



Town of Buckland



Municipal Vulnerability Preparedness (MVP) Program

MVP Resiliency Plan

June 2018

Facilitated by the
Franklin Regional Council of Governments
A State-Certified MVP Provider



MVP Resiliency Plan

including the

Summary of Findings from the

Community Resilience Building Workshop

March 2018

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Town of Buckland

Community Resilience Building Workshop

Summary of Findings

Overview:

Throughout Franklin County, Massachusetts, communities are experiencing more extreme weather events – especially heavy rains and flooding – along with higher temperatures and other climate-related conditions. These types of conditions are predicted to increase as a result of climate change.

In the face of these changes, municipalities have more of a sense of urgency to increase their resilience and adapt to extreme weather events and mounting natural hazards. Relatively recent events such as Tropical Storm Irene and “Snow-tober”, both in 2011, have reinforced this urgency and compelled communities like the Town of Buckland to proactively plan and mitigate potential risks. This type of planning will reduce the vulnerability of Buckland's people, infrastructure and natural resources, and will empower Buckland's officials and citizens alike to take steps to protect themselves and their community.

In the winter of 2018, with funding from the Massachusetts Executive Office of Energy and Environmental Affairs, the Franklin Regional Council of Governments (FRCOG) offered the Town of Buckland technical assistance in completing their Community Resilience Building Workshop to achieve a designation as a Municipal Vulnerability Preparedness Community or “MVP Community”. As a State-certified MVP Provider, the FRCOG helped Buckland engage in a community-driven process that brought together climate change information and local knowledge to inform the workshop, whose 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 the Community; and
- Identify immediate opportunities to collaboratively advance actions to increase resilience.

This report summarizes the findings of the Town of Buckland's Community Resilience Building Workshop.

Community Resilience Building Workshop

Summary of Findings

The Town of Buckland has conducted a number of planning projects in previous years, including its 2013 Hazard Mitigation Plan, which enabled the Town to identify high priority hazards, areas, infrastructure, and populations vulnerable to a variety of hazards. The Hazard Mitigation Plan also identified action items to potentially address hazards. Other recent Buckland plans include: 2017 Shelburne Falls Slum and Blight Study, 2016 Housing Plan, and 2010 Open Space and Recreation Plan. In 2017, the FRCOG completed the Deerfield River Watershed-Based Plan. This plan examined ways to maintain both the health and resiliency of the watershed, in which Buckland is located.

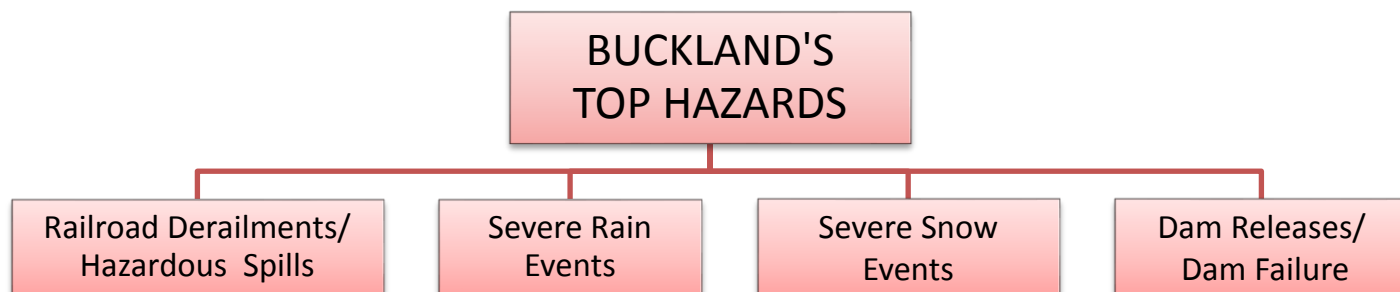
In spite of Buckland's diligence in completing these planning efforts, there was a need for the community to conduct an assessment across scales – from individual buildings and bridges to rivers and landscapes, and across sectors – infrastructure, society and environment – looking specifically through the lens of climate change and its likely impacts.

Workshop participants considered climate change impacts most likely to impact Buckland, include rising and extreme air temperatures, extreme weather events and increased precipitation, both in amount and intensity.

The workshop was critical to enabling participants to think about and engage with people from different sectors. The public water supply operator, first responders, a hydroelectric plant employee, highway department staff and others came together to determine the most threatening hazards to the Town of Buckland and to agree upon high priorities and actions to address them.

Top Hazards

Workshop participants discussed a number of hazards that impact Buckland, deliberating on how frequent, how intense and how widespread each hazard has been and could potentially be in the future. Hazards discussed included: dam failures, severe winter storms/ice storms, earthquakes, hurricanes, wind storms/microbursts, tornados, ice jams, floods, wild fires, landslides, droughts, manmade hazards and extreme temperatures. Top hazards identified by the participants are as follows:



Areas of Concern

The following list contains general areas that are of concern to Buckland as well as specific concerns within each area.

Neighborhoods or areas of town: Downtown area of Buckland; elderly and/or isolated residents; people without phone coverage

Roads, bridges and culverts: Culverts on South Street, Nilman Road, Elm Street and Charlemont Road; bridge on Apple Valley Road; gravel roads throughout town; roadside trees throughout town

Rail system: New highway garage adjacent to rail line; Elm Street railroad crossing; rail nearby Buckland Recreation Area

Public sanitation and water: Private wells; public water supply crosses Deerfield River on Bridge of Flowers and public sewer line crosses Deerfield River on the Iron Bridge

Infrastructure and buildings: Town buildings (fire and police stations, town hall and old highway garage located in the downtown area of Buckland); Buckland Recreation Area (on the banks of Clesson Brook); town records; Mary Lyons Church; emergency communications infrastructure

Ecosystems: Clesson Brook at Buckland Recreation Area; agricultural land along Deerfield River and Clesson Brook



This December 2016 four-car derailment is just one of several rail-related incidents that have occurred in Buckland, leading to participants identifying railroad derailments/hazardous spills as their number one hazard.

Current Concerns & Challenges Presented by Hazards

Participants in the workshop discussed a number of hazards, both natural and manmade which have impacted the community in recent years. The railroad, whose tracks run through Buckland, emerged as the top concern. Participants recalled recent derailments in town and a number of other issues related to the railroad, which are likely to continue in the future.

For many, Tropical Storm Irene in 2011 is a bellwether event, demonstrating the extent and

severity of the types of extreme weather and increased rain that is predicted to become more

frequent in the coming years. Flooding in particular, fueled by heavy rains, was widespread after Irene. Flooding impacted the downtown area of Buckland, where floodwaters swept away a quilt shop and flooded businesses, and rural areas, where Clesson Brook jumped its banks and washed out roads including parts of Route 112. In the aftermath of Irene, some bridges were shut down, many roads were damaged with a few roads rendered impassable and many businesses shut down, some for several months in Buckland and surrounding communities.

Workshop participants expressed concern about heavy rain events and potential future flooding, particularly with the downtown area of Buckland located right next the Deerfield River. Buckland's Town Hall, Police and Fire are all in the downtown area of Buckland and in the 100-year floodplain, along with most businesses and vulnerable, low-income populations.



Tropical Storm Irene, with widespread flooding, foreshadows the types of extreme weather events predicted to be more prevalent in the coming years, impacting waterbodies in Town, including the Deerfield River (left) and Clesson Brook (right).

Heavy snow events were also identified as a top hazard, due to the potential for downed trees and power lines, widespread power outages and certain residents being cut off from the rest of the Town due to road closures. Even though most people in Buckland are used to heavy snow, such events can still have broad and significant impacts on the Town.

Finally, participants determined that water releases from upstream dams, including Harriman Dam, should be included as a top hazard, along with highly unlikely dam failures. Dam failure was included because of the potential widespread devastation and the relatively short amount of time - 2 ½ hours from the Harriman Dam - to evacuate before floodwaters reach the Town.

Specific Categories of Concerns and Challenges

Vulnerability of the Downtown Area of Buckland: Several concerns about the downtown area of Buckland were voiced by participants of the workshop. There is a concern about many of the Town's buildings (Fire and Police Stations, Town Hall and old Highway Garage) being located so close to the river and in the floodplain. The old Highway Garage still houses the salt and sand shed, which Town officials would like to move out of the floodplain. The Town has all current

records digitized but historic records kept at the Town Hall are vulnerable to floods, mold and deterioration.

Sheltering of Buckland residents: Participants raised concerns about low-income residents who live in the downtown area of Buckland and who may have limited options for sheltering, should they have to evacuate their homes. There is no shelter in the downtown area of Buckland, which is in the floodplain. The regional shelter at the Mohawk Regional High School is about 2/10 of a mile from the potentially hazardous rail and the Deerfield River. Participants discussed the possibility of the Mary Lyons Church, which is not located near any known hazards, serving as a shelter however there are some modifications that would need to be made to the church



facilities in order for this to happen, including purchasing and installing a generator and installing ADA accessible bathrooms.

Isolation of other residents: There are areas of Town where residents might become cut off in the event of flooding, road closures and other events. There is a bridge on Apple Valley Road which is in need of repair and which, if closed, would cut off access to some homes in the area.

Residents near the Elm Street railroad crossing could also be vulnerable should there be a derailment or other issue with a train which would necessitate residents' evacuation. There is currently no secondary evacuation route to direct residents away from the railroad in the event of a rail emergency and toward Bray Road. Access to Bray Road would have to be on foot over rough terrain.

