

# **Watershed Associations: A Great Resource for Supporting Community Climate Adaptation**

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MMA Annual Meeting  
**Preparing Your Community for a Changing Climate**  
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Charles River Watershed Association

# Charles River Watershed Association

- Founded 1965
- One of the country's oldest watershed associations
- Interdisciplinary staff ➡ Integrated approach
  - Scientists
  - Lawyer
  - Planner
  - Policy experts
  - Director
  - Communications and support staff
- Work closely with EPA Region 1, state agencies, and 35 watershed municipalities



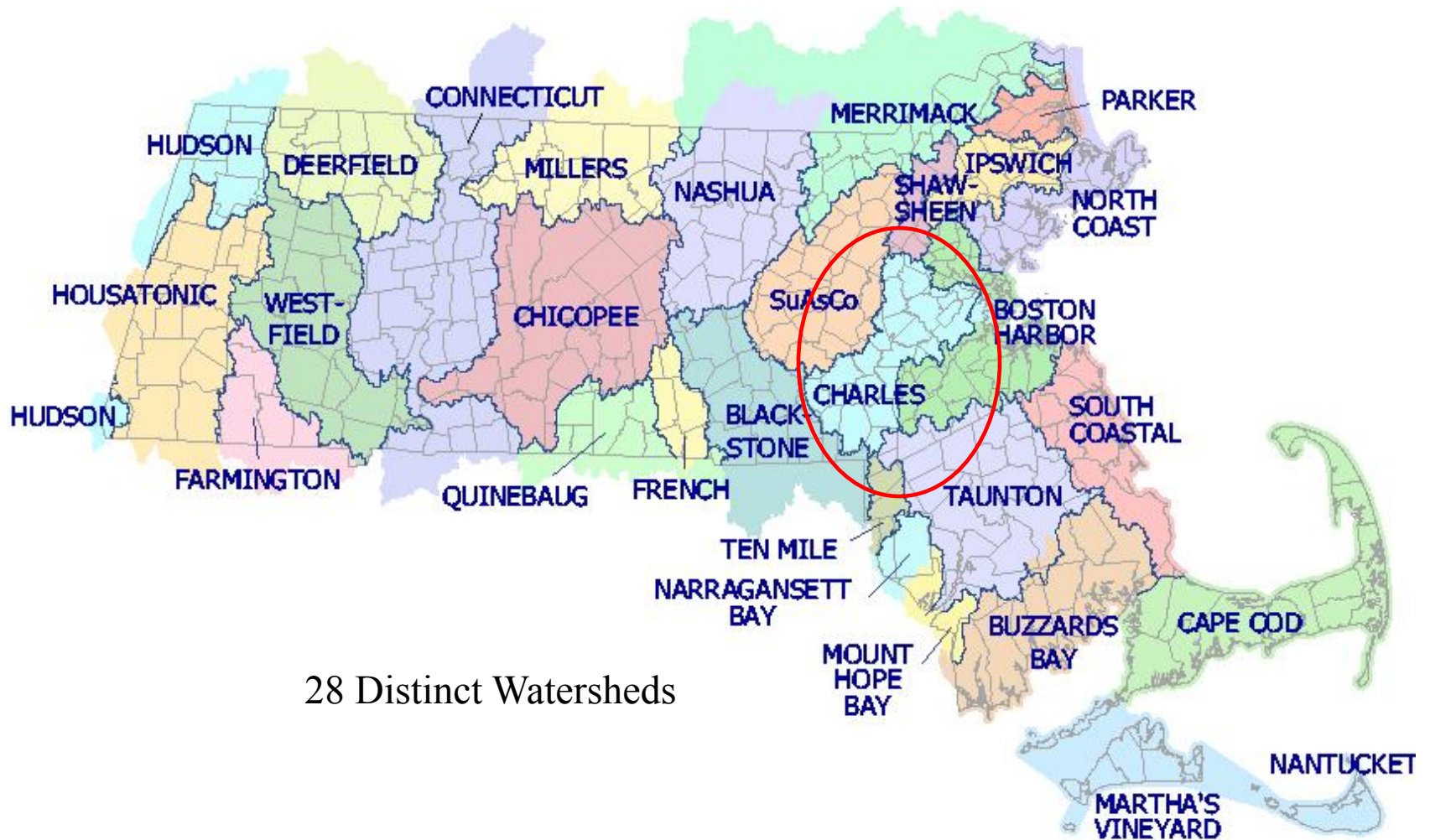
# Charles River Watershed Association

- Program Areas
  - Field Science
  - Blue Cities Initiative (low impact development and green infrastructure)
  - Climate Change Adaptation
  - Law, Advocacy and Policy





