



# FY19 Completed Action Grant Summaries

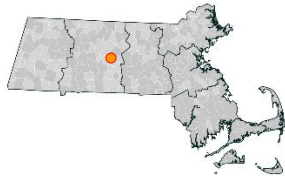


**Municipal Vulnerability Preparedness Program**  
MA Executive Office of Energy and Environmental Affairs

# FY19 Action Grant Projects

Redesign and Retrofit  
Nature-Based Drought Prevention

## Belchertown



MVP Grant: \$223,513

Match Amount: \$75,530

Total Project Cost: \$299,043

*Irrigation of athletic fields accounts for 25% of municipal water usage annually (1.5 million gallons), during peak demand*

### Project Priorities:

Design and permit a replacement water storage tank that would increase storage capacity and drought resilience and complete a feasibility/concept design of a rainwater harvesting system at Belchertown High School to irrigate the athletic fields.

- Reduce demand on Town's water supply
- Conserve potable water for essential uses
- Enhance reliability of water system under existing and future climate conditions



Storage Tank Option



Option 3 – Harvesting and Reuse System Layout



# FY19 Action Grant Projects

## Detailed Vulnerability and Risk Assessment

### Cambridge



MVP Grant: \$350,000

Match Amount: \$243,450

Total Project Cost: \$593,450



Project team member conducting field work.  
Source: City of Cambridge

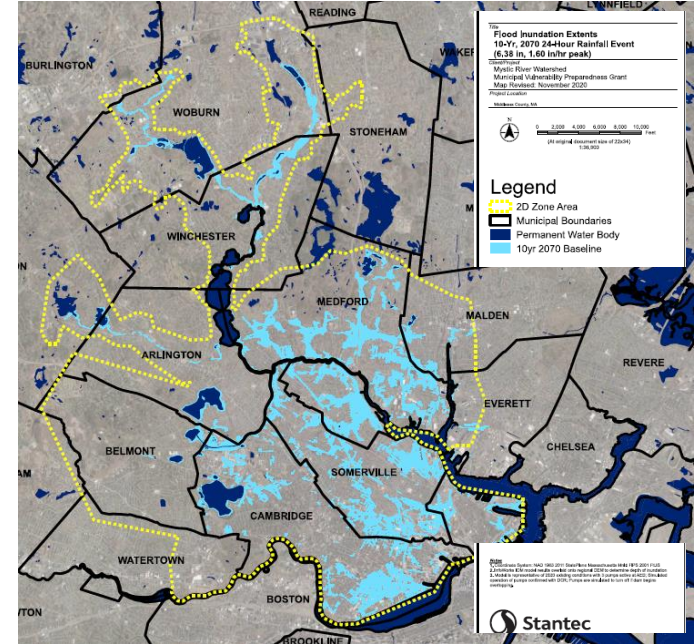
#### Project Priorities:

- Improve watershed planning tools and data sharing
- Identify opportunities to scale up nature-based solutions, and
- Explore innovative technologies such as Active Reservoir Management (ARM).

#### Project Results:

- Watershed flood model for current and future storms that incorporates operational procedures for Amelia Earhart Dam
- 10% concept designs for nature-based solutions at six sites

Completing a watershed-wide analysis to optimize and coordinate regional stormwater management in the Mystic River Watershed



To learn more, check out this recording of a conference presentation on this modeling work:

<https://vimeo.com/481270458>

# FY19 Action Grant Projects

Detailed Vulnerability and Risk Assessment  
Community Outreach and Education

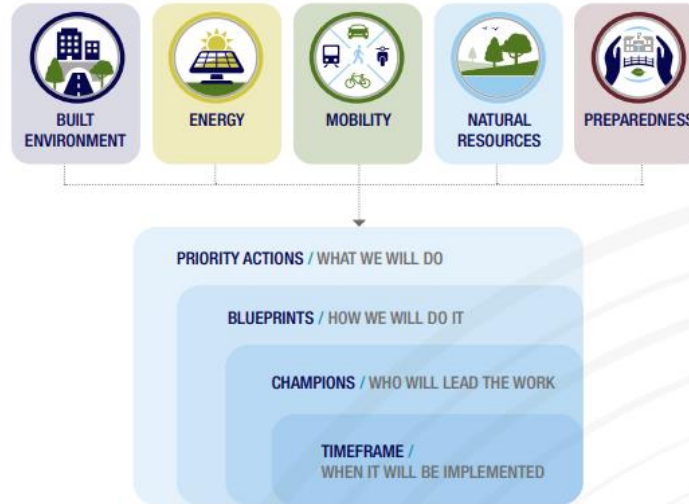
## Concord



MVP Grant: \$100,095  
Match Amount: \$37,840  
Total Project Cost: \$137,935

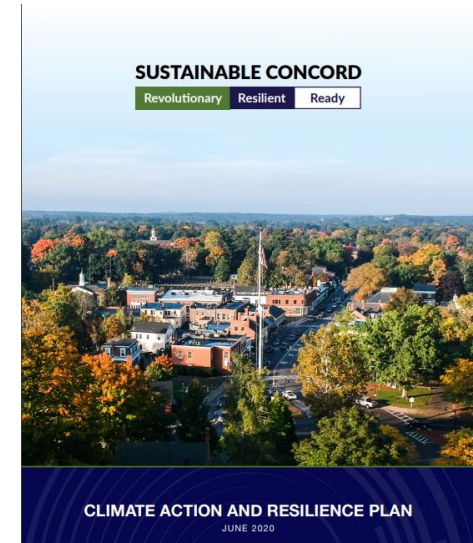
### ***Project Priorities:***

Develop Climate Action & Resilience Plan which prioritizes climate strategies that are supported broadly for the community and are the best opportunities for increasing resilience and reducing GHG emissions.



Graphic from Concord's Climate  
Action & Resilience Plan

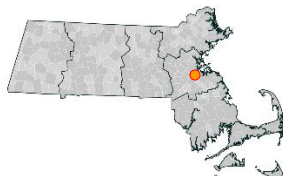
# Climate Action and Resilience Plan



# FY19 Action Grant Projects

Detailed Vulnerability and Risk Assessment  
Community Outreach and Education

## Dedham



MVP Grant: \$185,895

Match Amount: \$64,445

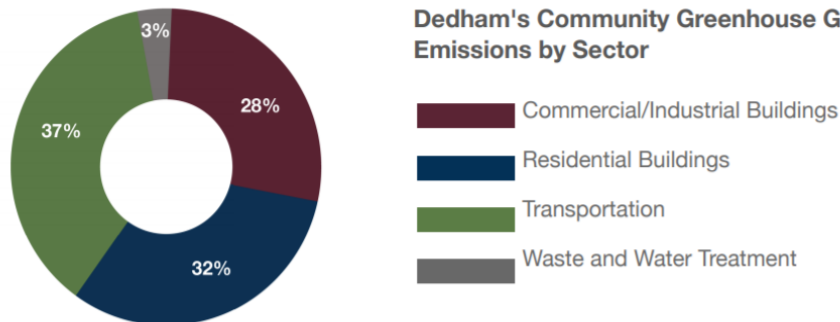
Total Project Cost: \$250,340

### ***Project Priorities:***

To develop a comprehensive climate action and resilience plan through an equitable engagement process that includes:

- updates to Dedham's existing hazard mitigation plan,
- a targeted infrastructure vulnerability assessment,
- a greenhouse gas emissions inventory and identified pathways to reduce them, and
- the development of a climate resilience framework.

### **Dedham's Community Greenhouse Gas Emissions by Sector**



1. Source: Dedham Community Greenhouse Gas Inventory, 2018

## Climate Action and Resilience Plan



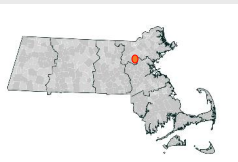
Source: Town of Dedham

### ***Project Results:***

A final Climate Action & Resilience Plan that includes nearly 375 actions compiled from discussions with the public, surveys, Climate Action Stakeholder Group (CASG) meetings, targeted interviews, best practices research, and existing Dedham planning efforts.