There are some residents without land lines, with poor or no cell phone coverage and/or no broadband. Additionally, not all have signed up for Reverse 9-1-1, so reaching all residents in the event of a widespread emergency is very difficult.

In the event of a railcar derailment, the Elm Street neighborhood currently has no evacuation route or plan.

Vulnerability of roads, bridges and culverts: In addition to the vulnerable bridge on Apple Valley Road, major culverts on South Street, Nilman Road, Elm Street and Charlemont Road are in need of repair. The South Street culvert which, when flooded, can compromise access to the wastewater treatment facility, is slated to be repaired in the next few years. However, the other culverts are too expensive for the Town to repair and too large for the State's Culvert Replacement Municipal Assistance Grant Program.

Many smaller culverts in Buckland have also been identified as having “High” to “Medium” risk of failure through the MassDOT Stream Crossing Study for the Deerfield River Watershed.¹ These culverts pose a future risk to transportation and emergency response and should be prioritized for replacement with right-sized infrastructure to anticipate future rain events.

Many gravel roads in Town are vulnerable to wash-outs due to the steepness of the roads and other conditions and, although residents often voice concern about their gravel roads, most residents do not want them paved. Roads are also at risk of closure should trees be downed during a storm, since over 80% of Buckland is forested.

Vulnerability of Town residents and facilities due to railroad: As was discussed earlier, rail lines are high on participants’ list of concern. In addition to the issue of the Elm Street crossing and lack of evacuation options for residents on Elm Street, there are also several other railroad crossings that are of concern to participants.

Rail lines run less than 200 feet from the Deerfield River in the south part of Town and are less than 100 feet from homes and other structures in other parts of Town, including the new Highway Garage, which is to be built on Sears Street on the site that currently houses the existing Highway Garage and used to be the Mayhew Steel Factory. Given the history of train derailments in Town, there are concerns about the proximity of homes and structures to the rail lines.

Uncertainty of water supplies during hazards or power outages: Nearly 40% of residents rely upon private wells for their drinking water. In the event of a prolonged power outage, these residents would be without water, unless an emergency water supply or system was established. The remaining 60% of residents rely upon public water which is delivered to residents via a water line that runs along the Bridge of Flowers over the Deerfield River. There is a valve to turn off water in the event of an emergency after which residents would have several days of drinking water available before stored water would be depleted. There is a concern on the part of participants that debris collecting on the upstream side of the Bridge of Flowers during and after high flows might threaten the drinking water line.

Vulnerability of land near waterbodies: Situated near Clesson Brook, the Buckland Recreation Area and the river banks along Clesson Brook have been subject to erosion since Tropical Storm Irene in 2011. This erosion now threatens the access road, parking lot, and pool and pool house at the Rec Area.

Also situated along Clesson Brook are working farms which lost valuable farmland soils to washouts and erosion during Irene. These areas continue to be at risk for erosion. Farmers were not able to find funding to help them recover from their farmland losses after Irene.

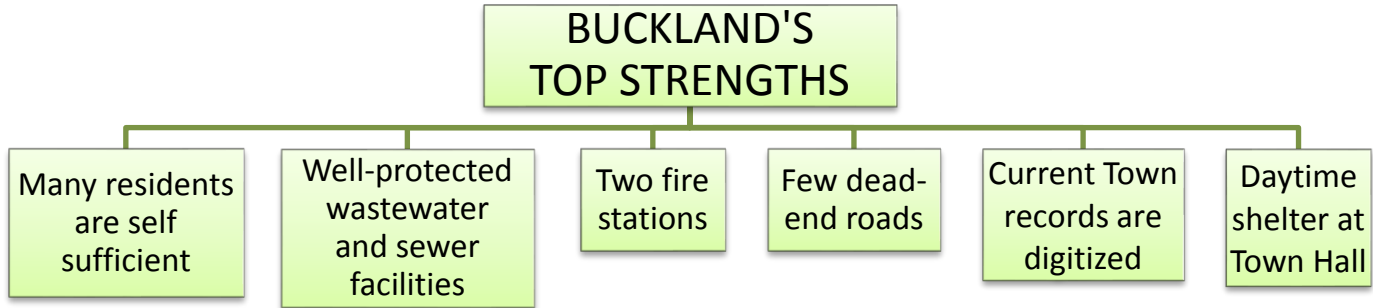
¹ MassDOT Stream Crossing Explorer: <http://sce.ecosheds.org/#>



Clesson Brook overflowed its banks and adjacent roads and farm fields, wiping out crops and washing away agricultural soils.

Current Strengths and Assets

Buckland residents, for the most part, know how to take care of themselves during routine snow storms, power outages and other such conditions. Participants expressed pride that people who have lived in Buckland for a long time are accustomed to weathering storms and helping out neighbors. Many families in Town know each other and know the first responders and Town staff who help run the Town. Participants cited several strengths and assets that help keep their community resilience in the face of climate change and other challenges. They include:

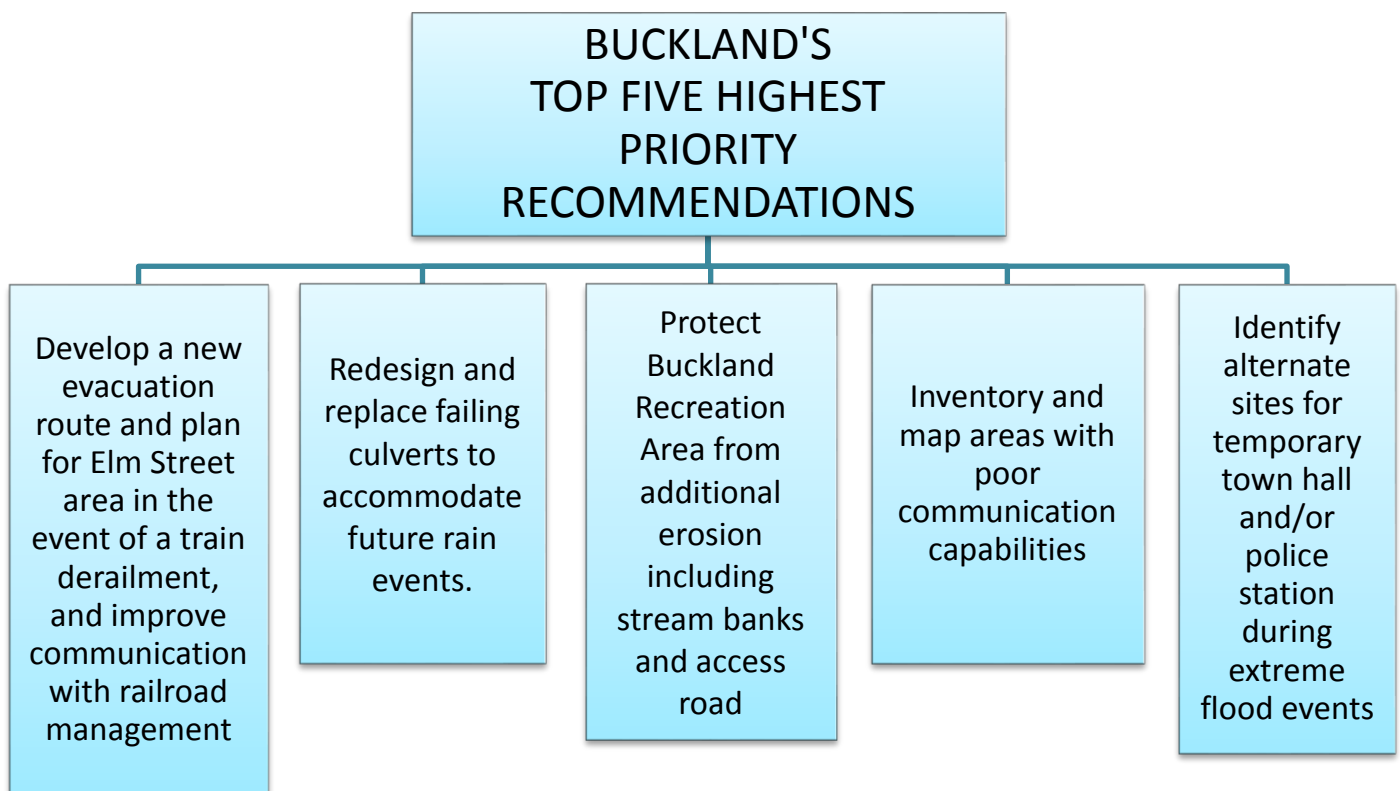


- **Self-sufficiency:** The “locals” or “old-timers” know how to deal with whatever nature brings their way.

- **Wastewater and sewer:** The wastewater treatment facility is well protected by the topography of the land. The wastewater treatment facility and the pumping station have their own stand-by power. The sewer line, located on the downstream side of the Iron Bridge, is protected as well.
- **Fire and Police:** A second fire station is located in Upper Buckland, well away from threat of flooding. Although fire and police facilities are located in the floodplain, department officials said they are able to move equipment and vehicles out of the floodplain if floodwaters are threatening the facilities.
- **Road network:** There are few dead end roads in Town, so there are alternatives in the event of road closures or washouts.
- **Town records:** Current Town Hall records are digitized and stored off-site (cloud storage).
- **Sheltering:** The Town Hall serves as an accessible, daytime heating and cooling center, with a generator and kitchen.

Top Recommendations to Improve Resilience

The railroad was a common topic of conversation during the workshop. Just as the railroad was rated as a top hazard by participants, two of the five highest priority recommendations for the Town of Buckland involve the railroad.



