

Town of Southampton



Community Resilience Building Workshop *Summary of Findings*

June 2021

Town of Southamptton

Community Resilience Building Workshop

Summary of Findings

Overview

Extreme weather and natural and climate-related hazards are an increasing concern for the communities of Massachusetts, and there is a clear need to involve municipalities, corporations, organizations, and the State in increasing resilience at all levels. Recent storm events affecting the region have highlighted many of the vulnerabilities that towns and cities face. Hurricane Irene and Superstorm Sandy brought intense flooding to many municipalities and threatened (or destroyed) infrastructure across the state. Extreme temperatures at both ends of the spectrum have pushed the limits of communities' preparedness to protect both infrastructure and people. In coastal communities, the impacts of sea level rise are felt daily and further exacerbate the impacts of other extreme events. Current climate modeling indicates that all of these hazards are expected to increase in frequency and scale over the coming decades. The Municipal Vulnerability Preparedness (MVP) program provides support and a prescribed process for cities and towns in Massachusetts to plan proactively for resiliency and implement key climate change adaptation actions.

In 2019, the Town of Southamptton was awarded a \$22,000 MVP grant to fund the planning stage of this process and to update the Town's Open Space and Recreation Plan. The Town partnered with Fuss & O'Neill, a state certified MVP Provider, to complete a comprehensive, baseline climate change and natural hazard vulnerability assessment and develop a list of priority actions for the Town. This process involved the development of an MVP Core Team, which met on January 29, 2021 to determine initial concerns and worked to identify stakeholders within the municipality and set goals for the process. Those stakeholders were then invited to participate in a Community Resilience Building (CRB) workshop on April 13th and April 15th, 2021, engaging in a tried and tested process developed by The Nature Conservancy; the process was modified to suit a virtual platform during the Commonwealth's COVID-19 stay-at-home advisory. Stakeholders viewed a pre-recorded introduction, then individual stakeholder groups met via Zoom meetings to discuss strengths, vulnerabilities, and priorities in a small group setting. This information was compiled and circulated back to the larger workshop group. The CRB methodology is an "anywhere at any scale" format that draws on stakeholders' wealth of information and experience to foster dialogue about the strengths and vulnerabilities within the Town. Workshop participants interacted at both large and small group levels, using an iterative process to gather input, synthesize ideas across groups, and ultimately develop a set of priority resilience and adaptation actions.

The CRB workshop's central objectives were to:

- Define top local natural and climate-related hazards of concern;
- Identify existing and future strengths and vulnerabilities;
- Develop prioritized actions for Southamptton;
- Identify immediate opportunities to collaboratively advance actions to increase resilience.

Top Hazards and Vulnerable Areas

During the MVP Core Team Meeting, participants were asked to identify the top four natural hazards of concern for the Town of Southampton. Heavy precipitation and associated minor flooding were identified as a top hazard. Drought and fire risk were identified as a second hazard. Extreme temperatures, both very cold temperatures and extreme heat, were seen as a third major hazard. Extreme storm events, including extreme winds, were identified as a fourth hazard. These four hazards have already had demonstrated impacts on the Town, and as climate change progresses, these hazards are expected to have ever greater consequences for infrastructure and environment, as well as for various societal elements. Specific areas of concern are identified below.

Top Hazards

- Heavy precipitation/flooding
- Drought/fire risk
- Extreme Temperatures (Hot/Cold)
- Extreme Storm Events/Wind

Areas of Concern

While many impacts are expected to be felt Town-wide, certain elements, locations, or community groups present particular concerns.

Neighborhoods/Communities

Senior population, group home populations, school-aged children

Facilities

Police Department, Fire Department, Town Hall, Council on Aging/Senior Center, Norris Elementary School

Ecosystems

Trees and forests, wetlands/vernal pools, riparian corridors, Manhan Meadow Sanctuary, Barnes Aquifer

Dams

Dam at the Tighe-Carmody Reservoir, Dam at the intersection of Middle Road and White Loaf Road, Dam at Middle Road near East Street, Lyman Mill Pond Dam, White Reservoir Dam

Infrastructure

Roads (including Gilbert Road, Fomer Road, Riverdale Road, Glendale Road, Pomeroy Meadow Road, Gunn Road, and Moose Brook Road), culverts and bridges (including East Street Bridge), stormwater infrastructure, electrical and gas infrastructure, drinking water infrastructure, septic systems

Current Concerns and Challenges Presented by Hazards

Major storm events have been a recurring threat to Southampton throughout its history, from hurricanes like the Great Hurricane of 1938 and other storms bringing wind, intense precipitation, and localized flooding, to winter storms or nor'easters delivering ice and snow. More recently, the Town has been experiencing an increasing regularity of storms, with the so-called 100-year storm occurring more frequently. More intense storms delivering higher volumes of precipitation in a single event are expected to put significant pressure on dams, culverts, and other drainage infrastructure that were designed to handle smaller storms with more consistent distributions of precipitation. Workshop participants stressed that the frequency of heavy precipitation and high wind events has been increasing in recent years.

These events may cause extended power outages, road closures, and increased stress on emergency services. Two areas in particular were called out as locations of repeated flooding and road closures—Gilbert Road along the Manhan River which has had a handful of closures over the past 10 years, and Riverdale Road which has experienced both road closures and flooding of homes. The Police Chief noted occasions where a 2.5-3 mile stretch of road would be knocked out of use by a single downed tree. Because of the Town's rural character, these kind of closures and outages are often not a high priority for the power company in terms of restoration, but they cause significant impacts for the affected residents, both in terms of electricity and road access. Events like this causing outages up to two days have become increasingly common in Southampton in the last handful of years. One resident noted that they have had tree falls at their home three separate times, due to microbursts or similarly violent wind events. A microburst also did extensive damage to the Manhan Meadows Sanctuary.

The Town has observed a shift in winter weather patterns, especially relating to ice accretion causing downed power lines. The October 2011 storm, for example, led to downed trees and power lines that caused outages for up to a week and a half for some residents. One stakeholder noted that she was employed as a home hospice nurse during that time and could not get out of her home to care for patients because of the extent of downed trees and power lines. Power outages have also impacted emergency communications in Town. The Fire and EMS repeater is located at the Highway Garage. One outage lasted long enough that the battery backup power supplying the repeater nearly ran out, which would have shut down emergency communications.

The Town has experienced issues relating to drought and heat, which raises concerns over the impacts on drinking water supplies, as well as the health of residents and farms in Southampton. Voluntary water restrictions were invoked most recently in June 2020. The Town has also observed an increase in excessively hot summer days in recent years. Currently, the Town does not operate heating or cooling shelters, although these shifts in temperature are causing the Town to reassess the need to establish designated shelters.

Furthermore, changes in temperature and precipitation patterns have increased problems associated with pests and disease control. Workshop participants cited concerns over an increase in mosquito and tick-borne diseases, such as Lyme disease and EEE. Ticks have become increasingly common on the playground at the elementary school. Participants also noted certain areas, such as Wolf Hill, that have been decimated by invasive pests like the emerald ash borer.

Climate hazards are felt most acutely by certain vulnerable groups. Southampton is home to a large senior population, which may not have the financial or physical resources to adapt to the impacts of climate change. These residents may be especially vulnerable due to a lack of adaptation measures such as air conditioning, or lack of access to private transportation needed to obtain critical resources such as food, medical services, and fuel.

Specific Categories of Concerns and Challenges

Infrastructural

Roads

As climate change brings increased frequency and intensity of storms, as well as overall increases in annual precipitation, existing flooding and runoff-related problems may be exacerbated in the future. This is a concern Town-wide, as roadway erosion was cited by Highway Superintendent Randall Kemp as an ongoing problem in Town. Kemp noted that the Highway Department is reinforcing the sides of roads more frequently than in the past to accommodate the “deluge” of rain and to prevent undermining of these roads. Workshop participants also highlighted Gilbert Road as being especially prone to flooding issues. The bridge on the road has overtopped several times in the past decade. Riverdale Road was also mentioned as a road of concern. On these two roads, the impact is mostly restricted to road closures until the flooding subsides. There is one property on Riverdale Road that has been flooded in the past and an additional four to five houses that are potentially at risk of flooding during more severe storms. Roads along the Manhan River, including Glendale Road, Pomeroy Meadow Road, Gunn Road, and Moose Brook Road were also identified by workshop participants as being vulnerable to flooding.

Shifting winter weather patterns have led to changes in winter road maintenance in recent years. As Highway Superintendent Randall Kemp stated, there is now “less equilibrium, more extremes” when it comes to severe weather events. Although roads have required less plowing, the icing over of roads has become an increasing concern, especially relating to downhill road drainage. As a result, the Town “end[s] up using a lot more sand and salt” to treat the roads and ensure driver safety. This not only increases the burden on the Town’s financial resources and manpower, but also exacerbates the environmental impact of roadway runoff from Town roads, a concern mentioned by workshop participants. The Town uses a half-salt, half-sand mix, which can lead to runoff causing salinization and turbidity problems in local waterbodies.

Culverts, Bridges, and Stormwater Infrastructure

In Southampton, like in many communities across the Commonwealth, existing culverts and bridges were designed to accommodate historic patterns of precipitation and runoff. As precipitation events become more intense and less predictable, undersized culverts are expected to pose a greater threat of failure and flooding. Randall Kemp, Highway Superintendent, noted an interest in ensuring that stormwater management structures across Town are appropriately sized to accommodate higher volumes of precipitation. There is also interest in reviewing the Town’s storm water regulations to address the need to incorporate climate resilience in future projects.

Additionally, there are three bridges on the Manhan River that are supported by telephone poles, two of which are located on main egress routes out of Town. The Town is preparing for repairs on one of these bridges, the East Street Bridge, located on the Town’s evacuation route. There is also a bridge in the Manhan Meadow Sanctuary that is vulnerable to flooding.

