

HAZARD MITIGATION PLAN UPDATE ANNEX FOR THE TOWN OF VOLUNTOWN

**Southeastern Connecticut Council of Governments
Multi-Jurisdictional Hazard Mitigation Plan Update**

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1.0 INTRODUCTION

1.1 Purpose of Annex

The purpose of this HMP annex is to provide an update to the natural hazard risk assessment and capability assessment provided in the previous HMP, and to evaluate potential hazard mitigation measures and prioritize hazard mitigation projects specific to mitigating the effects of natural hazards to Voluntown. Background information and the regional effects of pertinent natural hazards are discussed in the main body of the Southeastern Connecticut Council of Governments (SCCOG) Multi-Jurisdictional Hazard Mitigation Plan. Thus, this annex is designed to supplement the information presented in the Multi-Jurisdictional HMP with more specific detail for Voluntown and is not to be considered a standalone document.

The primary goal of this hazard mitigation plan annex is to identify particular vulnerability to natural hazards and potential mitigation measures for such natural hazards in order to *reduce the loss of or damage to life, property, infrastructure, and natural, cultural, and economic resources*. This includes the reduction of public and private damage costs. Limiting losses of and damage to life and property will also reduce the social, emotional, and economic disruption associated with a natural disaster.

1.2 Setting

The Town of Voluntown is a rural community in the northeastern corner of New London County that was founded in 1721. The community had a population of 2,528 as of the 2000 census. Slight growth over the next decade brought the total population of Voluntown to 2,603 as of the 2010 census. The town is approximately 39.8 square miles in area and consists primarily of land associated with the Pachaug State Forest. The town is bordered by Griswold to the west, Plainfield to the northwest, Sterling to the north, Hopkinton, Exeter, and West Greenwich, Rhode Island to the east, and North Stonington to the south. Voluntown is located at the junction of several major transportation routes. Major roads include Route 49, Route 138, and Route 165. No rail lines travel through the town.

1.3 Plan Development

The 2005 HMP and its annexes were developed through a series of meetings and the completion of written questionnaires, personal interviews, and workshops as described in the Multi-Jurisdictional HMP update. Since that time, the HMP has been available in the Town Hall and available to emergency personnel. Residents were encouraged to contact the First Selectman with any concerns regarding emergency response or potential projects related to natural hazard damage.

Based on the existing plan, existing information, and hazards that have occurred since 2005, SCCOG determined that the following data collection program would be sufficient to collect data to update the Multi-Jurisdictional plan and each annex.

- The SCCOG issued a press release on November 20, 2011 announcing a public information meeting on the multi-jurisdictional HMP update. This press release was published in the Norwich Bulletin and The Day. This notice was also posted on the SCCOG website and the

Patch (a popular internet newspaper). The public information meeting was held on December 13, 2011 at the SCCOG office.

- ❑ A data collection meeting was held with the on February 1, 2012 to discuss the scope and process for updating the plan and to collect information. The First Selectman coordinated the local planning team which included his Secretary and the Fire Chief. The meeting focused on reviewing each section of the existing hazard mitigation plan and annex, critical facilities, and various types of hazards that have affected the town and that should be addressed in the update.
- ❑ The draft that is sent for State review will be posted on the town website (<http://www.voluntown.gov/>) as well as the SCCOG website (<http://www.seccog.org>) for public review and comment. In addition, a hard copy will be made available in the SCCOG office in Norwich. A press release will announce the availability of the HMP for review. This will provide residents, business owners, and other stakeholders throughout the SCCOG region the opportunity to review and comment on a relatively complete draft with all annexes. Comments received from the public will be incorporated into the final draft where applicable following State and Federal comments.

The adoption of this HMP update by the Town of Voluntown will be coordinated by SCCOG and the First Selectman. The HMP update must be adopted within one year of conditional approval by FEMA, or the Town will need to update the HMP and resubmit it to FEMA for review. The adoption resolution is located in Appendix A of this annex.

1.4 Progress Monitoring

Following adoption, the First Selectman will continue to administer this HMP as the chief elected official of the Town and will be the local coordinator of the HMP. The First Selectman will coordinate with responsible departments as listed in Table 11-1 and ensure that the recommendations of this HMP are considered or enacted. Refer to Section 1.8 of the Multi-Jurisdictional HMP for a description of how the local coordinator will perform progress monitoring. The majority of recommendations in this annex can be accomplished within or with only a slight increase in the operating budgets of the various departments. Projects that require capital improvements or additional funding will need to be approved by the Board of Selectmen.

The HMP will be on file at the Town Hall to assist in guiding growth decisions. See Section 2.5 for recommendations related to integrating the findings of this HMP into other Town planning documents. The Town will encourage residents to contact the First Selectman with concerns related to natural hazards or emergency response via the Town's website. Such announcements will also state that the HMP is available for public review at the Town Hall as well as available on the Town's and the SCCOG's website.

The Town of Voluntown will review the status of plan recommendations each year. The First Selectman will be in charge of overseeing recommended projects and coordinating an annual meeting with applicable departments (those listed in Table 11-1) and other interested departments. Refer to Section 1.8 of the Multi-Jurisdictional HMP for a list of matters to be discussed at the annual meeting, including a review of each recommendation and progress achieved to date, or reasons for why the recommendation has not been enacted. The First

Selectman will keep a written record of meeting minutes and the status of the recommendations. These records of progress monitoring will form the basis for the next HMP update.

The Town of Voluntown understands that the multi-jurisdictional HMP and this annex will be effective for five years from the date of FEMA approval of the first SCCOG jurisdiction regardless of the date of adoption by the Town. The First Selectman will coordinate with SCCOG for the next HMP update which is expected to occur in 2016-2017.

2.0 COMMUNITY PROFILE

2.1 Physical Setting

The Town of Voluntown is located in the northeastern corner of the SCCOG planning area. Elevations range from approximately 185 feet near the southeastern edge of Glasgow Pond (which lies mostly in the Town of Griswold) to 614 feet on Bare Hill in the northwestern section of the town. The west-central area of the town along Route 165 is the most densely developed area, while outlying areas are rural. As noted in the 2010 *Plan of Conservation and Development*, many areas have numerous wetlands and watercourses and broad areas of moderate to steeply sloping land.

Geology is important to the occurrence and relative effects of natural hazards such as earthquakes. Thus, it is important to understand the geologic setting and variation of bedrock and surficial formations in lands underlying Voluntown.

Voluntown lays above seven bedrock formations which trend southeast to northwest across the area. The majority of the town is underlain by the Hope Valley Alaskite Gneiss formation, with banding of other formations occurring primarily in the northeastern corner and southern sections of the town. Each formation consists primarily of gneiss or quartzite which are relatively hard metamorphic rocks. No mapped bedrock faults exist within Voluntown.

The Town's different surficial geologic formations include glacial till and stratified drift. Refer to the Multi-Jurisdictional HMP for a generalized view of surficial materials. The majority of the town is underlain by glacial till. Till contains an unsorted mixture of clay, silt, sand, gravel, and boulders deposited by glaciers as a ground moraine. Areas adjacent to the Pachaug River and the headwaters of the Wood River have fairly extensive areas underlain by sand, sand and gravel, or fines. The amount of stratified drift present is important as areas of stratified materials are generally coincident with floodplains. These materials were deposited at lower elevations by glacial streams, and these valleys were later inherited by the larger of our present day streams and rivers. However, the smaller glacial till watercourses can also cause flooding. The amount of stratified drift also has bearing on the relative intensity of earthquakes and the likelihood of soil subsidence in areas of fill.

2.2 Land Use and Development Trends

Voluntown has been a rural community subsisting on agriculture and small businesses since its inception in the 18th century. Population growth was very limited until the 1960's when the population finally exceeded that of the 19th century census levels. With the completion of Interstate 95 in 1956, Voluntown began to attract residents who work in nearby communities but wanted to live in a rural area. Residential and commercial development further increased with the completion of the highway portion of Route 2 and Interstate 395.

According to the 2010 *Plan of Conservation and Development* for the Town, remaining developable land is limited to approximately 5,000 acres. This is because more than 60% of land in the town is committed open space that is part of the Pachaug State Forest, and out of the remaining land approximately 40% is undevelopable due to areas with slopes greater than 15%, areas of rock outcrops or shallow depth to bedrock, or wetlands. The Pachaug State Forest

attracts campers and hikers during the summer. Additional recreational opportunities include boating and fishing on Beach Pond.

The 2010 *Plan of Conservation and Development* states that Voluntown will continue to be a rural community in the future, with commercial areas being limited to the Village District along Route 165 near the Town of Griswold. Voluntown has a wide range of small businesses that offer services such as chicken farming, carpentry, construction, antiques, dairy and tree farming, stump grinding, and logging. No industry is located in Voluntown.

The housing stock in Voluntown consists primarily of single family homes. The Plan notes that a population of 3,090 is projected for Voluntown in 2020, a condition which would require relatively significant development of new homes over the next eight years. As noted in the Multi-Jurisdictional HMP, only 30 new housing units were constructed in Voluntown between 2005 and 2010, with development being relatively steady at approximately five homes per year. No subdivisions have been built since 2005, and developments are not currently proposed in the Town.

2.3 Drainage Basins and Hydrology

The Pachaug River is the primary watercourse in Voluntown. It begins at the outflow from Beach Pond in the east-central area of the town and flows west and southwest through Beachdale Pond and Sawmill Pond before entering Doaneville Pond in Griswold. Beach Pond lies on the State boundary with Exeter, Rhode Island. Major tributaries include Myron Kinney Brook, Denison Brook, Mount Misery Brook, Great Meadow Brook, and Bliven Brook. The majority of the Pachaug River watershed lies within the Pachaug State Forest. Minor dams are located along headwater ponds and along the tributary streams as well as along the Pachaug River, while more significant dams impound Beach Pond and Sawmill Pond.

The northeastern corner of Voluntown drains to the Wood River that has its headwaters impounded by Porter Pond in Sterling and drains southeast into West Greenwich, Rhode Island. Bailey Pond and Hazard Pond are significant ponds in the northeast corner of the town. The southeastern edge of Voluntown also drains eventually to the Wood River in Rhode Island. Most of the southeastern portion of Voluntown in the vicinity of Green Fall Pond drains to the Pawcatuck River through Green Fall River. Green Fall Pond impounds the headwaters of this brook, and Peg Mill Brook is a major tributary.

The Town of Voluntown does not experience any flooding-related as a result of activities upstream of Beach Pond in Exeter, Rhode Island, or from activities in the Town of Sterling, Connecticut upstream on the Wood River.

2.4 Governmental Structure

Voluntown is governed by a Town Meeting and Board of Selectmen form of government. The authority of Town officials is granted by Connecticut General Statutes. The Town Meeting is the legislative body of the Town and the Board of Selectmen is responsible for the administration of Town policies. The First Selectman is the chief elected official and is responsible for the day-to-day administration of the Town. He also acts as the Chief of Police (Police services are provided by Troop E in Montville) and Public Works Director. Town staff is very limited and other than the First Selectman and some public works staff is primarily part-time. Other than the First

Selectman, the Building Inspector / Zoning Enforcement Officer is the only other paid staff with an active role in hazard mitigation.