Addressing concerns about a railroad derailment or other disasters led the participants to determine that developing a new evacuation route and plan for residents in the Elm Street area is one of the five highest priorities for the Town. Participants were undeterred by the fact that

implementation of this recommendation might require an easement or other strategy to gain access to nearby streets for evacuation. Initial implementation steps would include conducting a detailed vulnerability assessment to determine the number of vulnerable residents, and mapping alternatives for a safe and effective evacuation route. This recommendation would also include educating the public about the new evacuation route and plan.

Participants acknowledge significant challenges working with the private railroad entity, but are determined to improve communication with the railroad. To implement this recommendation, the Town could conduct a systematic risk assessment along the railroad corridor in Town, identifying hazards such as discarded railroad ties which could catch fire. Findings of the assessment could be prioritized and provided to the railroad as a check-list for the town to track progress with the railroad.

Another high priority for the Town is the replacement and redesign of many of the failing and "at risk" culverts throughout Buckland. The failure of these culverts threatens to cut off communities and important infrastructure during emergencies. There are three major culverts on Nilman Road, Elm Street and Charlemont Road that are in need of repair or replacement and are, unfortunately, too large to be eligible under the State's Culvert Replacement Municipal Assistance Grant Program, but are too expensive for the Town to fund itself. In addition to these three specific culverts, there are many smaller ones that have also been identified as having "High" to "Medium" risk of failure through the MassDOT Stream Crossing Study for the Deerfield River Watershed.² These culverts pose a future risk to transportation and emergency response and should be prioritized for replacement with right-sized infrastructure to anticipate future rain events. This priority was echoed in the 2017 Deerfield River Watershed-Based Plan as one of the top four action items for the Clesson Brook subwatershed.

The Buckland Recreation Area was a topic of discussion during the workshop and participants discussed significant issues of erosion. Streambank stabilization is needed along Clesson Brook, which flows along the Rec Area, and reconstruction and/or relocation of the access road into the Rec Area is necessary. In addition, the parking lot, pool and pool house are located close to the stream banks and are very vulnerable. Relocation of these facilities outside of the 200 foot river buffer zone would also protect water quality. Implementation of this recommendation includes the use of green infrastructure, such as stream buffers, bio-retention systems and other such techniques to protect both the Rec Area and the quality of water in Clesson Brook. Ecological restoration of the streambank and corridor is also necessary. A feasibility assessment and conceptual designs are two of the first steps in implementing this recommendation. The Deerfield River Watershed-Based Plan recommends conducting fluvial geomorphic assessments for the Clesson Brook to "refine the location, severity, and likelihood of erosion hazards and the potential impacts restoration/mitigation projects might have on channel stability.

Another highest priority recommendation is to determine exactly where there are pockets of poor communication services, such as poor or no cell phone coverage and/or lack of

² <http://sce.ecosheds.org/#>

broadband. This will help first responders and others understand where extra efforts may be needed to contact people in the event of an emergency. Implementation of this project would require a detailed vulnerability and risk assessment, using GIS mapping and other available techniques to identify areas and vulnerable populations lacking communication services. Findings from the assessment could help determine placement of new cell towers and/or other communication infrastructure.

A recommendation to determine alternate sites for town hall and police operations during extreme flood events was also a top priority. Part of this recommendation should include planning and assessment for the possible redesign and/or retrofitting the two facilities, as well as evaluating the feasibility of relocating facilities outside of the flood hazard area.

A number of other recommendations emerged during the workshop. Some recommendations are far-reaching and/or expensive and others are modest or relatively affordable. Following is the Community Resilience Building Risk Matrix, sorted by priority, which illustrates how many of the recommendations are relevant to more than one top priority hazard. In fact, ten of the 25 recommendations are relevant to all four of the top priority hazards. Because many of the recommendations are similar to ones in the Deerfield River Watershed-Based Plan, the actions in this matrix will also strengthen the Deerfield River's watershed health, in addition to reducing the vulnerability of the communities that live within the watershed. Following the matrix is a complete bulleted list of recommendations, sorted by highest priority, moderate priority and lower priority.

Community Resilience Building Risk Matrix



H-M-L priority for action over the **S**hort or **L**ong term (and **O**ngoing)
V = Vulnerability **S** = Strength

Top Priority Hazards

Features	Location	Ownership	V or S	Recommendations	Railroad Derailments/ Hazardous Materials	Severe Rain Events	Severe Snow Events	Dam Releases/ Failure	Priority	Time
									H - M - L	Short Long Ongoing
Infrastructural										
Wastewater Facility & Pumping Station	Village	Shelburne Water District	S	Is not likely to flood, nor is pumping station. Access to facility is threatened by South Street culvert, which is scheduled to be replaced in 2021.		X		X	H	S
Large Culverts	Town-wide	Town	V	Secure funding to replace three large culverts.		X		X	H	L
Drinking Water Infrastructure	Village	Shelburne Fire District	V	Secure the public water line on Bridge of Flowers to better protect from floods, debris piles, and log jams.		X		X	H	L
Railroad	Town-wide	Private	V	Improve communication with the railroad company. Create an emergency procedure for residents near rail line and identify evacuation routes for residents who may be isolated in an emergency.	X				H	S
Emergency Communications (Radio System)	Town-wide	Town	V	Secure funding to fix radio system used by emergency personnel.	X	X	X	X	H	S
Mohawk Regional High School/Middle School	High School	Regional	V/S	Conduct an evacuation drill.	X	X	X	X	H	S
Communication System	Town-wide	Private	V	Identify areas in Town where there are gaps in communications systems if landlines do not work (i.e., where are there holes in broadband and cell coverage)	X	X	X	X	H	S
Town buildings are in the downtown floodplain (Town Hall, Fire Station, Police Station, Old Highway Garage)	Village	Town	V	Identify an alternate town hall and police station in case of emergency in the downtown area of Buckland.	X	X	X	X	H	S
Tree Maintenance	Town-wide	Town/Private	V	Make Tree Warden responsible for identifying vulnerable trees and notify Eversource			X		M	S
Old Highway Garage	Village	Town	V	Secure funding to build a sand/salt shed at the new Highway Garage site along with diesel tank storage.			X	X	L	L

Continued next page

Community Resilience Building Risk Matrix

				Top Priority Hazards						Priority	Time
				Recommendations	Railroad Derailments /Hazardous Materials	Severe Rain Events	Severe Snow Events	Dam Releases/ Failure	H - M - L	Short Long Ongoing	
Features	Location	Ownership	V or S								
Societal											
Council on Aging	Shelburne	Regional	S	Support the COA vans and Meals-on-Wheels	X	X	X	X	H	O	
Reverse 911 for Elders and School	Town-wide	Town	S	Continue to reach out to elders to ensure that they are signed up for Reverse 911 program	X	X	X	X	H	O	
Low Income Concentration in Village	Village	Private	V	Low income households may not have ability to seek shelter in emergencies. Work with Mary Lyon Church to purchase and install a generator and create an ADA accessible bathroom	X	X	X	X	H	S	
Residents along Railroad	Town-wide	Private	V	Educate residents on what to do in a railroad-related emergency.	X				H	S	
Autistic Housing	Creamery Road	Private	V/S	Establish better communications with facility.	X	X	X	X	M	S	
Informal neighborhood connections	Town-wide	Private	S	Determine if neighborhood contacts should be established to help disseminate information.	X	X	X	X	L	S	
Summer Camp	Buckland Recreation Area	Town	V	Evaluate current evacuation procedures along Rt. 112 with no sidewalk.	X	X		X	L	L	
Dzog Chen Tibetan Retreat	Southern Buckland	Private	V/S	Coordinate emergency access to site with owners.	X	X	X	X	L	L	
Cultural District	Village	Town/Private	V/S	Determine ways to protect the cultural and historic resources of the Village in case of flooding.		X		X	L	O	
Environmental											
Drinking Water Supply	Colrain	Shelburne Falls Fire District	V/S	Review and update the 2003 Source Water Assessment Project report for the Shelburne Falls Fire District wells located in Colrain.	X	X			H	O	
Clesson Brook @ Buckland Recreational Area	Buckland Rec.	Town	V	Access road to Rec Center, parking lot, and pool/pool house is threatened by erosion from Clesson Brook. Facilities need to be moved and bank stabilization needed.		X			H	S-L	
Deerfield River	Town-wide	Town/State/Private	V/S	Partner with Trout Unlimited on water quality issues such as RR debris	X				M	S	
Farmland	Town-wide	Private	V/S	Investigate resources, funding, info for landowners		X			M	S	
Recreational Amenities	Town-wide	Town/State/Private	S	When construction projects are occurring, recreational/environmental aspects should be incorporated		X			L	O	
Access to River	Town-wide	Town/State/Private	S	Increase access to river for recreational purposes		X			L	O	

Other Highest Priority Recommendations

- Replace South Street culvert which, when flooded, inhibits access to the wastewater treatment facility
- Secure funding to replace other three large culverts: Elm Street, Nilman Street, and Charlemont Road
- Secure the public water line on Bridge of Flowers to better protect from floods, debris piles, and log jams.
- Secure funding to fix the FRCOG-owned radio system used by emergency personnel.
- Conduct an evacuation drill of Mohawk Regional High School.
- Continue to fund and support the Council on Aging vans and Meals-on-Wheels
- Continue to reach out to elders to ensure that they are signed up for Reverse 911 program.
- Educate residents on what to do in a railroad-related emergency.
- Work with Mary Lyon Church to purchase and install a generator and create an ADA accessible bathroom so that the Church can serve as a shelter facility.
- Review and update the 2003 Source Water Assessment Project report for the Shelburne Falls Fire District wells located in Colrain.