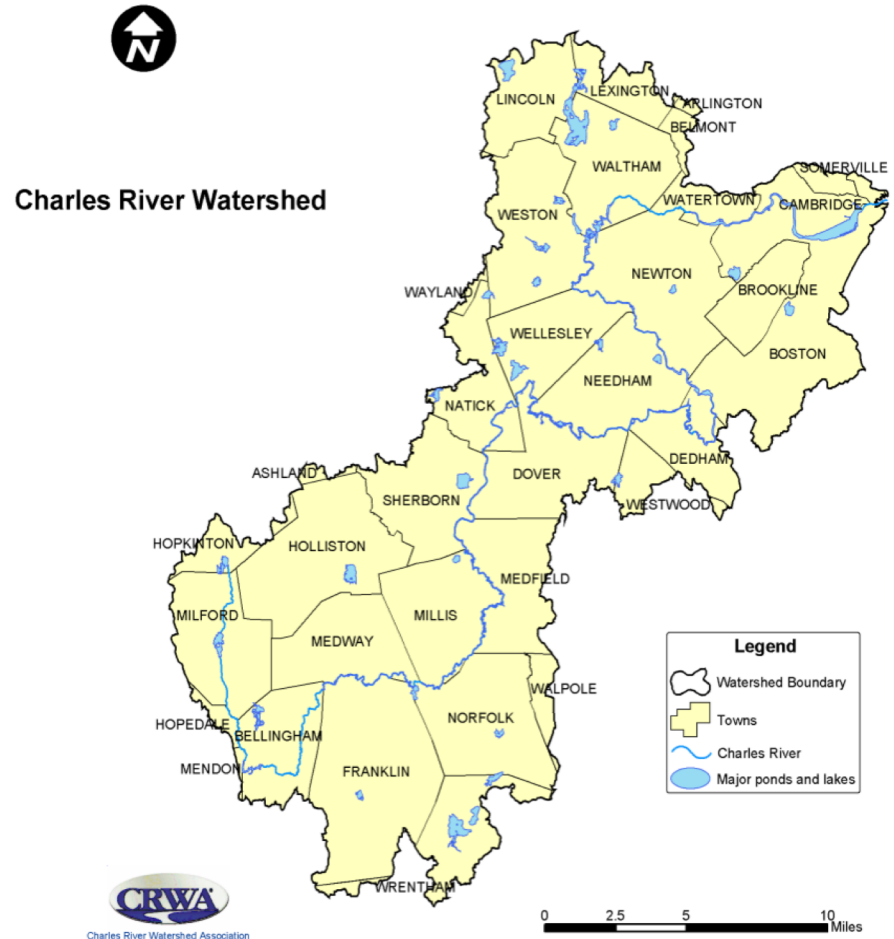
# Massachusetts Watersheds





# Charles River Watershed

- 80 miles
- 20 dams
- 308 mi<sup>2</sup>
- 35 towns
- Over 1 million residents
- CRWA takes a watershed-scale view