The Town of Voluntown has several commissions that can take an active role in hazard mitigation, including the Inland Wetlands Commission, the Planning and Zoning Commission, the Zoning Board of Appeals, and the Voluntown Volunteer Fire Company. Departments and commissions common to all municipalities in SCCOG and were described in Section 2.8 of the Multi-Jurisdictional HMP. More specific information for the departments and commissions of the Town of Voluntown is noted below:

- ❑ The Building Official reviews plans for new development and significant redevelopment and inspects the work to ensure it meets current building codes.
- ❑ The Inland Wetlands Commission is the Inland Wetlands Regulatory Agency for the Town of Voluntown and reviews plans for compliance with said regulations and maintains the Town's inland wetlands map.
- ❑ The Planning & Zoning Commission reviews land use applications, zoning regulation amendments, planning and development projects, and grant opportunities to ensure that development and growth in the town is consistent with existing land use, environmental policy, and the objectives of the *Plan of Conservation and Development*. They are assisted by the Zoning Enforcement Officer. When planning services are needed, they are contracted through SCCOG.
- ❑ The Public Works Department consists of a Road Foreman and several staff. They provide services including safe, efficient and well-maintained infrastructure of roads, bridges, snow removal and deicing on roads; tree and tree limb removal in rights-of-way; and maintain and upgrade storm drainage systems to prevent flooding caused by rainfall.
- ❑ The Voluntown Volunteer Fire Company provides fire suppression, fire prevention, rescue, and hazardous materials response services to the town.
- ❑ The Zoning Board of Appeals reviews projects that were denied by the Planning & Zoning Commission or were cited by the Zoning Enforcement Officer, as well as those that require variances.

The roles of Town departments have not changed since the time of the previous HMP. Thus, the Town of Voluntown is technically, financially, and legally capable of implementing mitigation projects for natural hazards to the extent that funding is available.

2.5 Review of Existing Plans and Regulations

The Town has several Plans and regulations that suggest or create policies related to natural hazard mitigation. These policies and regulations are outlined in the Emergency Operations Plan, *Plan of Conservation and Development*, Zoning Regulations, and Inland Wetland Regulations. The Zoning Regulations were recently updated to incorporate new NFIP requirements.

Emergency Operations Plan

The Town has an Emergency Operations Plan (EOP) that is updated and certified by the First Selectman annually. This document provides general procedures to be instituted by the First Selectman and/or designee and the Fire Department in case of an emergency. Emergencies can include but are not limited to natural hazard events such as hurricanes and nor'easters. The EOP is directly related to providing emergency services prior to, during, and following a natural hazard event.

Plan of Conservation and Development (2010)

The *Plan of Conservation and Development* was adopted in 2010 with contributions from local boards and commissions, citizens, and citizen groups. The Plan did not consider the potential impacts of natural hazards, but did outline areas that could not be built upon due to natural features that restrict development. The purpose of the plan is to balance growth with maintaining the quality of life that citizens within the Town embrace. The current plan notes that future development will seek to strengthen the town center, with residential development occurring on large lot sizes outside of the town center area.

Zoning Regulations

The Zoning Regulations of the Town of Voluntown, Connecticut were last updated in early 2012. The recent updates include updated NFIP regulations associated with the recent release of the FIS and DFIRM for New London County in July 2011 and include a variety of preventative regulations pertinent to mitigating flooding hazards. These regulations are applied during the permitting process for new construction and during substantial improvement of existing structures.

- ❑ Section 8.4 states that no building may be located within 25 feet of a water body, or within 25 feet of the highest floodline for that water body.
- ❑ Section 8.5 notes that any development activities within SFHAs must be conducted within the Voluntown Flood Damage Prevention Ordinance.

The Flood Damage Prevention Ordinance was updated in 2011 and provides the minimum regulations required under the NFIP.

Subdivision Regulations are included as an appendix to the Zoning Regulations.

- ❑ Section 5.4 considers activities in SFHAs and outlines the minimum requirements under the NFIP as in the Flood Damage Prevention Ordinance.
- ❑ Section 5.6 authorizes the Commission or Fire Marshall to require fire wells or ponds.

Inland Wetland and Watercourses Regulations

The Inland Wetlands and Watercourses Regulations in the Town of Voluntown were last amended on June 9, 1988. The regulations require a permit for certain regulated activities which take place within 200 feet of a wetland or watercourse or that may impact a wetland or

watercourse. These regulations build on the preventative flood mitigation provided by the Zoning regulations by preventing fill and sedimentation that could lead to increased flood stages.

2.6 Critical Facilities, Sheltering Capacity, and Evacuation

The Town of Voluntown considers several facilities to be critical to ensure that emergencies are addressed while day-to-day management of the Town continues. Critical facilities are presented on figures throughout this annex and summarized in Table 2-1. No critical facilities are located within the 1% annual chance floodplain. These facilities are described in more detail below.

**TABLE 2-1
Critical Facilities**

Facility	Address or Location	Emergency Power?	Shelter?	In 1% Annual Chance Floodplain?
Public Works Garage	Gate Street			
Town Hall	115 Main Street			
Voluntown Baptist Church	52 Main Street	✓	✓	
Voluntown Elementary School	195 Main Street	✓	✓	
Voluntown Volunteer Fire Company*	205 Preston City Road	✓		

*Emergency Operations Center

Public Works Garage

The present Town Garage is located behind the Town Hall and accessed from Gate Street. It is used for vehicle and equipment storage and does not have a central heating system or bathroom facilities. Additionally, the building is not large enough to allow for the inside storage of all of the town's vehicles and equipment. This limitation requires equipment such as a backhoe to be stored outside. Due to the size limitation of the present garage, the Town would like to construct a larger building, which would allow for inside storage of the Town's vehicles and equipment as well as providing space for vehicle maintenance.

The Town presently stores its road sand and salt at the former landfill site that is located near the southwestern terminus of the Shetucket Turnpike. This could be an issue if Denison Brook flooded Beach Pond Road during a winter flooding event.

Town Hall

The Voluntown Town Hall houses records, plans, and other documents important for administering the Town. It does not have emergency backup power, although a portable generator can be hooked up to provide limited power.

Voluntown Volunteer Fire Company

Voluntown has one volunteer fire company on Preston City Road (Route 165) that responds to fires and accidents. The fire station also houses the Town's volunteer ambulance service. Patients are typically brought to Backus Hospital in Norwich.

The Fire Company has a variety of equipment including two tanker trucks, a forestry unit, a rescue truck, a Humvee, a boat, and a pick-up truck to provide fire and rescue services. The Fire Company is the primary agency involved with hazard mitigation through emergency services and public education. The Fire Company also houses Town's Emergency Operations Center and has a generator.

Shelters

Voluntown Elementary School is the primary shelter. It has a generator and could house 300 to 400 people, although the Town does not have the supplies to provide bedding to that number. It is not believed to be an American Red Cross certified shelter.

The Voluntown Baptist Church is the backup shelter. It has a generator and could house approximately 75 people.

Communications

The Town's communication capability is adequate for most circumstances. Emergency communications are good except during long power outages. The Town relies on cellular phones and email for much of its communications. Communication was difficult during the power outage following Irene.

The Town's ability to publicly disseminate information was also limited following Irene. Newspapers were not delivered and people did not have access to television or radio. As there are limited Town staff, personnel were tied up clearing roads as opposed to broadcasting information. Signs were posted around town identifying shelter and distribution locations.

The Fire Department has radios that it uses for emergency purposes. The Town would like to acquire additional radios for Town staff. The Town can communicate via radio with all of its Connecticut neighbors and the State but not with its neighbors in Rhode Island. Residents in Voluntown can sign up for the CT Alerts "Everbridge" System for Reverse 9-1-1, and the Town has access to it through members of the Fire Department.

Evacuation Routes

Voluntown does not have a published evacuation map; residents utilize State roads or local roads to exit the town. The highest capacity egress routes from Voluntown include Route 138 into Griswold and Interstate 395, or Route 138 into Hope Valley, Rhode Island to reach Interstate 95.

Additional Groups

No medical or daycare facilities exist in Voluntown. The Voluntown Housing Authority has approximately 20 units of elderly/disabled/low-income housing at Greenwood Manor, but this facility is not located in the 1% annual chance floodplain.

In addition to Town offices, the American Red Cross, the Salvation Army, and ARES-Ham Radio Operators provide services related to mitigation and emergency management. The American Red Cross and the Salvation Army help provide shelter and vital services during disasters and participates in public education activities. ARES-Ham Radio Operators will establish back-up communications at all shelters to the EOC.

2.7 Status of 2005 Plan Recommendations

The previous HMP included several general recommendations related to mitigating natural hazards. The recommendations and a summary of actions taken over the past several years towards those actions are listed below. Where progress was indicated, the progress was paid for out of the Town's operating budget.

- ❑ Coordinate Program with State for Accounting for Summer Transients in Pachaug State Forest – No formal plan has been written, but the State monitors campers and hikers on its land. *This recommendation will not be pursued further.*
- ❑ Raise Section of Route 49 Roadway to Eliminate Flooding and Icing – A catch basin was installed by the State and this area no longer has these issues. *This recommendation is completed.*
- ❑ Evaluate the Hazard Resistant Nature of Critical Facilities – This is ongoing as part of the Town's annual EOP update. No critical facilities are believed to be more or less susceptible to natural hazards. *This recommendation remains valid but has been subsumed into the EOP update.*
- ❑ Comprehensive Evaluation of Emergency Communication Capabilities Throughout the Town – This is ongoing along with the annual EOP update. The Town is going to seek funding to purchase additional portable radios. *This recommendation remains valid.*
- ❑ Develop a Flood Audit Program – The Town does not suffer from flooding, and has no interest in the Community Rating System. The Town is aware of potential problem areas, and floodplain development regulations restrict additional development. *This recommendation will not be pursued further.*
- ❑ Review of Transportation Facilities to Identify Critical Risks – This is ongoing annually as part of the Emergency Operations Plan update. The Town had access issues during Hurricane Irene due to the many downed trees and power lines. *This recommendation remains valid but has been subsumed into the EOP update.*
- ❑ Identify Appropriate Improvements to Traffic Infrastructure and Emergency Response Training and Equipment to Reduce Hazardous Materials Spills on Roadways – This is ongoing as part of bi-weekly Fire Department training as well as the annual EOP update. The Town has access to

CERRIT, the regional hazardous materials response team. *This recommendation is not pursued further.*