Moderate Priority Recommendations

- Make Tree Warden responsible for identifying vulnerable trees and notifying Eversource of needed maintenance.
- Establish better communications with the facility that houses autistic individuals.
- Partner with Trout Unlimited on water quality issues caused by leaching from discarded railroad ties.
- Investigate resources and sources of funding for farmers who loose farmland to flooding and/or erosion and who need bank stabilization and river buffers.

Lower Priority Recommendations

- Secure funding to build a sand/salt shed at the new Highway Garage site along with diesel tank storage.
- Determine if neighborhood contacts should be established to help disseminate information.
- Evaluate current evacuation procedures along Rt. 112 where there is no sidewalk.
- Coordinate emergency access to Dzog Chen Tibetan Retreat with the facility's owners.
- Determine ways to protect the cultural and historic resources of the Village in case of flooding.
- Incorporate green infrastructure into constructions projects including those at the Buckland Recreation Area.

CRB Workshop Participants: Department/Commission/Representative:

Name	Affiliation	Position
Matthew Cole*	Great River Hydro Company	Community Relations
Steven Daby*	Buckland Highway Department	Superintendent
Dan Fleuriel*	Shelburne Falls Wastewater Treatment	Superintendent
Rick Bardwell*	Shelburne Falls Fire Department	Fire Chief
John Ferris*	Shelburne Falls Fire Department/ Water District	Assistant Superintendent
Dena Willmore*	Buckland Select Board	Select Board member
James T Hicks*	Buckland Police	Police Chief
Andrea Llamas*	Buckland	Town Administrator
Herb Guyette*	Upper Buckland Fire Department/EMD	Emergency Management Director
Kimberly Noake MacPhee*	Franklin Regional Council of Governments	Land Use and Natural Resources Program Manager
Megan Rhodes*	Franklin Regional Council of Governments	Senior Transportation and Land Use Planner
Mary Chicoine*	Franklin Regional Council of Governments	Senior Land Use and Natural Resources Planner

*Attendee

CRB Workshop Project Team: Organization and Role

Franklin Regional Council of Governments:

Megan Rhodes, Project Lead and Principal Contact
 Kimberly Noake MacPhee, Lead Co-Facilitator
 Mary Chicoine, Facilitator

Town of Buckland

Andrea Llamas, Principal Contact

Recommended Citation

Rhodes M. Noake MacPhee K. and Chicoine M. (2018) Town of Buckland Community Resilience Building Workshop Summary of Findings. Franklin Regional Council of Governments.

Photo credits:

Cover	Tropical Storm Irene floodwaters	Recorder
Cover	Tropical Storm Irene aftermath	Recorder
Cover	Downed utilities	WMECO
Cover	Railroad ties	David Grist
Cover	Railroad tracks	David Grist
Page 5	Train derailment	Recorder
Page 6	Deerfield River after Irene	MassLive
Page 6	Clesson Brook after Irene	Recorder

