

MUNICIPAL VULNERABILITY PREPAREDNESS PROGRAM

Community Resilience Building Workshop Summary of Findings Report

Town of East Bridgewater

May 2021



Prepared for the Town of East Bridgewater, MA by Environmental Partners Group, Inc. with a grant from the Massachusetts Executive Office of Energy & Environmental Affairs



TABLE OF CONTENTS

SECTION 1	OVERVIEW.....	1
SECTION 1.1	MVP PLANNING PROCESS.....	1
SECTION 2	TOP HAZARDS AND VULNERABLE AREAS.....	3
SECTION 2.1	TOP HAZARDS.....	3
SECTION 2.2	VULNERABLE AREAS.....	3
SECTION 3	CURRENT CONCERNS AND CHALLENGES PRESENTED BY HAZARDS	5
SECTION 4	CURRENT STRENGTHS AND ASSETS	6
SECTION 5	TOP RECOMMENDATIONS AND STRATEGIES TO IMPROVE RESILIENCE....	7
SECTION 6	CONCLUSIONS AND NEXT STEPS	9
SECTION 6.1	COMMUNITY OUTREACH AND INPUT.....	9
SECTION 6.2	ACKNOWLEDGEMENTS.....	10

APPENDIX A.....	MVP Workshop Attendees
APPENDIX B.....	Climate Change Summary
APPENDIX C.....	Maps for MVP Workshops
APPENDIX D.....	Combined Matrices from Workshop
APPENDIX E	Community Outreach and Input

SECTION 1 OVERVIEW

SECTION 1.1 MVP PLANNING PROCESS

In 2017, the Commonwealth of Massachusetts inaugurated the Municipal Vulnerability Preparedness (MVP) program to assist municipalities in planning for and implementing strategies to adapt to predicted changes in our warming climate. The predicted changes include increased extreme heat days and heat waves, both increased flooding from large rain events, and a greater likelihood of drought, increased flooding due to sea level rise, and impacts from more intense storms.

The MVP program provides funding for cities and towns in Massachusetts to plan for climate change resilience and implement priority projects. The state provides communities with planning grants to complete vulnerability assessments and, develop action-oriented resilience plans, among other projects. Communities who complete the MVP program become certified as an MVP community and are eligible for action grant funding.

Driven by the desire to assess its vulnerabilities, build community resilience, and expand its potential to address hazards caused by climate change, the Town of East Bridgewater chose to pursue certification from the Massachusetts MVP program. In the fall of 2019, the Town received funds to start a town-wide conversation about climate change and its effects on the community. This Summary of Findings Report presents the results from the planning program for East Bridgewater.

The Town of East Bridgewater partnered with Environmental Partners (EP) to design a process that would allow the Town to become an MVP Community. Unfortunately, the initial date of the Community Resilience Building (CRB) Workshop in March 2020 had to be cancelled and postponed due to the COVID-19 pandemic and the shutdown of Municipal Offices and Operations. The State MVP Program graciously issued a 1-year extension to allow the Town more time to complete the process.

The MVP Core Planning Team regrouped and recruited community stakeholders to participate in a multi-day virtual CRB Workshop, hosted through Zoom meetings. Fourteen people representing East Bridgewater town staff and, members of boards and commissions gathered virtually in March 2021 for the CRB Workshop (see Appendix A for list).

- Throughout the MVP process, EP facilitated and encouraged discussion from the Town with the result being that the discussion and plans presented in this MVP Summary of Findings Report are the Town's own priorities from the community that is East Bridgewater. To complete the work outlined in this report, the Town worked with EP to: Prepare and host a website via ESRI StoryMap to share information on the program, and to present on the MVP Process, and CRB Maps.
- Prepare and distribute an online MVP Questionnaire to establish concern/understanding of climate change in East Bridgewater, and what concerns were relevant to the CRB participants regarding natural resources, infrastructure and vulnerable populations.
- Host three virtual MVP CRB workshop sessions in which:

- o the highest priority hazards were confirmed;
 - o the impacts, strengths, and vulnerabilities to environmental, infrastructure, and socio-economic systems were identified;
 - o adaptation actions were identified and discussed; and
 - o a final set of high priority action items were collectively defined and agreed upon by workshop participants;
- Prepare for and host a virtual listening session after the workshop to prepare for and discuss the results from the workshop while soliciting feedback from the community.

This report provides detail about the MVP process that East Bridgewater followed, and the actions identified as high priorities to enhance local and regional resilience. The Town would like to thank the Massachusetts Executive Office of Energy and Environmental Affairs for their financial and technical support for this effort.

SECTION 2 TOP HAZARDS AND VULNERABLE AREAS

SECTION 2.1 TOP HAZARDS

The Core Planning Team identified the top natural hazards. Based on the review of workshop materials, the team identified heat waves, flooding, drought and intense storms (wind, snow, ice) as the climate hazards of greatest concern facing East Bridgewater. Observed and predicted changes to the climate in East Bridgewater were a large motivator for becoming an MVP certified town.



HEAT WAVES



FLOODING



DROUGHT



INTENSE STORMS

Combined, these hazards inspired the Town to begin identifying and implementing actions that will enhance local resilience to these existing conditions and projected changes. More detailed information on these hazards, including trends, projections, and impacts are presented in the following section.

Appendix B provides a summary of the historic trends and projected changes in weather and climate experienced in East Bridgewater, as well as the results from the Online Questionnaire issued before the CRB Workshops. This information was foundational to the MVP process as it helped to establish common ground for the stakeholders and discuss what types of changes and associated impacts to expect going forward.

SECTION 2.2 VULNERABLE AREAS

At the MVP Workshop sessions, participants discussed the impacts of the four hazards and articulated features they saw as community strengths and vulnerabilities. These features were discussed as they relate to three community components: Environmental, Infrastructural, and Societal. The workshop attendees were broken into two teams. Each team was tasked with reviewing the details of each feature identified under each of the components. Team members used a matrix to track each feature, whether it was a strength and/or a vulnerability, the hazard that affects it, and the priority and timeline associated with implementation.

Below are the features identified by the teams for the three community components:

ENVIRONMENTAL FEATURES:

- Forge Pond
- Robbins Pond
- Wetlands
- Rivers / Streams
- Open Space / Recreational Areas
- Agricultural Lands
- Trees / Tree Canopy

INFRASTRUCTURAL FEATURES:

- Culverts
- Bridges
- Town Roads
- State Roads
- DPW Facility
- Septic Systems
- Water Distribution System
- Dams
- EMS
- Schools

SOCIETAL FEATURES:

- Elderly Population
- 55+ Communities
- Shelters
- Evacuation Routes
- Reverse 911 / Code Red System
- Housing Authority
- Faith Based Organizations – Food Pantries
- Council on Aging Services
- CERT – Community Emergency Response Team

Most of these features were identified as both strengths and vulnerabilities. As such, workshop participants discussed the specific strengths as well as vulnerabilities before naming actions or plans that could boost strengths and mitigate vulnerabilities. The CRB Maps and completed matrices, from the group discussions, can be found in Appendices C and D, respectively.

SECTION 3 CURRENT CONCERNS AND CHALLENGES PRESENTED BY HAZARDS

East Bridgewater residents are noticing changes to the climate. During the Workshops, the CRB participants raised their concerns about these impacts, specifically the increasing frequency and intensity of storms, including heavy rain events, the recent periods of drought, and intense storms (nor'easters/hurricanes) that have brought damaging high winds.

HEAT WAVES - The biggest challenges related to heat waves and higher temperatures were the ability to provide cooling centers for residents in need, anticipate and control power needs for cooling, and if or when wild-fires may occur, including access to areas owned and operated by other entities and utilities.

FLOODING - There are many wetlands, streams, rivers and ponds across the Town, and large rain events result in major flooding throughout Town, and at multiple stream/river crossings, flooding issues are primarily due to insufficient storage capacity, dams and natural blockages throughout the stream segments, and inadequate culvert size.

DROUGHT - Drought threatens East Bridgewater's capacity to supply drinking water as the town relies on wells and surface water resources. Drought also affects the Town's agricultural lands and influences other natural features.

MORE INTENSE STORMS - The biggest challenges related to intense storms, including nor'easters and hurricanes are the prolonged power outages from falling trees and limbs, and the unanticipated damages to roads, buildings and other infrastructure.

SECTION 4 CURRENT STRENGTHS AND ASSETS

One of the focal points of the MVP Workshops to identify the Town's strengths for the features impacted by the four climate hazards outlined above. Workshop participants identified numerous East Bridgewater strengths and assets that will support resilience to future climate impacts. Town strengths identified include social networks, facilities and emergency management, and natural resources. Town-specific strengths identified include:

- Agricultural Lands for potential flood storage and conservation
- Water Management programs for protecting water resources
- Active Culvert assessment and replacement program
- Inter-municipal Agreements for shelter needs (as needed)
- Active Council on Aging / Senior Center programs
- Active Food Pantries
- Emergency services including: Code Red system/Reverse 911, a CERT team, updating of Emergency Response Plans

SECTION 5 TOP RECOMMENDATIONS AND STRATEGIES TO IMPROVE RESILIENCE

After identifying the Town's features, strengths and vulnerabilities, the MVP Workshop participants brainstormed a list of potential resilience actions East Bridgewater could take to combat the impacts from the four climate hazards. Actions were intended to build on the existing strengths of the Town, while addressing current or future vulnerabilities. This process was conducted separately in each breakout group, and then followed by a full team prioritization of the actions to identify and prioritize which actions the Town should take first.

MVP Workshop stakeholders generated a list of nearly 20 action items.

Each participant was asked to vote on their top three priorities across the three community components (Environmental, Engineering and Societal). The following projects are the top five action items that were collectively identified as top priorities for East Bridgewater, listed in order of the number of votes they received.