- ❑ Implement a Reverse 9-1-1 System to Automatically Call Telephones Throughout Town, Relaying Important Information During an Emergency – Residents can join the CT Alerts “Everbridge” System to receive Statewide notices although the Town does not have the capability to program specific areas. The Fire Department can also access the system. *This recommendation has been completed and the Town will continue to encourage residents to participate.*
- ❑ Distribute or Post Public Information Regarding Hazards in the Town – Notifications are posted on bulletin boards around town and at Town buildings and on the Town website. Local media is utilized to pass information prior to and during storms, including newspaper, television, and radio. Flyers were passed out by mail following Irene. Town staff also performed well-being checks on elderly and disabled residents who are known to have issues during the outages. Town churches maintain lists of people at risk. The Town recently conducted a town-wide mailing requesting that if people need additional assistance during an emergency to send that information to the Fire Department. The Fire Department now possesses that list, but some of the church lists may be more up to date. *This recommendation remains valid and there are additional opportunities such as providing brochures at the Town Hall and posting of preparedness information on the Town’s webpage.*
- ❑ Evaluate Emergency Shelters, Update Supplies, and Check Communication Equipment – This is conducted at least quarterly or following any use of the facilities. The Fire Department has acquired a lot of donations from other governments in the region. *This recommendation remains valid.*
- ❑ Maintain Emergency Personnel Training as Well as Maintaining and Updating Emergency Equipment and Response Protocols – Training is performed regularly, with equipment upgrades occurring to the extent the budget will allow. *This recommendation remains valid.*
- ❑ Evaluate and Consider Burying Power Lines Underground and Away from Possible Tree Damage – This is encouraged for new projects. There are no areas with underground utilities except for Rachel Lane. Buildings in floodplains are required to have utilities underground by ordinance. There are no plans to move existing utilities underground. *This recommendation remains valid for future developments and should be placed into an ordinance for new development or substantial redevelopment.*
- ❑ Complete an Earthquake Survey of all Critical Facilities and Infrastructures –A formal survey is not proposed due to the infrequent nature of this hazard. All Town buildings are relatively old (the most recent was built in the 1960’s) and likely do not have any seismic protection. The addition to the school that was completed in 2001 is likely the most structurally sound municipal building. *This recommendation will not be pursued further.*
- ❑ Complete Catch Basin and Culvert Surveys to Identify Structures in Need of Maintenance or Replacement – Inspections are performed annually each spring by Public Works during cleaning operations. Public Works also inspects catch basins in floodprone areas for blockages prior to major storms. *This recommendation remains valid.*

- ❑ Complete a Survey of Fire Hydrants to Assess Vulnerabilities and Capabilities for Fire Protection – Fire protection capabilities are reviewed at least annually with the EOP update. The Town believes that its fire protection level is adequate. The dry hydrants in town are inspected annually and are all believed in good shape. *This recommendation remains valid.*

3.0 INLAND FLOODING

3.1 Setting / Historic Record

Flooding is the primary natural hazard that impacts the town each year as documented in the previous HMP. While riverine flooding is a concern, nuisance flooding and poor drainage have historically been the primary flooding issues at several locations in the town. Flooding is typically caused by heavy rainstorms, but can also be caused by relatively light rains falling on frozen ground. Flooding of roadways is more common than damage to structures.

The March 2010 storms produced the most widespread flooding in Voluntown since the last HMP, causing some roadway flooding and a significant amount of nuisance flooding as noted below. Structures were not directly affected by overbank flooding, including those located in the 1% annual chance floodplain.

- ❑ The Pachaug River overtopped Forge Hill Road by 1.5 inches, but no damage was reported.
- ❑ The Fire Department's pump failed, leading to water damage in the Fire Department basement. Insurance covered the loss and FEMA provided funding to replace equipment.
- ❑ Approximately 40 to 50 homes needed their basements pumped out by the Fire Department's mobile equipment, and many homes had more than five feet of water in the basement.

3.2 Existing Programs, Policies, and Regulations

The Town attempts to mitigate inland flood damage and flood hazards by utilizing a wide range of measures including restricting activities in floodprone areas, replacing bridges and culverts, promoting flood insurance, maintaining drainage systems, through education and outreach, and by utilizing warning systems. Many mitigation measures are common to all hazards and therefore were listed in Section 2.6. No structural flood control projects are located within or upstream of Voluntown, although the existing dams provide a modicum of flood mitigation.

Bridge Replacements, Drainage, and Maintenance

The Department of Public Works cleans and inspects catch basins and culverts at least annually or more often if problems are noted. When flooding occurs, the Public Works department or the Fire Department would handle the complaints depending on the location. For example, Public Works would inspect bridges and culverts and erect barricades to close roads, while the Fire Department responds to calls requesting help for flooded basements. The Town uses a message system on its webpage and fields phone calls related to drainage complaints. Drainage complaints are directed to the First Selectman.

The Town has performed work since the last HMP to alleviate flooding problems caused by poor drainage. A drainage system was recently installed on Bennett Road and Bennett Road Extension that alleviated a nearby nuisance flooding problem, and the Town is repairing the Wylie School Road bridge over Great Meadow Brook and adding a wingwall to prevent scour. The Town also added drainage swales on Hodge Pond Road that has fixed the erosion problem noted in the previous HMP. In addition, the Town successfully convinced the Connecticut DOT to install a

catch basin on Route 49 that eliminated a chronic ponding issue. The Town also installed a catch basin in front of the Fire Department to eliminate a significant ponding problem in that area.

Regulations, Codes, and Ordinances

The Town of Voluntown has planning and zoning tools in place that incorporate floodplain management. The Town has had a Flood Damage Prevention Ordinance since 1998 and recently revised it in June 2011 as noted in Section 2.5. The Town utilizes the 1% annual chance floodplain as defined by FEMA to regulate floodplain and floodway activities and requires 100 percent compensatory storage for any encroachment in the floodplain. The Town also requires freeboard of 12 inches for new construction or substantial renovations.

The Town's Zoning Regulations restrict building within 25 feet of a watercourse. While floodways are not mapped within Voluntown, this regulation indirectly provides some floodway protection. The Town's Subdivision Regulations require that adequate drainage be provided to reduce exposure to flood hazards.

Regulations covering development in inland wetland areas have been in existence since 1988 and enforced by the Town's Inland Wetlands Commission. The Town has also adopted a map prepared by the Inland Wetlands Commission which regulates building in wetland areas.

Acquisitions, Elevations, and Property Protection

The Town of Voluntown has not performed acquisitions or elevations of floodprone property. Property protection has focused instead on preventive measures and maintaining and upgrading drainage systems.

Flood Watches and Warnings

The First Selectman and the Fire Department access weather reports through the National Weather Service and local media. Residents can also sign up for the Statewide Reverse 9-1-1 to receive warnings when storms are imminent. The Town does not currently have the capability to telephone warnings into specific areas.

3.3 Vulnerabilities and Risk Assessment

This section discusses specific areas at risk to inland flooding within the Town. Inland flooding due to nuisance flooding or poor drainage is most common type of flooding experienced by the Town, although roadway inundation also occurs during more severe events.

3.3.1 Vulnerability Analysis of Areas along Watercourses

Major inland watercourses and water bodies in Voluntown have the 1% annual chance floodplain defined by FEMA. The Pachaug River, Denison Brook, and Great Meadow Brook are mapped as Zone AE, indicating that flood elevations are available. Other mapped floodplains are Zone A. The majority of watercourses do not typically present flooding hazards to residents, buildings, or roadways, although it is understood that an extreme event could cause structures and roadways to flood. For example, the March 2010 floods caused Forge Hill Road to be slightly overtopped by

the Pachaug River. Refer to Figure 3-1 for the location of the 1% annual chance floodplains within Voluntown.

Voluntown has several major transportation routes that include Routes 49, 138, and 165. The DFIRM mapping suggests that these routes can be affected by extreme flooding. There is a stretch of Route 49 approximately one-quarter mile south from the intersection of Route 49 and Route 165 that has flooded in the past. The State has installed a catch basin in this area that has mitigated a previous flooding concern related to poor drainage flooding causing icing conditions in this area. In addition to these major roads, several minor roads in the Town could also be impacted by an extreme flooding event, including Williams Road near the Wood River, Gardiner Road near Mount Misery Brook, and Green Falls Road near Dennison Brook.

3.3.2 Vulnerability Analysis of Private Properties

As noted in Table 3-4 of the Multi-Jurisdictional HMP, a total of 21 structures in Voluntown appear to be located in the 1% annual chance floodplain. Most are located along the Pachaug River. The majority of these structures are residential but some commercial structures are also located in the floodplain. Only one structure appears to be located within the Zone A floodplain (the 1% annual chance floodplain without flood elevations defined).

Town personnel indicate that structures do not typically get flooded by overbank flooding. Repetitive flood insurance claims have not been filed at any properties in Voluntown over the past twenty-five years. Nuisance (basement) flooding is an issue particularly during major rainstorms, but the structures affected usually do not lie within the 1% annual chance floodplain.

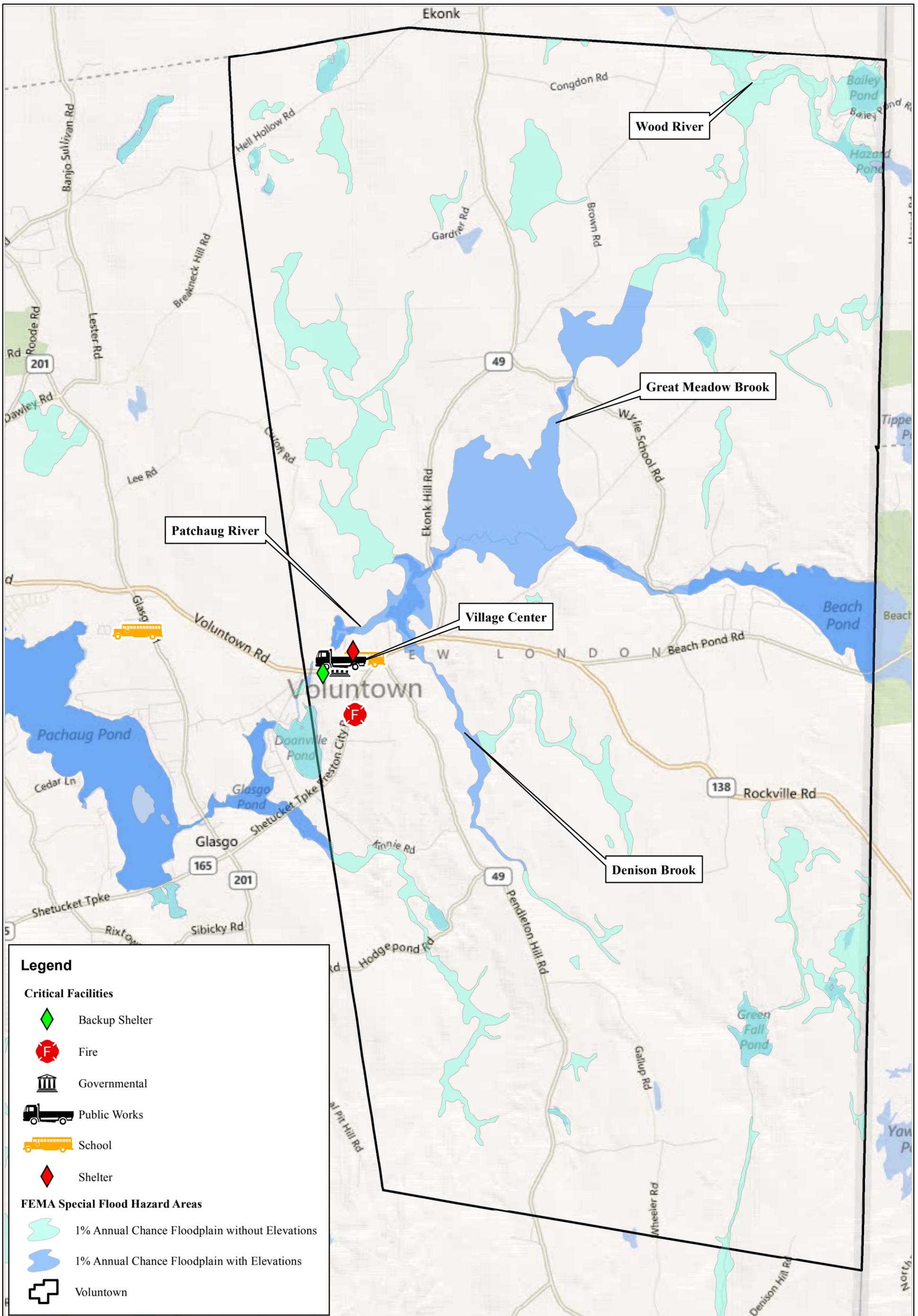
Since the previous HMP, the Town has been focused on repairing and upgrading drainage systems to eliminate nuisance flooding along roadways. The Town has succeeded as noted in Section 3.2 and at this point there are no drainage issues within the town.