Electrical Infrastructure

Power lines can be knocked out by snow and ice, in addition to wind events, causing extensive impacts to the Town. Downed trees and subsequent power outages caused by wind are of special concern throughout Town. Workshop participants noted an increase in the frequency and intensity of both high wind/heavy precipitation events and ice events, both of which lead to downed trees that impact power lines. These outages cause areas of Town to be without power for several days or longer. As Southampton

is a rural community, pockets of Town with smaller populations may be impacted by a downed line but, due to the low number of people affected, such scenarios may not be deemed a priority for power restoration by the electric company. During the major snowstorm in October 2011, some residents were without power for a week and a half. For more recent storms, outages average two days, although outages are happening “a lot more now—I can’t remember power outages this long and wind storms of this magnitude,” according to Police Chief Ian Illingsworth. The Chief expressed interest in collaborating with Eversource to rearrange circuits so that power outages can be isolated to specific, lower-priority areas in Town, which would also decrease the impact to residents and the burden on emergency services as their resources are diverted to man downed powerlines.

Joe Mitchell, Community Relations and Economic Development Specialist at Eversource also cited concern over a potential increase in pressure on the grid as heating and cooling needs of the Town increase as a result of more extreme temperatures resulting from climate change.

Back-up Power Supply

Given the increasing prevalence of power outages across Town due to extreme storm events, there is significant interest in acquiring additional back-up power sources to increase the Town’s resilience in the face of climate change. This is especially important as parts of Southampton may be prone to extended outages. Currently, several facilities in Town have back-up generators, including the Town Hall and Police Department. The Highway Department has ordered a generator but it is on back-order for months due to pandemic-related issues in the supply chain. Currently there is no back-up power supply at the Norris Elementary School.

Workshop participants also noted concern over the cascading impacts of power outages on residents across Town. Many residents rely on septic systems and wells that require electricity to properly function and may not have access to or the resources to acquire back-up power systems.

Emergency Communications

Uninterrupted service of Southampton’s emergency communications structure is vital to providing emergency services in Town, which is especially critical during hazard events. These services, however, are vulnerable to a variety of climate-change related hazards, including wind and snow and ice. In the past, emergency communications in Town have been impacted by power outages brought on by extreme wind and storm events. The Fire Department and Emergency Services repeater is located at the Highway Garage; one recent storm in Town caused a power outage that was long enough for the emergency battery to reach critically low levels. The Town was able to coordinate with Eversource to focus on power restoration in the area so the repeater did not lose power, although this remains a concern for future power outages.

Additionally, the Police Department dispatch repeater is located at the abandoned ski area on Mount Tom, which currently is not serviced by a generator. Access to the repeater is difficult in good weather due to its location; this becomes further complicated or sometimes impossible in hazardous weather. Recently, the emergency battery for the repeater died and there is no generator present. Workshop participants noted that due to the location, the installation of a generator is not feasible. There is interest in moving the repeater to an area that is less impacted by extreme storm events and where it would be possible to install a back-up power supply to increase the resilience of the communications system.

Septic Systems

With the exception of a handful of commercial properties along Route 10 which are tied into the Easthampton sewer system, the entire Town relies on septic systems for waste management. Septic systems in Southampton are a concern due to increasing flood risk and the potential for this flooding to

raise groundwater levels and lead to septic failures and discharges of sanitary waste to the environment, which poses a threat to both human health and the environment. There is also concern about the impact of power outages on the ability of septic systems to function safely and reliably.

Drinking Water Supply

The Town's public drinking water is supplied by a well that draws from the Barnes Aquifer. This system serves approximately 5,000 out of the 6,000 residents in Town; an additional 1,000 are on private wells. Workshop participants expressed concern over the impacts of droughts, such as those experienced in 2016, and, to a lesser degree, in 2019, on drinking water supplies in Town, especially as prolonged drought events become more common as a result of climate change. The Town well currently has more capacity than they are allowed to pump and did not experience any major impacts during the 2016 drought. However, demand is outpacing supply, and in 2020, as a result of the increasing pressures of drought on the Town's water supply, the Water Department established an interconnection with the City of Easthampton. Additionally, as a result of persistent drought conditions, the Town has implemented a voluntary water restriction to conserve water since June 2020, but participants noted that the restrictions have not stopped people from watering their lawns. The Town also restructured water use fees to incentivize water conservation. The Town had a historic interconnection with the City of Holyoke that is now dormant because the Town does not have adequate water treatment in place. Furthermore, although the Tighe-Carmody Reservoir is located in Southamptton, the Town is unable to draw from the reservoir. It is owned and maintained by the City of Holyoke.

Workshop participants also expressed concern over the ability of residents with private wells to draw from them during power outages since they require electricity to run the pumps and many residents likely have no backup power system.

Buildings and Facilities

Currently, cooling capacity in Town buildings is limited, which is a concern as temperatures continue to rise as a result of climate change and Southamptton experiences an increase in days over 90 degrees. The attic of the Town Hall, where Town records and archives are stored, has no temperature control, meaning that vital records are exposed to extreme temperatures in increasingly hot summers. Workshop participants expressed concern that there may be no copies of the records stored here. Workshop participants also noted that Police and Fire Department buildings "fall below standards," and there is interest in building a public safety complex that would not only have facilities that would better meet the needs of the departments but would be resilient in the face of climate change.

Dams

The dam at the Tighe-Carmody Reservoir is a primary dam of concern in Town. If the dam overtops, there would be significant damage to "a good part of the Town of Southamptton." There are also concerns over the dam at the intersection of Middle Road and White Loaf Road (and erosion repair along the road), the dam on Middle Road near East Street, the Lyman Mill Pond Dam, and the White Reservoir Dam (no longer used by the City of Holyoke and is not officially holding water). The structural condition of these dams was not noted during the workshop although there is concern over the impacts of their overtopping during heavy precipitation events. None of these dams are owned, operated, or maintained by the Town of Southamptton.

Gas Infrastructure

Holyoke Gas and Electric (HG&E) is the sole gas provider for the Town of Southamptton. All gas infrastructure, with the exception of bridge crossings, is located underground. Martin Kulig of HG&E noted that the gas infrastructure is in generally good condition and that there are no flooding concerns relating to climate change for underground infrastructure or infrastructure at bridge crossings. HG&E will be

replacing the above-ground gas line at the East Street Bridge with a line that will be approximately 10-15 feet beneath the river. He noted that this is the direction the natural gas industry is headed in to minimize weather and climate related risks.

Environmental

Agriculture and Gardens

There are a number of agricultural operations across Southampton. Climate impacts such as drought, excessive rain, and changing temperatures may affect agriculture and livestock for both commercial and residential agricultural practices. The impacts of climate change, ranging from increased frequency and intensity of drought, to heavy precipitation, and changes in seasonal and average temperatures may adversely impact these farms and private gardens across Southampton, including crop and livestock health and the ability to grow certain species of produce. There is concern that the effects of climate change on agricultural practices could affect food security for those who rely on farms as a main source of food. There are a number of farms in Town that produce dairy, cattle, blueberries, apples, and more. The impacts of climate change, ranging from increased frequency and intensity of drought, to heavy precipitation, and changes in seasonal and average temperatures may adversely impact these farms and private gardens.

Trees and Forests

Forests provide critical ecosystem services that help buffer the effects of climate change, from storing and sequestering carbon, to increasing groundwater recharge, to modulating local temperature. However, trees and forests are also threatened by climate change. Wind and storms cause blowdowns, drought can contribute to die-off, new invasive pests (e.g., Asian Longhorn Beetle, Emerald Ash Borer, and Hemlock Woolly Adelgid) are eliminating certain tree species, and others are in decline due to shifting temperature and precipitation regimes that favor more southerly species. The Town's emergency services also recognize that hazard events can convert trees from assets to threats during extreme storm and wind events, during which downed trees are a frequent cause of power outages. Furthermore, the Fire Chief noted that there is currently difficult access for combating wildfires and brush fires in forests across Town.

Invasive Species and Stress on Native Species

Invasive plants and animals are a source of concern in Southampton, as they are throughout the Commonwealth. Forest and upland ecosystems are threatened by a variety of invasive plants, including plants such as bittersweet swallowwort, multiflora rose, and several non-native honeysuckles. Riparian and aquatic habitats are severely threatened by common reed, Japanese knotweed, invasive water chestnut, hydrilla, purple loosestrife, and Eurasian milfoil. Critical invasive insect pests already in the area include the Asian Longhorned Beetle, Hemlock Woolly Adelgid, and Emerald Ash Borer, both of which have the potential to do serious damage (both environmental and economic) to Massachusetts' forests and trees. Emerald Ash Borer has already decimated the Wolf Hill Sanctuary in Southampton. These and other species pose a significant challenge and have serious consequences on ecosystem health and resilience, and these impacts are likely to increase in response to climate change. Warming temperatures will also bring new invasives to the area, and these will have an easier time gaining a foothold if the Town's natural ecosystems are simultaneously weakened due to changes in climatic conditions.

Chemical and Fertilizer Use

Workshop participants expressed concern over the environmental and human health impacts of chemical use related to pesticides, herbicides, and fertilizer-use. This is of special concern as invasives become increasingly common as a result of climate change. The Town lacks the necessary resources and manpower to implement code enforcement for regulating fertilizer and chemical use.

Barnes Aquifer

Tim Gaudet, on the Board of Water Commissioners, voiced concerns over the impacts of drought on the recharge rate of the Barnes Aquifer, which serves as the primary source of the Town's drinking water supply and provides approximately 5,000 residents with water within Southampton; the Aquifer also serves surrounding towns. Workshop participants were uncertain if recent droughts have impacted the recharge rate, although it remains a concern for future drought events.

Wetlands, Riparian Areas, and Vernal Pools

Wetlands, including vernal pools, serve a number of important ecological functions, including flood storage, groundwater recharge, and water quality improvements. Subsequently, changing wetland boundaries may also increase the stress on native species and lead to increased prevalence of invasives. A Conservation Commission member expressed concern over the impacts of climate change on wetland resiliency in Town (e.g., holding less water, sequestering less carbon). The Town recently passed a bylaw that requires a 25-foot no-build buffer around wetland resource areas. The Town is also working to have its vernal pools certified by the Commonwealth.

