Mystic Shoreline Initiative

Mystic Shoreline Revitalization Plan

Final Report
September 2025

Mystic River
WATERSHED ASSOCIATION

TABLE OF CONTENTS

LAND ACKNOWLEDGMENT

EXECUTIVE SUMMARY

PART 1 | INTRODUCTION **6**
- 1.1 MYSTIC SHORELINE INITIATIVE
- 1.2 MYSTIC SHORELINE REVITALIZATION PLAN
- 1.3 PROJECT SITE OVERVIEW

PART 2 | AREA CHARACTERS AND SITE ANALYSIS **22**
- 2.1 MYSTIC LAKES SEGMENT - CHARACTERS AND CHALLENGES
- 2.2 WEST MEDFORD SEGMENT - CHARACTERS AND CHALLENGES
- 2.3 COMMUNITY VISIONING AND RESULTS

PART 3 | DRAFT CONCEPTUAL DESIGN **61**
- 3.1 MYSTIC LAKES SEGMENT
- 3.2 WEST MEDFORD SEGMENT
- 3.3 CONCEPTUAL DESIGN ENGAGEMENTS & RESULTS

PART 4 | REFINED CONCEPTS & RECOMMENDATIONS **71**
- 4.1 MYSTIC LAKES SEGMENT
- 4.2 WEST MEDFORD SEGMENT

PART 5 | DESIGN TOOLBOX **117**

PART 6 | OPINION OF PROBABLE COST **131**

APPENDICES **134**
- APPENDIX A LANDSCAPE AND SHORELINE ASSESSMENT MEMO
- APPENDIX B RESOURCE AREA DELINEATION REPORT
- APPENDIX C NATURAL AREAS ASSESSMENT AND INVASIVE SPECIES SURVEY
- APPENDIX D CONCEPTUAL LEVEL DESIGN PERMITTING ASSESSMENT

PROJECT TEAM

LANDSCAPE ARCHITECTURE

HALVORSON

Tighe&Bond STUDIO

ENVIRONMENTAL SCIENCE & GIS

Tighe&Bond

CULTURAL RESOURCES MANAGEMENT

COMMONWEALTH CULTURAL & ARCHAEOLOGICAL ASSESSORS, LLC.



MyRWA wishes to honor and acknowledge the indigenous communities native to this region and its past, present, and future. The watershed is on the colonized lands of the Massachusett, Nipmuc, and Pawtucket tribes.

As you explore the watershed, we encourage you to learn with us about its past and current indigenous heritage.

MYSTIC RIVER WATERSHED ASSOCIATION

OUR MISSION

To protect and restore the Mystic River and its tributaries

MYSTIC GREENWAYS PROGRAM VISION

Connecting 25 miles of path, improve hundreds of acres of parklands and engage thousands of community members from Mystic Lakes to the Boston Harbor.

MYSTIC SHORELINE INITIATIVE

A multi-year effort of the Mystic Greenways program to provide universally accessible recreation opportunities along, and improve the ecological health of, the Mystic Lakes and Mystic River in Arlington, Winchester and Medford.

LEARN MORE AT **MYSTICRIVER.ORG**

EXECUTIVE SUMMARY

The Mystic Lakes and Mystic River shoreline in Winchester and West Medford have served as a valuable natural resource for human habitation, movement, recreation, and sustenance for millennia. Indigenous peoples utilized the shores for hunting and living, taking advantage of the abundant fishing the lakes provided. After colonization, in the early 19th century, the Middlesex Canal ran along its shores, enabling the efficient transfer of raw materials and manufactured products between Lowell and Boston. And in the late 19th century, the completion of Mystic Valley Parkway realized the vision of Olmsted, Olmsted and Eliot to preserve the eastern shoreline of the lakes for both conservation and recreation through groundbreaking landscape design. Such feats were juxtaposed against the backdrop of intentional redlining in West Medford, where African American residents settled and established a thriving legacy.

Presently, the shoreline, under the jurisdiction of the Massachusetts Department of Conservation and Recreation (DCR), exists as an open space with limited resources delineated for conservation, or dedicated for recreational use. Beyond Shannon Beach, a notable regional asset, and four small parking lots with an adjacent sidewalk, the shoreline largely remains undeveloped. This limits recreational access for people of all ages and abilities, while also contributing to erosion and environmental degradation in several overused areas.

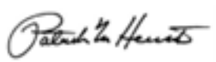
The enclosed Conceptual Design and Survey Report was commissioned by MyRWA and conducted with funding from the Lawrence and Lillian Solomon Foundation and an Anonymous Foundation. It seeks to build upon existing studies and plans, such as DCR's Mystic River Master Plan (2009), with a goal of identifying accessibility and ecological improvements for the eastern shoreline of the Mystic Lakes, as well as the Mystic River in West Medford. Dubbed the "Mystic Shoreline Revitalization Plan", this conceptual process complements other planning and design efforts seeking to improve safety and accessibility along the Mystic Valley Parkway corridor.

The recommendations of the report were guided by extensive site analysis, including an environmental survey, traffic study, and cultural resources assessment, and a public process conducted in three phases: Visioning, Initial Concepts and Refined Concepts. Each phase of the public process included the convening of a resident steering committee meeting, a public meeting, and public surveying. Additional outreach about the project was conducted during tabling sessions at Shannon Beach in Winchester and Dugger Park in Medford.

To achieve the project's goals, the plan recommends conservation-focused improvements including shoreline stabilization, habitat restoration and stormwater management for the roughly three miles-long area of study. Recreational improvements recommended include an enhanced path network, scenic viewpoints and overlooks, new launches for non-motorized boating, seating, and improved parking demand management. Core to the project's conceptual plan remains a commitment to uplifting opportunities for cultural and historical features, such as memorials, public art, and educational interpretive signage highlighting the significant ecological and historical value of the area.

It is anticipated that the report will be used as a guiding resource for further project development in the interest of the Commonwealth of Massachusetts, its residents and visitors. Please enjoy!

Sincerely,



Patrick Herron

Executive Director

Mystic River Watershed Association

THE LAWRENCE & LILLIAN Solomon Foundation

Mystic River WATERSHED ASSOCIATION

PART 1

INTRODUCTION

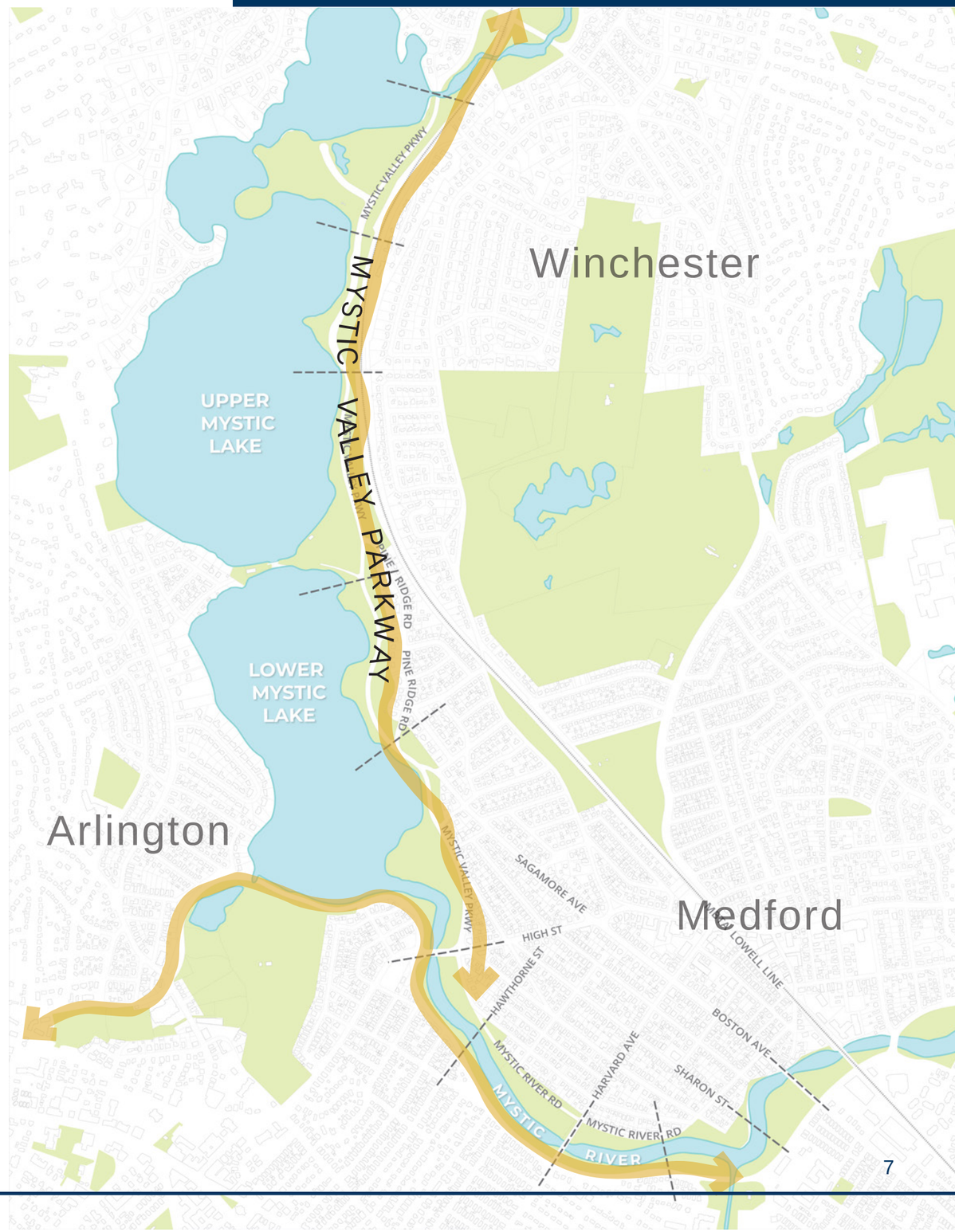
MYSTIC SHORELINE INITIATIVE

BACKGROUND

- Area home to remarkable environmental resources, historical significance and recreational value.

- Present condition provides challenges for the environment and visitors.

- We've heard from community members, DCR, and local municipalities that a comprehensive effort is needed to address persistent issues.



MYSTIC SHORELINE INITIATIVE

EXISTING CONDITIONS



Limited Accessibility



Severe Erosion



Safety Concerns



Mismanage Stormwater

MYSTIC SHORELINE INITIATIVE - MAP OVERVIEW

MYSTIC SHORELINE REVITALIZATION PLAN

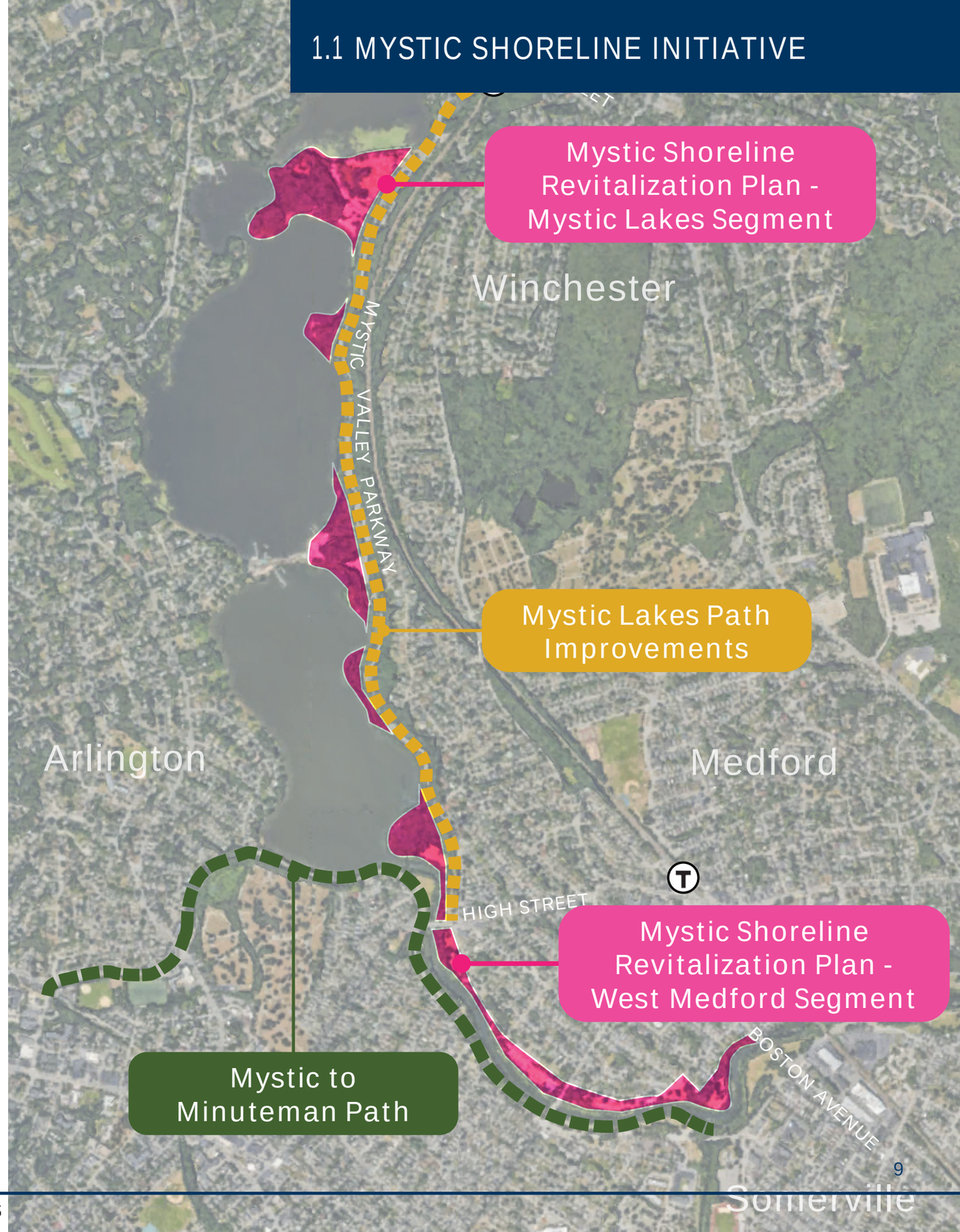
- West Medford Segment
- Mystic Lakes Segment

MYSTIC LAKES PATH

- Mystic Valley Parkway from High Street (Medford) to Bacon Street (Winchester)

MYSTIC TO MINUTEMAN PATH

- Mystic Valley Parkway from Mystic Street to Alewife Brook Parkway (Arlington)
- High Street Rotaries (Arlington/Medford)
- Summer Street (Arlington)



MYSTIC SHORELINE REVITALIZATION PLAN

Identify accessibility and ecological improvements for the eastern shoreline of the Mystic Lakes, as well as the Mystic River in West Medford.

