants. There are **2** categories, **Financial Programs or Funding Resources**; and **Potential Funding Programs** for hazard mitigation projects.

Table 39
Financial Capabilities

<u>Latest Adoption or Version Date</u>	<u>Capability Assessment:</u> Financial	<u>Description</u> Related to hazard mitigation planning and coordination	<u>Location of Capability</u> Entire Town or Selected Areas	<u>Level of Effectiveness</u>	<u>Responsibility</u>	<u>Changes Since Last Haz Mit Plan (2017)</u>	<u>Future Improvements to Capability</u>
HILLSBOROUGH FINANCIAL PROGRAM OR FUNDING RESOURCE FOR HAZARD MITIGATION PROJECTS							
1/2015 2021 CARES	TA FEMA Public Assistance Grants (Disaster Recovery Costs)	PA recovery funding used after disasters, last for 2015 snowstorm.	Entire Town	Moderate	Town Administration	Funding is applied for when needed, such as CARES Act funding for pandemic relief	Apply for Public Assistance Funds after a Disaster Strikes the County
Mar 2021	BOS Warrant Articles	Could be used for structural projects, emergency equipment purchases, Zoning and code changes	Entire Town	High	Board of Selectmen	Used yearly	Use articles to plan for emergency management.
2/2018	PB Town Capital Improvements Program (CIP) 2018-2023 Project Funding	Sets aside funds for large equipment purchase or maintenance projects	Entire Town	High	CIP Committee of Planning Bd	Established capital reserve funds (CRFs) to allow for implementation of all Dept plans	Fund CRFs to ensure plans are implemented as intended. Consider funding new Mitigation Project CRF to fund other haz mit projects in the CIP over time
2017	FD FEMA Assistance to Firefighters Grants	Annual competitive grant program	Entire Town	Moderate	Fire Department	Applied numerous times, granted \$ twice	Apply for grants as projects come up
Mar 2021	FD Fire Department	Purchased fire hoses, turn out gear and equipment over the years	Entire Town	High	Fire Department	New Fire Equipment CRF	Fund mitigation projects

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	Operating Budget						
Mar 2021	EM Emergency Management Operating Budget	Funds dry hydrants, training, specialized equipment, etc.	Entire Town	Moderate	Emergency Management	Bought cell signal booster for high school	Fund infrastructure upgrade projects
Annual As of 2021	WS User Fees for Water, Sewer c	Capital Reserve accounts have been established for both water and sewer funded by user fees to upgrade infrastructure	Existing water and sewer infrastructure	Low	Sewer, Water Commission	See description below	Fund additional mitigation projects
<ul style="list-style-type: none"> •2016 Lined a section of Henniker Street sewer main. •2017 Replace a section of Bridge Street sewer main. •2021 Line a section of Bear Hill Road sewer main. •2021 Line a section of Preston Street sewer main. •2021 Installed a generator at the Bear Hill Road pump station. •2021 Installed a “Muffin Monster” grinder at the West Main Street pump station. •2021 Replaced Bible Hill water reservoir hatches. •2021 Replaced 14” valve on the West Main Street water main. 							
Annual As of 2021	BOS User Fees for Water, Sewer, Gas, or Electric	Portions of water and sewer user fees could be set aside to upgrade infrastructure	Entire Town	Low	Board of Selectmen (Sewer, Gas, Electric), Water Commission	Replaced aging sewer pipes on Butler Street	Fund mitigation projects
HILLSBOROUGH FUTURE FINANCIAL RESOURCES TO EXPLORE FOR HAZ MIT PROJECTS							
TBD As of 2021	BOS Municipal Bonds to Incur Haz Mit Project Debt	Could be used for structural projects or land conservation projects. Bonds are for expensive mitigation strategies, pay overtime	Entire Town	Moderate	Board of Selectmen	Assessing Needs	Plan for infrastructure improvements related to Hazard Mitigation
2017	BOS NH Department of Safety (NHDOS) Highway Grant	Received four grants- STEP, DUI Enforcement, School emergency notification and equipment	Entire Town	High	Board of Selectmen	Received DUI Enforcement Grants	Monitor the Department of Safety for future grant opportunities
2017	CC USDA Farm and Ranch Protection Program	50% match, preserves farmland	Entire Town	Not applied for	Conservation Commission	No changes made since 2017.	Grant writing staff or contracting as CC is entirely volunteer.

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6 CAPABILITY ASSESSMENT

Latest Adoption or Version Date	Capability Assessment: Financial	Description Related to hazard mitigation planning and coordination	Location of Capability Entire Town or Selected Areas	Level of Effectiveness	Responsibility	Changes Since Last Haz Mit Plan (2017)	Future Improvements to Capability
2017	CC NH Conservation "Moose Plate" Grant	Supports land conservation, conservation planning, BMPs, soil conservation and flooding, wildlife habitat, and water quality	Entire Town	Not Applied for	Conservation Commission	No changes made since 2017.	Grant writing staff or contracting as CC is entirely volunteer.
TBD As of 2021	EM FEMA Hazard Mitigation Assistance Grants	High competition for \$, can fund mitigation projects	Entire Town	High	Emergency Management	Updated Hazard Mitigation Plan	Apply Again
TBD As of 2021	EM FEMA Emergency Management Performance Grant	High competition for \$, can fund mitigation projects	Entire Town	High	Emergency Management	No changes made since 2017	Assess need for grant funding
TBD As of 2021	HD NH Department of Transportation Bridge Program	Fund replacement of red listed bridges. Used in 2017	Entire Town	Medium	Highway Department	No changes made since 2017. Used to help with historic and other town bridges	As needed apply to receive funding

Source: Hillsborough Hazard Mitigation Committee

EDUCATION AND OUTREACH CAPABILITIES

In **Table 40**, identifying Town Departments have *Public Outreach Programs, Educational Activities and Notification* methods already in place or those which could be implemented can supplement or encourage mitigation activities and communicate hazard-related information to residents, businesses and the general public.

Table 40

Education and Outreach Capabilities

<u>Latest Adoption or Version Date</u>	<u>Capability Assessment: Education and Outreach Programs</u>	<u>Description Related to hazard mitigation planning and coordination</u>	<u>Location of Capability Entire Town or Selected Areas</u>	<u>Level of Effectiveness</u>	<u>Responsibility</u>	<u>Changes Since Last Haz Mit Plan (2017)</u>	<u>Future Improvements to Capability</u>
HILLSBOROUGH PUBLIC OUTREACH PROGRAM, EDUCATIONAL ACTIVITY, NOTIFICATIONS							
Dec 2021	EM NIXLE and Code Red	People choose to receive calls. Town has advertised for people to join, used by PD, PWD, FD	Entire Town, General Public	High	Emergency Management	Updates to systems handled by companies	Provide outreach year-round online, using flyers, and by word of mouth
Dec 2021	FD Fire Prevention Program	This program teaches children & adults how to protect themselves from all fires no matter whether the cause is natural or human-made	Entire Town	Moderate	Fire Department	Opportunities for education are taken advantage of when offered.	Provide outreach year-round online, using flyers, and by word of mouth
Dec 2021	FD Fire Department Facebook Page	Sharing information on fire department daily business and alerts	Entire Town, General Public	Moderate	Fire Department	New Program	Provide outreach year-round online, update the webpage
Dec 2021	PD Police Department Facebook Page	Convey pertinent information on a timely fashion to the public we inform the public on special activities at the PD and we use it as resource to return a lost dog.	Entire Town, General Public	High	Police Department	New Program	Provide outreach year-round online, update the webpage
Dec 2021	PD Police Department Drug Take Back Box	Procedure to assist residents with disposal of outdated prescription drugs	Police Department	High	Police Department	Installed in Police Department Lobby	Advertise the Availability of the PD's Drug Take Back Box
Dec 2021	PD Police Department Bicycle Safety Rodeo	Gathering at Park to check bike safety and refresh riders on rules of the road.	Entire Town	Moderate	Police Department and Youth Services	No longer incorporated at schools	Hold the bicycle rodeo yearly

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6 CAPABILITY ASSESSMENT

Latest Adoption or Version Date	Capability Assessment: Education and Outreach Programs	Description Related to hazard mitigation planning and coordination	Location of Capability Entire Town or Selected Areas	Level of Effectiveness	Responsibility	Changes Since Last Haz Mit Plan (2017)	Future Improvements to Capability
Dec 2021	PD Variable Message Sign	Portable Speed and message display used to educate on community alerts, activities and safety. Used to encourage speed limit adherence on various problem streets	Police Department	High	Police Department	Purchased 8/2014	Utilize the message board as an essential component of public outreach to the community.
Dec 2021	PD Police Department School Classes Program	MOU with School to do After school classes in Car seat safety, drug education,	Police Department	Moderate	Police Department and School District	New Program	Measure the success of the program and reevaluate when the MOU expires
Dec 2021	TA Town Website	Used by multiple Town depts, available to residents and visitors, hosts Zoning amendment changes	Entire Town, General Public	Moderate	Town Administration	Website fully redesigned 2015	Update the site information on a semi-weekly basis
Dec 2021	TS Transfer Station Household Hazardous Waste Disposal	Household hazardous material disposal program permits disposal of dangerous materials in the Transfer Station: propane tanks, dried paint cans, waste oil, waste antifreeze, batteries, tires	Transfer Station	High	Transfer Station	Held program for residents annually, accepted old waste	Hold Annual Household Hazardous Waste Days at the Transfer Station
2022 (forthcoming)	BOS Town Office Upgrades Outreach	Facility changes and upgrades	Entire Town	High	BOS	New Program for 2022	New Town Offices and upgrade ventilation in all facilities

Source: Hillsborough Hazard Mitigation Committee

Review of Existing Plans

As described above, during the Hazard Mitigation process and the identification of existing mitigation **Capabilities**, the Hazard Mitigation Committee used their knowledge of the existing plans, policies, procedures and other documents utilized for their Department duties to develop Capability **Future Improvements**. However, several additional documents not listed in the **Capability Assessment** are also utilized by the community and have a positive relationship to the **Hazard Mitigation Plan 2022**. Most of the documents below are not the Town's documents, but the hazard mitigation goals, objectives, and/or Actions in this Plan are supported by the **Mitigation Support and Resource Documents** listed below in **Table 41**.

Table 41

Mitigation Support and Resource Documents

Latest Adoption or Version Date	Mitigation Support and Resource Documents Not Listed within Capability Assessment Tables
Feb 2007	NH DHHS NH Influenza Pandemic Public Health Preparedness & Response Plan 2007
2007	USGS Flood of May 2006 in NH
2008	USGS Flood of April 2007 in NH
Sep 2009	FEMA Flood Insurance Study for Hillsborough County 2008
2010	NWS Thunderstorms, Tornadoes, Lightning. Preparedness Guide
Apr 2010	NH Hospital Mutual Aid Network MOU
2011	NH DES Management of Collected Debris Following Severe Storm Events Fact Sheet
Dec 2011	NH DHHS Disaster Behavioral Health Response Plan
Feb 2012	NH DHHS Child Care Center Emergency Preparedness Guide
2013	NFPA 1971: Standard on Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting
2014	NFPA 70: National Electrical Code (NEC) and Handbook
2015	NFPA 101 Life Safety Code 2015
2015	NFPA 1 Fire Code 2015
Feb 2015	Central NH Regional Plan 2015
Mar 2015	NH State of NH Tickborne Disease Plan 2015
Jul 2015	NH DOS Statewide Fire Mobilization Implementation Master Plan 2015
Jul 2015	American Red Cross of NH Strategic Plan – Humanitarian Services FY 2015-2021
Jul 2015	NHHSEM NH Recovery Plan with RSFs 2015
Sep 2015	NH DOS Bureau of Emergency Management Services EMS Provider Manual 2015
2016	NFPA 1730: Standard on Organization and Deployment of Fire Prevention Inspection and Code Enforcement, Plan Review, Investigation, and Public Education Operations
Jan 2016	Eversource Energy Electric Operations Response Plan

Latest Adoption or Version Date	Mitigation Support and Resource Documents Not Listed within Capability Assessment Tables
Oct 2016	CNHREPC Central New Hampshire Regional Emergency Planning Committee Regional Hazardous Materials Emergency Plan 2016
2016	Capital Area Public Health Network Public Health Emergency Preparedness and Response Plan
Mar 2018	NH DOT Recommendations for the Ten-Year Transportation Improvement Plan (Projects) 2021-2028
2018	USGS Preliminary Stage and Streamflow Data at Selected Stream Gages for Flood of Oct 2017
Oct 2018	State of NH Multi-Hazard Mitigation Plan Update 2018
Jul 2019	NH DHHS NH Arboviral Illness Surveillance, Prevention and Response Plan & Map 2019
As provided	NHDES Dam Emergency Action Plans for High, Significant & Low Hazard Dams

Source: Hillsborough Hazard Mitigation Committee, CNHRPC

7 PRIOR ACTION STATUS

The **Hazard Mitigation Plan Update 2017** provided a basis to begin Action development, many of which originated from prior **Plans**. A review of the **2017** Actions is provided by the Hazard Mitigation Committee, determining which Actions have been **Completed**, **Deleted**, or **Deferred** to the **2022 Plan**.

Action Status Determination

The status of all Hazard Mitigation Plan Actions varies. Priorities over the previous five years can change, budgets are uncertain, and staff are allocated time for certain tasks. Actions developed, evaluated and implemented across Hazard Mitigation Plans accommodate existing, new, and future development (buildings and infrastructure). To accommodate the **2017 Plan's deferred** Actions in addition to the **New** Actions from the **2022 Plan**, there are four designated Action types to describe the detailed Actions following within the **7 PRIOR ACTION STATUS** and/or **8 MITIGATION ACTION PLAN**:

- ☐ **Completed**
- ☐ **Deleted**
- ☐ **Deferred**

Actions which were **Completed** from the **2017 Plan** are listed in **Table 42** along with completion dates.

Actions which were **Deleted** from the **2017 Plan** might have been no longer necessary or a priority to the Town, no longer relevant to the Town's situation or objectives, could not realistically be undertaken, were not financially feasible, were modified and incorporated into other existing Actions, or duplicated existing efforts of Hillsborough's activities. Deleted Actions are listed in **Table 43**.

Actions which were **Deferred** from the **2017 Plan** are still important to the Town but were not completed because they did not have the staff capability or the funding to undertake them, other Actions took higher priority, more time was required for completion, or they may need to be repeated to be effective. These **Deferred** Actions are in **Table 44** and have been re-prioritized with the **New** Actions in the **Mitigation Action Plan**.

Changes in priority of the **Deferred 2017** Actions occurred over the last five years. The **2017 Plan** used the **12-36 Priority Score enhanced STAPLEE** system while the **2022 Plan** included both a **Ranking Score** and an **Action Timeframe** to determine priorities with a more useful **15-75 Priority Score enhanced STAPLEE** system. Both methods are described.

New Actions are described later in 8 MITIGATION ACTION PLAN.

DEFINITIONS

The following definitions were used to ascertain which Actions should be considered *mitigation* Actions versus which should be considered *preparedness* Actions more suitable for incorporation into the *Town Emergency Operations Plan*. The mitigation Actions are those which are carried forth in this **2022 Plan** into the *Mitigation Action Plan*.

Action Type	Duration	Definition or Characteristics
Mitigation	Long Term	Action supports sustained risk prevention or reduces long-term risk to people, property and infrastructure. ↳ Best suited for <i>Town Hazard Mitigation Plan</i> .
Preparedness	Short Term	Action assists or supports planning, protective activities, public education, training and exercise. ↳ Best suited for <i>Town Emergency Operations Plan</i> .
Response, Recovery, Other Related	Short Term	Action supports preventative, response, recovery-related, repeated or deferred maintenance activities. ↳ Best suited for <i>Town Emergency Operations Plan</i> .