Societal

School

Norris Elementary School is the only school in Town, with approximately 480 students and 100 staff members. The school was built in the 1950s and updated in 1995. There is currently no centralized air conditioning at the school (the nurse's office, library, and administrative office have air conditioning) and the effects of extremely hot days are becoming increasingly common. As of June 2020, the school has closed for two days due to extreme heat. Aliza Pluta, Principal of Norris Elementary School, noted that extreme temperatures have been placing increasing stresses on students and teachers, especially while wearing masks to adhere to COVID-19 safety guidelines. Children have had to report to the nurse's office after recess to sit in the air conditioning because of excessively hot temperatures. Tom Leveille, Head Custodian, also noted that it is "blistering hot in the summer" and "very humid," making for an uncomfortable environment for students and staff. There is interest in exploring options for cooling the school, especially increasing air circulation on the second floor. The school was recently quoted at \$800,000 for installing a commercial-grade split system. The current system is manually operated and cannot be controlled on weekends or when people are not in the building. There is interest in establishing a more economical and energy-efficient way to operate the system.

Pluta also noted an increase in tick bites among the student population in recent years, raising concern over vector-borne diseases. She also voiced concern over the impacts of power outages on the reliability and accessibility of resources for remote learning, which may become increasingly common as a result of COVID-19 and cancellation of in-person school days as a result of inclement weather.

Seniors

The Town of Southampton is home to a large population over 60 years of age. This vulnerable population may lack the resources to adapt to the impacts of climate change and to access resources during hazard events. Workshop participants cited concerns over the health impacts of hotter temperatures on seniors, including dehydration, asthma and allergies, and heat exhaustion leading to kidney and heart problems. Hotter temperatures may also limit outdoor recreational opportunities for seniors, which may negatively impact their mental health. Workshop participants also noted concern over the impacts of power outages from storm events on seniors, as they may require medical resources that rely on electricity, such as oxygen and nebulizers, and few people in Town have back-up generators. The Police Department also keeps a register of seniors in order to conduct wellness checks during storm events.

Vulnerable Populations

There is a group home and five assisted-living facilities in Town. Three of the facilities have generators that are connected to natural gas tanks, but due to the natural gas moratorium, they do not have a constant supply and are therefore limited in terms of how long they can run without a fuel delivery. If there is a prolonged power outage, there is concern that these generators may run out of fuel and these facilities will be without back-up power.

Emergency and Heating/Cooling Shelters

The Town currently does not operate heating or cooling shelters. There is no emergency shelter in Town—residents rely on the emergency shelter in Northampton. This may present a challenge when it comes to transporting senior populations. There have been discussions of opening a cooling center, although the Town has been unable to reach a consensus on when the center would be open and how it would be staffed.

Stress on Emergency Services

Southampton's Fire, Police, EMS, and Highway departments bear much of the burden of responding to the increased human threats that result from climate-induced hazards. An ever larger percentage of the departments' time and resources must be devoted to handling things like traffic accidents resulting from ice or other dangerous conditions and activities to maintain traffic flows or protect property during storm events, and Public Works is relied upon to clear roads and maintain access throughout the Town.

Emergency Management Department Director Jon Workman noted that given the increased pressure on the EMD relating to an increase in natural disasters (brushfires, heatwaves, wind events, snow events, etc.), facilitating interagency operations will become increasingly important. The EMD is currently working closely with the other Town departments, including the Highway Department, on the impacts of wind and snow events across Town. Given that Southampton is a small community, there is a need to "address these challenges together." Town Administrator Ed Gibson has noted an increase in the stress on the Police Department, Fire Department, and Highway Department as extreme storm events become more common and these departments and their resources are increasingly relied upon to cordon-off areas with downed trees and downed electrical to ensure safe passage until Eversource can address the outage. According to Police Chief Ian Illingsworth, "Taping off or putting road closure signs isn't safe enough... we will have almost the entire department in working just to keep the roads safe" in the event of an outage or road closure.

Access to Medical Care and Supplies

Maintaining access to essential supplies as well as critical medical care and drug treatment during emergencies is important during hazard events. The Town of Southampton directs residents to hospitals in Springfield or Northampton. While there is an urgent care in Town, its capacity for emergency procedures is limited, and in cases where this is required, transport to nearby hospitals is used. Most recently, access to these facilities was impacted by the snowstorm of October 2011. Route 10 is the only major egress route from Town.

Open Space

According to the Town's recent Master Plan survey, protection of open space was identified as one of the top three priorities for respondents. Open space provides ecosystem services that help buffer the effects of climate change, from sequestering carbon, to increasing groundwater recharge, to modulating local temperature. Open space is also critical in floodplains for providing a buffer and increased flood storage, near public water supplies to maintain high water quality and promote recharge, and to maintain overall habitat connectivity that will be vital to allowing ecosystems and individual species to adapt to a changing

climate. From a social perspective, open space and parks also provide opportunities for recreation and stress-relief, as well as relief from extreme heat events. Workshop participants questioned how the effects of climate change on the Town's open space resources, forests, and parks (increased risk of wildfire, increased insect populations, etc.) may impact the quality of life of Southampton residents. As one example, the Manhan Meadow Sanctuary was cited as a property of special concern. Trails on the 11-acre conservation property were wiped out by a microburst in spring 2019, which took down numerous trees in the area. The Sanctuary has remained closed for over a year due to the impacts of the microburst.

Staff Capacity

The Town does not currently have paid positions for a Conservation Agent or a Town Planner, and relies on committed volunteers. There is concern over a lack of consistency resulting from this reliance on a volunteer network. There is also a lack of staffing for code-enforcement in Town. As workshop participant Randall Kemp stated, "We could do a lot, but we're stretched, and have definite limitations to our fiscal budget." There is also interest in improving the ability for Town employees to work from remote locations, such as their homes, during storm events that may inhibit travel to the office.

Business Community

Business has been growing in Southampton over recent years, although major businesses are primarily limited to the Route 10 corridor, close to neighboring Easthampton. Workshop participants voiced concern over the impacts of climate change for business owners, as well as the burden of adaptation. The need to make preparations for these risks was noted as a "balancing act" due to limited financial resources of these businesses.

Non-motorized Travel

As a rural community without a centralized commercial area or downtown, Southampton is generally not very walkable, which forces people to rely heavily on private vehicles. Improving options for non-motorized travel for recreation and accessibility is both a priority in terms of quality of life, and in terms of helping to curb emissions. Southampton is currently the missing link in an extensive network of bike paths that combine several of the neighboring communities, providing access all the way to Amherst. According to the Town's Master Plan survey results, the creation of a north side bike path was among the top three priorities for respondents. The Town has recently received a 100,000 grant that will be used to purchase land for the path. The Town is also currently working to improve walking paths across Southampton.

Pests and Disease Control

The Town recognizes that climate change is affecting pests and disease vectors both through changing precipitation conditions and changing temperature conditions. Warmer, wetter conditions lead to increased mosquito populations, while the absence of sufficient periods of cold means that pest populations that would historically have been killed off or reduced are able to survive the winter and emerge in greater numbers the following season. Further, as the Massachusetts climate begins to look more like the climate of the mid-Atlantic and southern states, we are seeing new types of diseases show up in existing pests (e.g. mosquitoes carrying West Nile Virus, Eastern Equine Encephalitis, or Zika and ticks carrying Rocky Mountain Spotted Fever). These changes present a major public and animal health challenge in terms of education, prevention, and treatment. 2018 marked the Commonwealth's highest ever incidence of West Nile Virus diagnosis, and 2019 marked the highest number of EEE cases in recent history in Massachusetts. Workshop participants noted an increase in the number of ticks and mosquitos in recent years and increasing concern over related vector-borne illnesses. The Town is currently part of a mosquito surveillance program and has secured funding for the next several years, although future funding outside this timeframe is uncertain.

Climate Migration and Future Development

As sea levels in the Commonwealth rise, populations may begin shifting inwards towards communities like Southampton. Workshop participants acknowledged that future climate migration may present development-related challenges in the community. Currently, Southampton is already a growing community, with 6.5% population growth since 2010. This increase in population is expected to increase developmental pressure in Town and add additional strain to the Town's natural resources and existing community. There is concern over the impact that continued development will have on forest and open space loss, which the Town has already been experiencing over the past few decades. There is an ongoing effort in Town to address future development pressures through the Town's updated Master Plan, Housing Plan, and Open Space and Recreation plan.



Current Strengths and Assets

While the Town recognized a number of vulnerabilities, workshop participants identified key strengths as well.

- The Town is preparing for **East Street bridge repairs** and gas infrastructure at the site will be moved underground for better protection.
- The Town has **robust community support from various organizations**, including from the Congregational Church.
- The **Council on Aging** provides numerous services for seniors.
- **Hampton Ponds State Park** is available for residents as open space and to provide cooling.
- The Town is part of a **mosquito surveillance program**.
- **Assessments of the health of Town-owned forests** are ongoing.
- The Open Space Committee is distributing a list of **best management practices relating to fertilizer use**.
- The Town has a **wetlands bylaw**.
- The Town is in the process **of updating its Master Plan**.
- The Town recently established an **interconnection with the City of Easthampton's water supply**.
- The **Highway Department has a Road Plan**.
- Eversource conducts **aggressive tree trimming and removal** to protect power lines.
- A **stormwater bylaw** is expected to pass at the next Town meeting.
- The **Police Department and Town Hall have back-up power supplies**.
- The Town enacts a **voluntary water ban**.
- The Town conducts **wellness checks on seniors** during significant weather events.
- The Town operates a **CodeRED system**.
- The Town is working to **increase accessibility for biking and walking paths**.
- The Town is in the process of getting its **vernal pools certified** by the state.

Top Recommendations to Improve Resilience in Southampton

Participants at the CRB workshop identified a number of recommendations to address vulnerabilities and increase resiliency in three main topic areas: infrastructure, environment, and society. Increasing resilience to the impacts of extreme storms resulting in heavy precipitation and high winds was a primary concern that emerged, encompassing a wide variety of infrastructural concerns both private and public. Providing sufficient protections and planning for vulnerable populations in Town (such as seniors) was a second major theme.

