

# Town of Colrain



**Municipal Vulnerability Preparedness (MVP) Program**

# MVP Resiliency Plan

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

April 2018

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# Town of Colrain

## 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 and other 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 in Franklin County, such as Tropical Storm Irene and “Snow-tober”, have reinforced this urgency and compelled communities like the Town of Colrain to proactively plan and mitigate potential risks. This type of planning will reduce the vulnerability of Colrain's people, infrastructure and natural resources, and will empower Colrain's officials and citizens alike to take steps to protect themselves and their community.

In the spring 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 Colrain technical assistance in completing their Community Resilience Building Workshop to achieve designation as Municipal Vulnerability Preparedness Community or “MVP” Community. As a State-certified MVP Provider, the FRCOG helped Colrain engage in a community-driven process that brought together climate change information and local knowledge to conduct 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 Colrain's Community Resilience-Building Workshop.

# Community Resilience Building Workshop

## Summary of Findings

The Town of Colrain, population 1,682, has conducted a number of planning projects in previous years, including its *2014 Hazard Mitigation Plan*, which enabled the Town to identify high priority hazards as well as areas, infrastructure and populations vulnerable to a variety of hazards, and action items to potentially address hazards. Other recent Colrain plans include *2014 Colrain Center Village Master Plan* and plans conducted by the FRCOG. FRCOG plans include the *2017 Watershed-Based Plan to Maintain the Health and Improve the Resiliency of the Deerfield River Watershed* and a 604b-funded *Fluvial Geomorphic and Habitat Assessment for the East Branch of the North River*. Some of the recommendations from the *Watershed-Based Plan* tie in directly with recommendations workshop participants developed. Another plan that is currently underway that includes Colrain is the *River Corridor Mapping Project*, led by the FRCOG in collaboration with Franklin Conservation District.

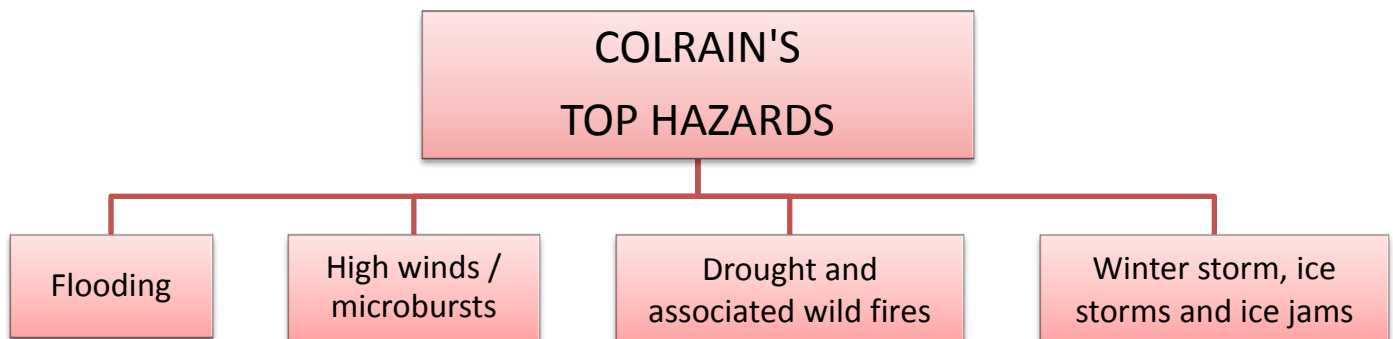
In spite of Colrain's diligence in completing these various planning efforts, there was still a need for the community to conduct a hazard assessment across scales – from individual buildings and bridges to rivers and landscapes, and across sectors – infrastructure, society and environment – looking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

Workshop participants considered climate change impacts most likely to impact Colrain, including rising and extreme air temperatures, extreme weather events, and increased quantity and intensity of precipitation.

The workshop was critical to enabling participants to think about and engage with people from different sectors. People representing public health, planning, fire, emergency management, and others came together to determine the most threatening hazards to the Town of Colrain and to agree upon high priorities and actions to address them.

## Top Hazards

Workshop participants discussed a number of hazards that impact Colrain, 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:



In addition to these top hazards, workshop participants said it was important to note that lack of cell phone and/or internet coverage is a hazard in and of itself, and that this issue serves to exacerbate the impacts of Colrain's top hazards.

### **Areas of Concern**

**Infrastructure and buildings:** Buildings, facilities and an uncapped landfill very close to the East Branch of the North River; shelters in floodplains; lack of cell phone and internet service throughout town

**Transportation and flooding:** Many vulnerable bridges and culverts throughout town; vulnerable roads throughout town including on state-owned land; lack public transportation throughout town

**Public sanitation and water:** Need for fire hydrants and ponds in Catamount State Forest; need for sewer and septic in the village center; private wells vulnerable to drought throughout town; instances of deteriorating housing throughout town

**People:** Isolated, hard-to-reach populations throughout town; tick-borne illnesses throughout town

**Ecosystems and natural resources:** Tree maintenance along roads throughout town; eroding riverbanks along the both branches of the North River; invasive plant species, especially along river corridors; farm fields without buffers along both branches of the North River



*The East and West Branches of the North River have been subjected to flooding, including the washing away of a dam and riverbanks during Tropical Storm Irene. Top photo is before Irene; bottom photo is after.*

### **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. 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 in Colrain after Irene. Flooding washed out roads, culverts and farm fields throughout Colrain, as shown on the map on page 11. Workshop participants expressed concern about heavy rain events and potential future flooding, saying impacts on bridges, culverts, roads and other infrastructure could be significant.

Participants also discussed the challenges posed to the Town during high wind and microburst events. Given that over 83% of the Town is forested, downed trees during these types of hazards could cause widespread road closures and could take down utility lines throughout Town.

Although towns in Franklin County have an abundance of rivers and streams – and worry about droughts has typically been low – the drought of 2016 was a reminder of the widespread impacts droughts can have on our region. In addition to impacting the water quality and quantity of rivers, streams and other waterbodies, drought can fuel wildfires. The Town of Colrain is particularly vulnerable, given the high percentage of wooded land in Town. Also, some State-owned land, like that in Catamount State Forest, is hard to get to, especially given the lack of maintenance on State-owned roads.

Participants also talked about impacts from winter storms and ice storms, which are similar to the impacts caused by high wind events. Downed trees and power lines, and road closures could be widespread and could tax the capacity of first responders, the highway department and private citizens.

### ***Specific Categories of Concerns and Challenges***

***Vulnerability of Colrain's village center:*** Colrain's village center lies in a valley, alongside the North River. The geographical conditions make for some challenges for the Town. There are currently no shelters located outside the floodplain of the North River in Colrain. Also, bridges and culverts are vulnerable to high flood events. The uncapped landfill is adjacent to a steep slope leading down to the West Branch of the North River. The Fire Department building, which is in need of replacement, cannot expand onto the land occupied by the landfill until the landfill is capped. The Town's salt shed is also located along this vulnerable stretch of land adjacent the West Branch of the North River.

Additionally, many private septic systems for the over 40 residences in the village center are in failure and, due to the topography, small lot size and surface bedrock, replacing the systems in their current locations is not possible. There may be an opportunity to partner with or otherwise connect with the private company, Barnhardt Manufacturing, which has a wastewater treatment facility. Any recommendations made regarding this issue should include information from the 2014 *Colrain Center Village Master Plan* and other related studies.

***Safety and well-being of Colrain's residents:*** Colrain is very rural and many residents live in isolated locations. There is unreliable or no cell phone service and internet for some residents. Residents who live alone and who have not opted in to Blackboard Connect do not have reliable access to information concerning emergencies.

Some homes which were flooded during Tropical Storm Irene have not been rehabbed, leaving occupants vulnerable to molds and other substandard housing conditions. It can be difficult for residents to understand what resources are available to them for housing rehab. Also, residents' private wells may be vulnerable during droughts to decreased water quality and quantity. With increased temperatures predicted, conditions are more favorable for some vector-borne illnesses, such as Lyme disease.



**Funding for needed projects:** Small, rural towns such as Colrain need funding to implement projects to be more resilient in the face of climate change. Funding for a variety of projects is identified in the Community Resilience Building Risk Matrix, including bridge and culvert repairs or replacement, feasibility studies, design and construction for replacing the Fire Department facility and capping the landfill, gravel road repair and other projects.