# The Climate is Changing

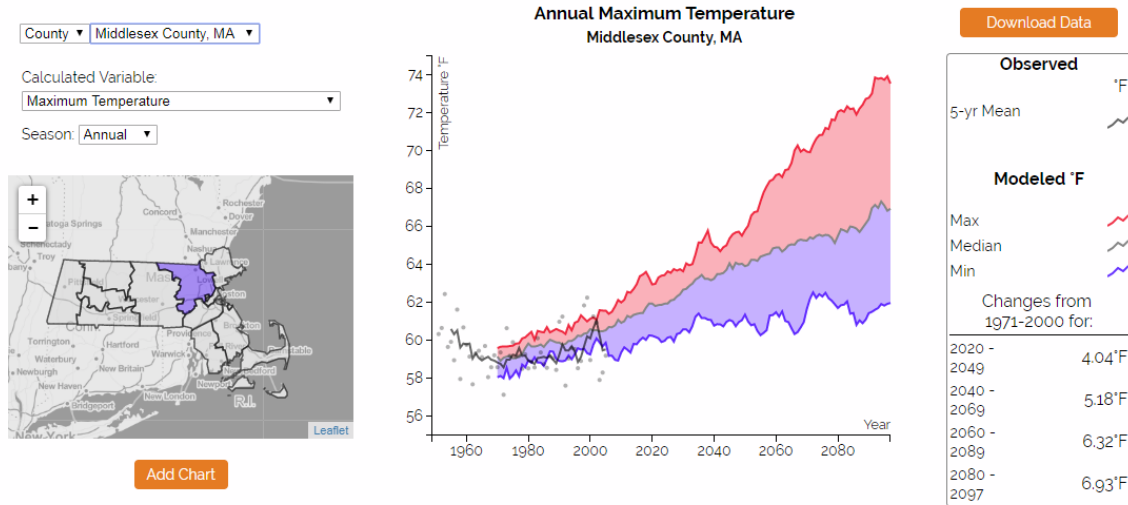


Table 3-1: Estimates of 10-yr, 24-hour design storms (inches) reported by BWSC and C-CCVA.

Boston Water and Sewer Commission	Baseline (1948-2012)	Precipitation Depths (in)		
		2035	2060	2100
B2 (medium)	5.24	5.55	5.76	6.08
A1Fi (precautionary)	5.24	5.60	6.03	6.65
Cambridge CCVA	Baseline (1971-2000)	2030s (2015-2044)	2070s (2055-2084)	
Average values	4.9	5.6	6.4	

Table 3-2: Additional extreme precipitation metrics (inches) reported by C-CCVA.

Cambridge CCVA	Baseline (1971-2000)	2030s (2015-2044)		2070s (2055-2084)	
		Lower	Higher	Lower	Higher
No. days per year > 2 in. rain in 24 hrs	2	3	3	3	3
Max. 5-day precipitation per year (in.)	6	6.5	6.6	7	7.2
<b>24-hr design storms</b>					
10yr	4.9	5.6		6.4	
25 yr	6.2	7.3		8.2	
100 yr	8.9	10.2		11.7	

About the Source  
Data

NECASC  
Northeast Climate Adaptation Science Center



# Charles River Watershed Association Climate Adaptation and Resilience Program

- Long-term River Monitoring
- On-the-ground Implementation:
  - Nature Based Solutions
  - Green Infrastructure
  - Low Impact Development
- Charles River Climate Compact
- MVP Program: municipal & state planning initiatives
- Climate Resilience 101: Training for Municipal Elected Officials
- Mitigation: Promoting Wastewater to Energy Projects





# Climate Resilience 101

- Please join us!
- Climate basics for municipal elected officials
- Overview of problems *and solutions!*
- Opportunity to hear from your peers
- Two trainings and >40 individuals trained to date
- Planning 1-2 trainings this spring