3.3.3 Vulnerability Analysis of Critical Facilities

As noted in Section 2.6, no critical facilities in Voluntown are located within the 1% annual chance floodplain. However, the Fire Department and the Town Hall both have experienced basement flooding and have sump pumps to remove water.

Given the relatively limited development in Voluntown, the closure of roadways and major transportation routes due to flooding is a concern for emergency personnel. For example, if Denison Brook overtopped Route 138 during a winter storm event, the most direct route between the Public Works Garage (where plows are stored) and the sand and salt storage (near the former landfill) would be cut off. This would result in a long detour through local roads.

Another area of concern raised by local officials is in the remote area north of Bailey Pond where two elderly residents live. There are several residential structures located south of Bailey Pond as well. Homes in the vicinity of Bailey Pond do not typically flood, but this area is still an emergency access concern because the 1% annual chance flood could overtop the road near Bailey Pond Dam. Bailey Pond Road is the only access in the town and may potentially be flooded by Wood River and Bailey Pond during severe storms. Emergency services would need to travel through Rhode Island to access the site.



Legend

Critical Facilities

-  Backup Shelter
-  Fire
-  Governmental
-  Public Works
-  School
-  Shelter

FEMA Special Flood Hazard Areas

-  1% Annual Chance Floodplain without Elevations
-  1% Annual Chance Floodplain with Elevations
-  Voluntown

SOURCE(S):
Town of Voluntown, FEMA, Microsoft (basemap)

Figure 3-1: FEMA Special Flood Hazard Areas

Location:
Voluntown, Connecticut



**SCCOG HMP Update
Town of Voluntown Annex**

Map By: scottb
MMI#: 3570-05
MXD: H:\3570-05\GIS\Maps\Voluntown\Figure3-1-.mxd
1st Version: 06/27/2012
Revision: 6/27/2012
Scale: 1 in = 3,500 ft

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3.4 Potential Mitigation Measures, Strategies, and Alternatives

Potential mitigation measures for reducing or eliminating the impact of inland flooding fall into the categories of prevention, property protection, emergency services, public education and awareness, natural resource protection, and structural projects. General potential mitigation measures that can be taken to reduce the effects of inland flooding were discussed in Section 3.7 and in Section 11.2.2 of the Multi-Jurisdictional HMP. General recommendations pertinent to all natural hazards that could affect the town are listed in Section 11 of this annex, as are specific measures pertinent to reducing inland flooding in the Town of Voluntown.

4.0 COASTAL FLOODING & STORM SURGE

4.1 Setting / Historic Record

The Town of Voluntown is not located along the coastline or along any tidally-influenced river. It is also not located in a potential hurricane surge zone. No coastal flooding or storm surge has affected the town since the last HMP. Therefore, the town is considered to be immune to the direct effects of coastal flooding and storm surge.

4.2 Existing Programs, Policies, and Regulations

The Town does not have any regulations in affect to restrict development due to coastal flooding hazards.

The Town understands that in an extreme case its shelter spaces may need to be utilized by non-Voluntown residents if a regional evacuation occurred due to a coastal flooding event as managed through its mutual aid agreements with SCCOG. The Town is prepared for this potential circumstance.

4.3 Vulnerabilities and Risk Assessment

No areas of the town are vulnerable to coastal flooding or storm surge.

4.4 Potential Mitigation Measures, Strategies, and Alternatives

No mitigation measures for reducing the impact of coastal flooding or storm surge in the town are necessary or are proposed at this time.

5.0 HURRICANES AND TROPICAL STORMS

5.1 Setting / Historic Record

Several types of hazards may be associated with tropical storms and hurricanes including heavy or tornado winds, heavy rains, and flooding. Flooding hazards are discussed in Section 3 of this annex. Wind hazards are widespread and can affect any part of the town. However, some buildings in the town are more susceptible to wind damage than others.

The last major hurricane or tropical storm wind event to affect the town was associated with Hurricane Irene in August 2011. The State and private campgrounds sent campers home prior to the storm. Trees fell throughout the town and the region causing power outages that lasted up to eight days in Voluntown. Town staff had to clear both local and State roadways due to the remoteness of the area. Residents utilized the charging and showering stations at the shelters and picked up fresh water, but no one stayed overnight.

5.2 Existing Programs, Policies, and Mitigation Measures

Wind loading requirements for new buildings are addressed through the Connecticut Building Code which is utilized by the Town. Effective December 31, 2005, the design wind speed for the Town of Voluntown is 110 miles per hour. Town personnel note that recently constructed buildings all meet the Connecticut Building Code standard wind loading, but that to their knowledge no buildings (including critical facilities) have been constructed to exceed wind loading requirements. The Town does not have a specific requirement requiring that utilities be located underground in new developments except for those located in floodprone areas.

Parts of trees (limbs) or entire tall and older trees may fall during heavy wind events, potentially damaging structures, utility lines, and vehicles. Utility lines are located underground in only a few areas of the town. The First Selectman is the tree warden who can post notification and schedule tree removal. The Public Works staff also monitors trees as part of their normal rounds and includes a budget for minor tree maintenance. The Town finds the funding to hire outside contractors for larger jobs. Unfortunately, the State does not provide funding to trim trees on State forest lands adjacent to roadways.

Connecticut Light & Power performs trimming near their utilities and completed a week's worth of trimming in Voluntown in January 2012. The Town would like the power utility to cut more trees and not just trim branches near the lines. The Town does not own any utility lines so they do not have any plans to move existing utilities underground. Installing utilities underground is encouraged for new developments.

Prior to severe storm events, the Town ensures that warning/notification systems and communication equipment are working properly and prepares for the possible evacuation of impacted areas. Residents can sign up to receive warnings from the statewide CT "Everbridge" Reverse 9-1-1 system to receive critical information, although the Town cannot send messages to specific areas at this time. Although hurricanes that have impacted Voluntown have historically passed in a day's time, additional regional shelters could be outfitted following a storm with the assistance of the American Red Cross on an as-needed basis for long-term evacuees.

5.3 Vulnerabilities and Risk Assessment

The entire Town is vulnerable to hurricane and tropical storm wind damage and from any tornadoes (Section 6) accompanying the storm, as well as inland flooding (Section 3). Of particular concern are the blockage of roads and the damage to the electrical power supply from falling trees and tree limbs. The Town had extensive outages in some areas because of tree damage to utility lines following Hurricane Irene in 2011.

Direct wind damage to newer buildings from hurricane or tropical storm-level winds is rare in the Town since the new buildings were constructed to meet or exceed current building codes. Many buildings in the Town were built in the 1970s and 1980s and do not meet current building codes. Older buildings in the Town (particularly near the village center) and mobile homes associated with campgrounds are particularly susceptible to roof and window damage from high wind events. This risk to structures will be reduced with time as these buildings are remodeled or replaced with buildings that meet current codes, although the risk to the campgrounds is expected to remain constant as this type of land use is not expected to change in the future.

The strength of a large hurricane could cause a moderate economic impact to the town. The potential economic effect of wind damage to SCCOG was evaluated in the Multi-Jurisdictional HMP. A separate analysis was not performed specifically for Voluntown.

5.4 Potential Mitigation Measures, Strategies, and Alternatives

Potential mitigation measures for reducing or eliminating the impact of wind damage fall into the categories of prevention, property protection, emergency services, public education and awareness, natural resource protection, and structural projects. General potential mitigation measures that can be taken to reduce the effects of wind damage from hurricanes and tropical storms were discussed in Section 5.7 and in Section 11.2.3 of the Multi-Jurisdictional HMP. General recommendations pertinent to all natural hazards that could affect the town are listed in Section 11 of this annex, as are specific measures pertinent to reducing wind damage to the Town of Voluntown.

6.0 SUMMER STORMS AND TORNADOES

6.1 Setting / Historic Record

Similar to hurricanes and winter storms, wind damage associated with summer storms and tornadoes has the potential to affect any area of the town. Furthermore, because these types of storms and the hazards that result (flash flooding, wind, hail, and lightning) might have limited geographic extent, it is possible for a summer storm to harm one area within the town without harming another. Such storms occur in the town each year, although hail and direct lightning strikes to the town are rarer. No tornadoes have occurred in the town since the last HMP.

6.2 Existing Programs, Policies, and Mitigation Measures

Warning is the most viable and therefore the primary method of existing mitigation for tornadoes and thunderstorm-related hazards. The NOAA National Weather Service issues watches and warnings when severe weather is likely to develop or has developed, respectively. The Town can access National Weather Service forecasts via the internet as well as listen to local media outlets (television, radio) to receive information about the relative strength of the approaching storm. This information allows the Town to activate its EOP and encourage residents to take protective measures if appropriate.

Aside from warnings, several other methods of mitigation for wind damage are employed by the Town as explained in Section 5.2 within the context of hurricanes and tropical storms. In addition, the Connecticut Building Code includes guidelines for the proper grounding of buildings and electrical boxes to protect against lightning damage.

6.3 Vulnerabilities and Risk Assessment

Summer storms are expected to occur each year and are expected to at times produce heavy winds, heavy rainfall, lightning, and hail. All areas of the town are equally likely to experience the effects of summer storms. The density of damage is expected to be greater near the more densely populated area of the town, and mobile home parks and campgrounds are more vulnerable to summer storm damage.

Most thunderstorm damage is caused by straight-line winds exceeding 100 mph. Experience has generally shown that wind in excess of 50 miles per hour (mph) will cause significant tree damage during the summer season as the effects of wind on trees is exacerbated when the trees are in full leaf. The damage to buildings and overhead utilities due to downed trees has historically been the biggest problem associated with wind storms. Heavy winds can take down trees near power lines, leading to the start and spread of fires. Such fires can be extremely dangerous during the summer months during dry and drought conditions. Fortunately, most fires are quickly extinguished due to the town's strong fire response and coordination with Connecticut DEEP fire fighters.

Lightning and hail are generally associated with severe thunderstorms and can produce damaging effects. All areas of the town are equally susceptible to damage from lightning and hail, although lightning damage is typically mitigated by warnings and proper grounding of buildings and equipment. Hail is primarily mitigated by warning, although vehicles and watercraft can often not be secured prior to the relatively sudden onset of a hailstorm. Lightning and hail are

considered likely events each year, but typically cause limited damage in the town. Older buildings and campgrounds are most susceptible to lightning and hail damage since many were constructed prior to current building codes, and many campgrounds offer little structural protection from the elements.