TOP PROJECTS IDENTIFIED FOR ACTION

- **Open Space Master Plan / Comprehensive Plan**
- **Forge Pond Evaluation and Restoration**
- **Water Supply Vulnerability Assessment**
- **Watershed Specific Drainage Studies**
- **Evaluation of Emergency Generators for Town-owned Facilities**

Below is the list of additional action items identified and discussed under each community component, listed in the order of the number of votes they received:

Environmental:

1. Open Space Master Plan / Comprehensive Plan – evaluate the use and/or purchase of land for preservation (water resources, stormwater/flood management, public use/recreation)
2. Forge Pond Restoration
3. Robbins Pond Restoration
4. Town Wide Watershed Restoration Plan (ecological restoration, potential river dredging/debris clearing, restoring access for recreational use)

Infrastructure:

1. Water Supply Vulnerability Assessment
2. DPW Facility Assessment / Site Relocation Study

3. Watershed specific drainage studies
4. Emergency Services Satellite location
5. Street Tree / Power Grid Vulnerability Assessment
6. Evaluation of Washington Street Bridge (future high water conditions)
7. Evaluation on Septic Systems / Alternative Treatment

Societal:

1. Evaluation of Emergency Generators for Town-owned Facilities
2. Conduct Analysis on Sheltering Needs
3. Enhance and Further Develop Communication Systems for the Council on Aging
4. Update / Upgrade Code Red – provide Education and Outreach on Program
5. Update Evacuation Routes / Signage
6. Develop Education and Outreach for Food Pantries on Preparedness Resources
7. Further Develop and Formalize CERT Program

SECTION 6 CONCLUSIONS AND NEXT STEPS

The MVP workshop process is only the first step in starting a dialogue about climate change hazards and impacts and developing programs to develop climate change resilience in East Bridgewater. The Town is eager to keep this process going. Both the actions identified in this plan and the application for additional funding from the State's MVP program will be fundamental to shifting the conversation into action.

SECTION 6.1 COMMUNITY OUTREACH AND INPUT

On April 5, 2021, the Town hosted a "Listening Session" to share climate information and the CRB workshop results. The Session was recorded, and broadcast via the Town's Public TV Station to allow for additional review and to further solicit participation and feedback from the community. Following the Public Listening Session, the Department of Public Works provided an online survey that asked:

Of the following projects, which do you feel will address the most vulnerable part of the Town of East Bridgewater? (There were six (6) choices)

- a. Forge Pond assessment
- b. Open space plan
- c. Robbins Pond restoration
- d. Water supply
- e. DPW facility improvements
- f. Sheltering needs

The polling was closed on May 5, 2021, with 30 responses, and the top three (3) projects were:

- 1. Water Supply - 24%
- 2. DPW Facility Improvements - 17%
- 3. Robbins Pond Assessment - 17%

Throughout the process, East Bridgewater has shared MVP resources with the community through hosting its MVP website. A copy of the website materials, questionnaire feedback and the presentation prepared for the Listening Session, are included in Appendix E.

SECTION 6.2 ACKNOWLEDGEMENTS

THANK YOU

A special thanks to the MVP Core Team members, CRB Workshop participants (Appendix A) and to DPW Director, John Haines who served as the Town's Project Coordinator.

Core Team Members	Affiliation
John Haines	DPW Director
Rob Kenn	DPW Operations Manager/Highway and Grounds
Jason Trepanier	Water Division Superintendent
Brian Noble	Town Administrator
Deputy Chief Craig Windsor	Fire Department

COMMUNITY RESILIENCE BUILDING PROJECT TEAM

Name	Title	Affiliation
John Haines	DPW Director	Town of East Bridgewater
Natalie Pommersheim	Lead Facilitator	Environmental Partners
Ann Marie Petricca	Facilitator	Environmental Partners
Eric Kelley	Facilitator	Environmental Partners

REPORT CITATION

Town of East Bridgewater (2021). Community Resilience Building Workshop Summary of Findings. East Bridgewater, Massachusetts.

APPENDIX A

MVP WORKSHOP ATTENDEES

East Bridgewater MVP – CRB Participant List

March 2021

CRB Invitees / Affiliation	Tuesday 3/16/21 Environment	Thursday 3/18/21 Infrastructure	Friday 3/19/21 Socio-Economic
John Haines – DPW Director	X	X	X
Brian Noble - Town Administrator			
Tim Harhen, Chief – Fire Dept.	X	X	X
Craig Winsor, Deputy Chief – Fire Dept.	X	X	X
Paul O'brien, Chief – Police Dept.			
Michael Jenkins, Deputy Chief – Police Dept.	X	X	X
Rob Kenn - DPW/Highway	X	X	X
Jason Trepanier - DPW/Water	X	X	X
Nancy Hill – Council on Aging	X	X	X
Brian Kiely – Facilities Manager	X	X	
Patrick Franey – Building Commissioner / Zoning			
Paula Wolfe - Assessor	X	X	
Susan Mulloy – Health Dept. Secretary	X	X	X
Kimberly Eldredge – Conservation Commission Clerk	X	X	X
Robert F. Philbrick – Board of Health Agent		X	X
Peter Spagone Jr. - Selectmen, EB Insurance			
Steve Belcher – Planning Board			
Roy Gardner – Planning Board	X		X
Rebecca Johnson – Town Administrator Assistant			
Joseph Cardinal – National Grid			
Eric Madison – Columbia Gas			
Liz Legault - Superintendent of Schools			
Gina Williams - Assistant Superintendent of Schools			
John Shea - School Business Manager			
Bruce Hughes – OCPC			
Courtney Rocha – MVP Regional Coordinator		X	
Natalie Pommersheim, EP – Lead Facilitator	X	X	X
Eric Kelley, EP – Facilitator		X	
Ann Marie Petricca, EP - Facilitator	X		X

APPENDIX B
CLIMATE CHANGE SUMMARY

REGIONAL CLIMATE DISCUSSION

Assessment | Concerns

REGIONAL CLIMATE DISCUSSION

Climate Change Hazards

- Temperature Changes
- Precipitation Changes
 - Flooding
 - Drought
- More Intense Storms



TEMPERATURE CHANGES

Heat Wave

An increased # of days with high temperatures – particularly days over 90°F –will lead to heat-related illnesses and higher energy demands in the summer.

Vulnerabilities

Disease Spread/ Mosquitos | High Energy Demands

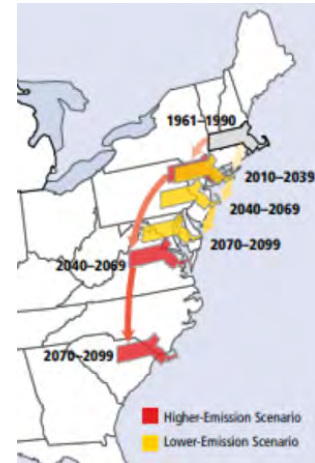
Action Items

Public Cooling Centers | Plant Trees (reduce heat island impacts)

Year	Days over 90°F
2010-2014	11.5 days*
By 2050	+ 10-35 days

*Highest number recorded since 1950
(NOAA National Centers for Environmental Information – State Climate Summaries)

MA could have the climate of South Carolina by the end of the century without emissions reductions driven by the reduced use of fossil fuels



PRECIPITATION CHANGES

Flooding

A single intense downpour can cause serious flooding which can damage critical facilities and infrastructure, or can limit access to essential roads.

Vulnerabilities

Flooding | Transportation access

Action Items

Conduct improvements to culverts and/or bridges (reduce flooding areas)



PRECIPITATION CHANGES

Drought

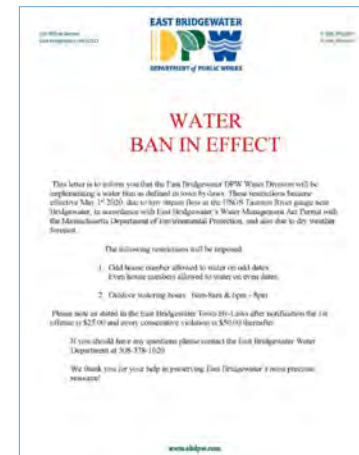
Precipitation events will be concentrated in fewer storm events and can lead to water supply shortages, crop damage and habitat stress.

Vulnerabilities

Water supply/redundant sources

Action Items

Evaluation of Town's water supply



MORE INTENSE STORMS

Storms

Nor'easters, ice storms, hurricanes, blizzards, and heavy rain events lead to downed trees, power outages, and property damage.

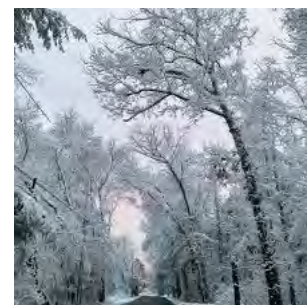
Projections show that these intense storms will become more frequent and more intense with rainfall concentrated in fewer, but heavier, events.