PROJECT GOALS

- Improve safety, accessibility & public health outcomes
- Improve the ecology of the Mystic River
- Enhance recreational experience

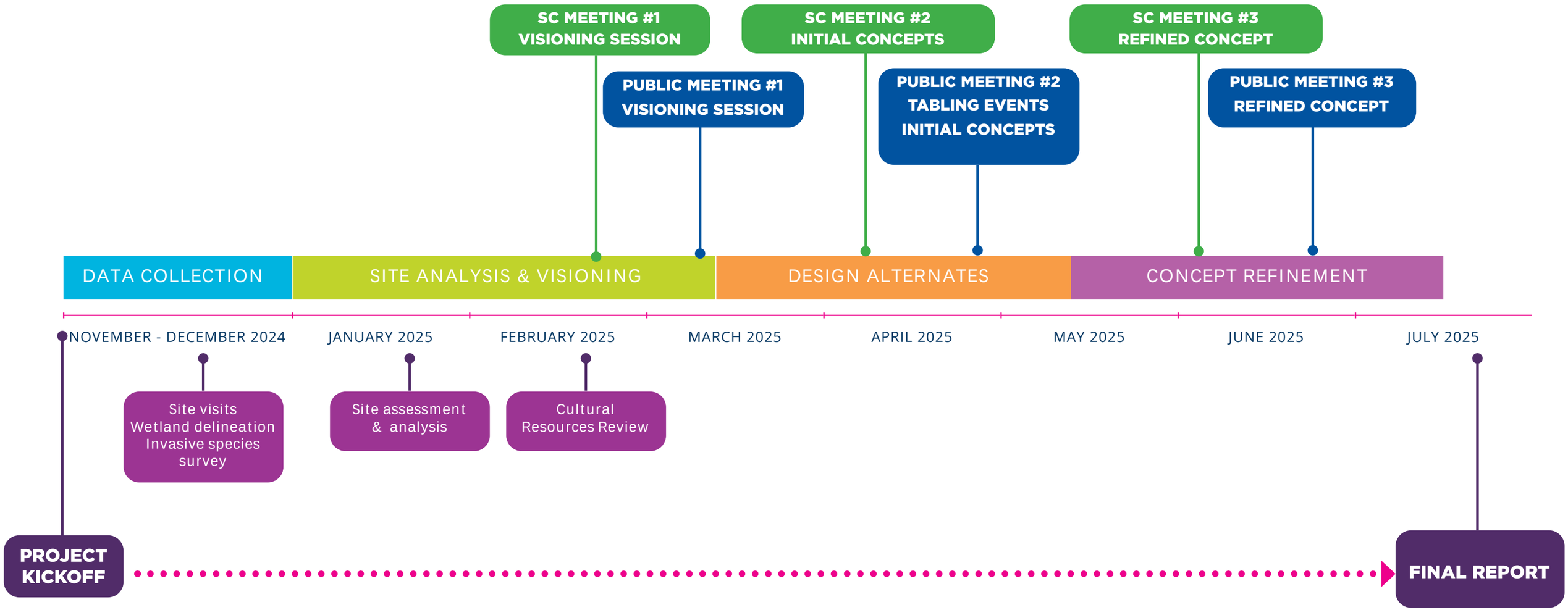
WHAT IS INCLUDED

- Landscape Assessment
- Cultural Resources Assessment
- Ecological Resources Assessment
- Shoreline Assessment (Wetland)
- Conceptual Design for
  - **Shoreline Restoration**
  - **Accessibility**
  - **Site Amenities: Overlook, Seating Areas,and Kayak Launch, etc.**

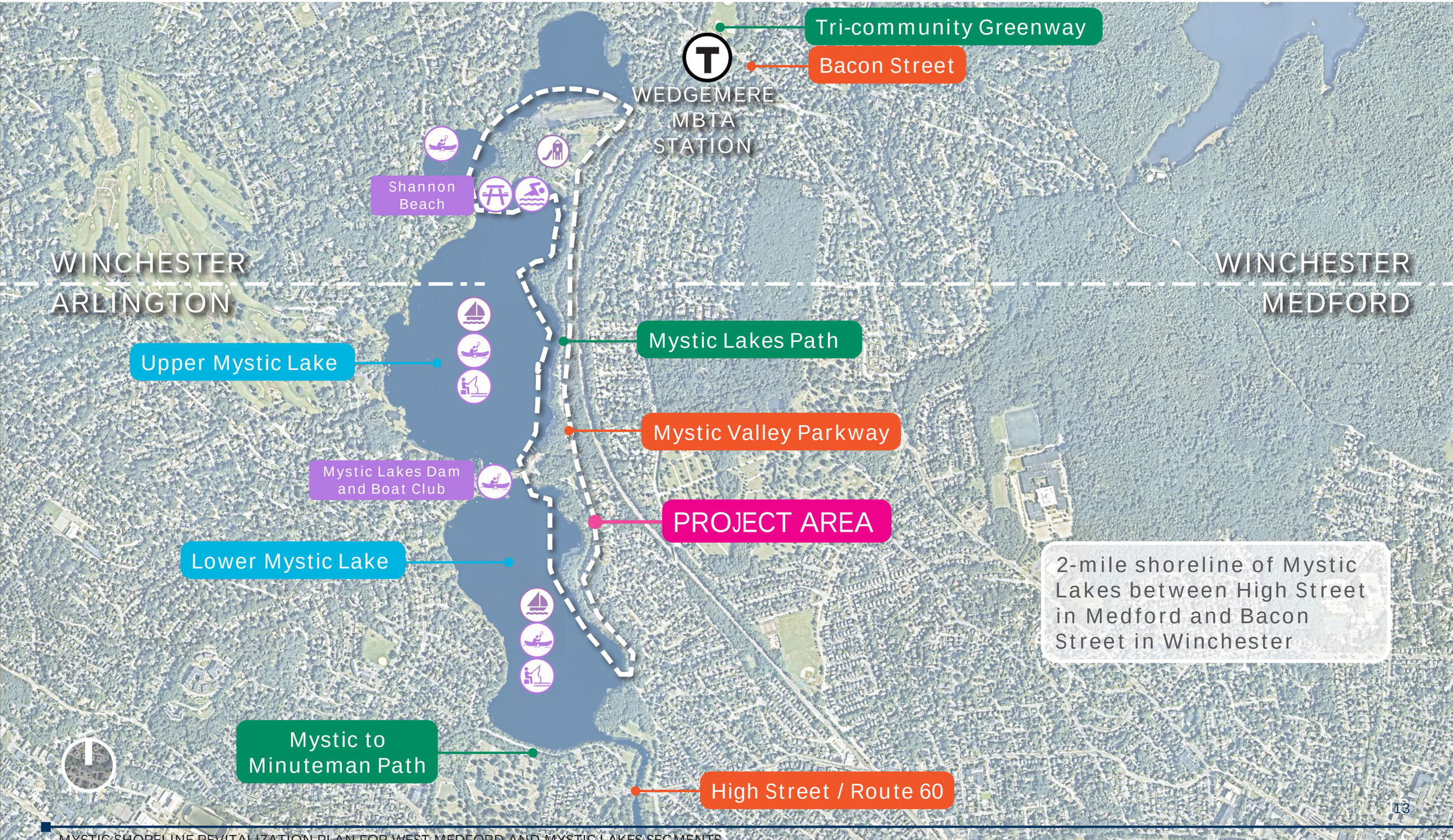
WHAT IS NOT INCLUDED

- Construction Documents
- Permitting and Construction
- Active recreational facilities
- Parking Management
- Mystic Valley Parkway Right-of-Way

SCHEDULE & PROCESS



SITE CONTEXT- MYSTIC LAKES SEGMENT



SITE CONTEXT- WEST MEDFORD SEGMENT



CULTURAL RESOURCES - Significance





Image Credit: The National Park Service

Frederick Law Olmsted National Historic Site

The Project is divided into two segments, the Mystic Lakes Segment and the West Medford Segment. Within the Mystic Lakes Segment there are six historic districts and twelve historic properties listed in the National Register of Historic Places (NR) that are within or crossed by the Project Area. Two of the historic districts span multiple towns, specifically, the Mystic Valley Parkway District in Arlington, Medford and Winchester and the Middlesex Canal Historic and Archaeological District in Medford and Winchester. One District crossed by the Project is The Everett Avenue - Sheffield Road Historic District, located in Winchester it once housed the workers and investors of the historic Baconville a former industrial mill village in the southern Winchester segment surrounding the Aberjona River.

There are fifty-eight NR-listed historic properties are within ¼ mile of the Mystic Lakes Segment of the Project Area as well as 12 other inventoried historic districts and 59 other inventoried historic properties within ¼ mile of the Project Area, including historic houses or buildings, bridges and the Mystic Dam.

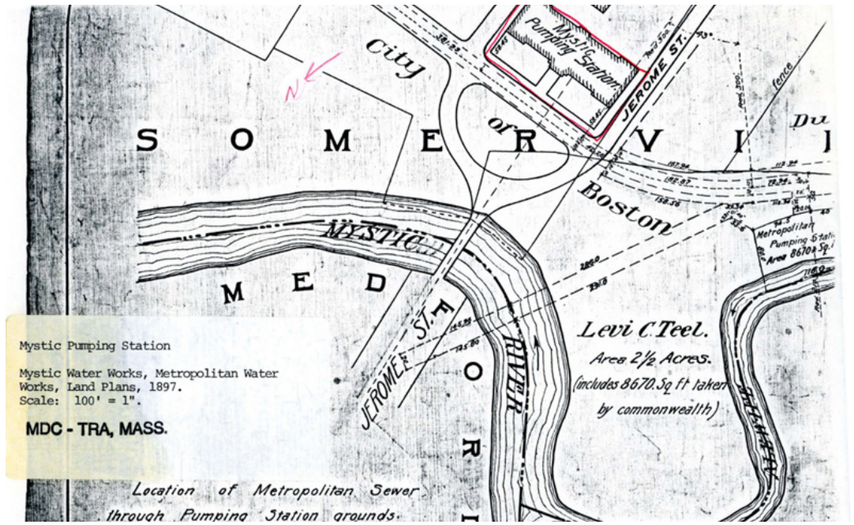
Ten inventoried precontact archaeological sites are located within ¼ mile of the Project Area, potentially spanning over 10,000 years of Native American activities around the Mystic Lakes. There are also 12 historic archaeological sites within or at ¼ mile of the Project Area. Many related to the Middlesex Canal. The Project Area includes multiple areas of archaeological sensitivity for precontact and contact period Native American archaeological resources, and historical (post-contact) archaeological resources.

For the West Medford Segment of the Project, Seventeen Historic Areas or Districts are within the quarter mile buffer of the proposed Project path. Six of these Areas are crossed by the Project including the Middlesex Canal with an archaeological component and a Historic District Component and the Mystic Valley Parkway which is additionally designated as a National Register Multiple Property Submission. One Massachusetts Historic Commission (MHC) listed individual historic asset that is crossed by the Project Path, Dugger Park is located between Mystic River Road and the Mystic River. Constructed in 1939, it covers 3.92 acres with tennis courts added in 1972. The Dugger Park was named after Edward Dugger, soldier, community leader, and first Black member of the Medford Planning Board, who died in 1939. The tennis courts were also named after a prominent resident of West Medford, Clarence Rhone (1893-1970).

CULTURAL RESOURCES - Significance (Ctd.)



Bird's Eye view of Pump House and bridge (1880, O.H. Bailey & Co.) view southwest. The project area would be the land on the near side of the river (note former bridge location).



The 1897 map above shows the pumping station and road layout before the Mystic Valley Parkway construction over the next decade. A bridge can be seen opposite the building and the north side would be in the present Project APE. Jereme St. became Capen Street south of the river. (Project Area overlaps with Medford letters).

To the east, one Local Historic District named the Mystic Pumping Station that is adjacent and across the river from the West Medford Project Area. It is an individual National Register listed resource with a notable designation as a National Register Multiple Resource Area and National Register Thematic Resource Area and can be viewed from the eastern end of the West Medford Segment. The former bridge that approached the pump house was an extension of Jerome Street on the West Medford side of the Mystic River.

In total there are 181 Inventoried Properties that exist within the ¼ mile buffer of the Project Path within the West Medford Segment. In addition, to the previously mentioned National Registered District Areas, and National Register elements of the Mystic Valley Parkway and the Middlesex Canal, other districts within a ¼ mile of the West Medford Segment include the Judkins Square Area Residential District , The Bower Streetscape, The West Medford Commercial Area, The American Woolen Mill Commercial Area, The Cotting Street Area at 5-60 Cotting St. and finally the Walkling Court Housing Project an example of early Medford Public Housing.

For the West Medford Segment there are 11 known Native American sites within ¼ mile and represent a glimpse of the Pawtucket and Menotomet Tribal presence who inhabited the area during the initial European settlement in the 17th century. The Mystic River was referred to as "MissiTuk" or "great tidal river," until European settlers arrived in the early 1600s. The first ship built by the English in Massachusetts, the Blessing of the Bay, was launched in 1631 from the Mystic River shores. In 1637, the first bridge across the Mystic was constructed. The bridge used by Paul Revere in his midnight ride crossed in this segment. With the laying of the railroad in the 1830's through West Medford, housing spread into farmland and river front properties along the Mystic River. West Medford competed with Medford Proper in the late 19th Century, even to a point of trying to petition the General Court to form a separate town called "The Brooks." In 1870, 150 house lots were made available in the sale of the Ebenezer Smith estate in West Medford.

CULTURAL RESOURCES - Middlesex Canal (1803 - 1852)

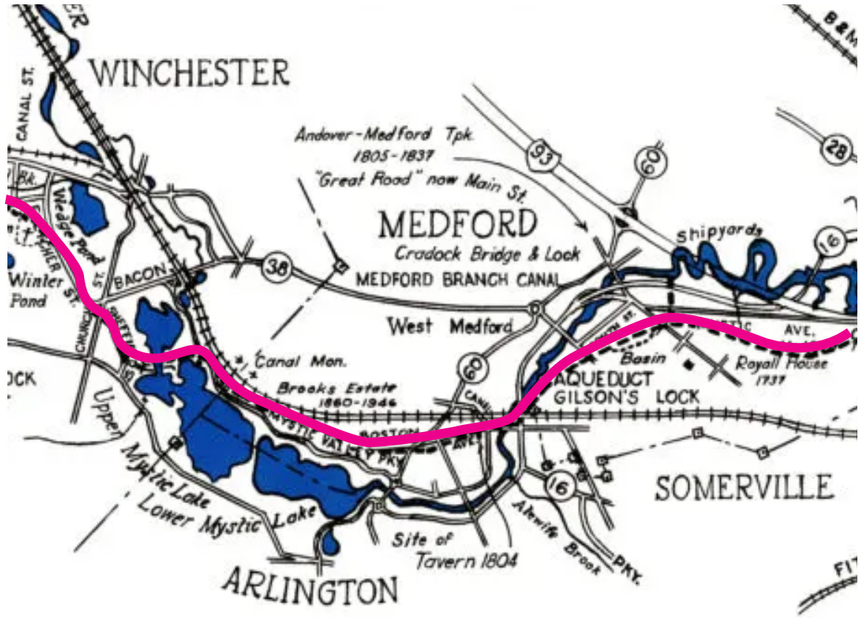




Image Credit: American Canal Society; Wilbar Hoxie Map of the Middlesex Canal (Top); National Park Service (bottom)

The Middlesex Canal was constructed over a ten-year period from 1793 to its opening in 1803, operated over a 27.25-mile course between Charlestown and Lowell for almost fifty years. The canal bed itself averaged 30.5 feet across, and had adjacent canal paths, locks, bridges, aqueducts, and other structures associated with the canal's operation and maintenance. It was the second and longest transportation canal in Massachusetts after the short 1795 South Hadley Canal and was a financial business venture developed by regional entrepreneurs as a solution to costly and difficult overland transportation that hampered trade in the north-south axis between Boston and the Merrimack River Valley. In its day, the canal was the southern link of the 80-mile waterway from the Boston waterfront to Concord, New Hampshire. The cost of construction was $536,000, of which $58,000 was for land taking and water rights. This would be equivalent to $200 million in today's dollars.