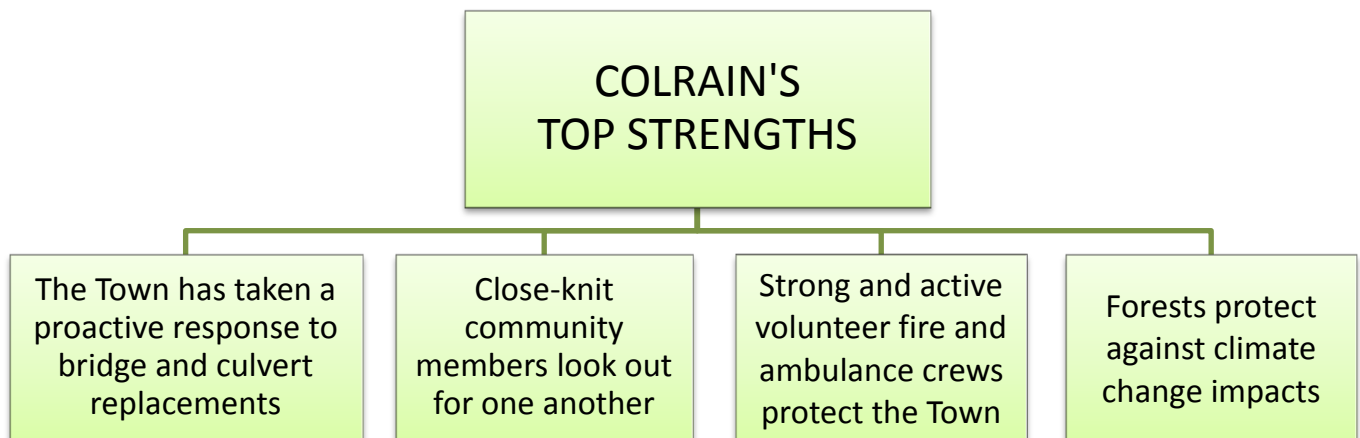


*A large landslide on the East Branch of the North River is just one of many riverbank issues that exist on both branches of the North River in Colrain.*

**Protection of natural resources:** Riverbank erosion and slumping as well as mudslides are a concern along much of the North River and its branches. Colrain's large expanses of forest could be vulnerable to drought and wildfires, as well as to invasive plant species. Farm fields have been subject to flooding and erosion and some farm fields have had debris deposited on them during floods. Crops have been lost to flooding as well.

**Current Strengths and Assets**

Colrain has a number of strengths and assets, as identified by workshop participants. The top strengths and assets are shown in the following chart:



A detailed list of strengths and assets identified by workshop participants include:

**Infrastructural strengths and assets:** Several bridges and culverts have been or are slated for repair or replacement, and the Town is pursuing additional funding for more repairs. Colrain's Fire, Police and EOC facilities are outside of the floodplain and are not vulnerable to flooding. Blackboard Connect serves to provide emergency information to Town residents who participate in the service.

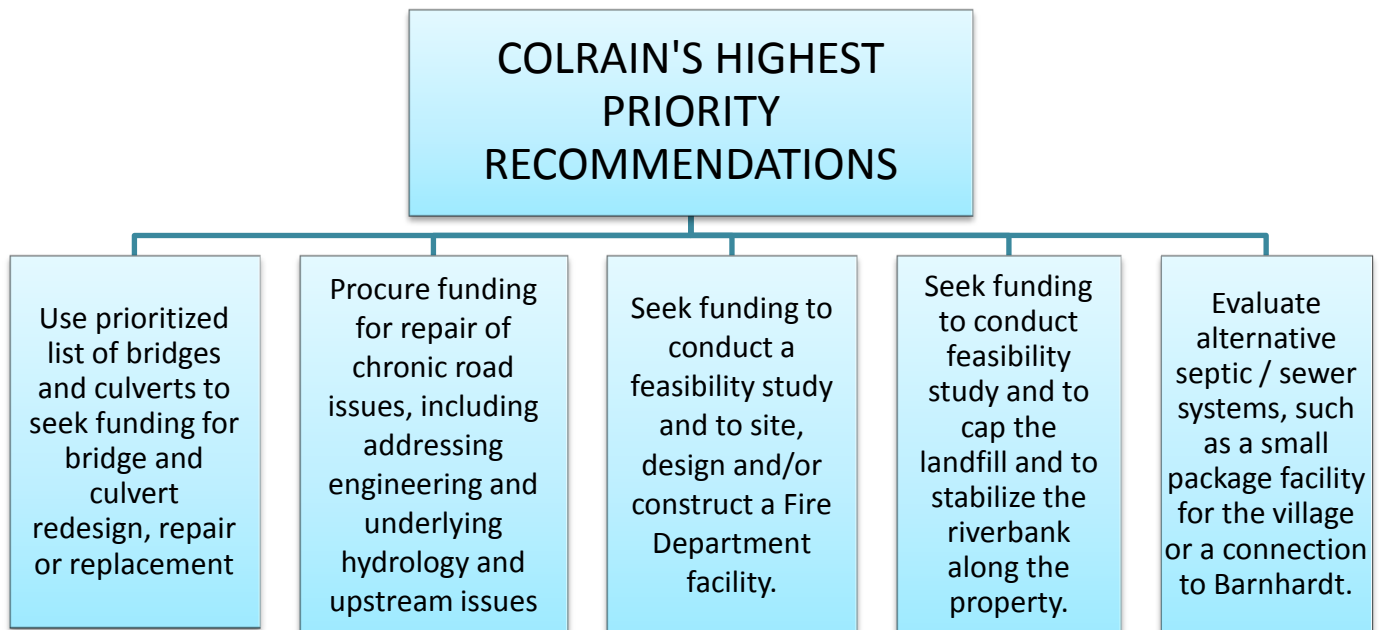
**Strength of Town Services:** Colrain has a strong volunteer fire crew and a strong ambulance crew. The Town Administrator is knowledgeable and is actively pursuing funding on behalf of the Town.

**Societal strengths and assets:** People in Colrain are a close-knit community and most people know each other. People look out for one another.

**Environmental strengths and assets:** Much of Colrain is forested; forests are critical to resilience to climate change impacts including cleaning air and water, increasing stormwater infiltration and decreasing runoff, storing carbon and other important functions.

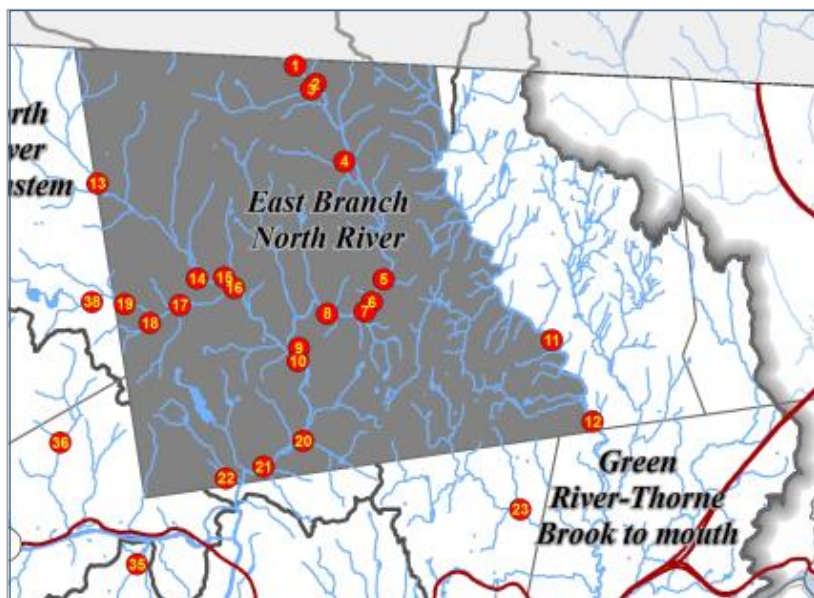
### **Top Recommendations to Improve Resilience**

Infrastructure and facilities were common themes in many of the recommendations to emerge from the workshop, including the top five highest priorities shown below.



**Transportation infrastructure** topped the list of highest priority recommendations, with workshop participants agreeing that the repair, maintenance and/or replacement of bridges, culverts and roads were of utmost importance to Colrain's resilience, particularly related to increased rainfall and increased flooding. Although Colrain has taken positive steps to seek funding, inventory, repair and or replace bridges and culverts, there are still many more bridges and culverts that need attention. Also, as bridges and culverts are replaced, there is an opportunity to utilize LID site planning and stormwater techniques, as called for in the 2017 *Watershed-Based Plan*. The potential failure of bridges and culverts threatens to cut off communities and important infrastructure during emergencies, while upgrading or replacing them promises to make Colrain more climate change resilient.

