HAZARD MITIGATION PLAN UPDATE
ANNEX FOR THE TOWN OF LEBANON

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

DECEMBER 2017

ADOPTED

MMI #3570-05

Prepared for:

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ACKNOWLEDGEMENTS

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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 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 hazards in Lebanon. Background information and the regional effects of pertinent 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 Lebanon and is not to be considered a standalone document.

The primary goal of this hazard mitigation plan annex is to identify risks to hazards and potential mitigation measures for such 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. Lebanon, with an approved Mitigation Plan, may apply for assistance from FEMA directly as a subgrantee through the state of Connecticut under the various grant programs.

1.2 Setting

Lebanon comprises approximately 55 square miles in northern New London County and is bordered by Hebron to the west, Columbia to the northwest, Windham to the northeast, Franklin to the east, Bozrah to the south, and Colchester to the southwest.

Significant bodies of water in Lebanon include Red Cedar Lake, Deep River and the Yantic River in the southern portion of town, Williams Pond in the western section of town, and Pease Brook, which runs through the central portion of town. The major transportation routes through Lebanon include Route 2, which runs through the southern corner of town, Route 87 which runs southeast to northwest through the center of town towards Franklin and Norwich, Route 207 which runs from east to west, and 289, which runs from the Lebanon town center towards Willimantic. Other important roadways include Waterman Road, which connects Route 2 to Route 87, and Lebanon Ave, which connects Colchester to Route 207.

1.3 Plan Development

Lebanon is a relatively new member of the SCCOG, joining on July 1, 2014 after the dissolution of the former Windham Region Council of Governments (WINCOG). WINCOG completed its initial multi-jurisdictional hazard mitigation plan in 2006, and began formally updating the Plan in 2012. With the dissolution of WINCOG in 2014, the jurisdictions previously included in their hazard mitigation plan are now members of three adjacent regional planning organizations (councils of governments). However, to maintain coverage in a hazard mitigation plan, the

WINCOG multi-jurisdictional hazard mitigation plan was completed and adopted in 2015 as a multi jurisdiction hazard mitigation plan for the "Former WINCOG Region."

The SCCOG multi-jurisdiction HMP was originally developed in 2005 and was last updated in 2012. Lebanon was not part of these two editions of the SCCOG HMP. As Lebanon is now a part of the SCCOG, the information from the "Former WINCOG" plan has been transferred and updated as part of this annex.

Based on the existing SCCOG HMP, former WINCOG HMP, and hazards that have occurred since 2012, SCCOG determined that the following data collection program would be sufficient to collect data to update the Multi-Jurisdictional plan and each annex.

- A data collection meeting was held with the First Selectman, Town Planner, Building Official, and Director of Public Works on December 15, 2016 to discuss the scope and process for updating the plan and to collect information. 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 Lebanon and that should be addressed in the update.

- The SCCOG issued a press release on November 4th, 2016 announcing two public information meetings on the multi-jurisdictional HMP update. This press release was published in the Norwich Bulletin and The Day, as well as in relevant local "Patch" news websites. This notice was also posted on the SCCOG Facebook page and website. The public information meetings were held on November 28 and December 1, 2016, at the Town of Groton Library and the SCCOG office, respectively.

- A survey soliciting public input was hosted at www.surveymonkey.com/r/SCCOGHazard from October 17, 2016 through March 17, 2017. Topics addressed by the survey included the types of natural hazards that concern participants, the assets, infrastructure, and government services they feel are most at risk, and the types of mitigation measures they support. The survey link was publicized along with the public meetings in The Day, The Norwich Bulletin, and local *Patch* websites, and at the public meetings.

- The draft that is sent for State review will be posted on the Town of Lebanon's website (http://www.lebanontownhall.org/) as well as the SCCOG website (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 Lebanon will be coordinated by SCCOG and the Lebanon Emergency Management Director and Town Planner. The HMP update must be adopted within one year of conditional approval by FEMA, or Lebanon 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 and be the local coordinator of this HMP (as the First Selectman has since 2005) under the authority of the Lebanon Board of Selectmen. The Town Planner will serve as the deputy local director and will assist the First Selectman. 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 in Town Hall at the First Selectman's Office, available to all departments, to assist in guiding growth decisions. See Section 2.5 for recommendations related to integrating the findings of this HMP into additional town planning documents. Lebanon will continue to encourage town residents to contact the First Selectman, with concerns related to natural hazards or emergency response via the town's website.

Lebanon 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.

Lebanon 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 SCCOG. The First Selectman will coordinate with SCCOG for the next HMP update which is expected to occur in 2021-2022.

2.0 COMMUNITY PROFILE

2.1 Physical Setting

Lebanon is located at the northwestern edge of the SCCOG planning area. Lebanon's elevation ranges from about 200 feet in the southeastern section of town at Pease Brook to about 660 feet at the peak of Gates Hill in the northeast section. Most of town is rural and mostly undeveloped with many hills, agricultural fields, and forestland.

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 Lebanon. Lebanon has ten bedrock formations which are generally situated in a northeast-southwest orientation. The Hebron Gneiss Formation, the Lebanon Gabbro Formation, the Tatnic Hill Gneiss Formation, and the Scotland Schist Formation cover the majority of the town's area. The Waterford Group formation, Brimfield Schist, and Canterbury Gneiss formation also cover significant areas in town.

Lebanon's surficial geologic formations include glacial till and stratified drift. Refer to the Multi-Jurisdictional HMP for a generalized view of surficial materials. Till contains an unsorted mixture of clay, silt, sand, gravel, and boulders deposited by glaciers as a ground moraine. Areas adjacent to the Yantic River, Pease Brook, and smaller tributaries have fairly extensive areas underlain by stratified drift. 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. The amount of stratified drift also has bearing on the relative intensity of earthquakes and the likelihood of subsidence. The vast majority of the town however, is classified as some form of till.

2.2 Land Use and Development Trends

Lebanon was incorporated in 1700 from lands acquired from members of the Mohegan Tribe. Like much of eastern Connecticut, Lebanon has been a farming community with small population growth due to the town's landscape. The Town contains over 300 classic 28th and 19th century houses. Today, it still maintains the rural character, and remains a residential community.

Lebanon's population grew the most rapidly from the 1960s through the 1980s, with population increasing from 2,434 to 6,041 in three decades. Population growth has slowed since then.

Based on the 2010 *Plan of Conservation and Development*, (referencing the"2006 Land Cover by Area" data developed by the University of Connecticut Center for Land Use Education and Research (CLEAR)) Lebanon is made up of approximately 49% deciduous forest, 6% coniferous forest and 5% forested wetlands. Other land cover in the town includes: agricultural and other grasses (22%), developed (8%), water (3%), turf and grass (5%), non-forested wetlands (1%), barren land (<1%), and utility rights-of-way (<1%). The approximate 894 acres of the town

occupied by water bodies includes: Amston Lake, Big Pond, Brewster Pond, Red Cedar Lake, Savin Lake, Spencer Pond, Stiles Pond and Williams Pond.

Lebanon's housing stock is primarily single family owner-occupied units. According to the 2010 *Plan of Conservation and Development* the Town contains 3,108 housing units. Lebanon experienced a building boom between 2000 and 2006, with as many as 70 building permits issued in 2004. Since 2007, residential construction has slowed significantly, with local population growth slowing in the last decade as well.

Currently active developments include:

- A 16-unit senior housing complex on West Town Street
- A 43-acre solar farm on the former Orbuch Farm land at 1 Williams Crossing Road, near the Franklin/Windham town line. The solar farm is expected to have a 9.5 Megawatt capacity.

As noted in the Former WINCOG HMP, Lebanon hosts seasonal populations in the vicinity of Lake Williams, Amston Lake, and Red Cedar Lake. These areas are more vulnerable to hazards that occur in the summer.

Agriculture is Lebanon's primary industry. Lebanon expects that preservation of agricultural land and activities for the sake of the local economy in terms of tourism, job creation, and maintenance of lower property taxes will continue to be a priority moving forward. Economic development goals of the Town include the promotion of agricultural businesses, heritage tourism, and integrated business and residential development in the Town center.

2.3 Drainage Basins and Hydrology

There are a total of twelve subregional watershed basins in Lebanon. These include The Tenmile River, Willimantic River, Shetucket River, Susquetonscut Brook, Pease Brook, Exeter Brook, Bartlett Brook, Raymond Brook, Yantic River, Sherman Brook, Deep River, and Gardner Brook. The Pease Brook sub regional basin is the largest subregional basin in town, accounting for approximately 6,771 acres or approximately 19% of land cover stretching through much of the center of Lebanon, down to the southeastern border with Bozrah. The second largest subregional basin, the Susquetonscut Basin, accounts for approximately 18% of the north central part of Lebanon, stretching towards the eastern border with Franklin. The remaining six subregional watershed basins account for the remaining land cover.

