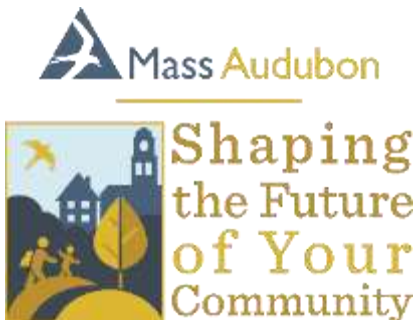


What can Conservation Commissions do to Improve Climate Resilience? (A lot, Actually)



Stefanie Covino

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Sara Burns

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Outline

- Nature at work
- Climate change (nature works for that, too)
- Using nature based solutions
- MVP program
- Case studies, tools, and resources
- Town of Swansea
- Funding opportunities & conclusion



Green Infrastructure

Green Infrastructure: A network of waterways, wetlands, woodlands, wildlife habitats, and other natural areas that support native species, maintain natural ecological processes, sustain air and water resources and contribute to health and quality of life.

(McDonald, Benedict and O'Conner, 2005).





















Low Impact Development (LID)






LID is a category of **Green Infrastructure (GI)**:

- **Works *with* nature**
- **Manages stormwater** as close to the source as possible
- **Preserves natural landscape** (or creates natural features).
- **Treats rain as a resource** rather than a waste product.

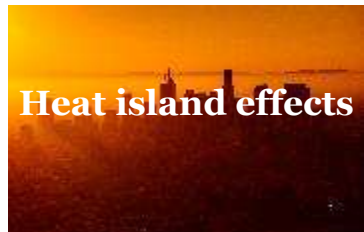
Co-benefits

Benefit	Reduces Stormwater Runoff				Increases Available Water Supply	Increases Groundwater Recharge	Reduces Salt Use	Reduces Energy Use	Improves Air Quality	Reduces Atmospheric CO ₂	Reduces Urban Heat Island	Improves Community Livability					Improves Habitat	Cultivates Public Education Opportunities
	Reduces Water Treatment Needs	Improves Water Quality	Reduces Grey Infrastructure Needs	Reduces Flooding								Improves Aesthetics	Increases Recreational Opportunity	Reduces Noise Pollution	Improves Community Cohesion	Urban Agriculture		
Practice																		
Green Roofs	●	●	●	●	○	○	○	●	●	●	●	●	◐	●	◐	◐	●	●
Tree Planting	●	●	●	●	○	◐	○	●	●	●	●	●	●	●	●	◐	●	●
Bioretention & Infiltration	●	●	●	●	◐	◐	○	○	●	●	●	●	●	◐	◐	○	●	●
Permeable Pavement	●	●	●	●	○	◐	●	◐	●	●	●	○	○	●	○	○	○	●
Water Harvesting	●	●	●	●	●	◐	○	◐	◐	◐	○	○	○	○	○	○	○	●

 Yes
  Maybe
  No

Source: Center for Neighborhood Technology's The Value of Green Infrastructure

Hazards



Nature-based solutions

Open space preservation

Ecosystem restoration

Low Impact Development

Municipal benefits



Avoided Costs



Enhanced Safety



Environmental Services

Free ecosystem services:

Free services provided by the natural landscape

Every \$1 invested in land conservation offers a **\$4 Return on Investment** in terms of these ecosystem service values

- **Flooding:** Floodplains provide flood protection and reduce infrastructure damage
- **Public Health:** Managing stormwater and reducing retention ponds reduces creation of mosquito habitat
- **Air Quality & Public Health:** Trees reduce the urban heat island effect, reducing smog creation and resulting asthma occurrences as well as reducing nitrogen dioxide and particulate matter
- **Water Quality:** Streamside vegetation filters pollutants and reduces erosion
- **Water Quantity:** Forests and wetlands store water, improve water quality, and recharge groundwater
- **Recreation:** Clean, flowing waters support recreation, including boating, fishing, and swimming while open space provides areas for hiking and biking
- **Quality of Life:** Open space and street trees create a more enjoyable walking environment, benefiting community connection, health, and economic benefit in downtowns and commercial areas
- **Property Value:** Healthy, mature trees add an average of 10-30% to a property's value

Avoided costs

Land Protection as Water Protection

- Quabbin & Wachusett Reservoirs serve 2.5 million
- Over 20 years, Massachusetts Water Resources Authority spent \$130M to protect 22,000 acres of watershed lands
- Avoided ratepayer cost of \$250M on a filtration plant and \$4M/yr in operations



Avoided Costs

Preserve Services

Massachusetts Forests Mitigate Climate Change

- MA forests **sequester 14%** of the state's gross annual carbon emissions
- Average acre stores **85 tons carbon**
- Capacity **increases** over time as forests mature



**Environmental
Services**

Enhance Safety: Charles River Natural Valley Storage Area. US Army Corps of Engineers

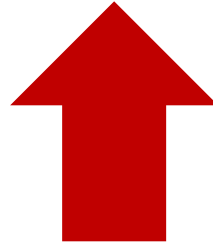
- 8,095 Acres purchased or protected in the middle and upper Charles River watershed since 1977. Project Cost of \$8,300,000
- From 1977 through September 2016, the project has provided \$11,932,000 in flood protective services (not counting for inflation).
- Co-benefits include recreation and natural resource benefits



<http://www.nae.usace.army.mil/Missions/Civil-Works/Risk-Management/Massachusetts/Charles-River-NVSA/>

Key Observed Climate Changes in MA

Temperature:

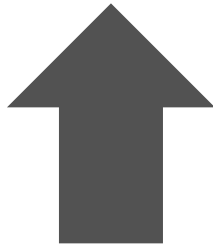


2.9°F

Since 1895

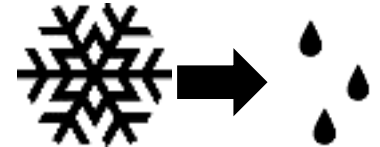


Growing Season:

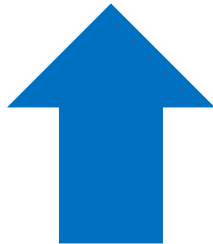


11 Days

Since 1950



Sea Level Rise:

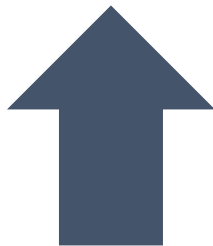


11 inches

Since 1922

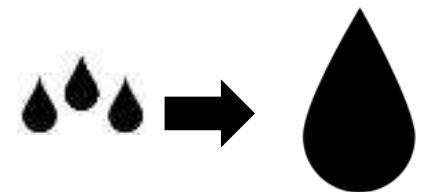


Strong Storms:



55%

Since 1958

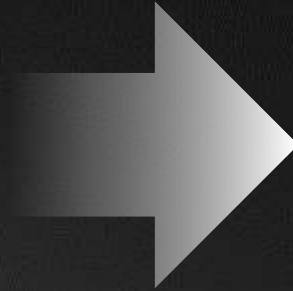


**Why do rising temperatures also
bring more precipitation?**



...consider your
morning coffee.

**More
evaporation**



**More
fuel for storms**



**More
precipitation**

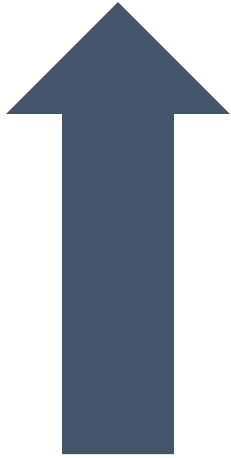
*warmer air holds
more moisture aloft*

**More
Heat**



How Much More Precipitation?

Total annual precipitation
has increased by:



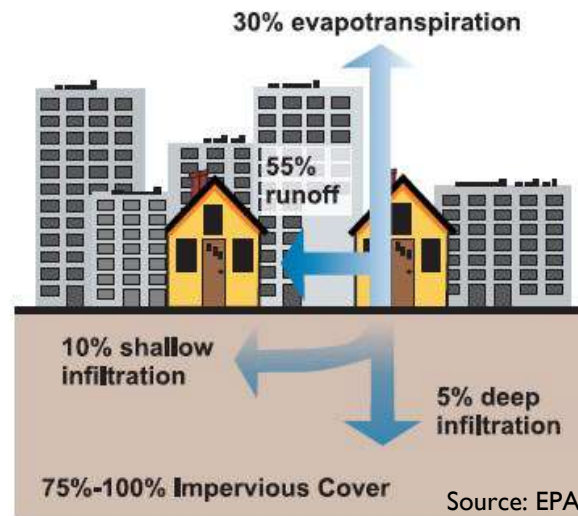
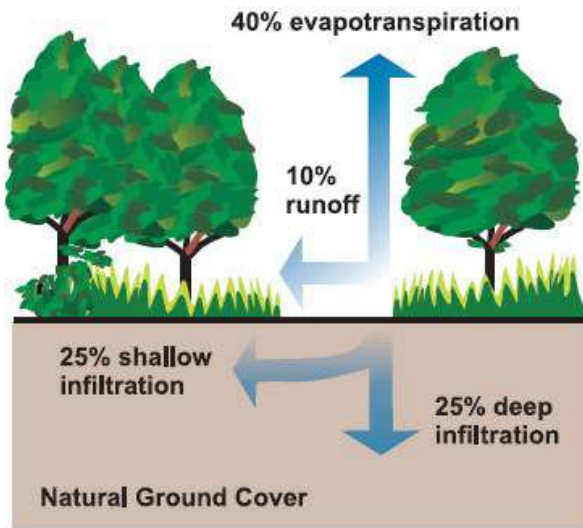
15%

***1.2 trillion more gallons of
water or equivalent snow falling
on Massachusetts each year.***

~9,700 filled Prudential Towers



What's the problem?