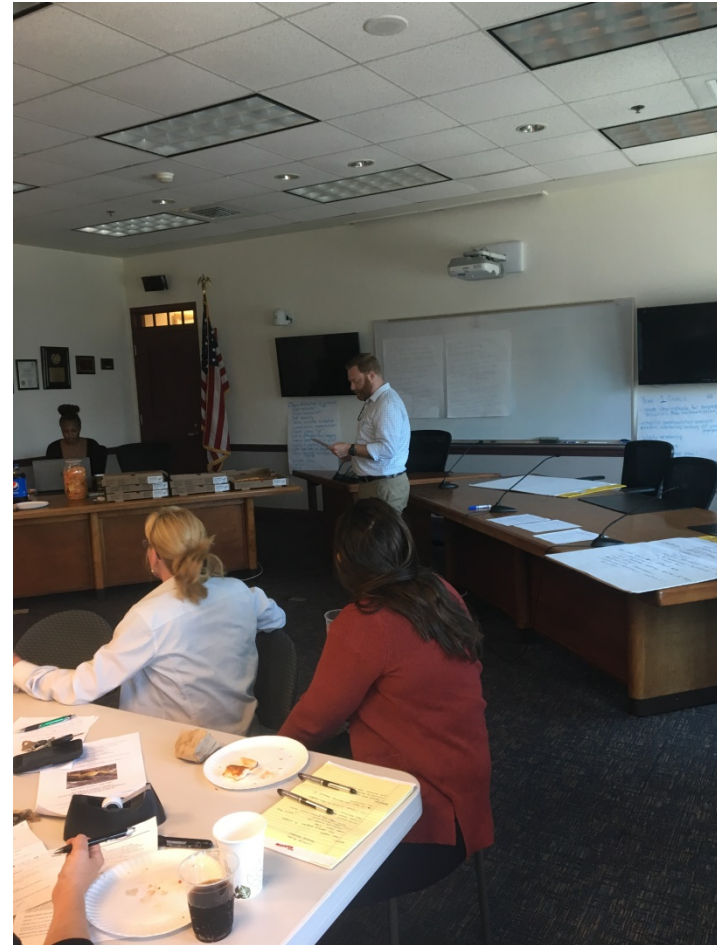
# Charles River Climate Compact

- Mission: Bring together communities in the Charles River watershed to work on climate adaptation and strategies at a regional scale.
- Address common challenges through joint effort and information sharing.



# Charles River Climate Compact

- 20 out of 35 communities currently participating
- 2 more likely joining this month
- Topic areas:
  - Stormwater flooding / MS permit compliance
  - Trees
  - Public engagement
  - Watershed scale modeling / planning





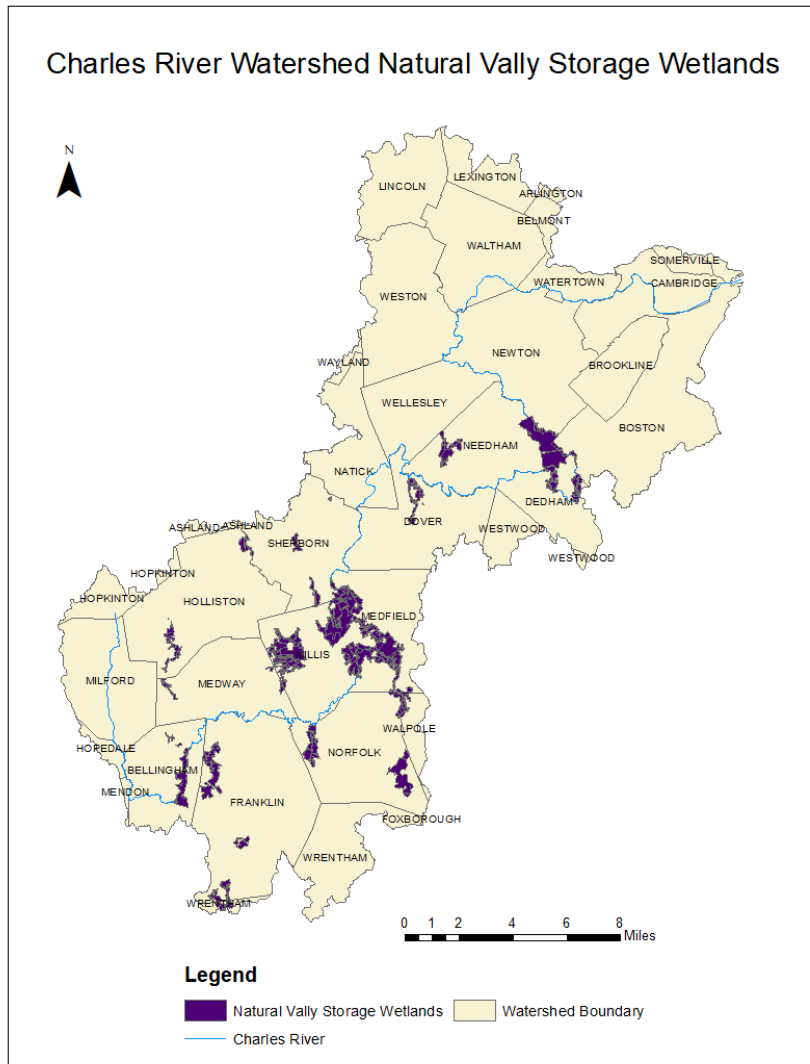
# Why a Watershed Compact?