Although tornadoes pose a threat to all areas of Connecticut, their occurrence is least frequent in New London County as compared with the rest of the State. Thus, while the possibility of a tornado striking the town exists, it is considered to be an event with a very low probability of occurrence.

6.4 Potential Mitigation Measures, Strategies, and Alternatives

General potential mitigation measures that can be taken to reduce the effects of wind damage were discussed in Section 5.7 and in Section 11.2.3 of the Multi-Jurisdictional HMP. No additional recommendations are available specific to reducing damage from summer storms and tornadoes. Refer to Section 11 of this annex for recommendations related to wind damage and general recommendations related to emergency services.

7.0 WINTER STORMS AND NOR'EASTERS

7.1 Setting / Historic Record

Similar to hurricanes and summer storms, winter storms have the potential to affect any area of the town. However, unlike summer storms, winter storms and the hazards that result (wind, snow, and ice) have more widespread geographic extent. In general, winter storms are considered highly likely to occur each year (major storms are less frequent), and the hazards that result (nor'easter winds, snow, and blizzard conditions) can potentially have a significant effect over a large area of the town.

Winter storms and nor'easters have affected the town since the last HMP, as reported to the NCDC and reported by Town officials. However, only the winter storms of 2010 – 2011 and Winter Storm Alfred had a significant effect on the town. The winter of 2010 – 2011 produced significant snowfall in Voluntown. The Town found it necessary to shovel the roofs of the elementary school and the Town Hall since they both have flat roofs. Many residents also cleared their own roofs or hired contractors. One resident lost a portion of a barn when the roof collapsed. Winter Storm Alfred in late October 2011 caused only minor tree damage, but 19 homes were without power for up to four days following the storm.

7.2 Existing Programs, Policies, and Mitigation Measures

Existing programs applicable to winter storm winds are the same as those discussed in Sections 5.2 and 6.2. Programs that are specific to winter storms are generally those related to preparing plows and sand and salt trucks; tree trimming and maintenance to protect power lines, roads, and structures; and other associated snow removal and response preparations.

As it is almost guaranteed that winter storms will occur annually in Connecticut, it is important to locally budget fiscal resources toward snow management. Snow is the most common natural hazard requiring additional overtime effort from Town staff, as parking lots and roadways need constant maintenance during storms. The Public Works Department oversees snow removal in the Town and stores salt and sand east of the village center. The Town has established plowing routes that prioritize access to and from critical facilities. The Connecticut Department of Transportation (DOT) plows State roads. Since the nearest Connecticut DOT facility is located in Occum (Norwich), there is sometimes a delay for plowing state roads.

The Connecticut Building Code specifies that a pressure of 30 pounds per square foot be used as the base "ground snow load" for computing snow loading for roofs. The Town monitors and shovels the roofs of municipal buildings when snow loads accumulate, and many residents and businesses shovel or plow their roofs.

7.3 Vulnerabilities and Risk Assessment

Severe winter storms can produce an array of hazardous weather conditions, including heavy snow, blizzards, freezing rain and ice pellets, flooding, heavy winds, and extreme cold. Further "flood" damage could be caused by flooding from frozen water pipes. Often, tree limbs on roadways are not suited to withstand high wind and snow or ice loads.

This section focuses on those effects commonly associated with winter storms, including those from blizzards, ice storms, heavy snow, freezing rain, and extreme cold. Warning and education can prevent most injuries from winter storms. Most deaths from winter storms are indirectly related to the storm, such as from traffic accidents on icy roads and hypothermia from prolonged exposure to cold. Damage to trees and tree limbs and the resultant downing of utility cables are a common effect of these types of events. Secondary effects can include loss of power and heat.

The majority of buildings in Voluntown were constructed within the past several decades and therefore not particularly susceptible to damage from heavy snow. While some Town buildings could be susceptible to heavy snow loads, they will be cleared quickly if safety is a concern. For example, the Town Hall and Voluntown Elementary School both have flat roofs which make them more susceptible to snow load damage.

Icing is not a significant issue in the Town. In general, there are few steep slopes such that extra sanding and salting of the roadways in necessary locations alleviates any trouble spots. Hodge Pond Road and Forge Hill Road are steep but there are additional egresses. A former icing problem on Route 49 has been mitigated by the State installing a catch basin that eliminated ponding. In addition, there are no issues with ice jams on any of the streams in the town.

7.4 Potential Mitigation Measures, Strategies, and Alternatives

Potential mitigation measures for flooding caused by nor'easters include those appropriate for flooding that were discussed in Section 3.7 of the Multi-Jurisdictional HMP and Section 11 of this annex. General potential mitigation measures that can be taken to reduce the effects of wind damage were discussed in Section 5.7 and in Section 11.2.3 of the Multi-Jurisdictional HMP and Section 11 of this annex. However, winter storm mitigation measures must also address blizzards, snow, and ice hazards. These were discussed in Section 7.7 and Section 11.2.4 of the Multi-Jurisdictional HMP and Section 11 of this annex.

8.0 EARTHQUAKES

8.1 Setting / Historic Record

An earthquake is a sudden 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 telephone lines; and often cause landslides, flash floods, fires, avalanches, and tsunamis. Earthquakes can occur at any time and often without warning. Detailed descriptions of earthquakes, scales, and effects can be found in Section 8 of the Multi-Jurisdictional HMP. Despite the low probability of an earthquake occurrence, earthquake damage presents a potentially catastrophic hazard to the town. However, it is very unlikely that the town would be at the epicenter of such a damaging earthquake. No major earthquakes have affected the town since the last HMP.

8.2 Existing Programs, Policies, and Mitigation Measures

The Connecticut Building Codes include design criteria for buildings specific to each region as adopted by Building Officials and Code Administrators (BOCA). These include the seismic coefficients for building design in Voluntown. The Town has adopted these codes for new construction, and they are enforced by the Building Inspector.

Due to the infrequent nature of damaging earthquakes, Town land use policies do not directly address earthquake hazards. However, the potential for an earthquake and emergency response procedures is addressed in the Town's EOP.

8.3 Vulnerabilities and Risk Assessment

Surficial earth materials behave differently in response to seismic activity. Unconsolidated materials such as sand and artificial fill can amplify the shaking associated with an earthquake. As noted in Section 2.1, areas along the Pachaug River and its tributaries are underlain by stratified drift. These areas are potentially more at risk for earthquake damage than the areas of the town underlain by glacial till. The best mitigation for future development in areas of sandy material is the application of the most stringent standards in the Connecticut Building Code, exceeding the building code requirements, or, if the Town deems necessary, the possible prohibition of new construction. The areas that are not at increased risk during an earthquake due to unstable soils are the areas underlain by glacial till.

No bedrock faults are located within Voluntown. Unlike seismic activity in California, earthquakes in Connecticut are not associated with specific known active faults. However, bedrock in Connecticut and New England in general is typically formed from relatively hard metamorphic rock that is highly capable of transmitting seismic energy over great distances. For example, the relatively strong earthquake that occurred recently in Virginia was felt in Connecticut because the energy was transmitted over a great distance through such hard bedrock.

The built environment in the town primarily includes some more recent construction that is seismically designed. However, most buildings were built before the 1990's and therefore are not built to current building codes. In addition, there are many areas with recreational buildings or shelters that may not be seismically designed such as at campgrounds or in the Pachaug State Forest. Thus, it is believed that most buildings would be at least moderately damaged by a

significant earthquake. Those town residents who live or work in older, non-reinforced masonry buildings are at the highest risk for experiencing earthquake damage.

Areas of steep slopes can collapse during an earthquake, creating landslides. Voluntown has many areas of steep slopes and bluffs although the majority of these features occur in undeveloped areas. Thus, landslides are not a concern in the town.

Seismic activity can also break utility lines such as water mains, gas mains, electric and telephone lines, and stormwater management systems. Damage to utility lines can lead to fires, especially in electric and gas mains. Dam failure can also pose a significant threat to developed areas during an earthquake. For this HMP, dam failure has been addressed separately in Section 10.0. As noted previously, most utility infrastructure in the town is located above ground. A quick and coordinated response with Connecticut Light & Power will be necessary to inspect damaged utilities following an earthquake, to isolate damaged areas, and to bring backup systems online. This is covered in the Town's and Connecticut Light & Power's EOPs.

A *HAZUS-MH* analysis of the potential economic and societal impacts to the SCCOG region from earthquake damage is detailed in the Multi-Jurisdictional HMP. The analysis addresses a range of potential impacts from any earthquake scenario, estimated damage to buildings by building type, potential damage to utilities and infrastructure, predicted sheltering requirements, estimated casualties, and total estimated losses and direct economic impact that may result from various earthquake scenarios.

8.4 Potential Mitigation Measures, Strategies, and Alternatives

Due to the low probability of occurrence, potential mitigation measures related to earthquake damage primarily include adherence to building codes and emergency response services. Both of these are mitigation measures common to all hazards as noted in Section 11 of this annex. The Multi-Jurisdictional HMP also includes additional recommendations for mitigating the effects of earthquakes that are also listed in Section 11.

9.0 WILDFIRES

9.1 Setting / Historic Record

Wildfires are considered to be highly destructive, uncontrollable fires. The most common causes of wildfires are arson, lightning strikes, and fires started from downed trees hitting electrical lines. Thus, wildfires have the potential to occur anywhere and at any time in both undeveloped and lightly developed areas of Voluntown. Structural fires in higher density areas of the town are not directly addressed herein.

Voluntown has experienced several 100-acre fires over the past three decades. The First Selectman could also recall a large fire that burned up to 1,000 acres in Voluntown and Rhode Island in the 1950s. These are considered to be extreme events. Typically, Voluntown experiences a few small brush fires each spring and autumn that burn one or two acres before being contained.

9.2 Existing Programs, Policies, and Mitigation Measures

Monitoring of potential fire conditions is an important part of mitigation. The Connecticut DEEP Forestry Division uses the rainfall data recorded by the Automated Flood Warning system to compile forest fire probability forecasts. This allows the DEEP to monitor drier areas to be prepared for forest fire conditions. The Town can access this information over the internet or directly from rangers at the Pachaug State Forest. The Town also receives “Red Flag” warnings via local media outlets.

Existing mitigation for wildland fire control is typically focused on building codes, public education, Fire Department training, and maintaining an adequate supply of equipment. The Town’s EOP recommends a 30-50 foot cleared radius be maintained around homes and buildings to prevent wildfires.

The Voluntown Volunteer Fire Company has a strong mutual aid relationship with the Connecticut DEEP firefighters to fight wildfires. The Town has an off-road vehicle to access distant fires, and the DEEP has tracked vehicles that can also access areas without roads. The Fire Department also has mutual aid agreements with surrounding communities.

The Fire Department goes to fires as quickly as possible in the town. Fire protection water is obtained through seven dry hydrants located throughout Voluntown. In areas located far from the dry hydrant, they draft water from the various streams, ponds, and rivers in the town, and rely on pump trucks to carry water to distant areas. The amount of fire protection afforded by the dry hydrants and nearby streams is considered to be adequate for the development level of Voluntown. The Fire Department will continue to evaluate the level of risk and the need for additional hydrants as development continues in the future.