As mentioned in Section 1.2, the most significant surface water bodies in Lebanon are Red Cedar Lake, Deep River, and the Yantic River in the southern portion of town, Williams Pond in the western section of town, and Pease Brook, which runs through the central portion of town. Other significant watercourses include Austin Brook, Bartlett Brook, Brousseous Brook, Burgess Brook, Cedar Swamp Pond Brook, Cold Brook, Dixon Brook, Exeter Brook, Gillette Brook, Goshen Brook, Hinckley Brook, Hoxie Brook, Jordan Brook, Mint Brook, Obwebetuck Brook, Pigeon Swamp Brook, Sherman Brook, Spencer Pond Brook, Spinning Mill Brook, Susquetonscut Brook, Tenmile River, and Waterman Brook. Unnumbered A zones and AE zones are delineated along many of the watercourses in Lebanon.

2.4 Governmental Structure

Lebanon 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 Lebanon.

Lebanon has boards, commissions, and committees that can take an active role in hazard mitigation, including the Inland Wetlands Commission, Conservation and Agriculture Commission, the Planning and Zoning Commission, the Emergency Management Committee, the Town Building Department, the Flood and Erosion Control Board, and the Board of Selectmen. Departments and commissions common to all municipalities in SCCOG were described in Section 2.8 of the Multi-Jurisdictional HMP. More specific information for the departments and commissions of Lebanon is noted below:

- The Lebanon Volunteer Fire Department provides fire suppression, fire prevention, rescue, and hazardous materials response services to the town.

- The Building Official is responsible for the issuance of building, electrical, plumbing, mechanical, demolition and change of occupancy permits.

- The Planning & Zoning Commission prepares and adopts the local plan of development and adopts and administers local zoning regulations. The Planning, Zoning, and Wetlands Department assists applicants with the municipal approvals process, ensures that proposals comply with applicable regulations, and enforces local Zoning, Subdivision, and Inland Wetlands and Watercourses regulations.

- The Inland Wetlands and Conservation Commission mission is to produce and enforce regulations and amendments in conformity with the regulations of the State Commissioner of Environmental Protection and the Inland Wetlands and Watercourses Act, as amended, as are necessary to protect wetlands and watercourses in Lebanon.

- The Public Works Department provides services including maintaining safe, efficient and well-maintained infrastructure of roads and bridges, snow removal and deicing on roads, conducting the removal of hazardous trees, and maintaining and upgrading storm drainage systems to prevent flooding caused by rainfall. The Town hired an in-house Town Engineer in 2013, switching from the use of a contracted municipal engineer.

- The Zoning Board of Appeals mission is to resolve conflicts which may arise between the common law rights of a property owner to his land as he or she wishes and the efforts of the Planning and Zoning Commission to manage land use in order to promote the general welfare of Lebanon. The Zoning Board of Appeals is empowered by statute to grant variances to zoning regulations.

As summarized in the Former WINCOG HMP, authorities in the Town of Lebanon who play advisory, supervisory, or direct roles in hazard mitigation for the Town include:

Authorities	Role			Hazard Mitigated
	Advisory	Supervisory	Direct	
Board of Selectmen / Flood and Erosion Control Board		X	X	All
Building Department	X		X	All
Burning Official	X		X	Wildfire
Conservation and Agriculture Commission	X			Flooding
Emergency Management	X	X	X	All
Fire Department			X	Wildfire
Fire Marshall	X		X	Wildfire
First Selectman		X		All
Inland Wetlands Commission	X			Flooding
Planning and Zoning Commission	X		X	Flooding
Public Works Department	X	X	X	All
Town Engineer	X		X	All
Town Planner	X		X	All
Zoning Board of Appeals			X	Flooding

The roles of town departments have not changed since the Former WINCOG HMP was adopted in 2015. Thus, Lebanon is technically, financially, and legally capable of implementing mitigation projects for hazards to the extent that funding is available; and the Town has actually increased its capabilities since hiring the Town Engineer.

2.5 Review of Existing Plans and Regulations

Lebanon has different plans and regulations that recommend or create policies related to hazard mitigation. These policies and regulations are outlined in the Ordinance on Flood Plain Management (1976), *Plan of Conservation and Development* (2010), Open Space Brochure (2010), Zoning Regulations (2015), Subdivision Regulations (2011), and Inland Wetlands and Watercourse Regulations (2007).

Emergency Operations Plan

Lebanon 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 in case of an emergency. Emergencies can include but are not limited to hazard events such as hurricanes and nor'easters. The EOP is directly related to providing emergency services prior to, during, and following a hazard event.

Plan of Conservation and Development (2010)

The POCD was most recently updated in 2010 with contributions from local boards, commissions, committees, citizens and citizen groups. The Plan seeks to be a statement of

policies, goals and standards for the physical and economic development of the City and recommends the most desirable uses types and population densities in various parts of the municipality.

The Town of Lebanon POCD includes the following actions:

- Lebanon's Inland Wetlands commission assures that any development that affects wetlands or a buffer within 100 feet of wetlands does not negatively impact the environment
- Town recognizes the need to acquire open space, especially in high-quality aquifers which could be used for future public water supply.
- Town is looking into the possibility of building fire substations to improve emergency services.
- Town encourages agricultural development of land as opposed to other land uses. This generally has less potential for runoff, which can reduce flooding.

The Lebanon POCD is considered inconsistent with the current goals and actions of the hazard mitigation plan. It does not directly address several of the hazards such as winter storm hazards, flood hazard, earthquake hazards, and wind hazards. The next update to the POCD (scheduled for 2020, during the life of the current hazard mitigation plan) should incorporate elements of the hazard mitigation plan.

Zoning and Subdivision Regulations (2015, 2011)

The Town of Lebanon updated its zoning regulations on June 26, 2015 in a manner consistent with the updated 2011 Flood Insurance Study for New London County. The Lebanon Special Flood Hazard Area District (Sec. 4.9-10 of the Lebanon Zoning Regulations) is used to enforce flood damage prevention. Refer to Section 3.2 for specific narratives. The degree of flood protection established by the variety of regulations in the Town meets the minimum reasonable for regulatory purposes under the NFIP. The Town plans to remain compliant with the NFIP and will continue to participate in the NFIP.

Inland Wetlands and Watercourses Regulations (2007)

The Inland Wetlands and Watercourses Regulations in Lebanon describe any activity within 100 feet of a wetland as a regulated activity, which requires a permit. 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

Lebanon 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 a Special Flood Hazard Area (SFHA). These facilities are described in more detail below.

TABLE 2-1
Critical Facilities

Facility	Address or Location	Emergency Power?	Shelter?	In SFHA?	Changes
Volunteer fire department*/ Fire Safety Complex**	*23 Goshen Hill Road*				*EOC*
Police department	*Goshen Hill Road*				
Elementary school	*Exeter Road*				
Middle school	*Exeter Road*				
Lyman Memorial High School	*917 Exeter Road*	✓	✓		
Industrial park off Route 207	*Route 207*				
Hist Dist (Jon. Trumbull home, Jon. Trumbull Jr. home, town green, War Office, etc.)					
Elderly housing facility	*Dr. Manning Drive*				
Senior Center	*West Town Street*				
Norwich Public Utilities (NPU) Water treatment Plant	*Reservoir Road*				
Two transformer stations					
Girl Scout camp off Clubhouse Road	*Clubhouse Road*				
Pumping Stations	*Throughout town*				
Warnings/Emergency Communication (CT Alert)	*Volunteer Fire Department Buildings*				
Department of Public Works	*87 Goshen Hill Rd*				*New Garage in Planning Stage*

*Emergency Operations Center (EOC)

Lebanon Volunteer Fire Department

The Lebanon Volunteer Fire Department was established in 1943, and purchased its first truck by 1944. The fire department currently maintains seven fire trucks, a water rescue response outfit, a utility vehicle, and one ambulance. This equipment allows the department to respond to standard fire calls, as well as perform rescues on the water and in low accessibility areas.

Shelters and Emergency Operations Center

Lebanon's shelter is in Lyman Memorial High School. The facility is fitted with a generator. Residents who seek refuge at the shelter are able to shower and use the restrooms. Phone charging, bottled water, some food supplies are also available.