# Reducing Flooding Vulnerability in Deerfield

## Deerfield



REGION

Northeast

AWARD

\$278,023 (FY19)

MATCH

\$111,066

Action

PROJECT TYPE

Community Outreach and Education, Local Bylaws, Ordinances, Plans, and Other Management Measures, Nature-Based Flood Protection, Nature-Based, Infrastructure, Nature-Based Solutions to Reduce Vulnerability to other Climate Change Impact

CORE PRINCIPLES  
DEMONSTRATED

- Design of green infrastructure in the town center
- Development of a municipal green infrastructure policy
- Replacement of top priority Mill Village Road culvert with more resilient culvert with improved wildlife passage, and design of second culvert
- Coordinating a community climate awareness event ("Climate Resiliency: Deerfield 2030")
- Public education on the town's new Rave emergency alert system
- Creating an evacuation action plan for potential dam failures on the Deerfield River
- Developing a land conservation priority plan for protecting the Deerfield River floodplain

PRIORITIES

[Deerfieldma.us](http://Deerfieldma.us)



**MVP**

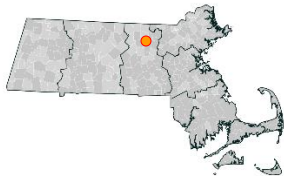
Municipal Vulnerability  
Preparedness



# FY19 Action Grant Projects

## Planning

### Devens



MVP Grant: \$142,170

Match Amount: \$50,635

Total Project Cost: \$192,805



## Climate Action and Resilience Plan

**Project Priorities:** To enhance the community's resilience to climate change hazards and ensure Devens is doing its part to minimize contribution to climate change, by creating a detailed implementation strategy that will allow the community to address both climate mitigation and adaptation. <https://devensforward.com/>

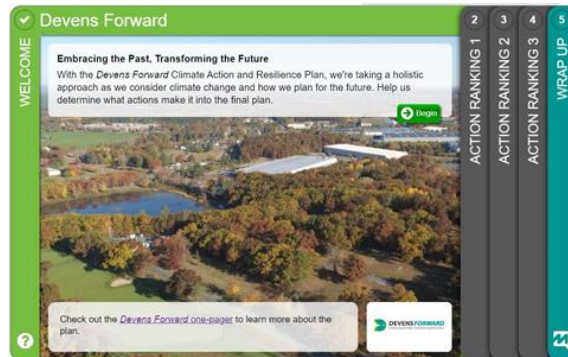
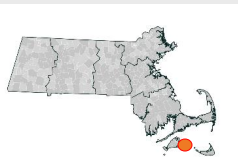


Image credits: Devens Enterprise Commission

# Edgartown Climate Change Vulnerability Assessment and Adaptation Plan



## Edgartown FY19



### AWARD

\$90,035

### PROJECT TYPE

Detailed Vulnerability and Risk Assessment

### CORE PRINCIPLES

Utilizing climate change data for a proactive solution

### DEMONSTRATED

### DESCRIPTION

- Risk-based coastal vulnerability assessment using MC-FRM to evaluate potential community impacts of asset exposure to sea level rise and coastal storm surge.
- Developed recommendations for natural resource resilience and local regulatory improvements, and flexible/phased adaptation plans for high-risk priority assets and the downtown waterfront district.





# FY19 Action Grant Projects

Ecological Restoration and Habitat Management to  
Increase Resiliency

## Falmouth



MVP Grant: \$760,000

Match Amount: \$1,130,305

Total Project Cost: \$1,890,305



Aerial of  
Area  
Restored

## Coonamessett River Restoration Project: Construction Phase 2

### ***Project Priorities:***

- Remove "Middle Dam" and replace with a new pedestrian boardwalk
- Replace a failing public road-stream crossing (culvert)
- Restore remaining 39 acres of cranberry bog complex
- Reconstruct 3,000 linear feet of the Coonamessett River