9.3 Vulnerabilities and Risk Assessment

As Voluntown is over 60% state forest land, wildfires can occur almost anywhere due to the undeveloped nature of the town. State forest lands and inaccessible tracks of land are at the highest risk for wildfires. These areas are considered to be at moderate risk. Areas that are located nearby water bodies are considered to be low risk since a water supply is available. Refer

to Figure 9-1 in the Multi-Jurisdictional HMP for a general depiction of wildfire risk areas within Voluntown.

9.4 Potential Mitigation Measures, Strategies, and Alternatives

The Town of Voluntown is a low- to moderate-risk area for wildfires. Potential mitigation measures for wildfires include a combination of prevention, education, and emergency planning measures as presented in Section 11.

10.0 DAM FAILURE

10.1 Setting / Historic Record

Dam failures can be triggered suddenly with little or no warning and often in connection with natural disasters such as floods and earthquakes. Dam failures can occur during flooding when the dam breaks under the additional force of floodwaters. In addition, a dam failure can cause a chain reaction where the sudden release of floodwaters causes the next dam downstream to fail. While flooding from a dam failure generally has a limited geographic extent, the effects are potentially catastrophic depending on the downstream population. A dam failure affecting Voluntown is considered a possible event each year with potentially critical effects. No dam failures affected the town since the time of the last HMP.

10.2 Existing Programs, Policies, and Mitigation Measures

The Connecticut DEEP administers the Dam Safety Section and designates a classification to each state-registered dam based on its potential hazard as detailed in the regional plan. As noted in the Multi-Jurisdictional HMP, Voluntown is home to one Class C (high hazard) dam and one Class B (significant hazard) dam. These dams are listed on Table 10-1. No Class B or Class C dams are located upstream of Voluntown whose failure could potentially lead to flooding within the town.

TABLE 10-1
High and Significant Hazard Dams within Voluntown

Dam	Hazard Class	Owner	River System
Sawmill Pond Dam	C	Private	Pachaug River
Beach Pond Dam	B	CT DEEP	Pachaug River

Dams in the region whose failure could impact Voluntown are under the jurisdiction of the Connecticut DEEP. The dam safety statutes are codified in Section 22a-401 through 22a-411 inclusive of the Connecticut General Statutes. Sections 22a-409-1 and 22a-409-2 of the Regulations of Connecticut State Agencies have been enacted, which govern the registration, classification, and inspection of dams. Dams must be registered by the owner with the DEEP according to Connecticut Public Act 83-38.

Owners of high and significant hazard dams are required to maintain EOPs for such dams. The Town of Voluntown does not own any dams. According to Connecticut DEEP Dam Safety files, a dam failure analysis was performed in 1981 on the Sawmill Pond Dam, but a current EOP was not immediately available in the files at the CT DEEP. A dam failure analysis was performed for the Beach Pond Dam by Roald Haestad in 1981 and an EOP is on file with the CT DEEP. Beachdale Pond dam, a low hazard dam that impounds the Pachaug River, is being rebuilt in the spring of 2012.

10.3 Vulnerabilities and Risk Assessment

The potential impacts related to the failure of Class C and Class B dams within Voluntown are described below. Where information was available, the descriptions below are based on information available at the Connecticut DEEP Dam Safety Section. Refer to figure 10-1 for a location map showing the dams and potential dam failure inundation areas (where available).

Sawmill Pond Dam

Sawmill Pond is an impoundment of the Pachaug River. A Class C dam is located at the western end of the pond approximately 500 feet east of Voluntown's western boundary. The structure is essentially a run-of-the-river dam on the Pachaug River with minimal storage. According to the 1981 Phase I Inspection Report by the USACE, the dam was constructed around 1870 as a source of power for an adjacent mill. The pond has an impoundment capacity of 40 ac-ft at the spillway elevation.

The dam is classified as small and a high hazard by the USACE. A dam failure analysis conducted by the USACE estimated that failure could result in the inundation of four to five homes located downstream of the dam to a depth of two to four feet with the potential loss of a few lives. In addition, minor dams located downstream would be overtopped. Doaneville Pond in Griswold is expected to absorb the floodwaters without further flooding. The 1981 report says that if the dam failed there would be a four foot rise in downstream water levels for four hours.

According to the Connecticut DEEP, this dam has been maintained in good condition. This dam had some erosion of the berm in March 2010 due to overtopping. The dam owner is working on repairs.

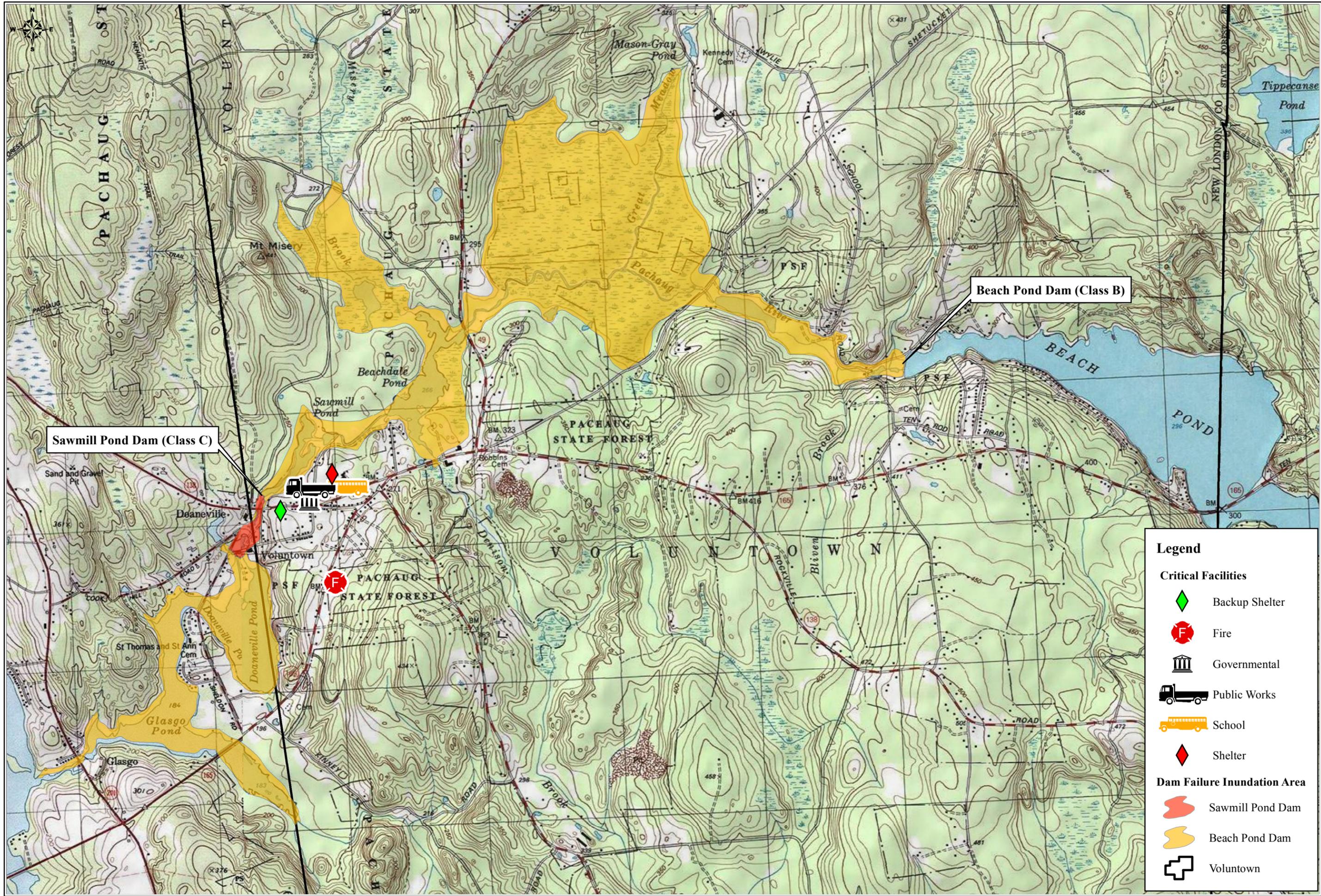
Beach Pond Dam

Beach Pond is an impoundment of the Pachaug River. A Class B dam is located at the western end of Beach Pond that is owned by the Connecticut DEEP. Beach Pond is used for recreation. According to the 1981 Phase II Investigation Report by Roald Haested, Inc. the estimated 1% annual chance flood discharge is 1,979 cfs. Based on the dam failure analysis also prepared by Roald Haestad, failure of this dam would cause inundation to a magnitude greater than the 1% annual chance flood event on the Pachaug River, and cause flooding impacts downstream to Pachaug Pond in Griswold.

Storm damage occurred during April 2011 that caused minor damage to this dam and repairs were made in 2012. The dam was completely rebuilt two decades ago and it is believed to be in good condition.

10.4 Potential Mitigation Measures, Strategies, and Alternatives

Voluntown is considered a low-risk area for dam failure since the majority of dams are well-maintained with active coordination with the Connecticut DEEP. Potential mitigation measures for dam failure include a combination of prevention, education, and emergency planning, as well as dam removal projects as discussed in Section 11.



Sawmill Pond Dam (Class C)

Beach Pond Dam (Class B)

Legend

Critical Facilities

- Backup Shelter
- Fire
- Governmental
- Public Works
- School
- Shelter

Dam Failure Inundation Area

- Sawmill Pond Dam
- Beach Pond Dam
- Voluntown

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 99 Realty Drive
 Cheshire, Connecticut 06410
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 www.miloneandmacbroom.com

SOURCE(S):
 USGS, CT DEEP, Town of Voluntown

Dam Failure Inundation Area Mapping
SCCOG HMP Update
Town of Voluntown Annex
Voluntown, Connecticut

Map By: scouth
 MIM#: 3570-05
 MXD: H:\3570-05\GIS\Maps\Voluntown\Figure10-1.mxd
 1st Version: 6/27/2012
 Revision: 6/27/2012
 Scale: 1 in = 2,000 ft

Figure 10-1

11.0 RECOMMENDATIONS

11.1 Summary of Specific Recommendations

The Multi-Jurisdictional HMP provided several region-wide recommendations applicable to all hazards that are also pertinent to the Town of Voluntown. In addition, recommendations throughout the sections of this annex are also applicable as recommendations. These recommendations are listed below:

11.1.1 Recommendations Applicable to All Hazards

Regional Coordination

- Continue to promote inter-jurisdictional coordination efforts for emergency response.
- Continue to promote local and regional planning exercises that increase readiness to respond to disasters.
- Continue to evaluate communication capabilities and pursue upgrades to communication and ensure redundant layers of communication are in place within the Town and with other SCCOG communities, New London County, and the State of Connecticut.
- Continue to promote regional transportation planning through SCCOG to balance general transportation, shipping, and potential evacuation needs.
- Work with SCCOG to perform a regional study to identify the vulnerability of critical facilities that may be unable to withstand natural hazard damage. Emphasis should be placed on critical infrastructure, shelters and other sites to ensure structural integrity against various hazards and adequacy of backup supplies.