HAZARDS CONSIDERED

With **23** individual hazards evaluated in this Plan, it is not always practical to list each one when describing location vulnerabilities or solutions. In many cases, listing the more encompassing main hazard categories from chapters **3 GOALS AND OBJECTIVES** and **4 HAZARD RISK ASSESSMENT**, which are **Flood**, **Wind**, **Fire**, **Extreme Temperature**, **Earth**, **Technological** and **Human**, should accurately define the issues of most of the identified Actions or locations. Using these hazard categories would often better accommodate the situation in their broadness. The categorized hazards have also been used in the **APPENDIX A Critical and Community Facilities Vulnerability Assessment** but tailored when necessary.

In some cases, further hazard detail at a specific location or to describe an Action is necessary. When needed, the specific hazards addressed in this **Hazard Mitigation Plan** could be utilized, such as **Erosion** from the *River Hazards* category, **Storm** (generally applying to warm weather, all-encompassing storms) or **Tree Debris** from the *Wind* category, **Excessive Heat** from the *Extreme Temperature* category, or **Communications** from the *Long Term Utility Outage*, to provide the specific information needed to understand certain issues in Hillsborough.

Therefore, when the main hazard categories of **Flood**, **Wind**, **Fire**, **Extreme Temperature**, **Earth**, **Technological** and **Human** are not precise enough, one or more of the specific **23** hazards evaluated may be utilized for greater accuracy.

Review of 2017 Actions

The **2017 Hazard Mitigation Plan** was written in a different format and its content had to comply with less specific review guidelines before the [Local Hazard Mitigation Review Guidebook \(FEMA\), 2011](#) became standardized and tailored by each FEMA Region over the years.

Hillsborough's mitigation Actions from the **2017 Plan**, which included Actions from the Town's previous Plans, were allocated **Action Numbers** and each **Project's** status was determined by the Hazard Mitigation Committee as either **Completed**, **Deleted** or **Deferred**. Over the previous Plans, the Actions numbers denoted by years were recorded as such. Actions from **2005** which were **Completed** or **Deleted** and identified as such in the **2017 Plan** were not given numerical identifiers (**#NA**).

HMP	Action # Range	
2005 Plan	#NA	#NA
2011 Plan	#01- 2011 to	#14- 2011
2017 Plan	#43- 2016 to	#50-2016
2022 Plan	#51- 2021 to	#82- 2021

A total of **23** mitigation Actions have been **Completed** from the previous **Hazard Mitigation Plans** as shown in **Table 42**. This includes **12** Actions most recently **Completed** between the **2017 Plan** and **2022 Plan**. Many of the Actions were Partially Completed (**P**) or need to be Repeated (**R**) for effectiveness.

Table 42

Completed Mitigation Actions

Priority Score (2017)	Action Number	Action	Completed By Date	Who is Responsible	Approx \$ Cost	Natural Hazards Addressed
COMPLETED AFTER 2022 Plan (from CHAPTER 8)						
		See Chapter 8 – Add completed Actions				
COMPLETED BY 2022 Plan						
36 P	#44-2016	Develop an Infrastructure Plan for Extension of Sewer and/or Water Services	Partial 2017-2022. Upgraded or replaced lines on Bridge St., Butler St., Henniker St. and Bear Hill Rd. Evaluates	Board of Selectmen with Water and Sewer Commission help	\$25,000 to \$50,000	Flood, Earthquake, Public Health (Water Quality)

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7 PRIOR ACTION STATUS

Priority Score (2017)	Action Number	Action	Completed By Date	Who is Responsible	Approx \$ Cost	Natural Hazards Addressed
			assets by CCTV.			
36	#45-2016	Update the Master Plan (MP) to Finish in 2016 to Enable New Ordinances and Regulations	2018	Planning Board	\$9,500	Flood, Earth, Drought, Wildfire, Wind, Tropical
35 R	#03-2011	Upgrade More Drainage Systems in Town	Completed Annually	Highway Department	\$100,000	Flood, Erosion, Wind, Tropical, Rainstorms, Debris
35 P	#04-2011	Upgrade Culverts on Stowe Mt Road with Larger Culverts for Better Stormwater Drainage	Partial 2020	Highway Department	\$200,000	Flood, Erosion, Wind, Tropical, Rainstorms, Debris
35 P	#07-2011	Upgrade Culverts on County Road with Larger Culverts for Better Stormwater Drainage	Partial 2019	Highway Department	\$100,000	Flood, Erosion, Wind, Snowmelt, Tropical, Rainstorms, Debris
35 R	#08-2011	Upgrade or Reconstruct More Roads in Town	Completed Annually	Highway Department	\$250,000	Flood, Erosion, Wind, Tropical, Rainstorms, Debris
36 R	#01-2011	Continue to Remove Hazardous Trees	Completed Annually	Highway Department	\$5,000	Wind, Tropical, Tree Debris, Winter
35	#02-2011	Conduct Assessment for Wastewater Treatment Facility for Armoring and Protection Options from Flooding	2021	Water and Sewer Department	\$50,000	Flood, River, Debris, Tropical
35 P	#47-2016	Complete Brownfields Project at Woods Woolen Mill in the Contoocook River Floodplain	Partial 2021	Planning Department	\$2,000,000	Public Health, Water Quality, Haz Mat
36	#22-2011	Print and Distribute Disaster Informational Placards	2017	Emergency Management	\$300	Earthquake, Drought, Wind, Tropical, Lightning, Winter, Extreme Temps, Fire, Flood
36 R	#23-2011	Conduct Fire Prevention Outreach Programs Including Firewise	Completed Annually	Fire Department	\$1,000	Wildfire, Lightning, Fire (Structural)
36 R	#48-2016	Undertake Public Outreach for Proper Propane Tank Tie - Down	Completed Annually	Building Department	\$0	Fire (Structural), Explosions, Flood
COMPLETED BY 2017 Plan						
34	#05-2011	Replace Culverts on Kimball Hill Road with	Fall 2013	Highway Department	\$100,000	Flooding, Erosion, Landslide, Debris Impacted

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7 PRIOR ACTION STATUS

Priority Score (2017)	Action Number	Action	Completed By Date	Who is Responsible	Approx \$ Cost	Natural Hazards Addressed
		Larger Culverts for Better Stormwater Drainage				Infrastructure, Rapid Snow Pack Melt, Earthquake
34	#06-2011	Replace Culverts on Bog Road with Larger Culverts for Better Stormwater Drainage	Fall 2013 (1 culvert)	Highway Department	\$100,000	Flooding, Erosion, Landslide, Debris Impacted Infrastructure, Rapid Snow Pack Melt, Earthquake
30	#09-2011	Reconstruct Gould Pond Road to Correct Washout Problem	Fall 2013	Highway Department	\$150,000	Flooding, Erosion, Landslide, Debris Impacted Infrastructure, Rapid Snow Pack Melt, Earthquake
30	#10-2011	Reconstruct Barden Hill Road to Correct Washout Problem	Fall 2013	Highway Department	\$150,000	Flooding, Erosion, Landslide, Debris Impacted Infrastructure, Rapid Snow Pack Melt, Earthquake
30	#11-2011	Reconstruct Pleasant Street to Correct Washout Problem	Fall 2013	Highway Department	\$150,000	Flooding, Erosion, Landslide, Debris Impacted Infrastructure, Rapid Snow Pack Melt, Earthquake
30	#12-2011	Replace Culverts on Upper Beard Road with Larger Culverts for Better Stormwater Drainage	Fall 2013	Highway Department	\$100,000	Flooding, Erosion, Landslide, Debris Impacted Infrastructure, Rapid Snow Pack Melt, Earthquake
30	#13-2011	Replace Culverts on Carter Hill Road with Larger Culverts for Better Stormwater Drainage	Fall 2013	Highway Department	\$100,000	Flooding, Erosion, Landslide, Debris Impacted Infrastructure, Rapid Snow Pack Melt, Earthquake
34	#16-2011	Subscribe to Code Red Notification System	Oct 2011	Emergency Management	\$7,500 annually	Natural, Human, Technological Hazards
32	#17-2011	Purchase Generator for Middle School for its Function as an Emergency Shelter	July 2014	Emergency Management	\$125,000	Power Failure, Severe Wind Storms, Winter Weather, Extreme Heat
27	#19-2011	Protect Public Officials from Human Threats	May 2014 & Sep 2014	Board of Selectmen	\$15,000	Human Hazards, Public Health
34	#37-2011	Improve Subdivision Regulations for Road Design	2011	Planning Board	\$0	Fire, Wildfire, Traffic Accidents, Evacuation, Debris Impacted Infrastructure

Source: Hillsborough Hazard Mitigation Committee

P = Project Partially Completed R = Project Repeated Regularly – Appears in [2021 Mitigation Action Plan](#)

The pink highlighted rows indicate the **20** total **Deleted** Actions in **Table 43** from previous **Hazard Mitigation Plans** which will not be incorporated into the **2022 Plan** as **Deferred** Actions. Many of the Actions were **Deleted** because they were preparedness, response or recovery items and more appropriately belonged in the Town's *Emergency Operations Plan*.

Table 43
Deleted Mitigation Actions

Priority Score (2017)	Action Number	Action	Deleted Date	Who is Responsible	Approx \$ Cost	Why Deleted? The Action...
DELETED AFTER 2022 Plan (from CHAPTER 8)						
		See Chapter 8 – Add deleted Actions				
DELETED FROM 2022 Plan						
--	--	None	--	--	--	--
DELETED FROM 2017 Plan						
35	#14-2011	Purchase Additional Signage, Cones, Barricades	Aug-16	Highway Department	\$3,500	Preparedness Action
36	#15-2011	Acquire More AEDs for Police Department	Aug-16	Police Department	\$5,000	Preparedness Action
34	#18-2011	Purchase Generator for Lighting the Night Time Operations	Aug-16	Highway Department	\$2,000	Preparedness Action
36	#21-2011	Continue School Resource Officer Program	Aug-16	School District and Police Department	\$0	Preparedness Action
36	#24-2011	Increase Advanced Life Support Personnel	Apr-16	Fire Department	\$200,000	Duplicates existing efforts
36	#25-2011	Undertake More Hazardous Materials Training by Fire Department	Aug-16	Fire Department	\$3,000	Preparedness Action
36	#26-2011	Continue Road Reconstruction Training	Aug-16	Highway Department	\$1,800	Preparedness Action
36	#27-2011	Undertake Hazmat Equipment Training for Police Department	Apr-16	Police Department	\$0	Was no longer necessary or a priority to the Town
33	#28-2011	Upgrade Fire Department Members Training to Include Public Assembly and Fire Investigation Training	Aug-16	Fire Department	\$1,800	Preparedness Action
36	#29-2011	Undertake More Tactical Training Exercises to Improve Reaction Time to Active Shooter Incidents	Aug-16	Police Department	\$5,000	Preparedness Action

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7 PRIOR ACTION STATUS

Priority Score (2017)	Action Number	Action	Deleted Date	Who is Responsible	Approx \$ Cost	Why Deleted? The Action...
36	#30-2011	Participate in National Flood Insurance Program (NFIP) Training	Aug-16	Planning Department	\$500	Preparedness Action
28	#31-2011	Continue Feasibility Research, Evaluation, and Planning for Mass Immunization at Schools (School)	Aug-16	School District	\$0	Preparedness Action
36	#32-2011	Continue to Undertake National Incident Management System (NIMS) Training for Emergency Management Team	Aug-16	Emergency Management	\$0	Preparedness Action
36	#35-2011	Develop Plan to Protect Power Line Areas	Apr-16	Highway Department	\$0	Duplicates existing efforts
35	#36-2011	Evaluate Hazardous Material Facilities in Floodplain (Special Flood Hazard Areas)	Aug-16	Fire Department	\$5,000	Incorporated into another Action
36	#38-2011	Encourage Businesses to Develop Site Specific Emergency Response Plans of Procedures	Aug-16	Emergency Management Director	\$0	Preparedness Action
36	#39-2011	Improve Evacuation Route Plans in the EOP	Aug-16	Emergency Management Director	\$0	Preparedness Action
24	#40-2011	Evaluate Wastewater Siphon under the Contoocook River	Aug-16	Sewer Commission	\$1,000	Preparedness Action/Deferred Maintenance
34	#41-2011	Evaluate the West Main St Sewer Pump Station	Aug-16	Sewer Commission	\$5,000	Preparedness Action
34	#42-2011	Evaluate the Bear Hill Rd Sewer Pump Station	Aug-16	Sewer Commission	\$5,000	Preparedness Action

Source: Hillsborough Hazard Mitigation Committee

The tan highlighted rows in **Table 44** indicate the **17 Deferred** mitigation Actions from the **2017 Plan** which also appear in the forthcoming **2022 Plan's Mitigation Action Plan**. Many **Action** titles were revised to update the Action and to reflect the new focus on mitigation although the principle for each remains the same. The **Approximate Cost** may rise. They will all be reevaluated to accommodate **2021** standards in later sections. Many of the Actions were Partially Completed (**P**) or need to be Repeated (**R**) for effectiveness.

Table 44
Deferred Mitigation Actions

Priority Score (2017)	Action Number	Action	Deferred Date	Who is Responsible	Approx \$ Cost	Why Deferred? Because...	Hazards Addressed
36	#33-2011	Conduct Floodplain Assessment to Evaluate Structures along the Contoocook River	July 2021	Code Enforcement	\$0	Action had no staff, volunteer, or funding available	River, Flood, Erosion, Ice Jam
32	#34-2011	Update the Floodplain Ordinance to Comply with Federal NFIP Requirements	July 2021	Planning Department	\$0	Action needs to be repeated for effectiveness	Flood, Erosion, River
32	#43-2016	Revise the Subdivision and Site Plan Review Regulations to Require Road Elevation and/or More than 1 Egress for New Developments	July 2021	Planning Department	\$0	Action was lower priority than other activities	Wind, Winter, Wildfire, Tropical
36 P	#44-2016	Develop an Infrastructure Plan for Extension of Sewer and/or Water Services	July 2021	Board of Selectmen with Water and Sewer Commission help	\$25,000 to \$50,000	Action needed more time for completion	Flood, Earthquake, Public Health (Water Quality)
35 TR	#03-2011	Upgrade More Drainage Systems in Town	July 2021	Highway Department	\$100,000	Action needs to be repeated for effectiveness	Flood, Erosion, Wind, Tropical, Rainstorms, Debris
35 P	#04-2011	Upgrade Culverts on Stowe Mt Road with Larger Culverts for Better Stormwater Drainage	July 2021	Highway Department	\$200,000	Action needed more time and funding for completion	Flood, Erosion, Wind, Tropical, Rainstorms, Debris
35 P	#07-2011	Upgrade Culverts on County Road with Larger Culverts for Better Stormwater Drainage	July 2021	Highway Department	\$100,000	Action needed more time and funding for completion	Flood, Erosion, Wind, Tropical, Rainstorms, Debris
35 P	#08-2011	Upgrade or Reconstruct More Roads in Town	July 2021	Highway Department	\$250,000	Action needs to be repeated for effectiveness	Flood, Erosion, Wind, Tropical, Rainstorms, Debris

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7 PRIOR ACTION STATUS

Priority Score (2017)	Action Number	Action	Deferred Date	Who is Responsible	Approx \$ Cost	Why Deferred? Because...	Hazards Addressed
36 R	#01-2011	Continue to Remove Hazardous Trees	July 2021	Highway Department	\$5,000	Action needs to be repeated for effectiveness	Wind, Tropical, Tree Debris, Winter
32 R	#46-2016	Continue to Purchase or Obtain Key Conservation Lands for Permanent Preservation	July 2021	Conservation Commission	Unknown	Action needs to be repeated for effectiveness	Flood, River
35	#47-2016	Complete Brownfields Project at Woods Woolen Mill in the Contoocook River Floodplain	July 2021	Planning Department	\$2,000,000	Action needs for time for completion (2030)	Public Health, Water Quality, Haz Mat
36	#20-2011	Conduct Outreach to Manufactured Home Park Residents	July 2021	Emergency Management	\$200	Action was lower priority than other activities	Extreme Temps (Heat-Cold)
36 R	#22-2011	Print and Distribute Disaster Informational Placards	July 2021	Emergency Management	\$300	Action needs to be repeated for effectiveness	Earthquake, Drought, Wind, Tropical, Lightning, Winter, Extreme Temps, Fire, Flood
36 R	#23-2011	Conduct Fire Prevention Outreach Programs Including Firewise	July 2021	Fire Department	\$1,000	Action needs to be repeated for effectiveness	Wildfire, Lightning, Fire (Structural)
36 R	#48-2016	Undertake Public Outreach for Proper Propane Tank Tie - Down	July 2021	Building Department	\$0	Action needs to be repeated for effectiveness	Fire (Structural), Explosions
36	#49-2016	Educate the Populations on Evacuation Procedures in the Central Business District Area and Commercial Zone	July 2021	Emergency Management	\$0	Action was lower priority than other activities	Flood, Lightning (Conflagration), Evacuate
36	#50-2016	Encourage Residents Downstream of the Jackman Dam and throughout the Community to Sign Up for CodeRed	July 2021	Police Department with Emergency Management help	\$200	Action was lower priority than other activities	Evacuation, Flood

Source: Hillsborough Hazard Mitigation Committee

P = Project Partially Completed R = Project Repeated Regularly – Appears in **2021 Mitigation Action Plan**

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8 MITIGATION ACTION PLAN

The Chapter provides a summary discussion of the Actions the community can consider completing to help mitigate the effects of hazard events.