All other photos not cited above were taken by the FRCOG

Appendices

Maps

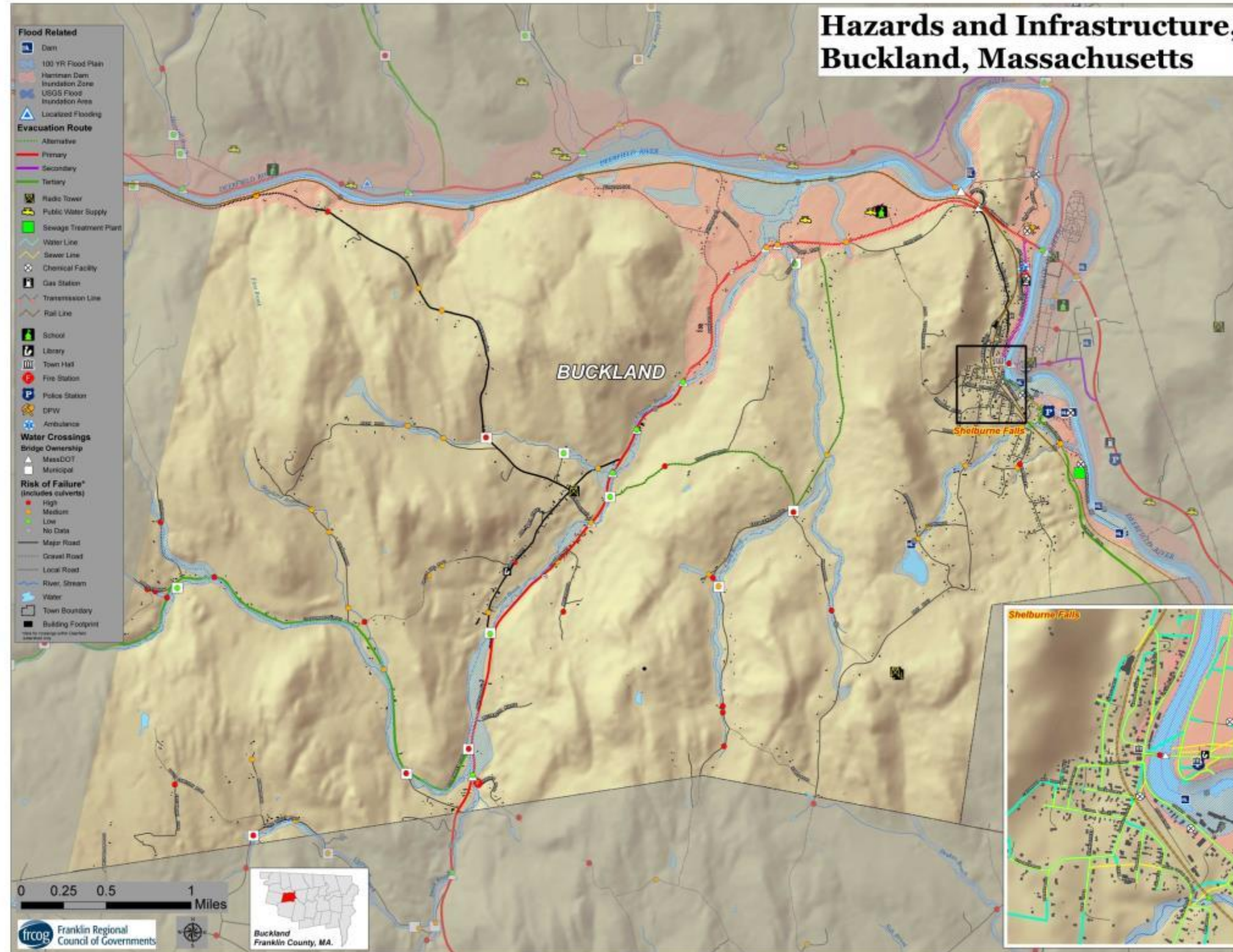
Exercise Outputs

Workshop Presentation

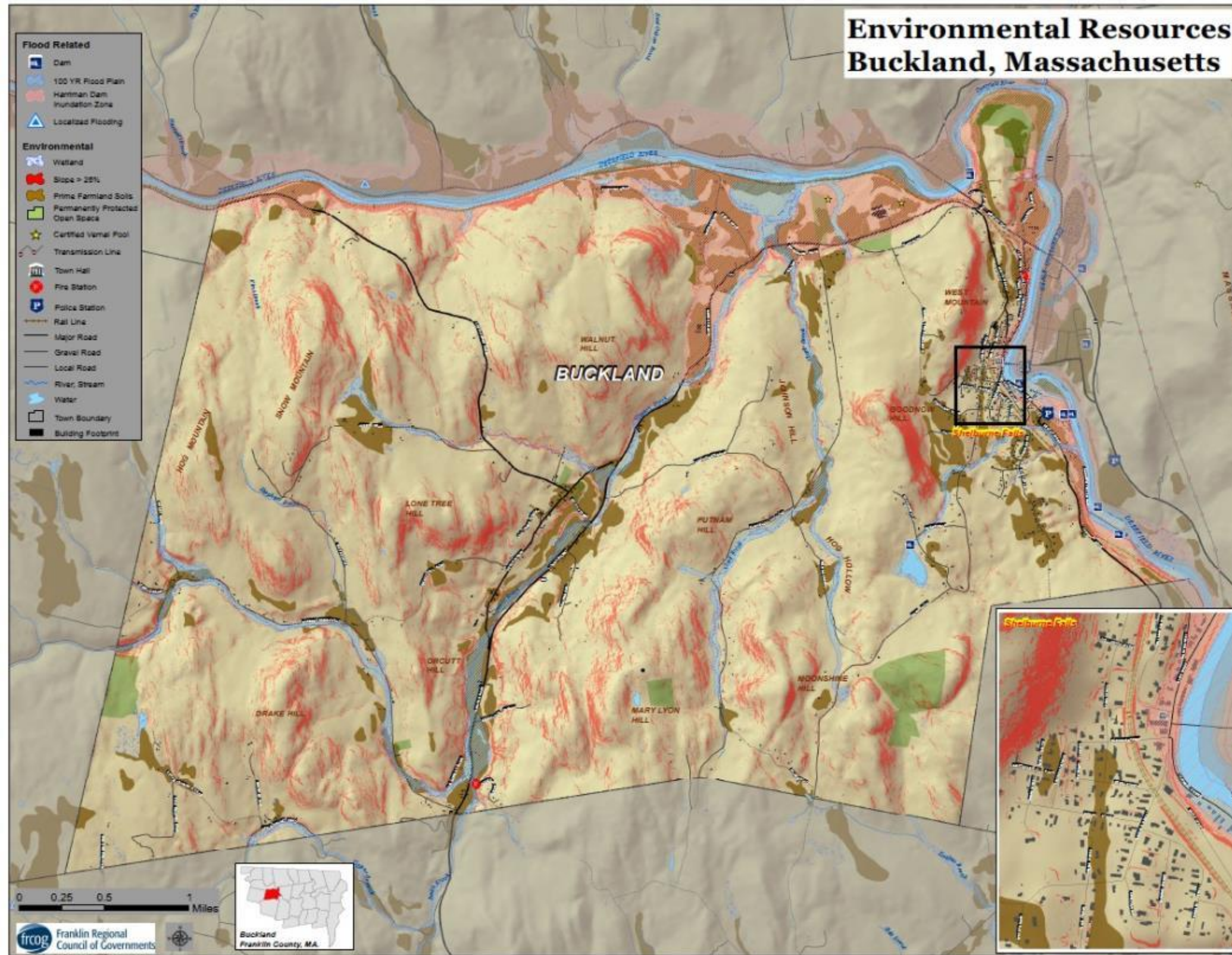
Public Input Documentation

Certificate of Adoption

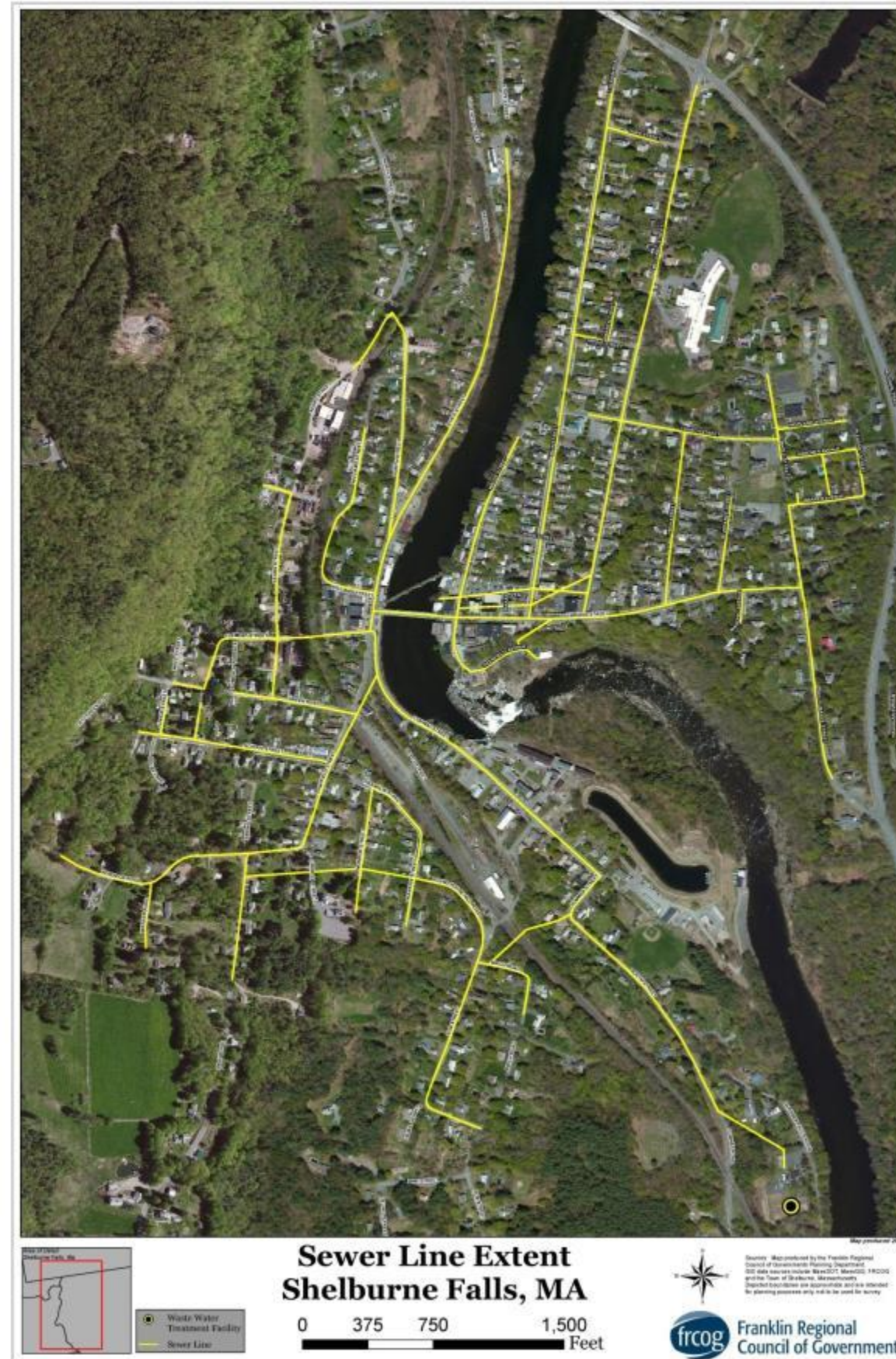
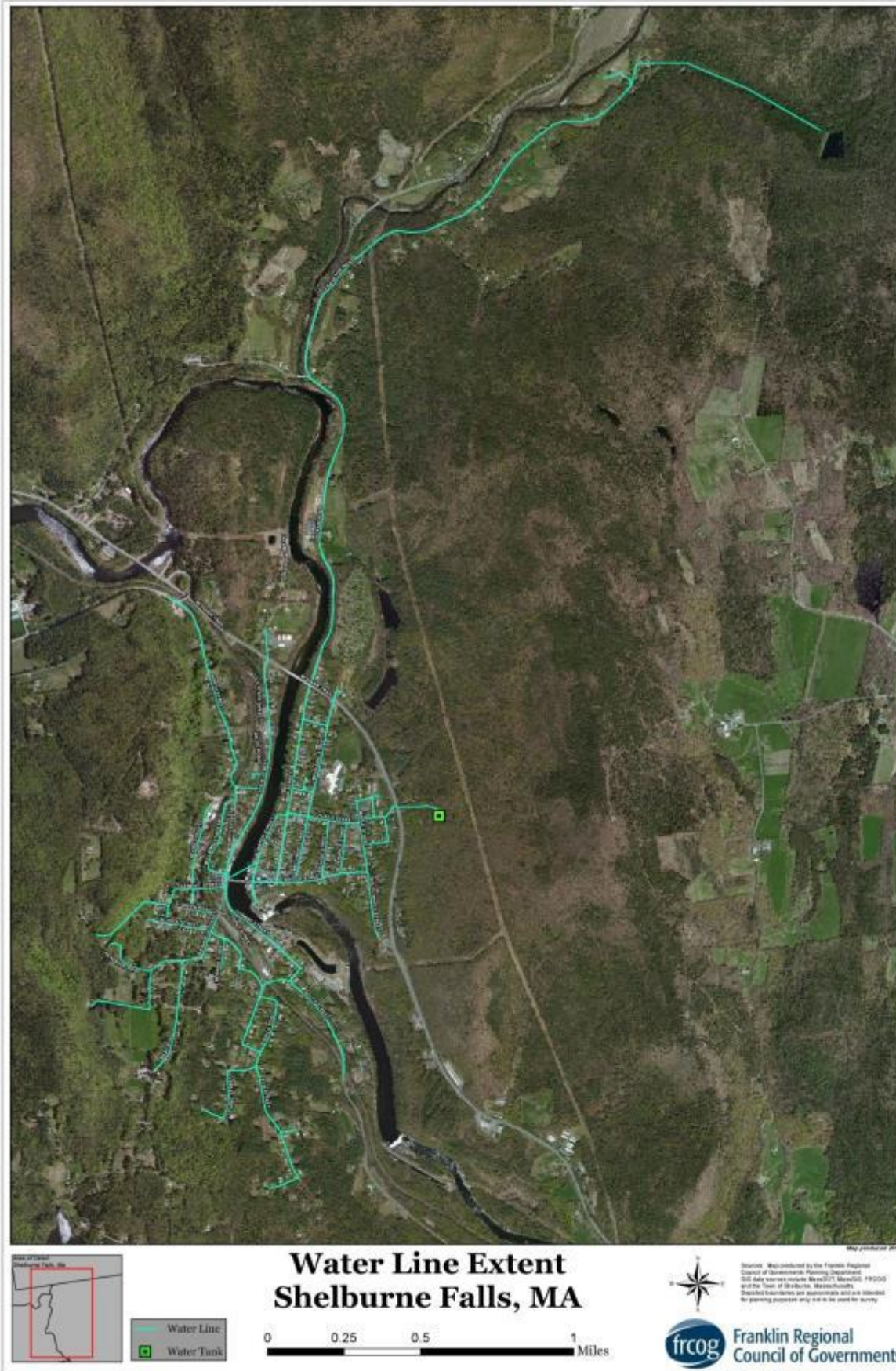
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BASE MAPS

