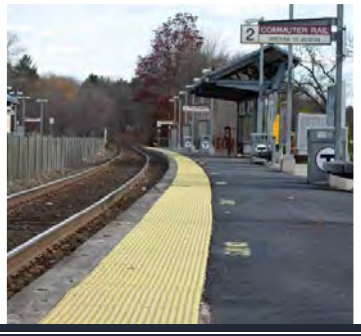
Municipal Vulnerability Preparedness:
CRB Workshop Summary of Findings

March 2020

Town of Southborough, MA



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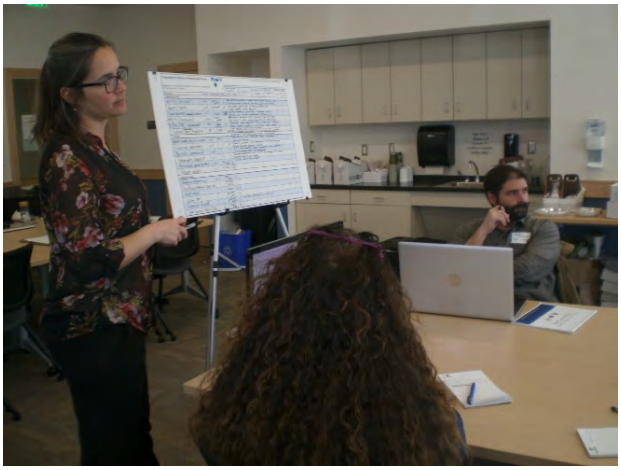
EXECUTIVE SUMMARY

The Town of Southborough has taken an important first step toward building societal, environmental, and infrastructure resilience within their community by participating in the Municipal Vulnerability Preparedness (MVP) program executed through the Executive Office of Energy and Environmental Affairs (EEA). An MVP Planning Grant was awarded to the Town from the EEA, allowing Southborough to complete the planning steps required to earn designation as an "MVP Community" and begin the process of updating their Local Hazard Mitigation Plan (LHMP). This approach to municipal resilience and climate adaptation planning will allow Southborough to undertake a comprehensive planning process that employs local knowledge to identify natural and weather-related hazards, recognize the community's strengths and vulnerabilities, and prioritize actions to help mitigate damages and prepare them for the future. This successful MVP Planning effort results in a list of clear actions that Southborough can incorporate into the LHMP and work toward implementing to improve community resilience, thus reducing disaster recovery time and cost for the Town, the region, and the Commonwealth. This process is an integral art of the update to the LHMP, which will result in a hazard mitigation plan that helps prepare the Town for the long-term impacts of natural and man-made hazards, including climate change.

Melissa Danza, the MVP Project Manager and Conservation Agent for Southborough, initiated the MVP planning process by assembling a Core Team to help lead the effort within the community. The Core Team included: Neal Aspesi, Director of Emergency Management, Karen Galligan, Director of Public

Works, and John Parent, Facilities Director. The Core Team met in early December 2019 to outline the primary goals and objectives for the MVP process, discuss integration with the LHMP, and plan next steps in preparation for the workshop. With the assistance of Pare Corporation, a certified MVP Provider, the Town developed a list of attendees for their Community Resilience Building workshop and took steps to prepare for the planning workshop.



A full-day Community Resilience Building (CRB) Workshop was held on March 9, 2020 at the Southborough Public Safety Complex at 32 Cordaville Road. A total of 24 community stakeholders participated in the CRB Workshop (see full list of Attendees at the end of this document), divided into four breakout groups. Pare Corporation with assistance from Linnean Solutions provided one facilitator and one scribe for each group, which were also supplied with a digital GIS database and printed reference maps (see Attachments). After an introductory presentation by the Lead Facilitator and each of the members of the Core Team, the breakout groups dove into the main portion of the workshop.

The workshop followed the CRB framework, guiding each of the breakout groups through the following steps in the planning process:

- Identify past, current, and future impacts from natural hazards
- Determine the highest-priority hazards
- Identify the **infrastructural** vulnerabilities and strengths
- Identify **societal** vulnerabilities and strengths
- Identify **environmental** vulnerabilities and strengths
- Identify and prioritize infrastructural actions
- Identify and prioritize societal actions
- Identify and prioritize environmental actions
- Identify highest-priority actions for Southborough

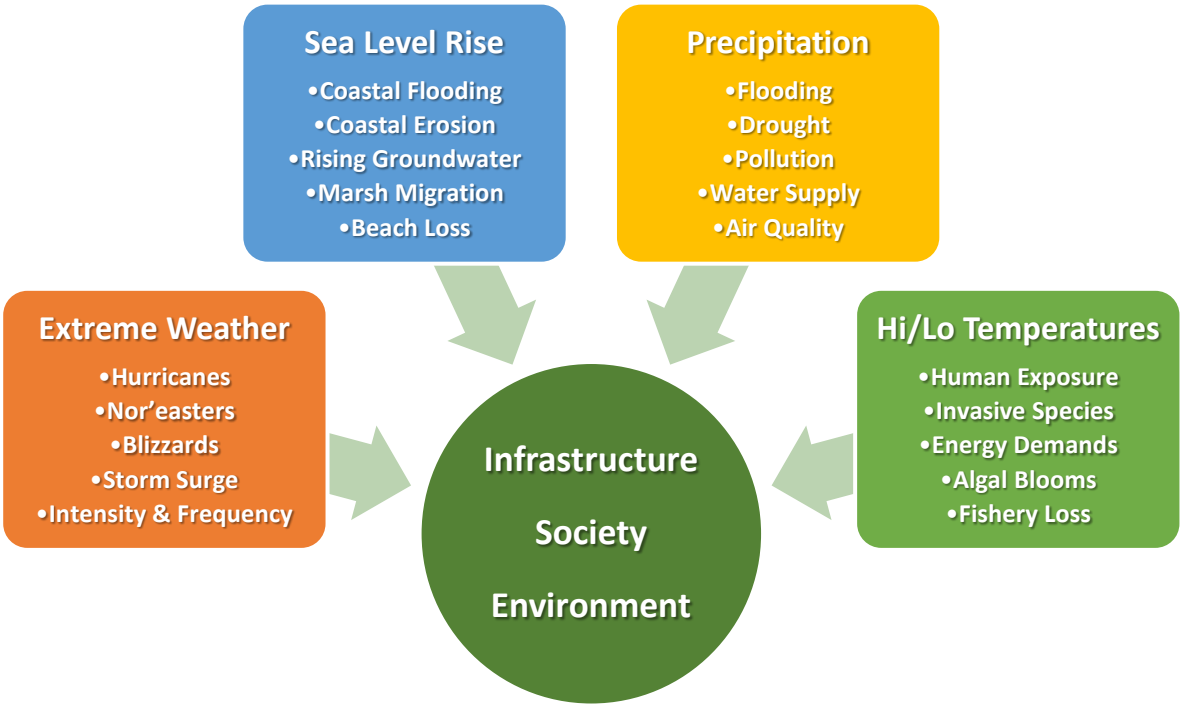
A Summary of Findings for the workshop is transcribed in the following pages, and outlines the thoughts, comments, and dialogue of the stakeholders that participated in the workshop. These findings will be presented to the Town for public comment. A primary goal of the workshop was to

identify the “Top Recommendations to Increase Resilience” in Southborough – a comprehensive list of these recommendations can be found in corresponding section. At the conclusion of the CRB Workshop, the top three priorities for increasing community resilience were identified by workshop participants:

I. Stormwater Management
II. Emergency Services
III. Ecological Health

The MVP process will allow the Town of Southborough to identify actions that can help address each of these priorities and incorporate them into the Town’s long-term planning. This document outlines the process by which these priorities were identified, and which actions can be taken by the Town. The findings of the MVP workshop will be integrated into the LHMP, creating a comprehensive planning document to guide the hazard mitigation and climate adaptation planning efforts within the Town of Southborough.

TOP HAZARDS FOR THE COMMUNITY



The graphic above was presented to all workshop attendees, followed by a discussion of the recent impacts from these natural hazards to Southborough and the potential of increased threats due to climate change. When considering these impacts on the community and existing vulnerabilities, workshop participants identified four hazards as the highest priority: **Precipitation**, **Extreme Weather Events**, **Hi/Lo Temperatures**, and **Disease**. These hazards align with the impacts of climate change and will present an even greater threat in the future.

- **Precipitation:** Increased precipitation has the potential to exacerbate Southborough's issues with high water table, water quality, and flooding. The number of days with over 1" of precipitation is projected to increase by 8-10 days by 2050.
- **Extreme Weather Events:** Extreme weather events have the potential to interrupt the functioning of critical infrastructure including transportation networks, communication, and utilities. The frequency and intensity of extreme weather events is projected to keep increasing across New England.

- **High/Low Temperatures:** High and low temperatures present an increased risk of wildfires, threaten biodiversity, and put vulnerable populations at risk of exposure. The number of days with temperatures above 90°F is projected to increase by 6 to 22 days by 2050.
- **Disease:** Human disease has the potential to disrupt every aspect of life within the community and threaten the health and well-being of residents for years. Diseases within the flora and fauna can threaten biodiversity and disrupt services that rely on the Town's natural resources.

TOP VULNERABILITIES AND AREAS OF CONCERN

During the CRB workshop, each group discussed vulnerabilities in each of the categories being addressed: infrastructure, society, and environment. Although there were vulnerabilities and strengths identified in each category by each group, there were three primary areas of concerns that became evident during the discussion of the past impacts from natural hazards. These areas of concern, as identified by all workshop participants, are:

- **Causeways:** The Town of Southborough is served by four (4) causeways over the Sudbury Reservoir, located at Middle Rd, Cordaville Rd, White Bagley Rd, and Boston Rd. The causeways are limited to one lane of traffic in each direction, with extremely narrow shoulders, restricting traffic and creating backups during major hazard events. In addition to restricting traffic and emergency response routes, the causeways also carry utilities from one side of town to the other, leaving utilities vulnerable to weather or accident events on the causeways.
- **Transportation network:** The network of roads within Town is challenging to manage, with limited through streets and a very high number of dead-end or isolated areas. This arrangement makes it difficult to respond during hazard events and increases the chances of areas becoming isolated due to storms, flooding, or major accidents.
- **Wetland resources & waterbodies:** The Sudbury Reservoir is a cornerstone of the community, and stormwater management within the watershed is a top concern. Maintaining water quality in the reservoir and protecting the remaining freshwater wetlands is critical to the environmental health of the community, particularly with the constant pressure of development.

WORKSHOP RISK MATRICES

The risk matrices developed during the workshop have been transcribed and consolidated. The following tables include this compiled data, arranged by priority level:

Higher Priority

Category	Action
Infrastructure	**Critical Facilities in Town Buildings** Conduct a facilities inventory and assessment to consider potential future uses, possible improvements, use for sheltering, etc; Study building envelopes and implement repairs/recommended actions Review flood proofing needs/opportunities Investigate churches, non-municipal facilities for shelter capacity
	Powerlines/Natural Gas Lines/Utilities Work to put infrastructure underground Consider including installation requirements in permitting process and creating other "incentives" Work and collaborate with private utility companies
	Stormwater Implement local law changes requiring new rainfall standards to be used (NOAA Atlas 14) Improve management along Rt. 9. - work with MA DOT and MA DCR Address stream crossings for improvements Update bylaws - more public outreach regarding improving water quality
	Communication System Develop a plan to maintain communications: cloud-based solutions, physical locations, IT Plan, cybersecurity, test backup systems
	Causeways Study access to resources in the event of loss of access (e.g. food pantries) Expand causeway capacity (traffic and hydraulic) Relocate overhead utilities below grade
	State Roads Through Town Participate in advanced planning with State Create new emergency access on I-90 Add new “reverse direction capability on Rte 9 Provide backup power at intersections Increase grade separation @ Rte 9
	Existing Detention Basins Town-wide Locate funding for regular maintenance Locate and inventory detention basins and evaluate capacity and conditions

	Develop maintenance program and enforcement protocol
Society	**Vulnerable Populations** Identify vulnerable populations (ex. Senior center lists) Engage the communities (ex. ESL translations) Develop call lists & develop volunteer networks
	Health and Well-Being/Southborough Medical Increase the offerings for health and wellbeing services Increase preparedness of the facilities
	Streamlining Emergency Repairs Permitting Process Develop a way to streamline permitting process in the event of emergency: for example, streamline ConCom review process for homes with flooding, etc
	Southborough Housing Authority – Colonial Gardens Improve community outreach and preparedness/readiness Develop a relationship with translational services
	Capacity of shelters Review overnight capacity; add cooling capabilities Review sheltering services (food, water, sanitation)
	Transportation infrastructure are critical to connectivity/isolation Evaluate improvements to causeways, sidewalks Evaluate and develop shelter in place plans and evacuation plans
Environmental	**Sudbury watershed, River, & Reservoir** Develop and disseminate public education resources especially related to impacts of stormwater runoff, etc Review flooding areas and impact on roadways and assets Maintain relationship with DCR Identify owner of private dam
	Wetland Health Upgrade the Wetland Protection Bylaw Increase land protection initiatives Implement native plant initiative Develop an invasive species management plan Improve and add stormwater BMPs in town Improve stormwater BMPs Wetland restoration, protect wetlands, stream crossings, culvert improvements, curb at intersection of Rt. 85 and Rt. 9
	Open Space Establish forest management plan / fire risk management plan (state/town/private)
	Landscaping Practices Education on green practices, bylaws & enforcement, implementing existing native plants initiative, mowing/fertilizing practice guidance docs

Moderate Priority

Category	Action
Infrastructure	**Sewers/Septic** Develop plan for a sewer on Rt. 9 (funding, installation, etc.)
	Rt. 9/495/90/Causeways Reinforce evacuation routes; Identify flood mitigation for Rt. 9 and 85 Improve traffic flow at Middle road and Rt. 9 Develop and enact emergency /contingency plans
	School Systems (heating and cooling; flooding concerns) Develop plan for heating and cooling including consider addition of dehumidifiers and considerations for air quality Study flood issues and mitigate flood issues
	Public Safety Facility Study backup location/substation for emergency response Review continuity of operations plan Consider mutual aid agreements
	Water System Increase water infrastructure connectivity Establish hydrants in the north east corner of town Identify source for continual funding
	Stormwater BMPs – design/maintenance Review LID design requirements/EPA requirements/recommendations for incorporation into local standards Develop a plan for regular inspection and maintenance
	Culverts Town-wide Locate funding for regular maintenance Locate and map culverts, evaluate capacity and conditions Develop maintenance program and enforcement
Society	**Community Support** Make Resilience and Preparedness information available to the community Use recreational opportunities to gather/distribute info
	Business Community Develop and distribute Resilience and Preparedness information Engage to incorporate climate adaptation and environmental action into development Develop partnerships for recovery
	Private Schools Allocate resources for unexpected events, provide alternatives Consider and develop partnerships for public sheltering opportunities Collaborate to develop inspections and guidance

	Senior Center Expanded capacity to accommodate more users Study opportunity to provide emergency accommodations for seniors Develop relationship with translational services
	Youth and Family Facility Study relocation to a centralized location (explore community center) Develop relationship with translational services
	Getting employees to work Explore mass transit improvements (e.g. RTA)
	Scenic Road Designation Revisit the program and review bylaw for updates to make it more relevant to stakeholders Review town wide trees for vulnerabilities and strengths
	Aging Population Maintain senior center database Maintain liaison between senior center and emergency services Review communication plans
	Recreation Facilities Education to protect people from disease
	Communications Evaluate public phone charging locations in emergency situations
Environmental	**Flora/Fauna, Native/Invasive** Develop a town-wide management plan, including homeowner removal plan, best-practices from DCR, etc.
	Sewer System (Septic) Consider alternatives to septic systems to reduce risk and vulnerabilities including exploring specific packaged systems, exploring a town system, considering connecting to neighboring town systems
	Brush Fire Prepare education resources Develop forest management plan Coordinate with MWRA, MBTA Review accessibility routes (for fire response) Identify water supply gaps Determine availability of adequate firefighting apparatus
	Runoff Water Quality Implement nonpoint source pollution improvements Create educational resources Implement green infrastructure solutions including BMPs installation, parking lot upgrades, landscaping practices improvements Consider alternatives to road salt