With about 45 miles of gravel roads, Colrain's Highway Department has its hands full trying to keep the roads in good repair. The reality is that some roads need more significant engineering and hydrological work, beyond simple grading or drainage. Additional funding is needed to address the magnitude of the problems with roads in Colrain, including conducting a Rural Roads Assessment to identify road drainage and stormwater management problems and to determine priority projects and BMPs, as recommended in the *Watershed-Based Plan*.



#	Issue
1	Road washouts
2	Washouts at Green Bridge
3	Road washouts; bridge footing undermined
4	Ag fields eroded; bridge footings eroded
5	E Branch North R. erosion
6	Erosion, rip-rap repeat, homes damaged
7	Sediment & erosion, rip-rap bank armoring
8	Highway Dept saltshed; bank erosion
9	Ag fields, dam at BBC damaged
10	Ag fields damaged; landslide
11	Repeated road washouts
12	Bank erosion, armored banks, dam & bridged damaged
13	Bridge footings undermined
14	Bank, stream erosion by bridge
15	Stream bank armored repeatedly
16	Bridge/stream channel erosion
17	Landslide
18	Perched culvert; gabions failing
19	Gabions failing
20	Bridge footings undermined
21	Bank erosion old bridge abutment
22	Bridge footings undermined

Roads, bridges, culverts, riverbanks, farm fields and more were impacted by flooding caused by Tropical Storm Irene in 2011.

**A new Fire Department facility** also topped the list of highest priority recommendations. This recommendation is essential to the Town being able to respond as quickly as possible to hazards such as increased wildfires due to increased droughts. This recommendation goes hand-in-hand with the recommendation to **cap the landfill** adjacent to the Fire Department and to stabilize the riverbank. Doing so would provide room to site a new, larger Fire Department facility and would address environmental concerns of leaving the landfill uncapped, including water quality issues. This recommendation was made as part of the *Watershed-Based Plan* in 2017, which includes performing additional field investigation to assess environmental risk, identifying and characterizing the extent of any impacts that may be present, and determining the need for corrective action. As with the riverbank near the landfill, riverbanks along many parts of the river need assessment and stabilization, as called for in the 2017 *Watershed-Based Plan*.

**Sewer infrastructure** replacement rounded out the list of highest priorities for Colrain. In the village of Colrain, there are a number of homes that have septic systems that are failing. The site constraints of these homes prevent homeowners from installing new septic systems. Colrain has been exploring alternatives. Workshop participants agreed that decisions need to be made to address the failing infrastructure, whether this means a small, package sewer system or tying homes into the wastewater treatment facility at Barnhardt Manufacturing. Replacing the failing

sewer infrastructure would address infrastructural, societal and environmental needs in Colrain, and would help the Town be more resilient to increased rainfall and flooding.

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 sector and 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 some of the recommendations are similar to ones in the *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.



				Top Priority Hazards								
H-M-L priority for action over the Short or Long term (and Ongoing) V = Vulnerability S = Strength				Recommendations	Flooding	High Winds/ Microbursts	Drought/ Wildfires	Ice & Winter Storms/Ice Jams	Priority		Time	
Features	Location	Ownership	V or S						H - M - L	Short Long Ongoing		
<b>Infrastructural</b>												
Town depends upon a large number of bridges and culverts throughout town. Bridge failures could have catastrophic impact on the Town and its residents.	Townwide	Town or state	V	Pursue additional funding for redesigns, repair and/or replacement of bridges and culverts throughout Town, using prioritized list.	X	X	X	X	H	S		
There is not enough state funding for bridge and culvert repair. Funding has not increased adequately to pay for increased regulations related to bridges and culverts.	Townwide	Town or state	V	Contact legislators or other state officials to encourage additional funding of bridge and culvert repairs.	X	X	X	X	H	S		
Town does not have emergency shelters that are located outside of floodplain.	Townwide	Town	V	Identify shelters outside of the floodplain and obtain funding to equip them as needed.	X	X	X	X	H	S		
Colrain's Fire Department facility needs to be replaced.	Village	Town	V	Obtain funding to conduct a feasibility study to replace the Fire Department facility.	X	X	X	X	H	S		
				Obtain funding to site, design and/or construct a new facility.	X	X	X	X	H	M		
There is an uncapped landfill adjacent the Fire Department and the West Branch of the North River. There is some riverbank instability along the property.	Village	Town	V	Obtain funding to conduct a feasibility study on capping the landfill.	X				H	S		
				Obtain funding to cap the landfill and to stabilize the riverbank along the property.	X				H	S		
There are 45 miles of gravel roads in Town and there is widespread road damage and chronic issues throughout Town, due to steep grades, erosion and other factors.	Townwide	Town	V	Pursue funding for road repairs, including addressing engineering, underlying hydrology and other issues.	X			X	H	S		
				Partner with the FRCOG to identify upstream sites for debris and mudslide controls to reduce damage to roads.	X				H	S		
There are issues with declining septic systems. This is causing environmental issues as well as declining property values.	Village	Private	V	Evaluate alternative septic / sewer systems, such as a small package facility for the village or a connection to Barnhardt.	X				H	S		
There is significant riverbank instability and erosion.	East Branch of North River	Town / Private	V	Seek funding to implement riverbank stabilization projects as specified in the FRCOG's geomorphic assessments.	X			X	H	M		
There is a lack of cell phone and internet coverage.	Townwide	Private	V	Seek funding to conduct a feasibility study for installing a municipal cell phone town.	X	X	X	X	H	S		
The Greenfield Road hill into the village has been the site of several runaway truck incidents.	Greenfield Road	State	V	Conduct additional assessments and install safety measures as determined in assessment.				X	H	S		
Roads in Catamount State Forest are not maintained.	Catamount State Forest	State	V	Contact legislators or other state officials to encourage road maintenance		X	X	X	M	S		
Highway Department does not have back-up power.	Village	Town	V	Obtain a grant to establish back-power and a generator.	X	X	X	X	M	S		
Colrain's road salt shed is located on a vulnerable site along the West Branch of the North River.	Village	Town	V	Move salt shed to more stable site.	X			X	L	L		
There is a need for more water supplies for fire suppression.	Catamount State Forest	State	V	Secure information on existing fire ponds and update as needed.			X		L	S		

**Community Resilience Building Risk Matrix**



				Top Priority Hazards						
H-M-L priority for action over the Short or Long term (and Ongoing) V = Vulnerability S = Strength				Recommendations	Flooding	High Winds/ Microbursts	Drought/ Wildfires	Ice & Winter Storms/Ice Jams	Priority	Time
Features	Location	Ownership	V or S						H - M - L	Short Long Ongoing
<b>Infrastructural (cont.)</b>										
Colrain has a strong volunteer Fire Department and Ambulance crew.	Townwide	Town	S				X			
Fire, Police and EOC facilities are located outside the floodplain and have back-up power.	Village	Town	S		X	X	X	X		
Design of internet (fiber) under development and design.	Townwide	Private	S		X	X	X	X		
With so much of Colrain forested, there are regular issues with downed trees on roads and utility lines. However, communication with Eversource, who maintains trees along utility lines, is good.	Townwide	Town or state	V			X		X		
Several bridges and culverts are being repaired / replaced.		Town or state	V/S		X			X		
Bridge and culvert inventory is underway.	Townwide	Town or state	S		X			X		
Town pursuing grants for infrastructure repair and upgrades, including bridges and culverts.	Townwide	Town	S		X			X		
<b>Societal</b>										
The list of vulnerable people in Town is not up to date.	Townwide	Town	V	Update and maintain vulnerable populations list.	X	X	X	X	H	S/O
				Coordinate/integrate Blackboard Connect with other entities, such as Town officials, LifePath, Council on Aging and first responder.	X	X	X	X	H	S/O
Blackboard Connect is an effective tool to keep people informed of emergencies and hazards.	Townwide	Town	S	Use townwide events such as community meals as an opportunity to encourage participation in Blackboard Connect.	X	X	X	X	H	S/O
Colrain is a close-knit community.	Townwide	Private / Town	S		X	X	X	X		
Transportation for vulnerable people needed.	Townwide	Private / Town	V	Develop neighbor helping neighbor network for groceries, prescriptions and other basic needs.	X	X	X	X	H	S
There are increased incidences of tick-borne illnesses.	Townwide	Private	V	Expand subsidized tick-testing program through UMass.					H	S
People who rely upon private wells for drinking water are without water when there is a power outage. Long term droughts may also impact water quality and quantity of private wells	Townwide	Private	V	Encourage household emergency preparedness.	X	X	X	X	H	S
Post disaster loans from FEMA are difficult to navigate.	Townwide	Private	V	Establish volunteers who are willing to help residents fill out FEMA paperwork and navigate the system.	X	X	X	X	M	O
There are some homes in Colrain which did not get repaired or rehabbed after Tropical Storm Irene and that are deteriorating and/or have mold issues. There are also septic systems in failure.	Townwide	Private	V	Provide education and information on housing rehab loans and funding for septic repair.	X				L	L
Areas of Town can be cut off from ambulance service.	Townwide	Town	V	Pursue above recommendations to help lessen this issue.	X	X	X	X		