The town's emergency operations center (EOP) is located in the firehouse on 23 Goshen Hill Road. The EOP contains the base radio, which is used to coordinate activities in an emergency.

Communications

Lebanon is currently registered the CT Alert "Everbridge" Emergency Notification System for Reverse 9-1-1. Town officials should encourage residents to sign up for the service via the CT Alert Emergency Notification System web site (http://www.ct.gov/ctalert/site/default.asp).

Additional Facilities

The Public Works Garage is located on 87 Goshen Hill Road. It is outfitted with a generator and is outfitted with gasoline pumps for town equipment and vehicles.

Evacuation Routes

The highest capacity egress routes from Lebanon include:

- Route 87, which is oriented northwest-southeast. The road runs southeast from Lebanon down to Franklin, where it connects to Route 2. In the northwest direction, Route 87 connects to Route 6 in Andover.
- Route 289, which runs north from the Lebanon town center, leads to Willimantic.
- Route 207 which extends west from the town center towards Hebron, and extends east from the town center towards Franklin.
- Route 16 connects Route 207 and western Lebanon to Colchester.
- Waterman Road, while not a high capacity highway, provides a fairly direct route from eastern Lebanon to Route 2.

3.0 INLAND FLOODING

3.1 Setting / Historic Record

The Town of Lebanon is at risk of flooding along a number of streams, brooks and ponds in the town. According to the 1988 Federal Emergency Management Agency's (FEMA's) updated Flood Insurance Study (FIS) for the town:

> *"Floods in Lebanon have occurred in every season of the year. Spring floods are common and are caused by rainfall combined with snowmelt. Floods in late summer and fall are usually the result of hurricanes or other storms moving northeast along the Atlantic coast. Winter floods result from occasional thaws, particularly in years of heavy snow cover.*
>
> *Major floods of the past 50 years in Lebanon occurred in March 1936, September 1938, and August 1955. Of these, the flood of September 1938, caused by a hurricane, was the most severe. Stream-flow records at USGS gaging station No. 01193500 on the Salmon River at East Hampton and No. 01127500 on the Yantic River at Yantic, which are in the vicinity of Lebanon, indicate that the September 1938 flood has a recurrence interval of approximately 100 years."*

According to the Town of Lebanon, flood damages have been relatively minor in recent years. No public assistance reimbursements were received for flooding after events of October 2005, April 2007, or March 2010, and no specific damage areas were reported. According to FEMA, The Town of Lebanon does not have any repetitive loss or severe repetitive loss properties.

3.2 Existing Capabilities

Lebanon attempts to mitigate inland flood damage and flood hazards by utilizing a wide range of measures including restricting activities in flood prone 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 Lebanon although the existing dams provide a small amount of flood mitigation.

Bridge Replacements, Drainage, and Maintenance

Stormwater runoff can significantly exacerbate flooding; therefore, managing stormwater runoff is a priority mitigation measure. Residential and commercial development increases impervious land area, reduces the infiltration of stormwater runoff into the ground, and increases the volume and velocity of stormwater runoff causing flooding. Enforcing appropriate maintenance programs for stormwater facilities will therefore help reduce the impact of these events and subsequently reduce the damage caused by flooding. A good stormwater management system promotes groundwater recharge and controls peak flows, while reducing local flooding and maintaining stream bank integrity. An example of a good stormwater management system

would be one that calls for removing sediment accumulation from catch basins yearly. This may make the difference in whether or not flooding occurs. Lebanon currently performs routine maintenance on its drainage systems through the cleaning, repair, and replacement of storm drains and catchment systems.

Currently, 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 Director or either Fire Company typically handles complaints from residents. For example, the Public Works Department would inspect bridges and culverts and erect barricades to close roads, while the Fire Companies respond to calls requesting help for flooded basements. Drainage complaints are directed to the Public Works Director.

Recent drainage projects have included replacing the Baker Hill and Kingsley Road Bridge, as well as the acquisition of a vacuum device for clearing leaves and debris from obstructed drains. Additionally, Bascom Road was recently outfitted with new drains. A $4 Million road and bridge improvement project is on the horizon.

Regulations, Codes, and Ordinances

Lebanon has planning and zoning tools in place that incorporate floodplain management. These policies and regulations are outlined in the Ordinance on Flood Plain Management (1976), Zoning Regulations (2015), and Inland Wetlands and Watercourse Regulations (2007).

The Town of Lebanon updated their zoning regulations on June 26, 2015 in a manner consistent with the updated 2011 Flood Insurance Study for New London County. The Lebanon Special Flood Hazard Area District (Sec. 4.9-10 of the Lebanon Zoning Regulations) includes, but is not limited to, the following limitations in the flood zone:

- Residential structures shall have the lowest floor elevation, including the basement, elevated above the base flood elevation,

- Non-residential structures shall have the lowest floor elevation, including basement, elevated as above or flood proofed to a point above the base flood elevation, as below,

- Non-residential structures located in all A-Zones may be flood-proofed in lieu of being elevated provided that together with all attendant utilities and sanitary facilities the areas of the structure below the required elevation are watertight with walls substantially impermeable to the passage of water, and use structural components having the capability of resisting hydrostatic and hydrodynamic loads and the effect of buoyancy,

- New construction or substantial improvements of elevated buildings that include fully enclosed areas formed by foundation and other exterior walls below the base flood elevation shall be designed to preclude finished living space and designed to allow for the entry and exit of floodwaters to automatically equalize hydrostatic flood forces on exterior walls,

- ❑ In AE-Zones where base flood elevations have been determined, but before a floodway is designated, no new construction, substantial improvement, or other development (including fill) shall be permitted which would increase base flood elevations more than one (1) foot at any point within the community when all anticipated development is considered cumulatively with the proposed development,

- ❑ In areas where floodways have been determined, encroachments, including fill, new construction, substantial improvements and other developments shall be prohibited unless certification (with supporting technical data) by a registered professional engineer is provided demonstrating that encroachment shall not result in any (0.00) increase in flood levels during occurrence of the base flood discharge. When utilizing data other than that provided by the Federal Emergency Management Agency, the following standard applies: the Commission shall utilize a regulatory floodway based on the principal that the area chosen for the regulatory floodway must be designed to carry the waters of the base flood, without increasing the water surface elevation of that flood more than one foot at any one point,

- ❑ All new construction or substantial improvements shall be:

    - Designed and anchored to prevent flotation, collapse, or lateral movement; constructed with materials and utility equipment resistant to flood damage; and be constructed by methods and practices which minimize flood damage, and

    - Consistent with the need to minimize flood damage within flood prone areas; serviced by utilities such as gas, sewers, electric, heating, ventilation, plumbing, air conditioning equipment, HVAC ductwork, and water systems located and constructed to minimize or eliminate flood damage, and provide with adequate drainage to reduce exposure to flood hazards,

- ❑ New and replacement water supply systems shall be designed to minimize or eliminate infiltration of flood waters into the system.

- ❑ New and replacement sanitary sewer systems shall be designed to minimize or eliminate infiltration of floodwaters into the system and discharges from the systems into the floodwaters; on site waste disposal systems shall be located to avoid impairment to them or contamination from them during flooding.

- ❑ Manufactured homes (including a recreational vehicle placed on a site for 180 consecutive days or longer) and manufactured home parks and subdivisions are prohibited in the Special Flood Hazard Area District.

- ❑ If any portion of a structure lies within the Special Flood Hazard Area (SFHA), the entire structure is considered to be in the SFHA. The entire structure must meet the construction requirements of the flood zone. The structure includes any attached additions, garages, decks, sunrooms, or any other structure attached to the main structure. Decks or porches

that extend into a more restrictive flood zone will require the entire structure to meet the standards of the more restrictive zone.

- If a structure lies within two or more flood zones, the construction standards of the most restrictive zone apply to the entire structure (i.e., V zone is more restrictive than A zone; structure must be built to the highest BFE). The structure includes any attached additions, garages, decks, sunrooms, or any other structure attached to the main structure.

- New construction, substantial improvements and repair to structures that have sustained substantial damage cannot be constructed or located entirely or partially over water unless it is a functionally dependent use or facility.

- Above-ground storage tanks (oil, propane, etc.) which are located outside or inside of the structure must either be elevated above the base flood elevation (BFE) on a concrete pad, or be securely anchored with tie-down straps to prevent flotation or lateral movement, have the top of the fill pipe extended above the BFE, and have a screw fill cap that does not allow for the infiltration of flood water.