High Priority

- **Conduct a field inventory of culverts and bridges** to rank and prioritize projects for increased flooding resiliency and storm-hardening, followed by design and implementation of priority re-sizing or replacement projects. Green infrastructure, Low-Impact Design, and other nature-based solutions will be integrated with hard-infrastructure improvements to establish approaches that will be robust in the face of natural hazards and climate-change scenarios. Focus on bridges along the Manhan River and other structures that are located on evacuation routes that may be impacted by flooding and are especially critical during emergency events.
- **Conduct a Town-wide road assessment** to understand the feasibility and costs/benefits of implementing engineered drainage systems. A majority of roads in Town currently have country-drainage.
- **Assess green infrastructure opportunities for stormwater management** to develop a list of specific priorities, assess feasibility and cost, rank priority projects in terms of climate resilience potential, and develop concept designs for key projects. Review Town regulations and update as necessary to support green infrastructure and low-impact development and encourage green infrastructure to be incorporated into all roadway projects.
- **Conduct dam assessments and dam removal feasibility studies** for the dam at the intersection of Middle Road and White Loaf Road, the dam on Middle Road near East Street, Lyman Mill Pond Dam, and the White Reservoir Dam. Coordinate with dam owners. Develop an understanding of the condition of the dams and determine risks and priority projects. Consider whether aging dams may pose a threat of failure and flooding, or where removal may have significant positive impacts on stream habitat and aquatic organism passage or for increasing flood storage and flood control possibilities.
- **Coordinate with Eversource to manipulate circuits** to isolate outages to lower-priority areas of Town. This will not only limit the impact of power outages on residents but will also help reduce the stress on Town Departments that are responsible for responding to downed lines and outages.
- **Explore options for relocation of the Police Department dispatch repeater** to a preferred and more easily accessible location on Mt. Tom. This will allow for the installation of a back-up power system and will increase the accessibility of the system, both of which will better serve emergency services and reduce the risk of repeater outages.
- **Evaluate options for establishing a public safety complex** that includes the Fire, Police, and Emergency Management departments. Consider locating the facility in a central location and integrating low-impact development and green alternate energy supplies.

- **Assess the feasibility of establishing a microgrid** that would serve the new public safety complex, the school, or other municipal facilities. Assess alternative back-up power supplies at critical municipal facilities, considering green power and resilient power systems, including the feasibility of establishing solar battery storage at key facilities including Emergency Management Services.
- **Hire a Town Planner** to increase the capacity of the Town, generate consistency across departments, and reduce the reliance on unpaid volunteers.
- **Hire a Conservation Agent** to increase the capacity of the Town, generate consistency across departments, and reduce the reliance on unpaid volunteers.
- **Hire a Code Enforcement Agent** to increase the capacity of the Town, generate consistency across departments, and reduce the reliance on unpaid volunteers.
- **Establish secondary emergency access and evacuation routes** that are outside flood-prone areas.
- **Assess options to address excessively hot days in schools.** This may include implementing plans to install air conditioning in the school. An alternative solution is to keep children out of school on the hottest days of the year by reducing the school year or providing remote-learning alternatives.
- **Establish designated heating and cooling centers in Town** and ensure that they have adequate capacity and power requirements. Assess the feasibility of hosting a cooling center in the Senior Center or Town Hall. Coordinate across Town departments for consensus on operation hours and staffing of the cooling center. Assess the feasibility of hosting a heating center at the Norris Elementary School.
- **Evaluate the technology used for emergency communications** to identify potential vulnerabilities and improvements as they relate to climate change hazards.

Moderate Priority

- **Assess alternate energy options for Norris Elementary School**, including options for acquiring back-up power and the feasibility of installing air conditioning at the school.
- **Conduct a Town bylaw review** to determine how to incorporate requirements for green infrastructure and low-impact design (LID) in new developments in new or existing bylaws.
- **Establish a regulatory review process for future developments** to limit the impact on the Town's existing resources. Encourage new development in areas with existing infrastructure capacity and encourage resilient building (e.g., underground electrical). Ensure access to affordable housing in new developments.
- **Support local businesses in adapting to the effects of climate change** to make the business community more resilient. Identify areas where impacts from climate hazards can be easily avoided or mitigated (e.g., by avoiding building floodplains or areas of known drainage-related flooding) and where targeted improvements, such as a microgrid, could be employed to provide extra resilience to community businesses. Coordinate with businesses (e.g. the Big Y) on community preparedness during emergency events.

- **Explore incentives for new and established Town businesses to install solar** or alternative energy sources, especially at key community facilities such as Urgent Care and Big Y.
- **Assess the feasibility of enacting mandatory water restrictions and outdoor water bans** during droughts. Explore resources for acquiring the necessary enforcement (e.g., hiring a code enforcement officer or enacting fines) for the bans.
- **Assess the feasibility of using Norris Elementary School as an emergency shelter.** Ensure it has the necessary capacity, back-up power supply, and resources required (beds, kitchen capacity, etc.) to support the population. Coordinate transportation to the facility as needed, with a focus on vulnerable populations, including seniors.
- **Develop and adopt a Climate Adaptation Plan** that addresses the future needs of Town departments and the community in adapting to the effects of climate change.
- **Secure long-term funding for ongoing mosquito surveillance program.**
- **Conduct a risk assessment of vector-borne diseases** and develop a follow-up plan for educating residents on the risks, awareness, and best management practices relating to pests and vector-borne diseases.
- **Conduct education and outreach for best management practices related to pests and vector-borne diseases** (e.g., tick checks, removing standing water).
- **Assess additional mosquito/pest control options,** including establishment of buffers between developed and undeveloped areas, determination of future risks due to increase in type and quantity of pests/disease vectors due to climate change, and development of an education and outreach program. Evaluate alternative methods for pest management, such as biological controls, that do not involve chemical application. Coordinate with the Board of Health to increase educational opportunities/awareness relating to pests and disease control.
- **Conduct strategic planning to support the agricultural community** in the face of climate change. The identified hazards have the potential to significantly impact agricultural production, with corresponding threats to livelihoods. Planning should include education on adapting agricultural practices to impacts of climate change, such as longer growing seasons, extended periods of drought, and changes in overall precipitation patterns. Educate farmers and gardeners on adaptation measures, including drought resistant crops.
- **Reinstate Barnes Aquifer Advisory Group** to help manage the pressures of new development and to understand the impacts of drought on the aquifer and take proactive measures to protect water supply. Work with the Advisory Group to maintain aquifer recharge to ensure adequate water access for farms and agricultural irrigation.
- **Conduct a survey on the vulnerability of town trails and bridges along waterways.** Identify pathways to fund trail and bridge improvements to protect surrounding properties, reduce erosion and land loss, and keep trails open as much as possible.
- **Create faster pathways to funding for storm clean-up** on Town properties, such as the Manhan Meadow Sanctuary. Prioritize these clean-ups and identify responsible parties within existing or new Town departments/positions.

- **Conduct education and outreach on the importance of riparian corridors**, including the importance of maintaining and vegetating these corridors. Explore options for coordinating this outreach with Town-wide education on climate impacts and nature-based solutions and economic benefits of ecosystem services through community groups, elementary school, sustainability fair, etc.
- **Continue the vernal pool certification process** for vernal pools on private and Town-owned properties. Conduct community education on the importance of vernal pools and wetlands.
- **Encourage the use of residential water conservation practices**, such as rain barrels. Conduct Town-wide education on best management practices related to water conservation. Assess options for “water smart” certification.

Low Priority

- **Develop a comprehensive tree and forests management plan** to identify, remove, and replace problem trees, preserve intact forests, provide guidance and resources for gradually moving toward more climate-resilient trees and forest communities (e.g. species that will tolerate warmer temperatures). Increase the planting of street trees and consider requiring a percentage of each newly developed lot to be maintained as forest. Educate residents on the benefits of trees and forests relating to cooling, carbon sequestration, wildlife habitat, etc.
- **Conduct a risk assessment for private drinking wells**, including the impacts of power outages on residents’ ability to draw water. Identify the impacts of climate change, specifically drought, on the 1,000 private drinking water wells in Town. Take steps to limit contamination of Town well water by agricultural practices (e.g., *E. coli* from cows grazing in recharge areas).
- **Conduct a study of potential impacts of climate migration on the Town**. Develop recommendations for consideration of these impacts in zoning regulations.
- **Explore new interconnection options with the Town of Westfield and City of Holyoke**. Assess the feasibility of establishing a new treatment facility that would be required for the Holyoke interconnection.
- **Update the CodeRED system** and encourage resident enrollment in the emergency notification system.
- **Conduct a risk assessment to identify vulnerable septic systems across Town**.
- **Back-up Town documents that are currently stored in Town Hall** in an area without climate control. Consider alternatives to provide more resilient storage facilities for vital records.
- **Assess ability to expand communications redundancy and build resilience** through the installation of fiber optics.
- **Explore options for open space cooling and access improvements along waterbodies** to help accommodate residents on extremely hot days. This is especially important given that the Town does not currently operate a cooling shelter.
- **Provide public education and outreach to well owners**, focusing on conservation measures and means of limiting water use to prevent impacts to the water supply. Simultaneously ensure that well owners are aware of their drought risks and adequately prepared for hazard scenarios

from drought to power outages, both of which may affect their water supply.

- **Continue to work on technological improvements for remote access for employees.**
- **Establish a streamlined, regulated process for the management of Town properties regarding haying** and the impact on ground-nesting birds. Coordinate with the State as necessary.
- **Review existing bylaws and develop zoning regulations for proper solar installation siting.** Discourage the development of solar on forested areas.
- **Continue to enhance “walkability” in Town through the creation of walking paths to popular destinations** to reduce reliance on private vehicles and provide transportation options for populations that may not have access to private vehicles. Expand Town sidewalks using smart or permeable pavement and vegetated strips.
- **Educate owners of private septic systems** about the importance of having systems pumped out and keeping them in good working condition in order to prevent risks to public health and the environment from systems that become overwhelmed during periods of heavy precipitation. Evaluate the possibility of developing a comprehensive Town-wide septic plan to uniformly address these concerns.
- **Develop comprehensive invasive species management plan** from inventory stage through management planning and implementation to address existing invasive populations that threaten features such as open space or forests, both of which contribute to resiliency, as well as anticipate new invasives that are likely to move into the area as climates shift.
- **Establish a formal drought plan** to detail appropriate actions to be taken during times of extended drought, with particular attention to developing alternate water supply sources for farmers.
- **Identify and acquire possible easements for non-development corridors** that connect existing (Town and private) natural spaces to allow movement of animals to more suitable habitats and expand their ranges.