Impervious
surface



Runoff



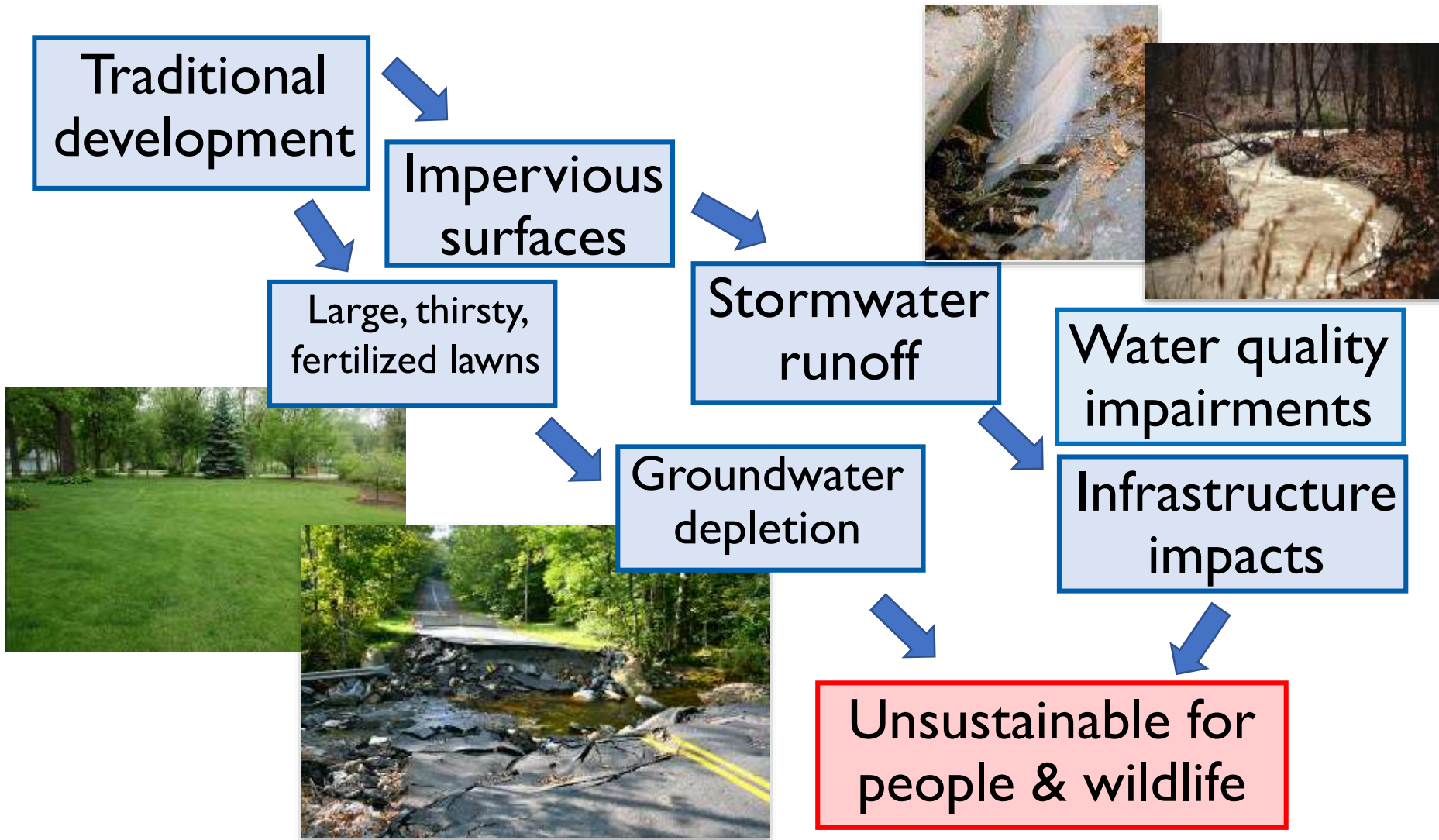
Large lawns



Fertilizer

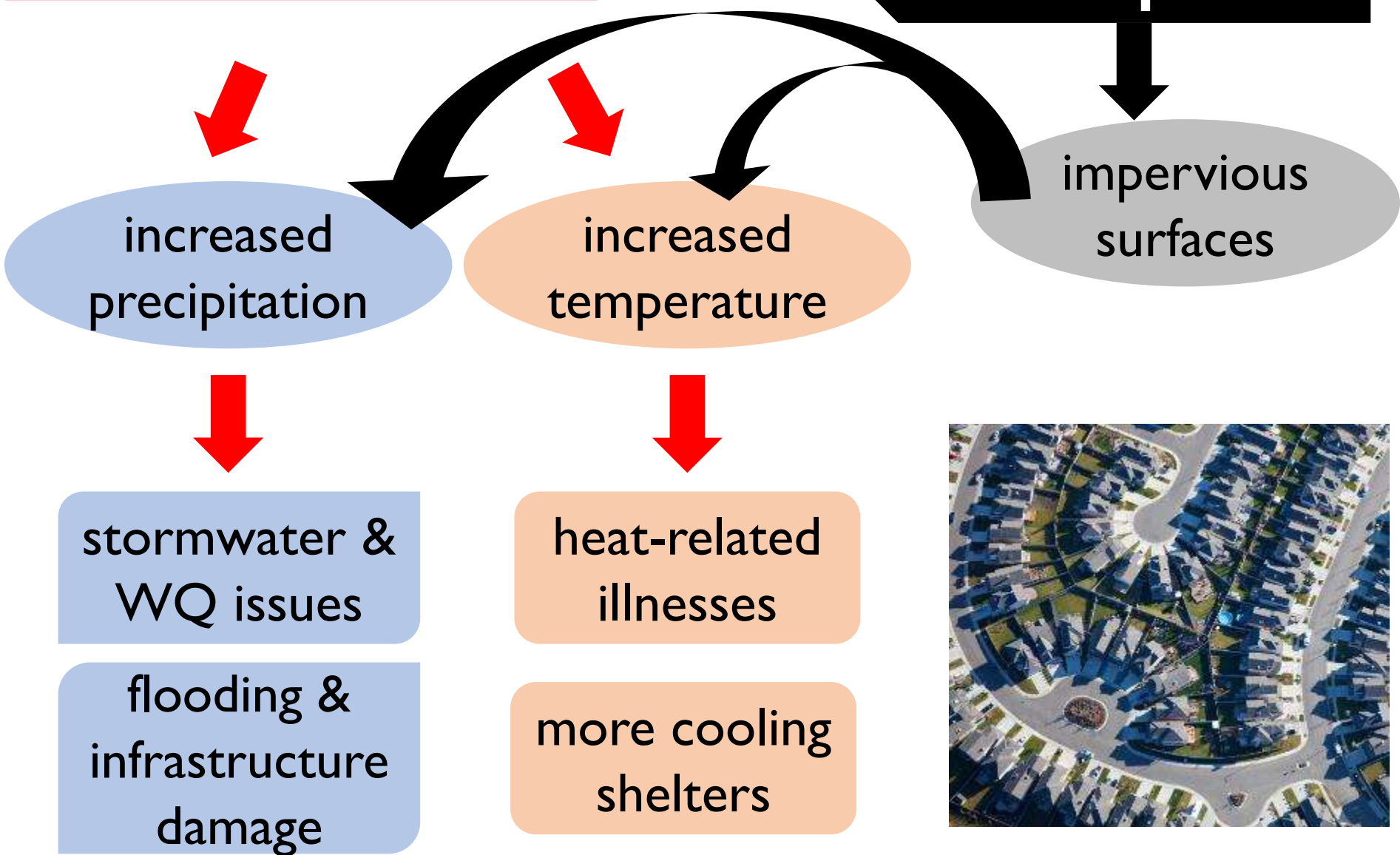


We need to change course



Climate change

Sprawling Development



Impacts: dry rivers, flooding, algae blooms, beach closures



There are real solutions.

**One of the best adaptation practices
is preserving natural areas.**



What does sustainable development really look like?: Actions at every scale

Conserve the natural green infrastructure already providing free ecosystem services

Integrate LID and green infrastructure design into development

Restore the resiliency of urban landscapes through LID in redevelopment



Conserve

Conserve the natural green infrastructure already providing free ecosystem services

Integrate LID and green infrastructure designs into current development projects

Restore the resiliency of urban landscapes through LID in redevelopment



Integrate

Conserve the natural green infrastructure already providing free ecosystem services

Integrate LID and green infrastructure designs into current development projects

Restore the resiliency of urban landscapes through LID in redevelopment



Restore

Conserve the natural green infrastructure already providing free ecosystem services

Integrate LID and green infrastructure designs into current development projects

Restore the resiliency of local landscapes through LID in redevelopment





CHARLES D. BAKER
GOVERNOR

OFFICE OF THE GOVERNOR
COMMONWEALTH OF MASSACHUSETTS
STATE HOUSE • BOSTON, MA 02133
(617) 725-4000

KARYN E. POLITO
SACUFFMAN GOVERNOR

By His Excellency
CHARLES D. BAKER
GOVERNOR

EXECUTIVE ORDER NO. 569

ESTABLISHING AN INTEGRATED CLIMATE CHANGE STRATEGY
FOR THE COMMONWEALTH

WHEREAS, climate change presents a serious threat to the environment and the Commonwealth's residents, communities, and economy;

WHEREAS, extreme weather events associated with climate change present a serious threat to public safety, and the lives and property of our residents;

WHEREAS, the Global Warming Solutions Act (the "GWSA") directs the Secretary of Energy and Environmental Affairs and the Department of Environmental Protection to take certain steps to reduce greenhouse gas emissions and prepare for the impacts of climate change, including setting statewide greenhouse gas emissions limits for 2020, 2030, 2040 and 2050;

WHEREAS, the statewide greenhouse gas emissions limit for 2020 is 25% below the 1990 level of emissions and the corresponding limit for 2050 is 80% below the 1990 level of emissions, but no interim limits have yet been set for 2030 or 2040;

WHEREAS, the Commonwealth can provide leadership by reducing its own emissions from state operations, planning and preparing for impending climate change, and enhancing the resilience of government investments;

WHEREAS, the transportation sector continues to be a significant contributor to greenhouse gas emissions in the Commonwealth, and is the only sector identified through the GWSA with a volumetric increase in greenhouse gas emissions;

WHEREAS, the generation and consumption of energy continues to be a significant contributor to greenhouse gas emissions in the Commonwealth, and there is significant potential



Baker Administration's Support



EO Language:
“...strategies that **conserve and sustainably employ the natural resources** of the Commonwealth to **enhance climate adaptation, build resilience and mitigate climate change...**”

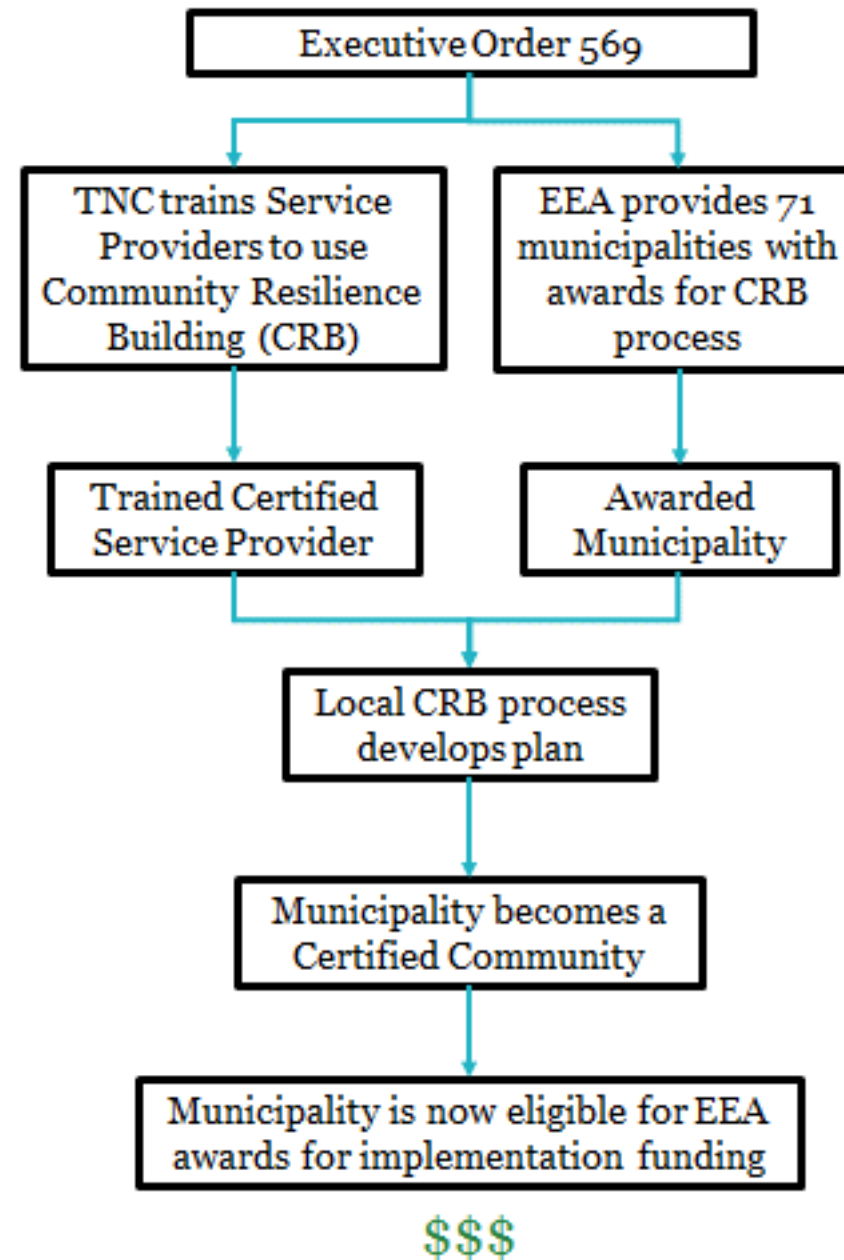
Nature-Based Solutions



Nature-Based Solutions *use* natural systems, *mimic* natural processes, or *work in tandem with* traditional approaches to address natural hazards like **flooding**, **erosion**, **drought**, and **heat islands**.