### **Before**



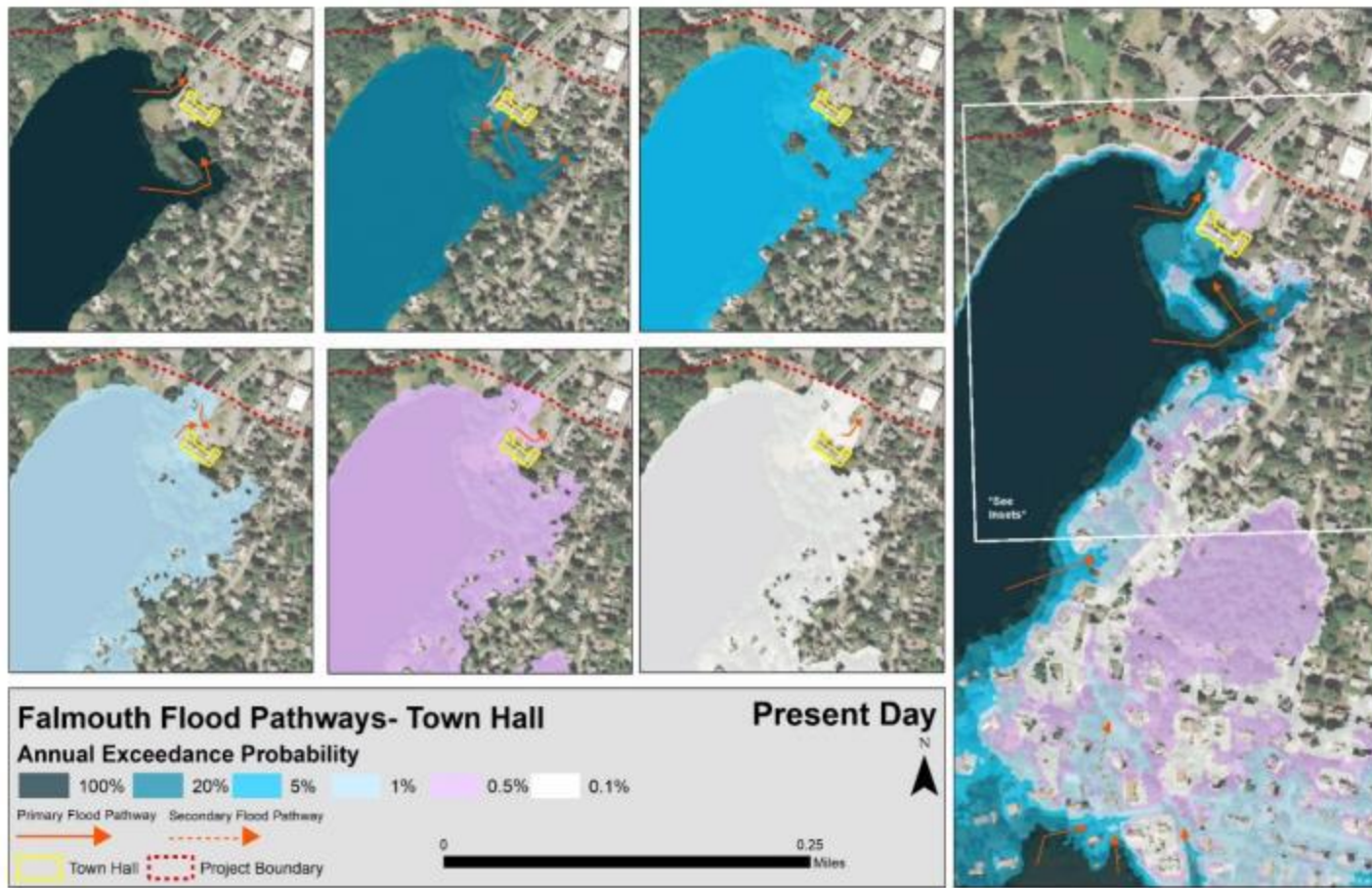
### **After**



a



**MVP**  
Municipal Vulnerability  
Preparedness



Balance use, access, and enjoyment of the coastal resources while accounting for ecosystem shifts in response to sea level rise.



# FY19 Action Grant Projects

Ecological Restoration and Habitat Management to Increase Resiliency

## Mattapoisett



MVP Grant: \$960,000

Match Amount: \$460,000

Total Project Cost: \$1,420,000



# Pine Island Pond Watershed Lands (PIPWL) Project

## *Project Priorities:*

Acquire 120 acres of undeveloped forest, wetland, and salt marsh vulnerable to climate change for permanent conservation

Image credit:  
town of  
Mattapoisett



Map prepared by: Buzzards Bay National Estuary Program, land acquired through project outlined in red

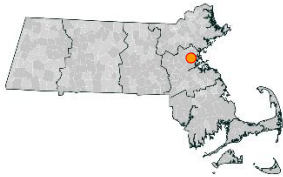


# FY19 Action Grant Projects

## Nature-Based Flood Protection

# Flood Mitigation Strategy Feasibility Analysis and Conceptual Design

## Medford



MVP Grant: \$93,529

Match Amount: \$31,176

Total Project Cost: \$124,705

### ***Project Priorities:***

- Build on a flooding vulnerability assessment funded by MVP in FY18
- Assess the feasibility of installing a subsurface detention tank system and complementary green infrastructure elements at Tufts Park to address severe flooding in South Medford