Local Emergency Response

- Continue to review and update the Town EOP at least once annually.
- Continue to maintain emergency response training and equipment and upgrade equipment when possible.
- Encourage local officials to attend FEMA-sponsored training seminars at the Emergency Management Institute (EMI) in Emmitsburg, Maryland. All of these workshops are free of charge. Tuition, travel and lodging are provided by FEMA for the EMI training. Annual training sessions include emergency management, environmental reviews, the FEMA grant programs, the NFIP and CRS and others related to other hazards.
- Continue to evaluate emergency shelters, update supplies, and check communication equipment.
- Continue to promote dissemination of public information regarding natural hazard effects and mitigation measures into local governmental and community buildings. Specifically,

- ⇒ Obtain copies of the disaster planning guides and manuals from the "Are You Ready?" series (<http://www.ready.gov/are-you-ready-guide>).
- ⇒ Encourage residents to purchase NOAA weather radios with an alarm feature.
- ⇒ Post hazard preparedness information on the Town's website. Include links to established sources at the State of Connecticut and FEMA.
- ❑ Encourage residents to submit contact information to the CT Alerts Reverse 9-1-1 system on the CT Alerts website.

Prevention

- ❑ Develop a checklist for land development applicants that cross-references the specific regulations and codes related to disaster resilience.
- ❑ Integrate elements of this HMP into the *Plan of Conservation and Development* during the next update of that plan.
- ❑ Require the underground installation of utilities for all new development where possible.
- ❑ Continue reviewing building plans to ensure proper access for emergency vehicles.
- ❑ Continue to enforce the appropriate building code for new building projects.
- ❑ Encourage residents to install and maintain lightning rods on their buildings.

Natural Resource Protection & Open Space

- ❑ Continue to regulate development in protected and sensitive areas including steep slopes, wetlands, and floodplains.

11.1.2 Recommendations Applicable to Inland Flooding

Prevention

- ❑ Continue to regulate new development activities within SFHAs to the greatest extent possible within the local land use regulations.
- ❑ Require developers to demonstrate whether detention or retention of stormwater is the best option for reducing peak flows downstream.
- ❑ Conduct an annual inspection of floodprone areas that are accessible to Town officials. Determine if potential flood damage is stormwater facility related and make recommendations as appropriate.

Property Protection

- ❑ Incorporate information on the availability of flood insurance into all hazard-related public education workshops.
- ❑ Make available FEMA-provided flood insurance brochures at public accessible places such as the local government buildings. Encourage residents to purchase flood insurance if they are located within a FEMA SFHA.
- ❑ Provide technical assistance to owners of non-residential structures that suffer flood damage regarding floodproofing measures such as wet and dry floodproofing.
- ❑ Encourage residents to submit flood insurance claims following damage events.

Emergency Services

- ❑ Pursue mutual aid agreements with such organizations as the American Red Cross and the Boy Scouts of America to provide volunteer labor during flooding to assist with response activities.

Public Education and Awareness

- ❑ Visit schools (as is currently done under fire prevention) and educate children about the risks of floods (and other natural hazards) and how to prepare for them.
- ❑ Encourage builders, developers, and architects to become familiar with the NFIP land use and building standards by attending annual workshops.

Natural Resource Protection

- ❑ Pursue the acquisition of additional municipal open space in SFHAs.
- ❑ Continue to aggressively pursue wetlands protection through existing wetlands regulations. Incorporate performance standards into subdivision reviews to include additional protective measures such as conservation easement areas around wetlands and watercourses.

Structural Projects

- ❑ Utilize recently available extreme rainfall data to determine existing sizing of culverts. Encourage bridge replacements and culvert replacements in areas found to be undersized.
- ❑ Continue to perform catch basin and culvert surveys to perform maintenance and cleaning and to identify and prioritize structures in need of replacement.

11.1.3 Recommendations Applicable to Wind Damage from Hurricanes, Tropical Storms, Summer Storms, Tornados, and Winter Storms

Prevention

- Encourage Connecticut Light & Power to also cut down trees as opposed to just trimming trees near power lines.

Property Protection

- Promote the use of functional shutters for older buildings in the town to guard against window breakage which can result in structural failure.
- The Building Department should make information on wind-resistant construction techniques (such as hurricane straps) available to all building permit applicants.

Emergency Services

- Identify a location or locations in the town for a brush disposal operation for dealing with debris after wind storms. Determine how these trees can be reused within the town (chips, firewood, composting) to reduce costs of exporting.
- Consider surveying all Town-owned buildings to determine their ability to withstand wind loading, particularly Voluntown Elementary School (shelter).
- Develop agreements, if necessary, with land owners and with companies to chop/chip in order to ensure that plans are in place prior to damage and cleanup needs (as is done for snow plow operations).

Public Education and Awareness

- Visit schools (as is currently done under fire prevention) and educate children about the risks of wind events (and other natural hazards) and how to prepare for them.

11.1.4 Recommendations Applicable to Other Damage from Winter Storms

- Consider conducting a study to identify municipal buildings, critical facilities, and commercial / industrial buildings that are vulnerable to roof damage or collapse due to heavy snow loads. This study could be included in the regional critical facility study described in Section 2.8.
- Consider drafting a written plan for inspecting and prioritizing the removal of snow from Town-owned structures.
- Continue making funding available to the Public Works Department each budget year for clearing snow from roads and parking lots.

- ❑ Provide information for generally protecting town residents during cold weather and for mitigating icing and insulating pipes at residences.
- ❑ Consider posting the snow plowing routes in local government buildings and on the Town's website such that residents and business owners may better understand their risks during winter travel.
- ❑ Continue to identify areas that are difficult to access during winter storm events and develop contingency plans for emergency personnel.

11.1.5 Recommendations Applicable to Earthquakes

- ❑ Ensure that Town departments have adequate backup supplies and facilities for continued functionality in case earthquake damage occurs to these buildings and critical facilities. This should be part of the regional critical facility study discussed in Section 2.8.
- ❑ Consider preventing residential development in areas prone to collapse such as below steep slopes or in areas prone to liquefaction.

11.1.6 Recommendations Applicable to Wildfires

- ❑ Continue to evaluate dry hydrants and areas at risk of wildfire in the town.
- ❑ Extend fire protection to future areas identified as being particularly at risk.
- ❑ Continue to support public outreach programs to increase awareness of forest fire danger, equipment usage, and protecting homes from wildfires. Educational materials should be made available at the Town Hall.
- ❑ Ensure that provisions of Town regulations regarding fire protection facilities and infrastructure are being enforced.

11.1.7 Recommendations Applicable to Dam Failure

- ❑ Work with the Connecticut DEEP to ensure that the owners of high hazard dams that could impact the town have a current EOP. The Town Hall should keep a copy of such plans.
- ❑ Provide assistance to owners of lesser-ranked dams regarding resources available for inspections and maintenance.

11.2 Prioritization of Specific Recommendations

As explained in Section 11.3 of the Multi-Jurisdictional HMP, the STAPLEE method was utilized in this annex to prioritize recommendations. Table 11-1 presents the STAPLEE matrix for the Town of Voluntown. Each recommendation includes the department or commission responsible for implementing the recommendation, a proposed schedule, and whether or not the recommendation is new or originally from the previous HMP. Refer also to Section 2.7 for the list of previous plan recommendations and whether or not each recommendation was carried forward into this HMP.

TABLE 11-1: TOWN OF VOLUNTOWN STAPLEE MATRIX FOR PRIORITIZING RECOMMENDATIONS

Implementation of Current Recommendations	Existing or New Recommendation?	Responsible Department ¹	Schedule	Cost ²	Potential Funding Source ³	Weighted STAPLEE Criteria ⁴														Total STAPLEE Score
						Benefits							Costs							
						Social	Technical (x2)	Administrative	Political	Legal	Economic (x2)	Environmental	STAPLEE Subtotal	Social	Technical (x2)	Administrative	Political	Legal	Economic (x2)	
ALL HAZARDS																				
Regional Coordination																				
Continue to promote inter-jurisdictional coordination efforts for emergency response	New	FD	2012-2017	Minimal	OB	1	1	1	1	1	1	1	9.0						0.0	9.0
Continue to promote local and regional planning exercises that increase readiness to respond to disasters	New	BoS	2012-2017	Low	OB	1	1	1	1	1	0.5	1	8.0						0.0	8.0
Continue to evaluate communication capabilities and pursue upgrades to communication and ensure redundant equipment is available	Existing	FS, FD	2012-2017	Low	OB, CI	1	1	1	1	1	1	1	9.0					-0.5	-1.0	8.0
Continue to promote regional transportation planning through SCCOG	Existing	BoS	2012-2017	Low	OB	1	1	1	1	1	0.5		7.0						0.0	7.0
Work with the SCCOG to perform a regional study of the vulnerability of critical facilities to natural hazard damage	New	FS	2012-2017	Low	OB	1	1	1	1	1	1		8.0	-0.5				-0.5	-2.0	6.0
Local Emergency Response & Public Information																				
Continue to review and update the Town EOP at least once annually	Existing	BoS, FD	2012-2017	Low	OB	1	1	1	1	1	1	1	9.0						0.0	9.0
Continue to maintain emergency response training and equipment and upgrade equipment when possible	Existing	BoS, FD	2012-2017	Moderate	OB, CI	1	1	1	1	1	0.5	1	8.0					-0.5	-1.0	7.0
Encourage Town officials to attend FEMA-sponsored training seminars at EMI	New	FS	2012-2017	Minimal	OB	0.5	0.5	1	1	1	1	0.5	7.0						0.0	7.0
Continue to evaluate emergency shelters, update supplies, and check communication equipment	Existing	FS, FD	2012-2017	Low	OB	1	1	1	1	1	1		8.0						0.0	8.0
Continue to promote dissemination of public information regarding natural hazard effects into Government buildings, with additions	Existing	FS, ZEO	2012-2017	Minimal	OB	1	1	1	1	1	1	1	9.0						0.0	9.0
Encourage residents to submit contact information to the CT Alerts Reverse 9-1-1 system	Existing	FS	2012-2017	Minimal	OB	1	1	1	1	1	1		8.0						0.0	8.0
Prevention																				
Develop a checklist for land development applicants that cross-references the specific regulations and codes related to disaster resilience	New	ZEO	2012-2017	Minimal	OB	1	1	1	1	1	1		8.0			-0.5			-0.5	7.5
Integrate elements of this HMP into the Plan of Conservation and Development during the next update	New	PZC, ZEO	2012-2017	Low	OB	1	1	1	1	1	1	1	9.0			-1	-0.5		-1.5	7.5
Continue reviewing building plans to ensure proper access for emergency vehicles	New	FD	2012-2017	Minimal	OB	1	1	1	1	1	1		8.0						0.0	8.0
Require the underground installation of utilities for all new development	Existing	PZC	2012-2017	Minimal	OB	1	1	1	1	1	0.5		7.0	-0.5			-0.5		-1.0	6.0
Continue to enforce the appropriate building code for new building projects	New	ZEO	2012-2017	Minimal	OB	1	1	1	1	1	1		8.0						0.0	8.0
Encourage residents to install and maintain lightning rods on their structures	New	ZEO, FD	2012-2017	Minimal	OB	1	0.5	1	1	1	1	0.5	7.5						0.0	7.5
Natural Resource Protection & Open Space																				
Continue to regulate development in protected and sensitive areas including steep slopes, wetlands, and floodplains	New	PZC	2012-2017	Minimal	OB	1	1	1	1	1	1	1	9.0						0.0	9.0
FLOODING RECOMMENDATIONS																				
Prevention																				
Continue to regulate new development activities within SFHAs to the greatest extent possible within Town land use regulations	New	PZC	2012-2017	Minimal	OB	1	1	1	1	1	1	1	9.0						0.0	9.0
Require developers to demonstrate whether detention or retention of stormwater is the best option for reducing peak flows downstream	New	PZC	2012-2017	Minimal	OB	0.5	1	1	1	1	1	0.5	8.0						0.0	8.0
Conduct an annual inspection of floodprone areas that are publically accessible. Recommend drainage improvements as appropriate.	New	DPW	2012-2017	Low	OB	1	1	1	0.5	1	0.5	0.5	7.0						0.0	7.0
Property Protection																				
Incorporate information on the availability of flood insurance into all hazard-related public education workshops	New	ZEO	2012-2017	Low	OB	1	1	0.5	0.5	1	1		7.0	-0.5					-0.5	6.5
Make available FEMA-provided flood insurance brochures and encourage residents to purchase insurance if they are in a SFHA	New	ZEO, FS	2012-2017	Minimal	OB	1	1	1	1	1	1		8.0						0.0	8.0
Provide technical assistance to owners of non-residential structures regarding floodproofing techniques	New	ZEO	2012-2017	Low	OB	1	0.5	0.5	1	1	1	0.5	7.0						0.0	7.0
Encourage residents to submit flood insurance claims following damage events	New	All	2012-2017	Minimal	OB	1	1	1	1	1	1		8.0						0.0	8.0
Emergency Services																				
Pursue mutual aid agreements with non-profits to provide volunteer labor for response activities	New	FD, FS	2012-2017	Low	OB	1	1	1	1	1	1		8.0						0.0	8.0