Lebanon's regulations require that proposed structures meet elevation requirements and strict construction demands. Structures may be required to be constructed with certain materials, elevated, flood proofed, watertight or anchored. It must be shown with not only proposed structures, but with any activity in the 100-year flood plain that encroachment will not alter the flood levels in the floodway. These types of regulations help to keep structures out of areas at risk of flooding. Structures that are allowed in the flood plain must meet requirements put in place to greatly reduce the risk of damage to property and the loss of life, should a flood occur.

The degree of flood protection established by the variety of regulations in the Town meets the minimum reasonable for regulatory purposes under the NFIP. The Town plans to remain compliant with the NFIP and will continue to participate in the NFIP.

Stormwater Management

The Town monitors known areas susceptible to flooding from stormwater runoff, and regularly inspect and maintain stormwater drainage systems. Overall, Town personnel feel that their stormwater management capabilities are sufficient. Nevertheless, a stormwater management plan is currently under development.

Acquisitions, Elevations, and Property Protection

As noted above in 3.1, the Town of Lebanon does not have any repetitive loss or severe repetitive loss properties. Elevations are required according to the aforementioned zoning regulations.

The Town continually pursued preservation of open space. This is typically accomplished through instituting conservation easements rather than through acquisition. Town personnel describe this program as constant, active, and productive.

In 2015 the Town purchased 37 acres of land on Synagogue Road along the Ten Mile River. Much of that property is vulnerable to flooding. Most will be set aside as open space, and part will become a cemetery. Additionally since 2015, the Town has purchased development rights along farmland to prevent development of those open spaces.

Flood Watches, Warnings, and Public Awareness

The First Selectman and the Volunteer Fire Companies access weather reports through the National Weather Service and local media. Lebanon participates in the CT Alerts "Everbridge" Emergency Alerting and Notification Reverse 9-1-1 System. Use of this service allows the town the ability to receive geographically specific weather warnings when storms are imminent.

The Town also mails hazard information to residents on a five-year cycle. The next mailer will be sent out in 2017. FEMA maps are available online through the Town website, as well as in the Town Hall at the Planner's office.

Summary

As noted in the Former WINCOG HMP in 2015, the Town's capabilities are considered to be effective with regard to response to flood damage, and the Town's capability to mitigate flood hazard damage is also considered effective for preventing damage to new development and substantial improvements. Overall, the Town of Lebanon's capability to mitigate for flooding and prevent loss of life and property was believed slightly improved since the initial WINCOG hazard mitigation plan was adopted in 2006. This is because the Town has implemented a series of bridge projects over the last several years to reduce the vulnerability of infrastructure, has implemented several drainage improvements to reduce flooding of roads and nearby properties, and now posts its regulations on its website. The Town is also part of the CT Alert Emergency Notification System, which utilizes the state's Enhanced 9-1-1 database to provide location-based notifications to the public for life-threatening emergencies.

Capabilities have not changed significantly between 2015 and 2017.

3.3 Vulnerabilities and Risk Assessment

3.3.1 Vulnerability Analysis of Areas along Watercourses

Areas studied for vulnerability, as noted in FEMA's 1988 FIS for the town, are as follows:

> *"The following streams were studied by detailed methods: Susquetonscut Brook, from the downstream corporate limits to Bender Road; the Tenmile River, from its confluence with the Willimantic River upstream to Palmer Pond; and the Yantic River, from the downstream corporate limits to Sisson Road. Williams Pond, Amston Lake, and Red Cedar Lake were also studied by detailed methods. The areas studied by detailed methods were selected with priority given to all known flood hazard areas and areas of projected development and proposed construction through December 1991.*

All or portions of the following flooding sources were studied by approximate methods: Sherman Brook, the Deep River, Hall Brook, Brewster Pond, Exeter Brook, Bartlett Brook, Savin Lake, Pease Brook, Jordan Brook, Spinning Mill Brook, the Tenmile River, and the Yantic River. Approximate analyses were used to study those areas having a low development potential or minimal flood hazards. The scope and methods of study were proposed to, and agreed upon by, FEMA and the Town of Lebanon."

A map of the flood risk areas was provided as Figure 29 of the 2015 WINCOG Plan; the flood risk areas have not changed since that update.

According to the Town of Lebanon, flood damages have been relatively minor in recent years. No public assistance reimbursements were received for flooding in October 2005, April 2007, or October 2010, and no specific damage areas were reported.

The Town of Lebanon reports that most of its flooding damages are due to localized heavy rain events, such as the short duration, high intensity rain event that recently occurred on March 30, 2014. Damage from this event consisted of unimproved gravel road washouts and erosion to paved road shoulders.

3.3.2 Vulnerability Analysis of Private Properties

The 2014 Connecticut Natural Hazard Mitigation Plan Update provides estimates of annualized loss by county for flooding in Table 2-44. Based on the data provided in Table 2-44 of the State Plan, the annualized loss for New London County based on the historic record through the National Climatic Data Center through the past 20 years is $350,705.

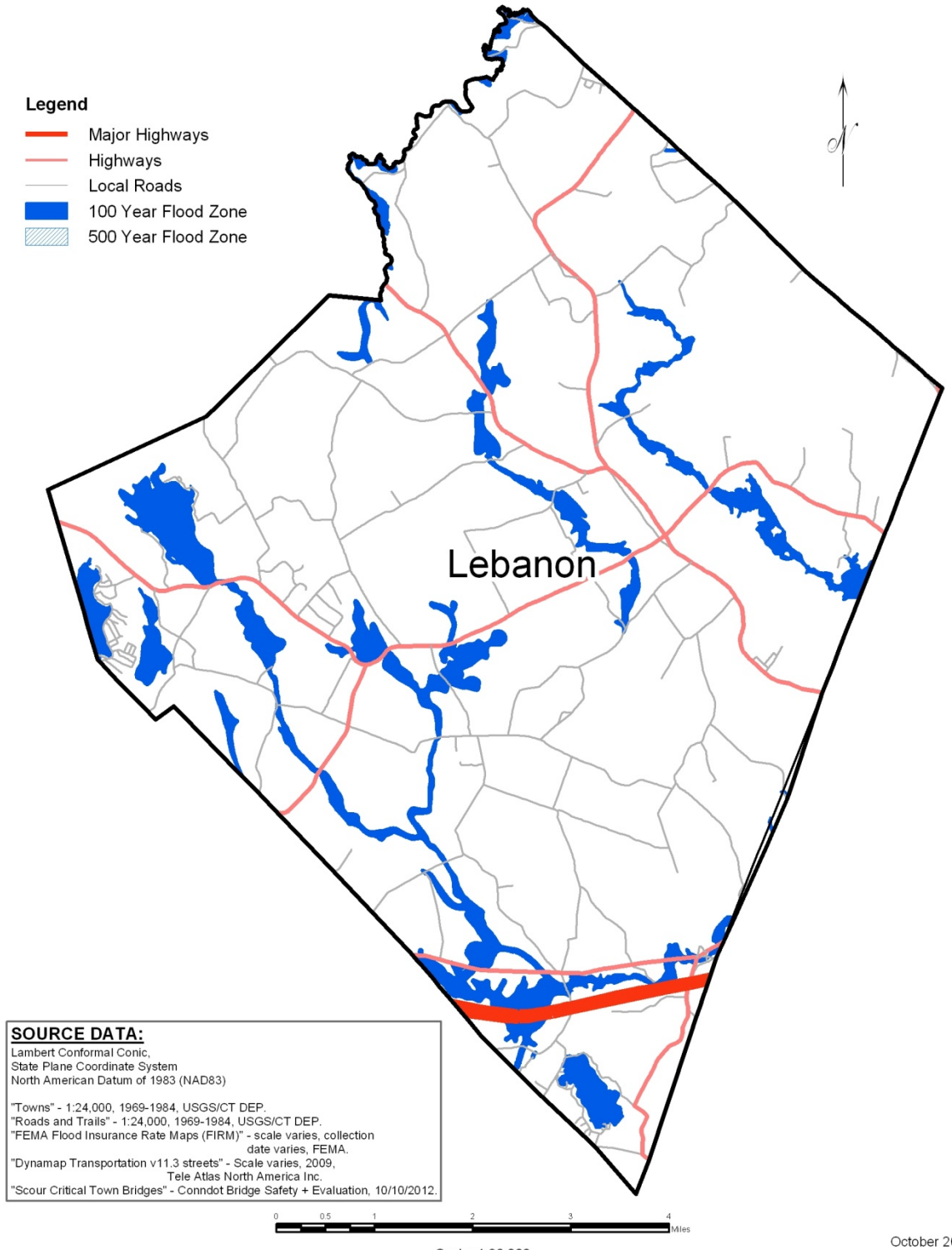
The ratio of the Town's population to the county population was utilized to attribute a portion of the county-wide annualized loss to Lebanon. Based on the 2010 Census data in Section II.A., Lebanon has approximately 2.7% of the population of New London County. Based on this percentage, the annualized loss in the Town of Lebanon for flooding is estimated at $9,352.