CRB Workshop Participants

All workshop invitees are listed below; attendees are indicated with an asterisk.

Name	Position/Organization
Ed Gibson*	Town Administrator, Town of Southampton
Don Snyder*	Director, Southampton Emergency Management
John Workman*	Chief, Southampton Fire Department
Ian Illingsworth*	Chief, Southampton Police Department
Randall Kemp*	Superintendent, Southampton Highway Department
Dan LaValley*	Member, Southampton Planning Board; Member, Southampton Parks Commission
Joan Linnehan	Director, Southampton Council on Aging
Janet Cain	Chair, Southampton Council on Aging Board
Thomas Gaughan	Superintendent, Southampton Water Department
Brian Roy	Acting/Assistant Gas Superintendent, Holyoke Gas & Electric
John Maher	Director of Government Affairs, Michael Charter/Spectrum
James Labrie	Southampton Business Owner
James Hallett	Teacher, Norris Elementary School
John Barrett	Chair, Holyoke Water Works
Tom Flaherty, Sr.	General Manager, Westfield Gas & Electric/Whip City Fiber
Michael Reed	Member, Southampton Conservation Commission
James Seney	Member, Southampton Housing Authority
Paula Maak,	Member, Southampton Parks Commission
Mark Reed	Chair, Southampton Parks Commission
Brittany Gutermuth*	Member, Southampton Conservation Commission
Kaitlyn Swistak-Rooks*	Member, Southampton Board of Health
Maureen Groden*	Member, Southampton Select Board; Member, Southampton Council on Aging; Open Space Committee
Cindy Palmer	Chair, Open Space Committee; Member, Southampton Planning Board; Open Space and Recreation Commission; Master Plan Implementation Commission
Ken Comia*	Senior Planner, Pioneer Valley Planning Commission
Martin Kulig*	Senior Gas Engineer, Holyoke Gas & Electric
Joe Mitchell*	Community Relations and Economic Development Specialist, Eversource
Aliza Pluta*	Principal, Norris Elementary School
Tom Leveille*	Head Custodian, Norris Elementary School
Jon Lumbra*	Chair, Southampton School Committee
Tim Gaudet*	Member, Southampton Board of Water Commissioners
Julianne Busa*	Fuss & O'Neill
Sarah Hayden*	Fuss & O'Neill

CRB Workshop Project Team

Name	Organization	Role
Ed Gibson	Town Administrator, Town of Southampton	Project Coordinator
Don Snyder	Director, Southampton Emergency Management	Core Team Member
John Workman	Chief, Southampton Fire Department	Core Team Member
Ian Illingsworth	Chief, Southampton Police Department	Core Team Member
Randall Kemp	Superintendent, Southampton Highway Department	Core Team Member
Brittany Gutermuth	Member, Southampton Conservation Commission	Core Team Member
Kaitlyn Swistak-Rooks	Member, Southampton Board of Health	Core Team Member
Maureen Groden	Member, Southampton Select Board	Core Team Member
Julianne Busa	Fuss & O'Neill	MVP Lead Facilitator
Sarah Hayden	Fuss & O'Neill	Scribe

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Appendix A

Final Risk Matrix



Top Priority Hazards (tornado, floods, wildfire, hurricanes, earthquake, drought, sea level rise, heat wave, etc.)

H-M-L priority for action over the Short or Long term (and Ongoing)

V = Vulnerability S = Strength

Features	Location	Ownership	V or S						
Infrastructural									
Roads	Town-wide, Gilbert Road, Fomer Road, Riverdale Road, Glendale Road, Pomeroy Meadow Road, Gunn Road, and Moose Brook Road	Town	S	The Highway Department has a Road Plan.				N/A	O
			V	Conduct a Town-wide road assessment to understand the feasibility and costs/benefits of implementing engineered drainage systems.				H	S
Dams	Dam at the Tighe-Carmody Reservoir, Dam at the intersection of Middle Road and White Loaf Road, Dam at Middle Road near East Street, Lyman Mill Pond Dam, White Reservoir Dam	City of Holyoke, Private	V	Conduct dam assessments and dam removal feasibility studies for the dam at the intersection of Middle Road and White Loaf Road, the dam on Middle Road near East Street, Lyman Mill Pond Dam, and the White Reservoir Dam. Coordinate with dam owners as necessary.				H	S
Culverts, Bridges, and Stormwater Infrastructure	Town-Wide, Bridges on: Manhan River (Glendale Road, Pomeroy Meadow Road, Dunn Road), Moose Brook, Manhan Meadow Sanctuary	Town	S	The Town is preparing for East Street bridge repairs.				N/A	O
				A stormwater bylaw is expected to pass at the next Town meeting.				N/A	O
			V	Conduct a field inventory of culverts and bridges to rank and prioritize projects for increased flooding resiliency and storm-hardening, followed by design and implementation of priority re-sizing or replacement projects. Green infrastructure, Low-Impact Design, and other nature-based solutions will be integrated with hard-infrastructure improvements.				H	S
				Assess green infrastructure opportunities for stormwater management to develop a list of specific priorities, assess feasibility and cost, rank priority projects in terms of climate resilience potential, and develop concept designs for key projects.				H	S
Electrical Infrastructure	Town-Wide	Eversource	S				Eversource conducts aggressive tree trimming and removal to protect power lines.	N/A	O
			V				Coordinate with Eversource to manipulate circuits to isolate outages to lower-priority areas of Town. This will not only limit the impact of power outages on residents but will also help reduce the stress on Town Departments that are responsible for responding to downed lines and outages.	H	L
Back-up Power Supply	Norris Elementary School, Municipal Facilities, Private Residences	Town	S				The Police Department and Town Hall have back-up power supplies.	N/A	O
			V				Assess the feasibility of establishing a microgrid that would serve the new public safety complex, the school, or other municipal facilities. Assess alternative back-up power supplies at critical municipal facilities, considering green power and resilient power systems, including the feasibility of establishing solar battery storage.	H	L

Drinking Water Supply	Town-Wide (Barnes Aquifer)	Town	S			The Town recently established an interconnection with the City of Easthampton's water supply.		N/A	O	
			V			Explore new interconnection options with the Town of Westfield and City of Holyoke. Assess the feasibility of establishing a new treatment facility that would be required for the Holyoke interconnection.		L	L	
				Conduct a risk assessment for private drinking wells, including the impacts of power outages on residents' ability to draw water. Identify the impacts of climate change, specifically drought, on the 1,000 private drinking water wells in Town. Take steps to limit contamination of Town well water by agricultural practices (e.g., E. coli from cows grazing in recharge areas).				L	L	
				Provide public education and outreach to well owners, focusing on conservation measures and means of limiting water use to prevent impacts to the water supply. Simultaneously ensure that well owners are aware of their drought risks and adequately prepared for hazard scenarios from drought to power outages, both of which may affect their water supply.				L	L	
Emergency Communications	Town-Wide	Town	S	The Town operates a CodeRED system.					N/A	O
			V	Update the CodeRED system and encourage resident enrollment in the emergency notification system.					L	S
				Explore options for relocation of the Police Department dispatch repeater to a preferred and more easily accessible location on Mt. Tom. This will allow for the installation of a back-up power system and will increase the accessibility of the system, both of which will better serve emergency services and reduce the risk of repeater outages.					H	S
				Evaluate the technology used for emergency communications to identify potential vulnerabilities and improvements as they relate to climate change hazards.					H	S
Septic Systems	Town-Wide	Private	V	Conduct a risk assessment to identify vulnerable septic systems across Town.				L	L	
				Educate owners of private septic systems about the importance of having systems pumped out and keeping them in good working condition in order to prevent risks to public health and the environment from systems that become overwhelmed during periods of heavy precipitation.				L	L	
Town Buildings	Norris Elementary School, Senior Center, Police Department, Fire Department	Town	V	Evaluate options for establishing a public safety complex that includes the Fire, Police, and Emergency Management departments. Consider locating the facility in a central location and integrating low-impact development and green alternate energy supplies.				H	L	
				Assess alternate energy options for Norris Elementary School, including options for acquiring back-up power and the feasibility of installing air conditioning at the school.				M	S	
				Back-up Town documents that are currently stored in Town Hall in an area without climate control. Consider alternatives to provide more resilient storage facilities for vital records.				L	L	
Broadband/Internet	Town-Wide	Town	V	Assess ability to expand communications redundancy and build resilience through the installation of fiber optics.				L	L	
Gas Infrastructure	Town-Wide	Eversource	S	The Town is preparing for East Street bridge repairs and gas infrastructure at the site will be undergrounded.				N/A	O	
Solar	Town-Wide	Town, Private	V	Review existing bylaws and develop zoning regulations for proper solar installation siting. Discourage the development of solar on forested areas.				L	S	
				Explore incentives for new and established town businesses to install solar or alternative energy sources, especially at key community facilities such as Urgent Care and Big Y.				M	L	
Societal										
Seniors	Town-Wide	Private	S	The Town conducts wellness checks on seniors during significant weather events.				N/A	O	
Vulnerable Populations	Town-Wide (including assisted living facilities)	Private	V	Update the CodeRED system and encourage resident enrollment in the emergency notification system.				L	S	