	Produce community education on lawn care with "best practices" guidelines to mitigate chemical runoff
	Spraying Pesticides/Herbicides Create educational resources Prepare guidance documents for proper practices and alternatives

Lower Priority

Category	Action
Infrastructure	**Sudbury dam/Reservoir/Aqueduct:** Strengthen MA DCR & MWRA relationship Use trails for education and outreach (water quality, forest management, invasives/natives, etc.)
	Rail System: Improve emergency access points Improve infrastructure conditions Evaluate and expand MBTA access and parking capacity
	Utilities (overhead and buried): Review utility coverage (hydrants) Review hazards to overhead and buried utilities and develop a mitigation plan Request reports from private utilities related to vulnerabilities
Society	**Recreational Opportunities:** Use for emergency preparedness opportunities
	Library (support for kids and residents): Rebuild in a better spot
Environmental	**Land Use/Open Space/Trails:** Opportunity for public education and engagement Complete an open space inventory Develop plan with resources and funding for long term management
	Air Quality: Create a Free Tree Program (native only) Explore renewable energy options Enforce green practices
	Haz Mat Response: Increase hazmat training for first responders and local responders Expand hazmat response supplies
	Underground Streams/GW/culverted streams: Identify culvert locations/components Conduct a hydrology study to evaluate current and future capacity Implement identified solutions

TOP RECOMMENDATIONS TO INCREASE RESILIENCE:

The last portion of the CRB workshop engaged all stakeholders in a discussion of the actions and priorities identified by each group. Each of the four breakout groups identified three actions as their highest-priority actions to increase community resilience in Southborough. The actions presented by each group varied in breadth and scope but seemed to fall within three major categories: stormwater management, emergency services, and ecological health. Top recommendations to increase resilience have been identified by workshop participants and are presented in the three following categories:

I. Stormwater Management:

Management of stormwater to mitigate flooding, protect town facilities, and improve water quality emerged as the top priority for Southborough. Wrap-up discussions among all four workshop breakout groups identified the following actions as top priorities under this category:

- Implement local regulation changes requiring updated rainfall standards to be used for the hydraulic design of stream crossings and other stormwater related infrastructure, so that climate change is adequately captured in the design conditions.
- Work with MassDOT and DCR to implement stormwater BMPs along Route 9, particularly at the intersection with Route 85.
- Review flood risk areas and identify stream crossings for upgrades and rehabilitation to help mitigate the risk of flooding.
- Conduct an inventory of town owned facilities that are vulnerable to flooding and identify projects to mitigate flood damage by increasing stormwater storage capacity.
- Pursue additional funding for the implementation of MS4 related tasks, including inventory of storm drains and detention basins, maintenance of stormwater infrastructure, and upgrades to increase storage capacity.

II. Emergency Services:

Concerns surrounding emergency responses within Southborough also ranked as a top priority, and included several actions to help improve resilience:

- Investigate improvements to the causeways to help increase traffic capacity, improve hydraulic capacity and reduce flooding, and relocate utilities underground to protect from damage and

outages. Specific attention to causeways where outages result in the isolation of specific areas in Town.

- Conduct a facilities inventory and assessment to assess sheltering capacity and identify potential improvements to increase capacity.
- Prepare a continuity of services plan to maintain communications and essential services during outages or major hazard events.
- Identify and engage vulnerable populations to improve access to essential emergency services during a major hazard event.

III. Ecological Health:

Protecting open space and the ecological health of the community emerged as the third highest priority category for potential actions. Actions in this category relate to protecting the natural resources of the Town, including water, wetlands, and the biodiversity of flora and fauna. In this category, the following actions emerged as priorities:

- Develop a public education program related to the impact of stormwater runoff to help individuals identify actions they can take to protect the water quality in the Sudbury watershed.
- Update the Wetland Protection Bylaws.
- Work with Town committees and local organizations to increase land conservation efforts.
- Develop and implement an invasive species management plan.

Core Team:

- Melissa Danza – Project Manager, Conservation Agent
- Neal Aspesi – Fire Department / Emergency Management
- Karen Galligan – Department of Public Works
- John Parent – Facilities Manager

Workshop Participants:

- Carl Guyer – Conservation Commission
- Sam Stiver – Board of Selectmen
- Hillary Monahan – MWRA
- Laurie Livoli – Building Commissioner
- Meme Lutrell – Planning Board / Master Plan Committee
- Bryan Fantony – School Facilities Manager
- Freddie Gillespie – Open Space Preservation Commission
- Dan Piche – Eversource
- Marijke Munsiff-Vegting – Economic Development Committee
- Paul Pisinski – Board of Health
- Lisa Braccio – Board of Selectmen
- Kelley Freda – Dept. of Conservation & Recreation
- Katie Keefe – Capital Group
- Sarah Cassell – Youth & Family Services
- Judith Watson – Conservation / Master Plan Committee
- Sandra Duran – St. Mark's School
- Steve Achilles – Southborough Fire Chief
- Peter Bemis – Engineering Design Consultants
- Hal Keis – Council on Aging / Southborough Open Land Foundation

Facilitation Team:

- Daniela Abbott, PE – Lead Facilitator, Pare Corporation
- Matthew Bellisle, PE – Pare Corporation
- Lance Hill, PE – Pare Corporation
- Matthew Dunn, PE – Pare Corporation
- Ryan McCoy, PE – Pare Corporation
- Lindsey Machamer, PE – Pare Corporation
- Andrew Cummings – Pare Corporation
- Amy Gerhardt – Pare Corporation
- Jim Newman – Linnean Solutions

Acknowledgements:

The Southborough MVP Workshop and Local Hazard Mitigation Plan update has been funded in part by the Massachusetts Executive Office of Energy and Environmental Affairs through an MVP Planning Grant, awarded to the Town of Southborough during the fiscal year of July 2019 through June 2020.

The Town of Southborough contracted with Pare Corporation to assist in planning and conducting the CRB workshop in March 2020. Pare Corporation and Linnean Solutions partnered to provide MVP-certified staff to facilitate the workshop and prepare this Summary of Findings.

Integration with the Local Hazard Mitigation Plan:

A Local Hazard Mitigation Plan was prepared for the Town of Southborough in 2009 and requires an update. The hazard assessment and mitigation goals of the 2009 plan will be updated to reflect mitigation actions taken to date. In addition, the findings outlined in this report will be incorporated into the 2020 Local Hazard Mitigation Plan, so that resilience and climate adaptation are reflected in the Town's mitigation goals and implementation plan.

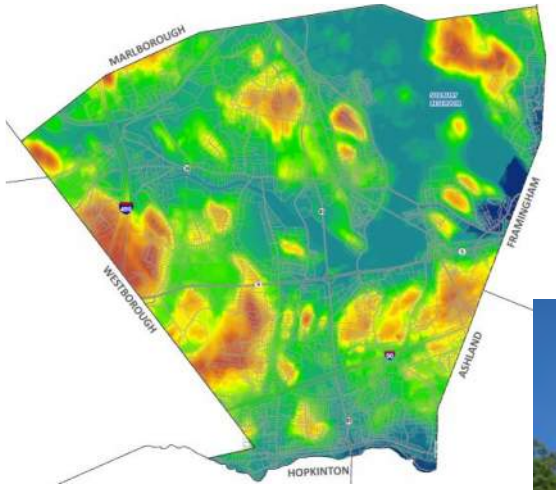
Suggested Citation:

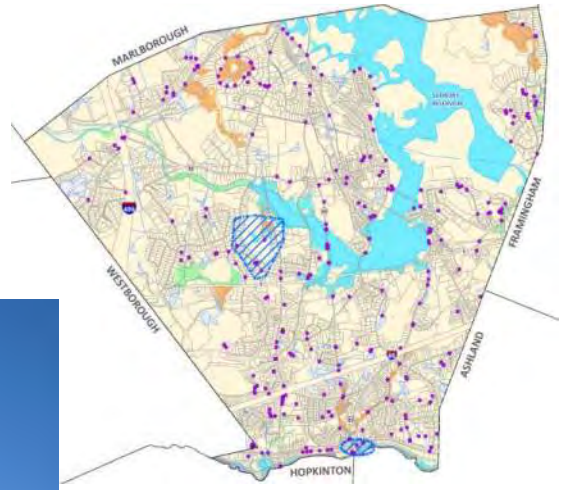
Town of Southborough. 2020. Southborough Municipal Vulnerability Preparedness Workshop Summary of Findings. Prepared by Pare Corporation, Foxborough, MA.

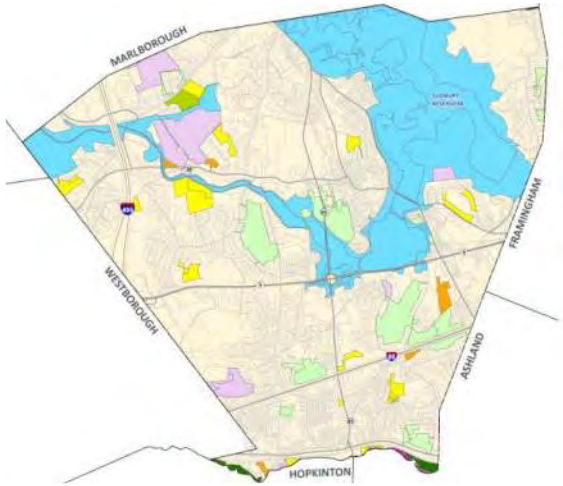
Appendices

- Workshop Introductory Slide Show
- Workshop Agenda
- Base Maps
- Reference Maps
- Workshop Group Matrices

TOWN OF SOUTHBOROUGH, MA
Municipal Vulnerability Preparedness

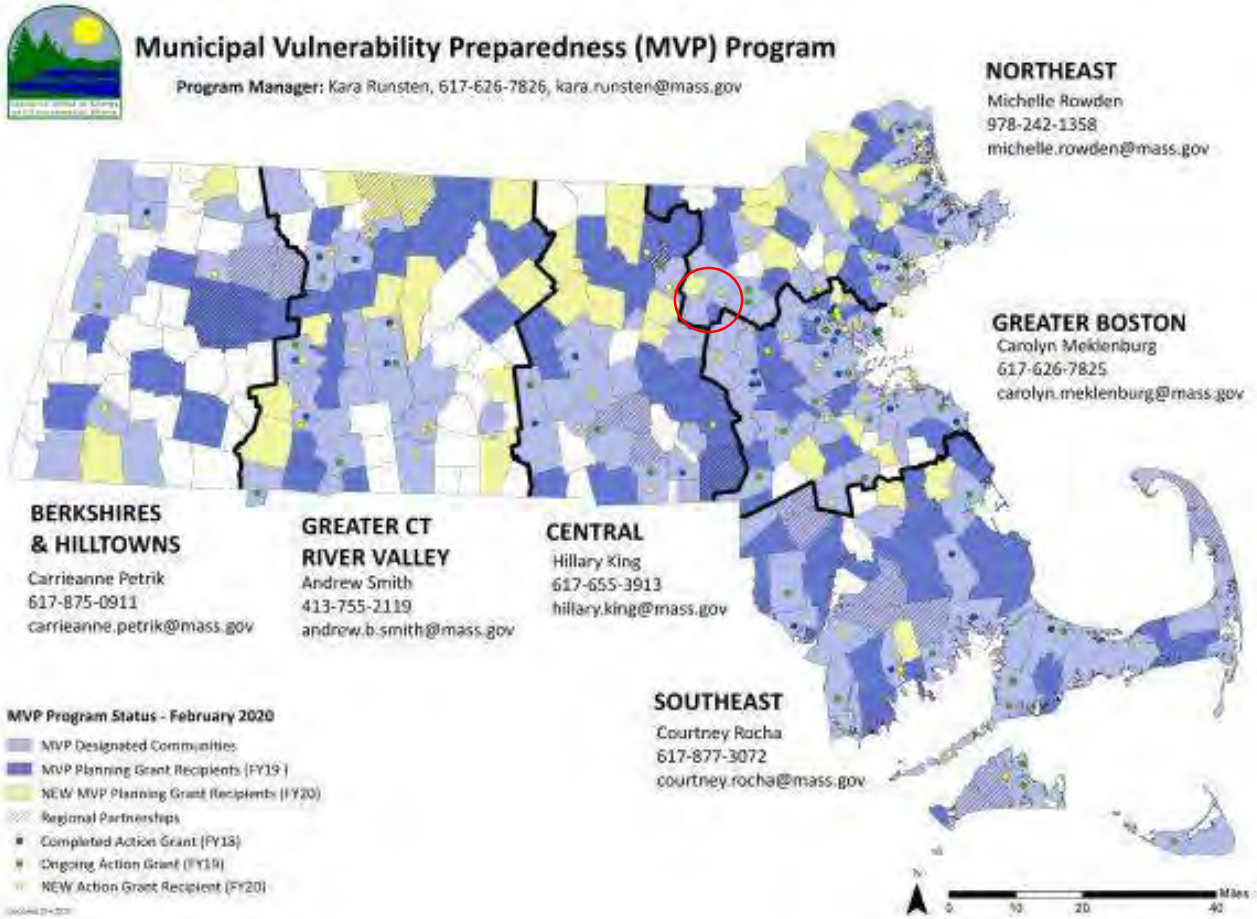






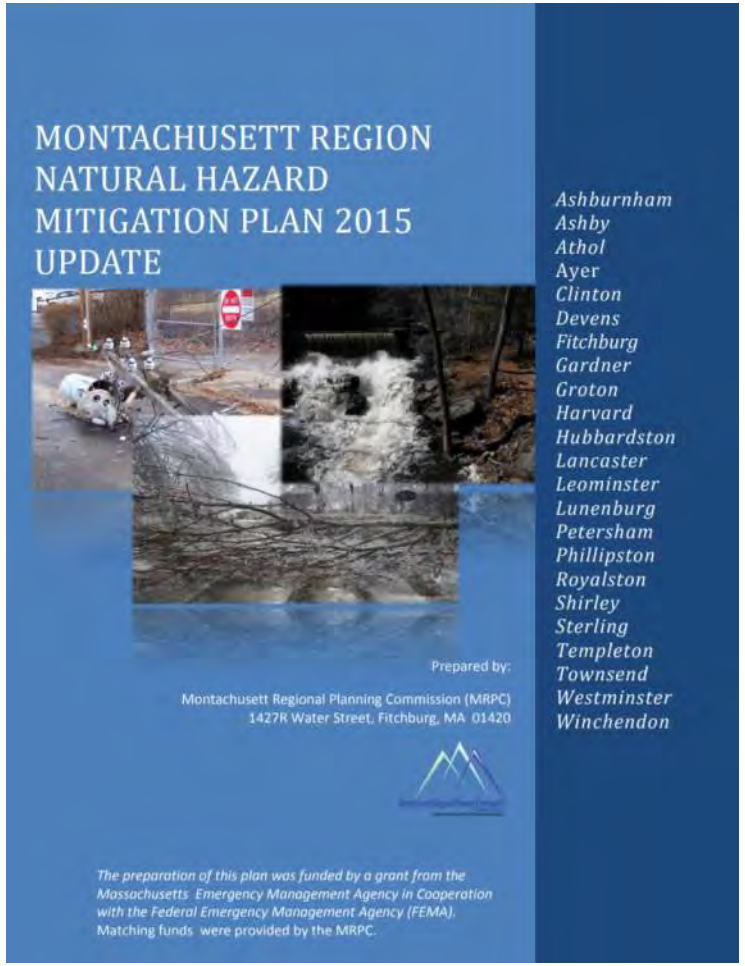
What is the MVP Program?