The **Mitigation Action Plan** is the culmination of the work of the previous Assessments, inventories, and evaluations from the previous Chapters. Actions to help Hillsborough mitigate the damages caused by disasters have been developed and prioritized by Hazard Mitigation Committee consensus in consideration of both existing and new development.

SOURCES OF ACTIONS

After determining the status of the existing Actions, **New** Actions can be determined. **New** Actions were evaluated by Hazard Mitigation Committee the using the **Problem Statements** determined during discussion of critical facility and community facility sites' potential vulnerability to hazards in the **Critical Facility and Community Vulnerability Assessment**. Many of these problems were further evaluated and developed into **New** mitigation Actions.

The **Capability Assessment** yielded a wealth of information from the **Future Improvements** of the plans, programs, ordinances, policies, agreements, technical skills, financial resources, and other resources the Town Departments, School District, and Stakeholders had available. These activities are important to the community. They assist Departments with the procedures, training, regional coordination, mutual aid, planning and purchases needed to perform their duties effectively. These activities in turn increase the capability for mitigating hazard events. For the **2022 Plan**, most of the **Capability Assessment's Future Improvements** activities were not utilized as Actions since they are more appropriate for the Town's **Emergency Operations Plan** recommendations.

Other community ideas were introduced to or by the Hazard Mitigation Committee as a result of Department, Board, Commission or Town discussions. Where appropriate, supported activities were introduced as New mitigation Actions.

Mitigation Actions developed emphasize both new and existing buildings and infrastructure to better protect populations of Hillsborough.

Several uncompleted **Deferred** (2017) Hillsborough mitigation Actions have been carried forward into the **2022 Plan** with the updates to the evaluation, cost, prioritization, etc.

ACTION MATRIX

A listing of **17 Deferred** mitigation Actions from **2017** and **46 New** mitigation Actions from **2022** important to the Town of Hillsborough was developed for evaluation. Each Action identifies at least one **Hazard Mitigated** which correlates to **3 GOALS AND OBJECTIVES**, describing how it can mitigate these identified natural hazard objectives. A short **Description and Evaluation** is provided, and the **Affected Location** is listed to ensure easier understanding and reassessment of the Actions in the future during implementation.

The Actions are numbered for easier tracking over the years with this practice beginning in this **2022 Plan**. The **2022** Actions begin where the prior Actions left off, **#51- 2022** through **#82- 2022**. Over time, the Actions can be tracked to see which have been **Deferred** and to organize the **Completed** or **Deleted** Actions. For those with funding needs, the ability to reference an Action within the Capital Improvements Program or in a Warrant Article can alleviate confusion and further support the mitigation Actions.

Each Action is sorted into one of these four mitigation Action categories, although it might identify with several:

Local Planning and Regulation
Structure and Infrastructure Projects
Natural Systems Protection
Education and Awareness

Within the **Mitigation Action Plan**, the **Deferred 2017** Actions and the **New 2022** Actions are evaluated by the relative ease of completion using a numeric **Ranking Score** generated by the enhanced STAPLEE prioritization, by the **Action Timeframe** by which the Hazard Mitigation Committee would like to see the Action implemented, and by a basic **Cost to Benefit Analysis** as contained within the STAPLEE.

The **Responsible Department** is indicated for each Action as the party who will ensure the Action gets completed. An **Approximate Cost** is provided, although no definitive cost estimates or quotes have been obtained now. Ways the Action can be **Funded** is identified and offered as an avenue to explore during implementation. The purpose is to offer an idea of how much funding is provided for each Action and how it may be paid for.

Hillsborough's Mitigation Action Plan 2022

At the meetings, the Hazard Mitigation Committee identified by consensus these mitigation Actions from the various **Assessments** and evaluations conducted. The process for Action development has been described in previous Chapters and sections. Combined with the visual *Maps 1-4* of the **Hazard Mitigation Plan 2022**, the **Mitigation Action Plan** shown in **Table 45 Planning and Regulatory**; **Table 46 Structure and Infrastructure**; **Table 47 Natural Systems Protection**; and **Table 48 Education and Outreach** should be able to guide future hazard mitigation efforts in the Town through an annual implementation process.

Seventeen (**17**) **Deferred** Actions from **2017** and **46 New** Actions from **2022** combine to develop the **63** Actions of the **2022 Mitigation Action Plan**. The **Deferred** Actions' cells are highlighted in tan.

Table 45

Local Planning and Regulation Actions

Action Number	Action	Action Timeframe	Ranking Score	Who is Responsible	Approx Cost to Town	Description and Evaluation of Action	Hazards Mitigated?	Affected Location in Town	What Cost Will Pay For	How Funded
#33-2011	Conduct Floodplain Assessment to Evaluate Structures along the Contoocook River to Reduce the Impacts of Flood	<u>Short Term</u> 1-2 Years then <u>Ongoing</u>	60	Code Enforcement	\$0	An assessment can evaluate the dwelling units, businesses, capacity, propane tanks, etc in the floodplain which must meet requirements. Review for public safety standpoint. Oil tank in basement, oil spills. Can begin during inspections of property for life safety, assessing, etc. Currently done upon inspections (additions, building permits, COA). Documented by building inspection. Is there a master list for easy access? An easily accessible database by responders is the goal.	River, Flood, Erosion, Ice Jam	Floodplain Areas	Cost is for in-kind staff and volunteer time.	N/A
#34-2011	Update and Enforce the Floodplain Ordinance to Comply with Federal NFIP Requirements to Reduce the Impacts of Flood	<u>Short Term</u> 1-2 Years then <u>Ongoing</u>	66	Planning Department	\$0	The Zoning Ordinance would need to be updated as new requirements to the National Flood Insurance Program are necessary for retention of NFIP participation. The Floodplain Ordinance protects life and property by regulating distance of structures to flood hazard areas, regulating elevation, clarifying definitions, regulating new structures and encroachments, stating duties of the Code Enforcement Officer, etc. In 2010, the Town adopted the recommended updates to the ordinance. The existing	Flood, Erosion, River	Contoocook River	Cost is for in-kind staff and volunteer time.	N/A

Town of Hillsborough, NH Hazard Mitigation Plan Update 2022

8 MITIGATION ACTION PLAN

Action Number	Action	Action Timeframe	Ranking Score	Who is Responsible	Approx Cost to Town	Description and Evaluation of Action	Hazards Mitigated?	Affected Location in Town	What Cost Will Pay For	How Funded
						ordinance is amended with federal updates as needed.				
#43-2016	Revise the Subdivision and Site Plan Review Regulations to Require Road Elevation and/or More than 1 Egress for New Developments to Reduce Safety Risks from Wildfire, Winter, and Severe Wind Events	<u>Short Term</u> 1-2 Years	54	Planning Department	\$1,000	Many of the manufactured home parks, apartment buildings, and congregate care facilities have only 1 egress/limited access in the event of an emergency. Mass evacuation would be very difficult for some populations as would Town emergency services reaching residents. Will be reviewing subdivision and site plan regs for 2022 to upgrade the road standards.	Wind, Winter, Wildfire, Tropical	New Development, Entire Town	Cost is for hearing and legal review, in-kind staff and volunteer time.	Planning Board budget
#44-2016	Develop an Infrastructure Plan for Extension of Sewer and/or Water Services to Maintain Capacity and Reduce the Risk of Public Health Issues	<u>Long Term</u> 4-5 Years	51	Board of Selectmen with Water and Sewer Commission help	\$75,000 to \$100,000	The extension is under discussion by Board of Selectmen as of summer 2021. The intent is expanding the commercial end of water and sewer- from West Main /NH 149 to NH 9 and continuing up Antrim Road to the town line.	Flood, Earthquake, Public Health (Water Quality)	West Downtown	Cost is for Engineering and writing up the Plan.	ARPA funding, Warrant Article
#51-2022	Monitor Changes to Manufactured Home Real Estate Market Trends to Trigger Life Safety and Code Inspections to Reduce the Risk Conflagration, Severe Wind	<u>Short Term</u> 1-2 Years then <u>Ongoing</u>	61	Code Enforcement / Building Inspection	\$0	About 75% of manufactured homes are older, not up to current building codes, and nearly all are not anchored to the ground. They are extremely vulnerable to heavy wind events, fire conflagration, and snow load building collapse. Only homes purchased and placed within the last 3-5 years are required to be anchored. Any manufactured home would have to meet current building codes before it locates to Hillsborough. MF	Earthquake, Wind, Winter, Wildfire, Tropical	Manufactured Home Parks, Manufactured Homes	Cost is for in-kind staff and volunteer time.	N/A

Town of Hillsborough, NH Hazard Mitigation Plan Update 2022

8 MITIGATION ACTION PLAN

Action Number	Action	Action Timeframe	Ranking Score	Who is Responsible	Approx Cost to Town	Description and Evaluation of Action	Hazards Mitigated?	Affected Location in Town	What Cost Will Pay For	How Funded
						homes must be situated on concrete slab and tied down (current building code) if new permits are filed or additions are made.				
#52-2022	Develop Map Layers of Aboveground and Underground Tanks and a Layer of Private Solar Arrays to Add to the AxisGIS Property Maps to Reduce the Risk of Fire and Injury	Medium Term 3-4 Years	71	Planning Department	\$0	Fieldwork is necessary, some information is on the property card. New propane tanks installed are permitted. The addresses are known in an Excel file for the last 5 years but are not in a database or on a map. Tanks should be on property cards. Estimated 50 private solar arrays in Town in 2021. Once the solar array does not sense grid power, they shut down (microinverters). Main inverters always push power when sun shines. Electrocution is a potential hazard to fire fighters, so they need to know how to handle each array. An intern is possible for the fieldwork and tax card research.	Fire, Explosion Potential, Life & Safety	Entire Town	Cost is for in-kind staff and volunteer time.	N/A
#53-2022	Complete an Inventory and Map of All Historic and Cultural Sites and Cemeteries in Floodplain Area to Reduce the Impact of Flood	Medium Term 3-4 Years	61	Cemetery Trustees with Historical Society and Planning Department help	\$0	Many historic sites are in the floodplain (Beehive Oven), and it's impossible to replace these resources once they are gone. The goal is to catalog their importance and assess for potential mitigation. Sites are expensive and difficult for Town to maintain.	Flood, Erosion, River	Floodplain	Cost is for in-kind staff and volunteer time.	N/A
#54-2022	Post Permanent Metal Signage with Rules and	Short Term 1-2 Years	72	Parks Dept with ELVD help	\$5,000	NHDES regularly tests beaches, ponds, and lakes and issues official closure statements when	Public Health, Infectious, Life Safety	Manahan Park, Beard	Cost is for ELVD 5 beaches, Manahan Park,	Parks and Rec Budget &

Town of Hillsborough, NH Hazard Mitigation Plan Update 2022

8 MITIGATION ACTION PLAN

Action Number	Action	Action Timeframe	Ranking Score	Who is Responsible	Approx Cost to Town	Description and Evaluation of Action	Hazards Mitigated?	Affected Location in Town	What Cost Will Pay For	How Funded
	Regulations at All Town and Private Beaches to Reduce Risks to Public Health and Safety					levels of bacteria are too high. The bacteria e. coli levels at Manahan Beach on Jackman Reservoir/Franklin Pierce Lake and at Beard's Brook Beach (current advisory 2021) have caused beach closings due to potential public health issues. The other 5 beaches in Hillsborough are private beaches on Emerald Lake- these beaches are vulnerable to e. coli and cyanobacteria as well. Posting the rules and regulations and public advisories for why closing the beaches is necessary will help prevent individuals from using the beaches during closures.		Brook and 5 ELVD Beaches	Beard Brook (7 locations * 2 signs).	ELVD Budget
#55-2022	Develop a Comprehensive Phasing Plan in Zoning Ordinance to Stipulate Phasing of Large Developments over Several Years to Reduce the Impact to Town Infrastructure and Services	Short Term 1-2 Years	68	Planning Department	\$500	Town infrastructure and services may not be able to keep up with the subdivision and built out of a large parcel or multiple developments. Examples include Fire, Police and Public Departments' services, vehicles, and equipment; Water, Sewer and School services and capacity. A phasing plan in the Zoning Ordinance would require large developments (residential or commercial) to be built in phases over time. The phasing can be supported in the Subdivision and Site Plan Review Regulations. Impact Fees and a Growth Management Ordinance are	Wind, Winter, Wildfire, Tropical, Health and Safety	New Development, Entire Town	Cost is for legal review.	Planning Board budget