Vulnerabilities

Power Outages | Damage to roads, property & infrastructure

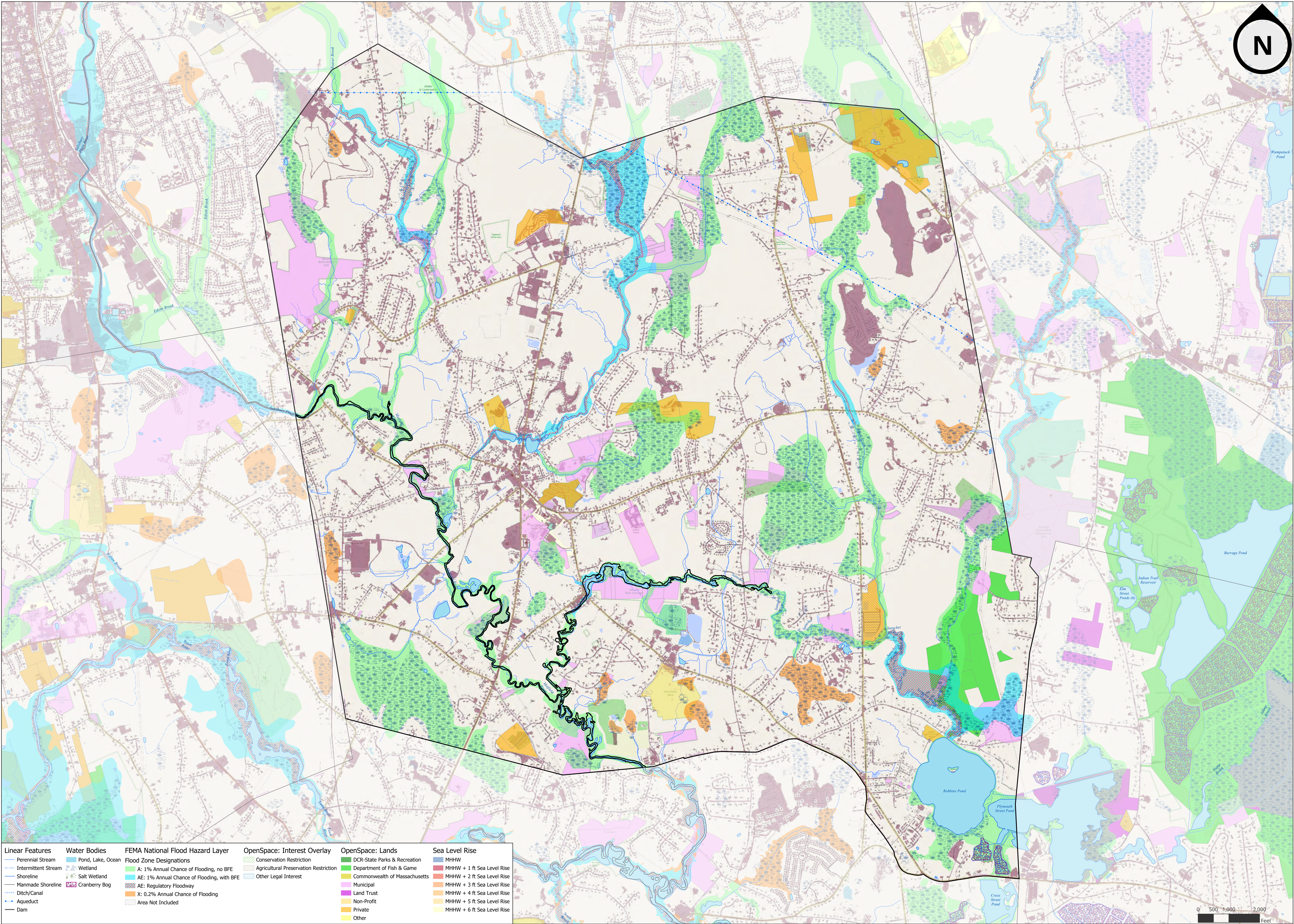
Action Items

Provide Generators | Identify Additional Power Source

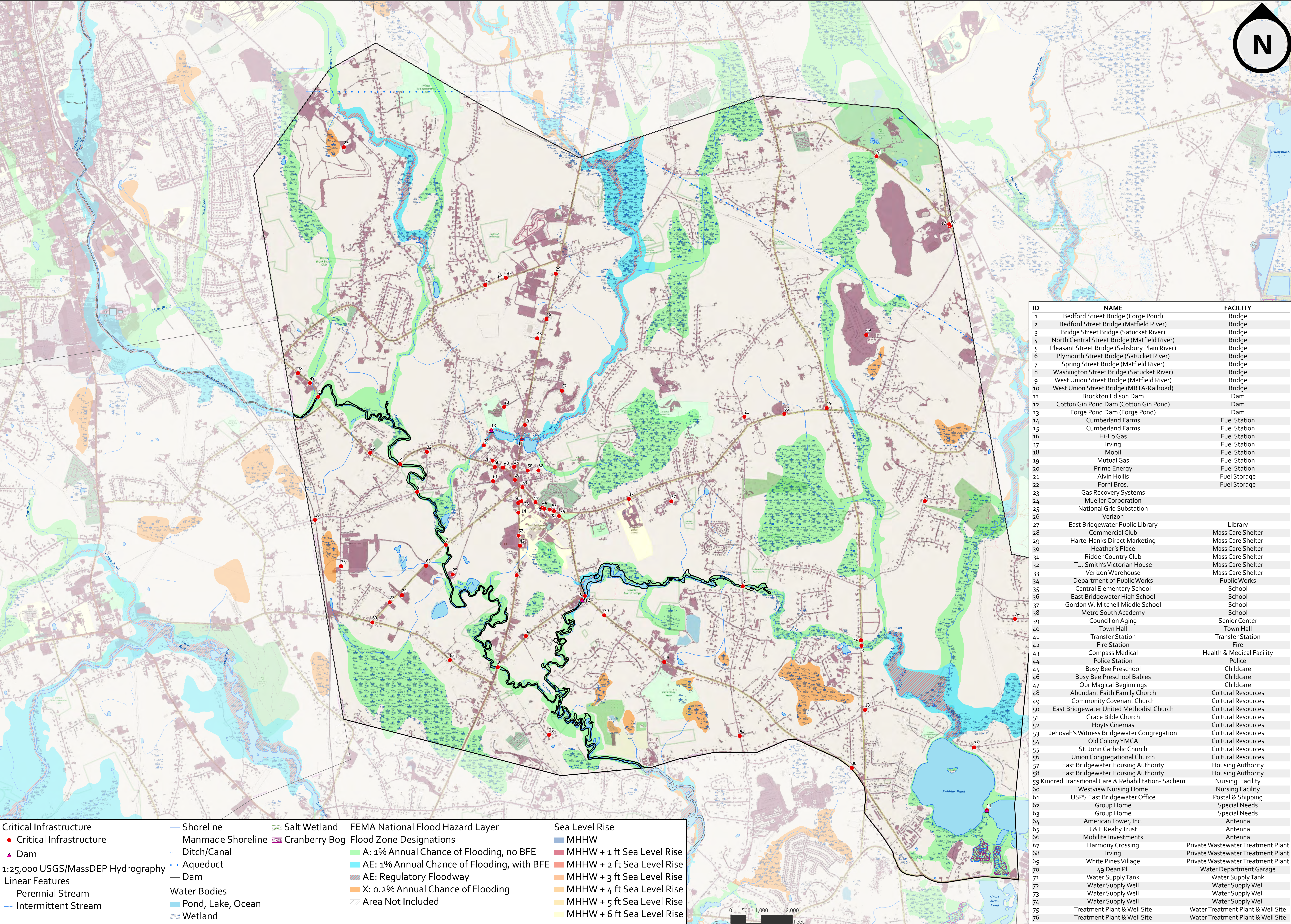


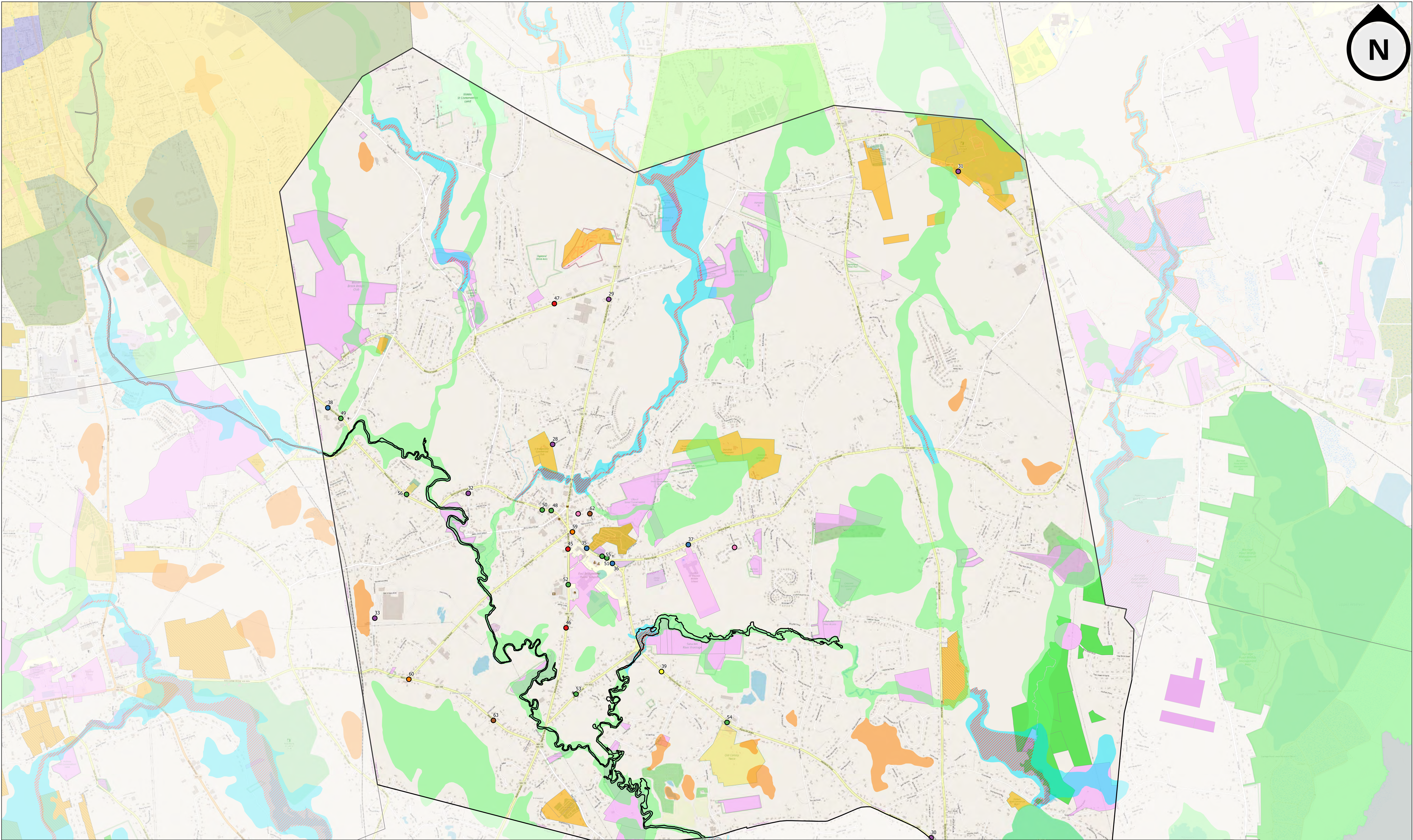
APPENDIX C

MAPS FOR MVP WORKSHOPS



Linear Features	Water Bodies	FEMA National Flood Hazard Layer	OpenSpace: Interest Overlay	OpenSpace: Lands	Sea Level Rise
Perennial Stream	Pond, Lake, Ocean	Flood Zone Designations	Conservation Restriction	DCR-State Parks & Recreation	MHHW
Intermittent Stream	Wetland	A: 1% Annual Chance of Flooding, no BFE	Agricultural Preservation Restriction	Department of Fish & Game	MHHW + 1 ft Sea Level Rise
Shoreline	Salt Wetland	AE: 1% Annual Chance of Flooding, with BFE	Other Legal Interest	Commonwealth of Massachusetts	MHHW + 2 ft Sea Level Rise
Manmade Shoreline	Cranberry Bog	AE: Regulatory Floodway		Municipal	MHHW + 3 ft Sea Level Rise
Ditch/Canal		X: 0.2% Annual Chance of Flooding		Land Trust	MHHW + 4 ft Sea Level Rise
Aqueduct		Area Not Included		Non-Profit	MHHW + 5 ft Sea Level Rise
Dam				Private	MHHW + 6 ft Sea Level Rise
				Other	





Critical Infrastructure

- Childcare
- School
- Cultural Resources
- Mass Care Shelter
- Nursing Facility
- Senior Center
- Special Needs
- Housing Authority

Environmental Justice 2010 Populations

EJ Criteria, by Block Group

- Minority

Income

- English isolation
- Minority and Income
- Minority and English isolation