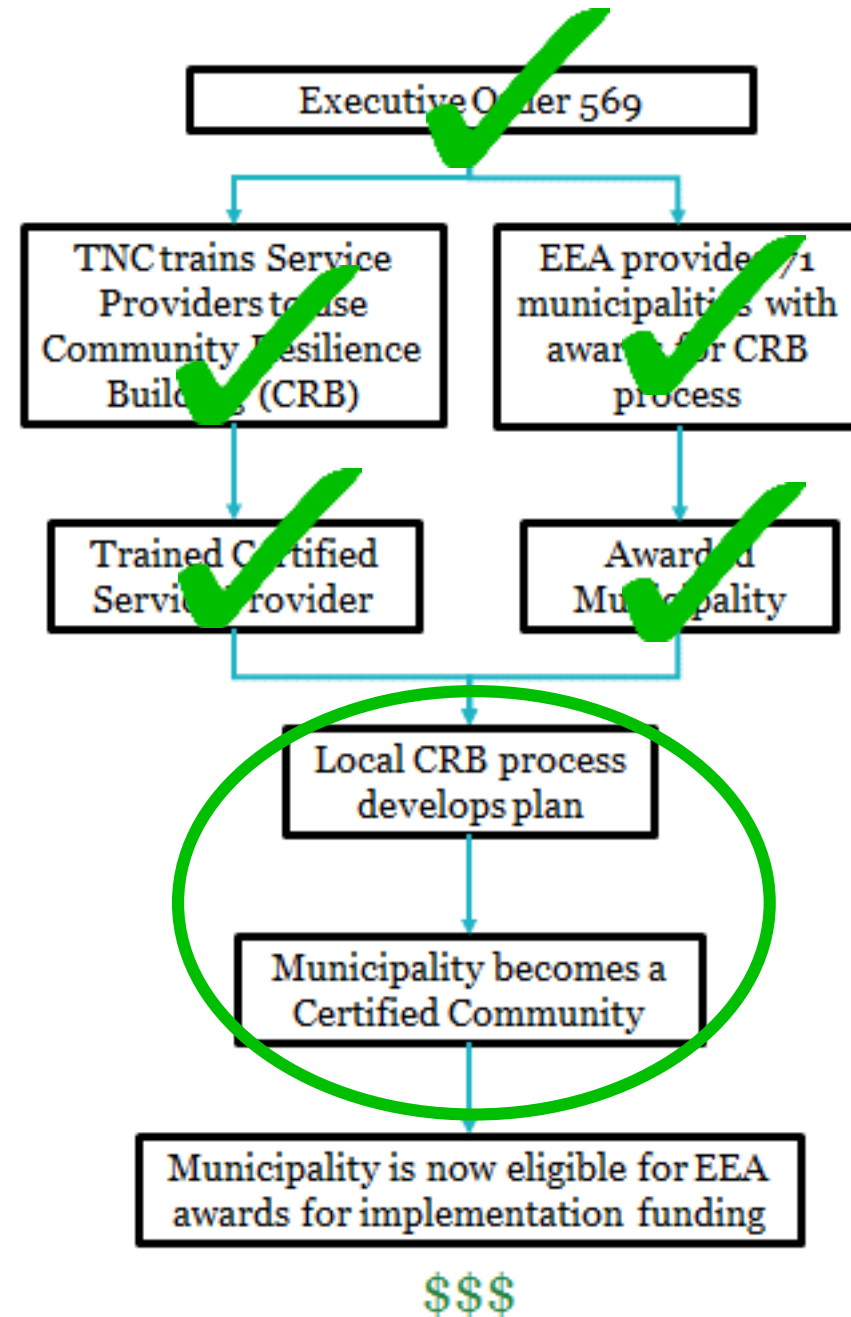
Incorporating nature-based solutions in local planning, zoning, regulations, and built projects can help communities reduce their exposure to these impacts, resulting in reduced costs, economic enhancement, and safer, more resilient communities.

Municipal Vulnerability Preparedness Process



Where is MVP Now?

A new round of municipal applications for funding coming soon!!!!



Benefits of MVP



Municipal Vulnerability Preparedness (MVP)



State and local partnership grant to build resiliency to climate change

- Preferred/prioritized funding from state
- “90% of the way there” for Hazard Mitigation planning
- Community of practice & support available to you, like Mass ECAN
- Creation of technical resources and webinars available to you

Return on Investment Studies in MA Trust for Public Land

- Outdoor recreation generates:
 - \$10 billion in consumer spending
 - \$739 million in state and local tax revenue
 - 90,000 jobs
 - \$3.5 billion in annual wages and salaries
- Agriculture, forestry, commercial fishing, and related activities generate:
 - \$13 billion in output
 - 147,000 MA Jobs
- **Conservation Projects Return \$4 : \$1 spent**



Avoided Costs



**Environmental
Services**

Return on Investment Studies in MA

Div. of Ecological Restoration



DER aquatic restoration projects produce an average employment demand of **12.5 jobs** and **\$1.75 Million** in total economic output from each \$1 Million spent, contributing to a growing “restoration economy” in Massachusetts



Environmental
Services

Enhanced Safety

Avoided Costs

Return on Investment Studies Northeast US Scientific Reports

- In Hurricane Sandy, wetlands reduced \$625,000,000 in direct flooding damages in New Jersey
- In New England, wetlands reduce storm damage by approximately 16%



**Environmental
Services**



**Enhanced
Safety**



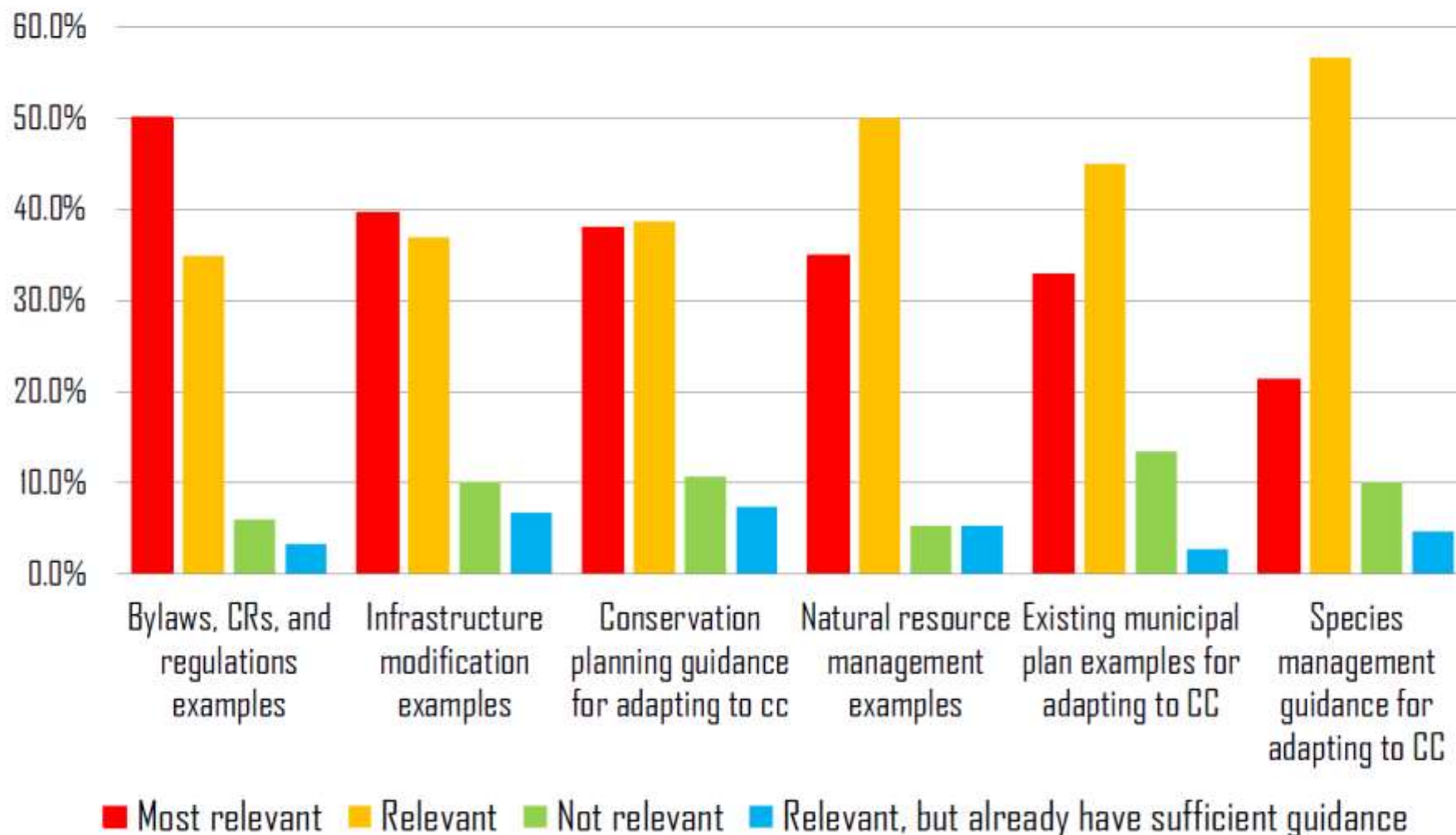
**Avoided
Costs**



<https://www.nature.com/articles/s41598-017-09269-z>

Identifying Barriers

From the Climate Action
Tool survey, 2015



*Note! 70% of respondents were municipal professionals, but most already engaged in land conservation.

Ensuring Success Webinars

MVP Tool Box

mass.gov/municipal-vulnerability-preparedness-program

- Working with MVP Service Providers: [View recording](#)
- Advancing Social Equity in Climate Adaptation Planning: [View recording](#)
- Alternatives for engaging your community: [View presentation slides](#)
- The importance of listening: [View recording](#)
- Bylaw Review –Encouraging Nature Based Solutions: [View recording](#)
- Nature Based Solutions: [View recording](#)
- Characterizing coastal flood hazards and increasing resilience: [View recording](#)

Resources for Nature-Based Solutions

Guidance/Case Studies

- [Naturally Resilient Communities](#) successful project case studies from across the country to help communities learn and identify nature-based solutions
- [EPA's Soak Up the Rain](#) stormwater outreach tools, how-to guides and resources
- [EPA's RAINE](#) database of vulnerability, resilience and adaptation reports, plans and webpages at the state, regional and community level.
- [Climate Action Tool](#) explore adaptation strategies and actions to help maintain healthy, resilient wildlife communities in the face of climate change.

Mapping/Planning

- [Mapping and Prioritizing Parcels for Resilience \(MAPPR\)](#) ID priority parcels for protection and climate change resilience
- [Living Shorelines in New England: State of the Practice](#) and [Profile Pages for Solutions](#) are case studies, siting criteria, and regulatory challenges for coastal resilience in New England.
- [Low Impact Development Fact Sheets](#) cover valuing green infrastructure, conservation design, development techniques, regulations, urban waters, and cost calculations.