H-M-L priority for action over the Short or Long term (and Ongoing) V = Vulnerability S = Strength				Top Priority Hazards						
				Recommendations	Flooding	High Winds/ Microbursts	Drought/ Wildfires	Ice & Winter Storms/Ice Jams	Priority H - M - L	Time Short Long Ongoing
Features	Location	Ownership	V or S							
<b>Environmental</b>										
Japanese knotweed has invaded parts of Town.	Townwide and along river corridors	Private / Town	V	Pursue funding for invasive plant species control and native plant replanting initiatives.	X				H	O
There are riverbank instabilities and erosion.	West Branch of North River	Private	V	Conduct streambank stabilization projects on both branches of the North River.	X			X	M	O
				Conduct outreach and education with private landowners about streambank stabilization.	X			X	M	O
River corridor mapping is underway.	Townwide along river corridors	Private / Town	S	Pursue funding to implement river corridor management recommendations.	X				H	O
There has been damage to farm fields from flooding and ice jams.	Along river corridors	Private	V	Investigate funding to support farmers related to farmland erosion, debris and crop loss.	X			X	L	O
Colrain has had ice jams on the North River.	North River	Private / Town	V	Explore options for clearing ice jams.				X	L	L
There are maple sugaring operations in Colrain. They are vulnerable to climate change.	Townwide	Private	S/V							
Farmers have quite a bit of knowledge about programs and resources available to them.	Townwide	Private	S							





### **Other Highest Priority Recommendations**

- Contact legislators or other state officials to encourage additional funding of bridge and culvert repairs.
- Identify shelters outside of the floodplain and obtain funding to equip them as needed.
- Partner with the FRCOG to identify upstream sites for debris and mudslide controls to reduce damage to roads.
- Seek funding to implement riverbank stabilization projects as specified in the FRCOG's geomorphic assessments.
- Seek funding to conduct a feasibility study for installing a municipal cell phone tower.
- Conduct additional assessments as needed of the hill on Greenfield Road and install safety measures as determined in assessment.
- Update and maintain vulnerable populations list.
- Coordinate/integrate Blackboard Connect with other entities, such as Town officials, LifePath, Council on Aging and first responder.
- Use townwide events such as community meals as an opportunity to encourage participation in Blackboard Connect.
- Develop neighbor helping neighbor network for groceries, prescriptions and other basic needs.
- Expand subsidized tick-testing program through UMass.
- Encourage household emergency preparedness.
- Pursue funding for invasive plant species control and native plant replanting initiatives.

### **Moderate Priority Recommendations**

- Contact legislators or other state officials to encourage road maintenance
- Obtain a grant to establish back-power and a generator.
- Establish volunteers who are willing to help residents fill out FEMA paperwork and navigate the system.
- Conduct streambank stabilization projects on both branches of the North River.
- Conduct outreach and education with private landowners about streambank stabilization.

### **Lower Priority Recommendations**

- Move salt shed to more stable site.
- Secure information on existing fire ponds and update as needed.
- Provide education and information on housing rehab loans and funding for septic repair.
- Investigate funding to support farmers related to farmland erosion, debris and crop loss.
- Explore options for clearing ice jams.

**CRB Workshop Participants: Department/Commission/Representative:**

Name	Affiliation	Position	Contact
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**CRB Workshop Project Team: Organization and Role**

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 Kimberly Noake MacPhee, Lead Presenter and Co-facilitator  
 Patricia Smith, Co-facilitator

**Town of Colrain Project Lead:**

Kevin Fox, Town Coordinator

**Recommended Citation**

Chicoine M. Noake MacPhee K. Smith P. (2018) Town of Colrain Community Resilience Building Workshop Summary of Findings. Franklin Regional Council of Governments.

**Photo credits:**

Cover	Downed power line	WMECO
Cover	Overtured dump truck	Recorder
Cover	Colrain Fire Department	Colrain Firefighters' Association