- Income and English isolation
- Minority, Income and English isolation

FEMA National Flood Hazard Layer

Flood Zone Designations

- A: 1% Annual Chance of Flooding, no BFE
- AE: 1% Annual Chance of Flooding, with BFE
- AE: Regulatory Floodway
- AH: 1% Annual Chance of 1-3ft Ponding, with BFE

AO: 1% Annual Chance of 1-3ft Sheet Flow Flooding, with Depth

- VE: High Risk Coastal Area
- D: Possible But Undetermined Hazard
- X: 0.2% Annual Chance of Flooding
- X: 1% Drainage Area < 1 Sq. Mi.
- X: Reduced Flood Risk due to Levee
- Area Not Included
- Area with no DFIRM - Paper FIRMs in Effect

MassGIS Protected and Recreational OpenSpace

OpenSpace: Interest Overlay

- Conservation Restriction
- Agricultural Preservation Restriction

CR/APR Combination

- Other Legal Interest

OpenSpace: Lands

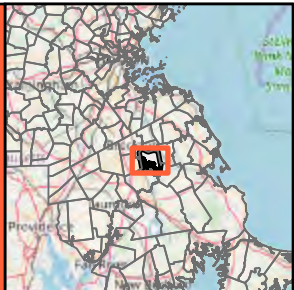
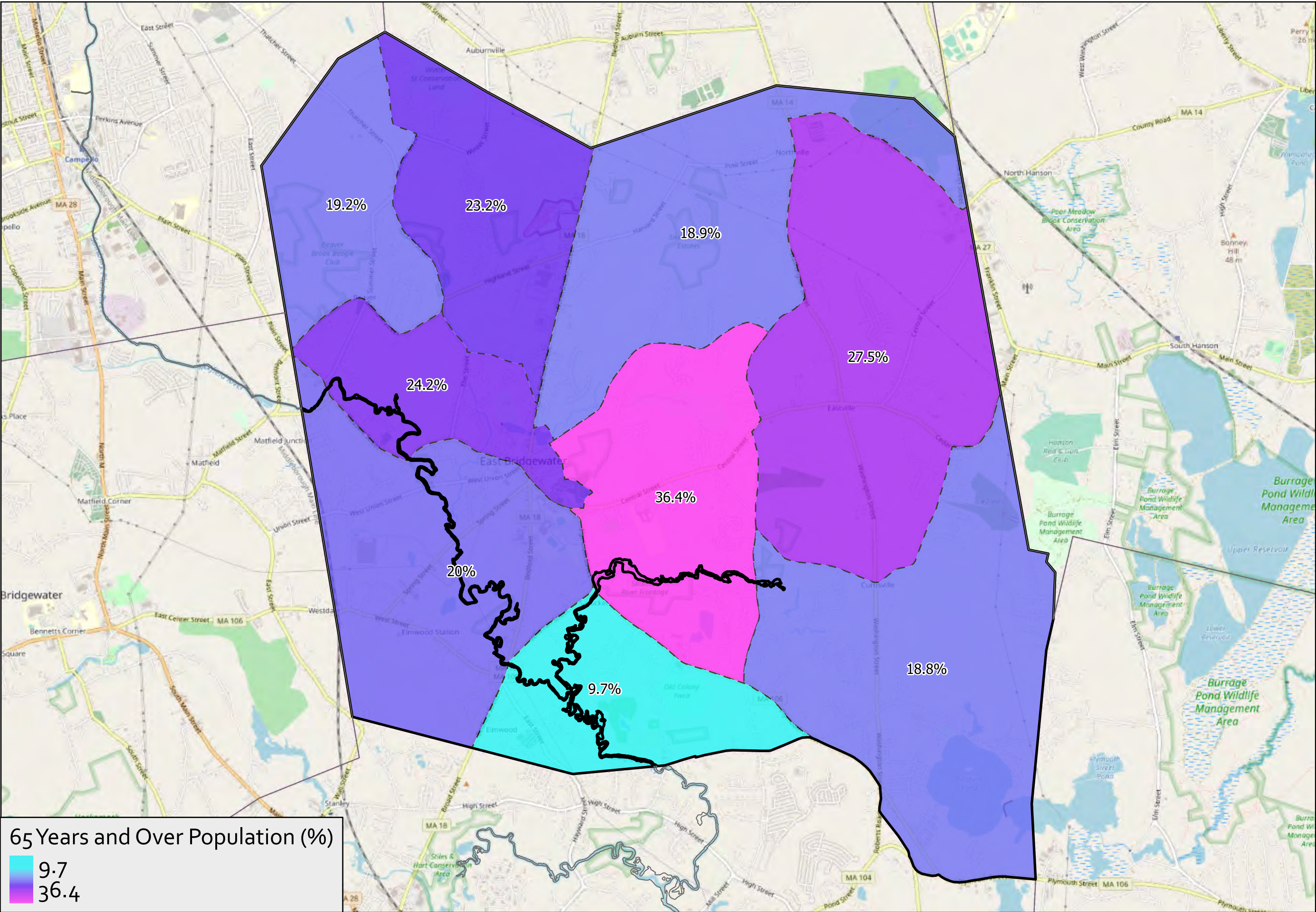
- Federal
- DCR-State Parks & Recreation
- DCRS/DFG
- Department of Fish & Game
- DCR-Urban Parks & Recreation
- DCR-Water Supply Protection
- Department of Agricultural Resources

Commonwealth of Massachusetts Sea Level Rise

- County
- Municipal
- Public Non-Profit
- Land Trust
- Conservation Organization
- Non-Profit
- Private
- Other
- Unknown

Sea Level Rise

- MHHW
- MHHW + 1 ft Sea Level Rise
- MHHW + 2 ft Sea Level Rise
- MHHW + 3 ft Sea Level Rise
- MHHW + 4 ft Sea Level Rise
- MHHW + 5 ft Sea Level Rise
- MHHW + 6 ft Sea Level Rise



Municipal Vulnerability Preparedness: Senior Population (65+)