Cost/Benefit

- [EPA's Green Infrastructure cost/cost-benefit/tools](#) Database of tools for comparing solution costs
- [Massachusetts Division of Ecological Restoration's](#) economic benefits of aquatic restoration based on MA case studies

Bylaws/Ordinances

- [EEA's Smart Growth Toolkit](#) access to information on planning, zoning, subdivision, site design, and building construction techniques
- [Guide for Supporting LID in Local Land Use Regulations](#) provides a framework for communities to review their zoning, rules, and regulations for a number of factors.

SOLUTIONS

6 Results

CASE STUDIES

0 Results

HELP ME CHOOSE

Hazard Types

- ☐ Coastal Erosion
- ☐ Tidal Flooding
- ☐ Coastal Flooding
- ☐ Riverine Erosion
- ☐ Riverine Flooding
- ☐ Stormwater Flooding

Region

- ☐ Coastal West
- ☐ Great Lakes
- ☐ Gulf of Mexico
- ☐ Mid-Atlantic
- ☐ Midwest
- ☒ Northeast
- ☐ Pacific Northwest
- ☐ Rocky Mountain West
- ☐ Southeast
- ☐ Southwest

Community Type

- ☐ Rural
- ☒ Suburban
- ☐ Urban

Scale

- ☐ Community
- ☒ Neighborhood
- ☐ Site



Open Space Preservation through Land Acquisition

Coastal Erosion Riverine Flooding Riverine Erosion
Coastal Flooding Stormwater Flooding Tidal Flooding

This strategy focuses on the public acquisition of undeveloped land to lessen...



Green Streets

Coastal Erosion Riverine Flooding Riverine Erosion
Coastal Flooding Stormwater Flooding Tidal Flooding

Green streets incorporate depressed planted areas, typically located between the roadway pavement...



Urban Trees + Forests

Coastal Erosion Riverine Flooding Riverine Erosion
Coastal Flooding Stormwater Flooding Tidal Flooding

Urban forestry is the planned installation and management of trees within an...



Floodwater Detention and Retention Basins

Coastal Erosion Riverine Flooding Riverine Erosion
Coastal Flooding Stormwater Flooding Tidal Flooding

A detention basin is an area that has been designed and designated...



Horizontal Levees

Coastal Erosion Riverine Flooding Riverine Erosion
Coastal Flooding Stormwater Flooding Tidal Flooding

A horizontal levee consists of a hardened structure (levee) setback from the...



Daylighting Rivers and Streams

Coastal Erosion Riverine Flooding Riverine Erosion
Coastal Flooding Stormwater Flooding Tidal Flooding

Daylighting rivers or streams is the process of removing obstructions (such as...

<http://nrcsolutions.org/>

Floodplain Buyout: Woloski Park, Middleborough, MA

- 10 home buyout in Taunton River floodplain
- FEMA's Hazard Mitigation Grant Program funded 75% of ~\$1Million cost
 - 25%: Town and The Nature Conservancy

Benefits:

- Avoided safety risk
- Avoided emergency evacuation and property recovery costs
- High quality habitat is restored, floodplain and ecosystem services recovered



Enhanced Safety



Avoided Costs



Environmental Services



Enhanced Safety

Whittenton Dam Removal, Taunton, MA

Costs

- Dam Repair = \$1.9 Million
- Dam maintenance = variable
- 2005 Evacuation Costs = \$1.5 Million
- Dam Removal Costs = \$440,000

Benefits

- Reduced Flood Risk
- Increased revenue
- Increased property values
- Water quality benefits



Environmental Services



Enhanced Safety



Avoided Costs

Factors	Conventional	Better	Best	Community's Zoning	Community's Subdivision Rules & Regulations	Community's Site Plan Review	Community's Stormwater/LID Bylaw/Regulations
GOAL 1: PROTECT NATURAL RESOURCES AND OPEN SPACE							
Soils managed for revegetation	Not addressed	Limitations on removal from site, and/or requirements for stabilization and revegetation	Prohibit removal of topsoil from site. Require rototilling and other prep of soils compacted during construction	(Not applicable)			
Limit clearing, lawn size, require retention or planting of native vegetation/naturalized areas	Not addressed or general qualitative statement not tied to other design standards	Encourage minimization of clearing/ grubbing	Require minimization of clearing/grubbing with specific standards				
Require native vegetation and trees	Require or recommend invasives	Not addressed, or mixture of required plantings of native and nonnative	Require at least 75% native plantings				
GOAL 2: PROMOTE EFFICIENT, COMPACT DEVELOPMENT PATTERNS AND INFILL							
Lot size	Required minimum lot sizes	OSRD/NRPZ preferred. Special permit with incentives to utilize	Flexible with OSRD/NRPZ by right, preferred option		(Not applicable)	(Not applicable)	(Not applicable)
Setbacks	Required minimum front, side, and rear setbacks	Minimize, allow flexibility	Clear standards that minimize and in some instances eliminate setbacks		(Not applicable)	(Not applicable)	(Not applicable)
Frontage	Required minimum frontage for each lot/unit	Minimize especially on curved streets and cul-de-sacs	No minimums in some instances, tied into other standards like OSRD design and shared driveways.		(Not applicable)	(Not applicable)	(Not applicable)
Common driveways	Often not allowed, or strict limitations	Allow for 2-3 residential units	Allow for up to 4 residential units, preferably constructed with permeable pavers or pavement				(Not applicable)
<div> <div>► ...</div> <div>2 OSRD Overview</div> <div>3 Zoning Subdiv SPR SW Overview</div> <div>4 Other Considerations</div> <div>5 OSRD Analysis</div> <div>6 Zoning Subdiv SPR SW Analysis</div> <div>7 Common Acronyms</div> <div>8 Resources & Model Bylaws</div> <div>9 Acknowledgements</div> </div>							

massaudubon.org/lidcost or [download here](#)

MVP Example: identified intersection that floods?



Bioretention bump outs & street trees can help to...

- capture & filter excess water – alleviate pressure on MS4
- improved pedestrian safety – better visibility, shorter walkway
- enhance aesthetics to encourage visitors & walking

without altering existing parking or bus stops



Environmental Services



Enhanced Safety

The power of a bylaw: Westford

- Adopted a Conservation Subdivision bylaw in 1978
- Requires conservation and conventional plans

Benefits

- 1,700 Acres of land Protected
- Preserved local habitat and water resources
- Created 13 miles of hiking trails & public recreation
- Town saved millions of dollars



Rail Trail in Westford

Linking Local and Regional Green Infrastructure



- Benefits of linkage:
 - Contribute to watershed-scale approach to addressing water balance, water quality and flooding concerns
 - Maximize the utility of local conservation planning
 - Control costs
 - Ecological integrity
 - Quality of life



Green Infrastructure Mapping in Taunton Watershed










Legend

-  Taunton Watershed Boundary
-  Streams

-  Town Boundaries

Land Use/Land Cover

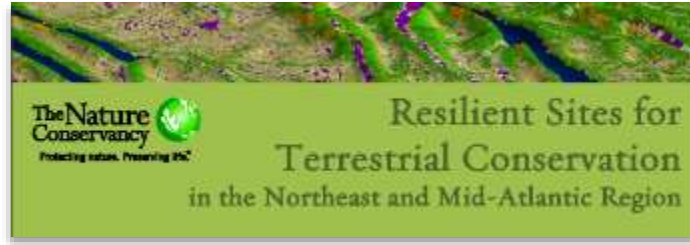
-  Open (Ag; Bare; Non-forest vegetation)
-  Commercial/Industrial/High Dens Res
-  Low Density Residential
-  Forest (incl. Forested Wetland)
-  Wetland
-  Water
-  Cranberry Bog

Major Routes, by Administrative Type

-  Interstate
-  U.S. Highway
-  State Route



Resilient Landscapes



Complex topography



+

Connected natural cover

+





High quality biodiversity features

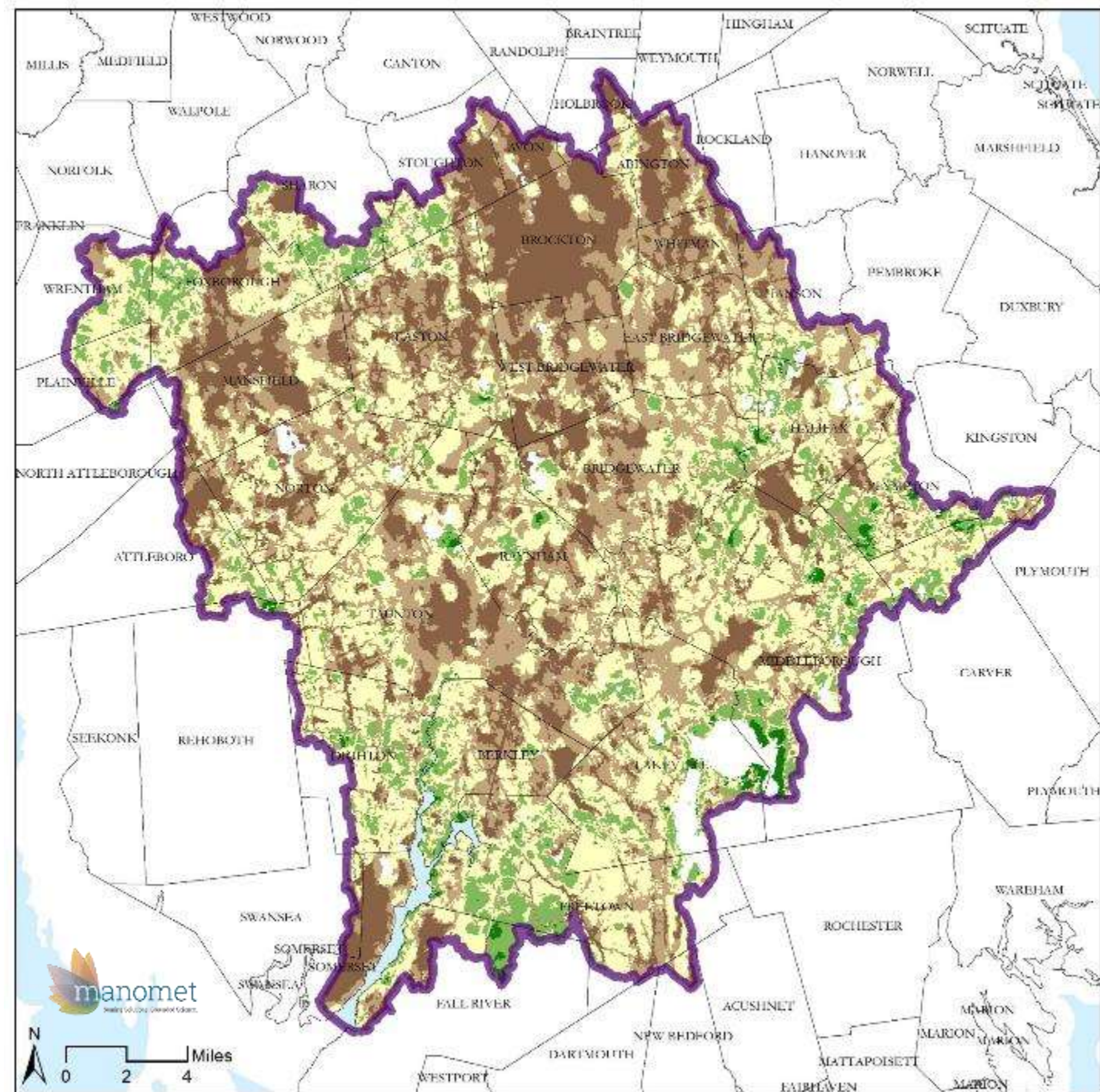
Legend

-  Taunton Watershed Boundary
-  Town Boundaries

Resilience

-  Well Above Average


-  Slightly Above Average
-  Average
-  Slightly Below Average
-  Well Below Average




