Municipal Vulnerability Preparedness Program

Community Resilience Building Workshop

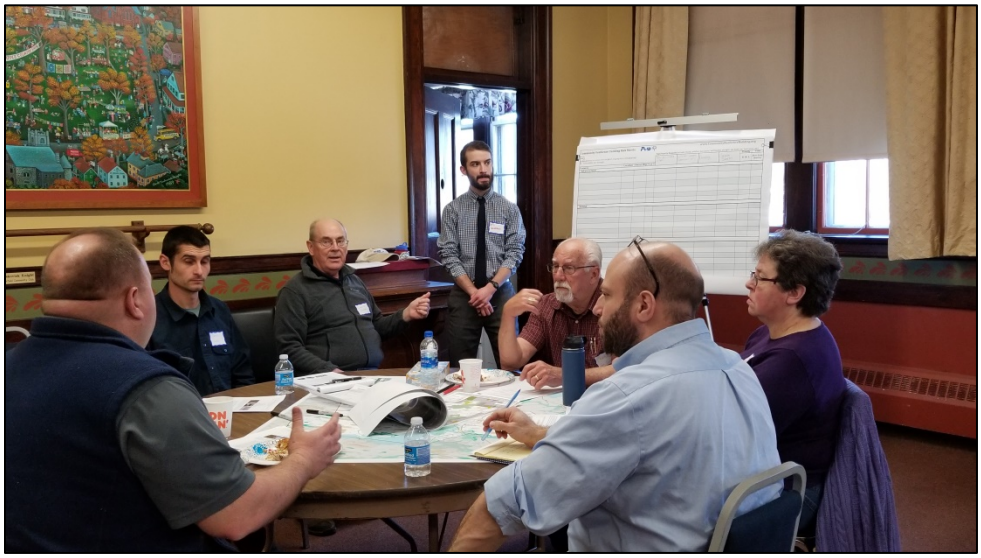
Summary of Findings for Brookfield, Massachusetts

Town of Brookfield and the Central Massachusetts Regional Planning Commission

June, 2019

Contents

Workshop Summary



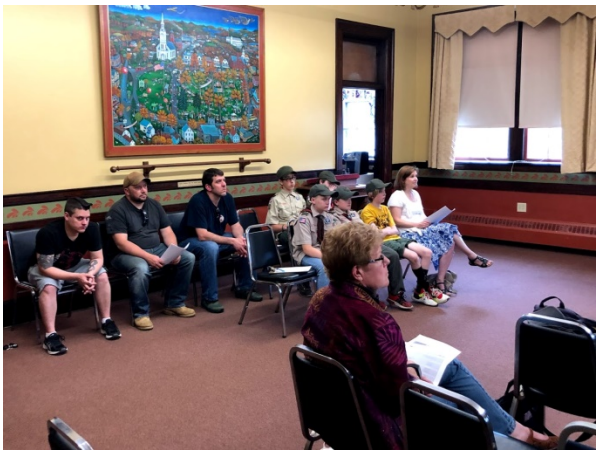
Brookfield MVP Workshop Table Discussion

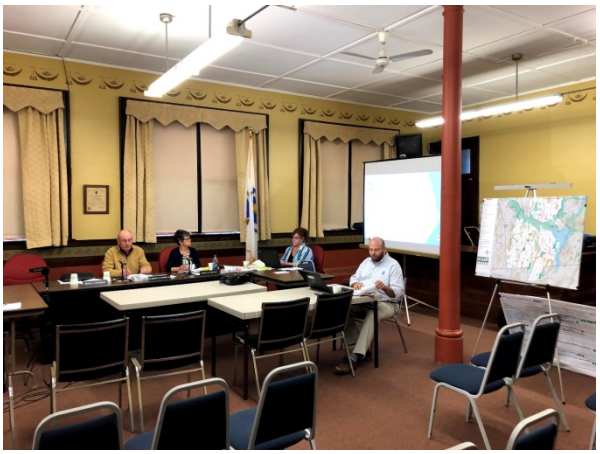
The Town of Brookfield's Municipal Vulnerability Preparedness (MVP) workshop was held April 25, 2019 at the Brookfield Town Hall. The goal of the workshop was to identify top hazards and develop strategies to enhance resiliency related to the anticipated effects from climate change. Brookfield contracted with the Central Massachusetts Regional Planning Commission (CMRPC) to serve as the MVP provider, including completing the Community Resiliency Building (CRB) workshop. Through the CRB process, stakeholders actively engaged in an ongoing discussion to determine the top hazards related to climate change that currently impact or may have the potential to impact Brookfield. The main objectives of the workshop were to: define top local natural and climate-related hazards of concern; identify existing and future strengths and vulnerabilities; develop prioritized actions for the community; and identify immediate opportunities to collaboratively advance actions to increase resilience.

On the day of the workshop the Central Massachusetts Regional Planning Commission delivered three presentations to those in attendance. These presentations (1) provided an overview of the workshop and CRB process; (2) gave a summary of climate change projections, impacts, and mitigation strategies; and (3) provided a detailed profile of natural hazards in the Town of Brookfield. After listening to the presentations given by CMRPC staff, workshop participants were asked to identify four climate-related hazards that impact the Town for in-depth discussion by small groups. After discussion and deliberation, participants identified the following hazards. These hazards are presented in no particular order and include: flooding; winter storms (including ice storms); droughts and wildfire; and severe storms (including tornados, thunderstorms, and damaging wind events). Having identified these hazards, workshop attendees were then broken into two groups to work through the CRB program's

matrix and mapping exercise. These groups were evenly divided and focused on all three areas of concern around the town and climate change.