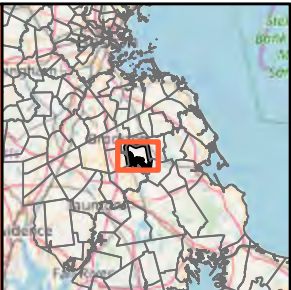
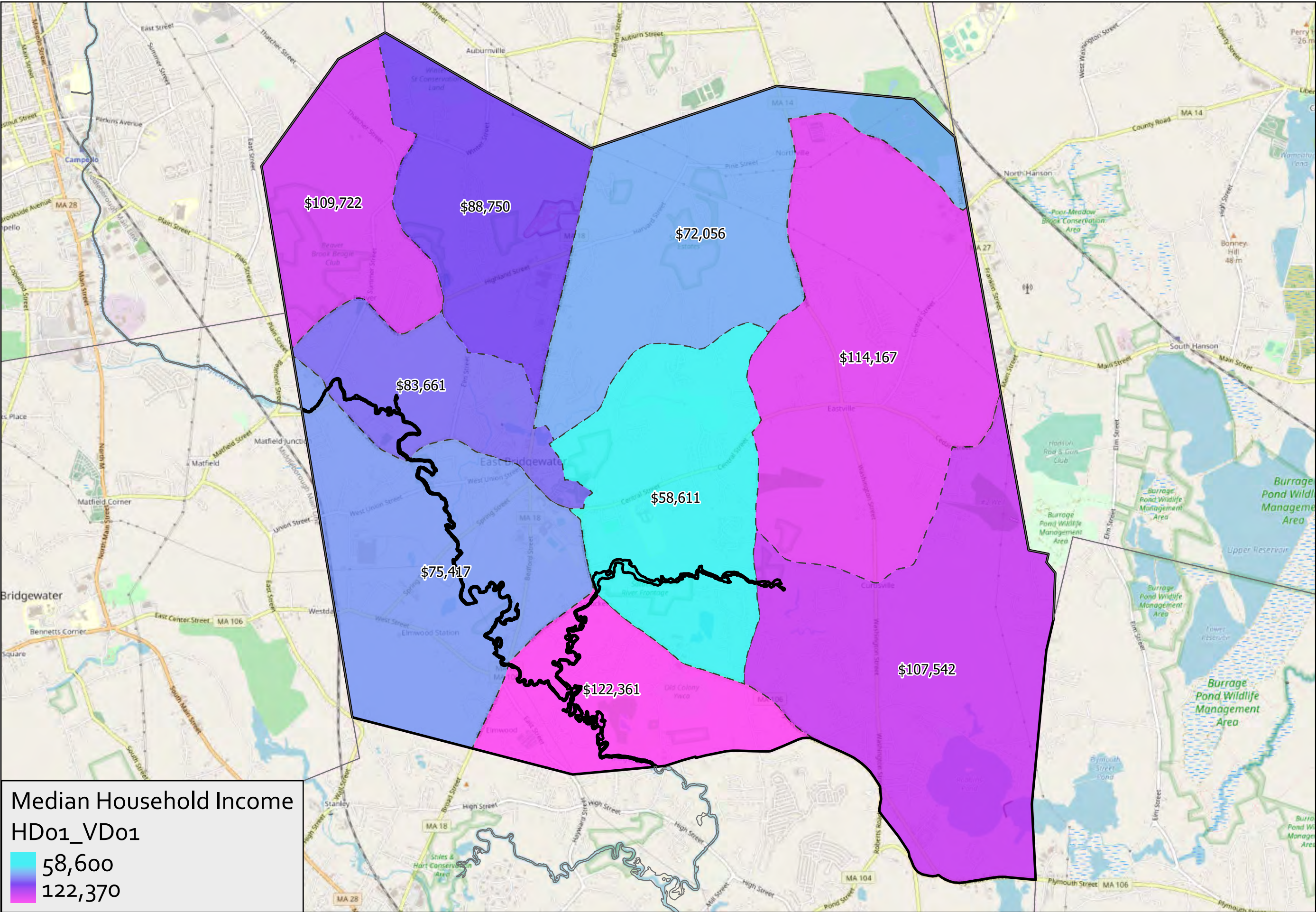
East Bridgewater, Massachusetts



0 1,000 2,000 Feet

ENVIRONMENTAL PARTNERS

Date Exported: 3/13/2020 1:41 PM



Municipal Vulnerability Preparedness: Median Household Income

East Bridgewater, Massachusetts



0 1,000 2,000 Feet



APPENDIX D

COMBINED MATRICES FROM WORKSHOPS

Community Resilience Building Risk Matrix					www.CommunityResilienceBuilding.org					
 H = M = L priority for action over the Short or Long term (and Ongoing) V = Vulnerability S = Strength					Top Priority Hazards (tornado, floods, wildfire, hurricanes, earthquake, drought, sea level rise, heat wave, etc.)					
					Drought	Flooding	Heat Waves	Intense Storms	Priority	Time
									H = M = L	Short Long Ongoing
Features	Location	Ownership	V or S	Impacts						
Environmental										
Forge Pond	Center of Town	Town/Private Mix	V / S	Water Quality, Flooding, trash/debris	1. Evaluate Forge Pond - Water Quality, Stormwater Storage/use, overall water flow/system				1. M	1. L
Robbins Pond	Southeast Corner	Town	S	Flooding due to culvert, sedimentation issues	2. Culvert replacement, dredging of Pond, resoration				2. H	2. L
Wetlands (Harvard Street / Highland Culvert)	Northeast	Private	V	Flooding/backup due to culvert, natural resource impacts	3. Culvert replacement/retrofit for restoration of wetland area/natural resource				3. H	3. S
Rivers/Streams	Throughout	Private	V/S	Flooding, blockages, water quality	4. Maintenance / Expansion of walking paths along Satucket River; 5. Water Quality/Stormwater retrofits for Water Quality				4. M 5. M	4. L 5. O
Open Space / Recreational Areas	Throughout	Private/Town	V/S	Flooding, Public Access, Land Management	6. Open Space / Recreational Master Plan - evaluate use/purchase of Land for Preservation (water resources/stormwater management)				6. H	6. O
Water Supply Resource Land	Throughout	Town/Private Mix	V/S	water supply redundancy	7. Pumping Station #5, for future use with water supply; looking at resource land abutting water supply areas				7. L	7. L
Trees / Tree Canopy	Throughout	Private/Town	V/S	Damage, Health of Native Trees	8. Town uses a Hazard Tree Mitigation Plan, currently on 3-year cycle, could work to study and expand upon this				8. L	8. L

Community Resilience Building Risk Matrix					www.CommunityResilienceBuilding.org									
     V = Vulnerability S = Strength					Top Priority Hazards (tornado, floods, wildfire, hurricanes, earthquake, drought, sea level rise, heat wave, etc.)							Priority		Time
Features	Location	Ownership	V or S	Impacts		Drought	Flooding	Heat Waves	Intense Storms	H	M	L		
Infrastructural										Beginning				
Roads	Town-wide	Town and State	V/S	Flooding and EMS Routes			Route 18, Whitman Street, and North Union Street are critical routes, flooding could impact EMS access to local hospital for neighboring Towns. 1. Watershed drainage study and flooding assessment		Obstacles to EMS Access to local hospital for neighboring towns. Hazard Mitigation Plan is in process of being updated with Old Colony Planning Council	H		O		
Bridges	Town-wide	Town and State	V	Flooding			Bedford street, Spring Street, West Union St Southwest side of town isolated due to flooding; Forge Pond - Upstream/Downstream impacts Pond Street (Robbins Pond can overflow under certain conditions, S/E winds, not deep water) 2. Washington Street Bridge - flooding evaluation - has not overtopped, but could be vulnerable with more intense flood events and higher water levels		Stream flow obstructions	M		L		
Culverts	Town-wide	Town and State	V	Flooding			Stream/River cleanouts of debris and channel obstructions; 3. Culvert assessment		Tree fall in river/stream channels causing flow obstructions	H		O		
Water Sources	Town-wide	Town	V/S	Water quality, flooding, drought		4. Source protection - Vulnerability assessment; some agricultural uses have water rights to pump out of streams, but they do not use diversions, withdrawals are small quantity (~30 gpm pumps for irrigation)	Washington Street Well could be vulnerable to flooding		Back-up power at Washington Street Well	H		S/O		
Water Distribution System	Town-wide	Town and Brockton	S	Fire protection has been improved over past 10 years. Brockton aqueduct crossed thru town					Water storage impacts if Washington Street Well loses power	L		S		
Dams	Two Dams	Town	V/S	Dam at Plymouth St. Bridge (Whitman/Washington) on the critical infrastructure map was removed and bridge abutments were modified to accommodate lower water levels			Forge Pond dam went thru rehabilitation about 10 years ago and it has a sluice gate and fish ladder. Robbins Pond has a sluiceway from the upstream waterway that is several feet higher in elevation.			L		L		
EMS	Town-wide	Town/State	V/S	EMS routes for neighboring Towns			No imminent flooding vulnerability to PD/FD		Rt 18 and Washington Street are critical routes for EMS access to local hospital (Brockton).	H		O		
Shelters	Two sites	Town/Region	V/S	Heat waves and intense storms				Cooling centers - Community Center and HS	Community Center has stand-by power (limited capacity 50), HS larger capacity with back-up power, agreement with Whitman/Hanson to use WHHS as regional shelter	L		O		
Power Grid	Town-wide	Private	V	Loss of power from flooding/intense storms			Electric utility has flood protection project designed for Spring Street substation. More flood prone areas (SS+ development at Bridge Street) rely on sump pumps so increased flood risk during power outage		Power outages leading to residential structure flooding for those that rely on sump pumps. Fire department does not work within powerline right-of-way/easements; utility responsible for trees within their ROW 5. Street Tree/Power Grid Vulnerability Assessment	H		O		

Community Resilience Building Risk Matrix					www.CommunityResilienceBuilding.org									
  = Vulnerability  = Strength					Top Priority Hazards (tornado, floods, wildfire, hurricanes, earthquake, drought, sea level rise, heat wave, etc.)									
Features	Location	Ownership	V or S	Impacts	Drought	Flooding	Heat Waves	Intense Storms	Priority	Time				
H	M	L							H	M	L			
Short	Long								Beginning					
Infrastructural														
DPW Facility	Specific	Town	V/S	Flooding Impacts	Equipment stored where there is flooding; history of issues accessing the DPW Facility location; 1. DPW Facility Evaluation / Site Relocation				M	L				
Culverts / Bridges	Multiple	Town/State	V/S	Flooding impacts/aging infrastructure	Culvert Report conducted in 2015; Town working to address issues identified. State conducts Bridge Inspections - all in moderate condition/ DPW plans to continue to work on problems as they arise.				L	O				
Septic Systems	Town-wide	Private	V	Flooding / High GW impacts failing/aging systems	Town has some areas of failing systems; but is working to replace and/or upgrade whenever feasible. 2. Evaluation on Septic Systems/Alternative Treatment				M	L				
State Roads (Route 18 / Whitman Rte 106)	Specific	State	V/S	Some areas of repeated flooding	With extreme storms - these areas see repeated flooding. Town to continue working with the State and MassDOT to identify retrofits or design improvements for future work, when feasible				M	L				
Emergency Services (Fire/Police)	Specific	Town	V/S	Some limitations to service area, especially if route is impacted	3. Emergency Services Satellite Location (evaluation of having another location for more Town-wide coverage/control) Fueling Station and Ambulance Services through the fire station only / Brockton is nearest hospital; Urgent Care Facility at Compass				M	L				