Resilient Landscapes


Areas of Above Average Resilience

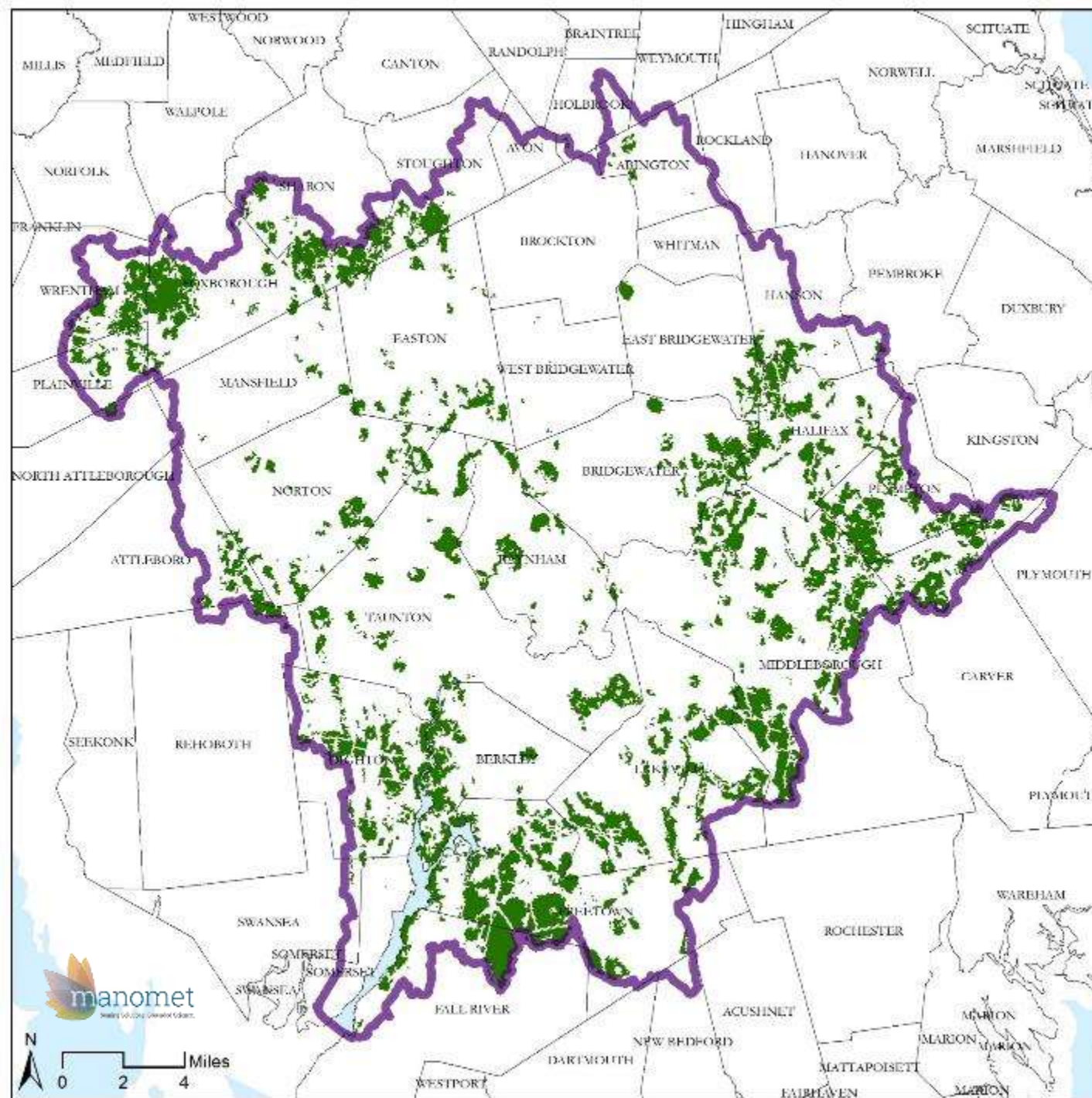
Legend

 Taunton
Watershed
Boundary

 Town
Boundaries

Resilience



 Areas of
Above
Average
Resilience




Resilient Landscapes

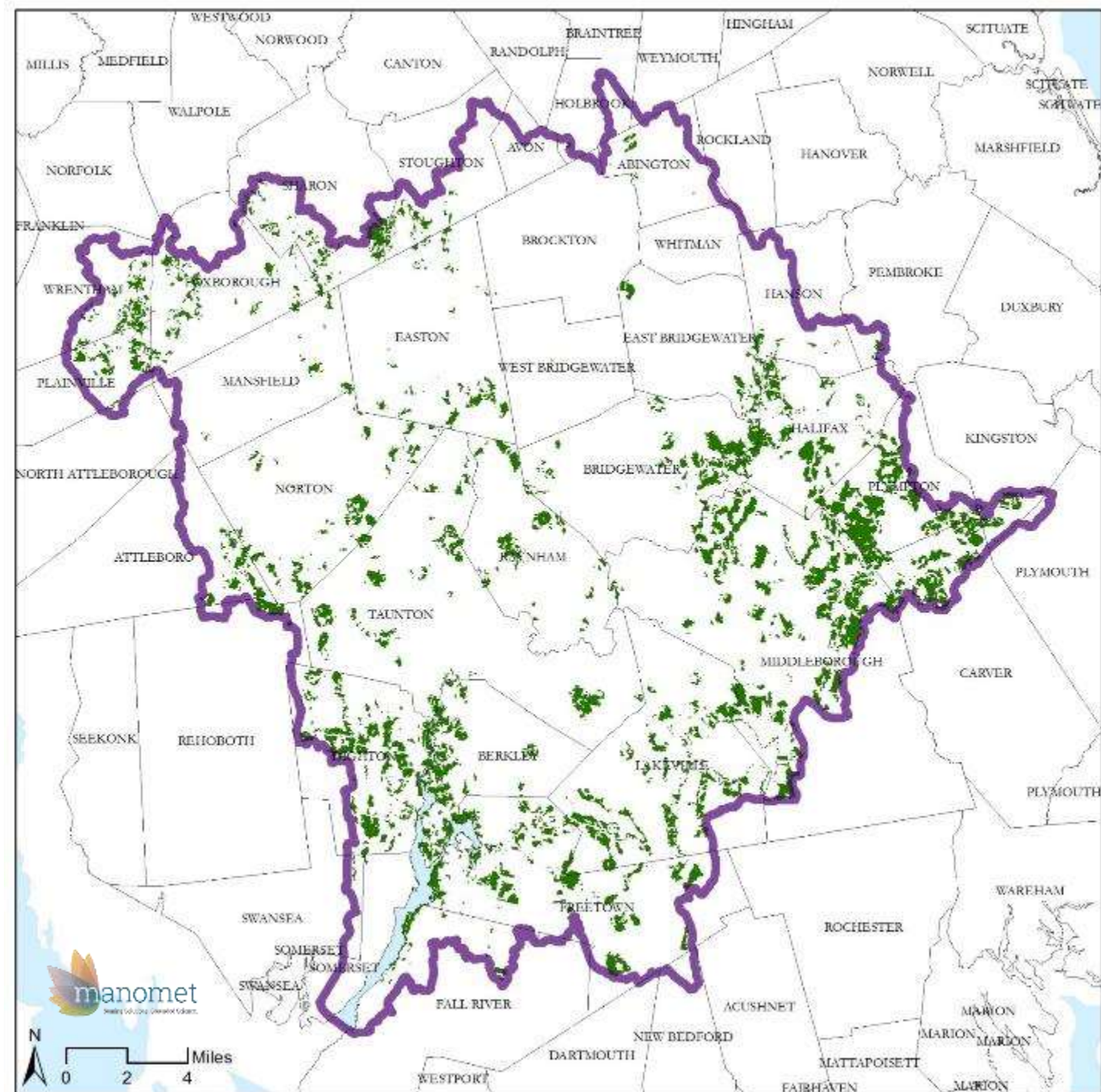
Areas of
Above Average Resilience
that are **Undeveloped and
Unprotected**

Legend

-  Taunton Watershed Boundary
-  Town Boundaries

Resilience

-  Areas of Above Average Resilience



Green Infrastructure Network Components...

Areas of
Above
Average
Resilience



BioMap2 Core and Critical Natural Landscape Areas that are **Undeveloped & Unprotected**

Legend



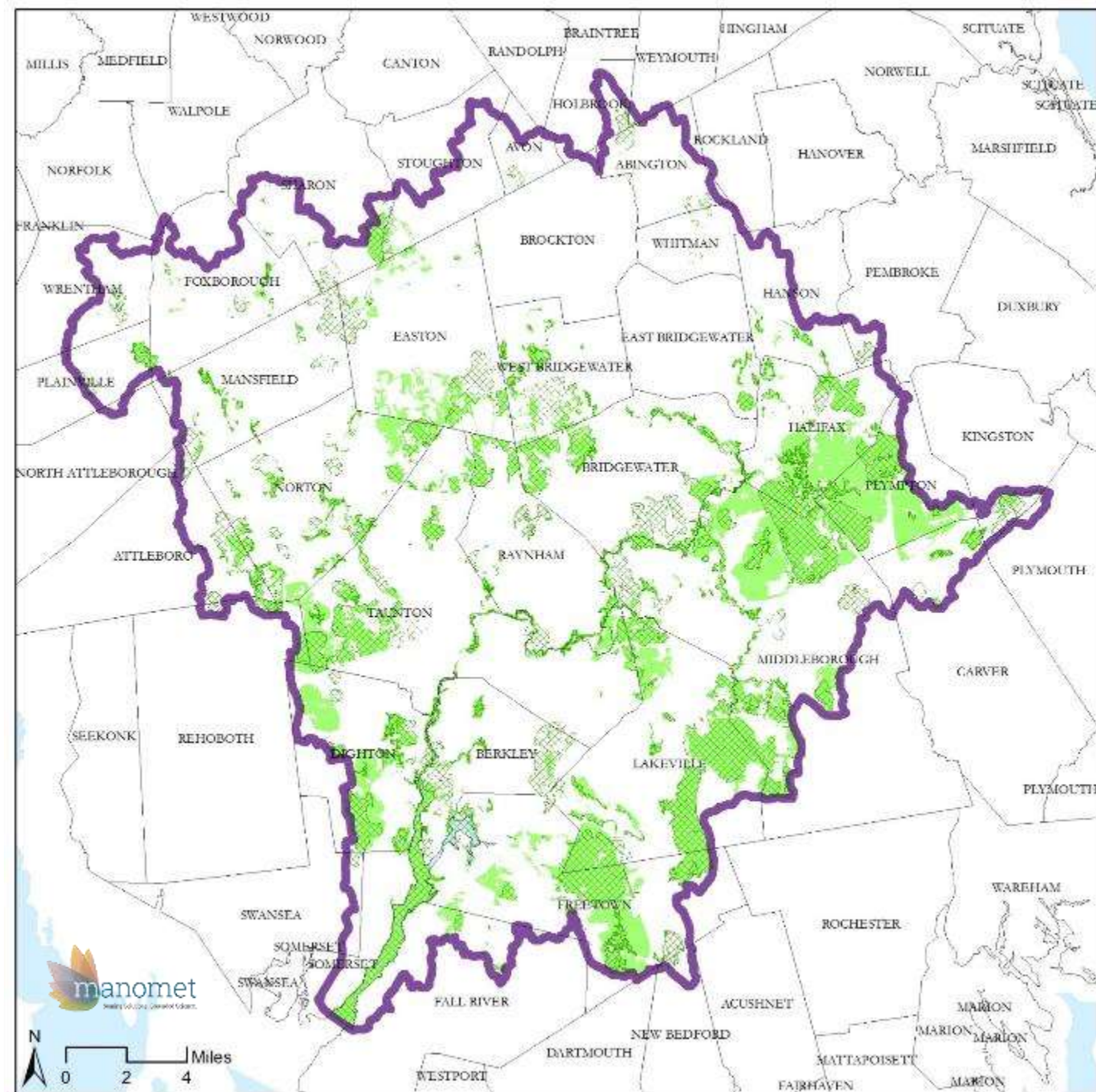
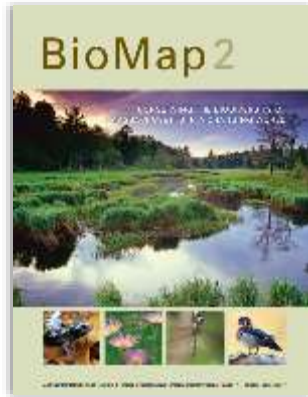
Taunton Watershed



Town

Undeveloped and Unprotected BioMap2 Core

Undeveloped and Unprotected BioMap2 Critical Natural



Green Infrastructure Network Components...