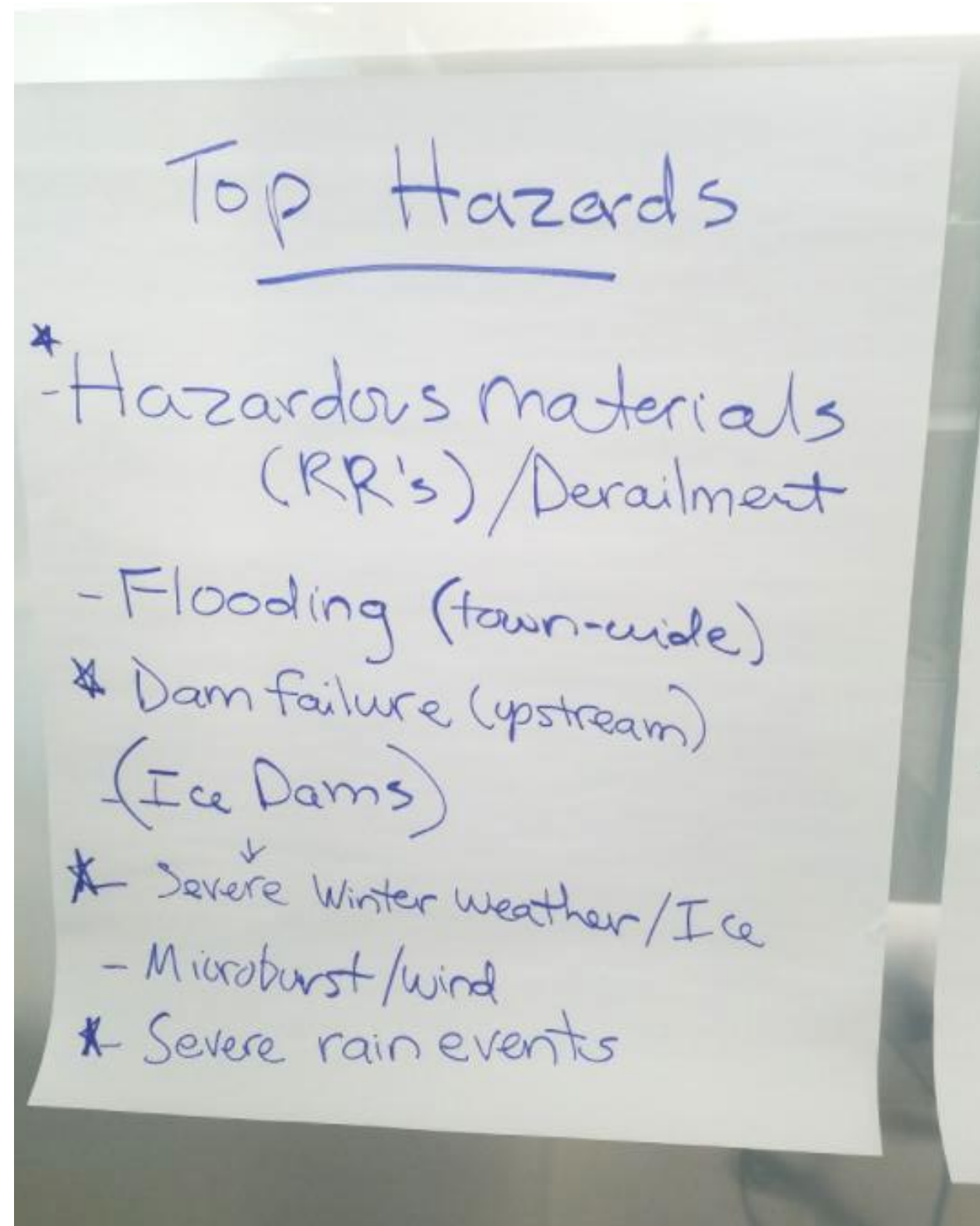


OTHER MAPS

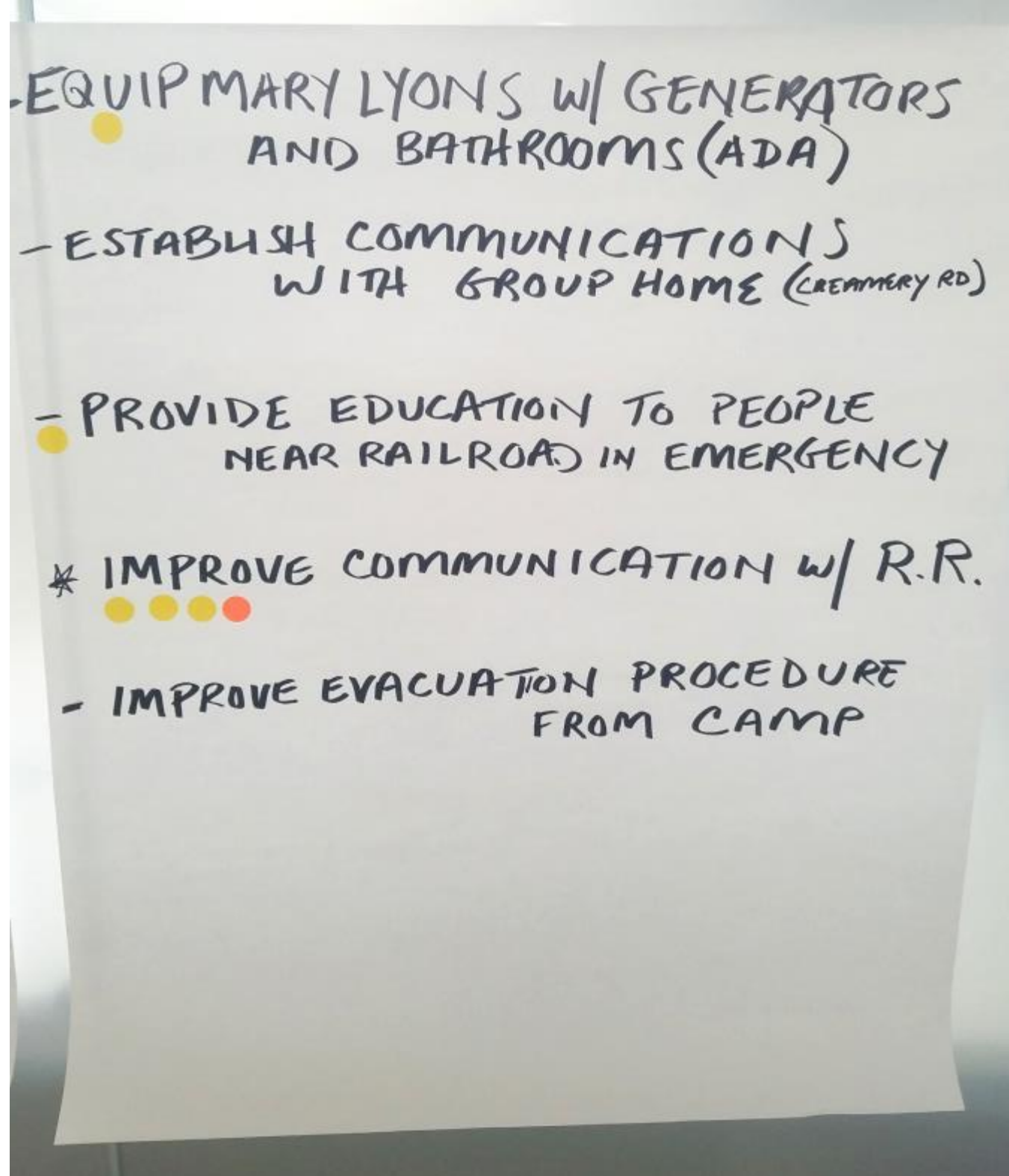


EXERCISE OUTPUTS

Top Hazards



Recommendation Prioritization (1 of 3)



EXERCISE OUTPUTS (CONT.)


Recommendation Prioritization (2 of 3)

- * Identify alternate town hall/police station ●●●●
- Secure town records ●●●●
- fix large culverts ●●●●
- Build storage facility for sand/salt ●
- ID emerg. procedure + evac route for Elm Street ●●●●
- * Create new evac route/road for Elm St ●●●●●●●●
- Establish relationship w/ RR ●
- * Identify vulnerable areas where communication is poor (no landlines, broadband cell coverage) ●●●●●●
- Increase Tree warden responsibilities re. ID of vulnerable trees.

Recommendation Prioritization (3 of 3)

- ID resources for Agriculture
- Protect Buckland REC from erosion
- ●●●● → move access road
- Evaluate well head protection in Colrain ●●
- Incorporate recreational opportunities into construction projects
- Access to river ●●

WORKSHOP PRESENTATION



Community Resilience Building Workshop





Photo courtesy of the Recorder, Paul Franz

Town of Buckland



March 28, 2018

Agenda



- Welcome and Introductions
- Municipal Vulnerability Preparedness Grant Program
- Discuss Impacts of a Changing Climate
- Workshop Agenda (see hand-out)
- Next Steps

MVP Program Launched 2017 \$1.1M Awarded



Municipal Participation

- MVP designation
- Participants
- Regional Partnership

Workshop Process and Outcomes

Build Resilience and Preparedness - to more frequent and intense weather events.

Improve pre-event planning, response & recovery, and long-term actions.

A prepared and resilient town will be able to maintain functions, protect its residents and emerge stronger and better prepared for future storm events and a changing climate.