Sixteen people attended the MVP workshop, including representation from the central town government and local regulatory bodies, emergency services, the MVP Core team, a local environmental non-profit, a state agency with significant land holdings in town, and CMRPC staff. A complete list of participants is included at the end of the report. A public listening session to discuss MVP results and recommendations for future actions was held on June 4th, 2019 in conjunction with a Board of Selectmen's meeting. Between the two meetings, a total of 22 people were in attendance, including members of Boy Scout Troup 159 who were there in order to earn their communications badge. Because the Board of Selectmen's meeting was broadcast to members of the community via public access television, an additional unknown number of residents learned about the program and the results of the town's MVP workshop.





A presentation on the program and the results were held at a public listening session (left) and again during the subsequent Board of Selectmen's Meeting (right). Both were promoted on the town's website, Facebook page, and in the local weekly newspaper.

Top Hazards and Vulnerable Areas

Quaboag River Flooding in Monson, MA in 1938 (left) and Lake Lashaway Flooding in East Brookfield, MA in 1938 (right). Images from the Worcester Telegram & Gazette.

Top Hazards

Following the presentations at the beginning of the workshop, a full-group discussion was held for approximately fifteen minutes to determine the top four hazards for breakout groups to further assess solutions. Participants were asked to develop a comprehensive list of hazards that the community has historically dealt with, currently faces, and/or anticipates having to face in the future due to climate change. Examples such as sea level rise, drought, and tornadoes were listed by the MVP provider to prompt discussion. After generating a comprehensive list, workshop participants were asked to collectively agree on the top four hazards impacting Brookfield. Taking climate change projections, critical infrastructure, and other considerations into account, participants chose to focus on the following hazards. While these hazards represent the top hazards discussed at the workshop, they are presented in no particular order. These include:

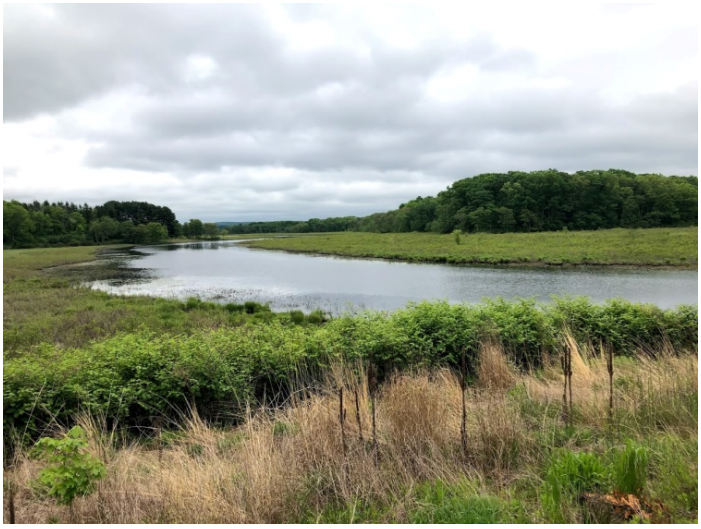
- Flooding (all applicable types: river, storm water runoff, and ponds)
- Winter storms (snow, ice, and mixed precipitation)
- Droughts and wildfires
- Severe storms (tornadoes, thunderstorms and other damaging wind events)

Extreme weather in recent years demonstrates how the various hazards impact the town. There have been numerous flooding events over the years, and the Quaboag River and its

tributaries have a large impact on storm water drainage and downstream flooding in Brookfield. Specific areas with critical infrastructure have been shown to be prone to flooding, thereby creating a variety of safety concerns. Winter/Ice Storms, a regional problem every winter, are expected to be more intense, include more mixed precipitation, damaging trees, power lines and other infrastructure.

Wildfires are expected to increase due to the impact of prolonged droughts. The drier forests and wooded areas will be more combustible in drought conditions. Drought will also likely lead to water shortages impacting the entire town whether or not residents and businesses are on town water or have wells. Heavy wind events are of primary concern as well. The town and the surrounding area have experienced a recent uptick in storms with hurricane-level winds. This phenomenon can be linked in part to the previously mentioned increase in average temperature and rising precipitation rates. However, this fourth hazard focused primarily on the winds associated with these storms, leaving heavy rain events to be discussed under flooding. The workshop participants agreed that different hazards affect the town at different times of the year. Flexibility and comprehensive response by town officials is needed to ensure the safety of the citizens in different hazards situations exacerbated by climate change.

Vulnerable Areas



Quaboag River in the center of Brookfield

The vulnerabilities listed below were discussed in the workshop's breakout groups.