Town of Hillsborough, NH Hazard Mitigation Plan Update 2022

8 MITIGATION ACTION PLAN

Action Number	Action	Action Timeframe	Ranking Score	Who is Responsible	Approx Cost to Town	Description and Evaluation of Action	Hazards Mitigated?	Affected Location in Town	What Cost Will Pay For	How Funded
						other tools to help accommodate a predicted growth boom.				
#56-2022	Develop a Town Public Health Emergency Plan to Reduce the Impact of Infectious Diseases	Medium Term 3-4 Years	60	Emergency Management with Health Officer help	\$2,000	Use experience from COVID-19 pandemic to write down policies and procedures for long-term infectious diseases. Can include beach testing and closing protocol.	Public Health, Infectious	Entire Town	Cost is for printing and review.	Emergency Management budget
#57-2022	Develop a Study to Review the Need for a Wetlands Ordinance to Address Drainage and Site Development for Floodprone Areas to Reduce the Impacts of Flood	Medium Term 3-4 Years	66	Conservation Commission with Planning Department	\$500	Ensure wetlands remain undisturbed to maintain their flood capacity. Potential setbacks, wetlands should be graded, zoning acreage changes. The Town has an old prime wetlands study. An Antioch intern has been requested to develop a new study.	Flood	Wetlands	Cost is for a stipend for the intern.	Conservation Commission budget
#58-2022	Respond to the Results of the Study for a Wetlands Ordinance or Zoning Ordinance Revisions to Protect Sensitive Species and Reduce the Impacts of Flood	Medium Term 3-4 Years	66	Planning Department with Conservation Commission	\$500	When the wetlands study has been completed, if it indicates the need for zoning ordinance revisions, these should be completed.	Flood	Wetlands	Cost is for legal review.	Planning Board budget
#59-2022	Revise the Subdivision Regulations or Site Plan to Require Underground Utilities for New Major Developments to Reduce the Risks of Severe Wind Events	Medium Term 3-4 Years	70	Planning Department	\$500	Could apply to major subdivisions. Would need to be placed into the Subdivision Regulations.	Severe Wind, Tropical, Debris, Utility	New Development, Entire Town	Cost is for legal review.	Planning Board budget

Town of Hillsborough, NH Hazard Mitigation Plan Update 2022

8 MITIGATION ACTION PLAN

Action Number	Action	Action Timeframe	Ranking Score	Who is Responsible	Approx Cost to Town	Description and Evaluation of Action	Hazards Mitigated?	Affected Location in Town	What Cost Will Pay For	How Funded
	ADD NEW ACTION HERE									
	ADD NEW ACTION HERE									

Source: Hillsborough Hazard Mitigation Committee

Table 46
Structure and Infrastructure Projects

Action Number	Action	Action Timeframe	Ranking Score	Who is Responsible	Approx Cost to Town	Description and Evaluation of Action	Hazards Mitigated?	Affected Location in Town	What Cost Will Pay For	How Funded
#03-2011	Upgrade Culverts and Drainage Systems in Town on an Annual Basis to Reduce the Impacts of Flood and Erosion	<u>Short Term</u> 1-2 Years then Ongoing	75	Highway Department	\$100,000	Finished Jones Road base coat in Sept 2021 and its underdrainage of 4,000' of 10" pipe. Base coat has been laid but rocks are in the road. Topping of Jones Road is to be done 2022. Many of the culverts are debilitated and needing replacement.	Flood, Erosion, Wind, Tropical, Rainstorms, Debris	Town Class V Roads	Cost is for permitting, materials, labor, equipment rentals.	Highway Department Budget
#04-2011	Upgrade Culverts on Stowe Mt Road with Larger Culverts for Better Stormwater Drainage to Reduce the Impacts of Flood and Erosion	<u>Medium Term</u> 3-4 Years	74	Highway Department	\$200,000	Partial 2020. Performed work, 2 installed in 2020 fall, 12". Remaining is a large culvert, nearly a box culvert or 48".	Flood, Erosion, Wind, Tropical, Rainstorms, Debris	Stowe Mountain Road	Cost is for permitting, materials, labor, equipment rentals.	Highway Department Budget
#07-2011	Upgrade Culverts on County Road with Larger Culverts for Better Stormwater Drainage to Reduce the Impacts of Flood and Erosion	<u>Medium Term</u> 3-4 Years	74	Highway Department	\$100,000	Partial 2019. Some improvements on culverts, 2019 upgraded. More improvements needed.	Flood, Snowmelt, Erosion, Wind, Tropical, Rainstorms, Debris	County Road	Cost is for permitting, materials, labor, equipment rentals.	Highway Department Budget
#08-2011	Rehabilitate or Reconstruct Roads in Town on an Annual Basis to Reduce the Impacts of Flood and Erosion	<u>Short Term</u> 1-2 Years then Ongoing	75	Highway Department	\$250,000	Rainstorms and flooding washout and overtop roads without proper elevation and drainage. Each year, 1-2 roads chosen for rehabilitation and drainage, depending on the funding and project scope. When roads are reconstructed, their culverts and drainage systems are improved. 2021 Warrant Articles were approved for each project, plus \$250,000 is annually budget for	Flood, Erosion, Wind, Tropical, Rainstorms, Debris	Town Class V Roads	Cost is for permitting, materials, labor, equipment rentals.	Highway Department Budget

Town of Hillsborough, NH Hazard Mitigation Plan Update 2022

8 MITIGATION ACTION PLAN

Action Number	Action	Action Timeframe	Ranking Score	Who is Responsible	Approx Cost to Town	Description and Evaluation of Action	Hazards Mitigated?	Affected Location in Town	What Cost Will Pay For	How Funded
						the Highway Dept. Finished Jones Road base coat in Sept 2021 and its underdrainage of 4,000' of 10" pipe. Base coat was laid but rocks are in the road, so topping of Jones Road is to be done 2022. Any remaining funds are carried over HD budget next year. HD determines which roads are the worst, depending on road conditions.				
#60-2022	Inspect and Enforce the New and Existing Septic System Failures and Enforce Compliance with Current Septic Rules at Local and State Levels to Reduce Risks to Public Health and Safety	<u>Short Term</u> 1-2 Years then <u>Ongoing</u>	69	Building Inspector (New) and Health Officer (Failures)	\$0	Problem is flooded septic systems are too close to waterbodies. A failure within 200' of waterbody can trigger compliance review it state of NH. Must be elevated above floodplain. Town has no influence on septic complaints. Health addresses septic issues when complaints come in. Plans are being reviewed by building inspector, attends ELVD perc tests. Ensures new plans and systems are above highwater mark. Basement is ok, no residential use.	Flood, Public Health (Water Quality)	Entire Town	Cost is for any legal costs for noncompliance , not possible to estimate.	N/A
#61-2022	Purchase an Installed Generator for the Transfer Station and Replace the Old Police Department Generator to Reduce the Risk of Lost Emergency Communications and Services	<u>Short Term</u> 1-2 Years	64	Police Department	\$100,000	Two installed generators are needed to ensure Police Department and Transfer Station systems remain operational during power outages. The Police Dept has an older installed generator in poor condition that needs replacement with a newer model. Needs assessments and cost estimates are necessary, so	Power Outage (Utility), Communication and Services Disruption (Utility)	Transfer Station, Police Department	Cost is for the installation, wiring equipment, and labor for 2 installed generators.	Capital Projects Warrant Article, ARPA funding

Town of Hillsborough, NH Hazard Mitigation Plan Update 2022

8 MITIGATION ACTION PLAN

Action Number	Action	Action Timeframe	Ranking Score	Who is Responsible	Approx Cost to Town	Description and Evaluation of Action	Hazards Mitigated?	Affected Location in Town	What Cost Will Pay For	How Funded
						the approximate cost will likely change.				
#62-2022	Install a Portable Generator at Bible Hill Telecomm Tower to Ensure the Emergency Antennas Remain Active During a Power Outage to Reduce the Risk of Lost Emergency Communications and Services	<u>Short Term</u> 1-2 Years	75	Police Department	\$3,000	There is a security risk at the Town's Bible Hill telecomm tower which contains critical town, county, state, and repeating equipment. Although the site has a fence and a lock, there is a potential for vandalism or sabotage. There is no generator on site if electricity to the array fails. A gasoline generator should be installed and a policy stating responsibility for its usage should be developed.	Power Outage (Utility), Communication Disruption (Utility)	Bible Hill Telecomm Tower	Cost is for the purchase of a stand-alone gasoline generator.	Police Dept Budget
#63-2022	Encourage the Upgrade of the Emerald Lake Village Water System to Maintain Clean and Adequate Water Supply to Residents to Reduce Risks to Public Health	<u>Long Term</u> 4-5 Years	71	Town Administrator and ELVD	\$0 (Town)	Discuss the aging and insufficient infrastructure of the ELVD water system with the ELVD Board. The current water system is insufficient to meet the needs of the existing population. Most are full time residences. Broken pipes and leaks are common occurrences. In addition, many additional lots could still be built in the future. Town may be able to help the ELVD locate financing to begin the project. ELVD has been evaluating a bond to pay for the upgrade and is considering other options.	Earthquake, Drought, Flood, Public Health (Water Quality)	Emerald Lake Village District	Cost is for \$0 for the Town and materials and installation will be borne by the ELVD residents.	ELVD budget or bond, Potential Federal Funding (75% to fill out an income survey)
#64-2022	Rehabilitate Contoocook Falls River Bridge to Reduce the Risk of Crash or Bridge Failure	<u>Long Term</u> 4-5 Years	62	Board of Selectmen with Highway Department	\$4,000,000	A larger project than Carr. Town needs to be ready to move fast when the funding becomes available – CRF \$ and engineering should be ready for the match. Municipal funding for bridge	Flood, River, Erosion, Aging Infrastructure	Contoocook Falls River Bridge	Cost is for CRF \$ and engineering, all estimated costs.	Funding for municipalities from the National

Town of Hillsborough, NH Hazard Mitigation Plan Update 2022

8 MITIGATION ACTION PLAN

Action Number	Action	Action Timeframe	Ranking Score	Who is Responsible	Approx Cost to Town	Description and Evaluation of Action	Hazards Mitigated?	Affected Location in Town	What Cost Will Pay For	How Funded
						repair and the associated permitting requirements and costs are too high and too difficult to obtain by taxation. This results in less bridge work completed and could potentially result in catastrophic bridge failure. The Town allocates annual funding to the Bridge Maintenance Capital Reserve Fund (CRF) but the Town requires more state funding than what is available to fund.				Infrastruc ture Bill
#65-2022	Rehabilitate the Carr Bridge at Jones Road Stone Arch Bridge to Increase Historic Preservation and to Reduce the Risk of Crash or Bridge Failure	Long Term 4-5 Years	69	Board of Selectmen with Highway Department and Historical Society	\$250,000 - \$500,000	Historic restoration of the remaining stone arch bridges is necessary, as they are not designed to modern engineering standards. Maintenance of Hillsborough's historic stone arch bridges is a more expensive activity than typical bridge repair. The graceful stone arch bridges are cultural and functional in purpose. All stone arch bridges are important carry excessive amounts of high traffic and require work. No priority is allocated to any one bridge, and they are all in the same shape.	Flood, River, Erosion, Aging Infrastructure	Carr Bridge at Jones Road Stone Arch Bridge	Cost is for CRF \$ and engineering, all estimated costs.	Historic site funding sources, Funding for municipalities from the National Infrastructure Bill
#66-2022	Evaluate the Need for Lightning Rods and/or Grounding Systems in Town Facilities to Reduce the impact of Lightning Strikes	Short Term 1-2 Years	75	Fire Department with Police Dept	\$0	Most Town Buildings are believed to have lightning rods. The Library (Town Office) does as well. The Town has a municipal solar array at the Transfer Station. It is unknown whether there are dedicated grounding systems and circuit panels.	Lightning, Fire, Communications, Utility	Town Buildings	Cost is for five lighting rod and grounding systems, installation, and panel.	Hazard Mitigation Project CRF (new)

Town of Hillsborough, NH Hazard Mitigation Plan Update 2022

8 MITIGATION ACTION PLAN

Action Number	Action	Action Timeframe	Ranking Score	Who is Responsible	Approx Cost to Town	Description and Evaluation of Action	Hazards Mitigated?	Affected Location in Town	What Cost Will Pay For	How Funded
						Grounding is designed for electrical surges in the building, not for lightning. Surge protectors are used in many buildings for electronics. A lightning strike could destroy electronic equipment, cause local fires, and would cause operations disruptions if proper systems are not installed.				
#67-2022	Upgrade Beard Road and Drainage Culverts to Reduce the Impacts of Flood and Erosion	<u>Short Term</u> 1-2 Years	75	Highway Department	\$50,000 - \$75,000	There are between 2-4 10' long culverts to upgrade in this section of Beard Brook Road. Before the hot top is applied (section of 0.75 mile), the new culvert pipes will be inserted.	Flood, Erosion, Wind, Tropical, Rainstorms, Debris	Beard Road	Cost is for permitting, materials, labor, equipment rentals.	Highway Department Budget
#68-2022	Upgrade Stowe Mountain Road and County Road Culvert to Reduce the Impacts of Flood and Erosion	<u>Medium Term</u> 3-4 Years	74	Highway Department	\$50,000 - \$75,000	Need equipment, rental, gravel. One culvert needed on Stowe Mtn Road and two+ culverts needed on County Road.	Flood, Erosion, Wind, Tropical, Rainstorms, Debris	Stowe Mountain Road, County Road	Cost is for permitting, materials, labor, equipment rentals.	Highway Department Budget
	ADD NEW ACTION HERE									
	ADD NEW ACTION HERE									

Source: Hillsborough Hazard Mitigation Committee

Table 47
Natural Systems Protection Actions

Action Number	Action	Action Timeframe	Ranking Score	Who is Responsible	Approx Cost to Town	Description and Evaluation of Action	Hazards Mitigated?	Affected Location in Town	What Cost Will Pay For	How Funded
#01-2011	Remove Hazardous Trees or Limbs Along Town Roadways to Reduce the Impact of Winter Weather and Severe Wind Events	<u>Short Term</u> 1-2 Years then <u>Ongoing</u>	75	Highway Department	\$5,000	Budget line item for several Depts. Eversource also cuts each year. Highway Crew assesses and removes if they can or calls tree service.	Wind, Tropical, Tree Debris, Winter	Town Class V Roads	Cost is for equipment rentals and training.	Highway Department Budget
#46-2016	Purchase or Obtain Key Conservation Lands for Permanent Preservation in the Floodplain to Improve Flood Capacity	<u>Long Term</u> 4-5+ Years then <u>Ongoing</u>	68	Conservation Commission	\$75,000 - \$300,000	2021 50% LUCT. Cons Comm uses funds for easements, surveys, legal fees with 3rd party easement holders, 5 Rivers, SPNHF.	Flood, River	Entire Town	Cost is for easement, surveys, legal fees for 1 property.	Conservation Fund
#47-2016	Complete Brownfields Project at Woods Woolen Mill in the Contoocook River Floodplain to Reduce the Risk of Hazardous Materials in the Floodplain	<u>Medium Term</u> 3-4 Years	71	Planning Department with Board of Selectmen	\$2,000,000	Have been meeting and undertaking assessments since 2018. One building will be removed by end of 2021. Work continues until about 2030, when it is thought the property will be entirely cleaned. Then land needs to be reclaimed.	Public Health, Water Quality, Haz Mat	Next to Contoocook River	Cost is for removal of the building and the contaminated soil by 2020. Removal of the second building in the future.	Match, in-kind and EPA Brownfields Grant funding
#69-2022	Develop a Potential Brownfields Assessment on the Vacant Dry Cleaning Facility Parcel to Reduce the Risk of Hazardous Materials in the Floodplain	<u>Long Term</u>	74	Property Owners and Engineers	TBD - \$250,000	Sited next to the Contoocook, develop a study of this parcel which may be polluting the river to determine if this former dry cleaning building and site needs cleanup. May be able to direct funds from EPA towards their property. Needs funding, will try to work with existing engineer.	Public Health, Water Quality, Haz Mat	Near the Contoocook River	Cost is for engineering assessment of the soils and a report.	Existing or additional US EPA Brownfields funding
#70-2022	Consider Municipal Water System Restrictions to Try to	<u>Short Term</u> 1-2 Years	75	Water and Sewer Commission	\$0	Public outreach about the importance of (voluntary) water restrictions by the Water and	Drought	Water District	Cost is for in-kind staff and volunteer time.	N/A