- **Community** led process
- Reinforces Town **partnerships**
- Informs **statewide** efforts
- Additional **funding** opportunities
- Designated **"MVP Community"**
- **Leverages existing efforts**
- Integrates MVP with **Hazard Mitigation Plan**



MVP Planning Outcomes

- MVP Summary of Findings / Resilience Plan
- Updated HMP Plan, incorporating resilience and climate adaptation
- Public Listening Sessions
- Prioritized implementation plan
- MVP Action Grant candidate projects
- Updates every five years
- Community accountability



The Workshop Format

- The Core Team & Background Materials
- Characterization Survey

- **Characterize Hazards**

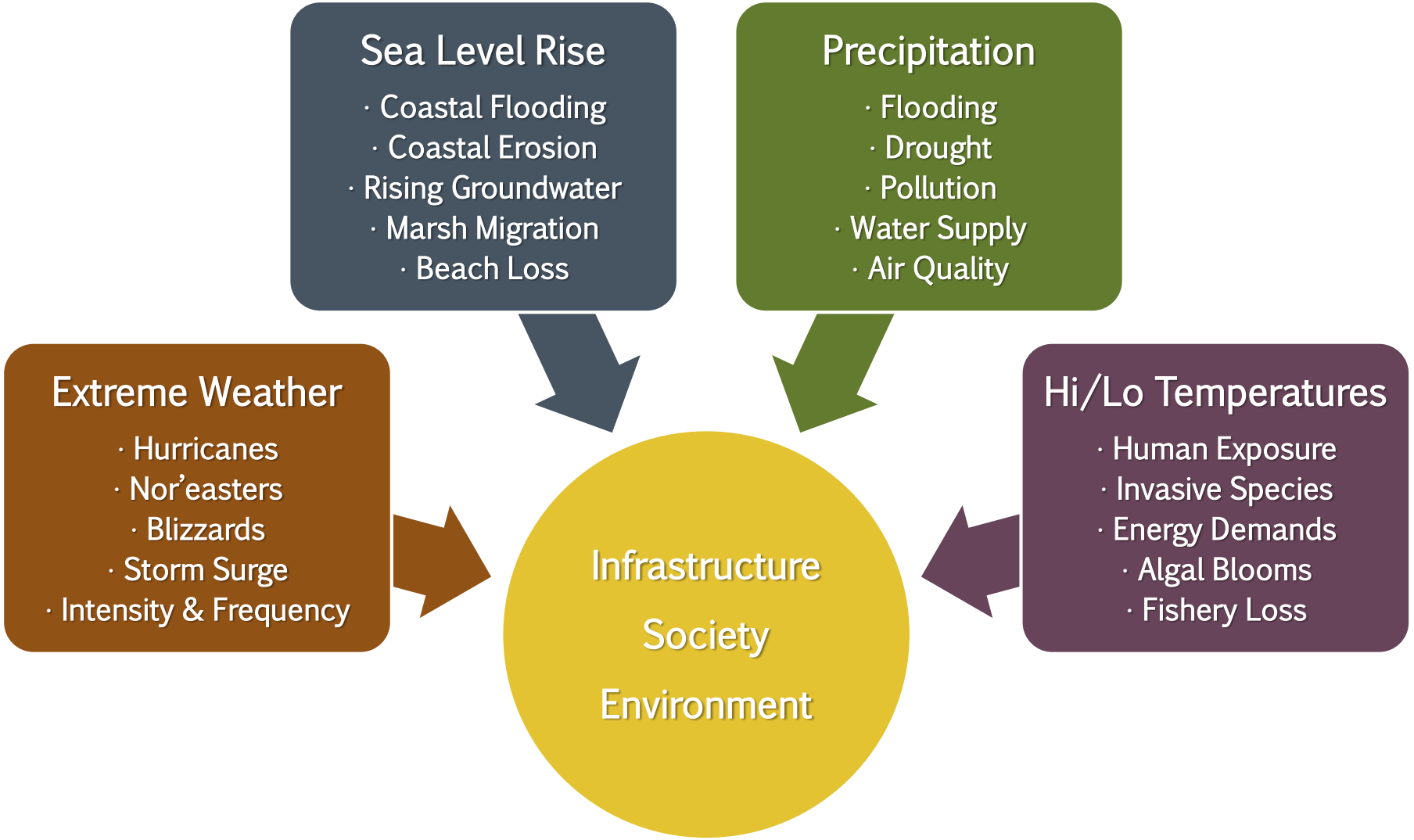
- Small Group Workshop
  - Identify Community Vulnerabilities & Strengths
  - Identify Community Actions
  - Prioritize Community Actions

- **Discuss & Identify Top Three Actions**

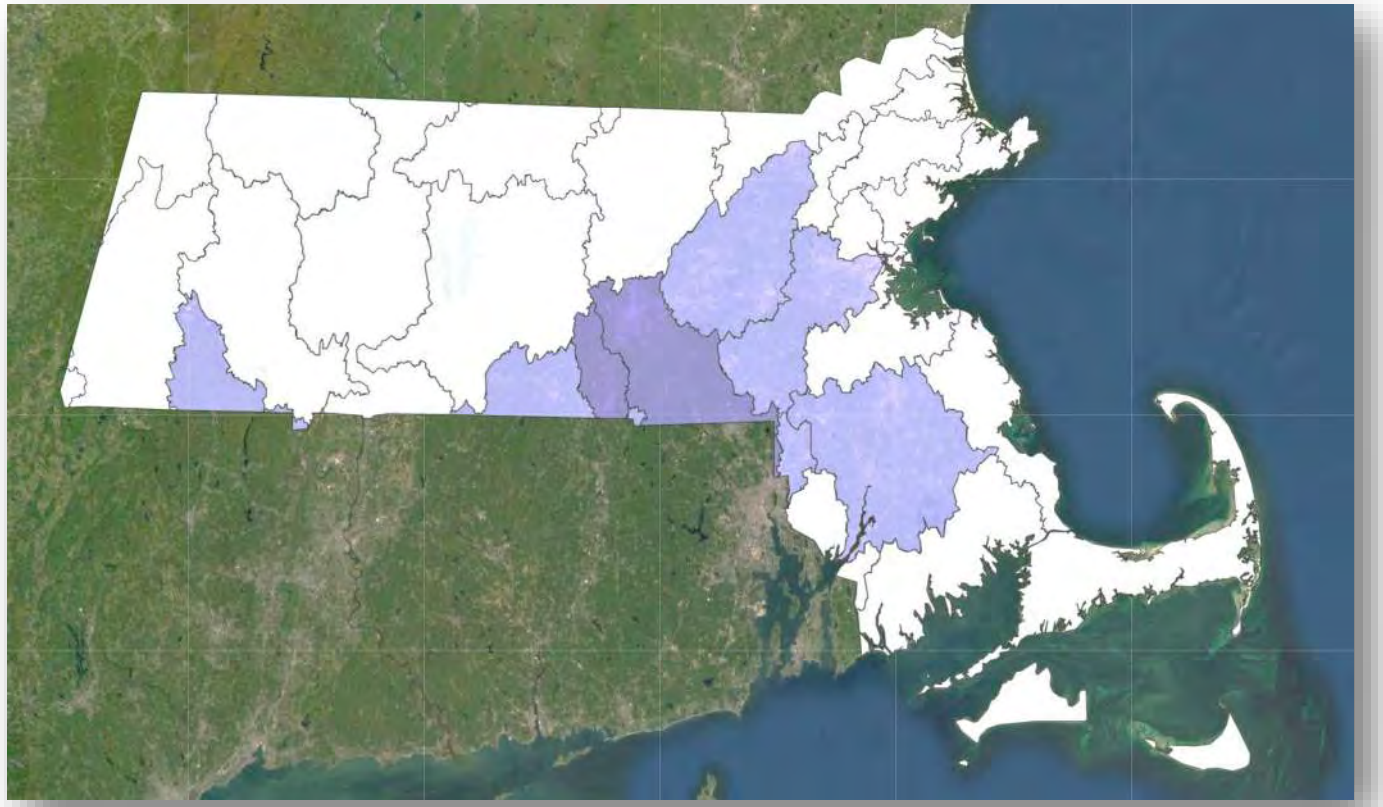
- Combine Information, Prepare Draft Reports
- Public Engagement Period

- **IMPLEMENTATION**

Perceived Natural Hazards



Climate Change in Massachusetts

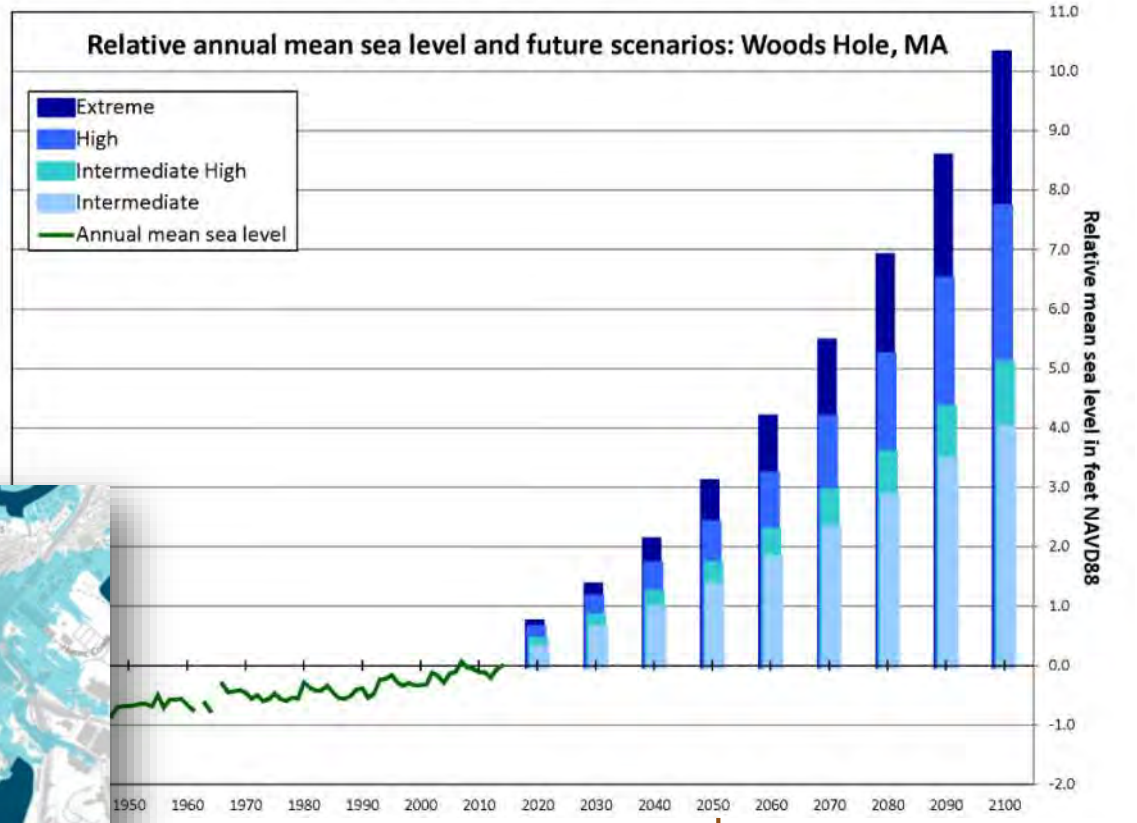


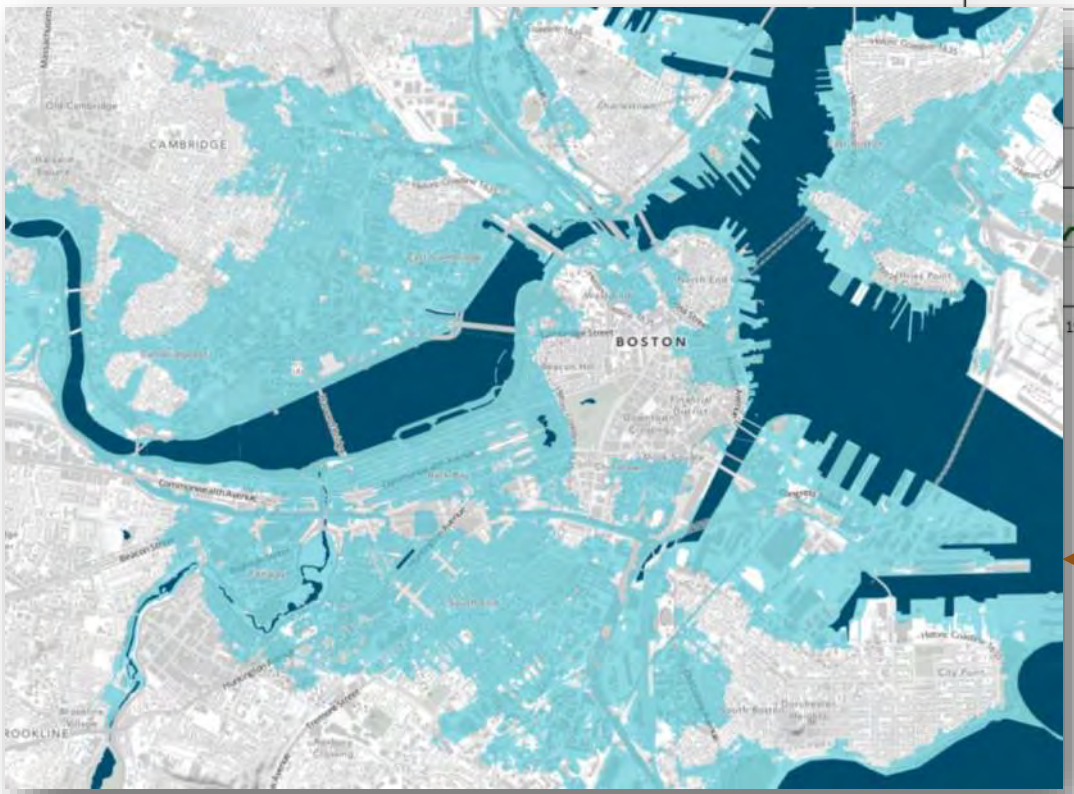
- Extreme Weather
- Sea-level Rise
- Changes in Precipitation
- Rising Temperatures

Extreme Weather

- Mar – Apr 2010: A series of severe storms and flooding events throughout Massachusetts
  - Widespread rainfall, causing small streams to rise above their flood stages
  - Over $145 million received in individual and public assistance
- Aug 2011, Tropical Storm Irene: tropical storm producing heavy rain in Western Massachusetts
  - Average of 10 inches of rain in Western Mass
  - Power outages peaked at more than 500,000
- Feb 2013, Winter Storm Nemo: Blizzard producing widespread heavy snowfall throughout the state
  - Widespread snowfall greater than two feet, with snowfall rates of one to two inches per hour at time
  - Nearly 400,000 customers lost power
  - Over $43 million received in public assistance
- Jan 2015, Winter Storm Juno: Winter storm breaking daily snowfall records throughout MA