When the canal began operation in 1803, a barge with one horse or ox could haul 15 to 30 tons, while a teamster with two to four horses or two oxen could only haul 1.5 to 3.0 tons or one-tenth the load and at a much slower pace. A comfortable packet boat owned and operated by the canal company carried passengers in enclosed housing. It was 75 feet in length, and carried about 50 passengers and luggage. It had priority passage and could transit the full length of the canal in a day at a cost of $1.10, or four cents a mile. Records of goods transported were reported in tons, pounds, barrels, boxes, cords, board feet, logs, bushels, bails, bags and as items such as bricks. By the 1830s, the canal's fortunes began to decline in the face of competition from new parallel railroads. The Boston & Lowell and Nashua & Lowell railroads opened in 1835 and 1838 respectively, and eventually offered faster, year-round transportation, which cut dramatically into canal traffic and profits and moved civic and industrial development away from the canal route. The last toll was collected in November 1851 and the last trip was in April 1852.

CULTURAL RESOURCES - Mystic Dam (1865)

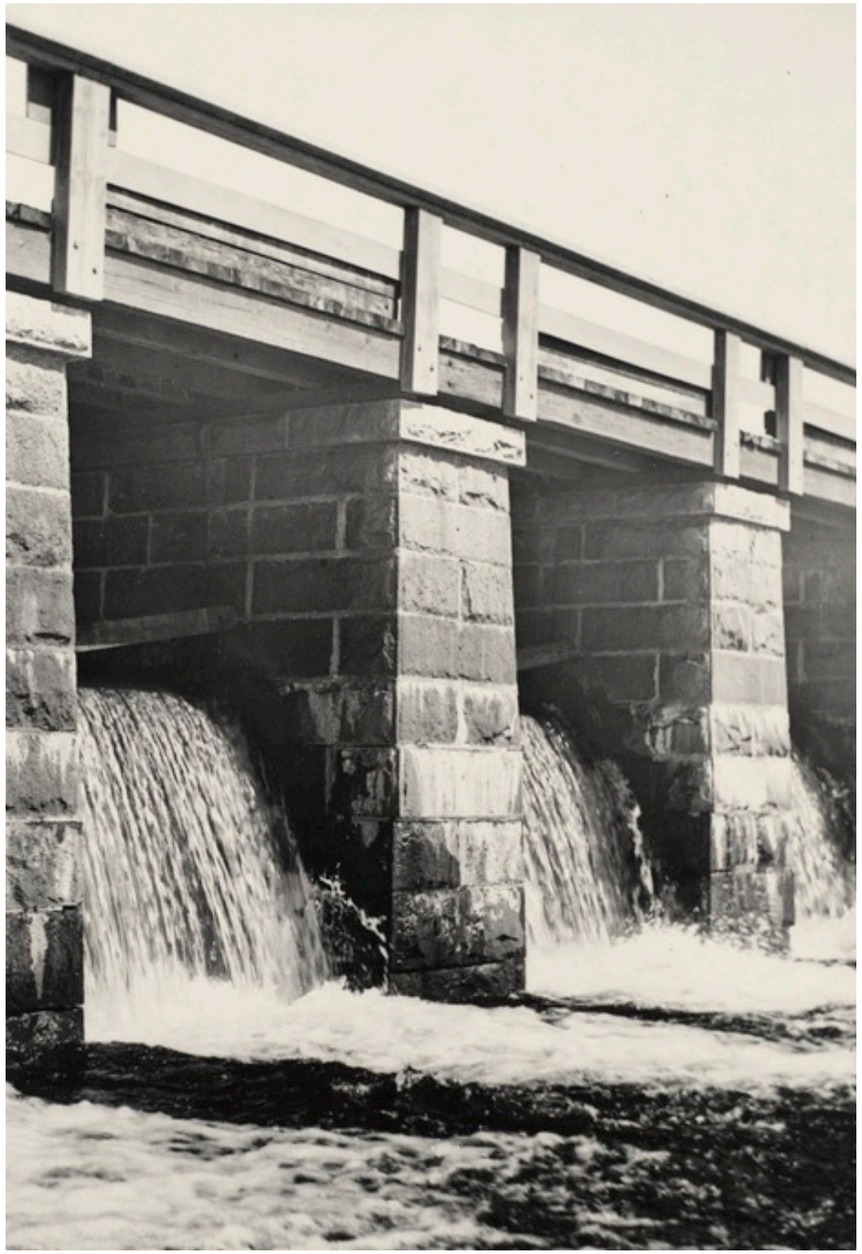


Image Credit: Digital Commonwealth

The Upper Mystic Lake and Lower Mystic Lake are natural glacial kettle ponds that were three seperated lakes in the 17th and 18th centuries. The Dam, 1,560 feet long, is an earthen embankment with a granite overfall. The overfall has five granite columns, each grooved on the inner faces for stop logs. The dam has a wooden walkway on top of the overfall with a simple plank railing. At one time the dam had a large wooden fish ladder of which some posts still remain. The Mystic Water Works, constructed in 1862-1865, were built by the City of Charlestown for its own supply. Water was pumped from the lakes up a hill to a reservoir on what is now the Tufts University campus. The works are a good example of a small, well-integrated water supply system still in existence from the Civil War Period.

CULTURAL RESOURCES - Mystic Valley Parkway (1896)

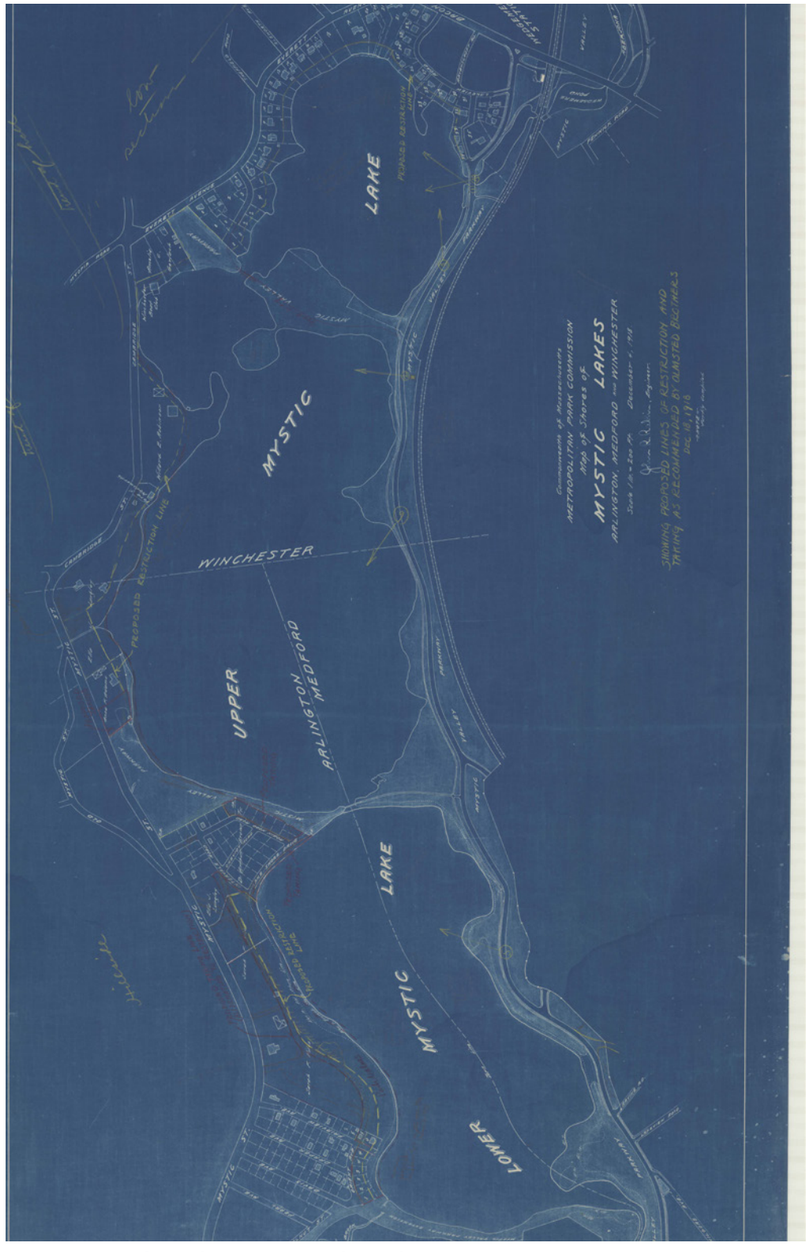


Image Credit: The National Park Service

Frederick Law Olmsted National Historic Site

The Mystic Valley Parkway, located in Arlington, Medford, Somerville, and Winchester, Middlesex County, Massachusetts, is significant as one of the earliest river parkways designed for the Metropolitan Park Commission (MPC) by Olmsted, Olmsted and Eliot and its successor firm, Olmsted Brothers. It is emblematic of the firm's principles of parkway creation. The Mystic Valley Parkway is a heavily traveled roadway paralleling the Aberjona River, Mystic Lakes, and Mystic River through a wide variety of neighborhoods. The Mystic Valley Parkway provides direct access to the Middlesex Fells Reservation for most of the parkways northwest of Boston, including Alewife Brook Parkway, Middlesex Fells Parkway, and Revere Beach Parkway.

The Mystic Valley Parkway got an early start in 1895, when several groups petitioned the MPC to move the project forward. Construction on a 2.4-mile stretch of the Mystic Valley Parkway, from High Street in Medford north to Main Street in Winchester, began in 1896. Work continued in 1896, with the construction of the bridge over the Aberjona River. The MPC built the new parkway at 36 feet wide and lighted it with 66 lights spaced 200 feet apart. The Mystic Valley Parkway opened to traffic in September 1897. It is emblematic of the Olmsted firm's principles of parkway creation and a crowning achievement for Charles Eliot who died during the completion of the Project.

NATURAL RESOURCES - Plant Communities

- White-Pine Oak Forest
- Anthropogenically-Disturbed Shoreline & Bank
- Deep Emergent Marsh
- Shallow Emergent Marsh
- Sumac Shrubland
- Japanese Knotweed Thicket
- Mesic Hardwood Forest
- Other