Properties located around the Quaboag River and Ponds

Homes, businesses, and facilities located in the flood zone are at risk of increased damage due to rising precipitation rates. Specific areas include: Allen Road and Lake Road area around South Pond, Pine Lane, Quaboag Street, Oak Avenue, and Brunell Avenue around Quaboag Pond,

South Maple Street (MA Route 9), and Mill Street and Fiskdale Road (MA Route 148) around the Quaboag River. South Maple Street and Quaboag Street are two of three roads leading to East Brookfield from the northern half of the town, and Fiskdale Road is the only north-south route connecting the two sides of town. All local emergency services are based north of the Quaboag River and utilize the Fiskdale Road bridge to access locations to the south.

Wolf Swamp

Wolf Swamp is a large forested area in the middle of the southern half of the town, running along Trout Brook. There is only one road, Lake Road/Rice Corner Road that crosses the area at its northern tip. The area contains a large variety of land and freshwater plants and animals but is also susceptible to wildfires and invasive species.

Infrastructure

Storm water drainage infrastructure (culverts, storm drains, etc.), bridges (esp. Fiskdale Road Bridge), public and private wells, roads, public and private septic systems, and the town information and technology system are present throughout the town and face a variety of issues as well contribute to some of the town's strengths.

Mobile Home Parks

The town has three mobile home parks, Nanatomqua, Wagon Wheel, and Brookfield Meadows, and all three communities are located south of the Quaboag River. These communities depend on their own wells and contain some of the town's most vulnerable populations, including senior citizens and residents with mobility issues. Mobile homes are more susceptible to damage during severe storms than traditional houses, and all three communities are surrounded by woodlands which can become an issue during periods of extended drought when the threat of wildfires is higher. The majority of these residents have low to moderate incomes which inhibits their ability to move homes or quickly recover in the event of a major climate event, and this will put their health and safety at considerable risk as these events become more frequent in the future.

Emergency Shelter Facilities

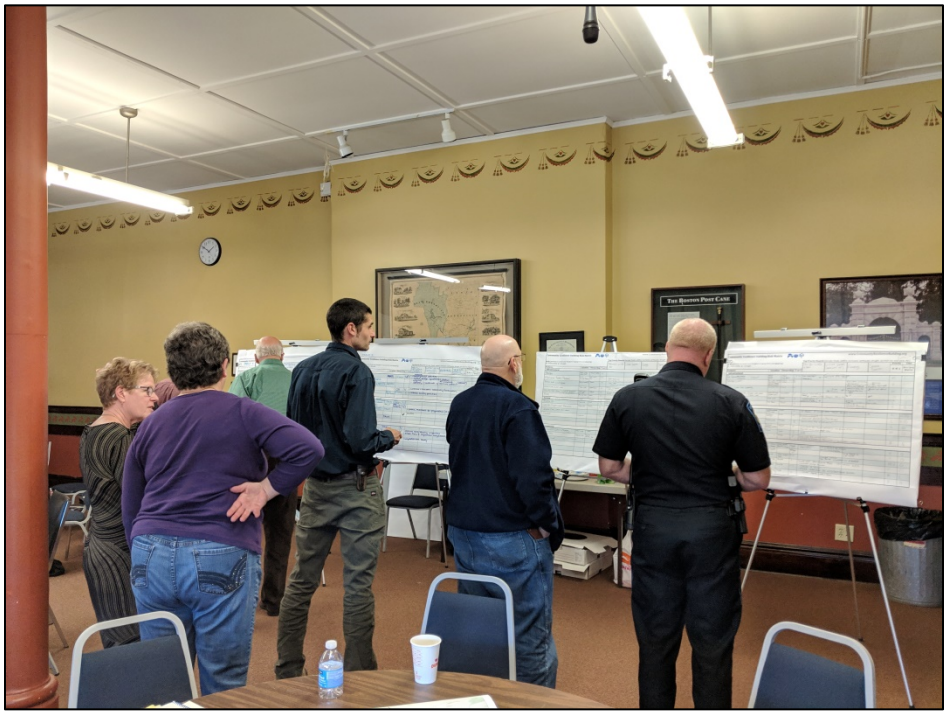
Brookfield Elementary School is the town's designated emergency shelter with the possibility to use the town hall, fire department, and policy department. It is important to note that all municipal buildings are located north of the Quaboag River, and there is currently only one north-south connection over the Quaboag River on Fiskdale Road.

Public Water System

Only the northern half of the town is connected to municipal water while all homes and businesses south of the Quaboag River are reliant on individual or shared private wells. As part of this MVP grant, CMRPC and the town conducted a survey of residents and businesses south

of the river regarding their access to drinking water and their interest in joining the public water system. The full results of this survey can be found in Appendix A.

Current Concerns and Challenges Presented by Hazards and Climate Change



Brookfield MVP Workshop Participants Prioritizing Actions

CMRPC, the MVP planning provider, had the unique advantage of preparing Brookfield's Hazard Mitigation Plan (HMP), which was adopted by the town's Board of Selectmen August 2018. Meetings with the Core Team prior to the workshop as well as the HMP helped to identify past climate-related events that significantly impacted the Town. Disaster events of concern included frequent major winter storms (as in 2015 and 2018), ice storms (2008), severe rain events (2005, 2010, 2016), tropical storms (Irene, Sandy), infestations of invasive and otherwise undesirable species (gypsy moths, aquatic invasive species, ticks), and extended periods of drought (2015 to 2016). While drought conditions affect all corners of Brookfield, they are particularly harmful to the residents and businesses south of the Quaboag River as all properties on that side are dependent on private wells for their water. During periods of drought, well water cannot replenish at or above the rate of usage, and dried up wells can have physical as well as health impacts on those who rely on them.