Town of Hillsborough, NH Hazard Mitigation Plan Update 2022

8 MITIGATION ACTION PLAN

Action Number	Action	Action Timeframe	Ranking Score	Who is Responsible	Approx Cost to Town	Description and Evaluation of Action	Hazards Mitigated?	Affected Location in Town	What Cost Will Pay For	How Funded
	Reduce the Impacts of Drought	<u>then Ongoing</u>				Sewer Commissioners can help reduce the effects of drought. At some point in the future, restrictions may need to be mandatory.				
#71-2022	Encourage the Use of Permeable Driveways and Provide Public Education about their Use and Maintenance to Reduce the Impacts of Drought	<u>Short Term 1-2 Years then Ongoing</u>	75	Planning Board with Highway Department	\$0	If a driveway permit is issued, the HD will inspect. Prior to permit issuance is when the benefits of permeable driveways can be provided to property owners. More permeable surfaces in the Downtown especially could result in less runoff and fewer drought conditions in Town (aquifer recharge).	Drought	New Development, Entire Town	Cost is for in-kind staff and volunteer time.	N/A
#72-2022	Encourage Tree Plantings Around Buildings to Shade Parking Lots and Along Public Rights-of-Way to Reduce the Effects of Drought	<u>Short Term</u>	75	Planning Board	\$500	This provision would be a revision to the Planning Board's Subdivision Regulations and Site Plan Review Regulations. Ensuring shade trees are planted and maintained will eventually provide shade, runoff collection, and heat reduction in the vicinity of paved areas.	Drought, Extreme Temps (Heat)	New Development, Entire Town	Cost is for legal review.	Planning Board budget
#73-2022	Prevent Invasive Species from Incurring in the Public Water Bodies to Increase Water Quality and Reduce the Risks of Public Health Issues	<u>Short Term 1-2 Years then Ongoing</u>	75	Water and Sewer Commission (for Loon Pond), with Health Officer help	\$0	Public education already being done for Franklin Pierce Lake through Franklin Pierce Lake Association. Extend to the other waterbodies in Town. Apply signage and send best practices to Loon Pond residents, Emerald Lake. Inform the residents of Loon Pond. Emerald Lake has a state boat ramp. Signage could be placed.	Public Health, Water Quality	Jackman Reservoir, Loon Pond, Emerald Lake Village District, Rivers, Lakes	Cost is for in-kind staff and volunteer time. Hard costs will be evaluated as needed.	N/A

Town of Hillsborough, NH Hazard Mitigation Plan Update 2022

8 MITIGATION ACTION PLAN

Action Number	Action	Action Timeframe	Ranking Score	Who is Responsible	Approx Cost to Town	Description and Evaluation of Action	Hazards Mitigated?	Affected Location in Town	What Cost Will Pay For	How Funded
#74-2022	Install a Public Potable Water Tap/Spigot at the Loon Pond Water Treatment Plant to Sell Water to Residents Whose Dug Wells Have Gone Dry to Reduce the Impacts of Drought	<u>Medium Term</u> <u>3-4 Years</u>	75	Water and Sewer Commission	\$10,000	Resident wells go dry outside of the municipal water district and as a temporary measure to assist them, the Town could request the W&S Comm to add a purified water spigot where residents can purchase water . The fee would go to the Water and Sewer Comm. Or, a water truck could be purchased and the resident charged by gallon if delivered.	Drought	Entire Town	Cost is for the purchase and installation of a potable water tap at Loon Pond, or to purchase a truck with a potable water barrels that could be delivered to residents.	Water and Sewer User Fees/Fund
	ADD NEW ACTION HERE									
	ADD NEW ACTION HERE									

Source: Hillsborough Hazard Mitigation Committee

Table 48
Education and Awareness Actions

Action Number	Action	Action Timeframe	Ranking Score	Who is Responsible	Approx Cost to Town	Description and Evaluation of Action	Hazards Mitigated?	Affected Location in Town	What Cost Will Pay For	How Funded
#20-2011	Conduct Public Organizing Outreach to Vulnerable Populations, Including Establishing and Promoting Accessible Heating or Cooling Centers to Reduce the Impacts of Extreme Temperatures	<u>Short Term</u> 1-2 Years then <u>Ongoing</u>	75	Emergency Management	\$200	Promotion could be door to door, through CodeRed, and or on the Town website. The temporary heating and cooling shelters in the community could be the Library or the High School Shelter. Ensure the vulnerable populations have emergency plans, where shelters are located in case emergencies impact their homes.	Extreme Temps (Heat-Cold)	Densely Populated Areas, Buildings and Complexes (See Appendix A table)	Cost is for printing and mailing costs.	Emergency Management Budget
#22-2011	Print and Distribute Disaster Informational Placards Addressing Natural Hazards to Reduce the Impacts of these Hazards on Townspeople	<u>Short Term</u> 1-2 Years then <u>Ongoing</u>	75	Emergency Management	\$300	Plastic emergency cards were printed and distributed in 2017 and need to be redone with current information and new hazards for 2025. May be able to obtain through State EOC.	Earthquake, Drought, Wind, Tropical, Lightning, Winter, Extreme Temps, Fire, Flood		Cost is for printing and mailing.	Emergency Management Budget
#23-2011	Conduct Fire Prevention Outreach Programs to Reduce the Risk of Fires and Wildfire	<u>Short Term</u> 1-2 Years then <u>Ongoing</u>	75	Fire Department	\$1,000	FD presents information at Elementary and Middle Schools about how to prevent wildfire and structural fires.	Wildfire, Lightning, Fire (Structural)	Entire Town	Cost is for photocopies, handouts for the public.	Fire Department Budget
#48-2016	Undertake Public Outreach for Proper Propane Tank Tie - Down to Reduce the Risk of Explosion During Flood Conditions	<u>Short Term</u> 1-2 Years then <u>Ongoing</u>	75	Building Department	\$0	Outreach opportunity used during inspections, permits. Provides flyers and verbal information.	Fire (Structural), Explosions, Flood	Waterfront Properties (Contoocook)	Cost is for in-kind staff and volunteer time.	N/A

Town of Hillsborough, NH Hazard Mitigation Plan Update 2022

8 MITIGATION ACTION PLAN

Action Number	Action	Action Timeframe	Ranking Score	Who is Responsible	Approx Cost to Town	Description and Evaluation of Action	Hazards Mitigated?	Affected Location in Town	What Cost Will Pay For	How Funded
#49-2016	Educate the Populations on Evacuation/Stay in Place Procedures in the Central Business District Area and Commercial Zone to Reduce the Risks of Dam Failure or River Flooding	<u>Short Term</u> <u>1-2 Years</u> <u>then</u> <u>Ongoing</u>	75	Emergency Management	\$0	In the floodplain, evacuation from any type of disaster, whether flooding or lightning strike or fire in the wildlands next to Downtown, will be extremely difficult and time consuming. There are 0' setbacks in the Central Business District for all sides. People should be prepared to understand what protective measures to take during these extreme events.	Flood, Lightning (Conflagration), Evacuate	Central Business District Area and Commercial Zone	Cost is for in-kind staff and volunteer time.	N/A
#50-2016	Encourage Residents Downstream of the Jackman Dam and throughout the Community to Sign Up for CodeRed to Reduce Potential Injury from Dam Breach Flood	<u>Short Term</u> <u>1-2 Years</u> <u>then</u> <u>Ongoing</u>	75	Police Department with Emergency Management help	\$200	EM is still using CodeRed (advertised on Town website, social media, Town Report). Advertise also on Town variable message board. If Jackman Dam fails (Franklin Pierce Lake), downstream could experience disastrous, catastrophic impacts. Dam Road, Sawmill Road, Keith Road, Municipal Drive, and the Main Street areas could be flooded. This densely populated area also contains many potential hazardous waste facilities.	Dam, Evacuation, Flood, River	Downstream of Jackman Dam: Downtown, Business District	Cost is for printing and mailing.	Emergency Management Budget
#75-2022	Develop an Education Program for Homeowners About the Importance of Installing Carbon Monoxide Monitors and Alarms to Reduce Risks of Injury or Death	<u>Short Term</u> <u>1-2 Years</u> <u>then</u> <u>Ongoing</u>	75	Emergency Management, with Fire Dept	\$0	Education for homeowners about the Importance of installing carbon monoxide monitors and alarms can be tied into the annual fire education. Also applicable to generators and cars with exhaust pipes in garages. These alarms are only required for new construction for CO.	Winter	New Development, Entire Town	Cost is for in-kind staff and volunteer time.	N/A

Town of Hillsborough, NH Hazard Mitigation Plan Update 2022

8 MITIGATION ACTION PLAN

Action Number	Action	Action Timeframe	Ranking Score	Who is Responsible	Approx Cost to Town	Description and Evaluation of Action	Hazards Mitigated?	Affected Location in Town	What Cost Will Pay For	How Funded
#76-2022	Engage in Public Education of Residents along US 202 Re: Evacuation or Shelter in Place During Haz Mat Incidents or Active Threat Incidents at Schools	<u>Short Term</u> <u>1-2 Years</u> <u>then</u> <u>Ongoing</u>	75	Emergency Management	\$0	All Schools are adjacent to US 9/202. An incident (active threat, haz mat, crash) at the Schools or on the highway could result in evacuation issues/shelter in place haz mat problems at the opposite site. For instance, US 9/202 could need to be shut down during active threat situation at the Schools, creating an additional need for detouring traffic. Or if a haz mat spilled occurred on US 9/202, the schools would need to be evacuated while traffic was detoured. A drill might be necessary. Another evacuation route possible to Transfer Station.	Haz Mat, Public Health, Fire/Explosion	US 202/NH 9, Schools	Cost is for in-kind cost and volunteers.	Fire Department Operating Budget Training Line Item
#77-2022	Conduct High Priority Public Education and Outreach at Higher Density Populations to Reduce the Risk of Public Health Emergencies	<u>Short Term</u> <u>1-2 Years</u> <u>then</u> <u>Ongoing</u>	75	Health Officer with Emergency Management help	\$0	Vulnerable populations are more susceptible to human hazards and public health issues. Higher density populations, living in close quarters, are more susceptible to public health issues, particularly infectious disease.	Public Health/Infectious	Densely Populated Areas, Buildings and Complexes (See Appendix A table)	Cost is for in-kind staff and volunteer time.	N/A
#78-2022	Engage in a Public Education Campaign to Ensure More Businesses and Residential Property Owners Tie Down Mobile and Stationary Propane	<u>Short Term</u> <u>1-2 Years</u> <u>then</u> <u>Ongoing</u>	75	Code Enforcement with Emergency Management	\$0	In Hillsborough, propane tanks of all sizes (grill and utility) are not anchored to the ground as they should be. During heavy wind, tropical and flooding events, they become floating bombs. There are free FEMA brochures available as handout to residents. Problems with flooding	Flood, Fire/Explosion, Haz Mat	Waterfront Properties (Contoocook)	Cost is to distribute free FEMA brochures on tank anchoring to various businesses in Town that fill/sell tanks to	N/A

Town of Hillsborough, NH Hazard Mitigation Plan Update 2022

8 MITIGATION ACTION PLAN

Action Number	Action	Action Timeframe	Ranking Score	Who is Responsible	Approx Cost to Town	Description and Evaluation of Action	Hazards Mitigated?	Affected Location in Town	What Cost Will Pay For	How Funded
	and Natural Gas Tanks					of propane facilities, where unanchored residential tanks do float away (Sam Pan Chinese Restaurant down the Contoocook River in 2005/2006).			make available to buyers.	
#79-2021	Engage in Public Education of the Regarding the Downtown Floodplain Evacuation Situation to Reduce the Risk of Injuries During a Flood or Dam Breach	<u>Short Term</u> 1-2 Years then <u>Ongoing</u>	75	Emergency Management	\$0	Evacuation of businesses in the Downtown area and along the floodplain such as Subway plaza, High Tide Restaurant, Rymes Gas Station would need to occur very quickly if there is Contoocook River flooding or breach of the Jackman Dam. Jackman Dam EAP has a map of the potential inundation area -EM to distribute the Jackman Dam Inundation Map to Town EM team.	Flood, River, Dam Failure	Smaller Subarea Downstream of Jackman Dam, Floodplains, Downtown Business District	Cost is for in-kind staff and volunteer time.	N/A
#80-2021	Provide Immediate Notification to Town Residents Related to E.coli, Cyanobacteria, and Other Water-Related Illnesses to When Local Beaches are Closed from Outbreak	<u>Short Term</u> 1-2 Years then <u>Ongoing</u>	71	Health Officer with Park and Recreation help	\$0	Growing potential for mosquito-borne illnesses on the waters and recreation areas in Town with higher temps. Advertise closings and notices immediately on social Media, postings at beaches, Town website.	Public Health/ Infectious, Extreme Temp (Heat)	Town & Private Beaches	Cost is for in-kind staff and volunteer time.	N/A
#81-2021	Develop a Public Health Advisory Webpage and a Public Health Information Webpage on the Town Website to Alert Residents to Beachfront Current Safety Issues	<u>Short Term</u> 1-2 Years then <u>Ongoing</u>	71	Health Officer	\$0	Advisories are issued from the State about not eating fish from Jackman Reservoir/ FP Lake more than twice per month per mercury content. Several topics are relevant to posting on the Town website both for current information/advisories as well as informational.	Public Health (Water Quality), Infectious	Entire Town	Cost is for in-kind staff and volunteer time.	N/A

Town of Hillsborough, NH Hazard Mitigation Plan Update 2022

8 MITIGATION ACTION PLAN

Action Number	Action	Action Timeframe	Ranking Score	Who is Responsible	Approx Cost to Town	Description and Evaluation of Action	Hazards Mitigated?	Affected Location in Town	What Cost Will Pay For	How Funded
#82-2022	Develop a Public Education Program Targeting Riverfront and Lakeside Homeowners to Avoid Over-Fertilization of Lawns which Causes Unsafe Beach Conditions	<u>Short Term</u> 1-2 Years then <u>Ongoing</u>	71	Health Officer	\$0	New cyanobacteria outbreaks at Manahan Beach seem to have been addressed by averting overfertilization by riverfront property owners. Talked to homeowners who considered the information, which has seemed to have been followed. This educational technique could also protect Jackman Reservoir. Best practices Information could be provided to homeowners. (Wetlands ordinance is 75' setback)	Public Health (Water Quality)	Emerald Lake, Jackman Reservoir (Manahan Beach)	Cost is for in-kind staff and volunteer time.	N/A
	ADD NEW ACTION HERE									
	ADD NEW ACTION HERE									

Source: Hillsborough Hazard Mitigation Committee

Great Projects... And the Realities of Project Implementation in New Hampshire

These important but costly and/or time-consuming mitigation projects identified in the **Mitigation Action Plan** represent the best case scenarios (or to some, “wish-list” items) for completion. There are many barriers to successful implementation of any project which is outside the typical duties of a Town staff member or volunteer. The annual struggle to obtain municipal funding at Town Meetings and the uncertainty of political & local support needed for hazard mitigation projects, the limited staff time available to administer and complete the projects and limited volunteer support to help locate grants and work on the Action Plan items all reduce the Town’s ability to complete successful hazard mitigation projects within the Plan’s 5-year lifespan. Town staff and volunteers are usually required to be reactive to their numerous daily duties or annual processes and have little availability to be proactive. This is especially true for the Central NH region’s smaller communities that rely on voter support for staff hiring and/or hazard mitigation project budget funding, which is 19 out of 20 municipalities (excludes the City of Concord).