This is your father's nature based solutions!: Charles River Natural Valley Storage Area

- 8,095 Acres purchased or protected since 1977  
\$8,300,000
- Yielded \$11,932,000 in flood protective services
- Co-benefits include recreation and natural resource benefits

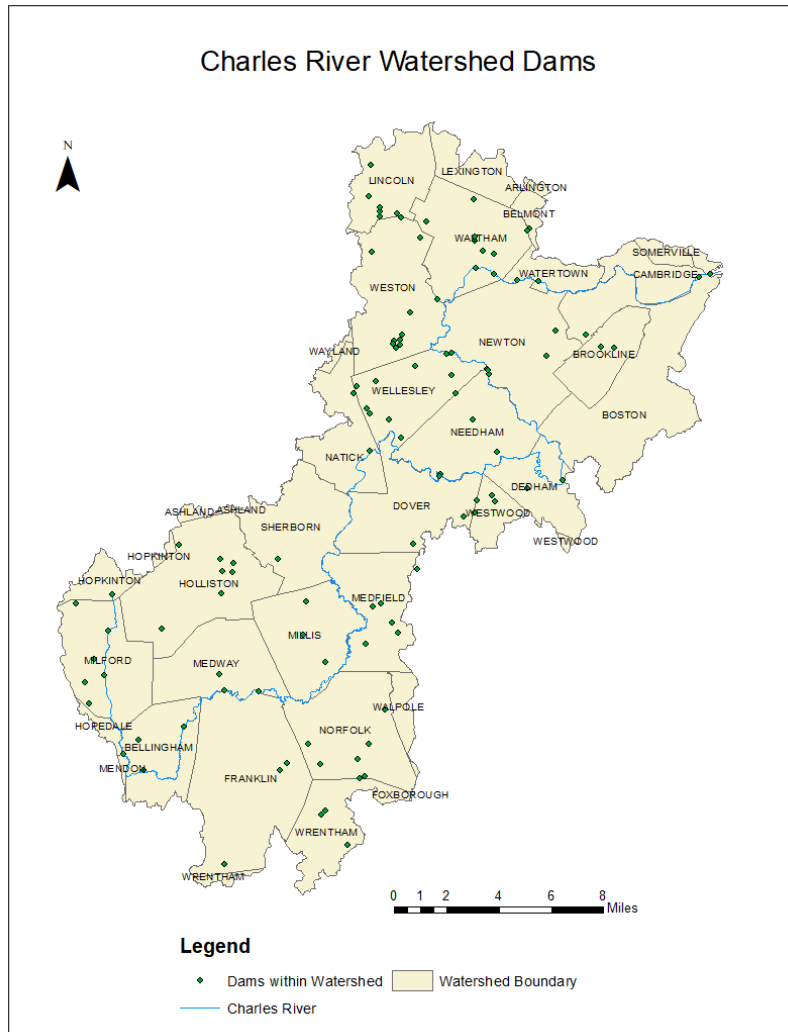


# Why a Watershed Compact?



- Located in 16 watershed communities: Millis, Medfield, Norfolk, Franklin, Holliston, Needham, Sherborn, Bellingham, Dedham, Dover, Medway, Newton, Wrentham, Walpole, Natick, and Boston
- Protects nearly the *entire* watershed