All other photos not cited above were taken by the FRCOG

## **Appendices**

Maps

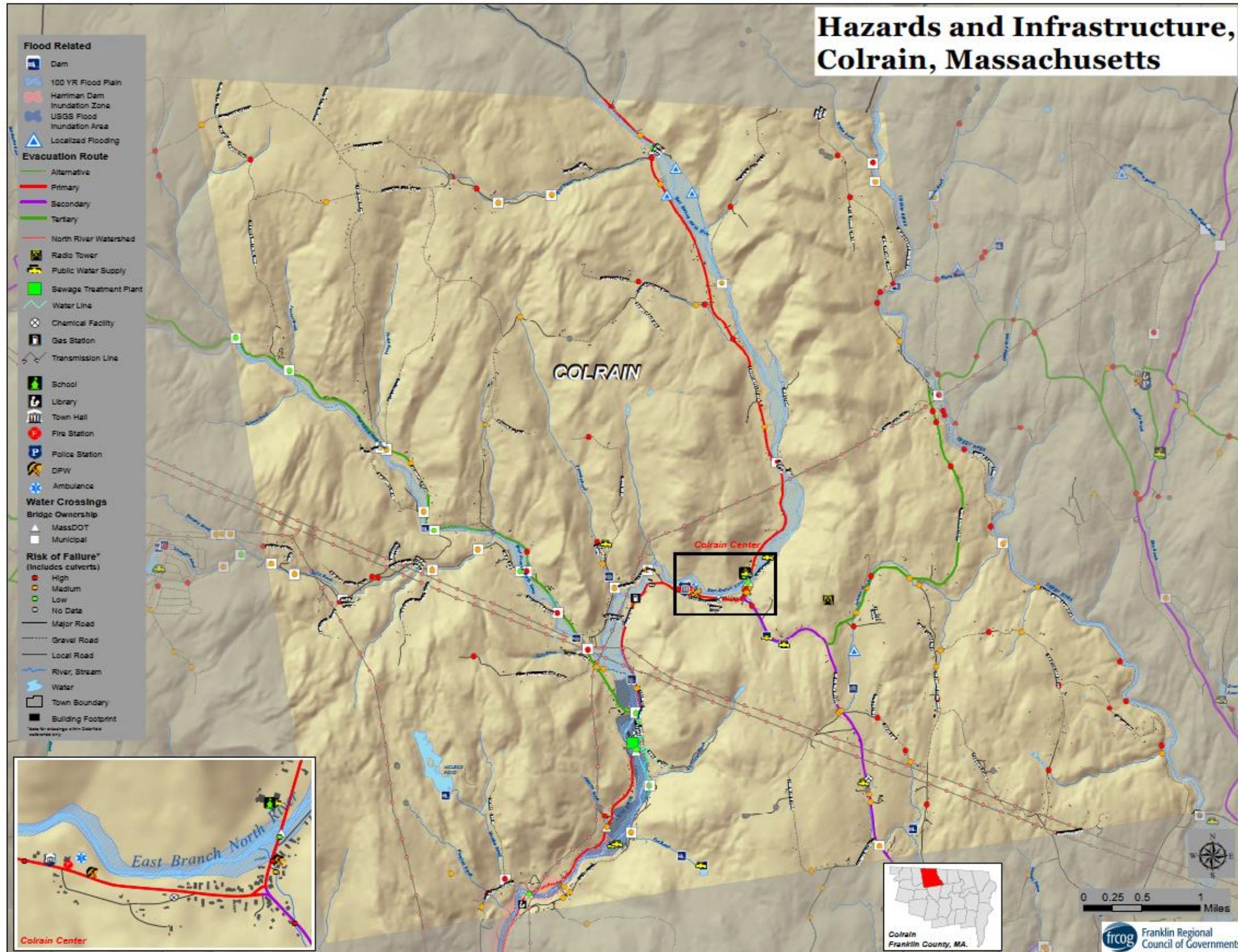
Exercise Outputs

Workshop Presentation

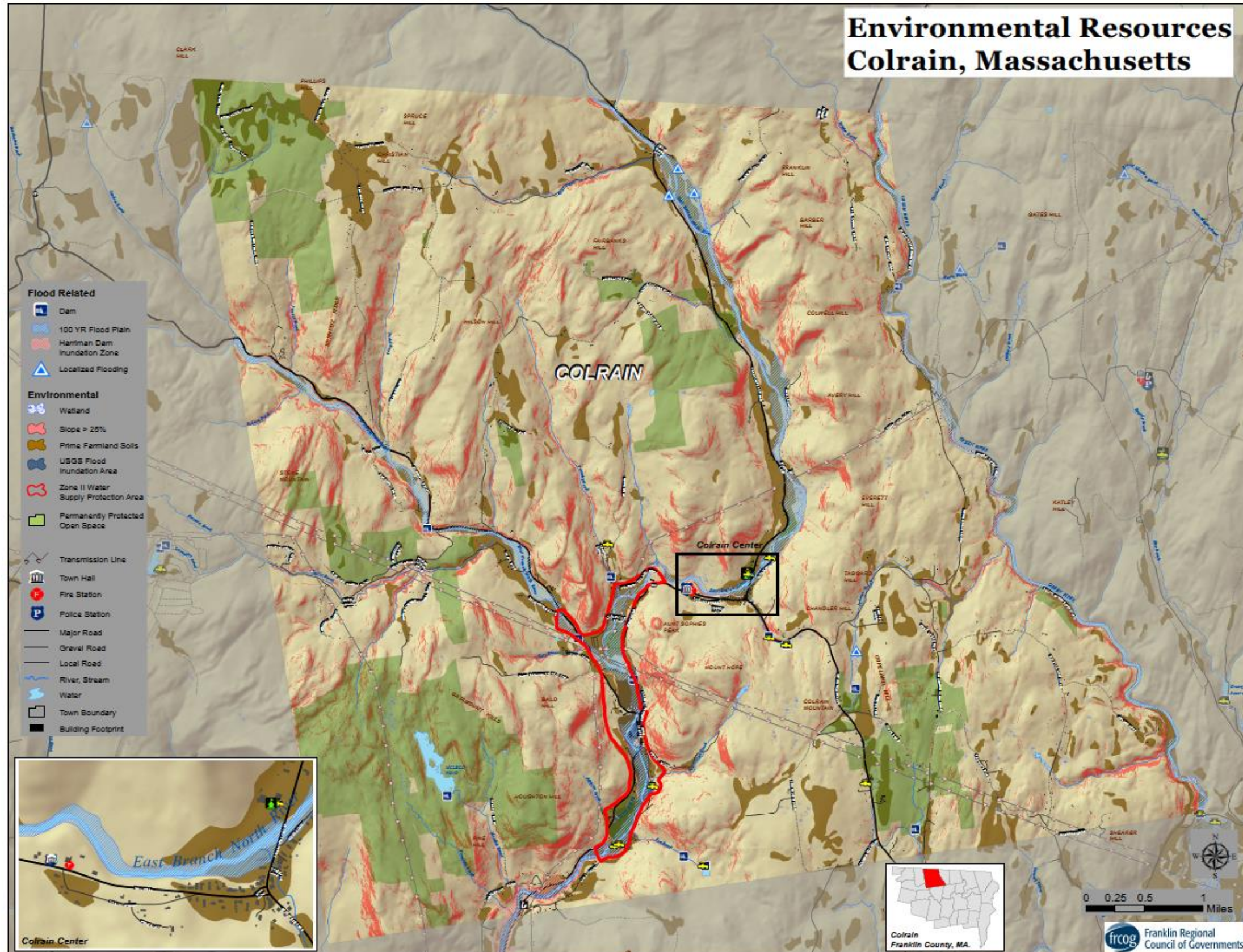
Public Input Documentation



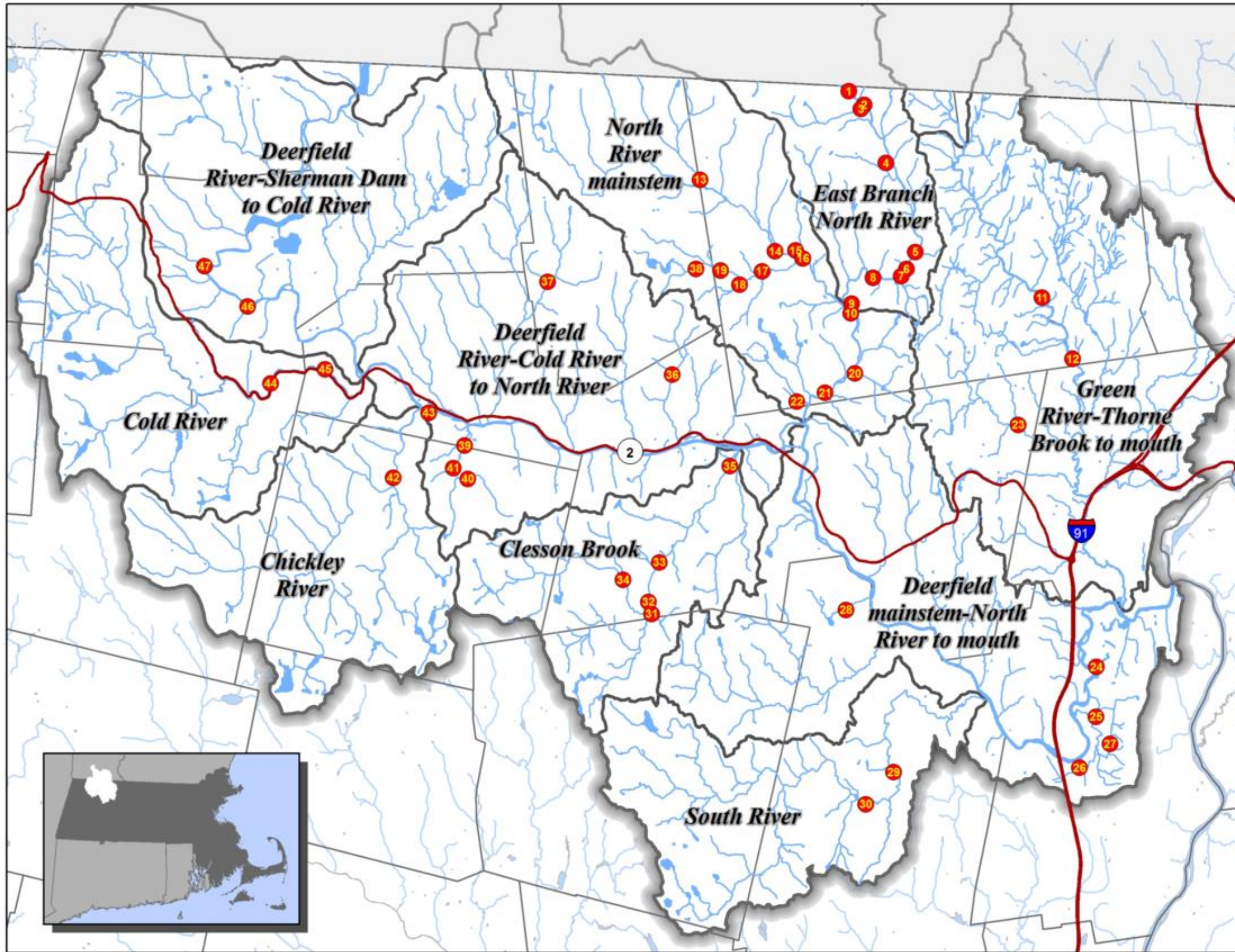
BASE MAP: Infrastructural and Societal



BASE MAP: Environmental



**BASE MAP: Tropical Storm Irene Damage**



Number	Issue
1	Road washouts
2	Washouts at Green Bridge
3	Road washouts; bridge footing undermined
4	Ag fields eroded; bridge footings eroded
5	E Branch North R. erosion
6	Erosion, rip-rap repeat, homes damaged
7	Sediment & erosion, rip-rap bank armoring
8	Highway Dept saltshed; bank erosion
9	Ag fields, dam at BBC damaged
10	Ag fields damaged; landslide
11	Repeated road washouts
12	Bank erosion, armored banks, dam & bridged damaged
13	Bridge footings undermined
14	Bank, stream erosion by bridge
15	Stream bank armored repeatedly
16	Bridge/stream channel erosion
17	Landslide
18	Perched culvert; gabions failing
19	Gabions failing
20	Bridge footings undermined
21	Bank erosion old bridge abutment
22	Bridge footings undermined
23	Stream erosion, repeatedly
24	Failing culverts
25	Failing culvert
26	Failing culvert
27	Ag fields severely damaged by TS Irene
28	Schneck Brook bridge abutments failing
29	River banks armored repeatedly
30	Armored river banks upstream of bridge
31	Armored stream bank
32	Bridge damaged
33	Stream armored w/rip-rap
34	Stream bank armoring post TS Irene, repeat
35	Stream bank erosion at bridge
36	Gabions failing
37	Dam failed
38	Rip-rap in stream post TS Irene
39	Stream banks armored repeatedly
40	3 sites post TS Irene rip-rap, repeat
41	Rd closed; landslide, stream bank erosion
42	Extensive problems post TS Irene
43	Ag fields damaged; excessive storm debris
44	Rip-rap along Cold River post TS Irene
45	Rip-rap along Cold River post TS Irene
46	Bank failures armored w/rip-rap post flood
47	Bank failures armored w/rip-rap post flood