Emergency/Heating/Cooling Shelters	Town-Wide	Town	S				Hampton Ponds State Park is available for residents as open space and to provide cooling.	N/A	O
			V				Assess the feasibility of using Norris Elementary School as an emergency shelter. Ensure it has the necessary capacity, back-up power supply, and resources required (beds, kitchen capacity, etc.) to support the population	M	S
							Establish designated heating and cooling centers in Town and ensure that they have adequate capacity and power requirements. Assess the feasibility of hosting a cooling center in the Senior Center or Town Hall. Coordinate across Town departments for consensus on operation hours and staffing of the cooling center.	H	S
							Explore options for open space cooling and access improvements along waterbodies to help accommodate residents on extremely hot days. This is especially important given that the Town does not currently operate a cooling shelter.	L	S
Stress on Emergency Services	Town-Wide	Town	V	Explore options for relocation of the Police Department dispatch repeater to a preferred and more easily accessible location on Mt. Tom. This will allow for the installation of a back-up power system and will increase the accessibility of the system, both of which will better serve emergency services and reduce the risk of repeater outages.				H	S
Access to Medical Care/Supplies	Town-Wide	Town, Private	S	The Town is working to increase accessibility for biking and walking paths.				N/A	O
			v	Continue to enhance "walkability" in Town through the creation of walking paths to popular destinations to reduce reliance on private vehicles and provide transportation options for populations that may not have access to private vehicles. Expand Town sidewalks using smart or permeable pavement and vegetated strips.				L	L
Developmental Pressure	Town-Wide	Town, Private	S	The Town is in the process of updating its Master Plan.				N/A	O
			V	Conduct a Town bylaw review to determine how to incorporate requirements for green infrastructure and low-impact design (LID) in new developments in new or existing bylaws.				M	S
				Establish a regulatory review process for future developments to limit the impact on the Town's existing resources. Encourage new development in areas with existing infrastructure capacity and encourage resilient building (e.g., underground electrical). Ensure access to affordable housing in new developments.				M	S
				Develop and adopt a Climate Adaptation Plan that addresses the future needs of Town departments and the community in adapting to the effects of climate change.				M	L
				Conduct a study of potential impacts of climate migration on the Town. Develop recommendations for consideration of these impacts in zoning regulations.				L	L
Evacuation Routes	Town-Wide, East Street	Town	V	Establish secondary emergency access and evacuation routes that are outside flood-prone areas.				H	L
Open Space/Recreation	Town-Wide	Town, Private	V				Explore options for open space cooling and access improvements along waterbodies to help accommodate residents on extremely hot days.	L	L
				Conduct a survey on the vulnerability of town trails and bridges along waterways. Identify pathways to fund trail and bridge improvements to protect surrounding properties, reduce erosion and land loss, and keep trails open as much as possible.				M	S
Staff Capacity	Town-Wide	Town	V	Hire a Town Planner to increase the capacity of the Town, generate consistency across departments, and reduce the reliance on unpaid volunteers.				H	S
				Hire a Conservation Agent to increase the capacity of the Town, generate consistency across departments, and reduce the reliance on unpaid volunteers.				H	S
				Hire a Code Enforcement Agent to increase the capacity of the Town, generate consistency across departments, and reduce the reliance on unpaid volunteers.				H	S
				Continue to work on technological improvements for remote access for employees.				L	S
Community Support	Town-Wide	Private	S	The Town has robust community support from various organizations, including from the Congregational Church.				N/A	O
Council on Aging	Council on Aging	Town	S	The Council on Aging provides numerous services for seniors.				N/A	O
Business Community	Town-Wide	Private	V	Support local businesses in adapting to the effects of climate change to make the business community more resilient. Identify areas where impacts from climate hazards can be easily avoided or mitigated (e.g., by avoiding building floodplains or areas of known drainage-related flooding) and where targeted improvements, such as a microgrid, could be employed to provide extra resilience to community businesses.				M	L

Vector-Borne Diseases	Town-Wide	Town, Private	S	The Town is part of a mosquito surveillance program.				N/A	O
			V	Assess additional mosquito/pest control options, including establishment of buffers between developed and undeveloped areas, determination of future risks due to increase in type and quantity of pests/disease vectors due to climate change, and development of an education and outreach program.				M	L
				Conduct education and outreach for best management practices related to pests and vector-borne diseases (e.g., tick checks, removing standing water).				M	S
				Conduct a risk assessment of vector-borne diseases and develop a follow-up plan for educating residents on the risks, awareness, and best management practices relating to pests and vector-borne diseases.				M	S
				Secure long-term funding for ongoing mosquito surveillance program.				M	L
School	Norris Elementary School	Town	V				Assess options to address excessively hot days in schools. This may include implementing plans to install air conditioning in the school. An alternative solution is to keep children out of school on the hottest days of the year by reducing the school year or providing remote-learning alternatives.	H	S

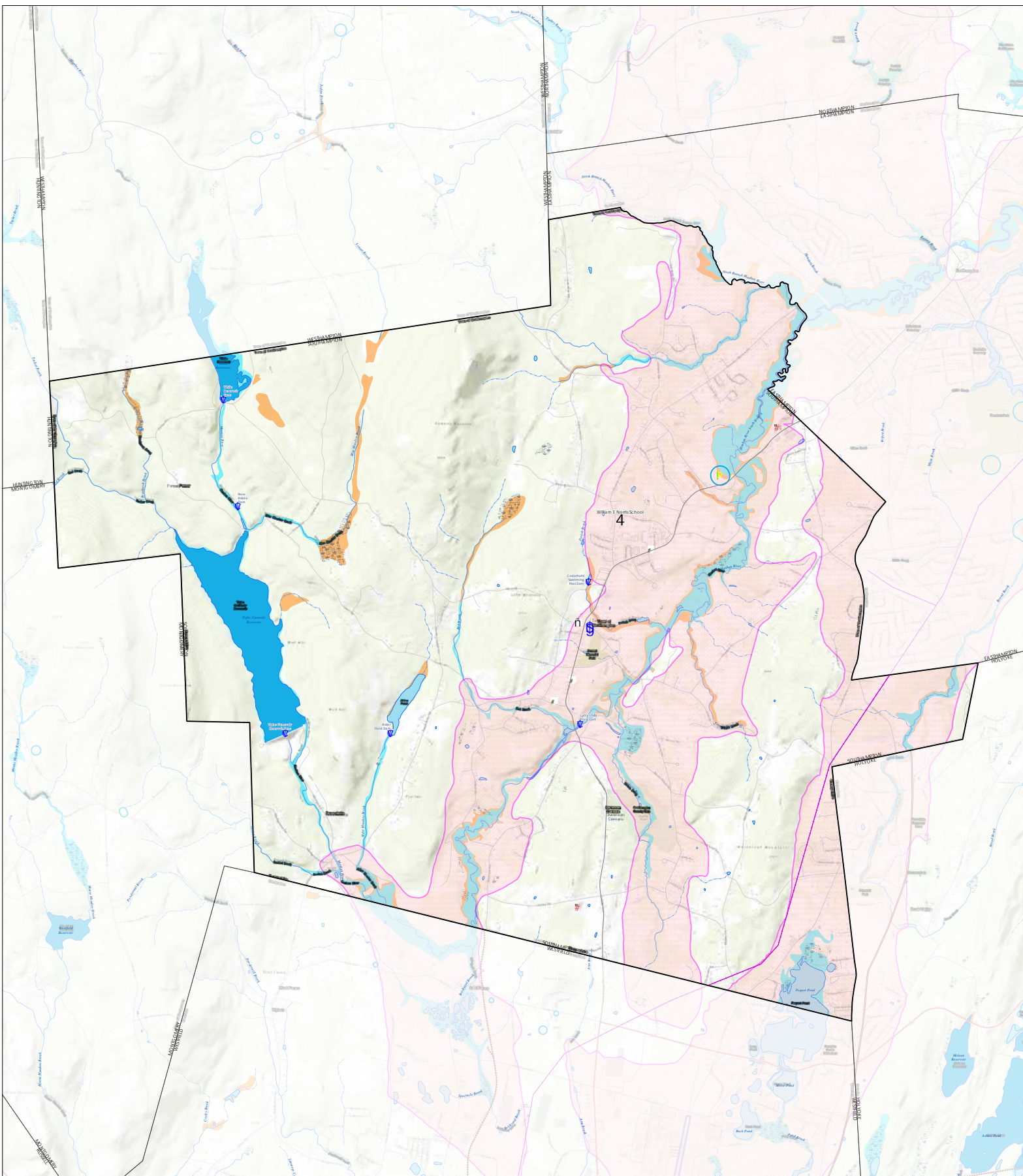
Environmental

Trees/Forests	Town-Wide	Town, Private	S	Assessments of the health of Town-owned forests are ongoing				N/A	N/A
			V	Develop a comprehensive tree and forests management plan to identify, remove, and replace problem trees, preserve intact forests, provide guidance and resources for gradually moving toward more climate-resilient trees and forest communities (e.g. species that will tolerate warmer temperatures). Increase the planting of street trees and consider requiring a percentage of each newly developed lot to be maintained as forest. Educate residents on the benefits of trees and forests relating to cooling, carbon sequestration, wildlife habitat, etc.				L	L
Invasive Species	Town-Wide	Town, Private	V	Develop comprehensive invasive species management plan from inventory stage through management planning and implementation to address existing invasive populations that threaten features such as open space or forests, both of which contribute to resiliency, as well as anticipate new invasives that are likely to move into the area as climates shift.				L	L
Manhan Meadow Sanctuary	Manhan Meadow Sanctuary	Town	V/S	No priority actions were discussed for this topic.				N/A	N/A
Chemical/Fertilizer Use	Town-Wide	Private	S	The Open Space Committee is distributing a list of best management practices relating to fertilizer use.				N/A	N/A
Barnes Aquifer	Barnes Aquifer	Town	S			The Town enacts a voluntary water ban.		N/A	N/A
			V			Assess the feasibility of enacting mandatory water restrictions and outdoor water bans during droughts. Explore resources for acquiring the necessary enforcement.		M	S
						Reinstate Barnes Aquifer Advisory Group to help manage the pressures of new development and to understand the impacts of drought on the aquifer and take proactive measures to protect water supply.		M	S
						Encourage the use of residential water conservation practices, such as rain barrels. Conduct Town-wide education on best management practices related to water conservation. Assess options for "water smart" certification.		M	S
Wildlife	Town-Wide	Town, Private	V	Identify and acquire possible easements for non-development corridors that connect existing (Town and private) natural spaces to allow movement of animals to more suitable habitats and expand their ranges.				L	L
Wetlands, Vernal Pools, and Riparian Corridors	Town-Wide	Town	S	The Town has a wetlands bylaw.				N/A	O
				The Town is in the process of getting its vernal pools certified by the state.				N/A	O
			V	Continue the vernal pool certification process for vernal pools on private and Town-owned properties. Conduct community education on the importance of vernal pools and wetlands.				M	O
				Conduct education and outreach on the importance of riparian corridors, including the importance of maintaining and vegetating these corridors. Explore options for coordinating this outreach with Town-wide education on climate impacts and nature-based solutions and economic benefits of ecosystem services through community groups, elementary school, sustainability fair, etc.				M	S