- Review natural hazard background information to provide context for all participants
- Identify and map vulnerabilities and strengths:
 - Infrastructure
 - Societal
 - Natural resources
- Develop and prioritize actions and clearly delineated next steps


Massachusetts' Changing Climate

- **Changing weather**
 - Higher temperatures
 - Shorter winters
 - More frequent & intense storms
 - Droughts
- **Amplifies existing risks**
 - Community and regional infrastructure
 - Local and regional economies
 - Public health
 - Natural resources and our environment

Goal for Building Resilience to a Changing Climate:

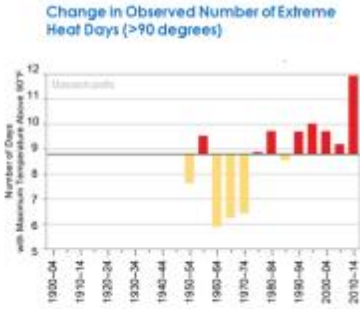
Protect life, property, natural resources and the economy

Higher Temperatures



Heat Waves

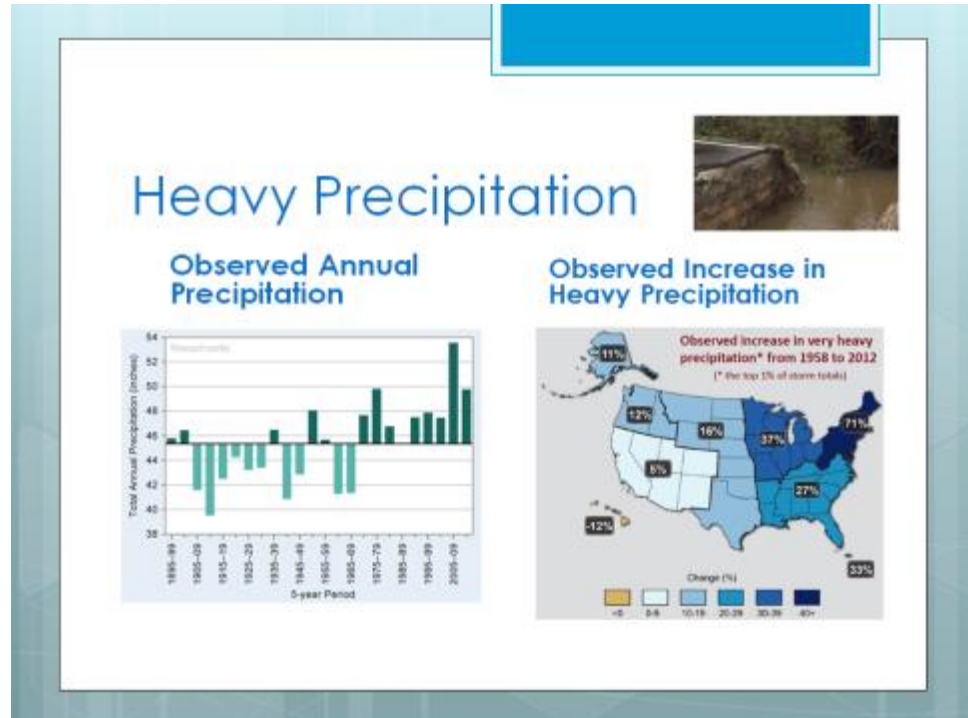
- Number of days >90° are predicted to increase.
- By 2050 - 6 to 25 more days
- By 2100 - 9 to 60 more days



Change in Observed Number of Extreme Heat Days (>90 degrees)

Numbers of Days with Maximum Temperature Above 90°

Period	Change in Observed Number of Extreme Heat Days (>90 degrees)
1950-54	0
1955-59	0
1960-64	0
1965-69	0
1970-74	0
1975-79	0
1980-84	0
1985-89	0
1990-94	0
1995-99	0
2000-04	0
2005-09	0
2010-14	12



Extreme Weather Events

- Tropical storms
- Tornadoes
- Thunderstorms
- Snow storms
- Drought

> The frequency, intensity, duration and geographic extent of these extreme storms is likely to increase.

Greenfield: 2.59"
Orange: 2.78"

News Flash! October 30, 2017

Heavy rains bring flash flood warnings and high winds knock out power to thousands. Roads flood

Pictures by Recorder Staff/Paul Franz, 10/31/2017. Online edition
<http://www.recordnet.com/food/closures-ood-power-outages-Manduca-corn-eggs-hom-flooding-and-winds-13427474>

Recent Severe Storms

2008 Whately Microburst

Recent Severe Storms

2008 Ice Storm

2017 Conway Tornado

WORKSHOP PRESENTATION (CONT.)

Recent Severe Storms
2011 Tropical Storm Irene



Snowtober!!! 2011 Historic Nor'easter



Buckland Multi-Hazard Mitigation Plan 2013

- Inventoried historic hazard events – frequency, magnitude and damages
- Vulnerability assessment for flooding was prepared based on damages from past events and location in 100 year floodplain
- Prioritized all hazards and included action items for each hazard

2013 Multi-Hazard Mitigation Plan
Hazard ID & Vulnerability Assessment

DONE!

Potential Hazards Identified for Buckland
Dam Failure
Severe Winter Storm/Ice Storm
Earthquake
Hurricane
Wind Storms, Microbursts, etc.
Tornado
Ice Jam
Flood
Wild Fire/Brush Fire
Landslide
Drought
Man-made Hazards
Temperature Extremes

A changing climate is exposing us to greater risk.

Action Items for most of these hazards were also developed

Workshop Agenda

- Identify Past, Current and Future Hazards
- Determine Top Priority Hazards
 - Which 4 hazards pose the greatest threat to the town currently and in the future?
- Brainstorm resiliency actions for Infrastructure, Societal and Environmental vulnerabilities.
 - Examples:
 - Upgrade culverts, flood-proof drinking water supplies
 - Evacuation drills and extreme weather communications protocols to protect vulnerable populations
 - Protect wetlands and floodplains to improve flood resiliency
- Determine top priority Resiliency Actions for Buckland

Infrastructure

A changing climate is exposing us to greater risk.

What is it?

- Roads
- Power grid
- Drinking Water
- Wastewater Treatment
- Communications
- Housing
- Emergency Response
- Schools

Vulnerabilities

- Increase in Precipitation and Extreme Storm Events
- Damages from Flooding, Wind Storms, Snow/Ice Storms

WORKSHOP PRESENTATION (CONT.)

Expected Impacts from Higher Temperatures

Infrastructure

Energy

- Increased demand will strain energy infrastructure
- Disrupt service (potential for widespread brownouts or blackouts)

Transportation

- More frequent maintenance required to address:
 - deterioration of asphalt roads
 - buckle railroad tracks
 - thermal expansion of bridges



Societal (Buckland Residents)

A changing climate is exposing us to greater risk.

What is it?

- Availability of health care services
- Access to lifelines (food/water, emergency response personnel, etc.)
- Support networks that connect and maintain the supply of goods and services to vulnerable populations.

Vulnerabilities

Vulnerable populations

- Elderly
- Low/moderate income
- Special needs
- Languages spoken

Environment

A changing climate is exposing us to greater risk.

Natural Resources

- Deerfield River
- Coldwater streams
- Forests
- Floodplains
- Habitat
- Wetlands
- Aquifers

Climate Stressors

- Flooding
- Erosion
- Impacts to water quality and quantity
- Loss of species diversity
- Invasive pests and plants
- Wetland soils become less absorptive
- More stormwater runoff, less groundwater recharge

Vulnerabilities?

Let's Get Started!

- Complete Workshop
- Compile Information in a Summary Report
- Follow-up Meeting with the Town
- Review of Funding Sources

PUBLIC INPUT DOCUMENTATION

Public Listening Session and Public Comment Period

A public listening session and public comment period were provided to ensure adequate opportunities were available Buckland residents and Town Officials to review and comment upon the draft Buckland MVP Resiliency Plan.

The public listening session was held in conjunction with the Buckland Select Board meeting on June 26 at 5:30 p.m. at the Buckland Town Hall, located at 17 State Street in Shelburne Falls (see Agenda below). Staff from the FRCOG who were in attendance at the earlier workshop attended the meeting and provided a presentation on the MVP program as well as findings from the workshop. The PowerPoint slides are available on pages 34 through 36. The agenda for the meeting is shown below.

The screenshot shows the Town of Buckland, Massachusetts website. At the top, it displays the date 6/25/2018 and the location Town of Buckland MA. The town's name is prominently displayed in a stylized font. Below this is a navigation menu with links for Home, Town Hall, Boards & Commissions, Departments, and About. A search bar is present with the text 'Find' and 'Type here to search'. Underneath the search bar, there are links for 'Upcoming Events', including 'Select Board Meeting' (Tue, Jun 26, 05:30 pm) and 'Zoning Board of Appeals Meeting' (Wed, Jul 11, 07:00 pm). The main content area features a 'Notice of Meeting' for the 'BUCKLAND SELECTBOARD' at 'Buckland Town Hall, 17 State Street' on 'Tuesday, June 26, 2018, 5:30 p.m.'. The status is listed as 'tentative'. Below the notice is a 'Listing of Topics' section with three main categories: 1. Appointments (5:30 p.m. Municipal Vulnerability Plan Public Hearing, 6:15 p.m. Buckland Recreation Committee - Pool Project), 2. Agenda Items (a. Retiree and Surviving Spouse Health Insurance, b. PARC Grant, c. Municipal Aggregation Contract - Colonial Power, d. Complete Streets Prioritization Plan, e. Appoint Raymond Lanza-Well to Finance Committee), and 1. Documents to Sign (a. Selectboard Meeting Minutes: May 22, 2018; May 22, 2018 Executive Session Minutes, b. Time Off Request, c. Town Hall Use Request - Farm Bug Co-op LLC, July 16, 2018, d. Certificate of Adoption to Accept Findings of Municipal Vulnerability Plan). At the bottom, there is a link for 'Town Administrator Updates'. The footer contains the URL 'http://town.buckland.ma.us/index.php?option=com_twe&view=meetings&id=4692' and the page number '1/2'.