EXERCISE OUTPUTS

Top Hazards

Colrain MVP Meeting 4-16-18

# HAZARDS

(#1) FLOODING	IMPACTS NO CELL PHONE OR INTERNET
HIGH WIND / MICROBURSTS	BRIDGE FAILURES
DROUGHT / FIRES	WATER SUPPLIES
ICE STORMS / WINTER STORMS	ROAD DAMAGE
ICE DAMS	TICKS
HILL	DOWNED TREES / LINES
RUNAWAY TRUCKS	POWER OUTAGES
DRIVER ERRORS / MECHANICAL ISSUES	

Top Recommendations

COLRAIN MUP mtg 4-10-18

- USE PRIORITIZED BRIDGE & CULVERT STUDY FOR GRANT PROPOSALS.
- PROCURE FUNDING FOR ROAD REPAIR INCLUDING HYDROLOGY ISSUES.
- DEVELOP NEIGHBOR HELPING NEIGHBOR PROGRAM
- EVALUATE SMALLER / PACKAGE SEWER SYSTEM
- EDUCATE PUBLIC ABOUT SEWER COSTS & BARNHARDT
- IDENTIFY SHELTERS OUTSIDE FLOODPLAIN
- CONDUCT FEASIBILITY STUDY FOR NEW FIRE FACILITY
- CONDUCT STUDY TO CAP LANDFILL
- EXPLORE FEASIBILITY OF MUNICIPAL CELL TOWER
- PURSUE FUNDING FOR INVASIVE PLANTS CONTROL
- UPDATE & MAINTAIN VULNERABLE PEOPLE LIST
- COORDINATE BETWEEN BLACKBOARD CONNECT, FIRST RESPONDERS, LIFE PATH
- USE TOWNWIDE EVENTS TO LET PEOPLE KNOW ABOUT BLACKBOARD CONNECT
- EXPLORE EXPANDED TICK TESTING
- EXPAND SCHOOL & PUBLIC EDUCATION @ TICKS & LYME
- ENCOURAGE HOUSEHOLD EMERGENCY PREPAREDNESS



# INFRASTRUCTURE ENVIRONMENT

COLUMBI 4-10-18


Community Resilience Building Risk Matrix				www.CommunityResilienceBuilding.com					
				LACK OF CELL PHONE & INTERNET COVERAGE					
				Top Priority Hazards (tornado, floods, wildfire, hurricanes, earthquake, drought, sea level rise, heat wave, etc.)					
				FLOODS	HIGH WIND & MICROBURSTS	DROUGHT - FIRES	ICE & WINTER STORMS - ICE DAMS	Priority	Time
								H - M - L	Short Long Ongoing
Features	Location	Ownership	V or S						
Infrastructure									
SEVERAL BRIDGES BEING REPLACED	SEE MAP & LIST		S	X			X		
BRIDGE & CULVERT INVENTORY UNDERWAY			S	X			X		
TOWN PURSUING GRANTS FOR INFRASTRUCTURE			S	X			X		
WATER SUPPLIES FOR FIRE SUPPRESSION	STATE FOREST CATAMOUNT	DO NOT MAINTAIN BRIDGE ACCESS ISSUE	V S	SECURE INFO ON FIRE PONDS AND UPDATE IT (COULD OCCUR OR THE TOWN)		IDENTIFY MORE FIRE PONDS		(L) (S)	
LARGE NUMBER OF BRIDGES			V	BASE ACTION ITEMS ON PRIORITY LIST OF BRIDGES				(H) (S)	
WIDESPREAD ROAD DAMAGE	WIDESPREAD EROSION	SEE PAT'S LIST	V	45 MILES - DIRT ROAD NEED MORE FUNDING FOR ROAD REPAIR & MAINTENANCE		ALSO, NEED TO ADDRESS UNDERLYING HYDROLOGY ISSUES		(H) (S)	
DOWNED TREES / LINES			V S			ADVOCATE FOR INCREASED FUNDING FOR BRIDGE & CULVERT REPLACEMENT		(H) (S)	
SEWER ISSUES - FAILING SEPTIC AND DECLINING HOME VALUES	VILLAGE AREA - BARNHARDT		V	- EVALUATE SMALLER / ALTERNATIVE PACKAGE FACILITY FOR SEWER		GIVEN THE INCREASED COST DUE TO ENVIRONMENTAL LAWS.		(H) (S)	
STRONG VOLUNTEER FIRE DEPT			S	- CONTINUE DISCUSSIONS W/ RESIDENTS (RE POTENTIAL COSTS, ESP RELATED TO BARNHARDT)		PARTNER W/ THE FRCOG TO IDENTIFY UPSTREAM SITES FOR DEBRIS CONTROL & MUD SLIDES.		(H) (M) (S)	
STRONG AMBULANCE CREW			S					(M) (S)	
FIRE & POLICE OUT OF FLOODPLAIN EOC & HAVE BACKUP POWER			S						
HIGHWAY DEPT - NO BACKUP POWER			V	ESTABLISH BACK UP POWER - WIRE AND GENERATOR				M S	
SHELTERS			V	IDENTIFY SHELTERS OUTSIDE FLOODPLAIN				H S	
MUNICIPAL FIRE FACILITY			V	CONDUCT FEASIBILITY OF NEW BUILDING (FIRE)				H S	
UNCAPPED LANDFILL - CANNOT USE THE LAND UNTIL IT'S CAPPED		TO EXPAND F.D. MAJOR SOLAR FARM	V	CONDUCT STUDY TO CAP THE LANDFILL & STABILIZE BANK.				H S	
SALT SHED AT RISK			V	MOVE SALT SHED TO SAFER LOCATION OR STABILIZE BANK.		RIVER BANK.		L L	
EAST BRANCH NORTH RIVER			V	REVISIT PROJECTS IDD IN THE GEOMORPHIC ASSESSMENT.					
CELL PHONE & INTERNET	THROUGHOUT		V	EXPLORE FEASIBILITY OF MUNICIPAL CELL TOWER.				H S	
"	"	"	S	INTERNET (FIBER) UNDER DEVELOPMENT & DESIGN					
HILL JACKSONVILLE			V S						

COUNCIL 4-10-18

# NATURAL RESOURCES INFRASTRUCTURE

Community Resilience Building Risk Matrix				www.CommunityResilienceBuilding.com					
				LACK OF CELL PHONE & INTERNET COVERAGE 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				FLOODS	HIGH WIND & MICROBURSTS	DROUGHT & FIRE	ICE & WINTER STORMS ICE DAMS	Priority H-M-L	Time Short Long Ongoing
Features	Location	Ownership	V or S						
<b>Infrastructure</b>									
KNOT WEED	THROUGHOUT		✓	① PURSUE FUNDING FOR INVASIVES CONTROL & REPLANTING				H	O
RIVER CORRIDOR MAPPING UNDERWAY	"		S						
FARM FIELD	DAMAGE FROM FLOODING AND ICE DAMS		S/V	② INVESTIGATE FUNDING FOR FARMER SUPPORT & RELATED TO FARMLAND EROSION & DEBRIS DEPOSITING & CROP DAMAGE.				L	O
ICE DAMS IN RIVER			✓	③ EXPLORE OPTIONS FOR CLEARING ICE DAMS.				L	L
WEST BRANCH RIVER BANK INSTABILITY & MUDSLIDE			✓	④ CONDUCT STREAMBANK STABILIZATION PROJECTS ON WEST AND EAST BRANCHES.				M	O
TREES & FORESTRY / MAIZE SUGARCANE			S/V	⑤ OUTREACH TO PRIVATE LANDOWNERS RE STREAMBANK STABILIZATION					
<b>Human</b>									
FARMERS KNOWLEDGE OF PROGRAMS & RESOURCES			S						
<b>Environment</b>									