Refer to Appendix B: Natural Areas Assessment and Invasive Species Survey



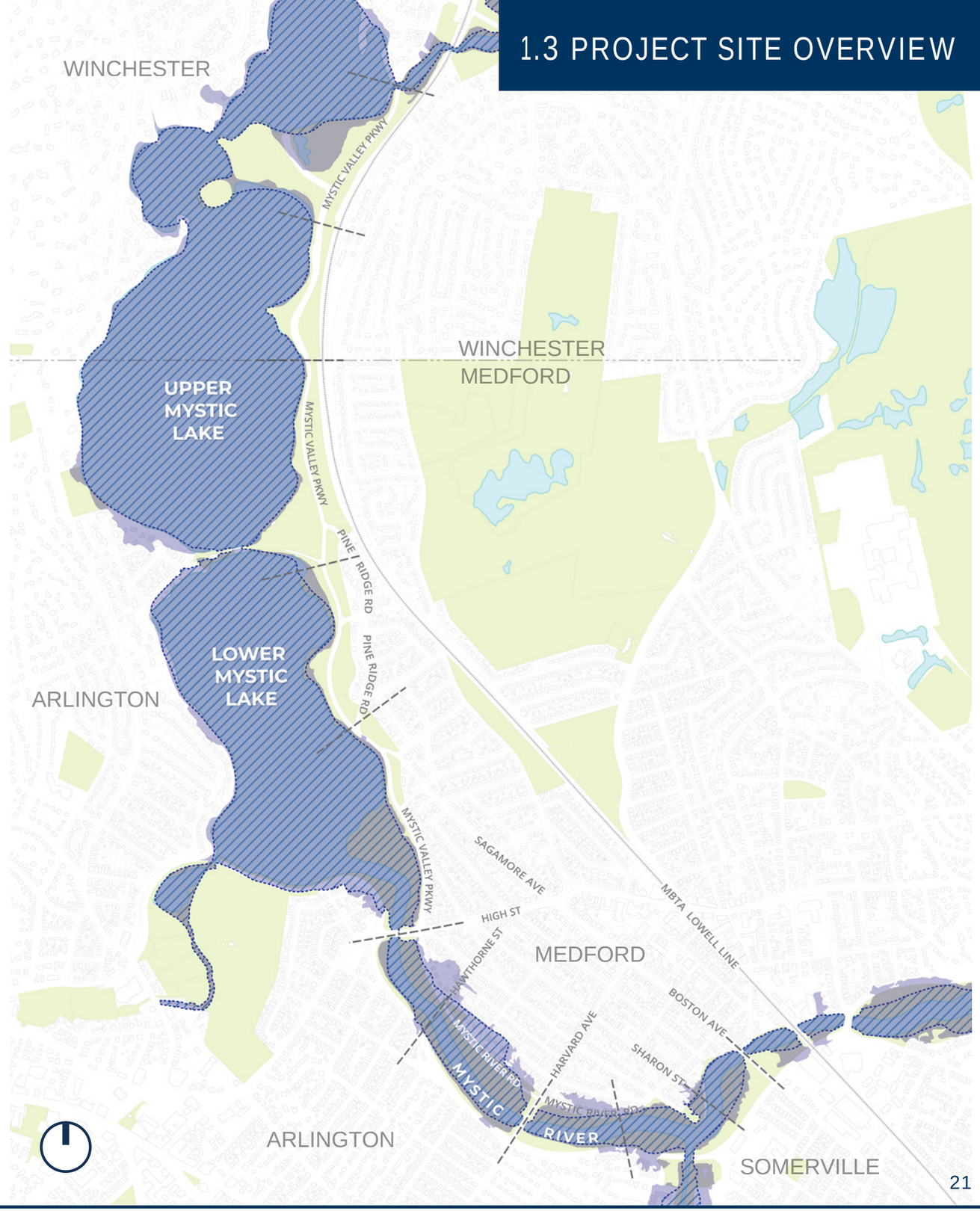
NATURAL RESOURCES - Flood Plain

Flood Patterns

FEMA Regulatory Floodway

FEMA 100 Year Floodplain

Flood resiliency coordination between MyWRA and key stakeholders is ongoing



PART 2

AREA CHARACTERS & SITE ANALYSIS

KEY PLAN

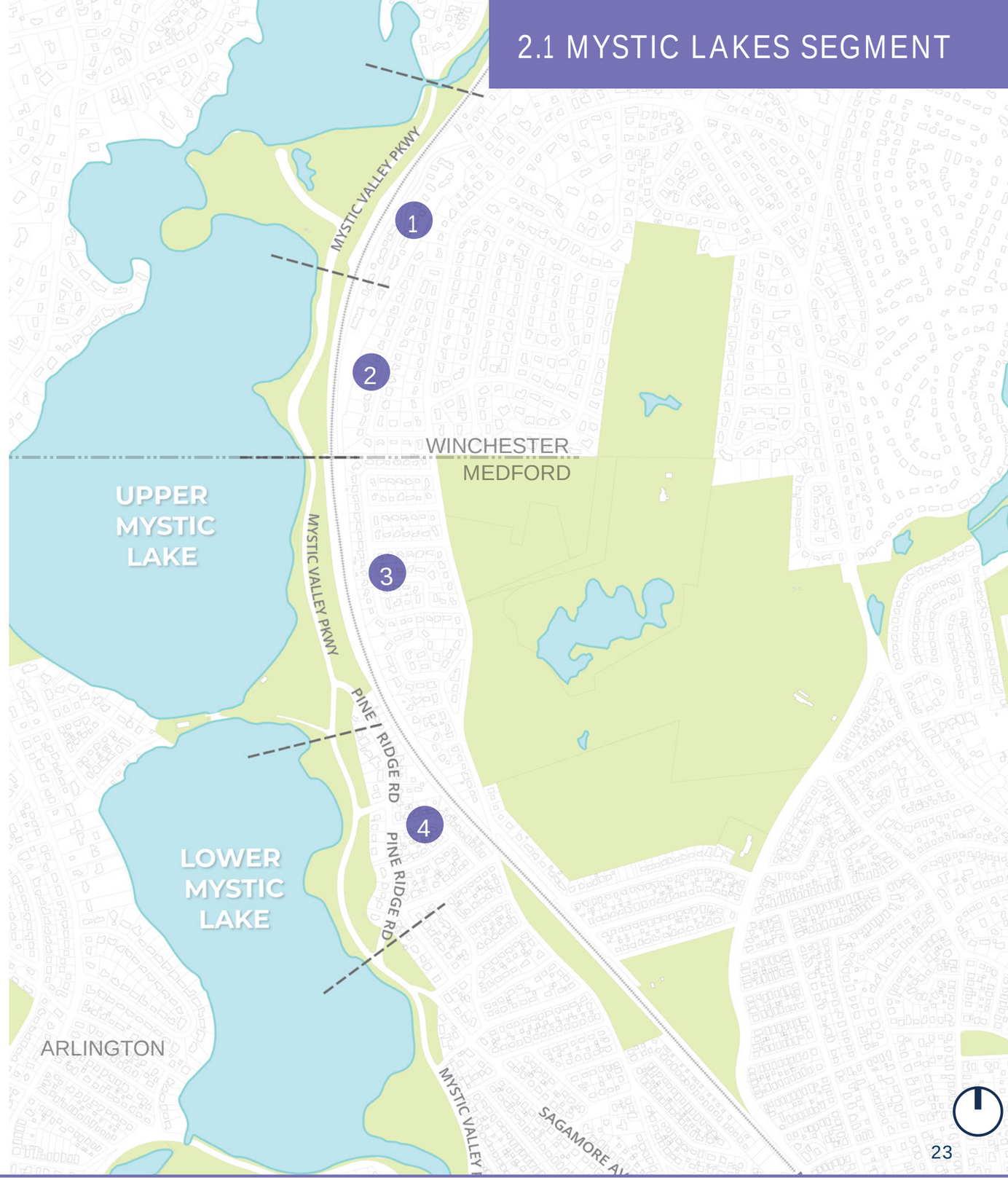
MYSTIC LAKES SEGMENT

AREA 1
Shannon Beach Peninsula between Aberjona Bridge and Shannon Beach

AREA 2
South of Shannon Beach to Medford/Winchester Town Line

AREA 3
Medford/Winchester Town Line to Mystic Lakes Dam

AREA 4
South of Mystic Lakes Dam to Pine Ridge Road



CONTEXT





Shannon Beach to the north is a regional destination along the Upper Mystic Lake



Several parking lots provide recreational access to areas south of Shannon Beach



Mystic Lakes Dam is a historic landmark between the Upper and Lower Lakes, providing sweeping views of the water



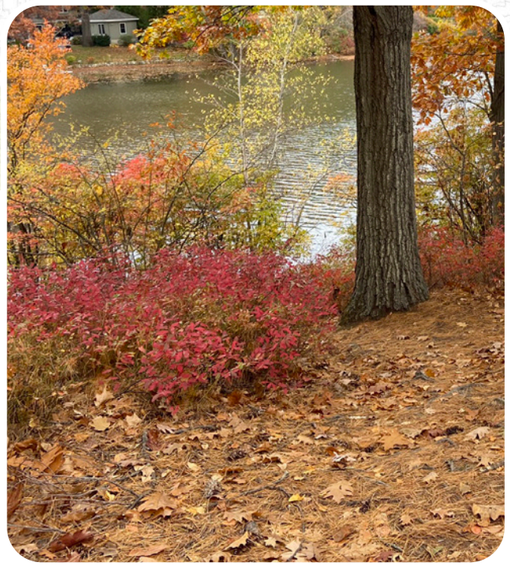
Mystic Valley Parkway runs along the east with limited access from residential streets

LANDSCAPE CHARACTER





Secluded, natural wooded peninsulas



Native understory vegetation



Scenic waterfront views

TRAIL CHARACTER





Paved path system at Shannon Beach Peninsula



Unpaved paths along the Mystic Valley Parkway varies in width, surface material, and slope



Natural surface trails in the woods and along the shoreline

RECREATIONAL RESOURCES



Shannon Beach



Picnic Area



Water Activities on the Lakes



Walking, Jogging, Biking



Scenic Waterfront Views



Wildlife Viewing

CHALLENGES OBSERVED



Severe shoreline erosions due to lack of understory vegetation and appropriate recreational amenities



Roadway Runoff / Upland Erosion, exacerbated from stormwater outfall



Invasive Species throughout the woods and along the shoreline



Unclear, narrow footpaths meander through dense vegetation



Inclined footpaths along steep shoreline slopes create unsafe conditions



Litter along the shoreline

MYSTIC LAKES SEGMENT - AREA 1

Shannon Beach Peninsula between Aberjona Bridge & Shannon Beach

Site Inventory

RECREATIONAL RESOURCES

- Unpaved Shared-use Path
- Paved Path
- Unpaved Footpath
- Natural Surface Trail
- Parking
- Scenic Viewpoint
- Picnic / Seating Area
- Shannon Beach
- Bathhouse
- Playground
- Bike Rack

ENVIRONMENTAL RESOURCES

- Water Body
- Wetland
- Wooded Area
- Tree Grove (Group of Trees with Clear Understory)
- Open Lawn
- High Point
- Stormwater Outfall
- Catch Basin
- Existing Tree

CULTURAL RESOURCES

1. Middlesex Canal
   a. Canal Crossing and Towpath
   b. Interpretive Signage with Map
   c. Boulder Marker
2. Stone Overlook (Former Symes River Aqueduct Site)
3. Stone Footbridge
4. Mystic Lakes Dam
5. Art Mural

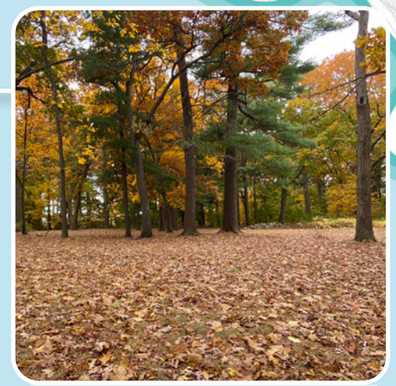


Grove of pine trees with picnic tables and trash receptacles

Middlex Canal Crossing and Towpath



Granite Overlook provides scenic lakeside views



Flat, hilltop grove surrounded by White-Pine Oak Forest



Open lawn area with trees and benches along the path



Shannon Beach

WINCHESTER BOAT CLUB

UPPER MYSTIC LAKE

SHANNON BEACH

TOWN OF WINCHESTER

AREA 2

AREA 1

ABERJONA BRIDGE

MYSTIC VALLEY PARKWAY

0 200'

MYSTIC LAKES SEGMENT - AREA 1

Shannon Beach Peninsula between Aberjona Bridge & Shannon Beach

Site Analysis: Challenges

SAFETY, ACCESS, AND RECREATIONAL CHALLENGES

- Non-ADA Accessible, Inclined Path
- Narrow Path along Steep Embankment
- Uneven Path Surface

ENVIRONMENTAL CHALLENGES

- Erosion Point
- Moderate Erosion Area
- Severe Erosion Area
- Stormwater Runoff
- FEMA Regulatory Floodway
- FEMA 100 Year Floodplain

Invasive Species Distribution within Plant Community

- White-Pine Oak Forest
- Anthropogenically-Disturbed Shoreline & Bank
- Deep Emergent Marsh
- Shallow Emergent Marsh
- Sumac Shrubland
- Japanese Knotweed Thicket

SUMMARY OF ISSUES

1. Uncontrolled foot traffic and shoreline access, contributing to erosion and safety concerns
2. Shoreline and upland erosion due to stormwater runoff, natural topography and lack of vegetation
3. Non-accessible and unsafe paths due to surface material, slopes, narrow widths, and uneven conditions
4. Lack of site amenities and signage/educational elements



Severe erosion caused by steep shoreline, insufficient understory vegetation, and foot traffic



Overlook walls and paving are in fair to poor condition, creating unsafe conditions



Wood steps vary from fair to poor condition



Smaller erosion points along gentler slopes due to human access



Underutilized drive creates extra stormwater runoff

MYSTIC LAKES SEGMENT - AREA 2

South of Shannon Beach to
Medford/Winchester Town Line

Site Inventory

RECREATIONAL RESOURCES

- Unpaved Shared-use Path
- Paved Path
- Unpaved Footpath
- Natural Surface Trail
- Parking (P)
- Scenic Viewpoint
- Picnic / Seating Area
- Shannon Beach
- Bathhouse
- Playground
- Bike Rack

ENVIRONMENTAL RESOURCES

- Water Body
- Wetland
- Wooded Area
- Tree Grove (Group of Trees with Clear Understory)
- Open Lawn
- High Point
- Stormwater Outfall
- Catch Basin
- Existing Tree

CULTURAL RESOURCES

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2. Stone Overlook (Former Symes River Aqueduct Site)
3. Stone Footbridge
4. Mystic Lakes Dam
5. Art Mural



Hilltop view



Lower shoreline views to the Upper Lake and Shannon Beach



Small, level area beneath a fairly healthy tree grove.

MYSTIC LAKES SEGMENT - AREA 2

South of Shannon Beach to
Medford/Winchester Town Line

Site Analysis: Challenges

SAFETY, ACCESS, AND RECREATIONAL CHALLENGES

- Non-ADA Accessible, Inclined Path
- Narrow Path along Steep Embankment
- Uneven Path Surface

ENVIRONMENTAL CHALLENGES

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3. Non-accessible and unsafe paths due to surface material, slopes, narrow widths, and uneven conditions
4. Lack of site amenities and signage/educational elements





Severe erosion caused by steep shoreline, insufficient understory vegetation, and foot traffic



Steep footpath leads down to a popular kayak launch spot exacerbates erosion issues.

MYSTIC LAKES SEGMENT - AREA 3

Medford/Winchester Town Line
to Mystic Lakes Dam

Site Inventory

RECREATIONAL RESOURCES

- Unpaved Shared-use Path
- Paved Path
- Unpaved Footpath
- Natural Surface Trail
- Parking (P)
- Scenic Viewpoint
- Picnic / Seating Area
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5. Art Mural



The trail benefits from a forested hill dominated by mature oak trees that block parkway traffic noise



Small "beach" and view along the shoreline to the Lake and Dam



Open area and wood guardrail along the Dam's entry drive



Small, flat area with informal fire pit under a fair tree canopy

MYSTIC LAKES SEGMENT - AREA 3

Medford/Winchester Town Line
to Mystic Lakes Dam

Site Analysis: Challenges

SAFETY, ACCESS, AND RECREATIONAL CHALLENGES

- Non-ADA Accessible, Inclined Path
- Narrow Path along Steep Embankment
- Uneven Path Surface

ENVIRONMENTAL CHALLENGES

- Erosion Point
- Moderate Erosion Area
- Severe Erosion Area
- Stormwater Runoff
- FEMA Regulatory Floodway
- FEMA 100 Year Floodplain

Invasive Species Distribution within Plant Community

- White-Pine Oak Forest
- Anthropogenically-Disturbed Shoreline & Bank
- Deep Emergent Marsh
- Shallow Emergent Marsh
- Sumac Shrubland
- Japanese Knotweed Thicket

SUMMARY OF ISSUES

1. Uncontrolled foot traffic and shoreline access, contributing to erosion and safety concerns
2. Shoreline and upland erosion due to stormwater runoff, natural topography and lack of vegetation
3. Non-accessible and unsafe paths due to surface material, slopes, narrow widths, and uneven conditions
4. Lack of site amenities and signage/educational elements



A narrow trail runs along a steep shoreline as it ascends towards the Boat Club parking lot.



Severe erosion caused by insufficient understory vegetation and foot traffic



An open area was likely used as a borrow-pit, resulting in a sumac shrubland with numerous invasive plants. Presence of utility poles and lack of viewsheds limit recreational value here.

MYSTIC LAKES SEGMENT - AREA 4
South of Mystic Lakes Dam to Pine Ridge Road

Site Inventory

RECREATIONAL RESOURCES

- Unpaved Shared-use Path
- Paved Path
- Unpaved Footpath
- Natural Surface Trail
- Parking (P)
- Scenic Viewpoint
- Picnic / Seating Area
- Shannon Beach
- Bathhouse
- Playground
- Bike Rack

ENVIRONMENTAL RESOURCES

- Water Body
- Wetland
- Wooded Area
- Tree Grove (Group of Trees with Clear Understory)
- Open Lawn
- High Point
- Stormwater Outfall
- Catch Basin
- Existing Tree

CULTURAL RESOURCES

1. Middlesex Canal
   a. Canal Crossing and Towpath
   b. Interpretive Signage with Map
   c. Boulder Marker
2. Stone Overlook (Former Symes River Aqueduct Site)
3. Stone Footbridge
4. Mystic Lakes Dam
5. Art Mural



Views standing along the shoreline to the Lower Lake and Dam



Trail runs at a lower elevation, closer to the shoreline



Trail is relatively flat and runs closer to the shoreline



Level, open lawn area along the multi-use path

LOWER MYSTIC LAKE

MYST LAKE DAM

MEDFORD BOAT CLUB

MYSTIC VALLEY PKWY

PINE RIDGE RD

PINE RIDGE TERRACE

AREA 3
AREA 4

AREA 4
AREA 5

OAK RIDGE ROAD

0 200'

CITY OF MEDFORD

MYSTIC LAKES SEGMENT - AREA 4
South of Mystic Lakes Dam to Pine Ridge Road

Site Analysis: Challenges

SAFETY, ACCESS, AND RECREATIONAL CHALLENGES

- Non-ADA Accessible, Inclined Path
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- Uneven Path Surface

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4. Lack of site amenities and signage/educational elements



Overall vegetation is in fair to poor condition and heavily populated by invasives.