# Why a Watershed Compact?

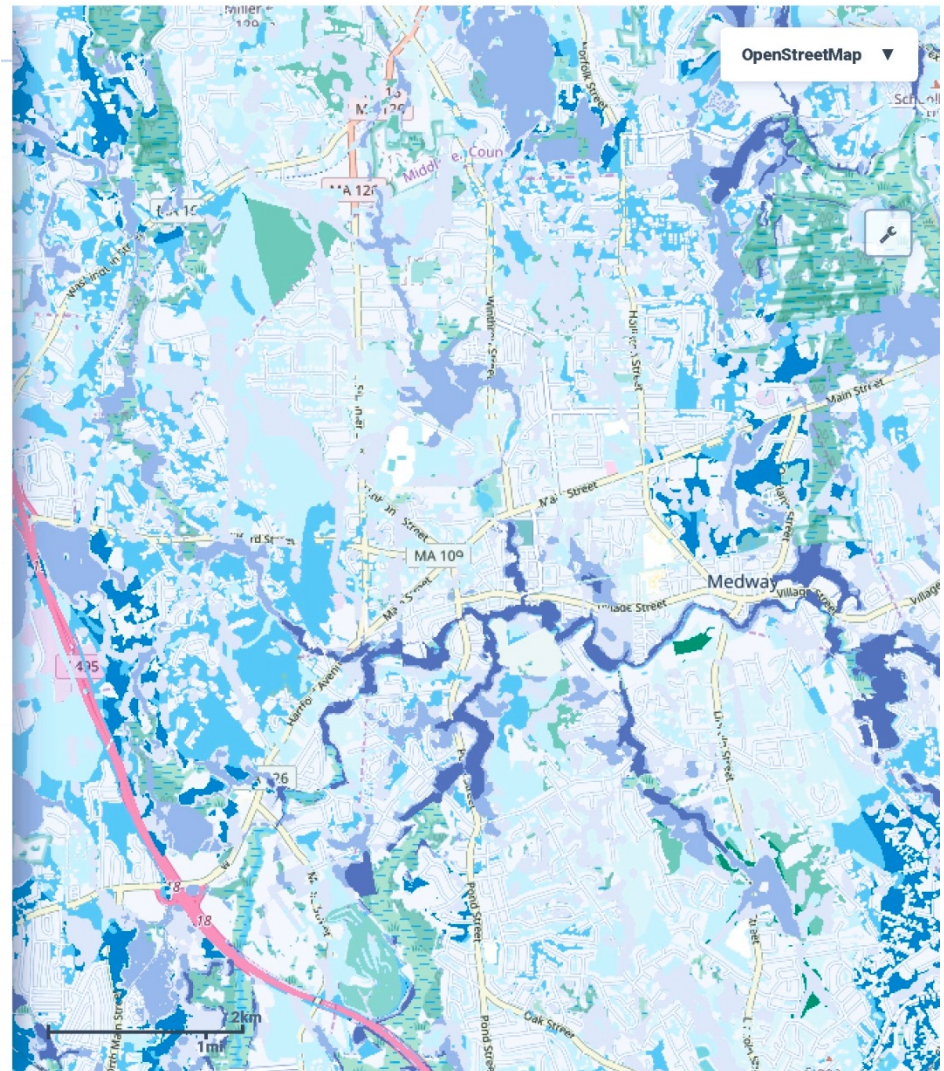


- Army Corp of Engineers: Natural Valley Storage Area
- Mother Brook Diversion: DCR
- Moody St. Dam – DCR
- Watertown Dam - DCR
- New Charles Dam – DCR
- Public/private dams



# Nature Based Solutions Online Mapper

- Coastal Flooding
  - Climate Ready Boston Flooding Hazard
  - Ch. 91 Flood storage
  - Hurricane Surge
- Inland Flood Storage
  - Wetlands with 100ft buffer
  - FEMA floodplain
  - Lowest 10% elevation by subbasin
- Water Resource Protection
  - Soil class A,B good for infiltration
  - SWMI categories 4,5
  - Wellhead protection zones
- High Quality Habitats
  - Biomap2
  - Above Average Resilience
  - Salt marsh migration areas
  - High Integrity Wetlands
  - Habitat Connectivity