# PEOPLE

Community Resilience Building Risk Matrix  www.CommunityResilienceBuilding.com


**LACK OF CELL PHONE & INTERNET COVERAGE**  
 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	FLOODS	HIGH WIND & MICROBURSTS	DROUGHT & FIRES	ICED WINTER STORMS & ICE DAMS	Priority H - M - L	Time Short Long Ongoing
<b>Infrastructural</b>									
ACCESS TO AMBULANCE SERVICE <small>CUT OFF</small>			V					H	S/O
VULNERABLE POPULATIONS - <small>USED TO BE SPECIAL NEEDS LIST</small>		PRIVATE	V	UPDATE AND MAINTAIN VULNERABLE POPULATIONS LIST.				H	S/O
BLACKBOARD CONNECT			S	COORDINATE BLACKBOARD CONNECT, TOWN & LIFE PATH. INTEGRATE				H	S/O
				USE TOWNWIDE EVENTS & WEEKLY MEALS TO LET PEOPLE KNOW ABOUT THIS SERVICE.				H	S/O
CLOSE KNIT COMMUNITY			S						
EMERGENCY SERVICES & HIGHWAY DEPT <small>COORDINATE WELL TOGETHER</small>			S						
<b>Societal</b>									
TRANSPORTATION FOR VULNERABLE PEOPLE NEEDED <small>FREE SERVICES ON DAILY NEEDS</small>			V	DEVELOP NEIGHBOR HELPING NEIGHBOR (GROCERIES, PRESCRIPTIONS)				H	S
INCREASED TICKS / LYME			V	EXPLORE EXPANDING SUBSIDIZED TICK TESTING PROGRAM				H	S
			V	EXPAND PUBLIC EDUCATION RE TICKS / LYME. <small>&amp; SCHOOL</small>				H	S
PRIVATE WELLS - LOSS OF ELECTRICITY = <small>LOSS OF WATER</small>			V	ENCOURAGE HOUSEHOLD EMERGENCY PREPAREDNESS.				H	S
WATER DURING DROUGHT - <small>FOR HUMANS &amp; LIVESTOCK</small>			V	ESTABLISH CITIZEN HELPERS TO FILL OUT FEMA FORMS. AND HELP IN OTHER WAYS.				M	O
POST DISASTER LOANS (FEMA)		FED/STATE	V	<del>ESTABLISH CITIZEN HELPERS TO FILL OUT FEMA FORMS.</del>					
<b>Environmental</b>									
POST DISASTER HOUSING DETERIORATION	<small>THROUGHOUT</small>	STATE/HRA PRIVATE	V/S	PROVIDE INFO ON HOUSING REHAB FUNDING & SEPTIC LOANS.				L	L

*Handwritten notes and arrows pointing to specific rows in the table, including 'COUNCIL ON AGING, FIRST RESPONDERS' and 'BEING COGNIZANT OF PRIVACY CONCERNS.'*

# WORKSHOP PRESENTATION



## Community Resilience Building Workshop

### Town of Colrain

April 10, 2018

### Workshop Process and Outcomes

**Build Resilience and Preparedness** – for 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**

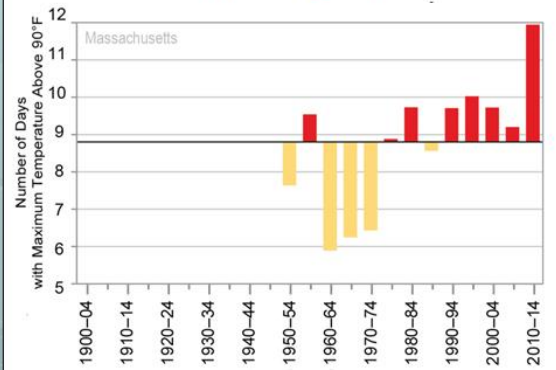
- Community and regional infrastructure
- Local and regional economies
- Public health
- Natural resources and our environment

**Goal for Building Resilience to a Changing Climate:**

Protect life, property, natural resources and the economy

## Higher Temperatures


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



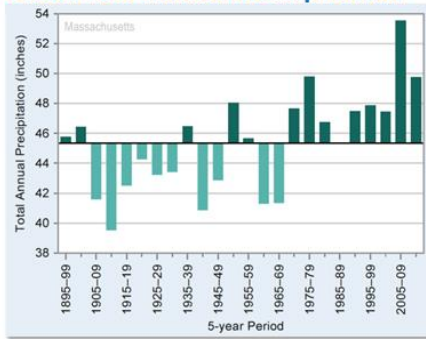
**Heat Waves**

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

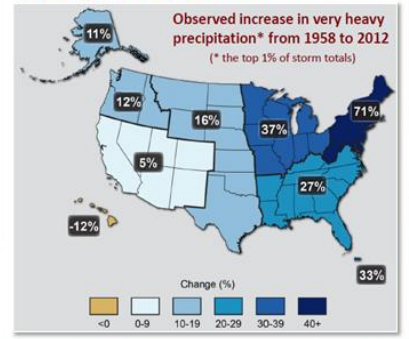
## Heavy Precipitation



**Observed Annual Precipitation**



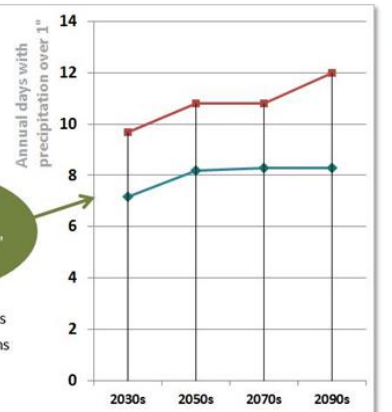
**Observed Increase in Heavy Precipitation**



## Heavy Precipitation

**Predictions**

- By the end of the century, our area could have 5 additional days of rainstorms that dump over 1 inch of rain.



Annual observed days with precipitation over 1" 1971-2000


- Lower Emissions
- Higher Emissions

## WORKSHOP PRESENTATION (CONT.)

### 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.



### Colrain Multi-Hazard Mitigation Plan 2014

- 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

### 2014 Multi-Hazard Mitigation Plan Hazard ID & Vulnerability Assessment

**Potential Hazards Identified for Colrain**

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

**DONE!**

Action Items for most of these hazards were also developed

A changing climate is exposing us to greater risk.

### 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



### Expected Impacts from Higher Temperatures

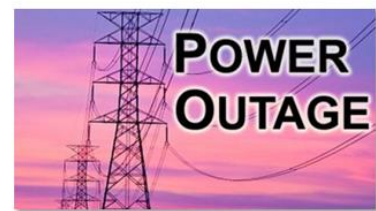

**Infrastructure**

**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 (Colrain 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



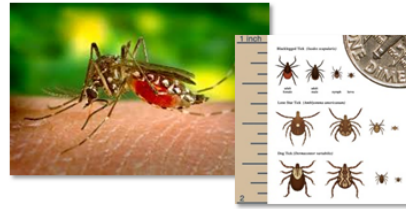
## WORKSHOP PRESENTATION (CONT.)

### Effects of Climate Change on Town Residents (societal)

A changing climate is exposing us to greater risk.

- Heat-Related Illness and Death
- Danger from Storms & Flooding
- Insect-Borne Diseases
- Allergies & Pollen
- Waterborne Disease & Algal Blooms
- Vulnerable populations
- Shelters & services

Health Impacts from a changing climate are magnified by individual health issues and circumstances of vulnerable populations



### Environment

A changing climate is exposing us to greater risk.



#### Natural Resources

- East & West Branch North River
- Coldwater streams
- Forests
- Floodplains
- Habitat
- Wetlands
- Aquifers
- Farm land

#### Vulnerabilities

- 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

### 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 Colrain

#### Potential Hazards Identified for Colrain

- |                                |
|--------------------------------|
| 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           |

## 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 Colrain residents and Town Officials to review and comment upon the draft Colrain MVP Resiliency Plan.

The public listening session was held in conjunction with the Colrain Select Board meeting on June 4 at 5:30 p.m. at the Colrain Town Office, located at 55 Main Road in Colrain. 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 35.