At the workshop, CMRPC staff presented downscaled data on climate change provided by the State's Executive Office of Energy and Environment Affairs (EOEEA) and the Northeast Climate Science Center at the University of Massachusetts, Amherst. Projections for the Chicopee River watershed show that by mid-century, annual average temperatures may increase in the range of 3 to 6.4 degrees from the historical baseline, hot days over 90 degrees may increase 8 to 29 days, days below freezing may fall 19 to 38 days, annual precipitation may increase 1.1 to 6 inches, yet seasonal drought conditions may become more frequent as precipitation becomes more concentrated in extreme intensity events and winter snowpack is reduced. Some of the challenges of these projected changes – many of which are already being observed – were discussed in a presentation at the workshop focused on specific hazards in the Brookfield area.

Challenges highlighted in the presentations and/or discussed as a group or in the breakout groups included:

- In general, attendees cited concerns that climate change will exacerbate problems that they are already dealing with and already lack the resources to address comprehensively – flooding and storm water management, vulnerable roads, water service coverage and resilience, ecological damage, and vulnerable populations, all within the context of a small community. This positive feedback loop created by climate change has the potential to increase already present hazardous risks.

- An increase in hot and warm days and decrease in cold days will mean increased need for cooling and less need for heating, especially among vulnerable groups such as children and seniors – this concern was elevated because of the Town's relatively limited formal shelter capacity (Brookfield Elementary School).

- Increased temperatures can also be expected to cause changes in the water cycle, leading to more intense rain events. Increased precipitation rates may lead to more frequent and severe flooding, including in areas outside of designated flood zones defined using historical data – particularly in the developed Pine Lane/Quaboag neighborhood along the Quaboag River and Quaboag Pond.

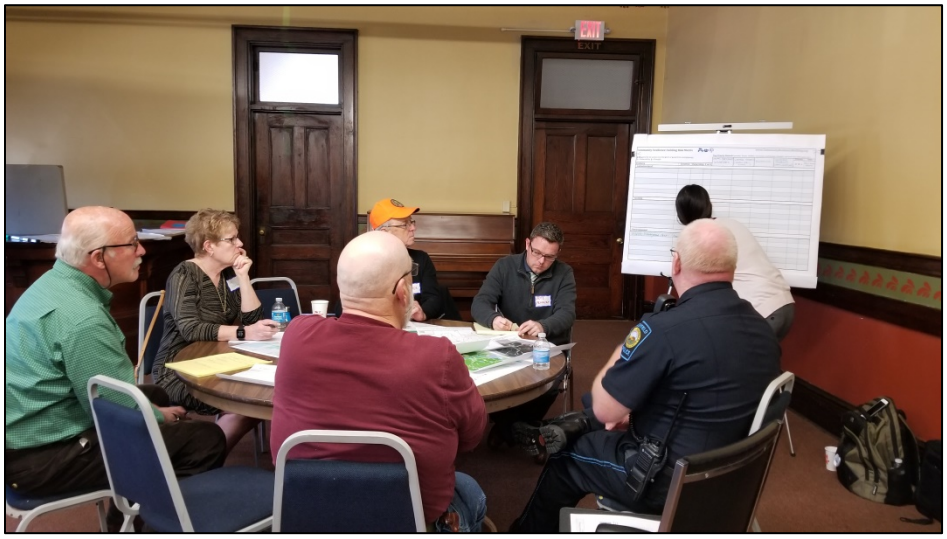
- Increased storm intensity may cause more tree damage leading to power outages and road closures, higher peak river flows requiring new approaches to storm water management, and increased erosion of river and brook banks and nearby infrastructure. Tree damage may occur from intense wind storms such as recent tornadoes or from heavy snow and ice storms.

- More frequent and severe droughts may challenge water supplies and increase risks from wildfire. Increased risk of wildfire can lead to a wide-range of ecological outcomes

including increased damage to human property and life, removal of suitable habitat space, and changes in ecosystem services made available by forest cover.

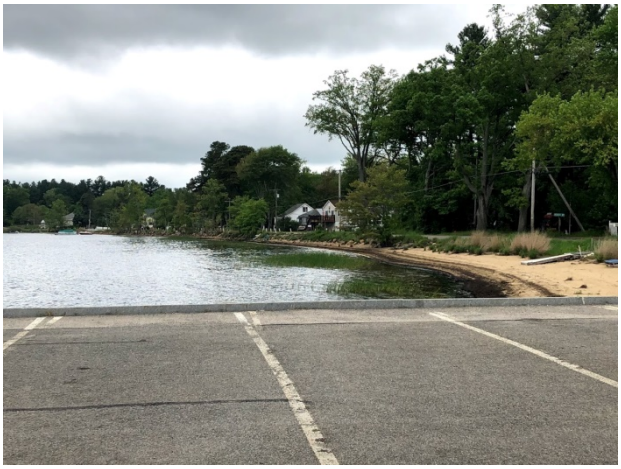
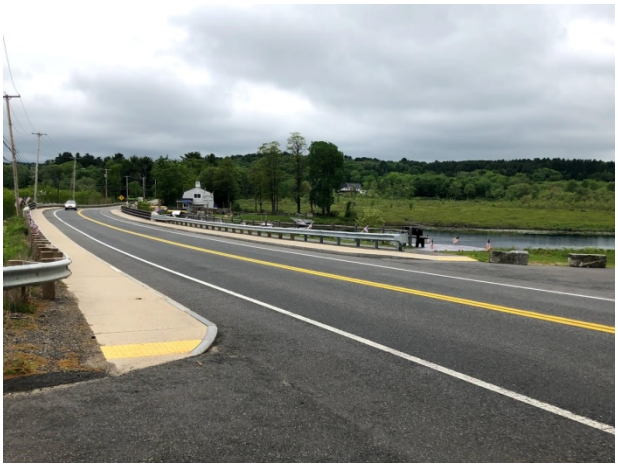
- Invasive plant and animal species may impact public health through increasing numbers of disease carrying pests (e.g., ticks and mosquitoes) and by damaging key ecosystems such as forests and wetlands, thereby increasing wildfire and flood risks.