Undulating trail makes accessibility challenging



Shoreline erosion likely exacerbated by discharge of stormwater outfall and street runoff



Invasive knotweed thicket is visual and physical barrier between the upper lawn area and the lower shoreline

KEY PLAN

WEST MEDFORD SEGMENT

AREA 1
Peninsula between Pine Ridge Road and High Street

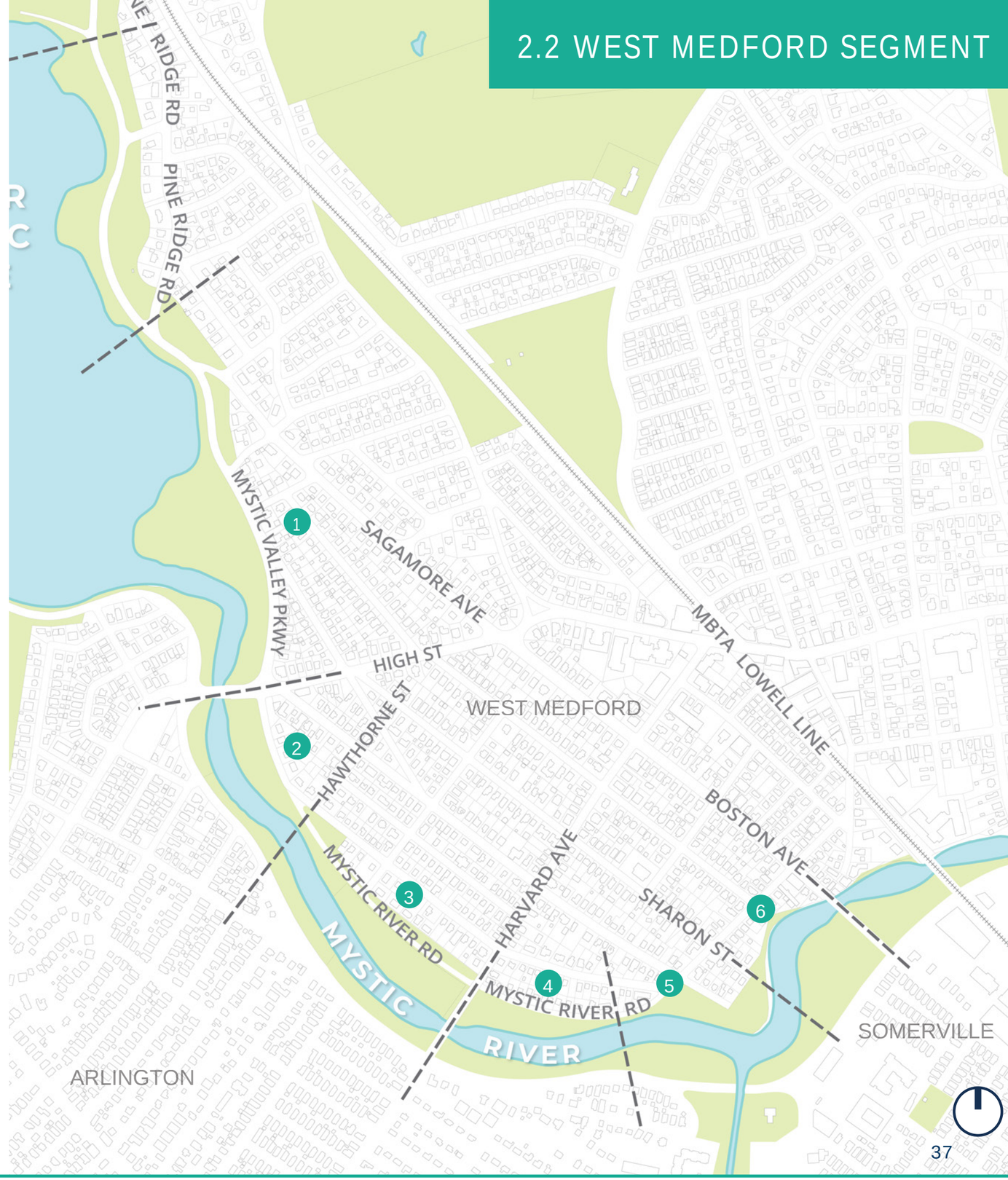
AREA 2
Between High Street and Hawthorn Street

AREA 3
Between Hawthorn Street and Harvard Avenue

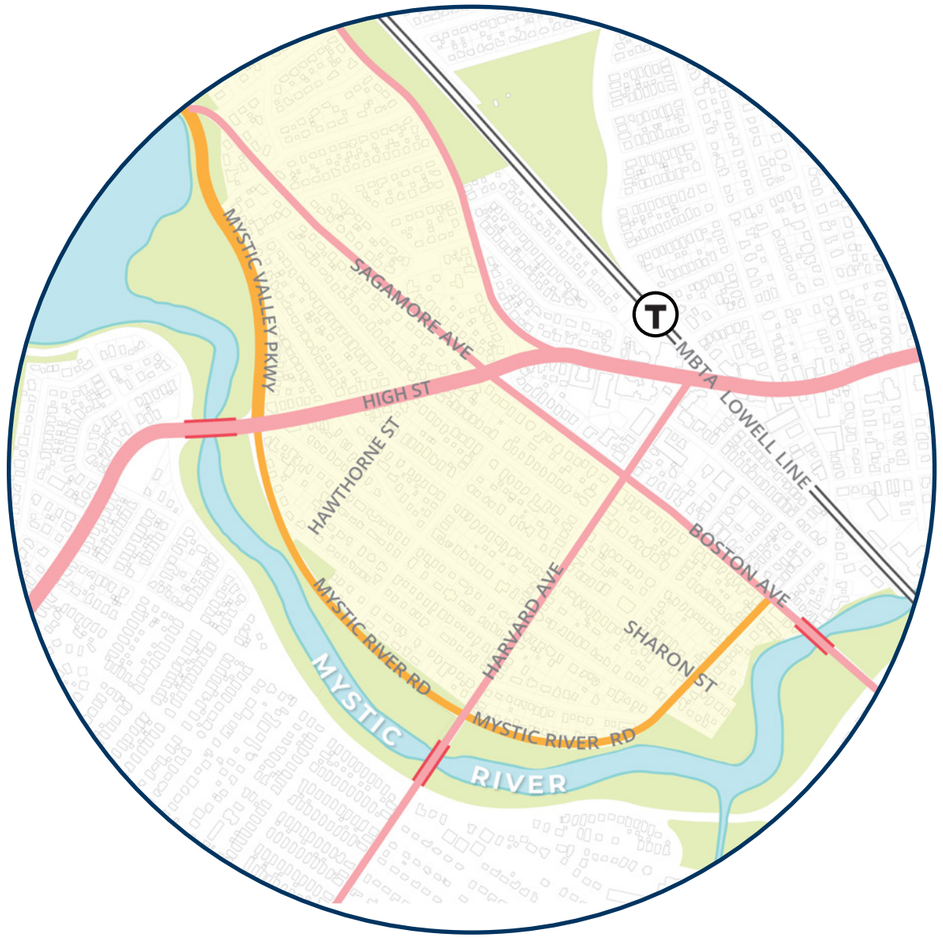
AREA 4
Between Harvard Avenue and 46 Mystic River Road

AREA 5
Between 46 Mystic River Road and Sharon Street

AREA 6
Between Sharon Street and Boston Avenue



CONTEXT





Northern section adjacent to Mystic Valley Parkway and residential neighborhood



Three bridges cross the river



Southern section adjacent to residential neighborhood and local street



Three major roadways intersect with the park

LANDSCAPE CHARACTER



Open lawn with mature oak trees along the street

Dense vegetation along steep river bank

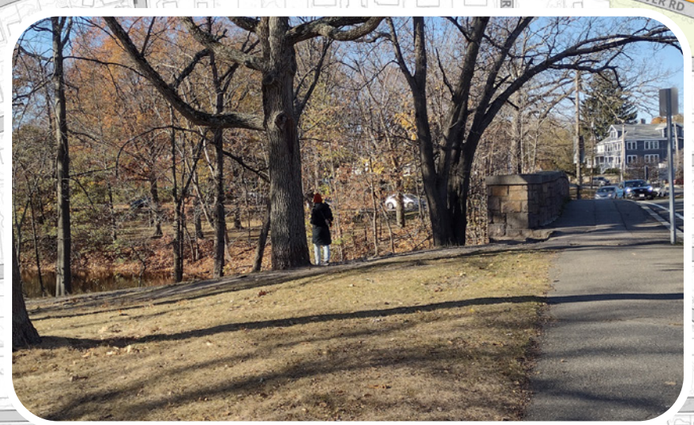


Mature tree grove with open lawn underneath



Wooded area dominated by native hardwood trees and non-native species

TRAIL CHARACTER



Inclined footpath at bridge abutment may not be compliant with accessibility standard



Level footpath along the shoreline varies by width and surface condition, including dirt, gravel, and exposed tree roots



Uneven footpath along the roadway

RECREATIONAL RESOURCES



Open lawn areas support provide space for family outings and informal play



Mature tree groves provide shade for picnicking and hammocking



Water activities along the river



Walking and jogging



Views toward the Mystic River and multiple historic stone bridges



Wildlife viewing

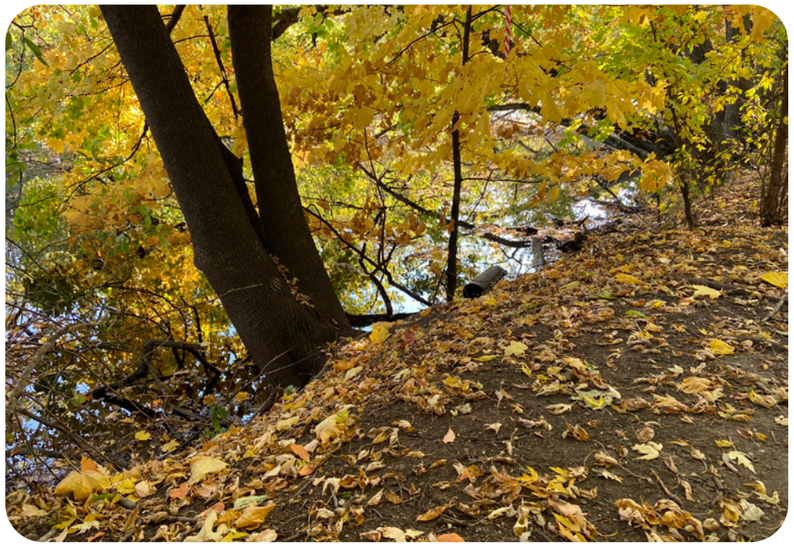
CHALLENGES OBSERVED



Riverbank Erosion



Roadway Runoff / Upland Erosion



Invasive Species along the shoreline



Inclined footpath may not be compliant with accessibility standard



Trip hazard caused by exposed tree roots along the footpath



Uncontrolled foot traffic leads to environmental degradation

WEST MEDFORD SEGMENT - AREA 1

Peninsula between Pine Ridge Road and High Street

Site Inventory

RECREATIONAL RESOURCES

- Unpaved Shared-use Path
- Paved Path
- Unpaved Footpath
- Natural Surface Trail
- Parking (P)
- Scenic Viewpoint
- Picnic / Seating Area
- Playground
- Tennis/Pickleball
- Basketball

ENVIRONMENTAL RESOURCES

- Water Body
- Wooded Area
- Tree Grove (Group of Trees with Clear Understory)
- Open Lawn
- Stormwater Outfall
- Catch Basin
- Existing Tree

CULTURAL RESOURCES

1. High Street Bridge*
2. Paul Revere Ride Marker
3. Memorial Bench - Dana S. Sharpton
4. Dugger Park and Tennis Courts
5. Dugger Park Memorial
6. Memorial Marker - Brandon S. Galloway-Golden
7. Memorial Marker - Julie Oliver
8. Mystic Valley Parkway Bridge*
9. Mystic Pump Station*
10. Middlesex Canal (Stone piers of aqueduct)*

*National Register - listed (NR)



An ample tree canopy and open understory, provides potential gathering space



Multiple paths converge at the pump station that provides views of the river and lake



Mesic Hardwood Forest characterizes the shadier, wooded areas



Gently sloping shoreline offers potential for safe water access



Sunny, open lawn is a well-used passive park space, supporting actitivites like family outings and informal play.

LOWER MYSTIC LAKE

MYSTIC RIVER

MYSTIC VALLEY PARKWAY

HIGH ST

1, 2

WEST MEDFORD AREA 2

WEST MEDFORD AREA 1

MYSTIC LAKES AREA 4

MYSTIC LAKES AREA 5/ WEST MEDFORD AREA 1

JEROME ST

KILGORE AVE

LAKEVIEW AVE

PITCHER AVE

RAVINE RD

FAGAMORE AVE

OAK RIDGE ROAD

0 200'

CITY OF MEDFORD

WEST MEDFORD SEGMENT - AREA 1

Peninsula between Pine Ridge Road and High Street

Site Analysis: Challenges

RECREATIONAL CHALLENGES

- Non-ADA Accessible, Inclined Path
- Narrow Path along Steep Embankment
- Uneven Path Surface

ENVIRONMENTAL CHALLENGES

- Erosion Point
- Moderate Erosion Area
- Severe Erosion Area
- Stormwater Runoff
- FEMA Regulatory Floodway
- FEMA 100 Year Floodplain

Invasive Species Distribution within Plant Community

- Anthropogenically-Disturbed Shoreline & Bank
- Mesic Hardwood Forest
- Other

SUMMARY OF ISSUES

1. Uncontrolled foot traffic and shoreline access, contributing to erosion and safety concerns
2. Shoreline and upland erosion due to stormwater runoff, natural topography and lack of vegetation
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4. Lack of site amenities and signage/educational elements





Continuous shoreline erosion along the western tip due to foot traffic and lack understory vegetation



Footpath through the open lawn is only 1-2' wide



Entry point from neighborhood lacks visibility

WEST MEDFORD SEGMENT - AREA 2
High Street to Hawthorn Street

Site Inventory

RECREATIONAL RESOURCES

- Unpaved Shared-use Path
- Paved Path
- Unpaved Footpath
- Natural Surface Trail
- Parking
- Scenic Viewpoint
- Picnic / Seating Area
- Playground
- Tennis/Pickleball
- Basketball

ENVIRONMENTAL RESOURCES

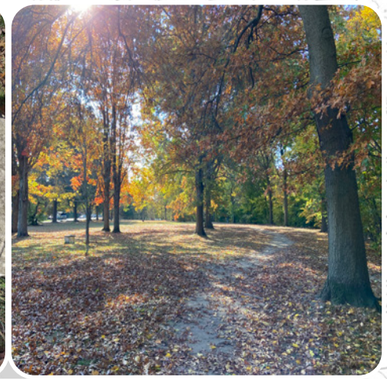
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- Open Lawn
- Stormwater Outfall
- Catch Basin
- Existing Tree

CULTURAL RESOURCES

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5. Dugger Park Memorial
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7. Memorial Marker - Julie Oliver
8. Mystic Valley Parkway Bridge*
9. Mystic Pump Station*
10. Middlesex Canal (Stone piers of aqueduct)*

*National Register - listed (NR)





Footpath runs along the river and under a mature canopy of trees, while a small memorial bench is tucked further inland



View of High Street Bridge from footpath





Area is defined by mature deciduous tree groves and open lawns. Hammock users were observed near the oak trees.