Sea Level Rise





100yr Storm in 2050

Changes in Precipitation

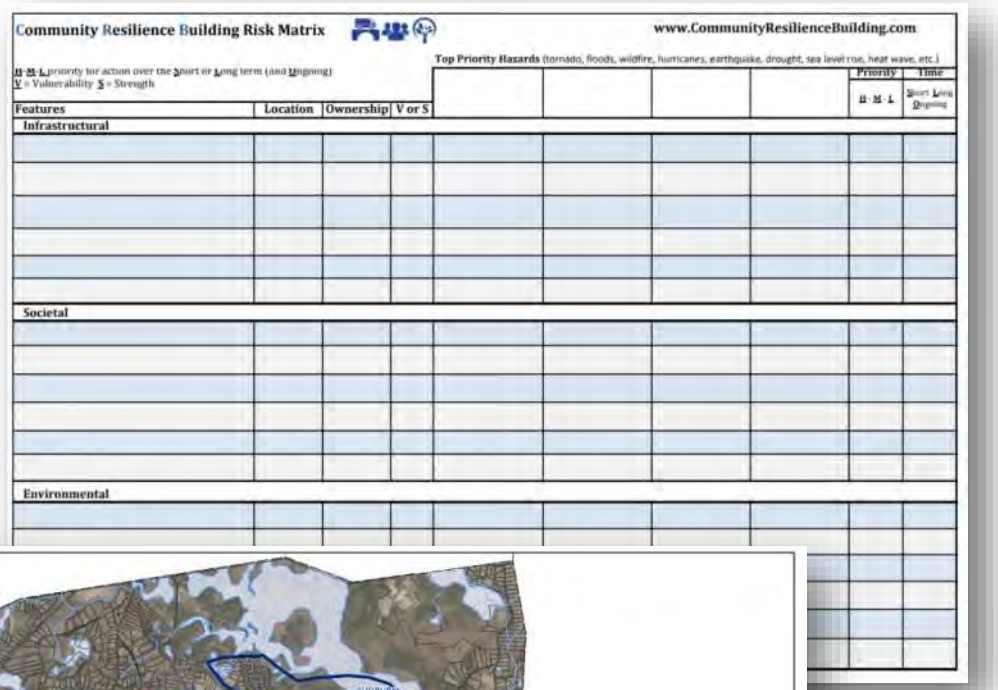
Climate Indicator		Observed Value 1971-2000 Average	Mid-Century Projected Change in 2050s	End of Century Projected Change in 2090s
Days with Precipitation > 1"	Annual	7 days	Increase by 10-42% 8-10 more days per year	Increase by 15-55% 8-11 more days per year
	Winter	2 days	Increase by 10-69% 2-3 more days per year	Increase by 25-109% 2-3 more days per year
	Spring	2 days	Increase by 2-46% 2 more days per year	Increase by 11-82% 2-3 more days per year
Total Precipitation	Annual	47 inches	Increase by 2-13% Increase of 1 - 6 inches	Increase by 3-16% Increase of 1.2 - 7.3 inches
	Winter	11.2 inches	Increase by 1-21% Increase of 0.1 - 2.4 inches	Increase by 4-35% Increase of 0.4 - 3.9 inches
Consecutive Dry Days	Summer	12 days	Variable (-1 - +2 days)	Variable (-1 - +3 days)
	Fall	12 days	Increase by 0 - 3 days	Increase by 0 - 3 days

Rising Temperatures

Climate Indicator		Observed Value 1971-2000 Average	Mid-Century Projected Change in 2050s	End of Century Projected Change in 2090s
Maximum Temperature	Summer	78.9 °F	Increase by 2.6 - 6.7 °F	Increase by 3.6 - 12.5 °F
	Fall	60.6 °F	Increase by 3.4 - 6.8 °F	Increase by 3.8 - 11.9 °F
Minimum Temperature	Winter	17.1 °F	Increase by 3.3 - 8.0 °F	Increase by 4.6 - 11.4 °F
	Fall	39.4 °F	Increase by 3.5 - 6.5 °F	Increase by 4.0 - 11.4 °F
Days with Maximum Temperature > 90°F	Summe	4 days	Increase by 6 - 22 days	Increase by 9 - 52 days
Days with Minimum Temperature < 32°F	Winter	82 days	Decrease by 4 - 12 days	Decrease by 6 - 25 days
	Spring	37 days	Decrease by 6 - 15 days	Decrease by 9 - 20 days
	Fall	27 days	Decrease by 8 - 13 days	Decrease by 8 - 20 days

Workshop Resources

- Base Map
- Map Booklet:
  - Facilities
  - Land Use
  - Hydrology & Flooding
  - Topography
  - Natural Resources
  - NE Landscape Futures
- GIS Resources


Community Resilience Building Risk Matrix

www.CommunityResilienceBuilding.com

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

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

Features	Location	Ownership	V or S					Priority H-M-L	Time Short Long Ongoing
Infrastructural									
Societal									
Environmental									

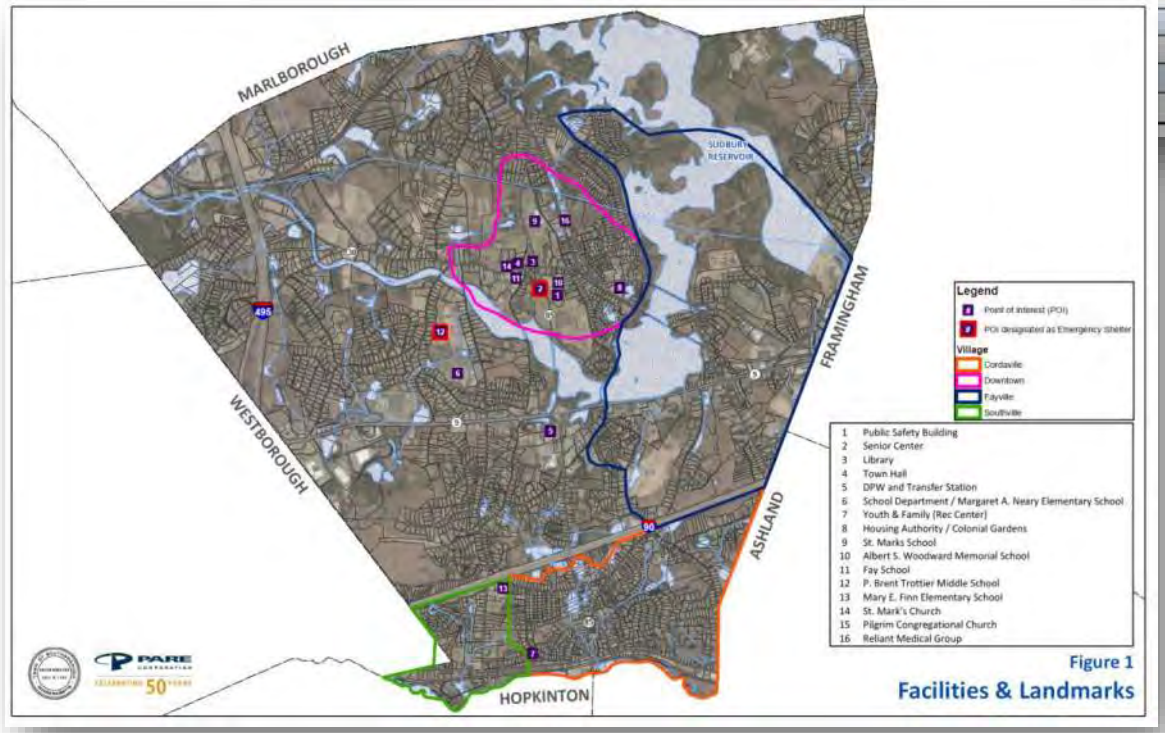


Figure 1
Facilities & Landmarks

Today's Agenda

- 10:30am — Characterize Hazards
- 10:45am to 12:30pm — Small Group Workshop
- 12:30pm to 1pm — Lunch
- 1pm to 2:30pm — Wrap up Small Group Workshop
- 2:30pm to 3:30pm — Prioritize Actions
- 3:30pm to 4pm — Final Thoughts

Questions?


THE NEW ENGLAND CENTER FOR CHILDREN
John and Diane Kim Autism Institute

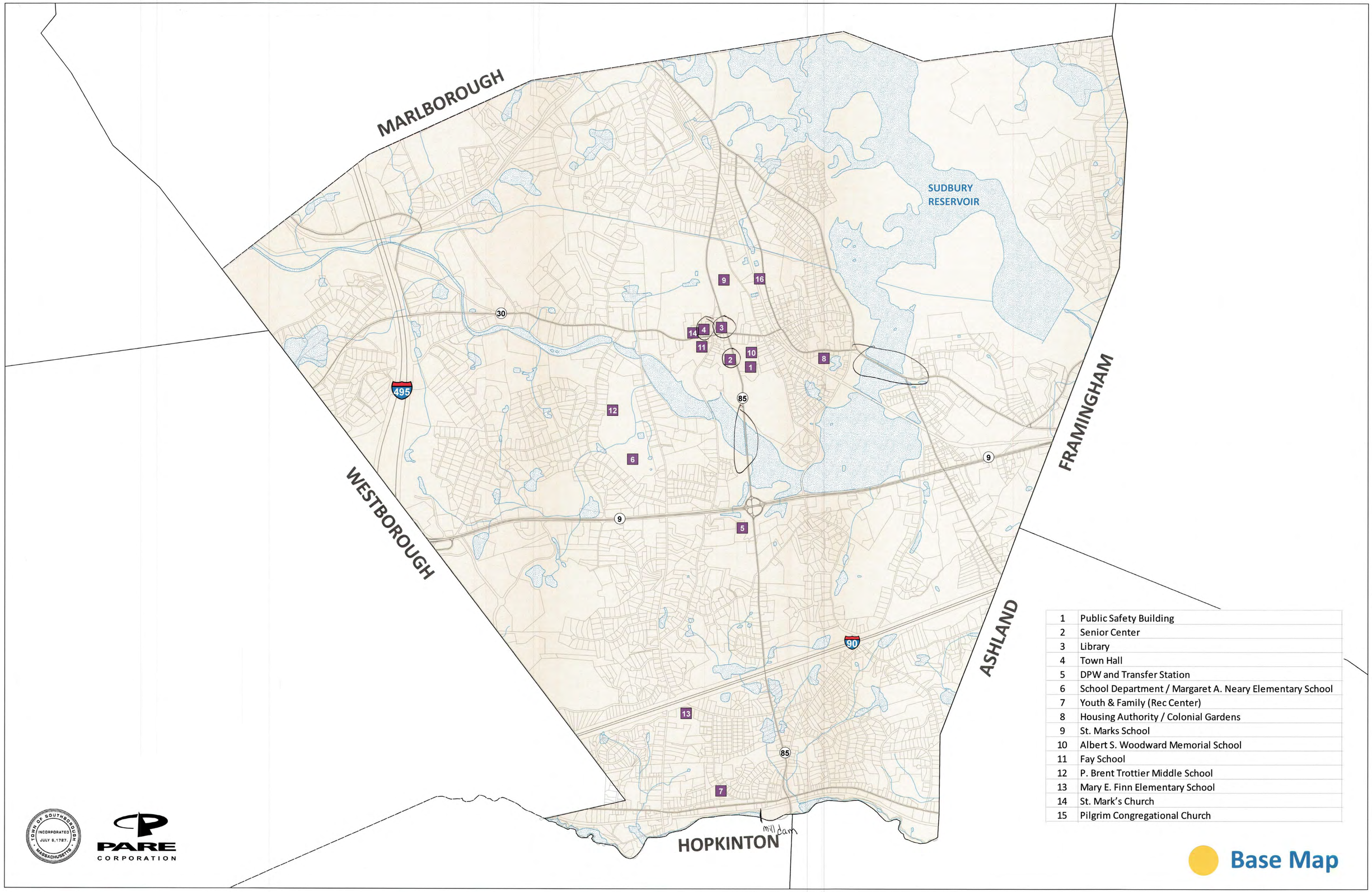
PARE CORPORATION
CELEBRATING 50 YEARS

Municipal Vulnerability Preparedness Workshop

March 9th, 2020

Community Room, Public Safety Complex
32 Cordaville Rd, Southborough, Massachusetts

9 am	*Registration & Breakfast*
9:15 am	Introduction & Core Team Presentations
9:45 am	Workshop Overview, Science & Resources Presentation
10:15 am	Group Facilitator Introductions, Group Instructions
10:30 am	Characterize Community Hazards
10:45 am	Group Workshop:
	Select Priority Hazards
	Identify Community Vulnerability & Strengths
	Identify Community Actions
	Prioritize Actions
12:30 pm	*Lunch Break*
1:00 pm	Wrap-up Group Workshop
2:30 pm	Determine Overall Priority Actions
3:30 pm	Final Thoughts & Discussion



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8	Housing Authority / Colonial Gardens
9	St. Marks School
10	Albert S. Woodward Memorial School
11	Fay School
12	P. Brent Trottier Middle School
13	Mary E. Finn Elementary School
14	St. Mark's Church
15	Pilgrim Congregational Church

TOWN OF SOUTHBOROUGH INCORPORATED JULY 5, 1727 MASSACHUSETTS

PARE CORPORATION

Base Map

MARLBOROUGH

SUDBURY RESERVOIR

FRAMINGHAM

WESTBOROUGH

ASHLAND

HOPKINTON

495

30

85

9

90

1	Public Safety Building
2	Senior Center
3	Library
4	Town Hall
5	DPW and Transfer Station
6	School Department / Margaret A. Neary Elementary School
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TOWN OF SOUTHBOROUGH INCORPORATED JULY 5, 1727 MASSACHUSETTS

PARE CORPORATION

Base Map

x Sub Station

Harvard Medical Depository

MARLBOROUGH

SUDBURY RESERVOIR

FRAMINGHAM

WESTBOROUGH

ASHLAND

HOPKINTON

* NECC

1	Public Safety Building
2	Senior Center
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13	Mary E. Finn Elementary School
14	St. Mark's Church
15	Pilgrim Congregational Church
16	Reliant Medical Campus

TOWN OF SOUTHBOROUGH INCORPORATED JULY 6, 1727 MASSACHUSETTS

PARE CORPORATION

Base Map

MARLBOROUGH

SUDBURY RESERVOIR

FRAMINGHAM

WESTBOROUGH

ASHLAND

HOPKINTON

1	Public Safety Building
2	Senior Center
3	Library
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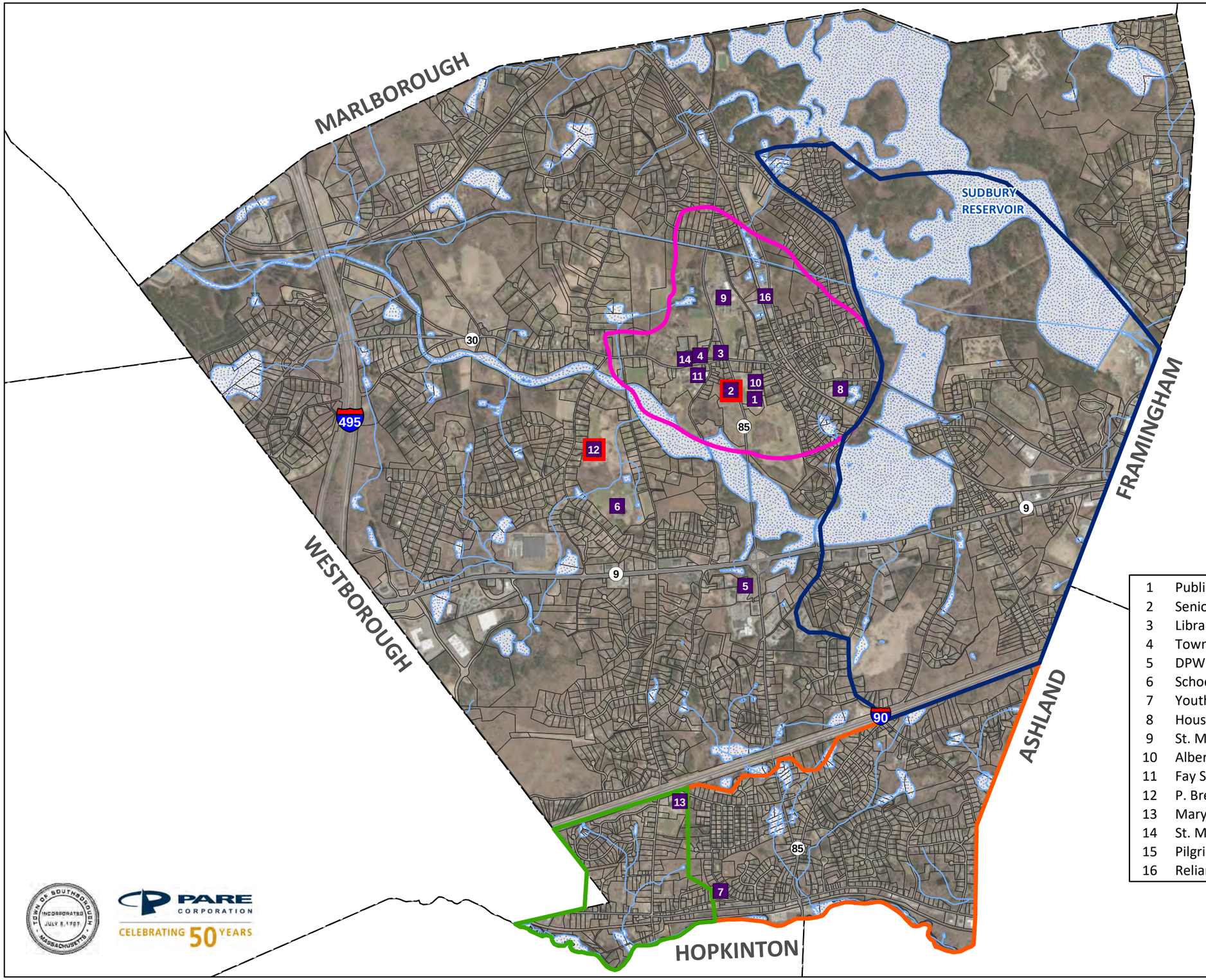
13	Mary E. Finn Elementary School
14	St. Mark's Church
15	Pilgrim Congregational Church