Representative Flooding Photos, Source: Mike Nestor, City of Medford

### ***Project Results:***

Concept designs for:

- Subsurface detention tank system
- Open vegetated swale
- Water quality bioretention system
- Additional stormwater BMPs such as porous pavers and tree filter boxes

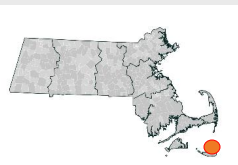


Green infrastructure concept designs from final report, Source: Biocycle, Philadelphia Water Dept., Contech

# Resilient Nantucket: Designed for Adaptation



## Nantucket FY20



AWARD

PROJECT TYPE

CORE  
PRINCIPLES

DEMONSTRATED

DESCRIPTION

Learn More:

- [Resilient Nantucket Webpage](#)
- Design Guidelines Document (to be posted)

\$78,000

Planning, Assessments, Capacity-Building, and Regulatory Updates

Furthering a community identified priority action to address climate change impacts and Pursuing innovative, transferable approaches

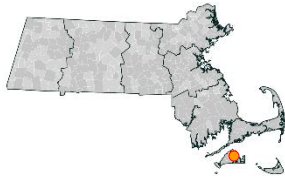
- Developed “user friendly” guidelines incorporating photographs and drawings specific to Nantucket’s historic properties
- Recommends approaches to elevate and “harden” historic properties impacted by climate change
- Used as an addendum to “Building with Nantucket in Mind” to supplement design reviews by the Nantucket Historical Commission & Historic District Commission



# FY19 Action Grant Projects

Redesigns and Retrofits  
Nature Based Solutions to Reduce Vulnerability

## Oak Bluffs



MVP Grant: \$1,088,451

Match Amount: \$362,818

Total Project Cost: \$1,451,269

### ***Project Priorities:***

- Improve climate resiliency of vulnerable shoreline
- Dredge Sengekontacket Pond to improve water quality and habitat
- Use dredged material to create beach area to protect the seawall, boardwalk, coastal bank, road, and homes

## North Bluff Preservation Project

**Before**



**After**



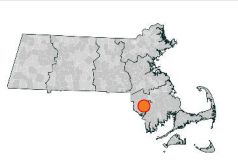
Image Credits: Town of Oak Bluffs



# Culvert and Green Infrastructure Concept Design and Dam Resiliency Assessment County Street and Perryville Pond Dam



## Rehoboth FY19



### AWARD

\$119,622

### PROJECT TYPE

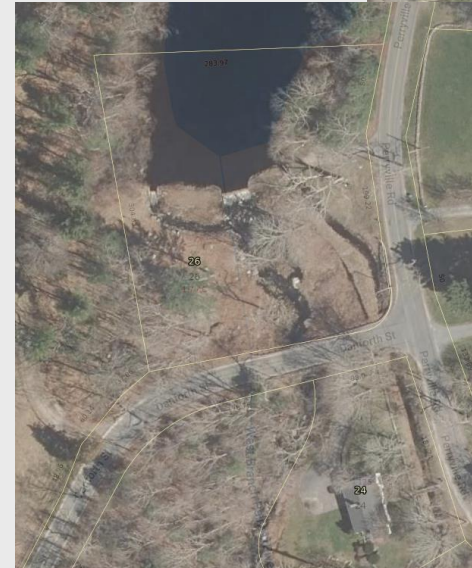
Culvert and Dam Assessment and Redesign

### CORE PRINCIPLES DEMONSTRATED

Green infrastructure solutions for improving resiliency to stronger, more frequent storm events caused by climate change

- Assessed 2 stream crossings at the Perryville dam and on County St
- Prepared concept designs to replace culverts so that they will more effectively handle storm events
- Incorporated Green Infrastructure at both crossings

### DESCRIPTION



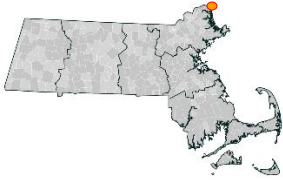
# FY19 Action Grant Projects

# Communicating the Local Benefits of a Resilient Coast

Redesigns and Retrofits

Nature Based Solutions to Reduce Vulnerability

## Salisbury



MVP Grant: \$157,500

Match Amount: \$52,500

Total Project Cost: \$210,000

### Project Priorities:

Study and design of culvert replacement and roadway elevations in Ring's Island, as well as a natural storm damage protection technique.