Therefore, mitigation and other projects are generally completed on an “as-needed basis” or on an “as-available basis” despite the different ways of evaluation and prioritization shown within the **Hazard Mitigation Plan 2022**. Small New Hampshire communities do the best they can with the resources available to them to make ends meet, particularly in times of economic duress or hardship and our State’s aging population. Town Meeting voters decide whether to approve new zoning ordinances which can help mitigate hazards, vote to approve Department Budgets which usually are sustainable and do not allow enough flexibility to plan ahead, and vote to approve Warrant Articles for a hazard mitigation project. Town volunteers are relied upon to do much of the hazard mitigation work as Town staff are already engaged in real-time, constant public engagement issues and have little additional time available for planning. Few younger people are stepping up to the plate of community volunteering when our existing volunteers are retiring. Indeed, many staff or volunteers have dual or triple roles in the community to fill vacancies, such as a Town Administrator serving as Health Officer and Human Services Officer and a volunteer Fire Chief serving as volunteer Emergency Management Director. Town staff try to accomplish their priority hazard mitigation projects in between their normal duties, but the reactive nature of New Hampshire municipal operations does not provide the necessary support unless there is an urgent need.

Our State’s communities, including Hillsborough, are used to “toughing it out” and will try to accomplish all they can with the time, funding, and resources available to them. However, many of these 2022 Actions may end up **Deferred to 2027** simply because of the unique nature of our independent State and community cultures.

Action Evaluation and Prioritization Methods

A variety of methods were utilized to evaluate and prioritize the Actions. These methods include the enhanced STAPLEE (Social Technical Administrative Political Legal Environmental and Economics) criteria, designating the Action to be completed within a certain timeframe, and completing a basic **Cost to Benefits Analysis**, a later section. These prioritization methods are meant to enable the community to better identify which Actions are more important and are more feasible than others.

ENHANCED STAPLEE METHOD

An enhanced provided a better methodology for prioritization the Actions against one another. The Hazard Mitigation Committee ranked each of the mitigation Actions derived from the evaluation process. The total **Ranking Score** serves as a guide to the relative ease of Action completion by scoring numerous **societal and ethical impact questions** and does not represent the Town's Action *importance* priority. Instead, the STAPLEE process evaluates each Action and attempts to identify some potential barriers to its success. As revised in **2022**, a score of **75** would indicate that the mitigation strategy, or Action, would be relatively among the easiest Actions to achieve from a social and ethical standpoint.

The previous Plans including the **2017 Plan** had answered the same questions, except the three new questions regarding funding, staffing, and historic preservation, on a scale of **1-3**, with **"1"** indicating a **NO** response, **"2"** indicating a **MAYBE** response, and **"3"** indicating a **YES** response, for a possible highest ranking total score of **36**.

There is more latitude in the **2022 Plan's** enhanced STAPLEE scores to more easily identify the relatively easiest Action projects for completion. All enhanced STAPLEE answers are subjective and depend on the opinions of the Committee members discussing them. The Committee answered these **15** questions with a numeric score of **"1"** indicating a **NO** response, **"2"** indicating an **UNCERTAIN** response, **"3"** indicating a **MAYBE** response, **"4"** indicating a **LIKELY** response or **"5"** indicating a **YES** response, about whether the Action can fulfill the criteria:

- Does the action reduce damage and human losses?
- 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?

Action Completion	
RANKING	SCORE
Excellent	75 - 60
Good	45 - 59
Fair	44 - 30
Poor	29 - 15

- Does the action offer reasonable benefits compared to its cost in implementing?
- Is the action legal?
- Is the action support or protect the environment?
- Does the action have the funding necessary for completion?
- Does the action have the necessary staff or volunteers to undertake?
- Does the action support historic preservation?

The enhanced STAPLEE scores can range from a low of **15** to a high **75**, the highest possible ranking. Hillsborough's **Mitigation Action Plan** STAPLEE rating is shown in **Figure 28** and includes a basic benefit-cost ranking as shown in yellow.

Figure 28
Enhanced STAPLEE Ranking of Mitigation Actions

Action Number	Does the Action..... or Is the Action.....	Reduce Damage? (or Injury?)	Contribute to Town Objectives? (Supported by Master Plan or current thinking?)	Meet Regulations? (If there are any)	Protect Sensitive Structures? (Buildings, roads, culverts, human-made things?)	Implement Quickly? (See also Action Plan for Timeframe)	Socially Acceptable? (People like project?)	Politically Acceptable? (Public Officials like project?)	Administratively Feasible? (Have admin skills or time for paperwork?)	Technically Feasible? (Have tech skills or special equipment?)	Have a Reasonable Cost to Benefits Gained? (Will project save \$5 in long term?)	Legal? (Or will be legal upon completion?)	Support or Protect the Environment? (Natural resources?)	Have the Funding? (Can funding be obtained?)	Have Necessary Staff or Volunteers?	Support Historic Preservation? (Sites, neighborhoods, culture?)	Ranking Score 15-75
#33- 2011	Conduct Floodplain Assessment to Evaluate Structures along the Contooscook River to Reduce the Impacts of Flood	4	4	4	4	4	4	4	4	4	4	5	4	4	4	3	60
#34- 2011	Update and Enforce the Floodplain Ordinance to Comply with Federal NFIP Requirements to Reduce the Impacts of Flood	4	5	5	3	5	3	4	5	5	5	5	4	5	5	3	66
#43- 2016	Revise the Subdivision and Site Plan Review Regulations to Require Road Elevation and/or More than 1 Egress for New Developments to Reduce Safety Risks from Wildfire, Winter, and Severe Wind Events	3	4	5	3	4	3	4	5	3	2	5	2	5	5	1	54
#44- 2016	Develop an Infrastructure Plan for Extension of Sewer and/or Water Services to Maintain Capacity and Reduce the Risk of Public Health Issues	3	5	5	1	1	4	4	4	4	4	5	4	3	3	1	51
#51- 2022	Monitor Changes to Manufactured Home Real Estate Market Trends to Trigger Life Safety and Code Inspections to Reduce the Risk Conflagration, Severe Wind	4	4	4	4	4	4	4	4	4	4	5	4	4	4	4	61
#52- 2022	Develop Map Layers of Aboveground and Underground Tanks and a Layer of Private Solar Arrays to Add to the AxisGIS Property Maps to Reduce the Risk of Fire and Injury	5	5	3	5	3	5	5	5	5	5	5	5	5	5	5	71
#53- 2022	Complete an Inventory and Map of All Historic and Cultural Sites and Cemeteries in Floodplain Area to Reduce the Impact of Flood	1	5	5	4	3	5	5	5	5	3	5	4	3	3	5	61
#54- 2022	Post Permanent Metal Signage with Rules and Regulations at All Town and Private Beaches to Reduce Risks to Public Health and Safety	4	5	5	3	5	5	5	5	5	5	5	5	5	5	5	72
#55- 2022	Develop a Comprehensive Phasing Plan in Zoning Ordinance to Stipulate Phasing of Large Developments over Several Years to Reduce the Impact to Town Infrastructure and Services	5	5	5	5	5	4	5	5	5	5	5	3	5	5	1	68
#56- 2022	Develop a Town Public Health Emergency Plan to Reduce the Impact of Infectious Diseases	5	5	5	1	5	3	4	5	5	5	5	1	5	5	1	60
#57- 2022	Develop a Study to Review the Need for a Wetlands Ordinance to Address Drainage and Site Development for Floodprone Areas to Reduce the Impacts of Flood	5	5	5	5	4	4	5	5	5	4	5	5	4	4	1	66
#58- 2022	Respond to the Results of the Study for a Wetlands Ordinance or Zoning Ordinance Revisions to Protect Sensitive Species and Reduce the Impacts of Flood	5	5	5	5	4	4	5	5	5	4	5	5	4	4	1	66
#59- 2022	Revise the Subdivision Regulations or Site Plan to Require Underground Utilities for New Major Developments to Reduce the Risks of Severe Wind Events	5	3	5	5	3	5	5	5	5	5	5	5	5	5	4	70
#03- 2011	Upgrade Culverts and Drainage Systems in Town on an Annual Basis to Reduce the Impacts of Flood and Erosion	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	75
#04- 2011	Upgrade Culverts on Stowe Mt Road with Larger Culverts for Better Stormwater Drainage to Reduce the Impacts of Flood and Erosion	5	5	5	5	5	5	5	5	5	5	5	5	5	5	4	74
#07- 2011	Upgrade Culverts on County Road with Larger Culverts for Better Stormwater Drainage to Reduce the Impacts of Flood and Erosion	5	5	5	5	5	5	5	5	5	5	5	5	5	5	4	74

Town of Hillsborough, NH Hazard Mitigation Plan Update 2022

8 MITIGATION ACTION PLAN

Action Number	Does the Action..... or is the Action.....	Reduce Damage? (or injury?)	Contribute to Town Objectives? (Supported by Master Plan or current thinking?)	Meet Regulations? (If there are any)	Protect Sensitive Structures? (Buildings, roads, culverts, human-made things?)	Implement ed Quickly? (See also Action Plan for Timeframe)	Socially Acceptable? (People like project?)	Politically Acceptable? (Public Officials like project?)	Admini- stratively Realistic? (Have admin skills or time for paperwork?)	Technically Feasible? (Have tech skills or special equipment?)	Have a Reasonable Cost to Benefits Gained? (Will project save \$\$ in long term?)	Legal? (Or will be legal upon completion?)	Support or Protect the Environment? (Natural resources?)	Have the Funding? (Can funding be obtained?)	Have Necessary Staff or Volunteers?	Support Historic Preservation? (Sites, neighborhoods, culture?)	Ranking Score 15-75
#08- 2011	Rehabilitate or Reconstruct Roads in Town on an Annual Basis to Reduce the Impacts of Flood and Erosion	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	75
#60- 2022	Inspect and Enforce the New and Existing Septic System Failures and Enforce Compliance with Current Septic Rules at Local and State Levels to Reduce Risks to Public Health and Safety	5	5	5	5	4	4	5	5	5	3	5	5	5	5	3	69
#61- 2022	Purchase an Installed Generator for the Transfer Station and Replace the Old Police Department Generator to Reduce the Risk of Lost Emergency Communications and Services	5	5	5	5	3	5	5	5	5	4	5	2	4	4	2	64
#62- 2022	Install a Portable Generator at Bible Hill Telecomm Tower to Ensure the Emergency Antennas Remain Active During a Power Outage to Reduce the Risk of Lost Emergency Communications and Services	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	75
#63- 2022	Encourage the Upgrade of the Emerald Lake Village Water System to Maintain Clean and Adequate Water Supply to Residents to o Reduce Risks to Public Health	5	5	5	5	5	5	5	5	5	5	5	5	5	5	1	71
#64- 2022	Rehabilitate Contooscook Falls River Bridge to Reduce the Risk of Crash or Bridge Failure	5	5	5	5	3	5	5	5	5	2	5	3	3	5	1	62
#65- 2022	Rehabilitate the Carr Bridge at Jones Road Stone Arch Bridge to Increase Historic Preservation and to Reduce the Risk of Crash or Bridge Failure	5	5	5	5	3	4	5	5	5	4	5	5	3	5	5	69
#66- 2022	Evaluate the Need for Lightning Rods and/or Grounding Systems in Town Facilities to Reduce the Impact of Lightning Strikes	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	75
#67- 2022	Upgrade Beard Road and Drainage Culverts to Reduce the Impacts of Flood and Erosion	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	75
#68- 2022	Upgrade Stowe Mountain Road and County Road Culvert to Reduce the Impacts of Flood and Erosion	5	5	5	5	5	5	5	5	5	5	5	5	5	5	4	74
#01- 2011	Remove Hazardous Trees or Limbs Along Town Roadways to Reduce the Impact of Winter Weather and Severe Wind Events	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	75
#46- 2016	Purchase or Obtain Key Conservation Lands for Permanent Preservation in the Floodplain to Improve Flood Capacity	5	5	5	5	3	4	4	5	5	4	5	5	3	5	5	68
#47- 2016	Complete Brownfields Project at Woods Woolen Mill in the Contooscook River Floodplain to Reduce the Risk of Hazardous Materials in the Floodplain	5	5	5	5	3	5	5	5	5	5	5	5	3	5	5	71
#69- 2022	Develop a Potential Brownfields Assessment on the Vacant Dry Cleaning Facility Parcel to Reduce the Risk of Hazardous Materials in the Floodplain	5	5	5	5	4	5	5	5	5	5	5	5	5	5	5	74
#70- 2022	Consider Municipal Water System Restrictions to Try to Reduce the Impacts of Drought	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	75
#71- 2022	Encourage the Use of Permeable Driveways and Provide Public Education about their Use and Maintenance to Reduce the Impacts of Drought	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	75
#72- 2022	Encourage Tree Plantings Around Buildings to Shade Parking Lots and Along Public Rights-of-Way to Reduce the Effects of Drought	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	75
#73- 2022	Prevent Invasive Species from Incurring in the Public Water Bodies to Increase Water Quality and Reduce the Risks of Public Health Issues	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	75
#74- 2022	Install a Public Potable Water Tap/Spigot at the Loon Pond Water Treatment Plant to Sell Water to Residents Whose Dug Wells Have Gone Dry to Reduce the Impacts of Drought	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	75
#20- 2011	Conduct Public Organizing Outreach to Vulnerable Populations, Including Establishing and Promoting Accessible Heating or Cooling Centers to Reduce the Impacts of Extreme Temperatures	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	75
#22- 2011	Print and Distribute Disaster Informational Placards Addressing Natural Hazards to Reduce the Impacts of these Hazards on Townspeople	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	75
#23- 2011	Conduct Fire Prevention Outreach Programs to Reduce the Risk of Fires and Wildfire	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	75
#48- 2016	Undertake Public Outreach for Proper Propane Tank Tie-Down to Reduce the Risk of Explosion During Flood Conditions	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	75
#49- 2016	Educate the Populations on Evacuation/Stay in Place Procedures in the Central Business District Area and Commercial Zone to Reduce the Risks of Dam Failure or River Flooding	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	75
#50- 2016	Encourage Residents Downstream of the Jackman Dam and throughout the Community to Sign Up for CodeRed to Reduce Potential Injury from Dam Breach Flood	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	75
#75- 2022	Develop an Education Program for Homeowners About the Importance of Installing Carbon Monoxide Monitors and Alarms to Reduce Risks of Injury or Death	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	75
#76- 2022	Engage in Public Education of Residents along US 202 Re: Evacuation or Shelter in Place During Haz Mat Incidents or Active Threat Incidents at Schools	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	75
#77- 2022	Conduct High Priority Public Education and Outreach at Higher Density Populations to Reduce the Risk of Public Health Emergencies	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	75
#78- 2022	Engage in a Public Education Campaign to Ensure More Businesses and Residential Property Owners Tie Down Mobile and Stationary Propane and Natural Gas Tanks	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	75
#79- 2022	Engage in Public Education of the Regarding the Downtown Floodplain Evacuation Situation to Reduce the Risk of Injuries During a Flood or Dam Breach	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	75
#80- 2022	Provide Immediate Notification to Town Residents Related to E. coli, Cyanobacteria, and Other Water-Related Illnesses to When Local Beaches are Closed from Outbreak	5	5	5	5	5	5	5	5	5	5	5	5	5	5	1	71
#81- 2022	Develop a Public Health Advisory Webpage and a Public Health Information Webpage on the Town Website to Alert Residents to Beachfront Current Safety Issues	5	5	5	5	5	5	5	5	5	5	5	5	5	5	1	71
#82- 2022	Develop a Public Education Program Targeting Riverfront and Lakeside Homeowners to Avoid Over-Fertilization of Lawns which Causes Unsafe Beach Conditions	5	5	5	5	5	5	5	5	5	5	5	5	5	5	1	71

Source: Hillsborough Hazard Mitigation Committee

ACTION TIMEFRAMES

The Actions are also prioritized by an estimated **Action Timeframe** for completion based upon the other Town activities (hazard mitigation-related or not), funding potential for the Action, the need for the Action project, and possible staff time and volunteers available to complete the Action. This relative Action importance priority is measured by the **time indicated for project completion**. All Action projects within the **Mitigation Action Plan** have been assigned an **Action Timeframe**.