- As the climate continues to change and disasters increase in frequency and strength the need to communicate with residents, businesses, and other institutions will increase as well. Changing climate will dictate the need for enhanced communications systems and related infrastructure as well as up to date and flexible emergency response and evacuation plans.



Brookfield MVP Workshop Participants Discussing Infrastructure, Societal, and Environmental Features throughout Brookfield

Specific Categories of Concerns and Challenges

Quaboag Pond Looking North (left) and the Fiskdale Road (MA Route 148) Bridge looking South (right)

The following topics were identified by workshop attendees as concerns or challenges related to Brookfield's changing climate and natural hazards.

Infrastructure Topics

Water and Septic Systems

The town is divided in half by the Quaboag River, and as such has two methods of providing residents and businesses with access to water. The northern half of the town is connected to a public water system while the southern half is entirely fed through private wells (the three mobile home parks have their own wellfields). As part of this MVP program, the residents and businesses in the southern half of the town were surveyed about their current water access as well as their interest in being connected to public water infrastructure in the future. The full results are included in Appendix A, but overall, 63% of residents are satisfied with their existing water supply and roughly even numbers are very interested in joining the public water supply and not doing so. Impacts to the wells' water chemistry was also noted in the survey with various respondents noting high levels of iron (39%) and manganese (13%), bad odor (12%), and bad taste (10%). While the water availability in the southern half of the town is currently at an acceptable level in most years, a major issue is the potential for wells to dry up during long periods of drought. The survey captured that during the 2015-2016 drought, 13% did not have available water at times, although this number is likely to be low due to changing property owners and a low response rate. This number is likely to change in the future as an increase in droughts from the changing climate leaves the rate at which the wells are used to exceed the rate they can be replenished, leading more wells to dry up. The town is also completely reliant

on septic systems to serve as each property's sewer infrastructure. While attendees did not see this as a current issue, future flooding could damage and potentially expose waste to the area's river, brooks, ponds, and even the public's water supply, and prolonged higher groundwater from increased overall precipitation could impact septic system performance.

Municipal Buildings

Future natural disasters and emergencies could mean that municipal buildings are used as emergency shelters. As such, some buildings do not have an adequate backup power source or feature lightning rods to protect the building against severe thunderstorms. The Brookfield Elementary School is the town's only designated emergency shelter; however, it lacks a proper source of backup power in the event of a severe weather emergency. Additionally, all buildings need to be ADA compliant to provide for residents with mobility issues and allow for everyone to access these safe shelters. As these shelters could be required year round, the town has to ensure that each are equipped with the tools to respond to all severe weather events and are ready to host residents regardless of the reason. It is also important that these shelters are available in both the northern and southern halves of the town as some events could cause the Quaboag River to flood and make the Fiskdale Road Bridge impassible, the only north-south link in the town.

Roads and Culverts

Flooding has the potential to become a major issue throughout the town, as the Quaboag River, several ponds, and wetlands are prominent features in the town's landscape. Severe storms in every season could inundate these natural resources and make roads and bridges impassible as culverts are used beyond their capacity. Drainage systems along the roads and culverts need to be inspected and improved wherever possible to keep flooding to a minimum and ensure that residents and emergency services can use the roads in case of emergencies or evacuations. A number of specific locations in need of improvement were identified as part of the workshop.

Communication Systems

Town officials and emergency services being able to communicate effectively and efficiently to all residents is among the most important topics that the town could experience issues with in the future. Methods of communication such as phone calls, text messages, and reverse 911 require all cell phone towers, power lines, and telephone lines to be in working order even as severe storms and flooding hits the town. Notices on the town's webpage, Facebook page, and email listserv also require these communication systems to be in working order. If storms damage these systems and cause outages, even briefly, residents may not know of potential threats or evacuation and shelter in place notices, leaving them vulnerable.

Societal Topics

Quaboag Street/Pine Lane Neighborhood

The Quaboag Street/Pine Lane neighborhood sits along the Quaboag Pond at the spot where it becomes the Quaboag River and contains roughly fifty homes. The residents in this area are particularly vulnerable to flooding as they are bound of two sides by water and have a single road, Quaboag Street, in which to use to evacuate. If this street at either end becomes blocked due to flooding or fire, these residents will become trapped and at risk.