1. Items Not Reasonably Anticipated by Chair 48 Hours in Advance of Meeting
2. Public Comment
3. Volunteer Recognition
4. Announcements
 - a. Anyone interested in serving on any appointed committee please send in their letter of interest.
5. Adjourn the Meeting

Posted: 06/22/2018, 1:40 p.m., sc

Copy event to [Google Calendar](#)

Disclaimer

TOWN HALL • 17 State Street • Shelburne Falls, MA 01370
Phone: 413-625-6330 • Website Feedback: Webmaster

Powered by [Town Websites](#)

The public comment period was held from June 14 through June 28, during which the public was invited to submit comments via email or regular mail. The following comments were received and incorporated into the plan as was appropriate:

- Town Administrator requested that the issues with the Buckland Recreation Area be expanded to include the Pool and Pool House as these facilities are also threatened by bank erosion of Clesson Brook.
- A resident noted that drainage issues on Orcutt Hill Road have been changing and worsening. A portion of this road is steep and gravel and functioned as an evacuation route during Tropical Storm Irene.
- A member of the Energy Committee asked whether there would be opportunity for multiple towns to work together to mutually address similar issues with the railroad.

The public listening session and public comment period were advertised on the Town of Buckland's website as well as on the FRCOG's website. The event was also advertised via a flyer, shown on the next page.

Buckland Municipal Vulnerability Assessment (MVP) Public Meeting



*The Town of Buckland and the Franklin Regional Council of Governments invite
Buckland residents to hear about and comment on the MVP Plan:*

- ✓ Attend the public meeting: June 26 at 5:30 p.m. at the Buckland Town Hall
- ✓ Provide public comment June 14 – June 28: MVP Plan and public comment instructions are at town.buckland.ma.us/ or in person at the Buckland Town Hall

WE WANT YOUR FEEDBACK!

Tuesday, June 26, 5:30 p.m.
Buckland Town Hall
More info:
Megan Rhodes, FRCOG
MRhodes@frcog.org OR 413-774-3167 x132

Following is the sign in sheet from the public listening session:

Town of Buckland MVP Resiliency Plan Public Meeting

June 26, 2018 at 5:30 p.m.

Buckland Town Office

SIGN IN PLEASE

Name	Affiliation	Email
Dena Williams	Buckland Select Board	
Zack Turner	Buckland Select Board	zturner@bucklandvt.com
Gerry Karajanes	Buckland resident	keyboarder26@gmail.com
Gerry Karajanes	Buckland resident	gerry.karajanes@gmail.com
Rick Bardwell	Steburne Falls Fire Dept	rbardwell@steburnefallsfiredept.com
Raymond Lanza-Weil	Buckland Resident	RLANZAWELL@GMAIL.COM
Helm Coyette	Buckland Fire	bucklandfire@gmail.com
Sherry Clark	Buckland Town Hall	
Andrea Lanza	Buckland Town Hall	
Margaret Olin	Buckland Energy Committee	

MVP

Community Resilience Building Workshop Findings, Priority Recommendations and Projects



Town of Buckland

Municipal Vulnerability Preparedness (MVP)



- ✓ Provides support for MA municipalities to plan for climate change resiliency and implement priority projects.
- ✓ Provides a simple, straightforward process
- ✓ Certifies municipalities as MVP communities
- ✓ Awards communities with funding to complete vulnerability assessments and implement resilience projects



Municipal Vulnerability Preparedness (MVP)



Community Resilience Building Workshop

- ✓ 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.

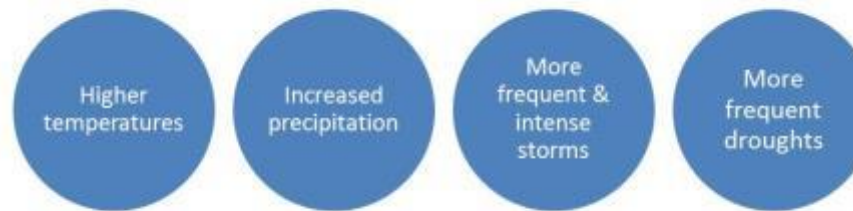
Workshop Participants



Benefits of diverse group of participants

- Local knowledge and experience
- Working across departments / sectors
- Reaching consensus

Changing Climate Variables

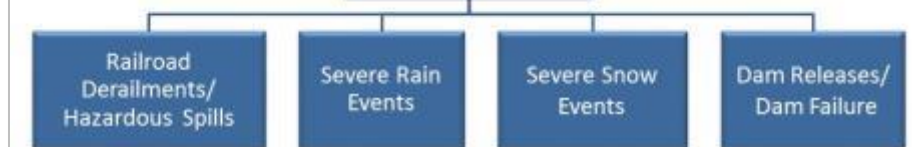


Amplify existing risks:

- Community and regional infrastructure & economies
- Public health and well being
- Natural resources and our environment

Goal for Building Resilience to a Changing Climate: Protect life, property, natural resources and the economy

BUCKLAND'S TOP HAZARDS



BUCKLAND'S TOP HAZARDS

Areas of Concern

Neighborhoods or areas of town: Downtown area of Buckland; elderly and/or isolated residents; people without phone coverage

Roads, bridges and culverts: Culverts on South Street, Nilman Road, Elm Street and Charlemont Road; bridge on Apple Valley Road; gravel roads throughout town

Rail system: New highway garage adjacent to rail line; Elm Street railroad crossing; rail nearby Buckland Recreation Area

Public sanitation and water: Private wells; public water supply crosses Deerfield River on Bridge of Flowers and public sewer line crosses Deerfield River on the Iron Bridge

Infrastructure and buildings: Town buildings town records; Mary Lyons Church; emergency communications infrastructure

Ecosystems: Clesson Brook at Buckland Recreation Area; agricultural land along Deerfield River and Clesson Brook

BUCKLAND'S TOP STRENGTHS



Areas of Strength

Self-sufficiency: The "locals" or "old-timers" know how to deal with whatever nature brings

Wastewater and sewer: The wastewater treatment facility is well protected by topography. It and the pumping station have their own stand-by power.

Fire and Police: A second fire station is located in Upper Buckland, well away from threat of flooding. Although fire and police facilities are located in the floodplain, department officials said they are able to move equipment and vehicles out of the floodplain if need be.

Road network: There are few dead end roads in Town, so there are alternatives in the event of road closures or washouts.

Town records: Current Town Hall records are digitized and stored off-site (cloud storage).

Sheltering: Town Hall is daytime heating and cooling center, with generator & kitchen.

BUCKLAND'S HIGHEST PRIORITY RECOMMENDATIONS



Municipal Vulnerability Preparedness: NEXT STEPS

1. Endorse your MVP Plan
2. Apply for MVP Grants which can include:
 - a) Detailed Vulnerability and Risk Assessment
 - b) Public Education and Communication
 - c) Local Bylaws, Ordinances, Plans, & Other Management Measures
 - d) Redesigns and Retrofits
 - e) Nature-Based Storm-Damage Protection, Drought Prevention, Water Quality, & Water Infiltration Techniques
 - f) Nature-Based, Infrastructure and Technology Solutions to Reduce Vulnerability to Extreme Heat and Poor Air Quality
 - g) Nature-Based Solutions to Reduce Vulnerability to other Climate Impacts
 - h) Ecological Restoration and Habitat Management to Increase Resiliency

Municipal Vulnerability Preparedness (MVP)

Q & A



Municipal Vulnerability Preparedness (MVP)

Public Comment Period:
June 14 through June 28, 2018

Please hand in your comments to FRCOG staff.
You may also email comments to MRhodes@frcog.org
or mail them to:

Franklin Regional Council of Governments
12 Olive Street, Suite 2
Greenfield, MA 01301
Attention: Megan Rhodes



CERTIFICATE OF ADOPTION



CERTIFICATE OF ADOPTION BUCKLAND, MASSACHUSETTS SELECT BOARD

A RESOLUTION ADOPTING THE TOWN OF BUCKLAND MUNICIPAL VULNERABILITY PREPAREDNESS (MVP) RESILIENCY PLAN

WHEREAS, the Town of Buckland participated in the MVP Community Resilience Building Workshop on March 28, 2018; and

WHEREAS, the Town of Buckland MVP Resiliency Plan contains several potential future projects to mitigate potential impacts from climate change in the Town of Buckland, and

WHEREAS, a duly-noticed public meeting was held by the Select Board on June 26, 2018, and

WHEREAS, the Town of Buckland authorizes responsible departments and/or agencies to execute their responsibilities demonstrated in the plan, and

NOW, THEREFORE BE IT RESOLVED that the Town of Buckland Select Board, adopts the MVP Resiliency Plan, in accordance with M.G.L. c. 40.

ADOPTED AND SIGNED this June 26, 2018.

Dena G. Willmore

A handwritten signature in blue ink, appearing to read "Dena G. Willmore", is written over a horizontal line.

Kevin Fox

A horizontal line intended for a signature, currently blank.

Zachary Turner

A handwritten signature in black ink, appearing to read "Zachary Turner", is written over a horizontal line.