Agriculture Lands	Town-Wide	Private	V	Conduct strategic planning to support the agricultural community in the face of climate change. The identified hazards have the potential to significantly impact agricultural production, with corresponding threats to livelihoods. Planning should include education on adapting agricultural practices to impacts of climate change, such as longer growing seasons, extended periods of drought, and changes in overall precipitation patterns. Educate farmers and gardeners on adaptation measures, including drought resistant crops.				M	L
				Establish a streamlined, regulated process for the management of Town properties regarding haying and the impact on ground-nesting birds. Coordinate with the State as necessary.				L	S
						Establish a formal drought plan to detail appropriate actions to be taken during times of extended drought, with particular attention to developing alternate water supply sources for farmers.		L	L

Appendix B

CRB Workshop Base Map



SOUTHAMPTON, MA

MUNICIPAL VULNERABILITY PREPAREDNESS PROGRAM



- Police Station
- Fire Station
- School
- Town Hall
- Dams
- Underground Storage Tanks
- MassDEP Major Facilities

- Powerline
- U.S. Highway
- State Route
- Non-numbered Road
- Community Groundwater Source
- Wellhead Protection Zone I
- Wellhead Protection Zone II

FEMA Flood Zone Designations

- 1% Annual Chance of Flooding
- 0.2% Annual Chance of Flooding

Town Boundary
County Boundary

Data sources:
Map of G-Infrastructure,
Hydrology, and
Administrative Data
ESRI - Base Map



0 0.33 0.65 1.3 Miles

Appendix C

CRB Workshop Outputs: Risk Matrices

Community Resilience Building Risk Matrix



www.CommunityResilienceBuilding.org

GROUP #1

Top Priority Hazards (tornado, floods, wildfire, hurricanes, earthquake, drought, sea level rise, heat wave, etc.)

H-M-L priority for action over the Short or Long term (and Ongoing)
V = Vulnerability S = Strength

Features	Location	Ownership	V or S	Heavy Precipitation/Flooding	Drought/Fire Risk	Extreme Temperatures (Hot/Cold)	Extreme Storms Events/Wind	Priority H - M - L	Time Short Long Ongoing
Infrastructural									
Roads/Bridges	Riverdale Road, Gilbert Road, Town-Wide, Manhan River-Glendale Road, Pomeroy Meadow Road, Dunn Road), Moose Brook, Manhan Meadow Sanctuary			East Street bridge repair (S); Town-wide road assessment for engineered drainage (mostly country drainage in Town); Town-wide bridge assessment for reconstruction		Town-wide road assessment for engineered drainage (mostly country drainage in Town)--roads icing over			
Dams	Tighe-Carmody Reservoir, private--1) intersection Middle Road and White Loaf Road--erosion repair along road 2) Middle near East; Lyman Mill Pond Dam; Whites Reservoir (City of Holyoke no longer uses), road goes over spillway-spalling, spillway blocked up during Katrina, but not officially holding water			Dam removal feasibility study					
Culverts/Stormwater Infrastructure	Town-Wide		S/V	Town-wide culvert assessment; Stormwater Bylaw passing at next Town meeting (S)					
Electrical Infrastructure	Town-Wide						Town works with Eversource to de-energize lines (S); Eversource conducts active tree-trimming (S); Coordinate with Eversource to manipulate circuits to isolate outages		
Back-up Power Supply	Norris Elementary School						Police station has back-up power (S); Highway Dept. has purchased generator (S); Acquire back-up power for Norris Elementary School; microgrid feasibility study		
Drinking Water Supply	Town-Wide (Barnes Aquifer)		S/V	Town-wide road assessment for engineered drainage (mostly country drainage in Town)--salt use	Interconnection w/ Easthampton (S); Town enacts voluntary water restrictions/adjusted pricing structure (S); explore potential for enacting mandatory water restrictions/outdoor water ban (with enforcement); check w/ BoH on private well issues				
Emergency Communications	Town-Wide		V				Explore options for relocating repeater to area managed by HG&E (has generators); Update CodeRED		
Septic Systems									
Town Buildings	Norris Elementary School, Senior Center, Police/Fire		V				Police station has back-up power supply (S)		
Broadband/Internet									
Societal									
Seniors	Town-Wide			Town conducts wellness checks during significant weather event (voluntary sign-up) (S); CoA conduct senior outreach; ensure power supply; Update CodeRED (opt-in)					
Vulnerable Populations	Town-Wide (assisted living facilities)			Ensure power supply; explore cooling options for schools (nurses office, library, and admin. Office have AC); Update CodeRED (opt-in)					
Emergency/Heating/Cooling Shelters	Town-Wide					Assess feasibility of hosting cooling center in Senior Center/Town Hall			

Stress on Emergency Services	Town-Wide								
Access to Medical Care/Supplies	Town-Wide			Check with Fire Dept. on list of individuals to check-in on vulnerable populations during power outages/hazards; Ensure power supply					
Developmental Pressure	Town-Wide			Locate development in areas with infrastructure capacity (smart development); Conduct zoning, etc. bylaw review/strengthen existing bylaws to reduce development pressure on existing resources					
Evacuation Routes	Town-Wide/East Street?								
Open Space/Recreation	Town-Wide				Hampton Pond for cooling (S): explore options for open space cooling--access improvements along waterbodies				
Staff Capacity	Town-Wide			Hire Town Planner (full-time position); Hire Conservation Agent and explore potential funding sources; enforcement for Town regs; grant writer					
Community Support	Congregational Church		S						
Council on Aging	CoA		S						
Agriculture	Town-Wide								
Business Community	Town-Wide		S/V						
Non-motorized Ambulation (walking/bike path)									
Environmental									
Trees/Forests	Town-Wide								
Invasive Species	Town-Wide			Create invasive species management plan					
Manhan Meadow Sanctuary	Manhan Meadow Sanctuary								
Chemical/Fertilizer Use	Town-Wide			Open Space Comm. distributing list of BMPs for fertilizer use (S); MS4 efforts relating to BMPs (S); community engagement/education/outreach on fertilizer BMPs					
Barnes Aquifer	Barnes Aquifer			Open Space Comm. distributing list of BMPs for fertilizer use (S); Reinstate Barnes Aquifer Advisory Group					
Open Space	Town-Wide								
Wildlife	Town-Wide								
Wetlands	Town-Wide			Town has wetlands bylaw (S)					

Community Resilience Building Risk Matrix



www.CommunityResilienceBuilding.org

GROUP #2

H-M-L priority for action over the Short or Long term (and Ongoing)

V = Vulnerability S = Strength

Top Priority Hazards (tornado, floods, wildfire, hurricanes, earthquake, drought, sea level rise, heat wave, etc.)

				Heavy Precipitation/Flooding	Drought/Fire Risk	Extreme Temperatures (Hot/Cold)	Extreme Storms Events/Wind	Priority	Time
								H - M - L	Short Long Ongoing
Features	Location	Ownership	V or S						
Infrastructural									
Roads/Bridges	Riverdale Road, Gilbert Road, Town-Wide, Manhan River-Glendale Road, Pomeroy Meadow Road, Dunn Road), Moose Brook, Manhan Meadow Sanctuary			East Street bridge repair (S); Town-wide road assessment for engineered drainage (mostly country drainage in Town); Town-wide bridge assessment for reconstruction; Hwy Dept. road plan (S)		Town-wide road assessment for engineered drainage (mostly country drainage in Town)--roads icing over			
Dams	Tighe-Carmody Reservoir, private--1) intersection Middle Road and White Loaf Road--erosion repair along road 2) Middle near East; Lyman Mill Pond Dam; Whites Reservoir (City of Holyoke no longer uses), road goes over spillway-spalling, spillway blocked up during Katrina, but not officially holding water			Dam removal feasibility study					
Culverts/Stormwater Infrastructure	Town-Wide		S/V	Town-wide culvert assessment; Stormwater Bylaw passing at next Town meeting (S); GI/LID zoning bylaw review (e.g., requiring perm. pavement)					
Electrical Infrastructure	Town-Wide						Town works with Eversource to de-energize lines (S); Eversource conducts active tree-trimming (S); Coordinate with Eversource to manipulate circuits to isolate outages; restrictions for future developments--require underground electrical (zoning)/balance with affordable housing		
Back-up Power Supply	Norris Elementary School						Police station has back-up power (S); Highway Dept. has purchased generator (S); Assess alternate energy options for NES/acquire back-up power (microgrid feasibility study, geothermal for Norris Elem. School)		
Drinking Water Supply	Town-Wide (Barnes Aquifer)		S/V	Town-wide road assessment for engineered drainage (mostly country drainage in Town)--salt use	Interconnection w/ Easthampton (S); Town enacts voluntary water restrictions/adjusted pricing structure (S); explore potential for enacting mandatory water restrictions/outdoor water ban (with enforcement); check w/ BoH on private well issues; explore potential interconnection w/ Westfield/Holyoke in conjunction w/ new treatment facility		Risk assessment for private drinking wells (power outages/power risk assessment)		
Emergency Communications	Town-Wide		V				Explore options for relocating repeater to area managed by HG&E (has generators); evaluate tech used by emergency communications; Update CodeRED		
Septic Systems							Risk assessment for vulnerable systems		