Those projects which are designated as **Ongoing** mean the Action should be undertaken on a regular basis throughout the five-year lifespan of the Plan. Actions that could qualify as **Ongoing** include public education, zoning ordinance or regulation revisions, essential mitigation maintenance and more. However, even **Ongoing** Actions are completed once before repetition. As a result, those Actions with an **Ongoing Action Timeframe** also include a duration (**Short**, **Medium** or **Long Term**) included.

Action Timeframe	Description of Timeframe
Ongoing	Action undertaken throughout the life of the 5-year Plan
Short Term	Action should be undertaken during Years 1-2 of the Plan
Medium Term	Action should be undertaken during Years 3-4 of the Plan
Long Term	Action should be undertaken during Years 4-5 of the Plan

Short Term projects are those which are the more important Actions and should be undertaken during **Years 1-2** of the Plan's lifespan if possible. **Medium Term** Actions are recommended by the Hazard Mitigation Committee to be undertaken during **Years 3-4** of the Plan's lifespan, while **Long Term** Actions are those which should wait until last, with suggested implementation undertaken during Plan **Years 4-5**. It is important to remember the **Action Timeframes** are relative to each other and are another indication of Action importance. If an Action cannot be completed within the **Action Timeframe**, it may still be a higher priority than other Actions but was unable to be implemented for some reason.

Both the **Action Timeframe** and the **Ranking Score** are incorporated into the **Mitigation Action Plan** to assist the Town with implementing the hazard mitigation Actions. The Actions can be sorted within their Action Category by either priority for easy display of the desired characteristic; Actions can also be sorted by **Responsible Department** to keep them all together for ease of completion.

COST TO BENEFIT ANALYSIS

A simple **Cost to Benefit Analysis** ranking is contained within the enhanced STAPLEE criteria as displayed in the previous **Figure**.

Natural Hazards Evaluated for Which Specific Actions Were Not Identified

The Hazard Mitigation Committee assessed each of hazards and made determinations whether to specifically develop mitigation Actions for all natural hazards. Nearly all the potential Actions can be applied to multiple natural or other hazards based upon the generality of the Action's effect. Still, there could be no solutions or mitigation Actions developed for some of the more difficult to mitigate natural hazards. Many possible reasons are considered such as feasibility, prohibitive cost, jurisdiction, staff availability to develop and administer the project, lack of local support, unrealistic favorable outcome for the effort and more, all resulting in the point that for some natural hazards, potential Actions would not have worked for the Town.

Many Actions are general in nature and have the capacity to mitigate multiple types of natural hazards. From **4 HAZARD RISK ASSESSMENT**, those natural hazards rated a **LOW Concern** may not have been considered for an Action because their priority was not as important as other hazards. The **MEDIUM** and **HIGH Concern** hazards either have generalized or targeted Actions associated with them in the **Mitigation Action Plan** or the reason why no specific or feasible Action was developed for the highest **Concerns** is described in **Table 49**.

Table 49

Committee Assessment of MEDIUM & HIGH Natural Hazards with Mitigation Actions

Mitigation Actions Developed For MEDIUM & HIGH Hazards?	CONCERN	Natural Hazard	Committee Assessment of Actions
Yes	HIGH	Public Health	See Actions related to Public Health, Health (Water Quality), Infectious, Life & Safety and general natural disaster.
Yes	HIGH	Extreme Temperatures (Heat-Cold)	See Actions related to Public Health, Winter, Drought, Extreme Temps.
Yes	HIGH	Tropical and Post-Tropical Cyclones	See Actions related to Wind, Tropical, Tree Debris, overall Severe Weather Storms.
Yes	HIGH	High Wind Events	See Actions related to Wind, Tropical, Tree Debris, overall Severe Weather Storms.
Yes	HIGH	Inland Flooding	See Actions related to Flood, Dam, Erosion, River, and Aging Infrastructure.
Yes	HIGH	Severe Winter Weather	See Actions related to Winter, overall Severe Weather Storms, Ice, Tree Debris.
Yes	HIGH	Wildfire Events	See Actions for Wildfire, Tree Debris, Lightning.
Yes	MEDIUM	Drought	See Actions related to Drought, Lightning, Extreme Temperatures, and Fire.
Yes	MEDIUM	Lightning	See Actions for Wildfire, Tree Debris, Lightning.

Source: Hillsborough Hazard Mitigation Committee; See **Table 9**

9 ANNUAL IMPLEMENTATION AND EVALUATION

The Town received FEMA approval for the prior **Hazard Mitigation Plan** in **January 2017**. The completion of a planning document is merely the first step in its life as an evolving tool. The **Hazard Mitigation Plan Update** is a dynamic document that should be considered by all Town Departments, Boards, and Committees within their normal working environments. While evaluating the effectiveness of Actions in its everyday implementation, everyone should be able to contribute to the relevancy and usefulness of the Plan and to communicate with the Hazard Mitigation Committee where changes should be made. An annual effort will be undertaken to complete Actions and add new Actions as old tasks are completed and new situations arise. This Chapter will discuss the methods by which the Town of Hillsborough will review, monitor, and update its new **Hillsborough Hazard Mitigation Plan Update 2022**.

Annual Monitoring and Update of the Mitigation Action Plan

The Board of Selectmen should vote to establish a permanent Hazard Mitigation Committee within **3 months** of receiving the FEMA **Letter of Formal Approval** as indicated in **1 PLANNING PROCESS**. The purpose is to meet on a regular basis to ensure the **Hazard Mitigation Plan's** Actions are being actively worked on and the Plan is evaluated and revised to fit the changing priorities of the Town.

The Emergency Management Director or Board of Selectmen designee should continue to serve as Chair of the Committee for Hazard Mitigation meetings and should be officially appointed to such a capacity by the Board. Current Hazard Mitigation Committee members can be appointed to continue to participate as members of the permanent Committee. More information is provided in **APPENDIX B**.

Committee membership should include:

- | | |
|--|---|
| ✓ Emergency Management Director | ✓ 1 Planning Board member |
| ✓ Deputy Emergency Management Director | ✓ 1 Budget Advisory Committee member |
| ✓ Town Administration | ✓ 1 Hillsborough School District Representative |
| ✓ Fire Chief or designee | ✓ 1 Library Representative |
| ✓ Police Chief or designee | ✓ 1 Historical Society member |
| ✓ Public Works Director or designee | ✓ 1 Conservation Comm. Representative |
| ✓ Building Inspector/ Zoning Compl. Off. | ✓ 1 Parks and Recreation Comm. Representative |
| ✓ Welfare Officer/Health Officer | ✓ Community (Stakeholders) at Large |
| ✓ Transfer Station Supervisor | |
| ✓ Town Planner | |
| ✓ 1 Board of Selectmen member | |

Stakeholders who should be solicited to attend meetings and to participate equitably in the Plan development process include representatives from Emerald Lake Village District, Hillsborough School District, Library, Historical Society, NH Army National Guard, neighborhoods, Chamber of Commerce, local State Representatives, agricultural/farming operations, trails groups, local non-profits including the Capital Area Public Health Network, area emergency management directors, local, State or Federal agency representatives (such as NH HSEM), Fox State Forest representative, utility representatives, and other members of the public. This composition is an example but provides a wide spectrum of potential interests and opportunities for partnership to develop and accomplish Actions.

HMC INTERIM MEETINGS AND ACTIVITIES

This Committee will **aim to meet up to 4 times per year** to follow these potential future meeting activities to update the **Mitigation Action Plan** and complete the Plan's annual evaluation as displayed in **Table 50**.

Table 50

Hazard Mitigation Committee Preliminary Annual Future Meetings and Activities

Meeting or Activity Month	ANNUAL Preliminary HMC Interim Meeting Agenda Items and Activities
JANUARY HMC Meeting <i>Budgets Determined</i>	Town operating budgets are determined for the next year. HMC assists Board of Selectmen and Budget Comm with getting their mitigation projects funded by Warrant Articles and written into Dept/Bd Operation budgets. Action implementation continues. HMC requests a Progress Report #2 for This Year's & Next Year's Actions from responsible Depts/Bds by beginning of February. HMC continues update to the Action Status File using the Department Mitigation Action Progress Reports .
February-March	HMC staff updates CHAPTER 8 Mitigation Action Plan Tables using the revised Action Status File from the Department Mitigation Action Progress Reports . HMC staff provides revised CHAPTER 8 Mitigation Action Plan Tables to Department Heads/Board Chairs, keeps original Word and Excel files accessible on Town computer system and backed up to cloud.
APRIL HMC Meeting <i>\$ Available</i>	Annual funding is received from March Town Meeting. HMC completes annual update of the CHAPTER 8 Mitigation Action Plan Tables , polls Depts/Bds for new Hazard Events descriptions/impacts/locations/date to add to CHAPTER 4 Local Hazard Event History Table , requests photos of Hazard Events and updates APPENDIX Photographic History . HMC reviews and revises CHAPTER 4 HIRA Table . HMC determines Action Plan items to pursue for Year, including \$0 cost items.
May	HMC members ensure Depts/Bds are provided with information to work on their Actions for the Year. HMC members meet with Depts/Bds to discuss Action priorities and requests completion of This Year & Next Year Actions. Depts/Bds begin working on Actions. HMC posts a Haz Mit/Severe Weather Survey online for widespread public input. HMC helps Depts/Bds with grants for Actions.

Meeting or Activity Month	ANNUAL Preliminary HMC Interim Meeting Agenda Items and Activities
JUNE HMC Meeting <i>Infrastructure Projects Underway</i>	Infrastructure projects will be underway. HMC requests a Progress Report #1 for This Year's & Next Year's Actions from responsible Depts/Bds by beginning of July. HMC completes Annual Evaluation of the Plan File . HMC works with the CIP Committee to get certain projects placed into the CIP. Depts/Bds to begin placement of Next Year's high-cost Action Plan items into the CIP.
July- August	HMC assists Depts/Bds with their Operating Budget requests to include Next Year's Actions, and to determine which Actions should have Warrant Articles. HMC staff continues assistance to Depts/Bds for Action Plan items. HMC continues update to the Action Status File using the Department Mitigation Action Progress Reports . HMC staff & members ensure Haz Mit Actions are added into the CIP.
SEPTEMBER HMC Meeting <i>CIP updated, Budgets drafted</i>	HMC to review Action Status File and identify Next Year's Actions to accomplish (including \$0). HMC to review Haz Mit/Severe Weather Survey results to help guide Action priorities. HMC polls Depts/Bds for new Hazard Events descriptions/impacts/locations/date to add to CHAPTER 4 Local Hazard Event History Table , requests photos of Hazard Events and updates APPENDIX Photographic History . HMC reviews and revises CHAPTER 4 HIRA Table if needed.
October- December	HMC attends Board of Selectmen Dept/Bd Operation Budget meetings and suggests Warrant Articles for Action Plan items. HMC attends Budget Committee meetings scheduled through January to champion Action item funding.

Sources: Hillsborough Hazard Mitigation Committee

For each of the Hazard Mitigation Committee implementation meetings, the Emergency Management Director (or Staff Coordinator) will invite other Department members, Board and Committee members, Town Staff, the representatives and Stakeholders noted above, and other participants of the **2022 Plan** Committee meetings. Identified and general members of the public will also be invited as indicated previously. Their purpose is to attend and participate in the meetings as full participants, providing input and assisting with decision making. 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 at <https://www.town.hillsborough.nh.us/>.

The **Hazard Mitigation Plan's Mitigation Action Plan** will be updated and evaluated annually generally following the suggestions outlined within the Chapter. All publicity information, Agendas, and Attendance Sheets, should be retained and compiled for inclusion into **APPENDIX C**.

The Emergency Management Director and Department heads will work with the Board of Selectmen to discuss the funding of Action projects as part of the budget process cycle in the fall of each year. The projects identified will be placed into the following fiscal year's budget request if needed, including the Capital Improvements Program (CIP), Town Operating Budgets, and other funding methods.

Implementing 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 **Hillsborough Hazard Mitigation Plan Update 2022** receives the attention it requires for optimum benefit. Incorporating Actions from the Plan is often the most common way the Hazard Mitigation Plan can be integrated into other existing municipal programs, as described below.

OVERALL IMPLEMENTATION PROGRESS THROUGH LOCAL PLANNING MECHANISMS SINCE THE 2017 PLAN

As a successful, growing community, the Town of Hillsborough has a comprehensive network of plans, processes, champions, regulations, and budgets to ensure its local objectives, projects and budgets are fulfilled. The **Hillsborough Hazard Mitigation Plan 2022** is a tool for community betterment which works most effectively when partnering with existing planning mechanisms. Since the original **2004 Plan**, the overall integration and importance of the **Hillsborough Hazard Mitigation Plan** into existing Town planning mechanisms continues to grow.

Although the **2017 Plan** was not adopted into Planning Board's latest **Master Plan 2018** the opportunity exists now for incorporation of the **2022 Plan**. The **Capital Improvements Program 2020-2026** has been recently updated and its projects influence new funding for Departments, including the Highway Department funding that previously upgraded culverts in the **Mitigation Action Plan**. The **Zoning Ordinance** was revised annually since **2017** and continues to encourage natural systems protection (see **6 CAPABILITY ASSESSMENT**). The **Subdivision and Site Plan Review Regulations** are in need of review and update between **2022-2027**. These regulations indirectly support hazard mitigation planning principles (such as excavation regulations, fire and emergency access, driveway standards, drainage, landscaping, erosion, etc.) that support all versions of the **Plan**. Annual budgets for Emergency Management have been very small but may be able to increase to consider the **Hazard Mitigation Plan** findings. By necessity of the overall tax dollars available as determined by voters, the Town budget limits funding for larger hazard mitigation projects such as box culvert upgrades or infrastructure inventories. The individual Town departmental budgets supported hazard mitigation planning where feasible or supported by voters, such as Capital Reserve Funds for Bridge Repair, Highway, Infrastructure improvements, Town Building Upgrades, Dry Hydrant, etc. Drainage upgrades, culvert upgrades, and asset inventory and management are priorities of the Public Works Department and are important mitigation projects in Hillsborough.

Moving forward, Town Boards and Departments have room for further improvement of the **Hazard Mitigation Plan's** incorporation into existing planning mechanisms. For several of these planning

programs, a summary of the **Process to Incorporate Actions** as noted below offers ways for the **2022 Plan** to be utilized.

MASTER PLAN

The **Hillsborough Master Plan 2018** was adopted by the Planning Board in **October 2018**. The goal for future updates is annual review and revision of one or two Chapters. Chapters from the **2018 Master Plan** to update include Hillsborough Today, Hillsborough Tomorrow, Implementation, Economic Base, Housing, Community and Recreational Facilities with Utilities, Transportation, Natural Resources, Existing and Future Land Use. New future chapters to consider could include Energy and Historic and Cultural Resources. The **Hazard Mitigation Plan 2022** could be adopted as an Appendix or a Chapter to the **Master Plan 2018** by the vote of the Planning Board. The Master Plan influences the Zoning Ordinance and the Subdivision and Site Plan Review Regulations along with the Capital Improvements Program. These documents are used by local land use boards and staff to guide growth and development of Hillsborough.