Community Resilience Building Risk Matrix



www.CommunityResilienceBuilding.org

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

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

H-M-L priority for action over the Short or Long term (and Ongoing)					Drought	Flooding	Heat Waves	Intense Storms	Priority	Time
									H - M - L	Short Long Ongoing
Features	Location	Ownership	V or S	Impacts						
Socio-Economic										
Elderly Population / 55+ communities (4 properties)	Multiple	Private	V/S	Isolation during storm events, Long Term Power Outages	Could develop communication systems to reach population (difficult to communicate - uses newsletters currently or robo calls) Council on Aging provides services/outreach/support; Continue to Manage Communication and Education and Outreach 1. Enhance and Further Develop Communication System for Council on Aging	M	O			
Council on Aging Services	Specific	Town	S	Currently provides services, could use more resources						
Shelters - Community Center/ Regional High School	Specific	Town/Regional	V/S	Town doesn't have high capacity for sheltering needs if necessary	2. Conduct Analysis of Sheltering Needs - Generator Dependent (Community Center OK 48 beds, short term) High School needs - plan to update/upgrade to provide full support/power for all needs	H	L			
Evacuation Route	Town-wide	Town	V/S	Useful in emergency evacuation	3. Update Evacuation Routes/Signage	L	O			
Generators	Multiple	Town/State	V/S	Needed with extended power outages	4. Evaluation of Generators for Town-owned facilities. Community Center, High School, Housing Authority (in conjunction with the State program) Town should evaluate the need for additional generators, and identify funding sources to assist in purchase	M	S/O			
Reverse 911/Code Red System	Town-wide	Town	S	System provides emergency alerts as needed (voluntary program)	Town to continue to run program and to update and upgrade as needed, 5. increase awareness and public education and outreach on system to reach larger community base	M	S/O			
Faith Based Organizations run Food Pantries (2 - St Johns, Union Congregational Church)	Multiple	Private	S	Food pantries are available if needed	Continue to support faith based organizations, assist to provide additional education and outreach and disaster preparedness resources. 6. Develop Education & Outreach for Food Pantries on Preparedness Resources	M	O			
CERT - Community Emergency Response Team (Department of Emergency Management)	Town-wide	Town	S	Emergency Response program through Police/Fire Departments	Currently Updating Emergency Management Plan (OCPC) - is there a need to develop Medical Reserve Corps - volunteer organization/training 7. Further develop and formalize CERT Program	L	O			

APPENDIX E
COMMUNITY OUTREACH AND INPUT



East Bridgewater MVP

Municipal Vulnerability Preparedness

MVP Program

What is the MVP Program?

In 2020, East Bridgewater was awarded a Municipal Vulnerability Preparedness (MVP) Program Planning Grant by the Commonwealth of Massachusetts.

The Commonwealth's MVP program is designed to:

- Help municipalities define climate related hazards they may face;
- Understand how communities may be impacted by climate change;
- Help towns identify present and future vulnerabilities to climate change and identify strengths they have against

- climate change; and
- Identify opportunities to take priority actions identified through the planning process.

There are two types of MVP Grants: MVP Planning Grants and MVP Action Grants.

MVP Planning Grants award funding to help towns assess their vulnerability to climate change impacts and to help build community resilience against the effects of climate change. Communities that receive the grants also receive the MVP Program Municipality designation from the Executive Office of Energy and Environmental Affairs.

MVP Action Grants are designed to help municipalities act against the effects of climate change. The grants give funding to municipalities so they can take important climate adaptation actions. The grant money is awarded to projects that are designed to protect towns against extreme weather, inland flooding, coastal flooding, severe heat, or increased pest populations like ticks and mosquitoes.

Bridgewater?

In East Bridgewater, our greatest weaknesses to climate change are related to natural water systems such as rivers, streams and wetlands; artificial water systems like wells and the public water supply; and insect-borne diseases. As the climate changes, our water infrastructure is at risk of breaking down or failing completely as a result of changing rain and snowfall patterns. Long periods of lower than normal precipitation can lead to droughts and put a strain on our water supplies. While, on the other hand, there is a greater chance of disruptive flooding due to increased precipitation in flash events.

Floods can damage private property, town infrastructure, and potentially contaminate municipal water supplies and private wells. Severe floods can destroy property and cause human injury and death. Flooding also increases the amount of standing water which can lead to increased mosquito populations in the area. Increased mosquito populations are linked to an increased risk of mosquito borne disease, as we saw during the 2019 EEE outbreak.

The MVP Planning Grant will allow East Bridgewater to become an MVP Designated Community and will then be eligible to apply for MVP Action Grants to design and implement improvements to make our community more resilient to these challenges we face.

Additional Information:

ResilientMA.org

MVP Program Information



State and local partnership to build resiliency to climate change



MVP in East Bridgewater



MVP Core Team Members

- **John Haines**, DPW Director
- **Rob Kenn**, DPW Operations Manager/Highway and Grounds
- **Jason Trepanier**, Water Division Superintendent
- **Brian Noble**, Town Administrator
- **Deputy Chief Craig Winsor**, Fire Department

East Bridgewater Police Warn Residents of Snow, Strong Winds and Ice

First Snow of Season will affect Commutes



Climate Change in East Bridgewater Questionnaire

As part of the planning process, East Bridgewater is gathering information to help develop a plan that includes community feedback. Please share your thoughts below!

[Link to MVP Questionnaire](#)



Community Resilience Building (CRB) Workshops

The initial date of the CRB Workshop was intended to be held in-person in March 2020, but due to COVID shutdowns, the Town had to delay the program.

Now, due to ongoing COVID restrictions, the Community Resilience Building (CRB) Workshop will be split up and held on three different days, covering three separate topics.

- Environmental Session on March 16th 9-11:30 am
- Infrastructural Session on March 18th 9-11:30 am
- Socio-Economic Session on March 19th 9-11:30 am

Meetings will be held via Zoom, please RSVP to John Haines (jhaines@eastbridgewaterma.gov or 781-378-1620) to participate and the meeting links and information will be shared with all CRB Participants.



Listening Session

The MVP Public Listening Session will be held virtually after

the CRB Workshops are complete.

- April 5th 4:30-5:30 pm



CRB Workshop Participants Action Items

1. Please complete the Climate Change in East Bridgewater Online Questionnaire (posted above)
2. Please review the Program Maps and Intro to MVP Presentation before our sessions



Program Maps

Click the following links to view interactive MVP maps. You can download these, along with additional maps in the Downloads section below.

East Bridgewater MVP - Environmental ...

Environmentally sensitive areas found in East Bridgewater can be seen in the map provided...

<https://envpartners.maps.arcgis.com/apps/webappviewer/index.html?id=2a4502d1c29e48849d465f0eef6fd6d1>

East Bridgewater MVP - Critical Infrastr...

Critical Infrastructure found in East Bridgewater can be found in the map provided here.

<https://envpartners.maps.arcgis.com/apps/webappviewer/index.html?id=a5f094f7d4324018853d7a8ac2280573>

East Bridgewater MVP - Socio-Economi...

Social and Economic mapping layers can be found in the map provided here.

<https://envpartners.maps.arcgis.com/apps/webappviewer/index.html?id=f6e8e3bf6c7849daae1640c76e7455e5>



Contact Us

John Haines, Director of Public Works

- jhaines@eastbridgewaterma.gov
- 508-378-1620



Downloads

To download CRB maps and presentation slides please click link below.

MVP Download Folder

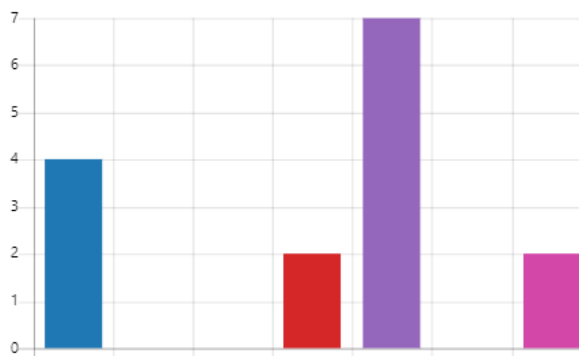
Powered by ArcGIS StoryMaps

East Bridgewater MVP Questionnaire Results

1. Which options below best define your role(s) in East Bridgewater? (please select all that apply)

[More Details](#)

Resident	4
Business Operator/Owner	0
Employee of a local business	0
Landowner	2
Local Official	7
Institutional / Organizational P...	0
Other	2



2. How important is the issue of climate change to you, personally? (choose 1)

[More Details](#)

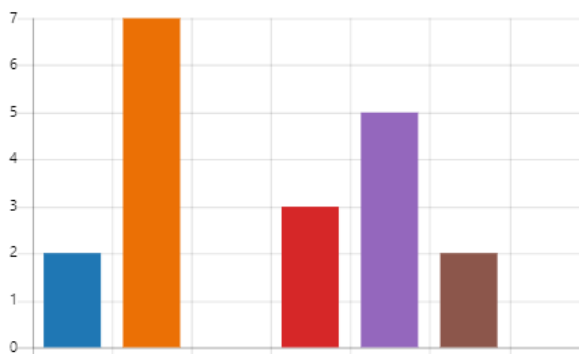
Very important	2
Quite important	6
Not very important	0
Not at all important	0



3. What issues are of most concern to you related to climate change? (choose 2)

[More Details](#)

Disease & illness (lyme diseas...	2
Natural disasters	7
Economic security	0
Resources shortages	3
Air & water quality	5
Loss of biodiversity	2
Other	0



4. How concerned are you about the impacts of climate change for East Bridgewater as a whole?

[More Details](#)

Extremely concerned	1
Somewhat concerned	7
Not concerned	0



East Bridgewater MVP Questionnaire Results

5. How prepared do you feel that you and/or your family are for the impacts of climate change?

[More Details](#)

Very prepared	1
Somewhat prepared	5
Not prepared	2
No need to prepare	0



6. How prepared do you think the Town of East Bridgewater is to address the impacts of climate change?

[More Details](#)