Ring's  
Island

A map of inundation probability  
in Ring's Island by 2070

### Road Design Options

Option 1 - Raised Berm Road



Option 2 - Sheet Pile Road



Option 3 - Elevated Road

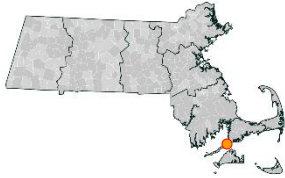


Three options for projected sea level  
rise and storm scenarios for elevating  
roadway in Salisbury

# FY19 Action Grant Projects

## Community Education

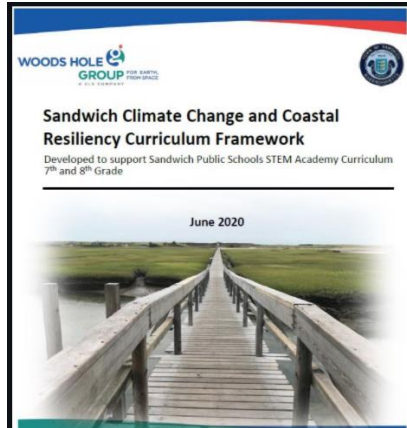
### Sandwich



MVP Grant: \$46,795

Match Amount: \$17,425

Total Project Cost: \$64,220

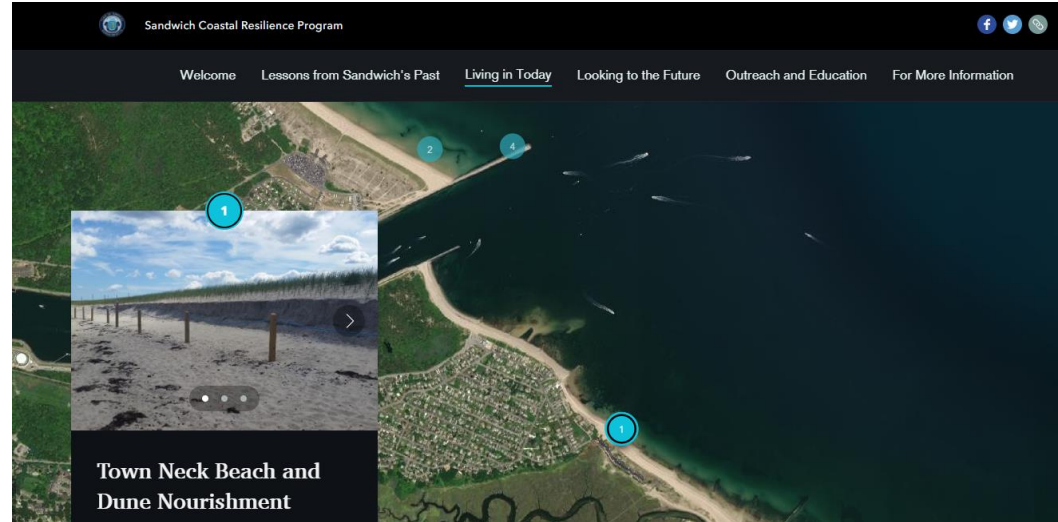


Left:  
Middle School  
STEM  
Curriculum

# Communicating the Local Benefits of a Resilient Coast

## *Project Priorities:*

Develop outreach and education materials – including an ArcGIS StoryMap, printed materials, and a 7<sup>th</sup> – 8<sup>th</sup> grade STEM curriculum unit – to communicate climate change vulnerabilities and the benefits that the Town's ongoing coastal resilience initiatives provide to the community as a whole.



Snapshot of Sandwich's ArcGIS Storymap. Explore it at the link below:  
[Sandwich Coastal Resilience Program](#)