*To support mitigation efforts, the Planning Board should consider adopting the **Hazard Mitigation Plan 2022** as a separate Chapter or Appendix to its Master Plan in accordance with **RSA 674:2.II(e)**.*

The **Hazard Mitigation Plan** should be presented to the Planning Board by the Town Planner and Emergency Management Director after FEMA's **Formal Approval**. The Plan can be considered for adoption after a duly noticed public hearing, just as any typical Chapter of a Master Plan. In addition, Actions and concerns from the Plan can be integrated into the Master Plan.

Process to Incorporate Actions

The Hazard Mitigation Committee will present the approved **Hazard Mitigation Plan** to the Planning Board within **6** months after FEMA's **Letter of Formal Approval** is received for the Board's consideration and adoption into the Master Plan after a duly noticed public hearing. This is the same process used to adopt other components of the Master Plan. The NH State law supporting the development of a natural hazard mitigation plan as a component of a community Master Plan is **RSA 674:2-III(e)**. The Hazard Mitigation Committee will oversee the process to begin working with the Planning Board to ensure that the relevant **Hazard Mitigation Plan** Actions are incorporated into the Master Plan.

CAPITAL IMPROVEMENTS PROGRAM

Hillsborough's last adopted **Capital Improvements Program (CIP)** is **2018-2023** as adopted in **2019**. The goal is to ensure the CIP is reviewed and updated each year by the CIP Committee. The HMC would like

to ensure Actions requiring capital improvements funding from the **Hazard Mitigation Plan Update** will be inserted into the Capital Improvements Program for funding during the CIP's next update with specific projects and equipment replacement identified as addressing needs cited in the Update. Depending on the Town's funding needs, Capital Reserve Funds for such items as road & bridge improvements should be identified where appropriate as addressing projects in the **Hazard Mitigation Plan Update**.

Process to Incorporate Actions

The Hazard Mitigation Committee (HMC)'s representative to the Planning Board will oversee the process to begin working with the Planning Board's CIP Committee to incorporate the various Hazard Mitigation Plan projects into the updated CIP. As the CIP is amended, the representative from the Hazard Mitigation Committee should be appointed to sit on the CIP Committee or the HMC should submit a CIP Project Application to ensure the mitigation projects are addressed as part of the CIP update process. A new Capital Reserve Fund for Hazard Mitigation Projects could be considered.

TOWN MEETING

In Hillsborough, the annual Town Meeting is held in March where the voters of the Town vote to raise money for capital projects and approve the annual operating budget of the Town. This is a good, revolving opportunity to explain the importance of the mitigation actions of the **2022 Plan Update** and **how the funding of specific capital projects simultaneously responds to these mitigation projects**.

Process to Incorporate Actions

The Hazard Mitigation Committee (HMC)'s Town Department members will work with the Town Administrator, Budget Advisory Committee and Board of Selectmen to develop a capital budget and warrant article language for appropriate Actions for **Town Meeting vote**. The HMC members may also request deposits to appropriate Capital Reserve Funds for some of the larger projects. A representative from the Hazard Mitigation Committee will provide a copy of the current **Mitigation Action Plan** to both the Budget Advisory Committee and Board of Selectmen annually and validate the need for funding at the annual Town Meeting to accomplish the projects. The representative will work with Town Administration to write warrant article language for approval Action items if needed or to get the items placed into Department Operating Budgets.

OPERATING AND CAPITAL BUDGETS

Many of the Actions will not require specific funding but are identified as requiring in-kind Staff labor to perform the work required to undertake the Actions. Town Departments and Staff have rigorous job functions that demand their undivided attention to the tasks required to run their respective Departments. Additions to the workload to accommodate the Actions can put a strain on their ability to serve the public during performance of their normal job duties. When possible, Hillsborough Departments and staff will be able to prioritize their tasks to work on **Hazard Mitigation Plan Update 2022** Actions. The in-kind staff work performed is assumed under the Operating Budget for that

particular Department. The Emergency Management Department could benefit from a higher annual budget.

Process to Incorporate Actions

With obtaining assistance from the HMC, the Department or Board is given the responsibility to ensure their Actions are completed, either by working on the Actions allocated to him/her when their normal job duties permit or by delegating the Action to another person. The funding for the Actions comes out of the Department's operating budget as work is undertaken by the Staff person on an as-time-permits basis unless the Action is a component of the Town staff members' normal work duties. Staff or volunteers will attempt to follow the **Action Time frame** as a guideline for completion. A yearly review of the **Mitigation Action Plan** by the Hazard Mitigation Committee will re-prioritize the Actions, and the members can report on their progress, asking for assistance or more time as needed. **By connecting planned Town of Hillsborough improvement projects to specific projects and objectives of the Hazard Mitigation Plan Update 2022, the Departments can utilize their resources more effectively.**

Continued Public Involvement

On behalf of the Hazard Mitigation Committee, the Emergency Management Director and the Staff Coordinator, under direction of the Town Administration, will be responsible for ensuring that Town Departments and the public have adequate opportunity to participate in the planning process. Administrative staff should again be utilized to assist with the public involvement process.

For each interim meeting in the annual update process, and for the **5-year** update process procedures that will be utilized for public involvement include:

- Provide personal invitations to Town volunteer Board and Committee Chairs, Budget Advisory Committee members, and Town Department heads;
- Provide personal invitations to abutting community emergency management directors of neighboring Towns;
- Provide personal invitations to the major businesses, agencies, neighborhoods, non-profits, and other entities listed previously in **9 ANNUAL IMPLEMENTATION AND EVALUATION**;
- Post public meeting notice flyers and press releases on the Town's website at <https://www.town.hillsborough.nh.us/> on the Town's online calendar on the same site, and place agendas and meeting materials on a Hazard Mitigation Committee webpage (off the Emergency Management section).
- Post meeting notices in the Hillsborough Town Office, outside on the Town Bulletin Board, at the Library, at the local schools, and at local business(es);

- Submit media releases to the Concord Monitor (a paid, regional daily newspaper serving over **40** communities around the Concord area) and other free, regional weekly newspapers serving Central region NH communities (online newspapers and newsletters have unpredictable longevity).

In addition to previous suggestions for invitations to Hazard Mitigation Committee update meetings, review **APPENDIX A Critical and Community Facilities Vulnerability Assessment** Tables: Vulnerable Populations, Economic Assets and Recreational and Gathering Sites for further stakeholder opportunities. The NH Homeland Security and Emergency Management Field Representative for Hillsborough will be invited. The Town will provide the Central NH Regional Planning Commission with Agendas, minutes and other materials for archiving, to be used when the **5-year** update again becomes necessary (email to salexander@cnhrpc.org). Any State, regional or federal interest in Hillsborough should be considered for direct invitation for MITIGATION, which is a transparent process. EMERGENCY OPERATIONS planning should have a more selective working group.

A new section of the Town website dedicated to Hazard Mitigation Committee activities and the **2022 Plan** should be kept updated with meeting notices and materials used by the Hazard Mitigation Committee. This online location would be an optimal place to post the final **2022 Plan** and its **Maps** and **Appendices** and to continue adding materials for annual Plan updates. Additional pages should be added for resources, information, and links to other websites for the public. Several Action Plan items which will be undertaken relate to public education and involvement and the Town website would be an exemplary method of getting the word out.

Implementation and Evaluation of the Plan

During the Committee’s annual review of the **Mitigation Action Plan**, the Actions are evaluated as to whether they have been **Completed**, **Deleted**, or **Deferred**. Those Action types are placed into their respective Tables. Any **New** Actions will be added as necessary. Each of the Actions within the updated **Mitigation Action Plan** will undergo the enhanced STAPLEE ranking as discussed in **8 MITIGATION ACTION PLAN**.

A set of **Annual Interim Plan Evaluation and Implementation Worksheets** is available to assist the community with Plan implementation in **APPENDIX B**. These worksheets are to be used during the Hazard Mitigation Committee basic meeting schedule outlined previously in **Table 50**. The primary implementation tasks are to be completed depending on when the Town prepares and receives its yearly operating budgets and warrant articles.

MAIN ANNUAL HMC IMPLEMENTATION TASKS

The rolling list of the Hazard Mitigation Committee’s annual main tasks to update and implement the Plan sections should include:

1. Document New Hazard Events that Occurred in Town.

- ➔ Redo Hazard Identification and Risk Assessment (**CHAPTER 4** HIRA Table in Plan, HIRA file) ratings for natural hazards.
- ➔ Add new events to Local and Area History of Disaster and Hazard Events (**CHAPTER 4** Local History Table in Plan).
- ➔ Submit photos of events to add to the **APPENDIX** Photographic History file.

2. Coordinate Annual Completion of Priority Mitigation Actions by Assigning to Departments.

- ➔ **APPENDIX B** Mitigation Action Progress Report file.

3. Ensure Departments Acquire Funding for Actions & Document the Status of Priority Actions.

- ➔ **APPENDIX B** Mitigation Action/Project Status Tracking file.

4. Evaluate Effectiveness of the Plan Each Year.

- ➔ **APPENDIX B** Plan Evaluation Worksheet file.

5. Request Semi-Annual Progress Reports from Departments & Update Status File.

- ➔ **APPENDIX B** Mitigation Action/Project Status Tracking file.

6. Update Mitigation Action Plan, Reprioritize Actions for Current Year, Update Supporting Plan Sections.

- ➔ Update Mitigation Action Plan (**CHAPTER 8** Tables in Plan), place **Completed** or **Deleted** Actions into respective **CHAPTER 7** Prior Action Status Tables in Plan.
- ➔ Enhanced STAPLEE Prioritization (**CHAPTER 8** Figure in Plan, STAPLEE file).
- ➔ Update other sections as needed/if time permits including:
 - **CHAPTER 5** Critical and Community Facilities (narrative in Plan, Tables in file, and **APPENDIX A**),
 - **CHAPTER 5** Problem Statements narrative in Plan,
 - **CHAPTER 5** Culverts to Upgrade Table in Plan,
 - **CHAPTER 6** Capability Assessment Tables in Plan,
 - and more.
- ➔ Make note of everything added/changed in the **2022 Plan** for so we can track the adjustments and copy them over into the new **2027 Plan** update! The latest approved format and content will be different than the **2022 Plan**.
- ➔ Remember to invite the Stakeholders and public to all meetings, take minutes as needed, and keep PDF copies of publicity. Add to **APPENDIX C Meeting Information**.

7. Send Interim Files to CNHRPC & Repeat.

- ➔ Email copies of Agendas, meeting publicity, meeting minutes, Action Prioritization, Action Evaluation, other revised Plan files, and the revised Hazard Mitigation Plan itself to CNHRPC staff salexander@cnhrpc.org for archival and preparation for the next 5-year Plan update in 2026-2027.

Figure 29 is a graphic display of the repeating annual interim activities of the Hazard Mitigation Committee to update and implement the **Hazard Mitigation Plan 2022** actions and while preparing for the **2027 Plan Update**.



Figure 29
Annual Interim Plan Implementation, 2022-2027








ANNUAL INTERIM IMPLEMENTATION FILES 2022-2027

To get the permanent Hazard Mitigation Committee started on its activities during the Interim Update Meetings, **APPENDIX B Evaluation and Implementation Worksheets** are provided. These example working documents include administrative and organizational Word and Excel format files, draft Agendas, a Mitigation Action Progress Report, a file to track the progress of Actions to completion, and a file to evaluate the effectiveness of the Plan (a way to make notes for future improvement). These documents are only a starting point for Towns to help guide implementation during the interim years of Plan approval (**2022**) through Plan lapse (**2027**). Contact [CNHRPC](mailto:salexander@cnhrpc.org) at 603-226-6020 or at salexander@cnhrpc.org for information about implementation assistance.

COMMITTEE ORGANIZATION AND PUBLICITY DOCUMENTS

-  Board of Selectmen: Motion & [Permanent] Hazard Mitigation Committee Membership
-  Interim Meeting Publicity- Template Press Release and Public Notice Meeting Poster

MEETINGS & WORKING WITH THE MITIGATION ACTIONS

-  Example Agenda for Interim Meeting 1 with recommended task list
-  Example Agenda for Interim Meeting 2 with recommended task list
-  Mitigation Action Status Tracking Sheet
-  Mitigation Action Progress Report for Departments (optional)
-  Annual Hazard Mitigation Plan Evaluation Worksheet

The next **5**-year full Plan update will evaluate the Actions in the same manner, add new Actions, and will fulfill a complete update of the **Hazard Mitigation Plan** according to future's Plan guidelines and standards.

10 APPENDICES

The following **APPENDICES A-F** are included under a separate electronic or paper document to maintain the relative brevity of this **Hazard Mitigation Plan Update**.

Listing of Hillsborough Hazard Mitigation Plan Update 2022 Appendices

Some of these documents should be updated annually as part of the interim Action implementation and Plan evaluation process*. The remaining **APPENDICES** could be amended with the new or revised annual information, but they are optional. It is necessary to establish a Town digital storage location for placing any new or updated hazard, Action, meeting, or Plan data over the **5-year** interim until the Plan is ready to be fully updated again. Systematic organization will facilitate annual updates and prepare for next **5-year** Plan development in **2027**.

- A Critical and Community Facilities Vulnerability Assessment ***
- B Annual Plan Evaluation and Implementation Worksheets ***
- C Meeting Information ***
- D Plan Approval Documentation**
- E Photographic History of Hazard Events ***
- F Hazard Mitigation and Severe Weather Community Survey Results ***

These Appendices should be reviewed and updated minimally each year*. It is also highly recommended to update **4 HAZARD RISK ASSESSMENT Table 12 Local and Area Hazard Event and Disaster History** to maintain a record of the disasters, hazards, and impacts to Hillsborough. See **9 ANNUAL EVALUATION AND IMPLEMENTATION** and **Figure 29** for details.

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11 MAPS

Four (4) detailed Maps were fully updated during the development of the **Hillsborough Hazard Mitigation Plan Update 2022**. Data from the previous Plan maps were used, new standardized data layers were available, and Hazard Mitigation Committee members added their own knowledge of sites and hazard events.





Plan Update 2022 Maps

Map 1 Potential Hazards illustrates potential hazard event locations in Hillsborough that have the possibility of damaging the community in the future. The *Map 1* legend includes (technology) infrastructure hazards such as dams, bridges, electric transmission lines and evacuation routes. Natural hazards are displayed such as Special Flood Hazard Areas (SFHAs), locations of potential flooding/washout, fire/wildfire, bridge washout, ice and snow, steep slopes (>15%) and more.

Map 2 Past Hazards illustrates the locations of where hazard events have occurred in Hillsborough in the past, including areas of SFHA, flooding/washout, snowmelt, dam breach, fire/wildfire, wind damage, ice damage, and more.

Map 3 Critical and Community Facilities includes the infrastructure included in *Map 1 Potential Hazards* on a background of aerial photography and the SFHAs to give viewers a better, real world perspective. The locations of all critical facilities and community facilities as recorded in the **APPENDIX A Critical and Community Facilities Vulnerability Assessment** are displayed on the Map. Each of these sites is numbered on a key listing the names of each facility.

Map 4 Potential Hazards and Losses utilizes all the features of *Map 3* on an aerial photography background and includes the *Map 1 Potential Hazards* and any realistic *Map 2 Past Hazards* locations where hazard events can occur again in Hillsborough.

-  **Map 1 - Potential Hazards**
-  **Map 2 - Past Hazards**
-  **Map 3 - Critical and Community Facilities**
-  **Map 4 - Potential Hazards and Losses**