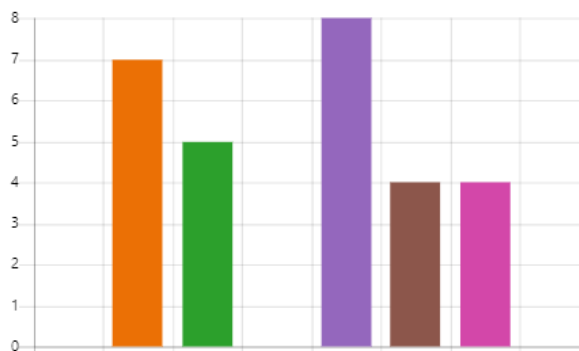
Very prepared	0
Somewhat prepared	4
Not as prepared as we should ...	3
I do not know	1



7. What climate hazards have affected you or your community in the past? (Choose 4)

[More Details](#)

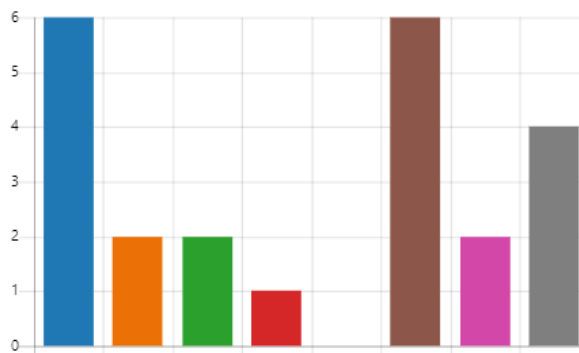
Tornadoes	0
Ice / Wind Storms	7
Drought	5
Landslides	0
Flooding	8
Extreme Heat	4
Extreme Cold	4
Other	0



8. What infrastructure / facilities are most at risk to climate related hazards in East Bridgewater?

[More Details](#)

Local Roads	6
State Roads (Rt. 18, Rt. 106)	2
Municipal Buildings (Schools/T...	2
Community Facilities (Open S...	1
Emergency Facilities (Fire & P...	0
Culverts	6
Dams	2
Bridges	4



East Bridgewater MVP Questionnaire Results

9. What can East Bridgewater do to protect its infrastructure? (e.g. feasibility studies, culvert replacement, facility relocation, bridge design improvements, etc.)

8 Responses

ID ↑	Name	Responses
1	anonymous	culvert replacements, large scale drainage improvements, new salted
2	anonymous	Culvert and waterway upgrades. Reduce new development in flood prone areas. Land conservation with new developments, cluster type plans.
3	anonymous	Continue with regular maintenance and scheduled repairs and improvements/replacements
4	anonymous	Don't see any clear linkage to climate change and the infrastructure within the town of East Bridgewater.
5	anonymous	Feasibility studies
6	anonymous	East Bridgewater has numerous medium to large culverts that are reaching the end of their effective life spans. These failing culverts could effectively isolate entire sections of the Town from emergency services provided
7	anonymous	Culvert replacement in low lying areas.
8	anonymous	feasibility studies, culvert replacement, facility relocation, bridge design improvements,

East Bridgewater MVP Questionnaire Results

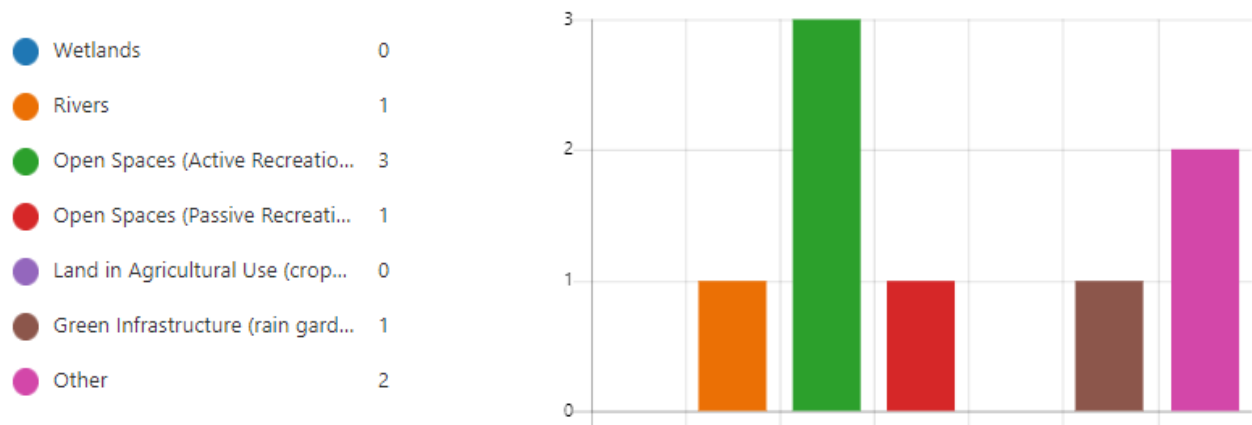
10. Who are the vulnerable groups in the community? Who requires additional assistance during emergency events?

8 Responses

ID ↑	Name	Responses
1	anonymous	the 5 over 55 communities we have in town.
2	anonymous	Flood prone areas. Utility dependent households. medical need or elderly unable to help themselves.
3	anonymous	Older adults, home bound, residents of public housing sites
4	anonymous	The elderly population.
5	anonymous	Elderly
6	anonymous	experience has proven that our elderly now seem to be more reliant upon municipal services than ever before
7	anonymous	The elderly population who tend to lose power during wind/heavy snow events.
8	anonymous	55 plus communities, housing authority tenants, residents near flood areas

11. Which natural resources in East Bridgewater are important to you?

[More Details](#)



East Bridgewater MVP Questionnaire Results

12. How can we better protect East Bridgewater's natural resources?

8 Responses

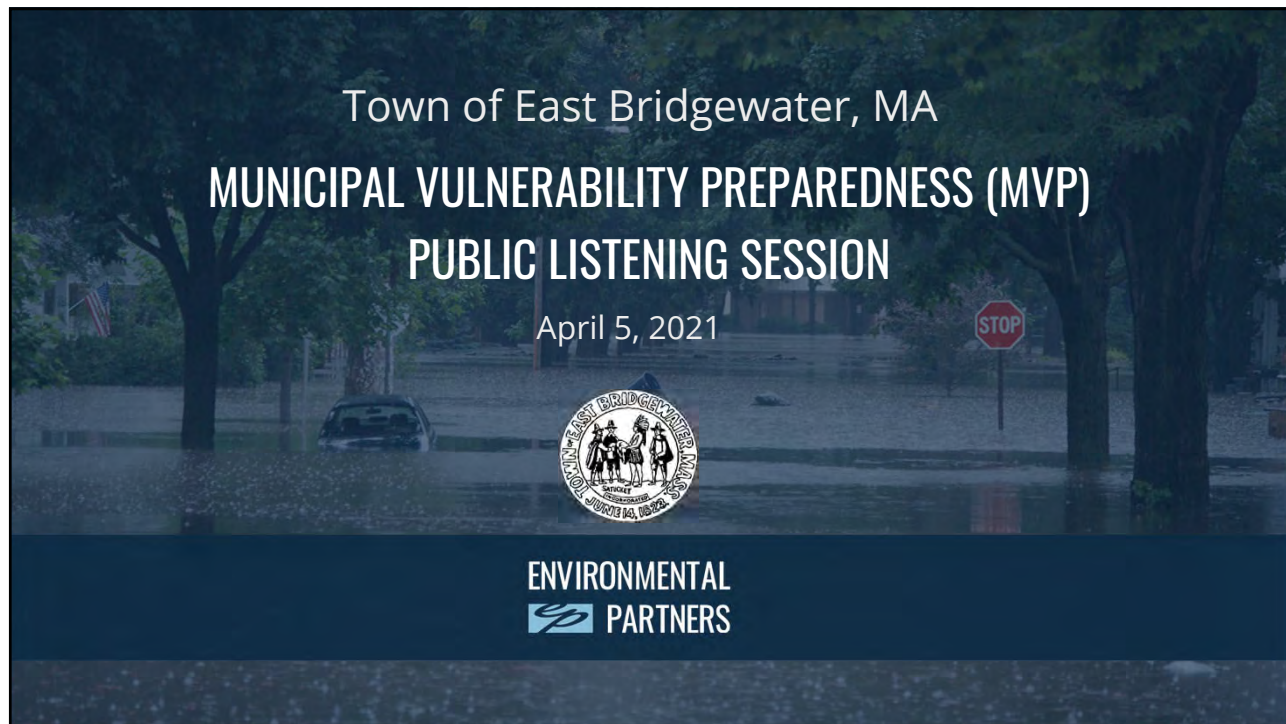
ID ↑	Name	Responses
1	anonymous	education and improving infrastructure
2	anonymous	Culvert and waterway upgrades. Reduce new development in flood prone areas. Land conservation with new developments, cluster type plans.
3	anonymous	More education for citizens on the subject
4	anonymous	By carefully evaluating all planned land use projects and prioritize environmental protections within the allowable boundaries of land use law.
5	anonymous	Study how to be ready
6	anonymous	awareness and investment
7	anonymous	Protection from flooding
8	anonymous	feasibility studies and public awareness

East Bridgewater MVP Questionnaire Results

13. When it comes to climate change, what efforts should be prioritized?

8 Responses

ID ↑	Name	Responses
1	anonymous	developing strategies to address teh most vulnerable locations/people
2	anonymous	Flood control and public utility resilience or reduction in dependency on public utilities.
3	anonymous	Increasing green energy production and recycling efforts. Make the town more walkable
4	anonymous	Continue focus on energy sources that reduce carbon emissions without major environmental damage done to source locations of materials needed for the products being manufactured. Ex: Lithium mining
5	anonymous	Disaster responses
6	anonymous	Flood mitigation and control efforts
7	anonymous	Reducing our carbon footprint and sparing trees, or replacing them, during land development
8	anonymous	extreme heat or extreme cold