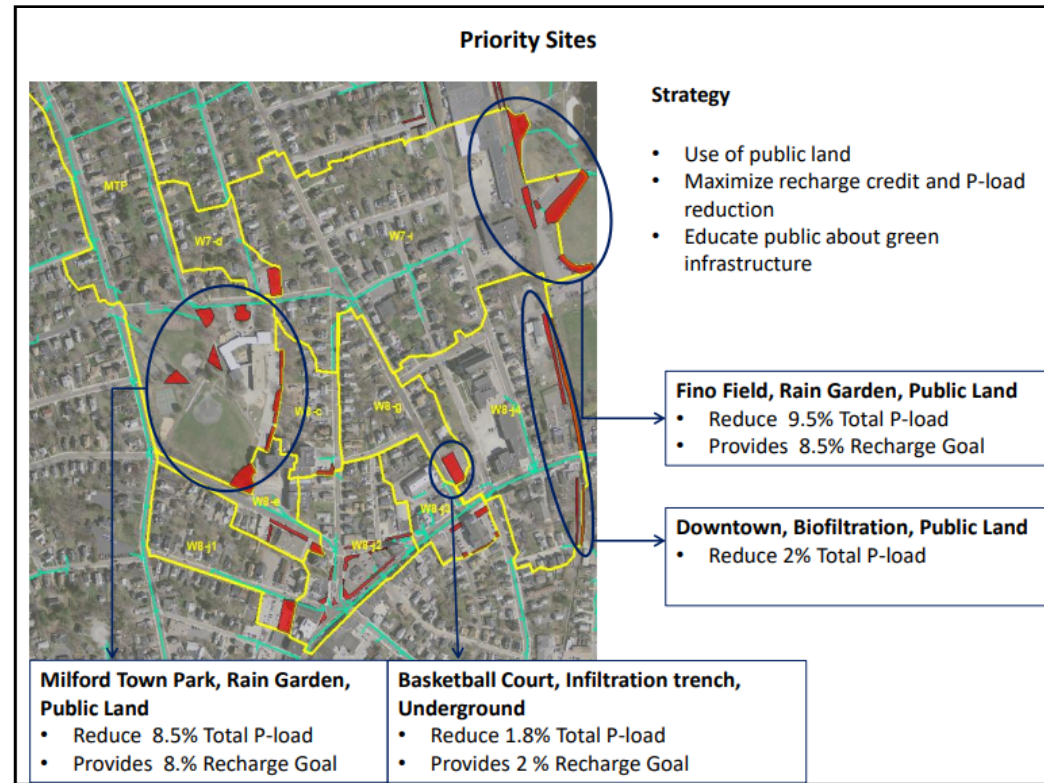
This tool is live at: <http://maps.coastalresilience.org/massachusetts/>

# Municipal Partnerships

- Municipal grant programs
- Stormwater planning and permit assistance
- Green infrastructure design and construction
- Drought resilience and water conservation
- Dam removal
- Education and outreach
  - Green landscaping
  - Stormwater management
  - Nutrient pollution reduction

# Milford Stormwater Plan

- Develop stormwater management plan for a 1300 acre area in the Town
- Identified over 60 green stormwater infrastructure opportunity sites
- Secured funding to construct at least one system
- Support MS4 compliance
- Partially funded by MassDEP 604b grant program





# Water Smart Planning and Practices in Norfolk

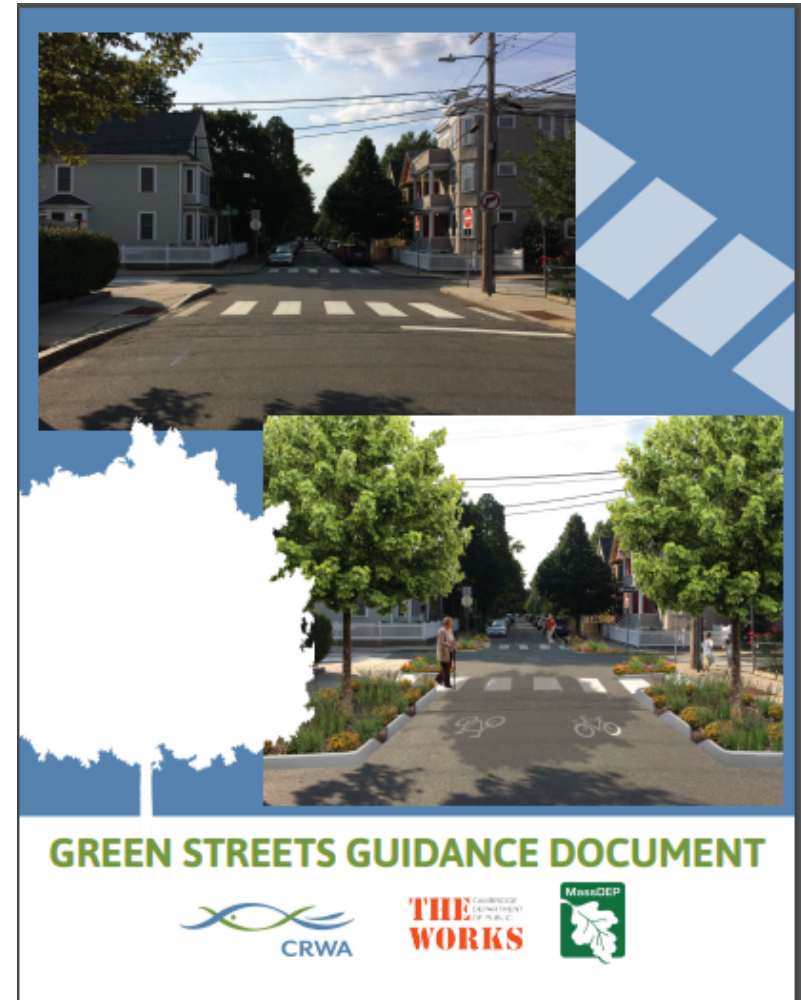
- Identified infiltration opportunities in Town Center zoning district to improve groundwater recharge as development occurs
- Support water supply resilience
- Implemented education campaign around green landscaping practices