WEST MEDFORD SEGMENT - AREA 2
High Street to Hawthorn Street

Site Analysis: Challenges

RECREATIONAL CHALLENGES

- Non-ADA Accessible, Inclined Path
- Narrow Path along Steep Embankment
- Uneven Path Surface

ENVIRONMENTAL CHALLENGES

- Erosion Point
- Moderate Erosion Area
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4. Lack of site amenities and signage/educational elements



Exposed tree roots along footpath create a trip hazard



Eroded footpath is a steep transition from roadway to parkland



Adjacent roadway lacks curbs, allowing more runoff to create more eroded conditions

WEST MEDFORD SEGMENT - AREA 3

Hawthorn Street to Harvard Avenue

Site Inventory

RECREATIONAL RESOURCES

- Unpaved Shared-use Path
- Paved Path
- Unpaved Footpath
- Natural Surface Trail
- Parking (P)
- Scenic Viewpoint
- Picnic / Seating Area
- Playground
- Tennis/Pickleball
- Basketball

ENVIRONMENTAL RESOURCES

- Water Body
- Wooded Area
- Tree Grove (Group of Trees with Clear Understory)
- Open Lawn
- Stormwater Outfall
- Catch Basin
- Existing Tree

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Open lawn at Dugger Park surrounded by healthy, mature oak trees.



Street parking



Footpath narrows down to 2-3' wide along the open lawn and as it approaches the basketball court



Portapotty outside of tennis courts; footpath continues between the courts and a densely vegetated shoreline



Amsell Colebrooke Playground under a healthy tree grove

WEST MEDFORD SEGMENT - AREA 3
Hawthorn Street to Harvard Avenue

Site Analysis: Challenges

RECREATIONAL CHALLENGES

- Non-ADA Accessible, Inclined Path
- Narrow Path along Steep Embankment
- Uneven Path Surface

ENVIRONMENTAL CHALLENGES

- Erosion Point
- Moderate Erosion Area
- Severe Erosion Area
- Stormwater Runoff
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4. Lack of site amenities and signage/educational elements



Eroded footpath is a steep transition from roadway to parkland



Severe shoreline erosion due to foot traffic, lack of understory vegetation, and discharge from stormwater outfall



Exposed tree roots along the footpath create a trip hazard



A deteriorating chain link fence and overgrown vegetation, densely populated with invasives, block riverside views

WEST MEDFORD SEGMENT - AREA 4
Harvard Avenue to 46 Mystic River Road

Site Inventory

RECREATIONAL RESOURCES

- Unpaved Shared-use Path
- Paved Path
- Unpaved Footpath
- Natural Surface Trail
- Parking (P)
- Scenic Viewpoint
- Picnic / Seating Area
- Playground
- Tennis/Pickleball
- Basketball

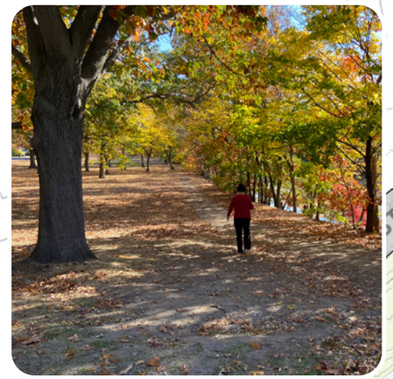
ENVIRONMENTAL RESOURCES

- Water Body
- Wooded Area
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- Open Lawn
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- Catch Basin
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*National Register - listed (NR)



Footpath enters a mature oak tree grove and continues along the shoreline



An underutilized, level area



Mature and healthy oak trees line the open lawn and roadway

WEST MEDFORD SEGMENT - AREA 4
Harvard Avenue to 46 Mystic River Road

Site Analysis: Challenges

RECREATIONAL CHALLENGES

- Non-ADA Accessible, Inclined Path
- Narrow Path along Steep Embankment
- Uneven Path Surface

ENVIRONMENTAL CHALLENGES

- Erosion Point
- Moderate Erosion Area
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4. Lack of site amenities and signage/educational elements



Section of the footpath disappears; exposed tree roots create a trip hazard.



Eroded footpath is a steep transition from roadway to parkland



Concentrated stormwater runoff and lack of vegetated cover creates severe erosion conditions along the shoreline

WEST MEDFORD SEGMENT - AREAS 5, 6

AREA 5: 46 Mystic River Rd to Sharon Ave

AREA 6: 46 Sharon Ave to Boston Ave

Site Inventory

RECREATIONAL RESOURCES

- Unpaved Shared-use Path
- Paved Path
- Unpaved Footpath
- Natural Surface Trail
- Parking
- Scenic Viewpoint
- Picnic / Seating Area
- Playground
- Tennis/Pickleball
- Basketball

ENVIRONMENTAL RESOURCES

- Water Body
- Wooded Area
- Tree Grove (Group of Trees with Clear Understory)
- Open Lawn
- Stormwater Outfall
- Catch Basin
- Existing Tree

CULTURAL RESOURCES

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7. Memorial Marker - Julie Oliver
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9. Mystic Pump Station*
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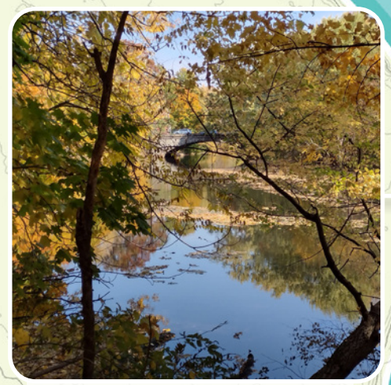
*National Register - listed (NR)



Gently-mounded, open area with views to the river confluence; dogwalkers frequent this area



An open area surrounded by a mix of young and mature birch trees



Framed view towards the Boston Ave Bridge



Wooded entry into Area 6

WEST MEDFORD SEGMENT - AREAS 5, 6

AREA 5: 46 Mystic River Rd to Sharon Ave

AREA 6: 46 Sharon Ave to Boston Ave

Site Analysis: Challenges

RECREATIONAL CHALLENGES

- Non-ADA Accessible, Inclined Path
- Narrow Path along Steep Embankment
- Uneven Path Surface

ENVIRONMENTAL CHALLENGES

- Erosion Point
- Moderate Erosion Area
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4. Lack of site amenities and signage/educational elements



Shoreline erosion is causing a large tree to tip over



Overgrown vegetation, populated with invasive species



Trail terminates at Boston Avenue, which is at a much higher elevation, creating accessibility and safety issues



Narrow trail is constrained between residential backyard fences and a steep shoreline lined with invasive Norway Maples

SECTION 2.3

COMMUNITY VISIONING AND RESULTS



PROCESS – VISIONING ENGAGEMENT

Community members were asked four questions about the shoreline:

- What do you currently like about the shoreline?
- What do you currently not like?
- What would you like to see that does not currently exist?
- What do you think we should avoid?

ENGAGEMENT ACTIVITIES

Shoreline Location	Year	Methods	# Participants	# Comments
Mystic Lakes	2024	Steering Committee; Public Meeting; Online Survey	168	1,281
West Medford	2025	Steering Committee; Public Meeting; Online Survey	200	1,005
Total			368	2,281



MYSTIC LAKES SEGMENT

Theme: Accessibility

Question	Visioning Summary
What do you currently like?	• Consistent views of the lake and water from various points along the paths. • A path allowing for long, uninterrupted walks or runs without street crossings. • Public access to the shoreline for various activities and the ability to find quiet, hidden trails close to the water's edge.
What do you currently not like?	• Inadequate parking demand management, especially during summer months • Narrow and rough paths that are difficult for strollers and wheelchairs and create conflict between users (e.g., cyclists and pedestrians). • Areas with limited public access, such as the bridge over the dam
What would you like to see that currently does not exist?	• More benches, picnic tables, and seating areas to allow people to rest and linger, especially with lake views. • Improved path conditions to make them more accessible for all users, including those with strollers or wheelchairs. • A safer, dedicated bike path to separate cyclists from cars and pedestrians where possible, and connect to regional greenways.
What do you think we should avoid?	• Removing or restricting current public access to the water for swimming, fishing, and boating. • Creating a single-use or overly uniform path system that eliminates the variety of rustic and paved options. • Ignoring connections to regional transportation and trails, which would limit access for residents from nearby communities.

MYSTIC LAKES SEGMENT

Theme: Recreation

Question	Visioning Summary
What do you currently like?	• Passive recreation, including walking, birdwatching, and enjoying sunsets, particularly from the dam. • Water activities such as swimming, kayaking, and fishing along various parts of the shore. • The variety of landscapes, from woodsy trails to open parkland at Shannon Beach, which supports different recreational experiences.
What do you currently not like?	• Overly restrictive signage near the dam ("no swimming," "no motor boats," etc.) that creates a prohibitive atmosphere. • Conflict between different user groups (e.g., cyclists and joggers) on narrow, poorly designed paths. • Lack of facilities that support recreational activities, such as designated fishing spots or safe cycling facilities.
What would you like to see that currently does not exist?	• Designated viewing platforms or decks that extend over the water for better views and birdwatching. • Interpretive signage detailing the area's history, wildlife (like the herring run), and ecological features. • A few designated fishing platforms to provide safe and dedicated access for anglers without disturbing other users.
What do you think we should avoid?	• Over-developing the shoreline in a way that heavily prioritizes active recreation (e.g. swimming, biking, boating, etc.) over passive recreation (e.g. picnicking, hammocking, strolling) • Creating infrastructure that intrudes significantly on undeveloped landscapes

MYSTIC LAKES SEGMENT

Theme: Environment

Question	Visioning Summary
What do you currently like?	• The natural, "woodsy" feel of the trails and the abundance of wildlife, especially eagles and other birds. • The variety of habitats, from open water to shoreline vegetation, which supports a high level of biodiversity. • Specific ecological features like the fish ladder and the bird habitat at "The Cistern," which are valued by the community.
What do you currently not like?	• Overgrown vegetation and lack of maintenance, which obstruct views and can feel unkept. • The presence of invasive species, particularly the expanding groves of Japanese Knotweed. • Construction debris, such as abandoned asphalt and eroded drain pipes, that litters the natural landscape.
What would you like to see that currently does not exist?	• Selective clearing of overgrown brush to restore scenic vistas of the lake, in line with the original Olmsted design principles. • Active removal of invasive species like Japanese Knotweed and planting of native flora to enhance the habitat. • Installation of green infrastructure, such as bioswales, to manage roadway runoff and improve water quality.
What do you think we should avoid?	• Planting trees or shrubs in locations that would obstruct key views of the water from the pathways. • Allowing the shoreline to become overly manicured, which would eliminate the "wild" and natural character that many people enjoy. • Losing or eliminating existing habitats

WEST MEDFORD SEGMENT

Theme: Accessibility

Question	Visioning Summary
What do you currently like?	• Easy access by foot from local neighborhoods. • Continuous paths for extended walks. • Feeling that the space is free and open to everyone without physical barriers..
What do you currently not like?	• Unsafe road crossings, especially at the High Street rotary and Harvard Avenue • Poor path conditions, including exposed tree roots, mud, ice, and erosion, making them inaccessible for strollers, wheelchairs, and those with limited mobility. • Limited or blocked access points, particularly the steep, obstructed connection at Boston Avenue. • Lack of benches and resting places..
What would you like to see that currently does not exist?	• Safer pedestrian crossings and traffic calming measures. • Improved, well-drained paths that are accessible but not over-paved (e.g., using stone dust or gravel). • More benches, picnic tables, and seating areas, particularly facing the water.
What do you think we should avoid?	• Adding large parking lots that would increase traffic and overcrowding. • Creating "over-engineered" or overly formal paths that are too straight or infringe on the natural shoreline. • Restricting current parking or access points without providing alternatives.

WEST MEDFORD SEGMENT

Theme: Recreation

Question	Visioning Summary
What do you currently like?	• Linear recreation like walking, dog walking, and running along the shoreline • Water activities like kayaking, canoeing, and fishing • Active recreation facilities at Dugger Park, including the playground, tennis, pickleball, and basketball courts. • Informal community spaces for picnicking, playing frisbee, and gathering.
What do you currently not like?	• Lack of proper, safe launch points for non-motorized boats like kayaks and canoes. • Jetskis, artificial noise makers and trash cumulation, especially on weekends and holidays. • Lack of public restrooms, especially near Dugger Park.
What would you like to see that currently does not exist?	• Several small-scale launch points for non-motorized craft (kayaks, canoes, paddleboards) designed to be difficult for motor boats or jet skis to use. • Permanent, clean public restrooms and a water fountain at Dugger Park. • More trash and recycling receptacles and dog waste stations to reduce litter.
What do you think we should avoid?	• Any infrastructure that encourages or enables motorized boats/jet skis. • "Over-programming" the area with formal sports fields (e.g., skate parks) or large-scale event spaces. • Adding bike traffic directly onto narrow pedestrian paths, creating conflict between users.

WEST MEDFORD SEGMENT

Theme: Environment

Question	Visioning Summary
What do you currently like?	• The natural, "wild," and undeveloped feel of the shoreline. • Abundant trees, especially the large, old oak trees that provide shade and beauty. • Wildlife sightings, including herons, eagles, muskrats, and other birds. • Relative peace and quiet and lack of crowds compared to other local parks.
What do you currently not like?	• Litter, trash, and broken glass along the shoreline and in the woods. • Erosion of the riverbank, leading to exposed roots and loss of trees. • Invasive and problematic plant species like poison ivy and multiflora rose. • Cars driving and parking on the grass, causing damage and soil compaction.
What would you like to see that currently does not exist?	• Systematic removal of invasive species and replacement with native plantings and pollinator gardens. • Erosion control measures to stabilize the riverbank and protect tree roots. • Interpretive signage about the area's history, ecology, and cultural significance (including Indigenous history).
What do you think we should avoid?	• Paving trails with asphalt or concrete, or overdevelopment, which would destroy the natural feel. • Significant removal of trees and clearing of understory vegetation that serves as wildlife habitat.