16 – MEDICAL CENTER (URGENT CARE/PHARMACY) – SOUTHBORO MEDICAL CENTER

Base Map

TOWN OF SOUTHBOROUGH MASSACHUSETTS INCORPORATED JULY 5, 1727

PARE CORPORATION



Legend

- # Point of Interest (POI)
- # POI designated as Emergency Shelter

Village

- Cordaville
- Downtown
- Fayville
- Southville

1	Public Safety Building
2	Senior Center
3	Library
4	Town Hall
5	DPW and Transfer Station
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12	P. Brent Trottier Middle School
13	Mary E. Finn Elementary School
14	St. Mark's Church
15	Pilgrim Congregational Church
16	Reliant Medical Group

TOWN OF SOUTHBOROUGH INCORPORATED JULY 8, 1727 MASSACHUSETTS

PARE CORPORATION CELEBRATING 50 YEARS

Figure 1

Facilities & Landmarks

MARLBOROUGH

SUDBURY RESERVOIR

FRAMINGHAM

WESTBOROUGH

ASHLAND

HOPKINTON

30

495

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9

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Legend

- Forest
- Brushland/Successional
- Open Land
- Water
- Forested Wetland
- Non-Forested Wetland
- Salt Water Wetland
- Saltwater Sandy Beach
- Cranberry Bog
- Orchard
- Nursery
- Cropland
- Pasture
- Cemetery
- Golf Course
- Participation Recreation
- Spectator Recreation
- Water-Based Recreation
- Marina
- Multi-Family Residential
- High Density Residential
- Medium Density Residential
- Low Density Residential
- Very Low Density Residential
- Transitional
- Urban Public/Institutional
- Commercial
- Industrial
- Transportation
- Powerline/Utility
- Mining
- Waste Disposal
- Junkyard

TOWN OF SOUTHBOROUGH INCORPORATED JULY 8, 1727 MASSACHUSETTS

PARE CORPORATION CELEBRATING 50 YEARS

Figure 2
Land Use & Development 1985

MARLBOROUGH

SUDBURY RESERVOIR

FRAMINGHAM

WESTBOROUGH

ASHLAND

HOPKINTON

30

495

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Legend

- Forest
- Brushland/Successional
- Open Land
- Water
- Forested Wetland
- Non-Forested Wetland
- Salt Water Wetland
- Saltwater Sandy Beach
- Cranberry Bog
- Orchard
- Nursery
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- Spectator Recreation
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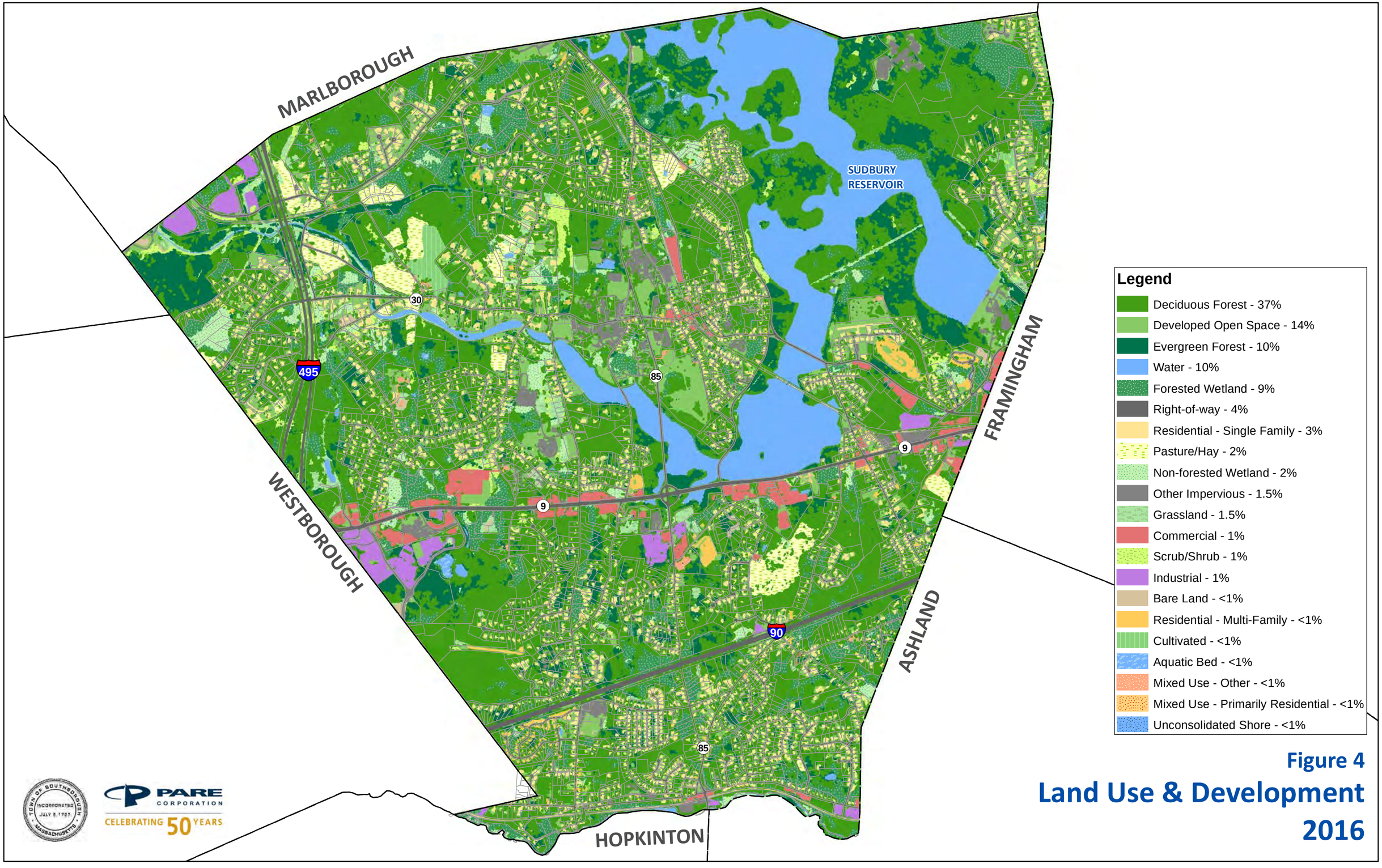
- Powerline/Utility
- Mining
- Waste Disposal
- Junkyard

TOWN OF SOUTHBOROUGH INCORPORATED JULY 8, 1727 MASSACHUSETTS

PARE CORPORATION
CELEBRATING 50 YEARS

Figure 3

Land Use & Development 2005

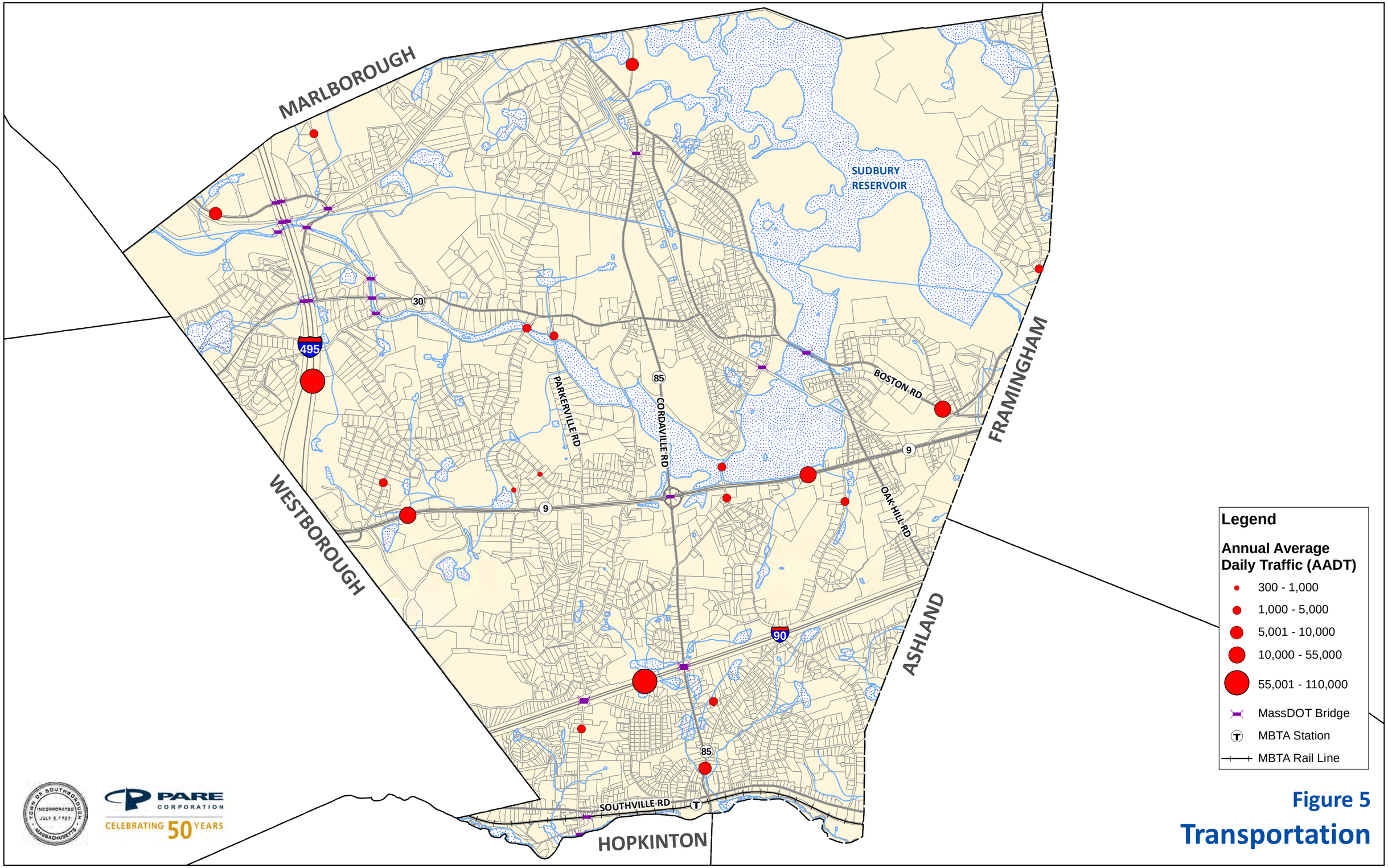


TOWN OF SOUTHBOROUGH INCORPORATED JULY 8, 1727 MASSACHUSETTS

PARE CORPORATION
CELEBRATING 50 YEARS

Figure 4

Land Use & Development 2016



TOWN OF SOUTHBOROUGH MASSACHUSETTS INCORPORATED JULY 8, 1727

PARE CORPORATION
CELEBRATING 50 YEARS

Figure 5

Transportation

MARLBOROUGH

SUDBURY RESERVOIR

FRAMINGHAM

WESTBOROUGH

ASHLAND

HOPKINTON

30

495

85

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90

Legend

Open Space by Owner

- Private
- DCR - Division of State Parks and Recreation
- DCR - Division of Water Supply Protection
- Department of Fish and Game
- Southborough Open Land Foundation
- Sudbury Valley Trustees
- The Trustees of Reservations (Chestnut Hill Farm)
- Town of Southborough

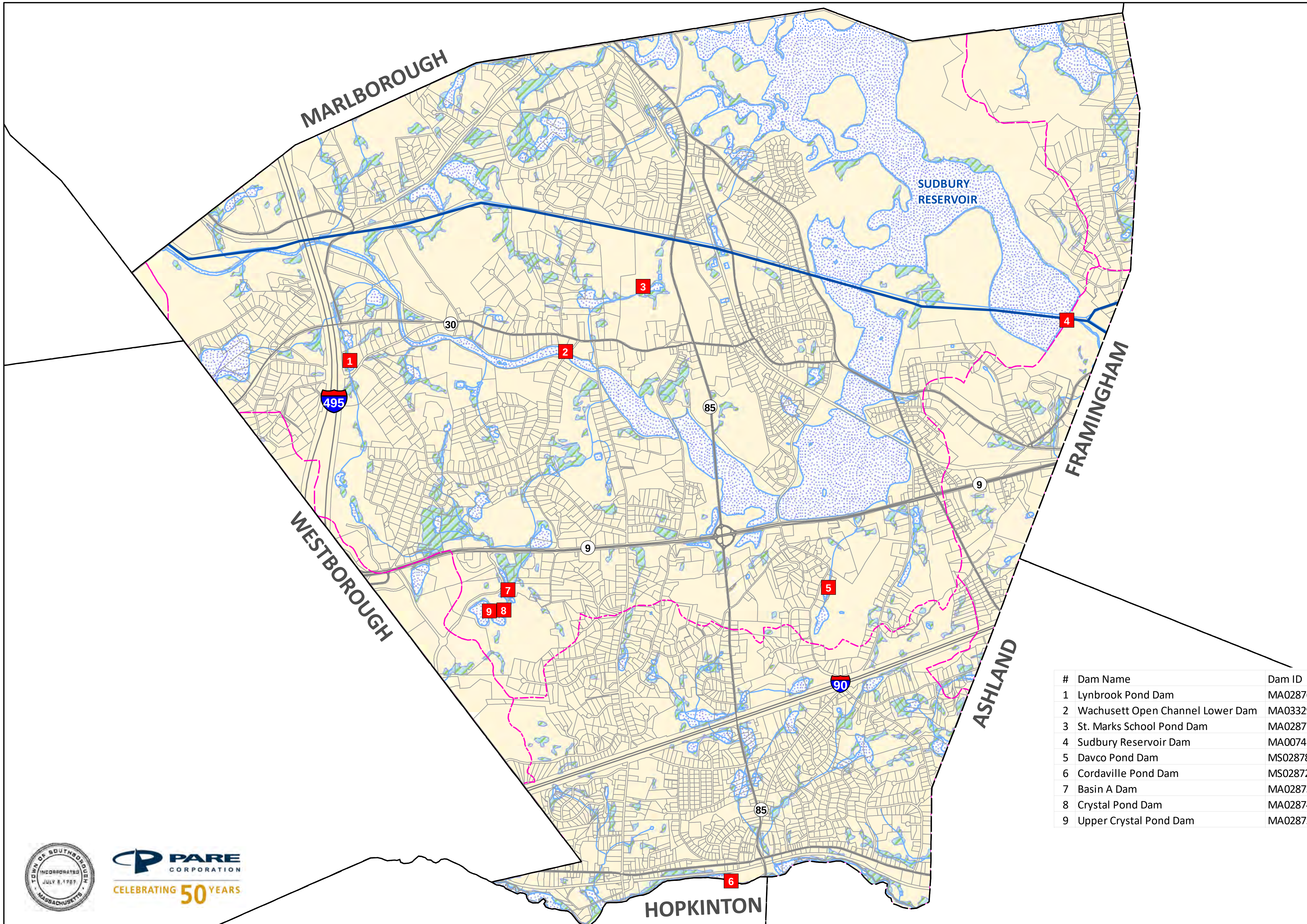
TOWN OF SOUTHBOROUGH INCORPORATED JULY 8, 1727 MASSACHUSETTS

PARE CORPORATION

CELEBRATING 50 YEARS

Figure 6

Open Space, Parks & Recreation



Legend

- # Dam
- Drainage Subbasin
- Cosgrove Aqueduct
- Stream/River
- Open Water
- MassDEP Wetlands