Note that this estimate does not take into account site specific details or particular flooding damages that may have affected the Town of Lebanon in the historic record. Therefore, this number should be used with caution. Nevertheless, it provides a useful planning number to consider the overall vulnerability of the Town to flooding.

According to FEMA, The Town of Lebanon does not have any repetitive loss or severe repetitive loss properties.

Flood Risk Zones of Lebanon

Figure 29



Scale: 1:96,000

October 2012

Prepared for: The Windham Region Council of Governments Hazard Mitigation Plan.

FOR ADVISORY PURPOSES ONLY

3.3.3 Vulnerability Analysis of Critical Facilities

As noted in Section 2.6 no critical facilities are located within an SFHA flood zone. With respect to critical facilities, there are no serious concerns to the town in conjunction with flooding.

3.4 Potential Mitigation Strategies and Actions

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 Lebanon

4.0 COASTAL FLOODING

4.1 Setting / Historic Record

Lebanon is not located along the coastline nor is it located in a potential hurricane surge zone. As such, no coastal flooding or storm surge has affected the town since the last HMP. Therefore, the town is not considered to be affected by coastal flooding and storm surge.

4.2 Existing Capabilities

Due to the town not being on the coast, it does not have and/or need regulations to restrict development due to coastal flooding hazards.

4.3 Vulnerabilities and Risk Assessment

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

4.4 Potential Mitigation Strategies and Actions

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

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.

Tropical Storm Irene impacted the region in August 2011. Sections of trees fell throughout the town and the region causing power outages that lasted up to seven days in Lebanon. Lebanon learned that communication between the local officials and Connecticut Light & Power (CL&P) (now Eversource) needs to greatly improve in order to efficiently and effectively clear roadways throughout town in the future. According to local officials, town shelters were not needed following Tropical Storm Irene although the EOC was operational. The town of Lebanon received over $50,000 in disaster relief from FEMA to cover the cost of damages from the storm.

In 2012 Hurricane Sandy, a hybrid storm with both tropical and extra-tropical characteristics, brought high winds and coastal flooding to southern New England. Record breaking high tides and wave action was combined with sustained winds of 40 to 60 mph and wind gusts of 80 to 90 mph. Widespread significant statewide power outages of 667,598 lasted up to eight days. The town of Lebanon received over $30,000 in disaster relief from FEMA to cover the cost of damages from the storm.

5.2 Existing Capabilities

Wind loading requirements are addressed through the state building code. The Connecticut State Building Code was most recently adopted with an effective date of October 1, 2016. The code specifies the design wind speed for construction in all the Connecticut municipalities. The ultimate design wind speed for Lebanon ranges from 120 to 140 miles per hour depending on the building use (for example, hospitals must be designed to the higher wind speed). Note that changes in design wind speed figures since the previous HMP are largely the result of a shift from "nominal" to "ultimate" wind speeds, for compatibility purposes; see the Connecticut Building Code or the American Society of Civil Engineers website for more information. Lebanon has adopted the Connecticut Building Code as its building code.

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 couple areas of the town. The Tree Warden posts notification and schedule tree removal. Most tree services are contracted out of town and the budget of tree removal is built into the Public Works Department budget and is not stand-alone. Town staff report that tree maintenance is a major priority for the Town, but currently the Town does not have a formalized tree maintenance program; instead, they respond to complaints as they come in.

In response to the major power-outages caused by Tropical Storm Irene and Hurricane Sandy, as well as significant winter storm events, Eversource has taken an aggressive approach to tree

maintenance and has improved communication and coordination with municipalities. Municipal staff report that Eversource has enhanced its tree clearing efforts, has updated its facilities, and has been working to strengthen the power grid and build in redundancies. Communication and coordination has improved due to Eversource's liaison program.

Warning is one of the best ways to prevent damage from hurricanes and tropical storms, as these storms often are tracked well in advance of reaching Connecticut. Lebanon can access National Weather Service forecasts via the internet as well as listening to local media outlets (television, radio) to receive information about the relative strength of the approaching storm. This information provides the resources needed to determine whether or not to implement its EOP and encourage residents to take protective or evacuation measures if appropriate.

As noted previously, Lebanon subscribes to a Reverse 9-1-1 system. Residents are able to sign up to receive warnings from the statewide CT Alert "Everbridge" Emergency Notification System and receive critical information from the town.

The Town maintains shelter facilities and performs debris management through Public Works with the assistance of the local electrical utility when necessary. In 2016 the Town purchased an equipment-mounted blower that is used to remove leaves from dirt roads, and is reported to be very effective.

Although hurricanes that have impacted Lebanon 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.

Summary

The Town's capabilities are considered effective with regard to mitigating hurricane damage. Overall, the Town of Lebanon's capability to mitigate for hurricanes and prevent loss of life and property was slightly improved between the 2006 and 2015 editions of the WINCOG hazard mitigation plan because the State building code was updated and locally adopted, the Town's sheltering resources and emergency communications were expanded, and other flooding mitigation measures were completed.

Capabilities have not changed significantly between 2015 and 2017.

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. There was a town-wide seven day power outage due to tree damage to utility lines following Tropical Storm Irene in 2011.

A majority of structures built in town do not meet current building codes and 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. Those newer structures put in place since the 1990s are less vulnerable to damage from hurricanes and/or tropical storms.

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.

5.4 Potential Mitigation Strategies and Actions

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 Lebanon.

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 Lebanon. 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 2015 edition of the Former WINCOG HMP.

6.2 Existing Capabilities

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. Lebanon 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 local officials to implement the EOP and encourage residents to take protective measures if appropriate as was the case during Tropical Storm Irene.

While the region has a very low risk of experiencing a tornado with great destructive potential, basic measures to minimize damage from high winds can be implemented and public education efforts can help to prepare residents. Owners of older mobile homes should be particularly aware of mitigation measures that could protect their homes from damage.

The National Weather Service's Early Warning System is an important mitigation measure for tornado/wind damage events. Other hazard-specific mitigation efforts that should be considered include:

- Being aware of, and educating the public through pamphlets and web-based information on:
  - The warning signs for a tornado,
  - The importance of securing outdoor objects that could become projectiles,
  - What kinds of buildings are most vulnerable to damage from tornadoes or high winds (such as manufacture housing),
  - Structural alterations to protect against wind damage,
  - When and where to seek shelter;
- Encouraging upgrading of existing buildings to meet current building codes;
- Enforcing and updating building code standards for light frame construction, especially wind resistant roofs. FEMA articles on bracing for gable trussed roofs and bracing for doors and windows are available for review. Information is also available on placement of HVAC systems and electrical utilities to resist both wind and flood damage; and
- Encouraging underground utility wires.

The Town's policies for mitigating tornado damage include maintaining shelters and debris cleanup equipment and distributing preparedness information to residents.

Summary

The Town's capabilities are considered to be effective with regard to thunderstorms and tornadoes.

- Overall, the Town of Lebanon's capability to mitigate for tornadoes and prevent loss of life and property improved between the 2006 and 2015 editions of the WINCOG hazard mitigation plan because the Town implemented regulations to bury power lines in new developments, and because the local electrical utility has performed an intensive trimming program near electrical lines following the severe storms in 2011.

- Furthermore, the Town of Lebanon's capability to mitigate for tornadoes improved between the 2006 and 2015 editions of the WINCOG hazard mitigation plan because the Town upgraded the local shelters and implemented a public information program to inform the public on how to prepare and respond to natural hazards and emergencies.

Capabilities have not changed significantly between 2015 and 2017.

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.

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 Lebanon'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 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 Connecticut. 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.

The Town of Lebanon reports that the cost to respond to each individual downed branches incident is approximately $500. The Town does not respond to reports of downed power lines, as these calls are referred to the electrical utility.

6.4 Potential Mitigation Strategies and Actions

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 local officials.

- The winter of 2010-2011 produced significant snowfall in Lebanon. The town received over $20,000 in disaster aid from FEMA as a result of damages.