Areas of
Above
Average
Resilience







BioMap2
Core &
Critical
Natural
Landscape








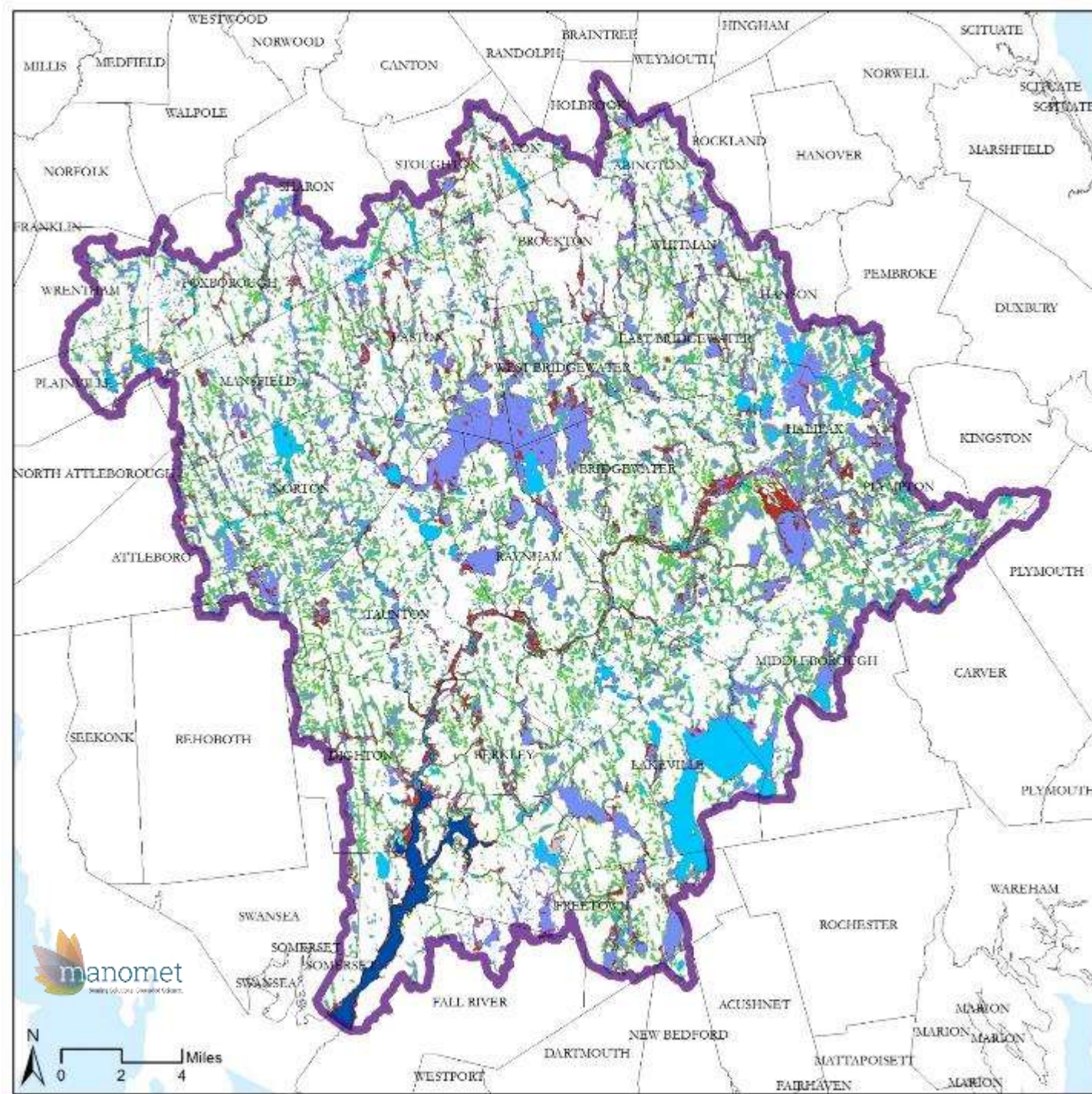
Surface water, wetlands, and Riparian buffer areas that are **Undeveloped & Unprotected**

Legend

-  Taunton Watershed Boundary
-  Town Boundaries
-  Undeveloped and Unprotected areas within 100ft of surface waters, wetlands, and flood zones
-  100-yr and High Risk Coastal Flood Areas

Surface Waters & Wetlands

-  Freshwater Pond, Lake, or Stream
-  Freshwater Wetland
-  Estuarine and Marine Deepwater
-  Estuarine and Marine Wetland
-  Other



Green Infrastructure Network Components...

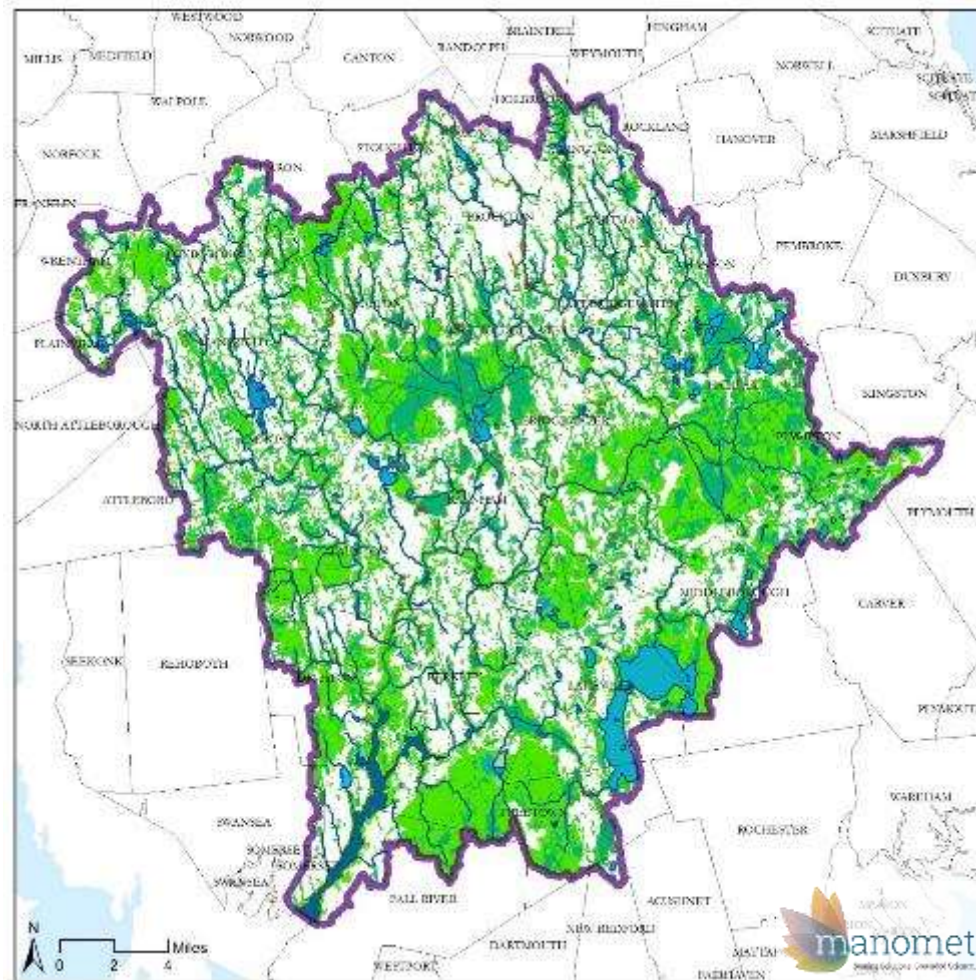
Areas of Above
Average
Resilience



BioMap2 Core &
Critical Natural
Landscape



Areas within 100ft
of Surface Waters,
Wetlands, and
Flood Zones; Areas
< /= 4m elevation



Legend

Green Infrastructure Network	Town Boundaries	Surface Waters & Wetlands	Estuarine and Marine Deepwater
100 yr and High Risk Coastal Flood Areas	Taunton Watershed Boundary	Freshwater Pond, Lake, or Stream	Estuarine and Marine Wetland
	Major Streams	Freshwater Wetland	Other

Taunton Watershed Green Infrastructure Network

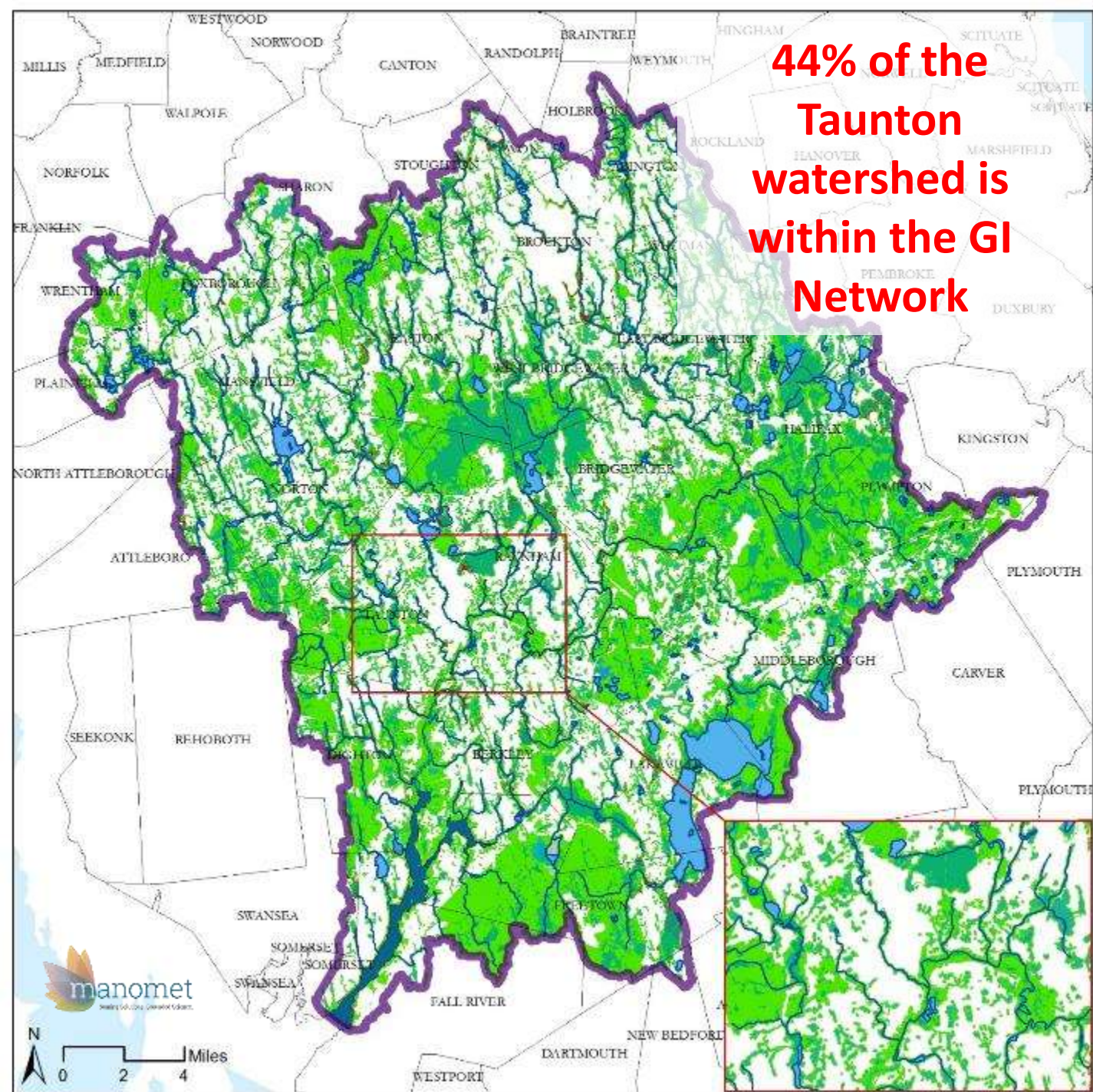
Legend

- Green Infrastructure Network
- 100-yr and High Risk Coastal Flood Areas
- Town Boundaries
- Taunton Watershed Boundary
- Major Streams