Town Buildings	Norris Elementary School, Senior Center, Police/Fire		V	Back-up Town documents		Police station has back-up power supply (S); evaluate future options for NES to incorporate green tech/energy (to account for pop. Growth); Town evaluating options for public safety complex--looking for location (S) coordinate public safety complex location w/ potential for new school and/or other facilities for potential microgrid			
Broadband/Internet				Assess ability to expand communications and resilience (fiber)--redundancy					
Gas Infrastructure	Town-Wide		S	Most infrastructure underground, line at East Street bridge will be relocated to under river (S)					
Solar				Assess feasibility of battery storage for solar for key municipal buildings					
Societal									
Seniors	Town-Wide			Town conducts wellness checks during significant weather event (voluntary sign-up) (S); CoA conduct senior outreach; ensure power supply; Update CodeRED (opt-in)					
Vulnerable Populations	Town-Wide (assisted living facilities)			Ensure power supply; explore cooling options for schools (nurses office, library, and admin. Office have AC); Update CodeRED (opt-in)					
Emergency/Heating/Cooling Shelters	Town-Wide					Assess feasibility of hosting cooling center in Senior Center/Town Hall (both currently have AC), Norris Elem. School for heating center; Norris Elem. School for emergency sheltering			
Stress on Emergency Services	Town-Wide								
Access to Medical Care/Supplies	Town-Wide			Check with Fire Dept. on list of individuals to check-in on vulnerable populations during power outages/hazards; Ensure power supply for residents					
Developmental Pressure	Town-Wide			Locate development in areas with infrastructure capacity (smart development); Conduct zoning, etc. bylaw review/strengthen existing bylaws to reduce development pressure on existing resources; ensure affordable housing for vulnerable populations (econ. challenged pops) as developmental pressure increases--zoning bylaw review (LID/cluster development); climate adaptation plan					
Evacuation Routes	Town-Wide/East Street?			East Street bridge repair (S); establish secondary access route for commutes/emergency services					
Open Space/Recreation	Town-Wide				Hampton Pond for cooling (S); explore options for open space cooling--access improvements along waterbodies				
Staff Capacity	Town-Wide			Hire Town Planner (full-time position); Hire Conservation Agent and explore potential funding sources; enforcement for Town regs; grant writer; improve Town employee remote access					
Community Support	Congregational Church		S						
Council on Aging	CoA		S						
Agriculture	Town-Wide			Maintain aquifer recharge to ensure adequate water access for farms/ag irrigation (mostly private wells/surface water irrigation); assess alternate water supply; farmers market/expand local food options (food security)					
Business Community	Town-Wide		S/V	Review of zoning/planning/master plan; increase education/awareness of available resources--buy in from business community can help advance programs; coordinate with local businesses (e.g. Big Y) on preparedness for emergency events					
Non-motorized Ambulation (walking/bike path)				Increase transportation options for biking/walking					
Vector-Borne Diseases	Town-Wide		V	Town is part of a mosquito surveillance program (S) Secure future funding ongoing for mosquito surveillance program; assessment of risks of vector-borne diseases and follow-up plan; education/outreach for BMPs related to pests (standing water, tick checks, etc.)					
Environmental									
Trees/Forests	Town-Wide			Comprehensive forest management plan (currently there's difficult access for combating/reducing risk of brush/wild fires)/cooperation with UMass extension and explore funding sources for establishing/implementing plan; assessments of Town-owned forest health are ongoing (S)					
Invasive Species	Town-Wide			Develop invasive species management plan					
Manhan Meadow Sanctuary	Manhan Meadow Sanctuary								

Chemical/Fertilizer Use	Town-Wide			Open Space Comm. distributing list of BMPs for fertilizer use (S); MS4 efforts relating to BMPs (S); community engagement/education/outreach on fertilizer BMPs					
Barnes Aquifer	Barnes Aquifer			Open Space Comm. distributing list of BMPs for fertilizer use (S); Reinstate Barnes Aquifer Advisory Group					
Open Space	Town-Wide								
Wildlife	Town-Wide								
Wetlands	Town-Wide			Town has wetlands bylaw (S)					
Vernal Pools	Town-Wide								
Riparian Areas	Town-Wide								
Agriculture Lands				Management of Town properties re: haying--regulation possibilities/education on nesting bird impacts (meadow larks/bobolinks)--work with state; zoning/bylaw regulation on proper solar installation siting					

Appendix D

CRB Workshop Presentation Materials



FUSS & O'NEILL



Boston Firefighters, January 4, 2018 (Reuters)



Szczypta Conservation Farm (Town of Southampton)

Municipal Vulnerability Preparedness Program Community Resilience Building Workshop Town of Southampton

Spring 2021 (Remote Workshop)

MVP Project Team



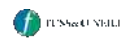
Julie Busa, PhD

Julie is a senior environmental scientist in the Water Environment and Natural Resources group of Fuss & O'Neill. She is a Certified Senior Ecologist with over 10 years of experience in the areas of global biodiversity and forest conservation, sustainability, and ecological modelling. Julie works extensively with municipalities on MS4 compliance and the MVP program.



Sarah Hayden

Sarah is an environmental scientist in the Water Environment and Natural Resources group of Fuss & O'Neill. She has a background in environmental science as well as a strong foundation in business administration and environmental economics. Sarah works with municipalities on MS4 compliance and the MVP program.



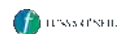
Fuss & O'Neill Overview



Fuss & O'Neill is a leading MVP consultant in assisting Massachusetts communities secure grant assistance, achieve designation as a Massachusetts Municipal Vulnerability Preparedness (MVP) community, and execute their MVP priority projects.

The MVP team is experienced in local government, environmental services, civil site engineering, stormwater management, and emergency management.

Fuss & O'Neill assisted new MVP communities secure more than \$4.8 million in MVP Action Grants in the program's first three funding rounds.



Southampton's MVP Program—\$22,000

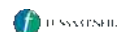
- Grant Supports Climate Change Vulnerability Assessments and Resiliency Planning
- MVP Comprehensive Approach
 - Infrastructure
 - Society
 - Environment
- Open Space and Recreation Plan Update (2019)

MVP designation leads to enhanced standing in future funding opportunities



MVP Program Process

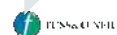
- Core Team Meeting
- Community Resilience Building Workshop
- Summary of Findings
- Listening Session
- Move Forward



MVP Action Grant

- Grant supports priority actions identified at Community Resilience Building Workshop
- \$25,000 - \$2,000,000 available (up to \$5,000,000 for regional projects)
- Local match of 25% - can be in-kind
- Next funding round open now

Only those communities which have completed the CRB workshop are eligible to apply



Terminology

Climate Change

The Change in Usual Climate Conditions

- Rising Temperature
- Changing Precipitation/ Rainfall Amount and Intensity
- Sea Level Rise



Town of Southampton—Connecticut and Westfield Basins

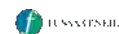
Rising Temperature

Connecticut Basin Westfield Basin	Observed Baseline 1971-2000	Projected Change In 2030s		Projected Change In 2050s		Projected Change In 2070s		Projected Change In 2090s	
Average Annual Temperature (°F)	46.98	2.18	to 4.46	3.00	to 6.43	3.57	to 9.00	4.04	to 10.94
	45.01	2.27	to 4.55	3.08	to 6.63	3.64	to 9.18	4.16	to 11.18
Annual Days with Maximum Temperature over 90°F (Days)	6.41	6.36	to 19.72	9.87	to 35.35	11.98	to 57.07	14.50	to 76.01
	2.75	3.90	to 12.64	5.70	to 24.05	7.18	to 42.37	8.76	to 59.56
Annual Days with Minimum Temperature below 32°F (Days)	158.63	-10.58	to -28.13	-18.57	to -37.28	-22.18	to -50.76	-22.88	to -59.79
	166.59	-10.89	to -27.83	-20.14	to -38.37	-22.41	to -52.99	-24.19	to -62.18

Town of Southampton—Connecticut and Westfield Basins

Changing Precipitation

Connecticut Basin Westfield Basin	Observed Baseline 1971-2000	Projected Change In 2030s		Projected Change In 2050s		Projected Change In 2070s		Projected Change In 2090s	
Total Annual Precipitation (Inches)	46.39	-0.40	to 4.99	1.25	to 6.22	1.95	to 7.26	1.68	to 8.30
	50.70	-0.24	to 5.11	1.18	to 6.85	2.04	to 8.06	2.08	to 9.10
Annual Consecutive Dry Days (Days)	16.41	-0.18	to 1.34	-0.42	to 1.75	-0.73	to 2.26	-0.35	to 2.44
	16.80	-0.26	to 1.40	-0.28	to 2.17	-0.65	to 2.27	-0.47	to 2.64



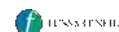
Preparation Question

What does climate change mean to you in your role
in Southampton?



Climate Change Impacts - Temperature

- Economic
 - Winter Recreation
 - Snow and Ice
- Agricultural
 - Longer Growing Season
- Health
 - Increased Pests
 - Heat Stroke
- Infrastructure
 - Road Buckling
 - More Potholes
 - Power Outages
- Environment
 - Change in Habitat



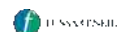
Climate Change Impacts - Precipitation

- Economic
 - Dangerous Floods
 - Lost Work Time
- Agricultural
 - Excessively Wet Spring
 - Drought
- Health
 - Flood/High Water-related Deaths
 - Emergency Response Delays
- Infrastructure
 - Road Washout
 - Environment
 - Sewer System Overflows
 - Compromised Bridges
- Environment
 - Changes in Habitat



Top Climate Change Hazards in Southampton

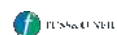
- Extreme temperatures
- Wind
- Extreme precipitation/flooding
- Drought



Community Resilience Building Workshop

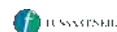
Overview – Remote CRB Workshop Process

- Pre-workshop:
 - Review recorded introductory presentation
 - All stakeholders assigned to a workshop group
- Small group workshops:
 - CRB Team and participant introductions
 - Introduction to CRB Workshop process
 - Use Risk Matrix to:
 - Identify Southampton's vulnerabilities and strengths
 - Prioritize response actions
- Large group response:
 - Circulate output from each small group
 - Stakeholders rate overall priority actions for the Town
- Virtual Discussion on next steps
- Compile Summary of Findings (Fuss & O'Neill)
- Stakeholders review and comment on report



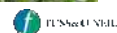
MVP Sectors

- Societal
 - Emergency shelters
 - Senior housing
 - Schools and campuses
 - Economically challenged populations
 - Evacuation plans
 - Animal shelters
 - Hospitals, pharmacies
 - Grocery stores
 - Utilities: electric, gas
 - Homeless
 - Other



MVP Sectors

- Environmental
 - Drinking water supply
 - Rivers and streams
 - Parklands
 - Agriculture
 - Title V systems
 - Stormwater management
 - Open spaces
 - Flood plains
 - Forest
 - Other



Community Resilience Building Workshop

Next Steps:

- Virtual Small Group Sessions
Identify Top Priorities
- Public Listening Session
- Monitor and Update Annually
- Apply for Action Grants