#	Dam Name	Dam ID	Hazard Class	Owner Type
1	Lynbrook Pond Dam	MA02876	Non-Jurisdictional	Private
2	Wachusett Open Channel Lower Dam	MA03329	Low	State - DCR
3	St. Marks School Pond Dam	MA02877	Non-Jurisdictional	Private
4	Sudbury Reservoir Dam	MA00741	High	State - DCR
5	Davco Pond Dam	MS02878	Non-Jurisdictional	Private
6	Cordaville Pond Dam	MS02872	Low	State - MBTA
7	Basin A Dam	MA02873	Non-Jurisdictional	Private
8	Crystal Pond Dam	MA02874	Non-Jurisdictional	Private
9	Upper Crystal Pond Dam	MA02875	Non-Jurisdictional	Private

PARE CORPORATION
CELEBRATING 50 YEARS

Figure 7
Hydrology

MARLBOROUGH

SUDBURY RESERVOIR

FRAMINGHAM

WESTBOROUGH

ASHLAND

HOPKINTON

30

495

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Legend

- Stormwater Outfall
- Area of Known Flooding

FEMA Flood Zone

- A: 1% Annual Chance of Flooding, no BFE
- AE: 1% Annual Chance of Flooding, with BFE
- AE: Regulatory Floodway
- X: 0.2% Annual Chance of Flooding

TOWN OF SOUTHBOROUGH INCORPORATED JULY 8, 1727 MASSACHUSETTS

PARE CORPORATION

CELEBRATING 50 YEARS

Figure 8

Stormwater and Flooding

MARLBOROUGH

SUDBURY RESERVOIR

FRAMINGHAM

WESTBOROUGH

ASHLAND

HOPKINTON

30

495

85

9

90

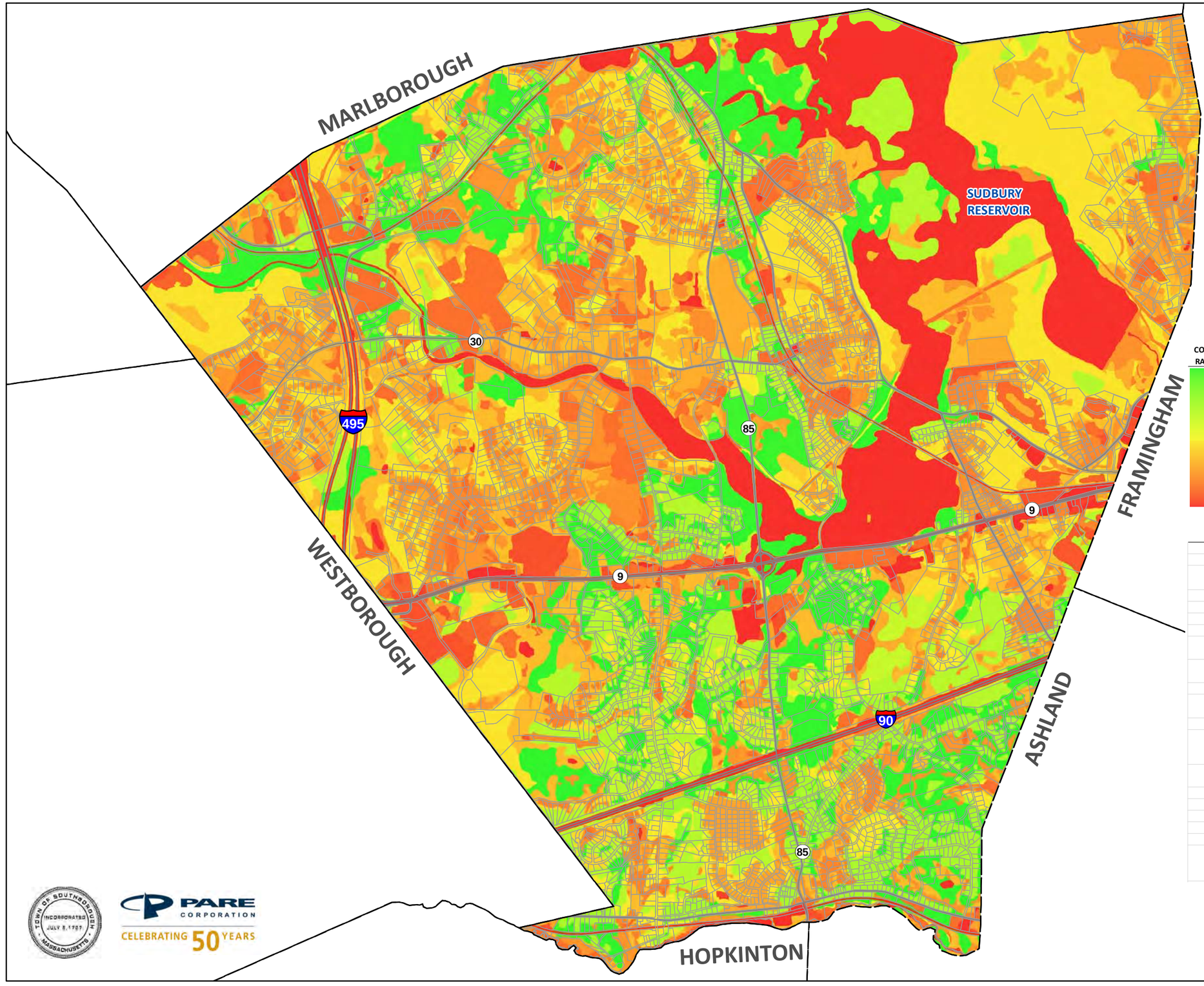
Legend

- Aqueduct
- Water Storage Tank
- Pump Station
- PRV
- Water Main
- Stream/River
- Open Water

TOWN OF SOUTHBOROUGH INCORPORATED JULY 8, 1727 MASSACHUSETTS

PARE CORPORATION CELEBRATING 50 YEARS

Figure 9
Water System



Curve Number (CN) - Tabulated Explanation

COLOR RAMP	CN Value	Perviousness General Category	Percent of Rainfall Absorbed (Range)	Land Cover (LSG) Type and Subsoil Hydrologic Soil Group (A,B,C,D)
	30-40	Extremely Pervious	75% - 65%	GOOD LC in A Soils;
	40-50	Very Pervious	65% - 55%	FAIR LC in A Soils; GOOD LC in B Soils
	50-60	Pervious	55% - 45%	FAIR-POOR LC in A Soils; 'GOOD-FAIR LC in B Soils
	60-70	Moderately Pervious	45% - 35%	GOOD-FAIR LC in B Soils; GOOD LC in C Soils
	70-80	Less Pervious	35% - 25%	Poor LC in A Soils; 'GOOD LC in C-D Soils
	80-90	Semi-Impervious	25% - 15%	FAIR-POOR LC in C-D Soils; 'GOOD LC in D Soils
	98	Impervious	8%	IMPERVIOUS LC in All Soils
	71	Less Pervious	36%	Average CN for Southborough, MA
	74	Less Pervious	33%	Average for State of MA

NOTES:

1. ***CN Definition*** : The runoff curve number (RCN), also refereed to as the curve number (CN) is an empirical parameter used in hydrology for predicting direct runoff or infiltration from rainfall excess.

2. Table developed utilizing NRCS TR55 Tables 2-2a through 2-2d

3. Land Cover Types (LC)

GOOD	Forests, Brush, Pasture, Grassed Areas (Golf Course, Lawn); All with good vegetation coverage (>75% ground cover)
FAIR	All of GOOD only with Fair (50-75%) or Poor (<50%) Coverage, Residential Districts with lot sizes larger than 1/2 acre, Cultivated Agricultural Fields
POOR	Urban districts, Gravel and Dirt Roads
IMPERVIOUS	Paved Areas (Roads, Parking Lots, Driveways), Roofs, Surface Water (Ponds, Rivers)

4. Hydrologic Soil Groups (HSG's):

A	Soils with low runoff potential and high infiltration rates (deep well to excessively drained sands or gravels)
B	Soils with moderate infiltration rate (moderately deep to deep, moderately well to well drained soils with moderately fine to moderately coarse
C	Soils with low infiltration rates (soils with a layer that impedes downward movement of water and soils with moderately fine to fine structure)
D	Soils with very low infiltration rates (clay soils with a high swelling potential, soils with a permanent high water table (wetlands), soils with a claypan or clay layer at or near the surface and shallow soils over nearly impervious material)

TOWN OF SOUTHBOROUGH INCORPORATED JULY 8, 1727 MASSACHUSETTS

PARE CORPORATION
CELEBRATING 50 YEARS

Figure 10
Curve Number

MARLBOROUGH

SUDBURY
RESERVOIR

FRAMINGHAM

WESTBOROUGH

ASHLAND

HOPKINTON

30

495

85

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Legend

Topography

High : 517'

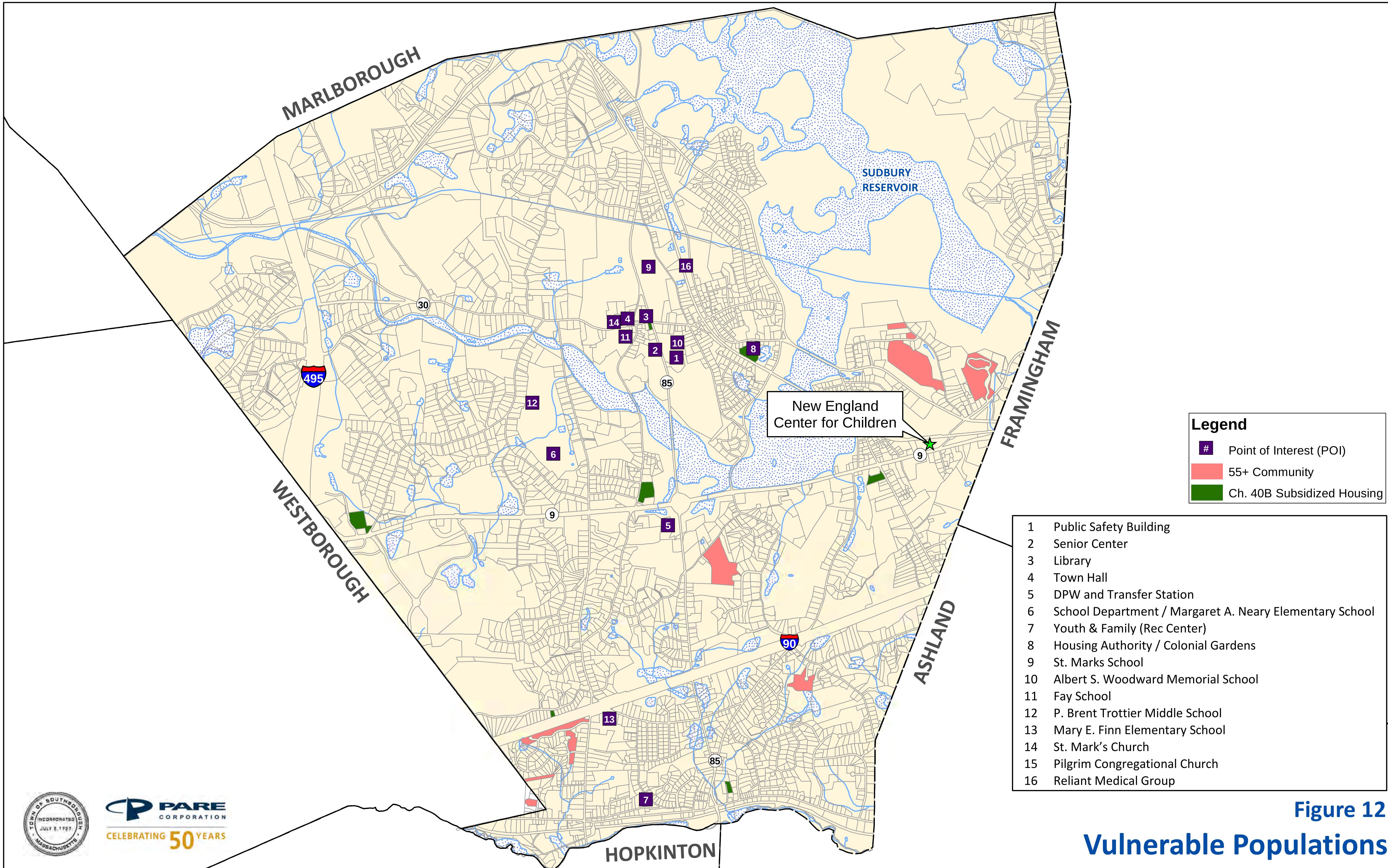
Low : 176'

TOWN OF SOUTHBOROUGH
INCORPORATED
JULY 8, 1727
MASSACHUSETTS

PARE CORPORATION
CELEBRATING 50 YEARS

Figure 11

Topography



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15	Pilgrim Congregational Church
16	Reliant Medical Group

Figure 12

Vulnerable Populations

MARLBOROUGH

SUDBURY
RESERVOIR

FRAMINGHAM

WESTBOROUGH

ASHLAND

HOPKINTON

30

495

85

9

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Legend

- Prime 1
- Prime 2
- Prime 3
- Statewide Importance
- Local Importance
- Prime 3 Wet
- Statewide Importance Wet
- Local Importance Wet
- Non-Forested Land

TOWN OF SOUTHBOROUGH
INCORPORATED JULY 8, 1727
MASSACHUSETTS

PARE CORPORATION
CELEBRATING 50 YEARS

Figure 13

Prime Forest Land

MARLBOROUGH

SUDBURY RESERVOIR

FRAMINGHAM

WESTBOROUGH

ASHLAND

HOPKINTON

30

495

85

9

90

Legend

- All Areas are Prime Farmland
- Farmland of Statewide Importance
- Farmland of Unique Importance