AGENDA

- Welcome
- Presentation on
 - MVP Process
 - Regional Climate Change Hazards
 - Community Resilience Building (CRB) Workshops Results
- Questions & Answers



WELCOME

What | Who

MVP IN EAST BRIDGEWATER

Core Team Members

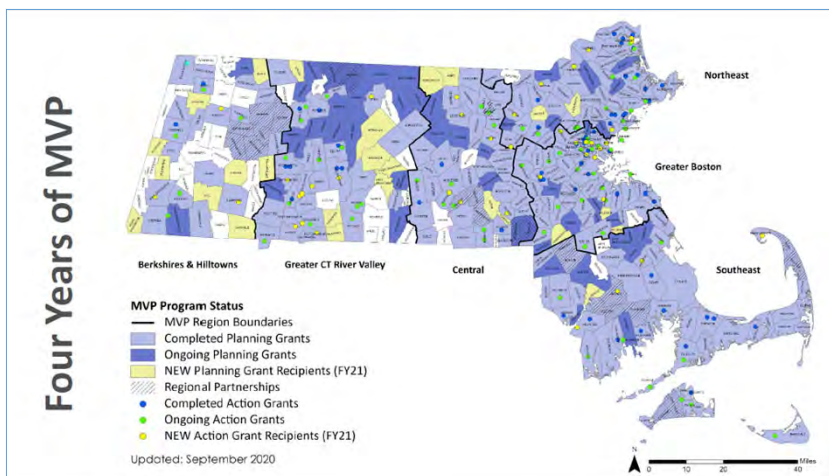
- John Haines, DPW Director
- Rob Kenn, DPW Operations Manager/Highway and Grounds
- Jason Trepanier, Water Division Superintendent
- Brian Noble, Town Administrator
- Deputy Chief Craig Windsor, Fire Department



MVP PROGRAM OVERVIEW

What | Who

MUNICIPAL VULNERABILITY PREPAREDNESS (MVP)



MVP PRINCIPLES

- A community-led, accessible process that
 - Employs **local knowledge**
 - Utilizes **partnerships**
 - Based on **best available climate projections**
 - Incorporates **nature-based solutions**
 - Reaches **Environmental Justice communities and vulnerable populations**



MVP PRINCIPLES

Why nature based?

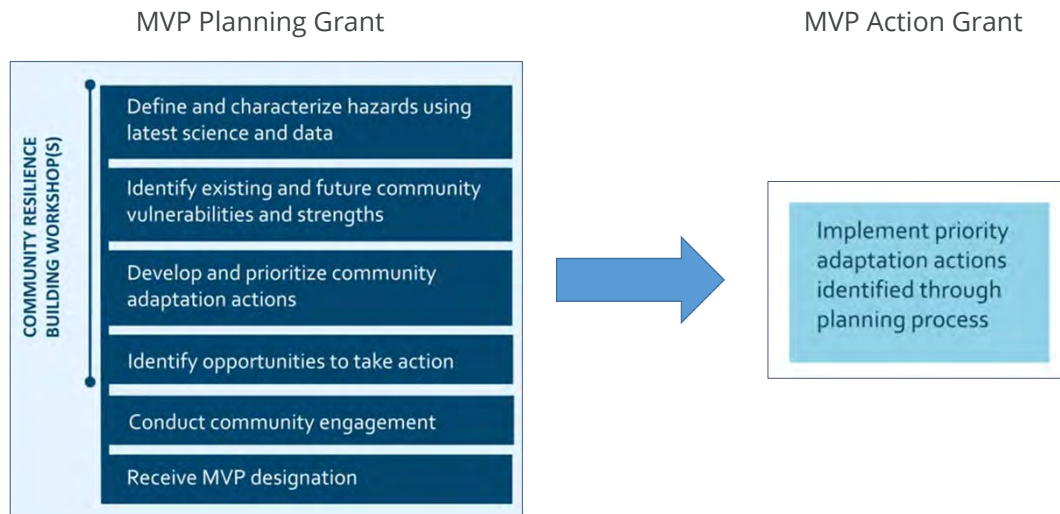
Where appropriate, nature-based solutions can be more cost-effective, protect water quality and quantity, sustain lands that provide food and recreation opportunities, reduce erosion, and minimize temperature increases associated with developed areas and climate change.

Examples

- Wetlands Conservation
- Rain Gardens and Bioswales
- Tree Planting
- Land Acquisition
- Dam Removal



MVP PROCESS



REGIONAL CLIMATE DISCUSSION

Assessment | Concerns

REGIONAL CLIMATE DISCUSSION

Climate Change Hazards

- Temperature Changes
- Precipitation Changes
 - Flooding
 - Drought
- More Intense Storms



TEMPERATURE CHANGES



Heat Wave

An increased # of days with high temperatures – particularly days over 90°F – will lead to heat-related illnesses and higher energy demands in the summer.

Vulnerabilities

High Energy Demands

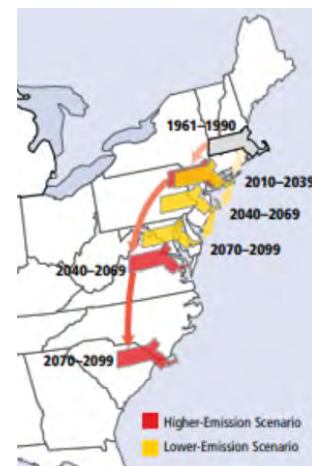
Action Items

Public Cooling Centers | Plant Trees (reduce heat island impacts)

Year	Days over 90°F
2010-2014	11.5 days*
By 2050	+ 10-35 days

*Highest number recorded since 1950
(NOAA National Centers for Environmental Information – State Climate Summaries)

MA could have the climate of South Carolina by the end of the century without emissions reductions driven by the reduced use of fossil fuels



PRECIPITATION CHANGES



Flooding

A single intense downpour can cause serious flooding which can damage critical facilities and infrastructure, or can limit access to essential roads.

Vulnerabilities

Flooding | Transportation access

Action Items

Conduct improvements to culverts and/or bridges
(reduce flooding areas)



PRECIPITATION CHANGES



Drought

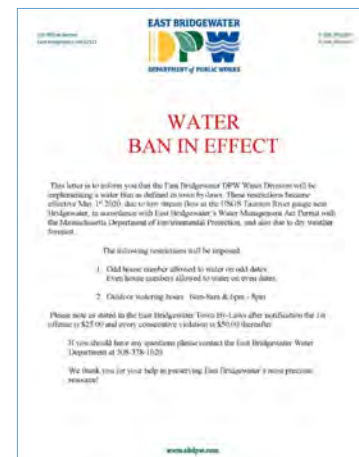
Precipitation events will be concentrated in fewer storm events and can lead to water supply shortages, crop damage and habitat stress.

Vulnerabilities

Water supply/redundant sources

Action Items

Evaluation of Town's water supply



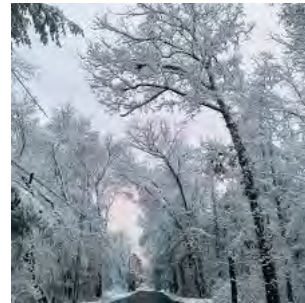
MORE INTENSE STORMS



Storms

Nor'easters, ice storms, hurricanes, blizzards, and heavy rain events lead to downed trees, power outages, and property damage.

Projections show that these intense storms will become more frequent and more intense with rainfall concentrated in fewer, but heavier, events.



Vulnerabilities

Power Outages | Damage to roads, property & infrastructure

Action Items

Provide Generators | Identify Additional Power Source



COMMUNITY RESILIENCE BUILDING (CRB) WORKSHOP

Virtual Sessions

CRB WORKSHOPS

Multi Session Online ZOOM Meetings

March 16th - Session 1: Environmental

March 18th - Session 2: Infrastructural

March 19th - Session 3: Socio-Economic



TAKEAWAYS FROM THE MVP WORKSHOPS

- Residents are noticing changes to the local climate
- CRB Participants raised concerns about these impacts, specifically in regards to:
 - Increasing frequency of heavy rain events
 - Recent periods of drought
 - Intense storms bring damaging high winds



HEAT WAVES



FLOODING



DROUGHT



INTENSE STORMS



TAKEAWAYS FROM THE MVP WORKSHOPS

Discipline Themes

Environmental Themes:

Flood storage, water quality, protecting open space, tree health and strategic planting, green infrastructure

Infrastructural Themes:

Aging infrastructure, road conditions, maintenance of dams, culverts and bridges

Socio-Economic Themes:

Impacts on the elderly and low-income, back up power capacity, cooling centers, communication systems, emergency management



TOP ACTIONS FROM THE MVP WORKSHOPS

Environmental

- Open Space Comprehensive Plan
- Forge Pond Restoration
- Robbins Pond Restoration
- Town Wide Watershed Restoration Plan

Infrastructural

- Water Supply Vulnerability Assessment
- DPW Facility Assessment / Site Relocation Study
- Watershed Specific Drainage Studies

Socio-economic

- Evaluation of Emergency Generators for Town-owned Facilities
- Conduct Analysis on Sheltering Needs
- Enhance and Further Develop Communications Systems for the Council on Aging



QUESTIONS & ANSWERS

Thoughts | Concerns

THANK YOU

John Haines
DPW Director
508.378.1620
jhaines@eastbridgewaterma.gov

Natalie Pommersheim
Project Manager
781.626.0358
nmp@envpartners.com



RESOURCES

East Bridgewater MVP Site

<https://www.envpartners.com/east-bridgewaters-mvp/>

East Bridgewater DPW Site

<https://www.ebdpw.com/>

Additional Links

<https://resilientma.org/>

<https://www.mass.gov/service-details/mvp-program-information>





1900 Crown Colony Drive, Suite 402
Quincy, MA 02169
P: 617.657.0200 F: 617.657.0201

envpartners.com