Surface Waters & Wetlands

- Freshwater Pond, Lake, or Stream
- Freshwater Wetland
- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Other

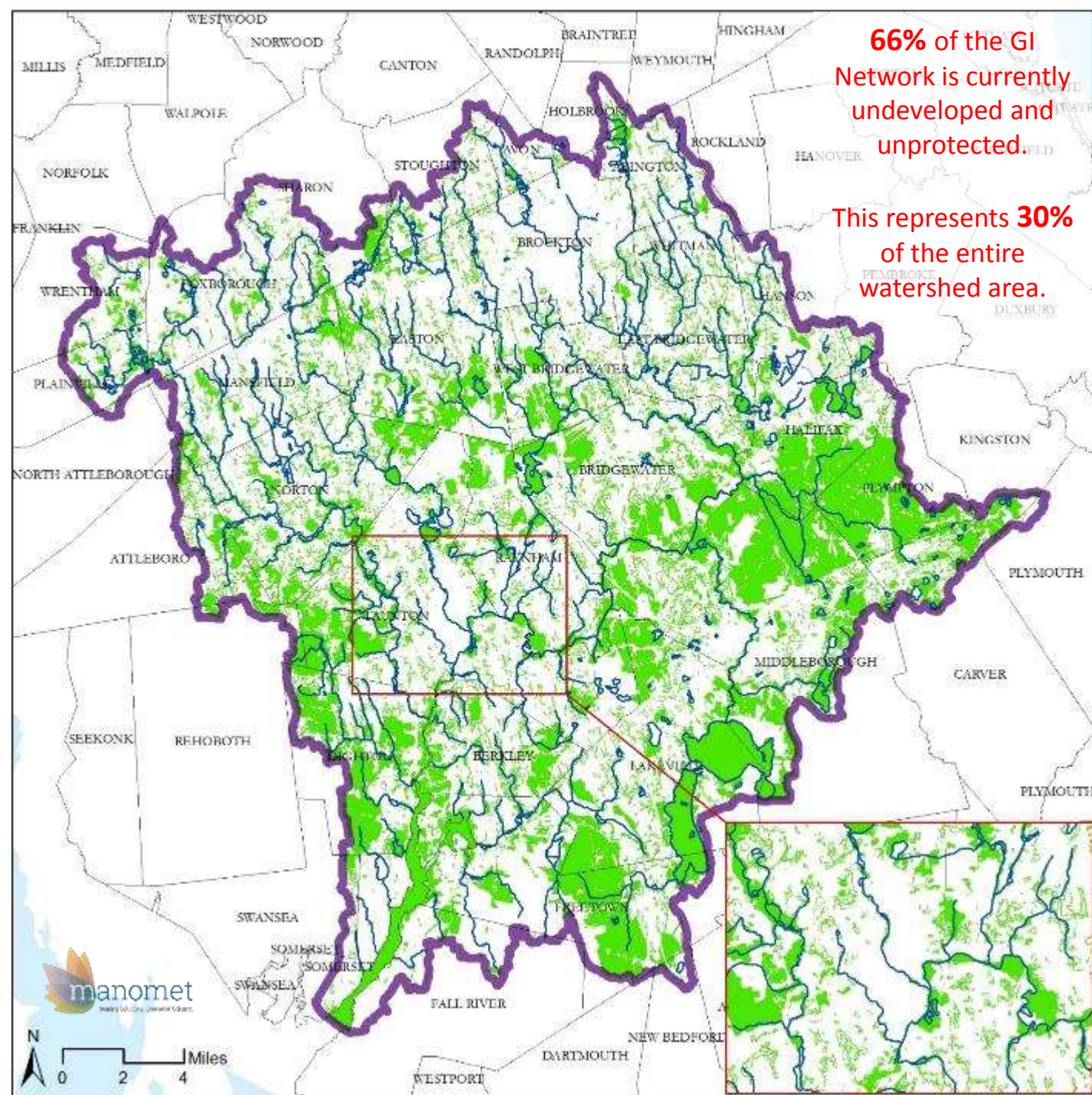
**44% of the
Taunton
watershed is
within the GI
Network**



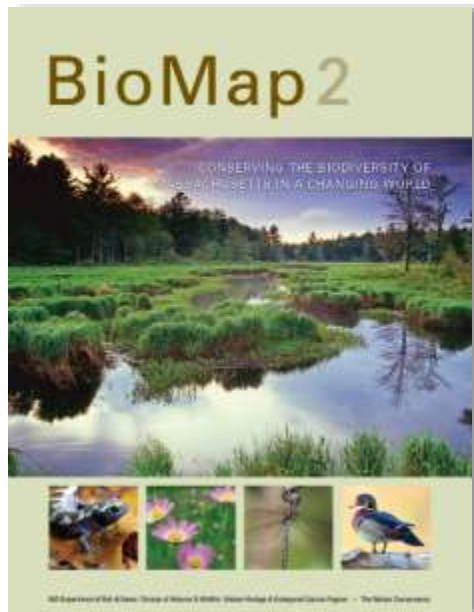
Taunton Watershed Undeveloped & Unprotected (non surface/wetland) Green Infrastructure Network

Legend

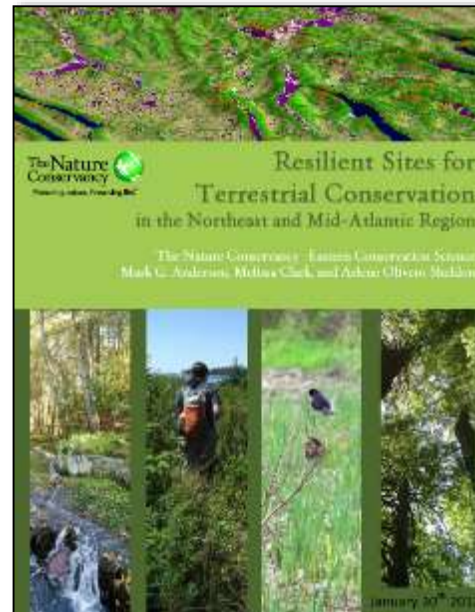
- Undeveloped and Unprotected Green Infrastructure Network
- Town Boundaries
- Taunton Watershed Boundary
- Major Streams



MAPPR: Mapping And Prioritizing Parcels for Resilience



BioMap2:
Habitat, Biodiversity



TNC Resilience:
Climate Adaptation



Critical Linkages:
Ecological Connectivity

MAPPR: In 3 Simple Steps

1

Select a study area

- Town, county, or watershed
- Land Trust area
- Dept. Fish Wildlife region

2

Choose model

- Choose a pre-calculated model (balanced, resilience, aquatic, or biological)
- Choose specific model values

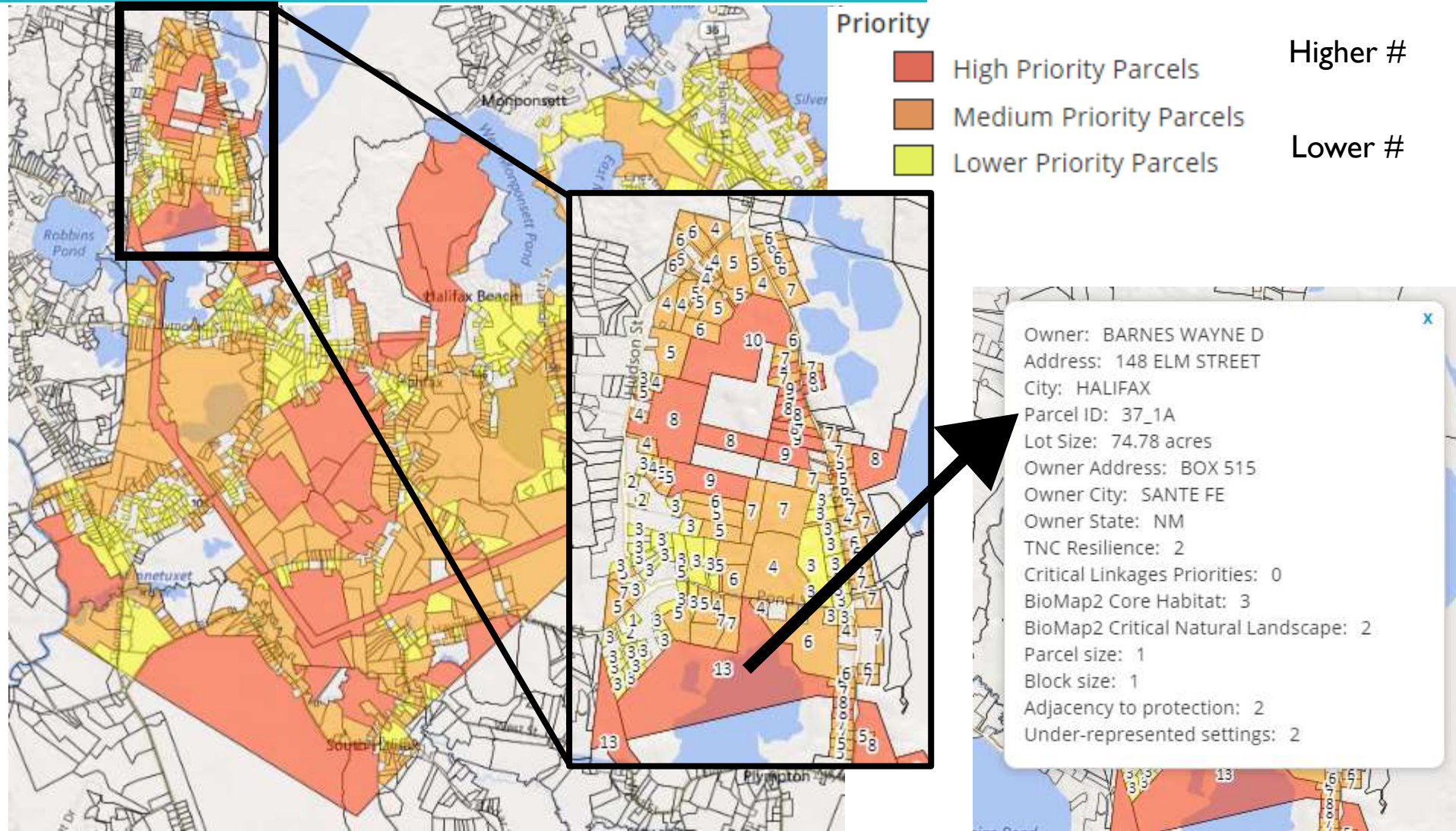
3

Run & Review Results

- Review results, including priority scoring and parcel ownership
- Adjust optional filters and constraints

Values: Resilient Sites for Conservation, Critical Linkages Priorities, BioMap2 Core Habitat, Parcel Size, Block Size, Adjacent to Protection

MAPPR in Halifax Balanced Model



Linking Local and Regional Green Infrastructure

- Mechanisms for linkage:
 - Comprehensive/Master Plans,
 - Cluster subdivision requirements,
 - Open space districts,
 - Transfer of development rights,
 - Water resource protection overlay districts,
 - Floodplain management,
 - Wetland protection districts and bylaws
 - Open space plans.