TOWN OF SOUTHBOROUGH INCORPORATED JULY 8, 1727 MASSACHUSETTS

PARE CORPORATION CELEBRATING 50 YEARS

Figure 14

Farmland Soils

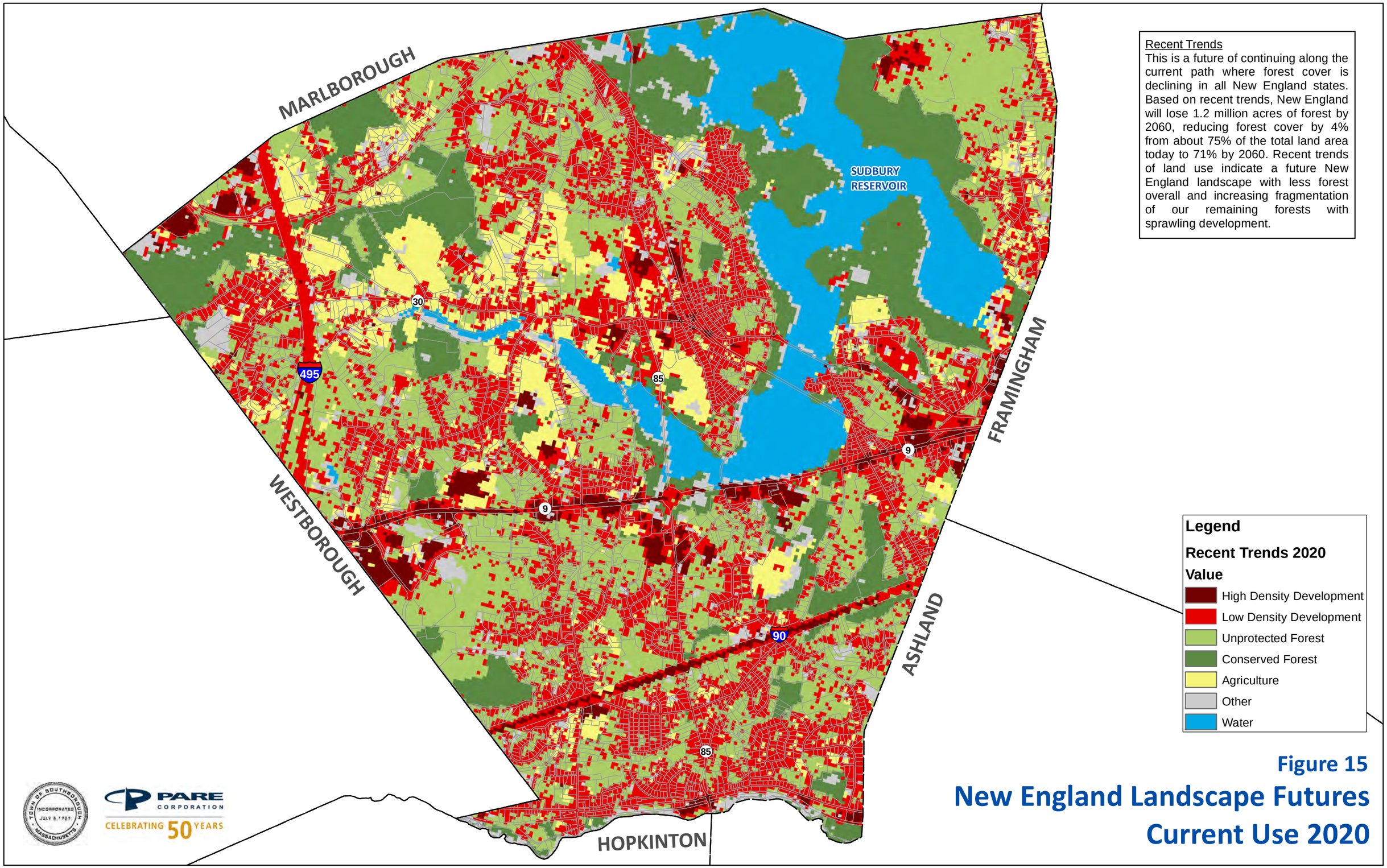
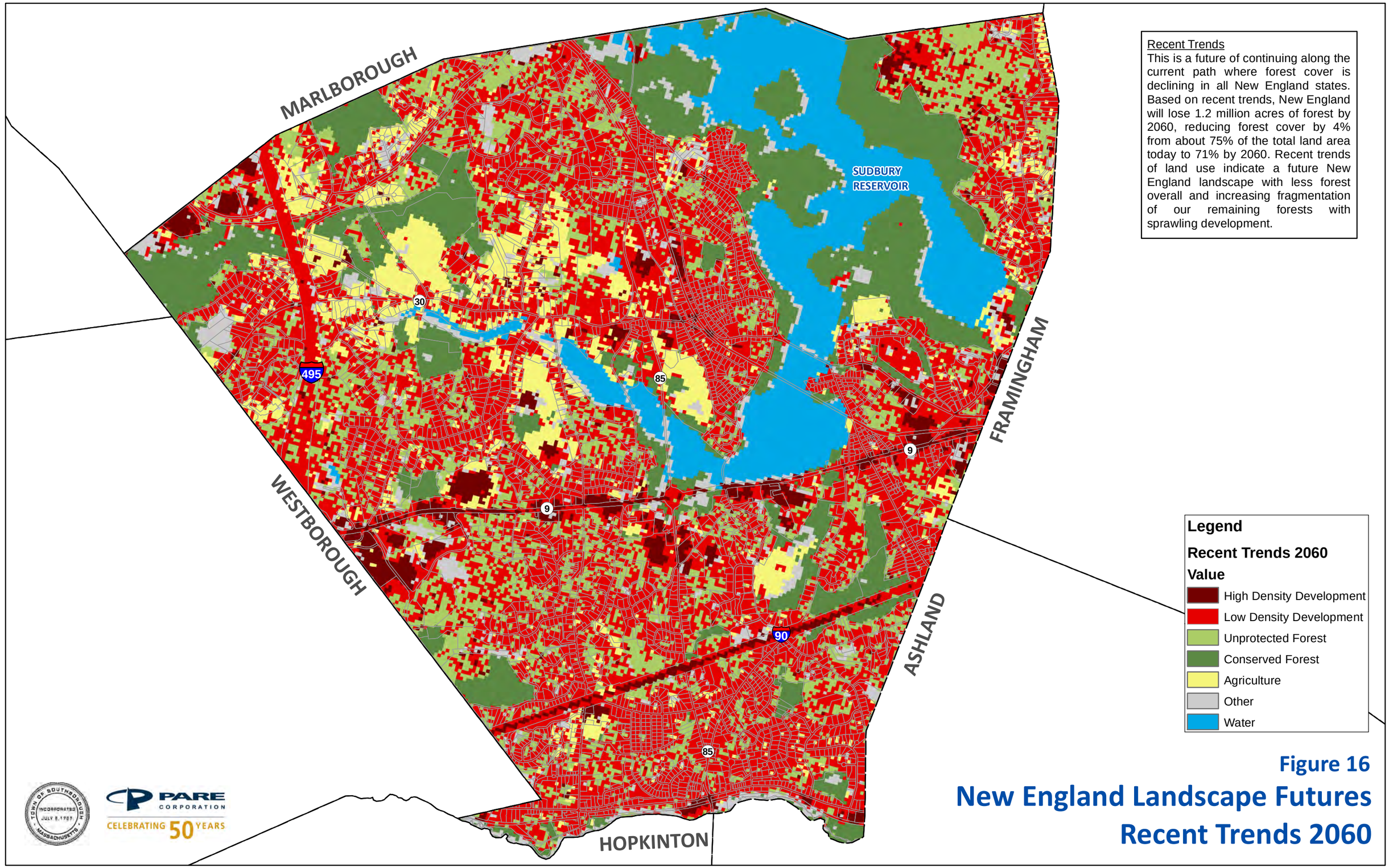


Figure 15

New England Landscape Futures
Current Use 2020



Recent Trends

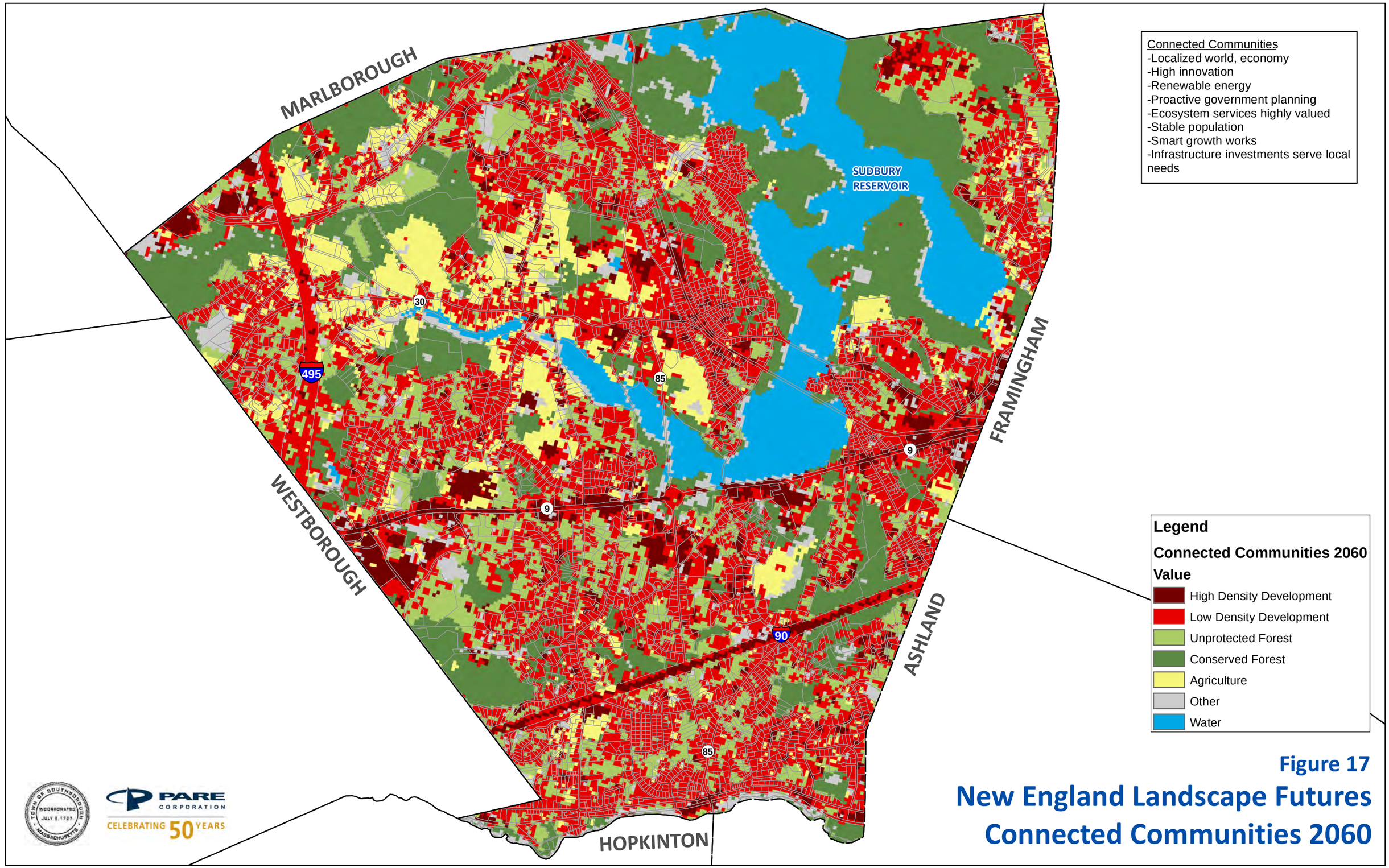
This is a future of continuing along the current path where forest cover is declining in all New England states. Based on recent trends, New England will lose 1.2 million acres of forest by 2060, reducing forest cover by 4% from about 75% of the total land area today to 71% by 2060. Recent trends of land use indicate a future New England landscape with less forest overall and increasing fragmentation of our remaining forests with sprawling development.

TOWN OF SOUTHBOROUGH INCORPORATED JULY 8, 1727 MASSACHUSETTS

PARE CORPORATION CELEBRATING 50 YEARS

Figure 16

New England Landscape Futures
Recent Trends 2060

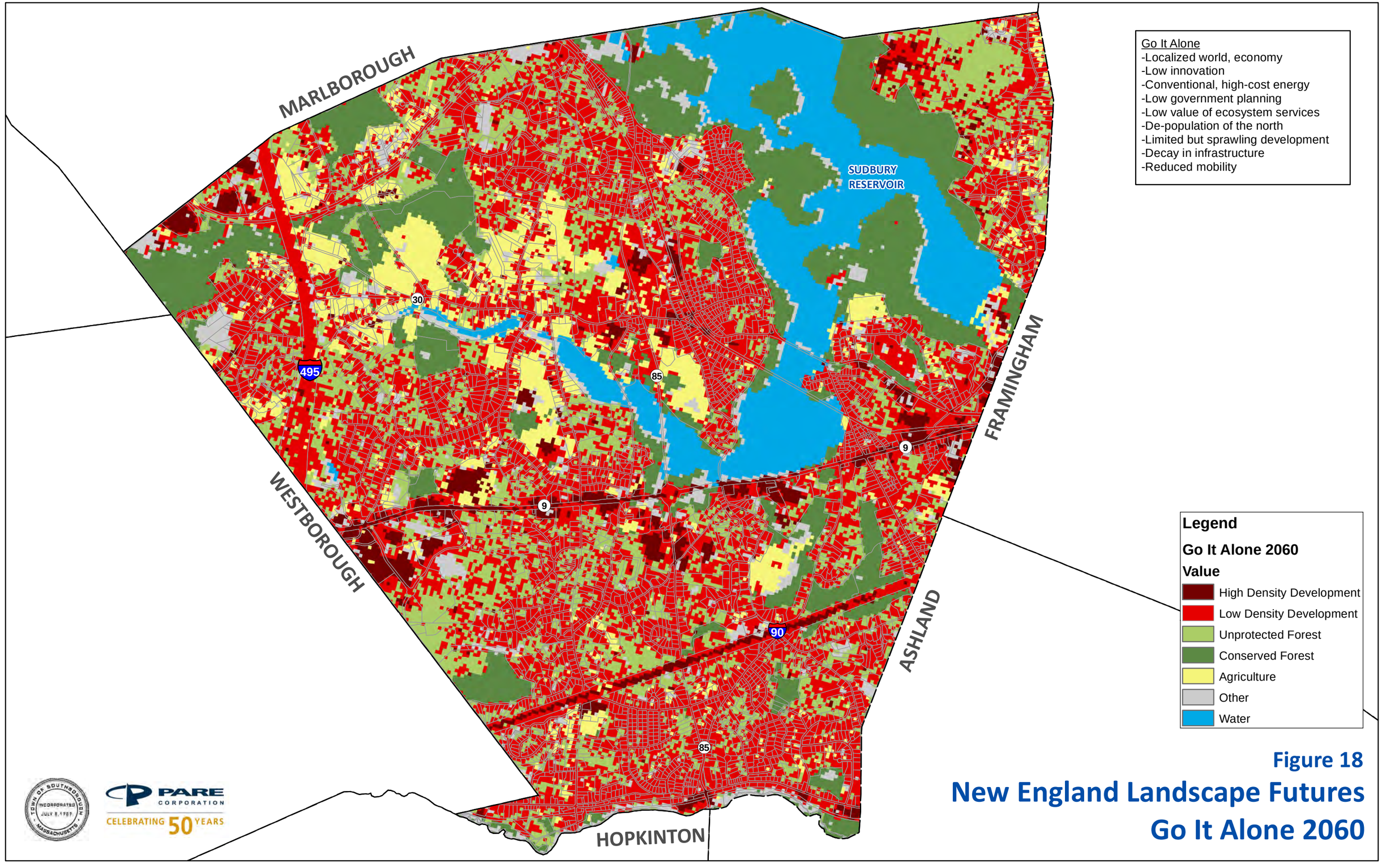


TOWN OF SOUTHBOROUGH INCORPORATED JULY 8, 1727 MASSACHUSETTS

PARE CORPORATION
CELEBRATING 50 YEARS

Figure 17

New England Landscape Futures
Connected Communities 2060



TOWN OF SOUTHBOROUGH INCORPORATED JULY 8, 1727 MASSACHUSETTS

PARE CORPORATION
CELEBRATING 50 YEARS

Figure 18

New England Landscape Futures
Go It Alone 2060

Growing Global
-Globalized world, economy
-Low innovation
-Conventional, cheap energy
-Low government planning
-Low valuing of ecosystem services
-High immigration
-Rapid, sprawling development
-Investment in conventional infrastructure

MARLBOROUGH
SUDBURY RESERVOIR
FRAMINGHAM
WESTBOROUGH
ASHLAND
HOPKINTON
495
30
85
9
90

Legend

Growing Global 2060

Value

- High Density Development
- Low Density Development
- Unprotected Forest
- Conserved Forest
- Agriculture
- Other
- Water