PART 3

DRAFT CONCEPTUAL DESIGN



DRAFT CONCEPTUAL DESIGN



The draft conceptual design for the eastern shoreline of the Mystic Lakes prioritizes a deep connection to the water, creating an uninterrupted path system with consistent lake views and varied public access points.

A majority of the paths would be improved for universal accessibility, while some would remain natural surface trails when sensitive environmental areas and steep grades are present. Benches and picnic areas are proposed to be introduced at some scenic locations. Problem areas, where erosion and invasive species are present, would be addressed by unobtrusive shoreline stabilization and vegetative management efforts. Guided by community values, the proposed conceptual design would preserve the shoreline's undeveloped ecosystem, and maintain and enhance a variety of recreational experiences for people of all ages and abilities.

SAFETY, ACCESSIBILITY & RECREATIONAL

A1 Path Network Improvements

- Accessible Shared-use Path
- Accessible Paved Path / Sidewalk
- Accessible Unpaved Path
- Natural Surface Trail
- Protective Barrier
- Wayfinding Signage
- Pedestrian Crosswalk
- A2 Scenic Viewpoint
- A3 Overlook Structure
- Type 1: Visual Access to Water Only
- Type 2: Stepped Access to Water
- A4 Non-motorized Boat Launch
- A5 Recreational Amenity
- A6 Parking

ENVIRONMENTAL

- B1 Shoreline/Upland Stabilization
- B2 Habitat Restoration: Invasive Species Removal and Native Plantings; Footpath Removal and Revegetation
- B3 Stormwater Management

CULTURAL/HISTORICAL

- C1 Cultural/Historic Feature
- C2 Interpretive/Educational Signage
- C3 Potential Memorial/Art Location

DRAFT CONCEPTUAL DESIGN



This conceptual design preserves the shoreline's cherished undeveloped character, providing a continuous, accessible path system that supports beloved activities like walking, paddling, and quiet wildlife observation.

The plan directly addresses critical safety and accessibility issues, including dangerous road crossings, eroded pathways, and the current lack of public restrooms and proper non-motorized boat launches. Key interventions will include restored unpaved and accessible pathways, scenic viewpoints with seating, and ecological enhancements like riverbank stabilization and invasive species removal. Guided by a "less is more" philosophy, the design intentionally avoids over-development and asphalt paving to maintain the tranquil atmosphere and protect the mature wooded areas and tree canopy.

SAFETY, ACCESSIBILITY & RECREATIONAL

- A1 Path Network Improvements
  - Accessible Shared-use Path
  - Accessible Paved Path / Sidewalk
  - Accessible Unpaved Path
  - Natural Surface Trail
  - Protective Barrier
  - Wayfinding Signage
  - Pedestrian Crosswalk
- A2 Scenic Viewpoint
- A3 Overlook Structure
  - Type 1: Visual Access to Water Only
  - Type 2: Stepped Access to Water
- A4 Non-motorized Boat Launch
- A5 Recreational Amenity
- A6 Parking

ENVIRONMENTAL

- B1 Shoreline/Upland Stabilization
- B2 Habitat Restoration: Invasive Species Removal and Native Plantings; Footpath Removal and Revegetation
- B3 Stormwater Management

CULTURAL/HISTORICAL

- C1 Cultural/Historic Feature
- C2 Interpretive/Educational Signage
- C3 Potential Memorial/Art Location

SECTION 3.3

CONCEPTUAL DESIGN ENGAGEMENTS AND RESULTS



PROCESS – DRAFT CONCEPTUAL DESIGN ENGAGEMENT

Community members were asked four questions about the draft conceptual plan

- What initial design do you like?
- What would you change?
- What do you think is missing?
- Is there anything else you would like to share?

ENGAGEMENT ACTIVITIES

Date	Time	Format	# Participants
April 7	6 PM - 8 PM	Steering Committee Mtg #2	13
April 17	6 PM - 7:30 PM	Community Meeting #2	65
4/18-5/5		Online Survey	20
4/24 & 4/25	3:30 PM – 5:30 PM	Tabling at Dugger Park (Medford) and Shannon Beach (Winchester)	52
June 9	6 PM – 8 PM	Steering Committee Mtg #3	13
June 16	6 PM – 7:30 PM	Community Meeting #3	40
6/17-7/3		Online Survey	12





Tabling at Dugger Park & Shannon Beach

WHAT WE HEARD & HOW IT WAS INCORPORATED

Theme: Accessibility

Topic	Feedback Summary	Response
Scenic Viewpoints, Overlooks & Benches	Many appreciate and desire "scenic views," "overlooks," and places to "take in the view". Consistent demand for more benches and seating in scenic spots. Some prefer to have few or no overlooks or benches due to disruption of natural shoreline.	• Constructed overlooks co-located only with existing sewer and water infrastructure • Universally accessible benches selectively placed and co-located with overlooks and some scenic viewpoints
Paths & Accessibility	Support for "improved paths," "accessible paths," “defined trails," and maintaining the "rustic" nature of natural surface trails.	• Accessible, unpaved paths proposed where not limited by sensitive habitat or steepness • Natural surface trails maintained in peninsulas to preserve woodland habitat and navigate steep inclines • ADA egress proposed at Shannon Beach picnicking area
Wayfinding & Info Signage	Clear signage for directionality and stewardship is desired.	• Signage (e.g. where to walk/bike, leave no trace, etc.) introduced and multi-lingual, as needed

WHAT WE HEARD & HOW IT WAS INCORPORATED

Theme: Accessibility Ctd.

Topic	Feedback Summary	Response
Crosswalks & Traffic Calming	People like "improved connections" to neighborhoods and "crosswalks" and "traffic calming" for ped safety.	• Includes crosswalks at Harvard, Arlington • Crosswalks and traffic calming already proposed for Mystic Valley Parkway & High Street rotaries
Parking Mangement	Mixed about parking, especially during peak days.	• Proposed parking at boat launches limited to two spaces for loading/handicap parking. • Shannon Beach/lake parking modifications subject to further review by DCR.
Public Rest Amenities	Support for restrooms and water stations, especially at Dugger Park	• Included for Dugger Park, requires further discussion with City of Medford
Public Safety	Call boxes and lighting are desired	• Improved streetlights proposed at Mystic River Rd/Harvard Ave; Arlington Rd/High St • Emergency phones not included in plan and subject to further discussion with landowners

WHAT WE HEARD & HOW IT WAS INCORPORATED

Theme: Recreation

Topic	Feedback Summary	Response
Non-Motorized Boat Launches	New/improved launches for kayaks and canoes are popular. Significant concern about "jetskis launching from non-motorized boat access", and safety at Ravine Road launch locale	• Plan recommends the design of boat launches in a manner which deters motorized crafts from being launched. • Proposed launch at Ravine Road should only be considered if paired with Mystic Valley Parkway traffic calming
Historic & Cultural Elements	Appreciation for "historic landmarks and signage," "cultural and memorial elements," and the inclusion of African American history.	• Cultural/historical elements & signage proposed throughout the proposed plan.
Nature Play	The idea of "nature play options" and "naturalized play" welcomed by most.	• Proposed in two locations, supporting nature-based learning

WHAT WE HEARD & HOW IT WAS INCORPORATED

Theme: Recreation Ctd.

Topic	Feedback Summary	Response
Dog Stations & Trash Receptacles	Trash receptacles & doggy bag stations liked for responsible waste disposal but large concerns remain about maintenance & trash removal	• Receptacles included in plan at proposed picnicking areas and "dog-friendly" areas • Only implemented with maintenance commitments from landowners.
Bike Racks	"More bike racks" were requested throughout the project area, though some expressed concern that a large footprint for bike racks would impact shoreline environment.	• Bike racks have been proposed to be co-located with other recreation amenities, such as scenic overlooks, play areas and boat launches. They would be small (fitting 2-3 bikes at a time) and designed to not be intrusive on the shoreline.

WHAT WE HEARD & HOW IT WAS INCORPORATED

Theme: Environment

Topic	Feedback Summary	Response
Environmental Restoration & Trees	Eliminating invasive species, "native planting," "habitat restoration," "shoreline stabilization," trees, and "stormwater improvements" are widely appreciated as essential for the area's health.	• Priority areas and community stewardship opportunities under consideration • New shade trees proposed along paths and roadway, where appropriate
Real-Time Water Quality Information	Users want "real time water quality information" and warnings about algae blooms.	• Shared with MyRWA's water quality team for consideration
Flooding/ Drainage Solutions	Concerns about areas that "tend to get very wet/flood slightly in heavy rain" and requests for "improved drainage."	• Curbing proposed along Mystic River Rd & Mystic Valley Parkway for improved stormwater management • Plan does not preclude DCR's Parkways Climate Change Vulnerability Assessment for flooding (May 2025)

PART 4

REFINED CONCEPTUAL DESIGN & RECOMMENDATIONS



OVERALL IMPROVEMENTS RECOMMENDATIONS



SAFETY, ACCESSIBILITY & RECREATIONAL

A1 Path Network Improvements
- Accessible Shared-use path
- Accessible Paved Path/ Sidewalk
- Accessible Unpaved Path
- Natural Surface Trail
- Pedestrian Crosswalk
- Wayfinding Signage

A2 Scenic Viewpoint

A3 Overlook Structure

Type 1: Visual Access to Water

Type 2: Physical Access to Water

A4 Non-motorized Boat Launch

A5 Recreational Amenity
- Bench, Picnic Table with Trash Receptacles
- Nature Play
- Public Rest Amenities
- Dog-friendly Amenity

A6 Parking, Bike Rack

ENVIRONMENTAL

B1 Shoreline/Upland Stabilization

B2 Habitat Restoration

Existing Tree

Proposed Tree

B3 Stormwater Management

CULTURAL/HISTORICAL

C1 Cultural/Historic Feature

C2 Interpretive/Educational Signage

C3 Potential Memorial/Art Location

0 500'

SAFETY & ACCESSIBILITY RECOMMENDATIONS

A1. PATH NETWORK & WAYFINDING



Image Source: Mystic Lakes Path Improvement Report

Accessible, Shared-use path



Crossing improvements - Pedestrian Safety Island & Curb Extension at Crosswalk





Natural surface trail



Accessible, unpaved path



Wayfinding

SAFETY & ACCESSIBILITY RECOMMENDATIONS

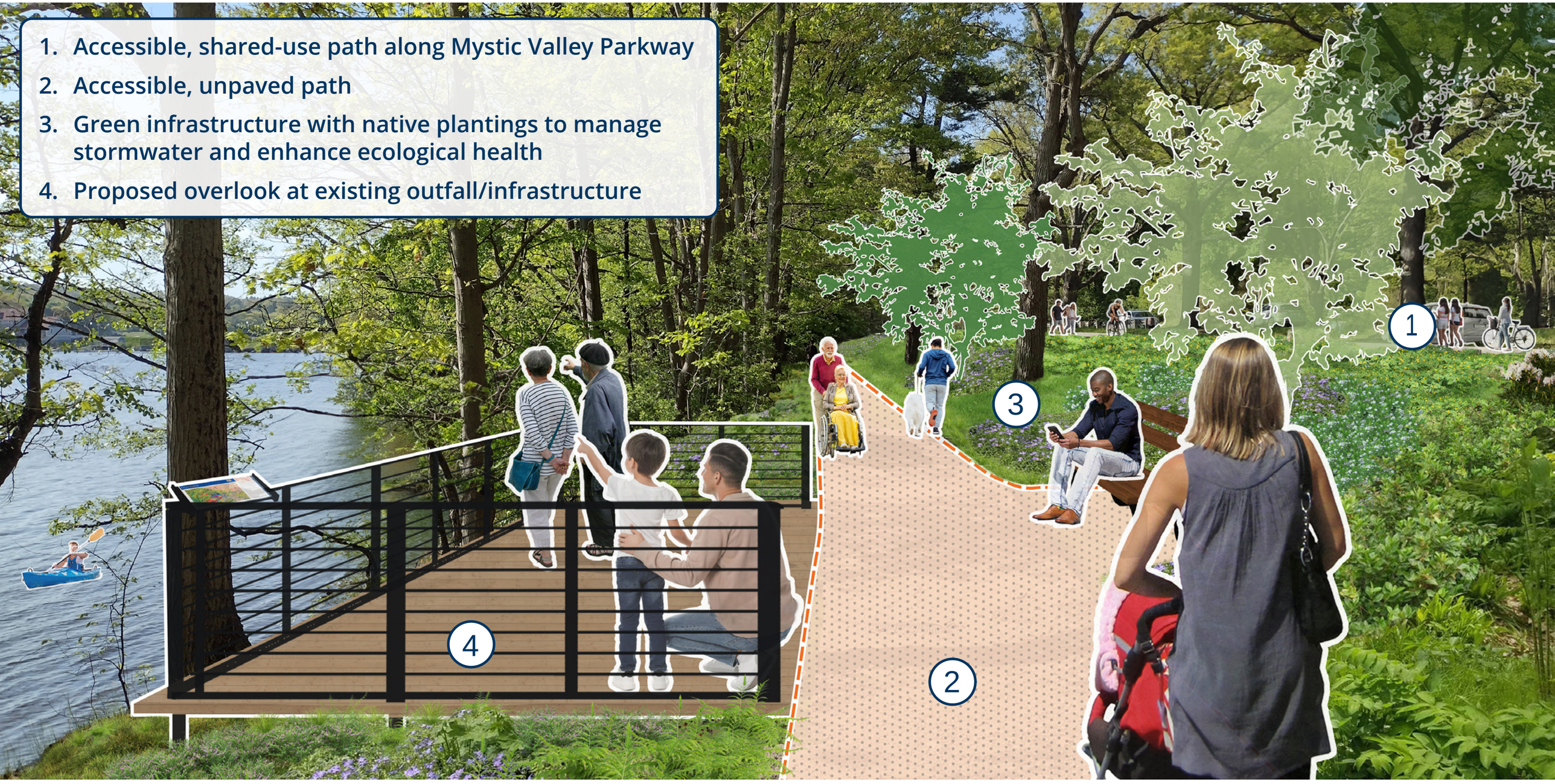
IMPROVEMENT RECOMMENDATIONS FOR ACCESSIBLE, UNPAVED PATH AND OVERLOOK

Existing Conditions: view looking north towards Mystic Dam

SAFETY & ACCESSIBILITY RECOMMENDATIONS

IMPROVEMENT RECOMMENDATIONS FOR ACCESSIBLE, UNPAVED PATH AND OVERLOOK

1. Accessible, shared-use path along Mystic Valley Parkway
2. Accessible, unpaved path
3. Green infrastructure with native plantings to manage stormwater and enhance ecological health
4. Proposed overlook at existing outfall/infrastructure



RECREATIONAL AMENITY RECOMMENDATIONS

A2. SCENIC VIEWPOINTS



- Scenic Viewpoint
- Overlook Structure (2 Types):
- Type 1: Visual Water Access
- Type 2: Physical Water Access
- Non-motorized Boat Launch
- Stormwater Outfall