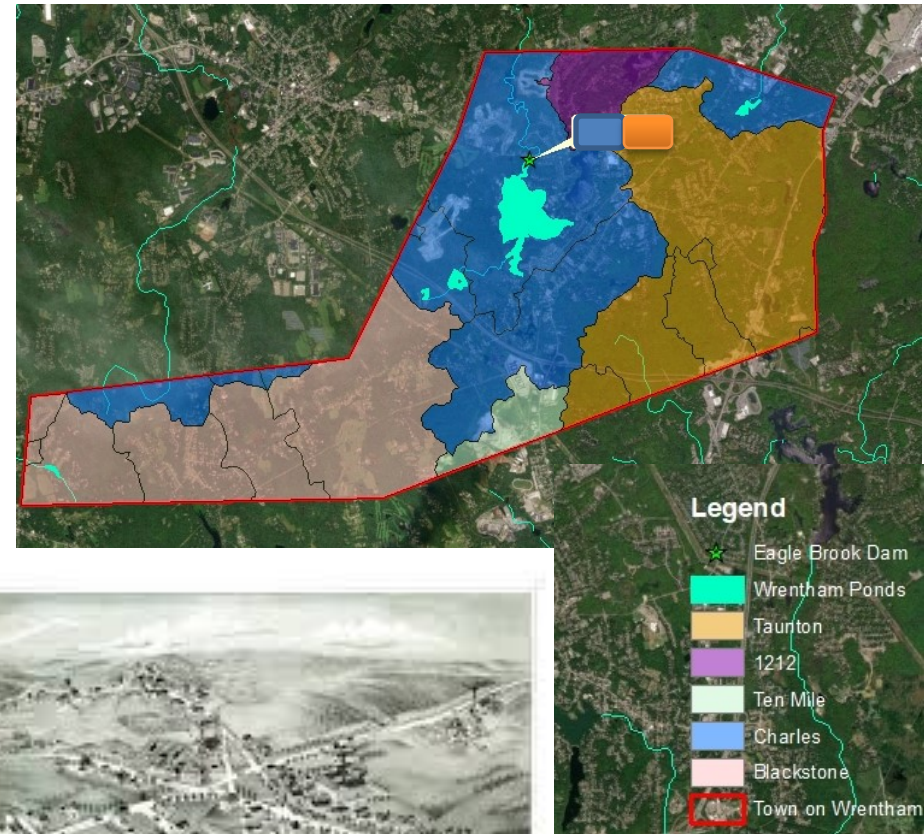
# Cambridge Green Streets

- Developed conceptual designs for greening typical urban street
- Created Green Street Guidance Document for use by multiple community departments
- Modeled impacts of scaling green streets up across the City under future climate scenarios



# Wrentham Dam Removal

- Conducting feasibility study on removal of a small “legacy” dam
- Beginning community conversation about dam removal



Funded by MVP Action Grant Program



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**THANK YOU FOR YOUR TIME TODAY**