# FY19 Action Grant Projects

Detailed Vulnerability and Risk Assessment  
Community Outreach and Education

## Scituate & Cohasset



MVP Grant: \$112,668

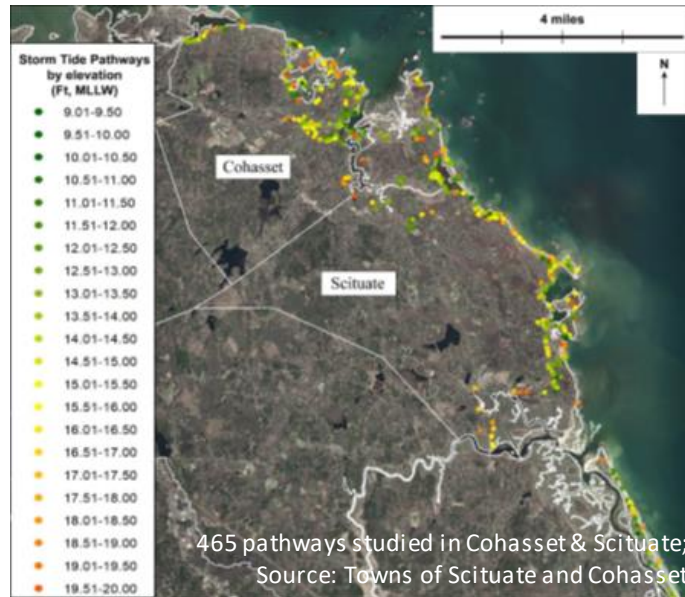
Match Amount: \$40,031

Total Project Cost: \$152,699

## Mapping Storm Tide Pathways in Scituate and Cohasset: Assessing Coastal Vulnerability to Storms and Sea Level Rise

### *Project Priorities:*

- To identify and map storm tide pathways, and compile the data into a GIS database for use in short- and long- term planning efforts
- To incorporate this data into the Southern New England Weather Forecast Office of the National Weather Service for public viewing



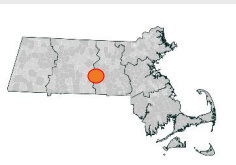
### *Project Results:*

- Every 6 inches of sea level rise results in approximately 100 acres of additional coastal land lost
- Many of these pathways have never been inundated, demonstrating historical knowledge is not enough to prepare effectively for climate change and sea-level rise
- Data uploaded to National Weather Service for interactive mapping: <https://www.weather.gov/box/coastal>

# Green Infrastructure Implementation in Downtown Spencer Mechanic Street Parking Lot



## Spencer FY19



Learn more:

<https://www.spencerma.gov/highway-department/news/mechanic-street-green-infrastructure-parking-lot>

**AWARD**

\$370,492

**PROJECT TYPE**

Construction and On-the-Ground  
Implementation  
Employing Nature-Based Solutions

**CORE  
PRINCIPLES**

**DEMONSTRATED**

**DESCRIPTION**

- Showcasing green infrastructure in downtown Spencer using rain gardens/bioretention and below ground infiltration practices
- Co-benefits reduce runoff volume and pollutant loads, improve aesthetics, reduce heat island impacts



### Uxbridge

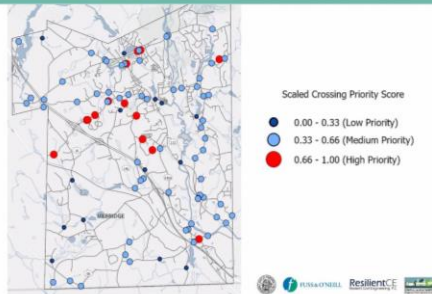


MVP Grant: \$288,904

Match Amount: \$96,647

Total Project Cost: \$385,551

#### Crossing Priority Scores

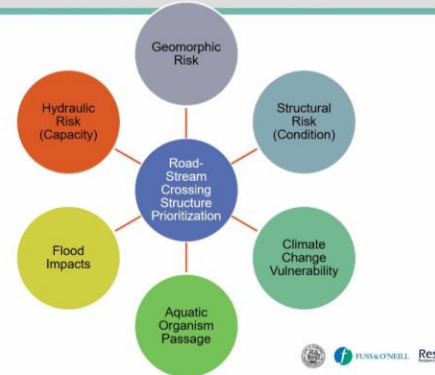


# Integrated Water Infrastructure Vulnerability Assessment and Climate Resiliency Plan

**Project Priorities:** To conduct a detailed vulnerability assessment of water-related infrastructure and develop planning recommendations to enhance flood resilience in the community.

- Identify water-related infrastructure at risk of flooding under present day and projected future climate change conditions
- Prioritize at-risk infrastructure
- Recommend site-specific and community-wide adaptation measures
- Engage municipal staff and the public
- [Project Website](#)

#### Road-Stream Crossing Assessment Framework







<https://www.mass.gov/mvp>