Vulnerable Populations

The town has a number of vulnerable populations that need to be considered when forming emergency preparedness plans. Brookfield has a substantially older population than Massachusetts as a whole. Many local seniors do not have access to a vehicle, and many live alone. Environmental risks faced by everyone could be even more hazardous to these individuals, and destructive events such as flooding, storms, and fires will require more immediate attention than other residents. At least one of the mobile home parks, the Nanatomqua Mobile Home Park, is a 55+ community and located just south of a FEMA designated flood zone along the Quabaog River. This concentration of potentially vulnerable parties in a potentially dangerous area will require town and emergency response officials to periodically review and update management and evacuation procedures for the community, especially as flooding and wildfires become more common.

Land Use Regulations

As the town's demographics change over time, the land use requirements and layout will change as well. Future growth could see the forest cover of the town diminish or developments on top of wetlands. A decrease in the town's population should see cutbacks to areas serviced by municipal departments. Either of these outcomes will put future residents at further risk from worsening weather events. An increase of impermeable surfaces, a decrease in woodland, and the presence of developments in wetlands and flood zones will see an increase in flooding. A reduction in services to certain areas could leave residents vulnerable to any of the issues covered so far. While the town at the present is well maintained and local and state land use regulations prevent certain adverse developments from taking place, changes to these regulations over time as a reaction to changing demographic trends could undo the current success.

Environmental Topics

Wetlands

Due to the number of ponds, brooks, and the Quaboag River, a sizeable amount of land in Brookfield is classified as a wetland or is within a flood zone. Some of this land is already developed and some is susceptible to development in the future. While typically seen as a

positive attribute to the town, these wetlands, particularly along the Quaboag River, have the disadvantage of separating the town in two. Large volumes of rain could flood these areas and damage properties and infrastructure, while droughts will seriously impact these vulnerable ecosystems and the wildlife they contain. Lastly, wetlands lie in the lowest parts of the town and collect storm water runoff and pollutants, and the volume of runoff and the damage it causes to these ecosystems and the town will increase in scope and frequency as severe storms in the town become more frequent in the future.

Invasive Species

Not only are invasive plants and animals a threat to the town's natural resources, they are a direct and indirect threat to the residents. Invasive animals bring an increased number of fleas and ticks into direct contact with the residents and invasive plants can signal more insects and take nutrients away from existing plant species. The range, strength, and location of these invasive species will increase as future climates brings increases in temperature, rain, and periods of drought, the type of climate better suited to different species instead of native ones. Aquatic invasives were noted at the workshop as detrimental to recreational waterways as well as the environment.

Forest Cover

The amount of woodland in and around Brookfield is both an asset and a concern for the residents as future climates bring increased periods of drought. Drought conditions such as the area experienced in 2016 increase the risk of wildfires. As all developed areas are in or around woodlands, not only is the risk of wildfires a concern for residents but also the potential damage that can occur from events after a fire. Landslides resulting from a severe storm on land that does not have trees to hold down soil and flooding are two common events that the town could face in the event of a severe storm occurring after a wildfire.

Contaminated Sites

The town has a limited number of properties with existing or previous light industry use; however, any ground contamination from these sites can impact future water quality and natural resources in the future as severe storms and flooding saturate the soil. Polluted runoff can contaminate local brooks, leading into a pond, the Quaboag River, eventually polluting the water downriver. Contaminated runoff and soil can even permeate and pollute the groundwater accessed by drinking wells. This threat to safe drinking water will become even more pronounced during extended periods of drought when drinking wells begin to dry up and the contaminates in the drinking water become highly concentrated.

Current Strengths and Assets

Brookfield has taken some steps to address natural hazards and climate change over recent years. There are a mixture of strengths and vulnerabilities when it came to infrastructure; support for infrastructure services is more established in the town than certain infrastructure features and plans. Societal strengths were mostly perceived as the work that town officials have completed over the years and are completing to protect and strengthen the Brookfield community. Environmental strengths focused mainly on the large and diverse number of natural resources and its quality as a key asset the town and its residents can use and highlight now and in the future.

Infrastructure Strengths

- The town features a generally well-maintained and connected road network with easy access to neighboring communities and major state and interstate routes.
- The town's natural gas pipeline infrastructure allows for most to all residents to access a safe and reliable heating source
- The town is situated along MA Route 9 in the northern half of the town and close to I-90, I-84, and Highway 20 in the southern half.
- To protect the large amount of natural woodland in the town, the Brookfield Fire Department has some specialized equipment and is able to use mutual aid to fight fires throughout the entire town's jurisdiction.

Societal Strengths

- For a small town, Brookfield has an efficient and well maintained group of emergency services officials with a variety of communication methods.
- Brookfield officials continue to plan for the town's future by looking at and considering the best methods and options for protecting and providing for its residents.
- The town utilizes a variety of methods and regularly utilizes them to communicate news, updates, and emergencies to the residents.
- Last but not least, the residents of Brookfield have formed a close and reliable community that helps everyone and works to protect the town.

Environmental Strengths

- The town is largely covered by woodlands, particularly in the southern half of the town, which is maintained by both the town and the state.
- The open space away from developments in the town allow for a variety of recreation activities which is a beneficial asset to the residents of the town.
- Due to the large amount of open space in the town (a substantial amount of which is protected permanently), Brookfield is also home to a variety of wildlife which further adds to the health of the town.