- Winter Storm Alfred in October 2011 caused tree damage because Lebanon received seven inches of wet, heavy snow. However, the damage was believed not as bad as it could have been because T.S. Irene had taken down so many trees and branches two months earlier. Federal assistance was not available to the town during this event.

- The year 2013 featured exceptional snow events that severely taxed snow removal abilities of towns in the region. The blizzard of 2013 in early February dumped one to two feet of snow on the region. Another snowstorm struck the region in mid-March, 2013 dumping upwards of one to two feet of snow in some parts of the county. The public assistance reimbursement for the February 2013 storm was $29,919.39.

7.2 Existing Capabilities

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. The Town of Lebanon maintains shelters and provides plowing services through Public Works.

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.

Summary

The Town's capabilities are considered to be effective in regards to response to severe winter storms, although the Town's capability to mitigate severe winter storm damage is relatively

limited to town-owned facilities. Overall, the Town of Lebanon's capability to mitigate for severe winter storms and prevent loss of life and property was slightly improved between the 2006 and 2015 editions of the WINCOG hazard mitigation plan.

Capabilities have not changed significantly between 2015 and 2017.

7.3 Vulnerabilities and Risk Assessment

Severe winter storms can produce an array of hazardous weather conditions, including heavy snow, microclimates, 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.

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.

As a result of a significant change in elevation in town with elevations ranging from approximately 600 to approximately 200 feet, microclimates exist in Lebanon. This presents the possible situation of wintry weather impacting the highest elevations while the lowest elevations are not impacted. As such, snowfall amounts can vary significantly in Lebanon dependent on elevation.

7.4 Potential Mitigation Strategies and Actions

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. However, winter storm mitigation measures must also address blizzards, snow, and ice hazards. 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.

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 Capabilities

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 Lebanon. Lebanon has adopted these codes for new construction, and they are enforced by the Building Official.

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

Summary

The Town does not specifically mitigate for earthquake hazards. Overall, the Town of Lebanon's capability to mitigate for earthquakes and prevent loss of life and property is limited and generally unchanged since the initial hazard mitigation plan was adopted in 2005, mainly because it is not a high priority because earthquake damage is so infrequent. Overall, the Town of Lebanon's capability to mitigate for earthquake losses has not changed significantly between 2015 and 2017.

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 adjacent to the Yantic River, Pease Brook, and smaller tributaries have fairly extensive areas underlain by stratified drift. These areas are likely 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 local officials deems necessary, the possible prohibition of new construction.

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 includes some more recent construction that is seismically designed. However, most buildings were built before the 1990s and therefore are not built to current building codes. In addition, there are areas such as town parks with recreational buildings or shelters that may not be seismically designed. 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. With a difference of upwards of five hundred feet in elevation, Lebanon has areas of steep slopes and bluffs, although the majority of these features occur in undeveloped areas. Thus, landslides are not a great 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 CL&P will be necessary to inspect damaged utilities following an earthquake, to isolate damaged areas, and to bring backup systems online.

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 Strategies and Actions

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 developed areas of Lebanon. Structural fires in higher density areas of the town are not directly addressed herein.

9.2 Existing Capabilities

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. Lebanon can access this information over the internet. Lebanon 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. As stated in section 2.6, the fire department currently maintains seven fire trucks, a water rescue response outfit, a utility vehicle, and one ambulance. This equipment allows the department to respond to standard fire calls, as well as perform rescues on the water and in low accessibility areas.

Forests and inaccessible tracks of land are at the highest risk for wildfires. The Lebanon Volunteer Fire Department has fire vehicles with all terrain capabilities, which can be used to fight fires in areas with limited access.

The Connecticut DEEP has recently changed its Open Burning Program. It now requires individuals to be nominated and designated by the Chief Executive Officer in each municipality that allows open burning and to take an online training course and exam to become certified as an "Open Burning Official." Permit template forms were also revised that provide permit requirements so that the applicant/permittee is made aware of the requirements prior to, during, and after burn activity. The regulated activity is then overseen by the Town.

Summary

The Town uses a variety of regulatory, preparedness, and public information programs to mitigate the effect of wildfires, including the Open Burning Program, maintenance of dry hydrants and cisterns, and educational programs on fire safety. The Town's capabilities are considered to be effective in regards to response to wildfires. Overall, the Town of Lebanon's capability to mitigate for wildfires and prevent loss of life and property was slightly improved between the 2006 and 2015 editions of the WINCOG hazard mitigation plan.

In general, municipal capabilities to mitigate wildfire damage have not increased since the 2015 edition of the hazard mitigation plan was adopted, with the exception of the benefits associated with changes in the State's regulation of open burning.

9.3 Vulnerabilities and Risk Assessment

Lebanon is considered a 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. Town staff report that wildfires are a minimal problem in Lebanon and do not require additional expenditures outside of normal operating budgets. It is estimated that the annualized loss due to wildfires in Lebanon is less than $500 per year.

9.4 Potential Mitigation Strategies and Actions

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 Lebanon is considered a possible event each year with potentially critical effects. No dam failures affected the town since the time of the last HMP.

There are 36 dams in Lebanon ranging from Hazard Class A (low hazard) to Hazard Class B (significant hazard). A total of 11 dams in the town are classified as low hazard (Class A); failure of any of these dams would hardly be of concern. Four dams are classified as moderate hazard (Class BB) and their failure would cause some damage, but no major disruptions. The failure of any of the four significant hazard (Class B) dams could cause serious damage and these dams are of greatest concern in the town. There are also 17 unassigned dams in the town, but the fact that close watch is kept over significant and high hazard dams suggests that these structures are either moderate, low, or negligible hazards.

10.2 Existing Capabilities

Dams in the region whose failure could impact Lebanon 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.

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. Owners of high and significant hazard dams are required to maintain EAPs for such dams.

While the state is assuming less responsibility for routine inspection of dams, DEEP will continue recommending measures to lessen the risk of dam failure, and the municipality can take the following mitigation actions:

- For municipally-owned dams, make sure that EOPs/EAPs are in place and current, and implement recommendations resulting from state inspections; and
- For privately-owned dams, encourage each dam owner to have an EOP/EAP in place and current, and implement recommendations resulting from inspections; monitor compliance as possible.

The Town of Lebanon has limited policies, programs, and resources dedicated to dam failure since most of these efforts are performed at the State level. Town staff report that the Town of Lebanon owns and maintains the Williams Pond Dam (DEEP Inventory #7101) which is rated hazard class B. Since 1993, the Town has spent a total of $1.6 million on reconstructing the dam and performing annual maintenance and minor repairs to ensure the safety of the structure and the downstream area. The Town of Lebanon does not have an EOP for this dam.

Norwich Public Utilities prepared an EOP for the Deep River Reservoir Dam (Class C) in Colchester in 2008. Portions of Lebanon were located in the downstream inundation area. A updated EAP that follows the new DEEP dam EAP guidelines was completed in 2015, and the inundation area (still largely located in Lebanon) was mapped with slightly higher precision.

Summary

The Town's ability to mitigate dam failure is considered to be good for town-owned dams but limited for privately owned dams. Overall, the Town of Lebanon's capability to mitigate for dam failure and prevent loss of life and property significantly increased between the 2006 and 2015 editions of the WINCOG HMP, mainly as a result of recent statewide legislative actions described above. Over the next few years, it is expected that dam safety programs will continue to strengthen in Connecticut. In addition, the Town of Lebanon has upgraded its shelters, improved emergency communications, and created a public information program using the Town's website and at local government buildings. Capabilities have increased only slightly between 2015 and 2017.

10.3 Vulnerabilities and Risk Assessment

A total of 30 privately-owned dams are in Lebanon. Private owners of dams are generally reluctant to make repairs, which tend to be costly. In these instances, needed repairs may not be done in a timely manner. Four dams in Lebanon are owned by the Connecticut DEEP (McGrath Dam, Savin Lake Dam, Brewster Pond Dam, and Red Cedar Lake Dam). McGrath Dam is rated Class A, while the remaining dams are rated Class B. State-owned dams are typically maintained in good condition.

The potential impacts related to the failure of Class C dams are described below. Although no Class C dams are located in Lebanon, one Class C dam is upstream:

- *Deep River Reservoir* is a Class C dam located at the north end of the reservoir, upstream of the Deep River Water Treatment Plant and Reservoir Avenue. This dam is owned by Norwich Public Utilities, a municipal utility corporation.