TABLE 11-1: TOWN OF VOLUNTOWN STAPLEE MATRIX FOR PRIORITIZING RECOMMENDATIONS

Implementation of Current Recommendations	Existing or New Recommendation?	Responsible Department ¹	Schedule	Cost ²	Potential Funding Source ³	Weighted STAPLEE Criteria ⁴														Total STAPLEE Score
						Benefits							Costs							
						Social	Technical (x2)	Administrative	Political	Legal	Economic (x2)	Environmental	STAPLEE Subtotal	Social	Technical (x2)	Administrative	Political	Legal	Economic (x2)	
Public Education and Awareness																				
Visit schools and educate children about the risks of flooding and how to prepare	New	FD	2012-2017	Low	OB	1	1	1	1	1	1		8.0				0.0	8.0		
Encourage builders, developers, and architects to become familiar with NFIP land use and building standards at annual workshops	New	ZEO	2012-2017	Low	OB	1	1	1	1	1	1		8.0		-0.5		-0.5	7.5		
Natural Resource Protection																				
Pursue the acquisition of additional open space in SFHAs	New	BoS	2012-2017	High	CI*	1	1	1	1	1	1	1	9.0				-1	-2.0	7.0	
Continue to aggressively pursue wetlands protection and incorporate performance standards into subdivision reviews	New	PZC	2012-2017	Low	OB	1	1	1	1	1	1	1	9.0	-0.5	-0.5			-1.0	8.0	
Structural Projects																				
Utilize the recently available extreme rainfall data to determine existing culvert sizing and encourage upgrades where undersized	New	DPW	2012-2017	Moderate	CI	0.5	1	1	0.5	1	1		7.0				-1	-2.0	5.0	
Continue to perform catch basin and culvert surveys to prioritize upgrades and perform maintenance and cleaning	Existing	DPW	2012-2017	Moderate	OB	1	1	1	1	1	0.5	0.5	7.5					0.0	7.5	
WIND DAMAGE RELATED TO HURRICANES, SUMMER STORMS, TORNADOES, AND WINTER STORMS																				
Prevention																				
Encourage CL&P to also cut down trees as opposed to just trimming trees near power lines.	New	FS	2012-2017	Minimal	OB	1	1	1	1	1	1	1	9.0				-0.5	-0.5	8.5	
Property Protection																				
Promote the use of functional shutters for older buildings	New	ZEO	2012-2017	Minimal	OB	1	0.5	1	1	1	0.5		6.0					0.0	6.0	
Make information on wind-resistant construction techniques available to all building permit applicants	New	ZEO	2012-2017	Low	OB	1	1	1	1	1	1		8.0					0.0	8.0	
Emergency Services																				
Identify a location for a brush-disposal operation for dealing with debris following wind storms and determine potential reuse	New	DPW	2012-2017	Minimal	CI	0.5	1	1	1	1	1		7.5					0.0	7.5	
Consider surveying all Town-owned buildings to determine their ability to withstand wind loading	New	ZEO	2012-2017	Low	OB	1	0.5	1	0.5	1	0.5		5.5					0.0	5.5	
Develop agreements with landowners and companies to chop/chip to ensure backup plans are in place for debris removal	New	DPW, FS	2012-2017	Low	OB	0.5	0.5	1	0.5	1	0.5		5.0					0.0	5.0	
Public Education and Awareness																				
Visit schools and educate children about the risks of wind events and how to prepare for them	New	FD	2012-2017	Low	OB	1	1	1	1	1	0.5		7.0					0.0	7.0	
WINTER STORMS																				
Consider conducting a study to identify buildings vulnerable to roof damage or collapse from heavy snow in the town	New	ZEO	2012-2017	Moderate	OB	1	1	1	0.5	0.5	1		7.0		-0.5		-1	-2.5	4.5	
Consider drafting a written plan for inspecting and prioritizing the removal of snow from Town-owned structures	New	ZEO, FS	2012-2017	Low	OB	0.5	1	1	1	1	0.5		6.5					0.0	6.5	
Continue making funding available to the Public Works Department each year for clearing snow from roads and parking lots	New	BoS	2012-2017	High	OB	1	1	1	1	1	0.5		7.0					0.0	7.0	
Provide information for protecting Town residents during cold weather and for mitigating icing and insulating pipes at residences	New	ZEO	2012-2017	Low	OB	1	1	1	1	1	1		8.0					0.0	8.0	
Consider posting the snow plowing routes in local government buildings and on the Town's website	New	FS	2012-2017	Minimal	OB	1	0.5	0.5	0.5	1			4.0		-0.5	-0.5		-1.0	3.0	
Continue to identify areas that are difficult to access during winter storm events and develop contingency plans to access such areas	New	FD, DPW	2012-2017	Minimal	OB	1	1	1	1	1	1		8.0					0.0	8.0	
EARTHQUAKES																				
Ensure that Town departments have adequate backup supplies and facilities for continued functionality following an earthquake	New	FS	2012-2017	Moderate	OB, CI		0.5	1	0.5	0.5			3.0	-0.5		-1		-2.0	1.0	
Consider preventing residential development in areas prone to collapse such as below steep slopes or areas prone to liquefaction	New	PZC	2012-2017	Minimal	OB	0.5	1	1	0.5	0.5	1	0.5	7.0		-0.5			-0.5	6.5	

TABLE 11-1: TOWN OF VOLUNTOWN STAPLEE MATRIX FOR PRIORITIZING RECOMMENDATIONS

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						Benefits							Costs							
						Social	Technical (x2)	Administrative	Political	Legal	Economic (x2)	Environmental	STAPLEE Subtotal	Social	Technical (x2)	Administrative	Political	Legal	Economic (x2)	
WILDFIRES																				
Continue to evaluate dry hydrants and areas at risk of wildfire in the town	Existing	FD	2012-2017	Minimal	OB	1	1	1	1	1	1	0.5	8.5					0.0	8.5	
Extend fire protection to future areas identified as being particularly at-risk	New	FD	2012-2017	Low	CI	1	1	1	1	1	1	1	9.0					-1	-2.0	7.0
Continue to support public outreach programs to increase awareness of forest fire danger, equipment usage, and protecting homes	New	FD	2012-2017	Low	OB	1	1	1	1	1	0.5	1	8.0						0.0	8.0
Ensure that provisions of Town regulations regarding fire protection facilities and infrastructure are being enforced	New	FS	2012-2017	Low	OB	0.5	0.5	1	0.5	1	0.5		5.0						0.0	5.0
DAM FAILURE																				
Work with CT DEEP to ensure that the owners of high hazard dams have current EOPs and keep local copies	New	FS	2012-2017	Minimal	OB	1	1	1	1	1	1		8.0						0.0	8.0
Provide assistance to the owners of lesser ranked dams regarding resources available for inspections and maintenance	New	ZEO	2012-2017	Minimal	OB	0.5	0.5	0.5	0.5	1		0.5	4.0						0.0	4.0

NOTES

- Departments:
 - BoS = Board of Selectmen
 - DPW = Department of Public Works
 - FD = Fire Department
 - FS = First Selectman
 - PZC = Planning & Zoning Commission
 - ZEO = Zoning Enforcement Officer / Building Official
- Minimal = To be completed by staff or volunteers where costs are primarily printing, copying, or meetings; Low = Costs are less than \$10,000; Moderate = Costs are less than \$100,000; High = Costs are > than \$100,000.
- OB = Operating Budget; CI = Capital Improvement budget; a * indicates that grant funding is needed and will be pursued
- A beneficial or favorable rating = 1; an unfavorable rating = -1. Technical and Financial benefits and costs are double-weighted (i.e. their values are counted twice in each subtotal)

APPENDIX A
ADOPTION RESOLUTION

RESOLUTION

TOWN OF VOLUNTOWN HAZARD MITIGATION PLAN UPDATE

WHEREAS, the Town of Voluntown has historically experienced severe damage from natural hazards and continues to be vulnerable to the effects of flooding, thunderstorms, high wind, winter storms, wildfires, earthquakes, and dam failure, resulting in loss of property and life, economic hardship, and threats to public health and safety;

WHEREAS, the Southeastern Connecticut Council of Governments, of which the Town of Voluntown is a member, has developed and received conditional approval from the Federal Emergency Management Agency (FEMA) for its Hazard Mitigation Plan Update under the requirements of 44 CFR 201.6;

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

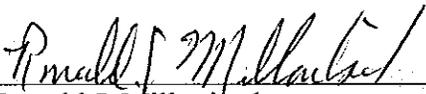
WHEREAS, the Plan recommends several hazard mitigation actions/projects that will provide mitigation for specific natural hazards that impact the Town of Voluntown, with the effect of protecting people and property from loss associated with those hazards;

WHEREAS, adoption of this Plan will make the Town of Voluntown eligible for funding to alleviate the impacts of future hazards;

NOW THEREFORE BE IT RESOLVED by the Board of Selectmen of the Town of Voluntown that:

1. The Plan is hereby adopted as an official plan of the Town of Voluntown;
2. The respective officials identified in the mitigation strategy of the Plan are hereby directed to pursue implementation of the recommended actions assigned to them;
3. Future revisions and Plan maintenance required by 44 CFR 201.6 and FEMA are hereby adopted as a part of this resolution for a period of five (5) years from the date of this resolution.
4. An annual report on the progress of the implementation elements of the Plan shall be presented to the Board of Selectmen by October 1 of each calendar year.

PASSED by the Board of Selectmen this 22nd day of January, 2013.



Ronald J. Millovitsch

First Selectman