- The Quaboag River, the divide between the north and south halves of the town, is formed from several ponds which are protected by the town and the state.

Top Recommendations to Improve Resilience

Prioritization of recommendations was achieved through four steps: 1) informal discussion at each breakout table during the workshop; 2) voting using stickers placed on the participant's table's CRB matrix (each attendee was given five stickers to select his/her top priority actions, with at least one sticker required to be used for each general topic area); 3) report-back from each table to the full audience to discuss and discern consensus priorities; and 4) final review and reconciliation of duplicate priorities.

For the environment, the top recommendation is to complete a comprehensive plan to monitor and assess the Quaboag River's water quality and flooding risks as well as the water quality and flooding risks of the ponds and brooks in its tributary. Similarly, the top recommendation for societal risks is to evaluate the evacuation procedures, continue outreach and education efforts, develop a flood water pumping plan, and pursue grant opportunities to protect houses in the Quaboag Street and Pine Lane neighborhood next to the Quaboag Pond. Finally, in regards to infrastructure, the town will look to complete an engineering analysis and study of the existing water system infrastructure and complete a plan to update and expand access to public water south of the Quaboag River as well as look for other ways to expand water sources.

A complete list of actions broken out by category is presented here:

Environmental Actions

General Topic	Specific Topic	Summary of Actions	Priority
Environmental	Quaboag River and Ponds	Complete a comprehensive plan to monitor and assess the water quality and flooding risks of the Quaboag River and other waterways throughout the town	H
Environmental	Invasive Vegetation, Weeds, Fish, and Wildlife	Complete a comprehensive study on the existing conditions of the region's invasive species, develop a management plan for ongoing efforts to combat risks, continue to monitor the situation throughout the town and especially at the Quaboag Pond and along the Quaboag River, coordinate with the Lake Association, and pursue available funding for future programs	H

Environmental	Septic System Infrastructure, Reliability, and Performance	Increase Board of Health and Building inspections and ensure that all systems are meeting Title 5 compliance through increased action on the part of a Title 5 coordinator.	H
Environmental	Wetlands	Continue to protect and examine opportunities for low impact development and nature based solutions and enforce and expand zoning regulations	M
Environmental	Tree Management and Forest Cover	Develop a Forestry Management Plan and utilize in future plans	M
Environmental	Beaver Dams	Investigate alternative best management practices and coordinate with East Brookfield	M
Environmental	Brownfields	Continue ongoing work and plan on the property	M
Environmental	Water Supply Capacity and Permitting	Complete an engineering analysis and study of the existing water system infrastructure	L
Environmental	Open Space and Wildlife Management Areas	Maintain the amount of existing open space	L

Societal Actions

General Topic	Specific Topic	Summary of Actions	Priority
Societal	Quaboag Street and Pine Lane Neighborhood	Evaluate evacuation procedures, continue outreach and education efforts, develop a flood water pumping plan, and pursue grant opportunities to protect houses in the area	H
Societal	Public Perception	Increase education and awareness efforts of local issues and vulnerable populations	M
Societal	Reverse 911 and Communications Systems	Continue to support usage, assess levels of use and outreach, and expand usage for evacuation planning	M

Societal	Municipal Owned Sites	Investigate water/well access and suitability, provide and communicate any development plans with the residents, consider an egress plan for the sites in the case of an emergency evacuation, and consider utilizing some town owned site as a shelter or a visitor center.	M
Societal	Elderly Residents Living at Home	Develop a plan to target and assist these residents during an emergency	M
Societal	Land Use/ Storm water Regulations	Review storm water regulations, review zoning regulations around the lake district, and incorporate Commercial Incentive District (CID) into the town's zoning code	L
Societal	Planning	Integrate the town's Hazard Mitigation, Adaptation, and Resiliency Plans into ongoing and future planning efforts.	L
Societal	Elderly Population in Mobile Home Parks	Evaluate the effectiveness of partnering with agencies best equipped to help vulnerable groups	L
Societal	Emergency Medical Services	Ensure that all communication plans are available to the public	L
Societal	Shelter Facilities	Ensure that Brookfield has a formal shelter plan, that formal agreements are made within the regional district, and that facilities are equipped with sufficient food supplies and can handle all ages during all natural emergencies	L

Infrastructure Actions

General Topic	Specific Topic	Summary of actions	Priority
Infrastructure	Public Water System Coverage, Private Well Users, and Shallow Wells	Complete an engineering analysis and study of the existing water system infrastructure and if needed complete a plan to update and expand water infrastructure and explore other water sources	H