  According to a 2017 Dam Inspection report by Milone & MacBroom, Inc., the dam consists of an earthen embankment with a concrete core wall, a stepped concrete spillway, and a gatehouse with outlet works. In 1972, the dam was raised by 24 feet to its present configuration. Construction included a new earthen embankment, concrete spillway, a gatehouse, and auxiliary earthen dike and spillway. The dam is 810 feet long, 62 feet high, and has an average top width of 20 feet. The dam outlet consists of a 42-inch steel pipe

within a 48-inch diameter concrete pipe. The outlet pipe divides to two branches downstream of the dam, a 30-inch pipe and a 42-inch pipe. The 30-inch pipe discharges to the water treatment plant located several thousand feet downstream. The 42-inch pipe releases to the downstream channel at the toe of the slope.

The spillway is a 90-foot wide concrete ogee crest structure. The spillway channel is a 90-foot wide concrete chute with 10-foot high walls. A concrete gatehouse/outlet works control tower is centrally located on the upstream side of the dam.

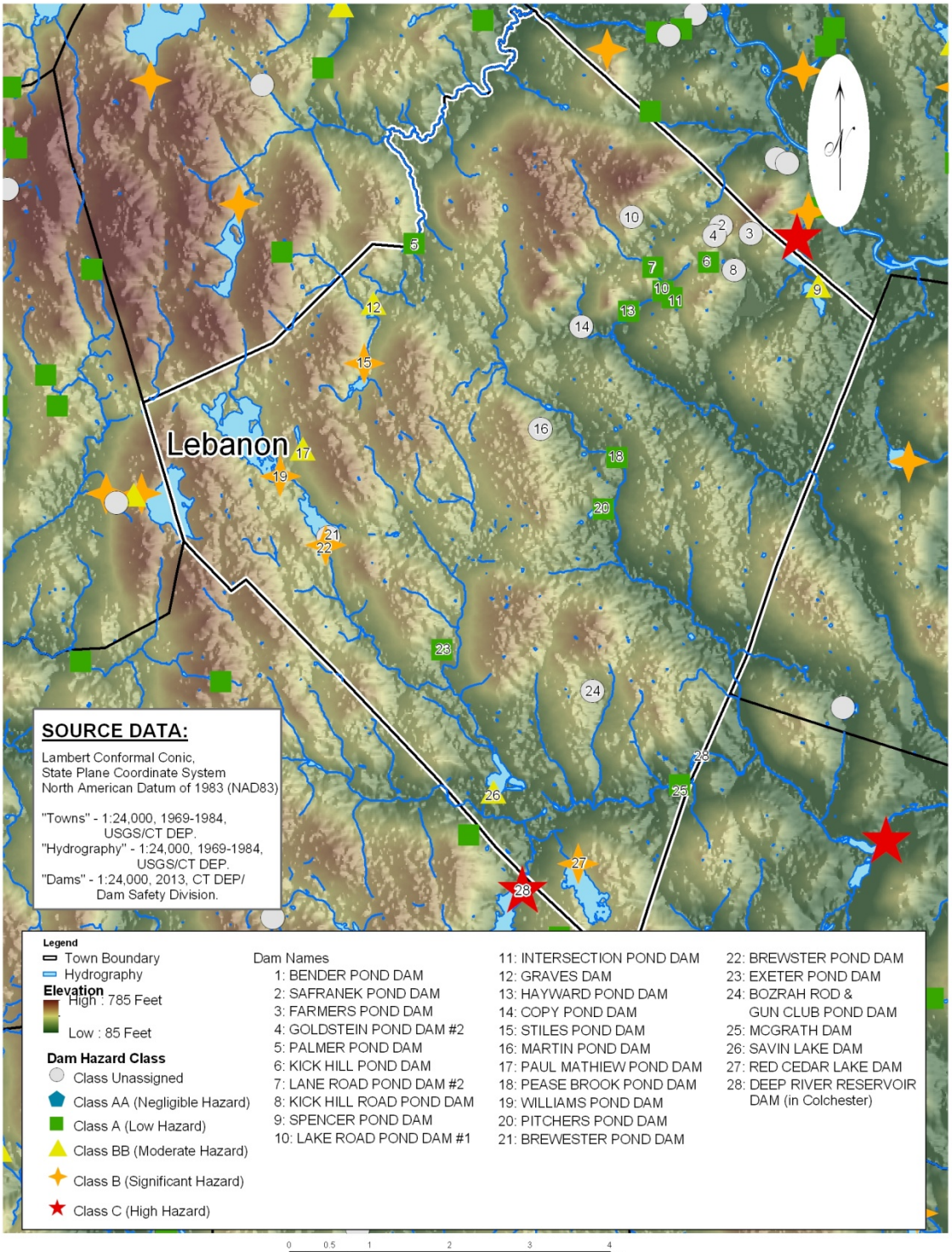
The dam is equipped with a breakaway dike located along the northwest shoreline of the reservoir. The dike is earthen and approximately 240 feet long. The left and right shorelines of the dike are lined with riprap and overgrown with vegetation. The center 50 feet is unprotected and constructed of fine earthen material such that the central section would give way when water levels in the reservoir are rising. The crest of the dike was approximately 20 feet above the reservoir water level on the date of inspection. Water escaping the reservoir through the dike is constrained by natural topography and eventually flows into the inundation area downstream of the Deep River Dam in the low lying area adjacent to the water treatment plant. The topography downstream of the dike has been modified to create a flow path through a naturally existing chute. The flow path has been lined with riprap, presumably to provide erosion protection.

The spillway discharges to Deep River, which flows under Reservoir Road through twin culverts. Deep River flows through a marshy lowland before intersecting Route 2. The culvert under Route 2 is a 13-foot high by 16-foot wide cast-in-place concrete box culvert with flared wingwalls. Downstream of Route 2, the Deep River joins Sherman Brook and flows into the Yantic River.

The Deep River Dam EAP was updated in 2015 and includes a dam failure inundation area. Dam failure could result in damage to Route 2 and to several houses located approximately 2,500 feet downstream of the dam. The inundation area includes the Deep River Water Treatment Plant as well as the Lebanon Pines alcohol and drug rehabilitation facility in Lebanon.

Town of Lebanon Dams

Figure 28



Scale: 1:120,000

March 2014

Prepared for: The Windham Region Council of Governments Hazard Mitigation Plan

FOR ADVISORY PURPOSES ONLY

10.4 Potential Mitigation Strategies and Actions

Lebanon is considered a low-risk area for dam failure. 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.

11.0 MITIGATION STRATEGIES AND ACTIONS

11.1 Status of Mitigation Strategies and Actions

The Former WINCOG HMP adopted in 2015 listed 15 mitigation actions for Lebanon. These actions, along with commentary regarding the status of each, are listed in the tables in this section. It is important to note that the limited amount of time since the Former WINCOG HMP (two years) has limited some of the progress of actions.

New actions were developed in the process of developing this HMP update. These are listed after the end of the table below.

Action Listed in Former WINCOG HMP (2015)	Status	Notes
Rent or contract for giant vac-all or similar equipment to assist Public Works in keeping up to date with the removal of silt and leaves from the town's waterways along all town roads	*Capability*	*This goes out to bid annually. Equipment is rented.*
Contract for vehicle-mounted catch basin cleaning equipment to assist Public Works in keeping up-to-date with the removal of silt and leaves from catch basins	*Complete*	*Purchased new equipment.* *Contract out only when necessary.* *Town was able to clean all catch basins in past year, demonstrating capability to remain up-to-date.*
Inventory all culverts and catch basins for upgrading and prioritize, schedule, and provide funding for their upgrade	*Carry Forward*	*Town has begun an inventory process. This is a High Priority, ongoing action for the Town.*
Remove McGrath Lane #2 bridge crossing the Yantic River	*Carry Forward*	*There is a second access to this area, so bridge does not need to be repaired.* *Bridge can still be removed.*
Upgrade Chappell Road bridge crossing Susquetonscut Brook	*Carry Forward*	*Progress has not yet been made on this action due to funding limitations*
Upgrade bridge stability; eliminate or replace wooden deck on Randall Road bridge	*Carry Forward*	*Progress has not yet been made on this action due to funding limitations*
Encourage DOT to improve Route 87 from Waterman Road to the Franklin town line where drainage problems form puddles of water and ice resulting in many serious motor vehicle accidents	*Delisted*	*This action is the responsibility of the State and is dropped from this list of actions.*
Encourage DOT to replace culvert on Route 207 between North Street and Mack Road	*Delisted*	*This action is the responsibility of the State and is dropped from this list of actions.*
Install generator at Senior Center to provide secondary or small capacity shelter and at all critical facilities.	*Carry Forward*	*This action has not yet been completed due to a lack of resources.*
Ensure that emergency shelters have adequate supplies to respond to natural emergencies.	*Carry Forward*	*This action has not yet been completed due to a lack of resources.*
Identify location for secondary access to Lake Shore Drive and prepare and file map of proposed street in the office of the town clerk.	*Carry Forward*	*This action has not yet been completed due to a lack of resources.*
Identify projects that may be eligible for FEMA natural hazard mitigation grants.	*Capability*	*Town pursues project funding through federal grants on a case-by-case basis, although mitigation grants have not been pursued.*
Make available literature on natural disasters and preparedness at Lebanon Town Hall, Public Library, Senior Center and website.	*Complete/ Carry Forward*	*Information has been added to Town Website.* *Literature is available at the Town Hall and the Library.* *Town will also make literature available at the senior center.*