TOWN OF SOUTHBOROUGH INCORPORATED JULY 8, 1727 MASSACHUSETTS

PARE CORPORATION
CELEBRATING 50 YEARS

Figure 19
New England Landscape Futures
Growing Global 2060

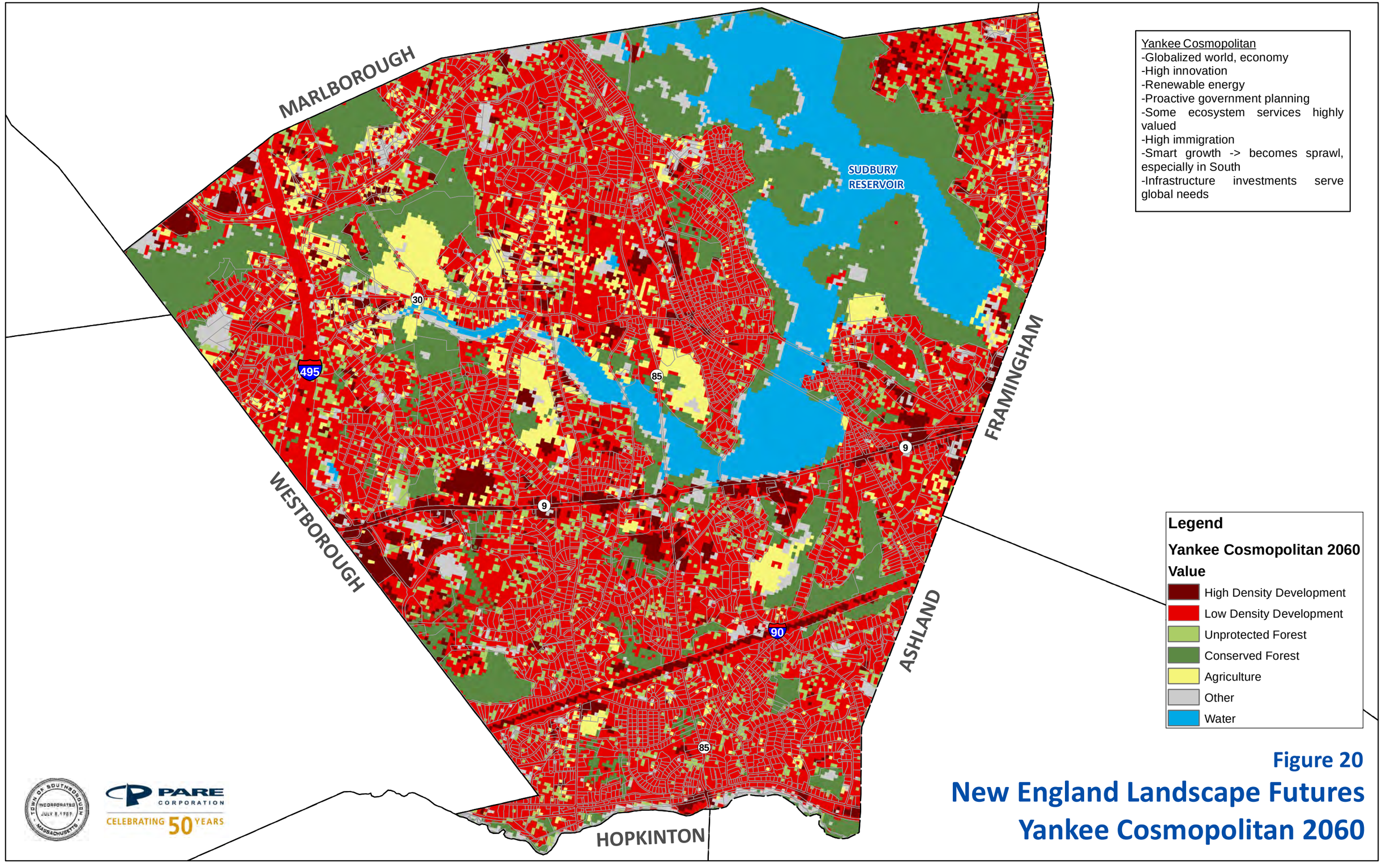


Figure 20

New England Landscape Futures
Yankee Cosmopolitan 2060

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.)

Features	Location	Ownership	V or S	SEVERE WEATHER	WILDFIRE	TRANSPO NETWORK	RELIANCE ON PUBLIC ~~UT~~ UTILITIES	Priority H-M-L	Time Short Long Ongoing
Infrastructural									
PUBLIC SAFETY FACILITY	CENTER	TOWN	S	• STUDY BACKUP LOCATION / SUB-STATION FOR EMERGENCY RESPONSE • REVIEW CONTINUITY OF OPERATIONS PLAN • MUTUAL AID AGREEMENTS				M	O
CAUSEWAYS	THROUGH OUT	MIXED	V	• STUDY FOOD PANTRY • EXPAND CAPACITY (TRAFFIC & HYDRAULICS)			• Relocate OH UTILITIES	H	S
STATE ROADS THROUGH TOWN	"	STATE	V/S	• NEW EMERGENCY ACCESS ON I-90 • PLAN ADVANCED PLANNING W/STATE • NEW "REVERSE DIRECTION CAPABILITY" ON RTE 9 • BACKUP POWER				H	S/L
WATER SYSTEM	"	TOWN	S	• GRADE-SEPARATION @ RTE 9 • INCREASE WATER CONNECTIVITY (INTERSECTIONS) • ESTABLISH HYDRANTS IN NE CORNER • CONTINUAL FUNDING				M	O
~~SEWER SYSTEM (NONE)~~									
RAIL SYSTEM	~~PRIVATE~~ STATE	PRIVATE STATE	V	• IMPROVE EMERGENCY ACCESS POINTS • IMPROVE INFRASTUCTURE CONDITIONS		• MBTA ACCESS & PARKING CAPACITY		L	S
Societal									
SENIOR CENTER	CENTER	TOWN	S	• EXPANDED CAPABILITY TO ACCOMMODATE MORE USERS • STUDY OPPORTUNITY TO PROVIDE EMERGENCY ACCOMMODATIONS FOR DISPLACED RESIDENTS				M	O
YOUTH & FAMILY FACILITY	SOUTH	TOWN	S	• CENTRALIZE LOCATION • EXPLORE COMMUNITY CTR			→ Relationship w/ translation services	M	L
SHA - COLONIAL GARDENS	Center	STATE	V	• IMPROVE COMMUNITY OUTREACH & PREPAREDNESS/READINESS				H	S
GETTING EMPLOYEES to WORK	THROUGH	MULTIPLE	V	• EXPLORE MASS transit improvements (RTA?)				M	L
PRIVATE SCHOOLS	Center	PRIVATE	S/V	• inspections and guidance • public sheltering opportunities?				M	O
Environmental									
OPEN SPACE	THROUGHOUT	STATE/TOWN	S	• ESTABLISH FOREST MANAGEMENT PLAN / FIRE RISK MANAGEMENT PLAN (STATE/TOWN/PRIVATE)				H	S
HAZ MAT RESPONSE	THROUGH	TOWN	V	• INCREASE HAZ MAT TRAINING → FIRST RESPONDERS → LOCAL RESPONDERS		• Back up HAZMAT supplies		L	O
RIVER/RESERVOIR	THROUGH	STATE	V	• Review flooding AREAS & IMPACT on roadways & assets		• who controls dam water?		H	S
SEWER SYSTEM		PRIV/SEPTIC	V	• explore area specific packaged systems • explore town system		• connect to neighboring systems?		M	L

Community Resilience Building Risk Matrix

www.CommunityResilienceBuilding.org

H-**M**-**L** priority for action over the **S**hort or **L**ong term (and **O**ngoing)
V = Vulnerability **S** = Strength

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

Hi-Lo Temperatures	Precipitation	Extreme Weather	Disease

Features	Location	Ownership	V or S		Priority H-M-L	Time Short Long Ongoing
Infrastructural						
* Maintenance of Infrastructure detention basins	Community	S, M, P	V	Locate funding locate detention basins, evaluate capacity, and condition develop maintenance program, enforcement.	H	O
Utilities (overhead/buried)	Community	M, P	V	Review utility coverage (hydrants) Review hazards to overhead and buried utilities Requests reports from private utility	L	O
Critical facilities in old buildings	Library Town Hall Senior Center	M	V	Study building Envelopes - implement repairs/recommendations Review flood proofing needs/opportunities Investigate churches, non-municiple facilities for additional capacity	H	O
Schools - cooling capacity/flood zone	All schools	M	V/S	Study flood issues/improve flood issues? add cooling capabilities, determine if schools are a ~~vulnerable~~ viable shelter location	L	L
Stormwater BMPs - Design/Maintenance	Community	Private Public	V/S	Review LID requirements/EPA requirements, recommendations Inspection Maintenance	M	O
Culverts - Townwide	Community	Public Private	V	Same as infrastructure	M	S
Societal						
Scenic Road Designation	Community	Public	V/S	Revisit scenic designation Review by law for applicable Review town wide trees	M	L
Aging Population - (includes vulnerable pop) Dispersed throughout Housing Auth. Pop. needs	Community	Public	V/S	Maintain Senior Center database Maintain liason between Senior Center and emergency services Review communication plans	M	O
Shelters - Capacity	Schools Trottier Woodward	Public	S/V	Review overnighting capacity add cooling Review sheltering services (food, water, sanitation)	H	S
* Roads/Trans - Connectivity/Isolation Station Flood / Causeways / Cul de sac	Community	Public	V	evaluate improvements to 2 causeways evaluate sidewalks evaluate shelter in place / evacuation plans	H	S
Recreation facilities DISEASE	Community	Public Private	V/S	Education	L	O
Communications	Community	Private Public	V/S	evaluate communication systems evaluate phone charging locations Maintain current notification Plan	L	O
Environmental						
* Wetland Health	Community	Public Private	V/S	Education, By Law Modification, Land Protection, implement Native Plant Initiative Invasive Species Management Plan - develop Improve Stormwater BMP	H	S
Brush Fire	Train Corridor Reservoir Forest	Public Private	V	Education, Develop Forest Management Plan, Coordinate with MWRA, MBTA Review: Accessibility Routes, water supply gaps, fire fighting apparatus	M	S/O
Runoff water quality	Community	Public Private	V	Non point Source Pollution improvements Education, Green Infrastructure Solutions BMP's - parking lot, landscaping, stormwater	M	O
Spraying pest./herb.	Community	Private Public	V	Education Guidance Document preparation	M	S
Landscaping practices	Community	Public Private	V	Education, Green Practices implement existing Native Plant Initiative Mowing/fertilizing practice guidance docs.	H	S
Underground (ED) streams/GW/buried/culverted streams	Community	Public Private	V	Identify culvert locations/components Hydrology study to evaluate current and future capacity Solution/implementation	L	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.)

Features	Location	Ownership	V or S	Precipitation, Flooding Water Quality	TRAFFIC	Biodiversity & Disease	Extreme Weather.	Priority H-M-L	Time Short Long Ongoing
Infrastructural									
Utilities (NG, power)	all	quasi-public	V(S)	~~Incorporate~~ incentives to improve utility system resilience into building, zoning & planning processes. [work w/ Utilities]				H ①	O
Sewer / Septic	all	private	V	Investigate options for installing (paying for) Sewer system along Route 9.				M	L
Town building / ~~Stmwtr Infra.~~	all	town	S/~~V~~	Facilities inventory & assessment → consider current & potential uses, possible improvements, sheltering, etc				H ③	S
RT 9 / Causeways	across	town/ state	S	~~&~~ Reinforce evacuation routes. Identify flood mitigation for Route 9 & 85. Middle Road & Rt 9 intersection.				M	L
495 / 90 Stormwater	all	~~fed~~ town	V	Stormwater mgmt along RT9! Work w/ MassDOT + MADCR. Address stream crossings for improvements. Update bylaws.				H ②	O
Sudbury Reservoir & Dam / Aqueduct	E	state	S(V)	Public outreach & point source discharges. MADCR & MWRA Relationships. Use rec trails for education & outreach re: water quality, forest mgmt, native/invasive				L	O
Societal									
Health: mental, physical, services	all	town	S	More services, needs assessment, improve preparedness & community resilience.				H ③	O
Vulnerable populations	all		V	Identify, outreach to help preparedness, translate materials. Develop volunteer network / call list.				H ③	S/O
Business community	all		S	List & info into distribution. Engage to incorporate climate adaptation & environmental actions into development.				M	O
Community Support	all		S	Resilience/preparedness info available. Take advantage of rec. opport. Partnerships to aid recovery.				M	O
Recreation opportunities	all	town/ State	S	Use for ~~Emerg.~~ Prep. outreach.				L	O
Private schools	all	private	S/V	Ensure additional resources available to address emergency. Sheltering / housing registry. Sheltering partnership.				M	S
Environmental									
Sudbury Watershed	all	town/ State	S	Educate the public re: water quality. Relationship w/ DCR. → ConCom develop best management guidelines w/ DCR.				H ②	O
Flora/Fauna/Native vs. Invasive		private/ public	V	Develop town-wide plan to manage invasive species Approved homeowners removal plan for expedited permitting				M	S
Wetlands		town	V/S	curb at intersection of 85 & 9. Stormwater mgmt, protect wetlands. RT9 @ Gulf Sta. Stream crossings, culvert impr.				H ②	S
Clean Air		private/ public	S	Town-wide tree program → giveaway, planting. * native trees * Encouraging / enforcing LID / green infra. Exp. renewable energy				L	O
Chemical Runoff		private/ public	V	consider alternatives to road salt. Education re: lawn care & chemical use. Best management guidelines. w/ DCR				M	S
Open Space / Trails / Rec		town/ state	S	Opportunity for public education & engagement. Develop plan w/ resources/funding to mange open space long-term. → open space inventory				L	O

Community Resilience Building Risk Matrix

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www.CommunityResilienceBuilding.org

H-M-L priority for action over the **S**hort or **L**ong term (and **O**ngoing)
V = Vulnerability **S** = Strength

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

Features	Location	Ownership	V or S	Precipitation Flooding	Cyber Security	Extreme Weather Storms	Disease New Vectors	Priority H - M - L	Time Short Long Ongoing
Infrastructural									
Use of old stormwater standards → Need to move to new rain models	All over Town	Developers State Town	V			New Town standards for new/redevelopment		H	S
Causeway flooding — isolating residents Dynamic traffic routing	Causeways	Police State DOT	V	Contingency Planning				M	O
Communication failure — Power loss, Cell loss, Internet, Satellite		Verizon Core Rep Town	V		Education Impact H' Relocation options for communication center	Backup power for system repeaters		H	S O
Water Source (Quabbin) Marlborough treatment facility — Power loss - Marlborough Relationships w/ locally based MWRA/DEP		MWRA/Town MWRA	S V S			— Plan — Implement — IT Plan			
Dependence on one water source			V						
Library — in a flood zone			V				Debt Management		O
Neary School — in a flood zone				Plan to rebuild/move school - rebuild wetland	Low	Hi (cost)		H	L
Societal									
Library - support for kids & residents			V/S	Rebuild in better spot				L	L
Water Source — Loss of water → who & where gets water									
Flooding of all sorts leading to town services being overwhelmed — timing & availability of inspection permitting			V			How can the town add flexibility & expediting process		H	S
School vulnerability to heat — No A/C — Disease vectors			V V			School update plan		M	L
Environmental									
Invasive species							EEE Management		
Pesticide use / Herbicide use — Water contamination — Health reduction				Ecosystem management & soil carbon plan for town — invasive management — flood management — soil management				H	S #1
Later/winter. Earlier summer — more standing water — earlier growing									
Reduction in natural species — trees, insects, fauna							Overall plan for ecosystem management		
Septic systems leaking into res. & river									
Overall CO_2 emissions — big threat					Soil carbon management plan				