Infrastructure	Municipal Buildings	Upgrade and install backup generators and lightning rods at the town hall, police station, and fire station. Ensure that all buildings are ADA compliant, upgrade buildings as needed, and evaluate emergency capabilities.	H
Infrastructure	Drainage and Culverts	Complete an engineering inventory and analysis of all storm drains and culverts and replace, upgrade, and expand capacity as needed. Roads needing particular attention include Quaboag Street/Pine Lane, Rice Corner Cross Road, Gay Road, Rice Corner Road, and Green Street.	H
Infrastructure	Communications Infrastructure	Upgrade infrastructure such as cellphone towers and identify and coordinate with AT&T, Comcast, Verizon, and MEMA on addressing issues	M
Infrastructure	Water System Flood Vulnerability	Complete an analysis and plan for future power loss and power backup due to ice and flooding for the Quaboag Street and Pine Lane Area	M
Infrastructure	Elementary School Emergency Shelter Capacity and Suitability	Expand backup generator capacity	M
Infrastructure	Roads	Continue to pursue maintenance and rehabilitation program and improve drainage capabilities, in particular, East Main Street, Quaboag Street, and MA 148	M
Infrastructure	Septic System Infrastructure, Reliability, and Performance	Increase Board of Health and Building inspections, ensure that all systems are meeting Title 5 compliance through increased action on the part of a Title 5 coordinator, upgrade and study the Housing Rehabilitation Program, zoning, permitting, and inspection procedures, and continue to pursue HUD funding	L
Infrastructure	Gas Supply	Continue existing operations	L
Infrastructure	Bridges	Conduct an assessment of existing conditions, inspect any issues and coordinate with MassDOT on addressing maintenance concerns as needed	L

Infrastructure	Evacuation Routes and Plan	Revisit routes, vehicle plan, and communication methods with the Regional Transit Agency and schools.	L
Infrastructure	Power Lines and Street Trees	Continue to coordinate with National Grid on maintenance issues, promote the switch to underground utilities, and revisit design guidelines and bylaws	L
Infrastructure	Railroad Tracks	Continue to maintain a relationship with the railroad's owners and operators, coordinate to know what contaminates are passing through the town, develop a hazmat plan, improve drainage along the route, and communicate with the railroad regarding any issues or fire hazards	L
Infrastructure	Fire Fighting Capabilities	Update equipment, continue to monitor woodland, and develop an emergency management plan	L
Infrastructure	Saw Mill Road Dam	Complete an Environmental Assessment and Protection Plan	L

Workshop Participation & Acknowledgements

Workshop Invitees and Participants

Department/Commission/Organization	Name	Attended?
Brookfield Conservation Commission	Ken Cleveland	X
Brookfield Board of Selectmen	Clarence Snyder	X
Brookfield Water Commission	Donald Taft	X
Town of Brookfield	Cathy LaRocca	X
Brookfield Water Superintendent	Dennis Clarke	X
Brookfield Police Department	Mike Blanchard	X
Brookfield Elementary School	Kathleen Hosterman	
Brookfield Highway Department	Cindy Thompson	X
Brookfield Board of Health	George Hirtel	X
Brookfield Board of Health	Mike Seery	
Brookfield Fire Department	Peter Martell	X
Brookfield Planning Board	Sharon Mahoney	
Wagon Wheel Mobile Home Community		
Nantomqua Cooperative Corporation		
Opacum Land Trust	Robert Corry	X
Massachusetts Audobon Society		
Central Mass. Regional Planning Commission	Peter Peloquin	X
Central Mass. Regional Planning Commission	Eli Goldman	X
Central Mass. Regional Planning Commission	Hoamy Tran	X
Central Mass. Regional Planning Commission	Andrew Loew	X
Central Mass. Regional Planning Commission	Trish Settles	X
Massachusetts Division of Fisheries and Wildlife	Todd Olanyk	X

Project Team

The following individuals were directly involved in planning and conducting the Brookfield workshop.

Organization	Name	Role
CMRPC	Andrew Loew	Facilitator/Presenter
CMRPC	Eli Goldman	Facilitator/Presenter
CMRPC	Hoamy Tran	Event support
CMRPC	Matt Franz	Mapping support
CMRPC	Trish Settles	Lead Facilitator/Presenter
CMPRC	Ian McElwee	Report writer
Brookfield Board of Selectmen	Clarence Snyder	Core Team Member
Brookfield Highway Department	Cindy Thompson	Core Team Member
Town of Brookfield	Cathy LaRocca	Core Team Member
Brookfield Conservation Commission	Ken Cleveland	Core Team Member
Brookfield Fire Department	Chief Peter Martell	Core Team Member

Organization	Name	Role
Brookfield Water Department	Donald Taft	Core Team Member

Acknowledgements

The MVP workshop, summary of findings, and south area water survey were made possible by many individuals and organizations providing their time and services. In total, the staff and officials from the Town of Brookfield devoted more than 100 hours of staff time as an in-kind match for the program. Oversight was provided by the Core Team led by Cathy LaRocca. All members of the Core team are listed above. The south area water survey was able to be completed thanks to the assistance of the Brookfield Water Department and the Brookfield Water Commission. Additional thanks are given to the staff of the *Brookfield Citizen*, the Merrick Public Library, and the Brookfield Town Hall for aiding with survey distribution and collection.

Support from the Brookfield Board of Selectmen and the town officials was much appreciated, especially for allowing the workshop and listening session to take place in the Banquet Hall. Finally, this process could have not have been conducted without the support and substantial grant assistance of the Massachusetts Executive Office of Energy Affairs' Municipal Vulnerability Preparedness (MVP) planning grant program.

Appendix

- Appendix A – South Area Water Survey
- Appendix B – Workshop Base Maps
- Appendix C – Workshop CRB Risk Matrices
- Appendix D – Workshop Presentations
- Appendix E – Listening Session Presentations