The Select Board was present, along with the Town Office Clerk and the Town Administrator, who participated in the earlier workshop. Several members of the public were also in attendance. Select Board members had questions about when project funding will be available and what types of projects might be funded. There were no comments from the Select Board or members of the public on the plan itself. Following is the sign in sheet from the public listening session:

**Meeting Sign In Sheet BOS Date: 6-4-18**

Name	Address	Phone	E-Mail
Belden Morina	60 Van Tugel Rd	624-3453	belden3@verizon.net
Bob Carni	death Rd	3090	
Yvonne Herbert	12 Heath Rd	624 3090	keldahy@vizon.net
Prentice Crosier	43 J Street Turners Falls MA 02015-26		
Paula Harrison	193 Heath Rd	624-5549	Treas/coll
Diane Bonaccio	Stubb. Falls.	772-0261 ext. 277	the Recorder Reporter
Peter Brooks	10 Crosier Ln	624-5241	p.brooks14@icloud.com
Eileen Sauvageau	604 Foundry Village Rd	624-3294	eibercabales@gmail.com

Jack Cavohick 13 Main Rd 624-3238 Colrain Clerk  
Gillian L.

Also present: Mark A. Thibodeau, Select Board and Kevin Fox, Town Coordinator

The public comment period was held from June 4 through June 18, during which the public was invited to submit comments via email or regular mail. No public comments were received.

The public listening session and public comment period were advertised on the Town of Colrain's website as well as on the FRCOG's website. The press release, shown below, was provided to the local newspaper and the event was also advertised via a flyer, also shown on the following page.

## **COLRAIN MUNICIPAL VULNERABILITY ASSESSMENT (MVP) PLAN**

### **FOR IMMEDIATE RELEASE**

**CONTACT:** *Mary Chicoine, Franklin Regional Council of Governments Senior Land Use and Natural Resources Planner, [maryc@frcog.org](mailto:maryc@frcog.org) OR 413-774-3167 x131*

### **COLRAIN RESIDENTS INVITED TO ATTEND MVP PUBLIC MEETING**

The Town of Colrain is holding a public meeting to review the findings of the recent Municipal Vulnerability Preparedness (MVP) Community Resilience Building Workshop, as well as the draft MVP Resiliency Plan. Workshop participants included Town of Colrain Fire and EMS officials, as well officials representing the Town Office, Highway Department, Energy Committee and others. The workshop helped participants define top local natural and climate-related hazards of concern, identify existing and future strengths and vulnerabilities, develop prioritized actions for Colrain, and identify and prioritize actions and projects the Town can implement to increase climate change resilience. Once adopted by the Town of Colrain Select Board, the Town is eligible to apply to the State for funding to plan for or implement projects it has identified as most important to its resilience.

The Colrain MVP public meeting will be held in conjunction with the Colrain Select Board meeting on June 4th at 5:30 p.m., at the Colrain Town Office located at 55 Main Road in Colrain. Public comments will be accepted during the meeting as well as during a public comment period from June 4 to June 18. View the draft MVP Plan and public comment information on the Town's website at <http://colrain-ma.gov/> under "What's New" or in person at the Colrain Town Office.

The MVP grant program, a program of the MA Executive Office of Energy and Environmental Affairs, provides support for cities and towns in Massachusetts to begin the process of planning for climate change resiliency and implementing priority projects. The state awards communities with funding to complete vulnerability assessments and develop action-oriented resiliency plans. Communities who complete the MVP program become certified as an MVP community and are eligible for MVP Action grant funding and other opportunities.



# Colrain Municipal Vulnerability Assessment (MVP) Public Meeting



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

- ✓ **Attend the public meeting:** June 4 at 5:30 p.m. at the Colrain Town Office, located at 55 Main Road in Colrain
- ✓ **Provide public comment June 4 – June 18:** MVP Plan and public comment instructions will be available at <http://colrain-ma.gov/> under “What’s New” or in person at the Colrain Town Office

## **WE WANT YOUR FEEDBACK PLEASE!**

**Monday, June 4<sup>th</sup>, at 5:30 p.m.  
Colrain Town Office**

**More info: [maryc@frcog.org](mailto:maryc@frcog.org) OR 413-774-3167 x131**



# MVP

## Community Resilience Building Workshop Findings, Priority Recommendations and Projects



Town of Colrain

## 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



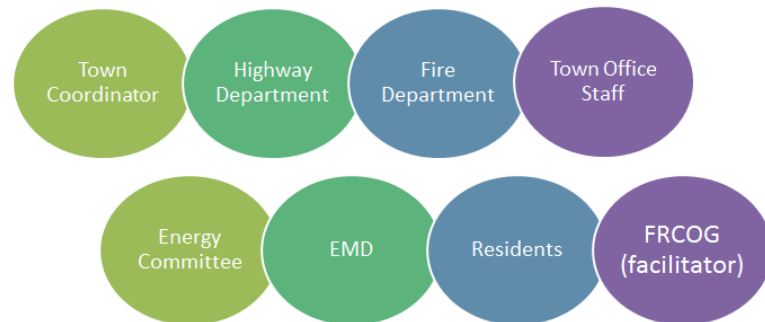
## Municipal Vulnerability Preparedness (MVP)



### 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*

## COLRAIN'S TOP HAZARDS



**COLRAIN'S TOP HAZARDS**

**Areas of Concern**

**Infrastructure and buildings:** Buildings, facilities and an uncapped landfill very close to the East Branch of the North River; shelters in floodplains; lack of cell phone and internet service throughout town

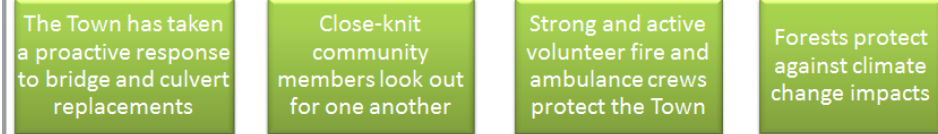
**Transportation and flooding:** Many vulnerable bridges and culverts throughout town; vulnerable roads throughout town including on state-owned land; lack public transportation throughout town

**Public sanitation and water:** Need for fire hydrants and ponds in Catamount State Forest; need for sewer and septic in the village center; private wells vulnerable to drought throughout town; instances of deteriorating housing throughout town

**People:** Isolated, hard-to-reach populations throughout town; tick-borne illnesses throughout town

**Ecosystems and natural resources:** Tree maintenance along roads throughout town; eroding riverbanks along the both branches of the North River; invasive plant species, especially along river corridors; farm fields without buffers along both branches of the North River

**COLRAIN'S TOP STRENGTHS**



**Areas of Strength**

**Infrastructural strengths and assets:** Several bridges and culverts have been or are slated for repair or replacement. The Town is pursuing more funding for more repairs. Colrain's Fire, Police and EOC facilities are outside of the floodplain and are not vulnerable to flooding. Blackboard Connect provides emergency information to participating residents.

**Strength of Town Services:** Colrain has a strong volunteer fire crew and ambulance crew. The Town Administrator is knowledgeable and is actively pursuing funding for the Town.

**Societal strengths and assets:** People in Colrain are a close-knit community and most people know each other. People look out for one another.

**Environmental strengths and assets:** Much of Colrain is forested; forests are critical to resilience to climate change impacts including cleaning air and water, increasing stormwater infiltration and decreasing runoff, storing carbon and other important functions.

**COLRAIN'S HIGHEST PRIORITY RECOMMENDATIONS**



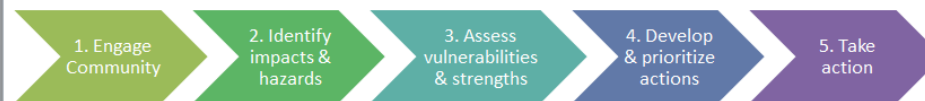
**Municipal Vulnerability Preparedness: NEXT STEPS**

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**

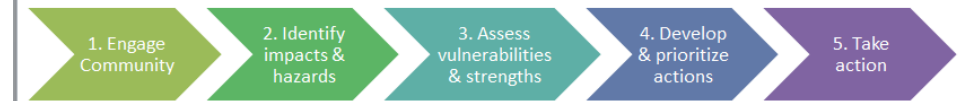


**Municipal Vulnerability Preparedness (MVP)**

**Public Comment Period:**  
June 4 through June 28, 2018

Please hand in your comments to FRCOG staff.  
You may also email comments to [maryc@frcog.org](mailto:maryc@frcog.org) or mail them to:

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



## **CERTIFICATE OF ADOPTION**

**The Certificate of Adoption is available in a separate document.**