Swansea Marsh and Habitat Conservation

- 37 acres in Palmer River Corridor purchased and conserved by Town of Swansea, Wildlands Trust, and Blount Fine Foods for \$110,000
- Major storms in 2010 and 2012 damaged stormwater and transportation infrastructure

Resilience Benefits

- Dissipated energy from storm, tide, and flood events
- Avoided cost of infrastructure repairs and replacement
- Protected water quality
- Future marsh migration



Creating Healthy, Resilient Communities *through* Green Infrastructure

Join us for **two interactive, half-day workshops** to identify what keeps our communities **healthy**, where we are **vulnerable** to weather, and how **green infrastructure** can solve many of the challenges we face in the Taunton Watershed.

Parts 1&2

January 27th, 9am-1pm

Norton Public Library

1. Context: Identifying our local assets and vulnerabilities

An interactive exploration of natural and built assets in your community, discussing vulnerabilities and sharing ideas to protect them.

2. Science: How climate affects us in Eastern Massachusetts



Parts 3&4

February 3rd, 9am-1pm

Norton Public Library

3. Discovery: Mapping our green infrastructure

We will identify local green infrastructure areas, prioritize their protection, and identify the steps you can take to preserve the benefits they provide.

4. Solutions: How to implement what we've learned

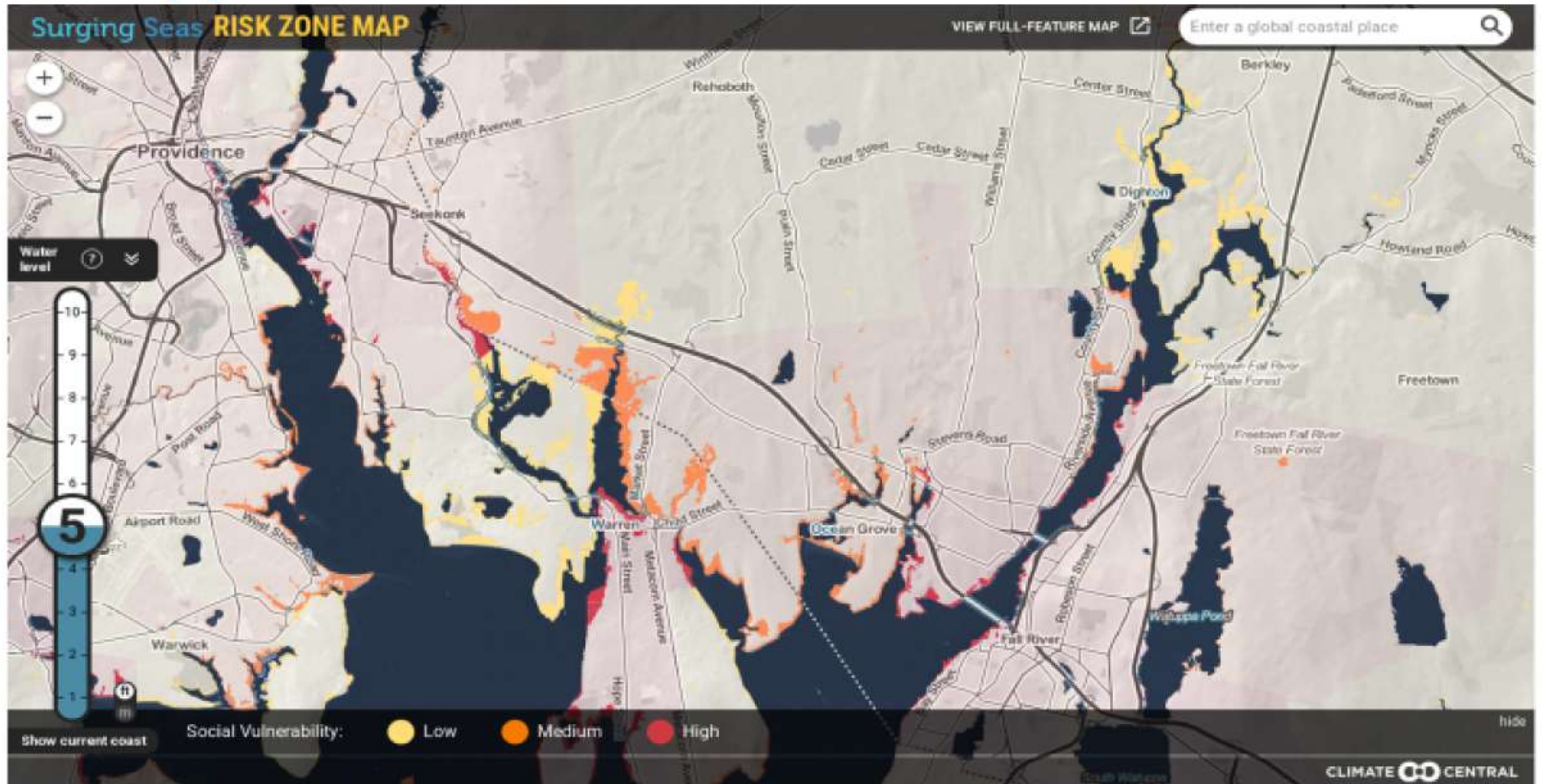
We will discuss some examples of successful green

Swansea Participated:

- Threats from SLR
- Beach Nourishment
- Salt Marsh Acquisition

Swansea Surging Seas Map

Land and population below 5 feet in Swansea, MA



Land and population below 5 feet in Swansea, MA



- Population: 490
- Homes: 230
- Property value: \$73 Million
- Miles of road: 2 miles
- Local roads: 2 miles

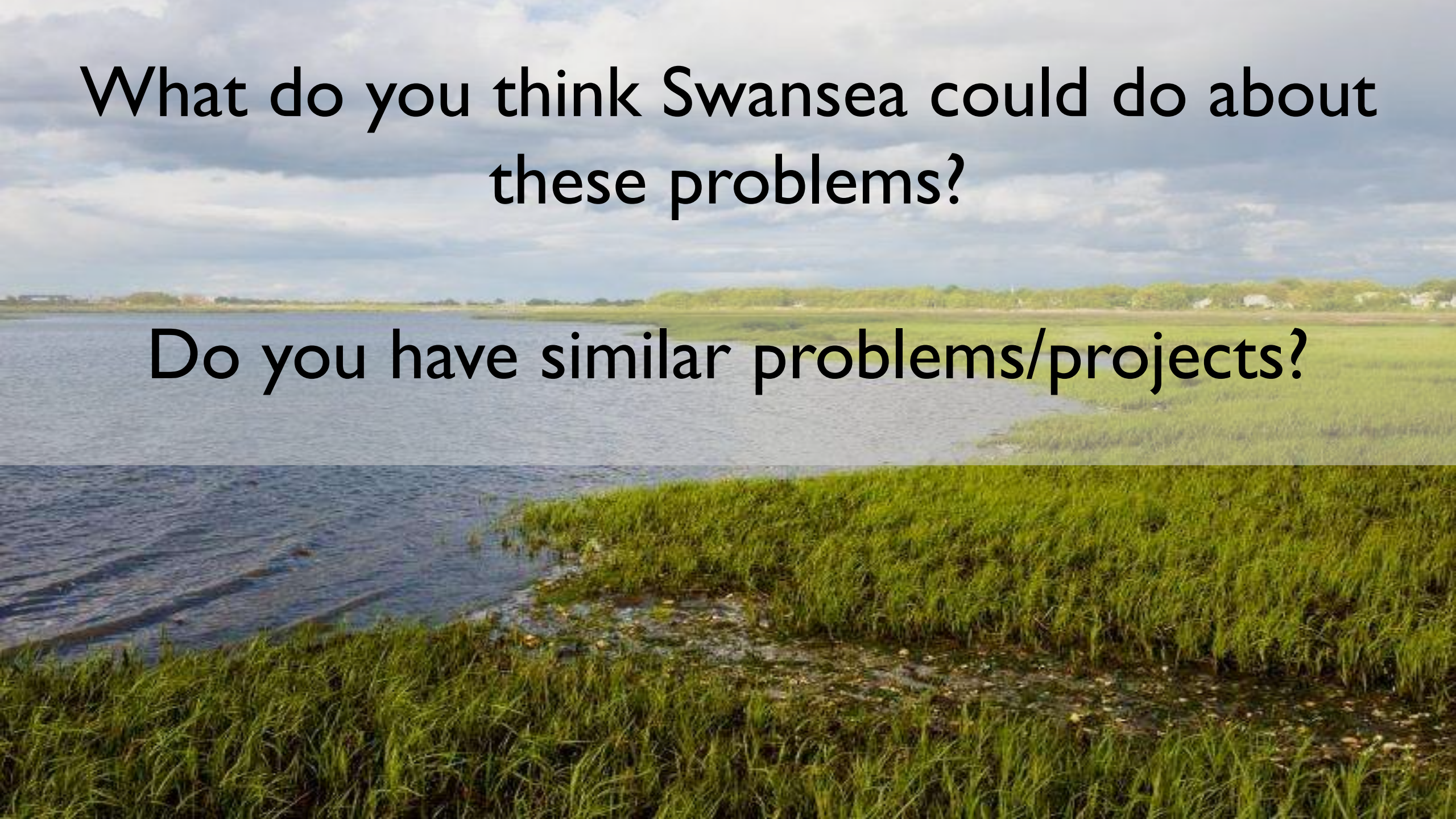
Swansea Surging Seas Map

Land and population below 5 feet in Swansea, MA



What do you think Swansea could do about these problems?

Do you have similar problems/projects?



Funding

Certified MVP Communities Receive Priority Ranking

- MA Clean Water State Revolving Fund Program (CWSRF)
- MA Office of Coastal Zone Management (CZM)
- MA Department of Agricultural Resources (MDAR)
- MA Executive Office of Energy and Environmental Affairs (EEA)
- MA Department of Environmental Protection (DEP)
- Mass Environmental Trust (MET)



Environmental
Protection



5 things you can do as conservation agent/commissioner

1. Apply to become an MVP community & participate in the core team
2. Talk to your neighbors, fellow board members, and community members about climate change and nature based solutions
3. Advocate to adopt the Community Preservation Act or support CPA projects
4. Work with your planning board to adjust local bylaws & regulations that support climate smart nature based solutions
5. Vote in local, state, and federal elections to promote candidates that support climate smart solutions and funding



Ten things local homeowners & citizens can do

1. Divert your downspouts

2. Plant a rain garden

3. Replace impervious surfaces

4. Adopt a drain – and encourage others to

5. Don't wash your car in the driveway




6. Pick up pet waste

7. Reduce fertilizer and pesticide use

8. Replace lawn with native plants

9. Reduce lawn watering and mowing

10. Pick up leaf litter (compost/dispose of properly)



Thank you!
Questions!



**Shaping
the Future
of Your
Community**



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