Action Listed in Former WINCOG HMP (2015)	Status	Notes
Mail emergency preparedness informational materials to every residence.	*Capability*	*The Town mails out materials on a five year cycle as a matter of policy. Materials were last mailed out in 2012, and are being mailed out again in 2017. The Town plans to continue these mailings indefinitely.*
Develop a long-term plan to bury power lines in existing development	*Delisted*	*Regulations requiring burial of power lines in new development were developed in 2006.* *A long term plan to bury power lines in existing developments has not yet been completed due to lack of resources. The cost-effectiveness of this action is not clear, and the action is dropped and replaced with a more specific action, below.*

Additional hazard mitigation measures developed during this plan update include:

- ❑ Complete update of Lake Williams Dam EAP
- ❑ Acquire a response vehicle for setting up road status signs in case of flooding or dam failure
- ❑ Develop a long-term plan to bury power lines in the Town Center.
- ❑ Complete development of a municipal stormwater management plan.
- ❑ Implement a formalized tree-trimming maintenance program.
- ❑ Purchase drones, if acquisition and operation is deemed feasible, for wildfire monitoring purposes.

11.2 Prioritization of Specific Actions

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

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Action or Strategy #	Table 11-1: Mitigation Actions and Strategies for Lebanon 2016 - 2021	Status	Responsible Department[1]	Fiscal Year					Cost	Potential Funding Sources[2]	Weighted STAPLEE Criteria[3]														Total STAPLEE Score	Priority for Community
											Benefits								*Costs*							
				7/2018-6/2019	7/2019-6/2020	7/2020-6/2021	7/2021-6/2022	7/2022-6/2023	Minimal <$1,000 Low < $10,000 Mod. < $100,000 High > $100,000		Social	Technical (x2)	Administrative	Political	Legal	Economic (x2)	Environmental	**STAPLEE Subtotal**	Social	Technical (x2)	Administrative	Political	Legal	Economic (x2)	Environmental	**STAPLEE Subtotal**		
1	Inventory all culverts and catch basins for upgrading and prioritize, schedule, and provide funding for their upgrade	Carried Forward	DPW	x	x				High	OB	1	1	1	1	1	1	1	**9.0**	0	0	0	0	0	-1	0	**-2.0**	**7.0**	High
2	Remove McGrath Lane #2 bridge crossing the Yantic River	Carried Forward	DPW					x	Moderate	CIB	0.5	1	1	1	1	0.5	1	**7.5**	-0.5	0	0	0	0	-0.5	0	**-1.5**	**6.0**	Medium
3	Upgrade Chappell Road bridge crossing Susquetonscut Brook	Carried Forward	DPW				x		High	CIB	0.5	1	1	1	1	0.5	0	**6.5**	0	0	0	0	0	-1	0	**-2.0**	**4.5**	Low
4	Upgrade bridge stability; eliminate or replace wooden deck on Randall Road bridge	Carried Forward	DPW			x			High	CIB	0.5	1	1	1	1	0.5	0	**6.5**	0	0	0	0	0	-1	0	**-2.0**	**4.5**	Low
5	Install generator at Senior Center to provide secondary or small capacity shelter and at all critical facilities	Carried Forward	EM	x	x	x	x	x	Mod. each; High overall	CIB	1	1	1	1	1	0.5	0	**7.0**	0	0	0	0	0	-1	0	**-2.0**	**5.0**	Low
6	Ensure that emergency shelters have adequate supplies to respond to natural emergencies	Carried Forward	EM	x	x	x	x	x	Low	OB	1	1	1	1	1	0	0	**6.0**	0	0	0	0	0	0	0	**0.0**	**6.0**	Medium
7	Identify location for secondary access to Lake Shore Drive and prepare and file map of proposed street in the office of the Town Clerk	Carried Forward	DPW		x				Low	OB	0.5	1	1	1	0.5	0.5	0.5	**6.5**	0	0	0	0	0	0	-1	**-1.0**	**5.5**	Medium
8	Make available literature on natural disasters and preparedness at Senior Center	Carried Forward	EM	x					Low	OB	1	1	1	1	1	0.5	0	**7.0**	0	0	0	0	0	0	0	**0.0**	**7.0**	High
9	Complete update of Lake Williams Dam Emergency Action Plan	New	FS	x					Low	OB	0.5	1	1	1	1	0.5	0	**6.5**	0	0	0	0	0	0	0	**0.0**	**6.5**	High
10	Acquire a response vehicle for setting up road status signs in case of flooding or dam failure	New	EM		x				Moderate	CIB	1	1	1	1	1	0.5	0	**7.0**	0	0	0	0	0	-0.5	0	**-1.0**	**6.0**	Medium
11	Develop a long-term plan to bury power lines in the Town Center	New	FS				x		Low	OB	1	1	1	1	1	0	0	**6.0**	0	0	0	0	0	0	0	**0.0**	**6.0**	Medium
12	Complete development of a municipal stormwater management plan	New	FS			x			Moderate	OB	1	1	1	1	1	0	0	**6.0**	0	0	0	0	0	-0.5	0	**-1.0**	**5.0**	Low
13	Implrement a formalized tree-trimming maintenance program	New	DPW	x					Low	OB	1	1	1	1	1	0	0	**6.0**	0	0	0	0	0	0	0	**0.0**	**6.0**	Medium
14	Purchase drones, if acquisition and operation is deemed feasible, for wildfire monitoring purposes	New	EM					x	Low	CIB	0.5	1	1	0.5	1	0.5	0.5	**6.5**	0	0	-0.5	0	0	0	0	**-0.5**	**6.0**	Medium

[1]Notes
DPW = Department of Public Works & Engineering
EM = Emergency Management
FS = First Selectman

[2]Notes
CIB = Capital Improvement Budget
EOC = EOC Grants
HMA = FEMA Grant Programs
OB = Operating Budget

[3]Notes
Beneficial or favorable ranking = 1
Neutral or Not Applicable ranking = 0
Unfavorable ranking = -1

Technical and Economic Factors have twice the weight of the remaining categories
(i.e. their values are counted twice in each subtotal).

APPENDIX A

ADOPTION RESOLUTION

CERTIFICATE OF ADOPTION
TOWN OF LEBANON BOARD OF SELECTMEN

A RESOLUTION ADOPTING THE HAZARD MITIGATION PLAN UPDATE, 2017

WHEREAS, the Town of Lebanon has historically experienced severe damage from natural hazards and it continues to be vulnerable to the effects of those natural hazards profiled in the plan (e.g. *flooding, high wind, thunderstorms, winter storms, earthquakes, dam failure, and wildfires)*, resulting in loss of property and life, economic hardship, and threats to public health and safety; and

WHEREAS, the Southeastern Connecticut Council of Governments, of whom the Town of Lebanon is a member, has developed and received conditional approval from the Federal Emergency Management Agency (FEMA) for its Hazard Mitigation Plan Update, 2017 under the requirements of 44 CFR 201.6; and

WHEREAS, committee meetings were held and public input was sought in 2016 and 2017 regarding the development and review of the Hazard Mitigation Plan Update, 2017; and

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

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

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

RESOLVED by the Board of Selectmen:

1. The Plan is hereby adopted as an official plan of the Town of Lebanon;
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.

Adopted this _____ day of _____, 201_ by the Board of Selectmen of Lebanon, Connecticut

_____
First Selectman

IN WITNESS WHEREOF, the undersigned has affixed his/her signature and the corporate seal of the Town of Lebanon this _____ day of _____, 201_.

_____
Town Clerk