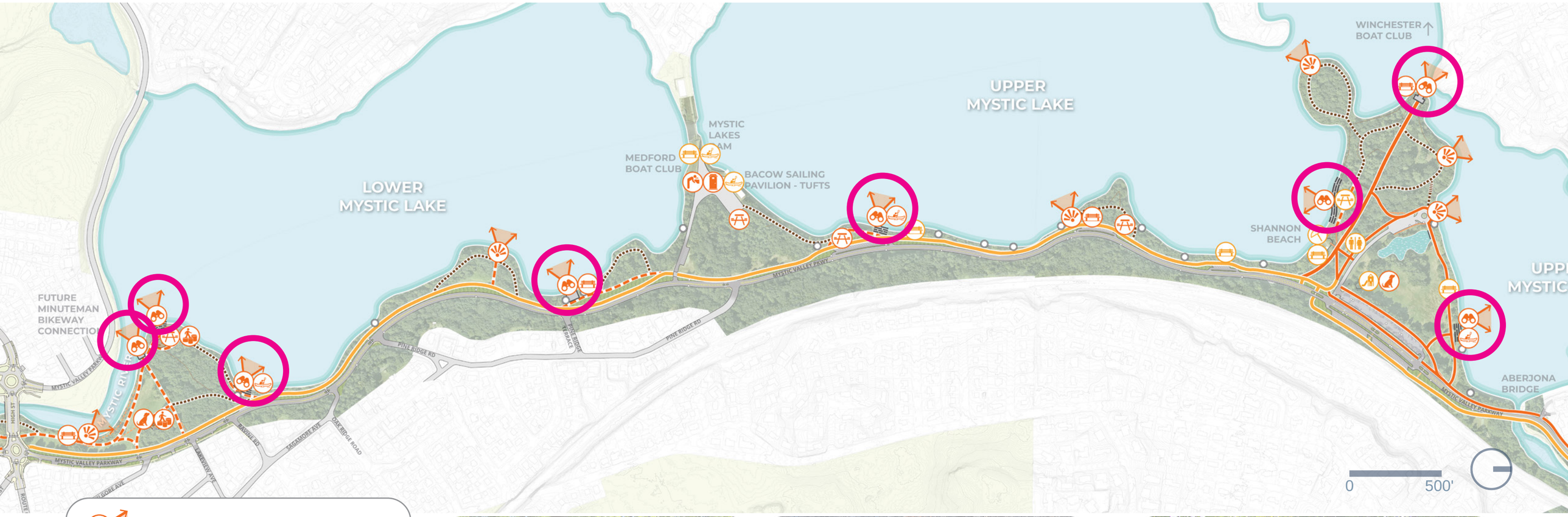




Scenic viewpoint experience enhanced with seating, selective vegetative clearing and/or low understory plantings

RECREATIONAL AMENITY RECOMMENDATIONS

A3. OVERLOOKS



- Scenic Viewpoint
- Overlook Structure (2 Types):
- Type 1: Visual Water Access
- Type 2: Physical Water Access
- Non-motorized Boat Launch
- Stormwater Outfall





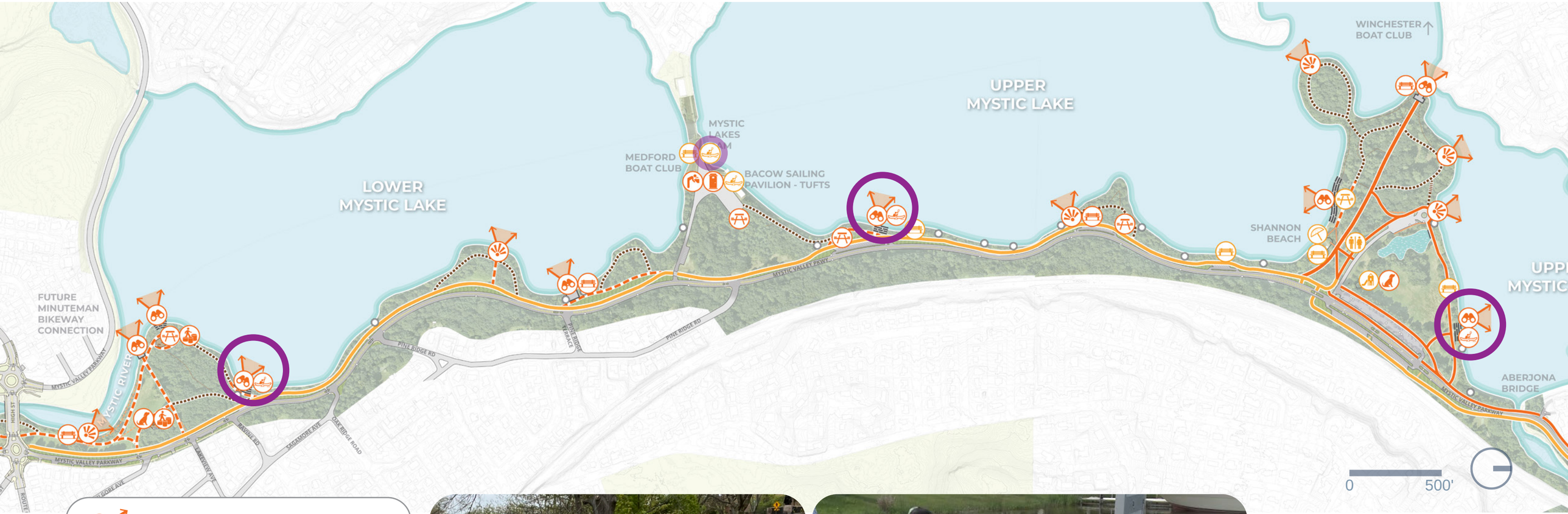
Overlook Type 1: Visual access to water only



Overlook Type 2: Physical access to water

RECREATIONAL AMENITY RECOMMENDATIONS

A4. NON-MOTORIZED BOAT LAUNCH LOCATIONS



- Scenic Viewpoint
- Overlook Structure (2 Types):
- Type 1: Visual Water Access
- Type 2: Physical Water Access
- Non-motorized Boat Launch
- Existing Non-motorized Boat Launch
- Stormwater Outfall



Stepped Access



Seasonal Dock Access

RECREATIONAL AMENITY RECOMMENDATIONS

A5. RECREATIONAL AMENITIES



- Picnic Table with Trash Receptacles
- Bench Seating
- Nature Play
- Public Rest Amenities
- Dog-friendly Amenities
- Stormwater Outfall
- Existing Picnic Table
- Existing Bench
- Existing Bathhouse
- Existing Playground



Backed Bench with ADA-accessible companion space



ADA-compliant picnic table with trash receptacles

RECREATIONAL AMENITY RECOMMENDATIONS

A6. PARKING



- Existing Parking
- Existing Bike Rack
- Proposed /Improved Parking
- Proposed Bike Rack

Image Source: Mystic Lakes Path Improvement Report

ENVIRONMENTAL RECOMMENDATIONS

B1. SHORELINE STABILIZATION
B2. HABITAT RESTORATION
B3. STORMWATER MANAGEMENT



- Shoreline Stabilization
- Habitat Restoration: Invasive Species Removal and Native Plantings
- Stormwater Management
- Stormwater Outfall





Shoreline Stabilization and Habitat Restoration: invasive species removal and management, native plants, and bioengineering techniques



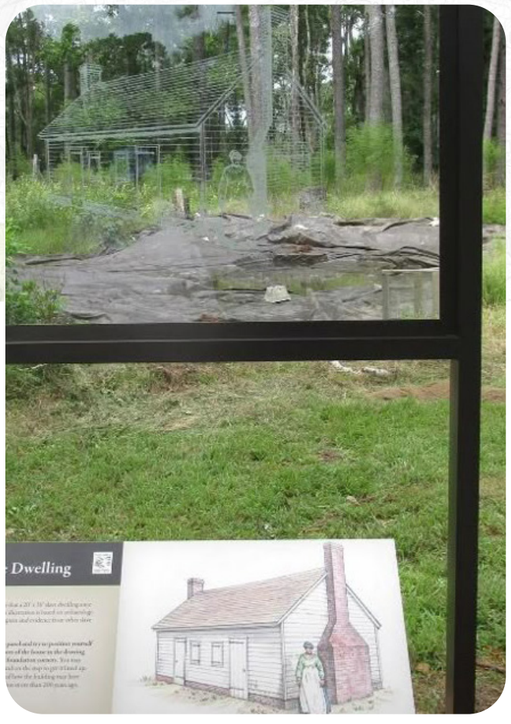
Rain garden or biowale between shared-use path and roadway

CULTURAL/HISTORIC RECOMMENDATIONS



- Existing Cultural/Historic Feature
- Interpretive/Educational Signage
- Potential Memorial/Art Location







Interpretive and Educational Signage

AREA 1
OPPORTUNITIES

SAFETY, ACCESSIBILITY & RECREATIONAL

- A1 Path Network Improvements
  - Accessible Shared-use Path
  - Accessible Paved Path/Sidewalk
  - Accessible Unpaved Path
  - Natural Surface Trail
  - Fencing
  - Pedestrian Crosswalk
  - Wayfinding Signage
- A2 Scenic Viewpoint
- A3 Overlook Structure
  - Type 1: Visual Access to Water
  - Type 2: Physical Access to Water
- A4 Non-motorized Boat Launch
- A5 Recreational Amenities (see right for others)
- A6 Bike Rack
- P Parking

ENVIRONMENTAL

- B1 Shoreline/Upland Stabilization
- B2 Habitat Restoration
  - Existing Tree
  - Proposed Tree
- B3 Stormwater Management

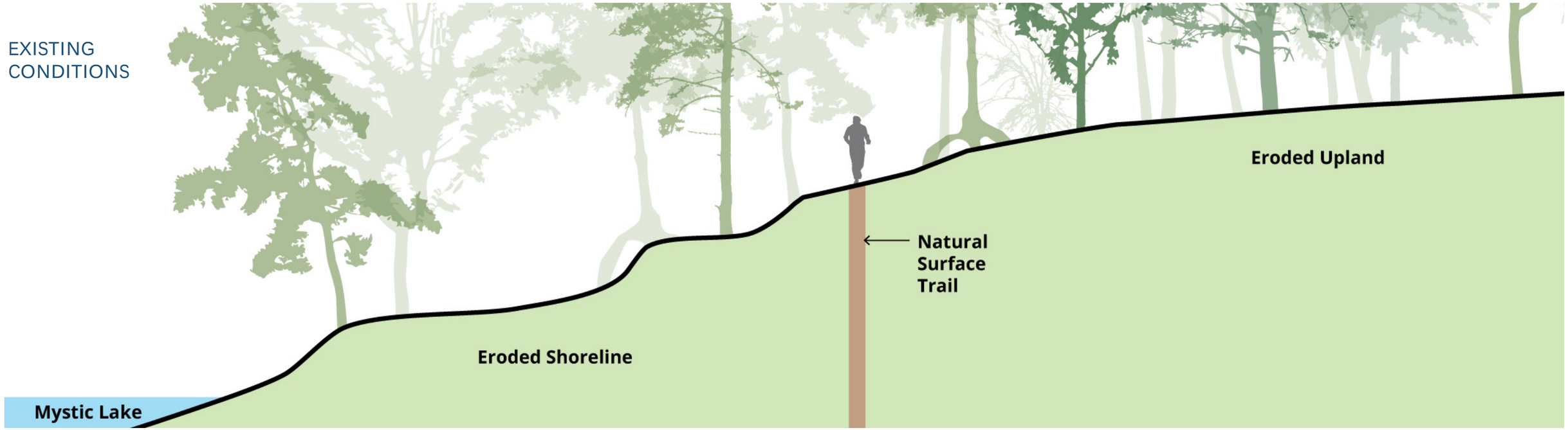
CULTURAL/HISTORICAL

- C1 Cultural/Historic Feature
- C2 Interpretive/Educational Signage
- C3 Potential Memorial/Art Location

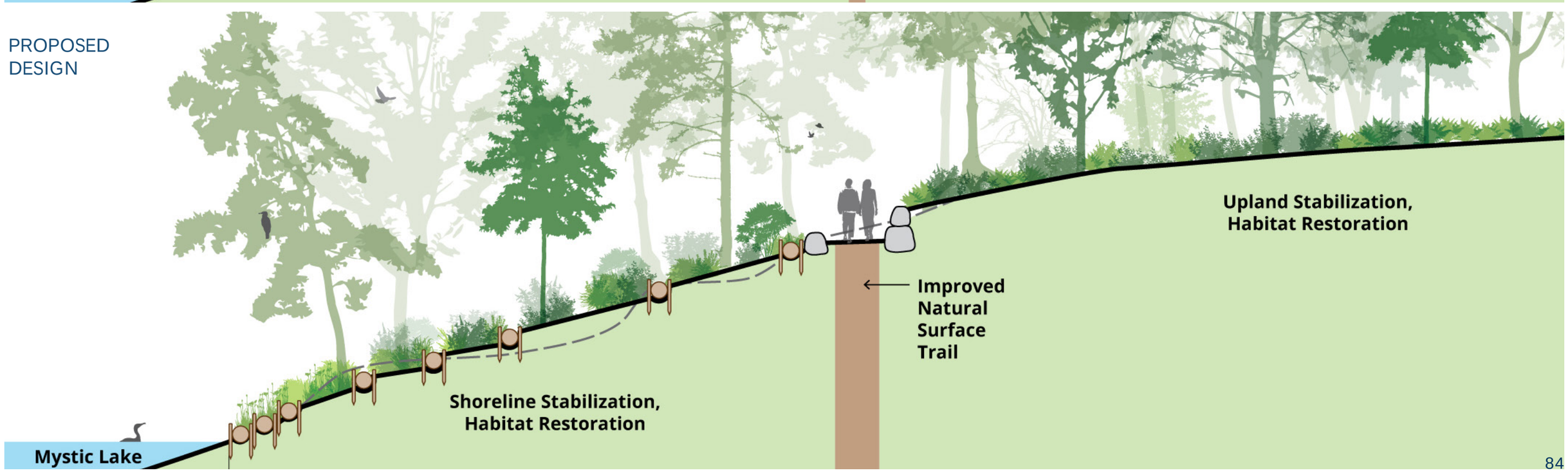


RECOMMENDATIONS FOR TRAIL ALONG STEEP SLOPE

EXISTING CONDITIONS



PROPOSED DESIGN



RECOMMENDATIONS FOR ACCESSIBLE, PAVED PATH & OVERLOOK - EXISTING CONDITION



Existing Conditions: view looking west at Shannon Beach Peninsula

RECOMMENDATIONS FOR ACCESSIBLE, PAVED PATH & OVERLOOK - PROPOSED IMPROVEMENTS



RECOMMENDATIONS FOR SHANNON BENCH PICNIC AREA - EXISTING CONDITION

Existing Conditions: view looking south at Shannon Beach picnic area

RECOMMENDATIONS FOR SHANNON BENCH PICNIC AREA - PROPOSED IMPROVEMENTS

1. Accessible, unpaved path
2. Accessible picnic table
3. Stone overlook with steps down to the lake
4. Revegetate shoreline to enhance ecological health

AREA 2
OPPORTUNITIES

SAFETY, ACCESSIBILITY & RECREATIONAL

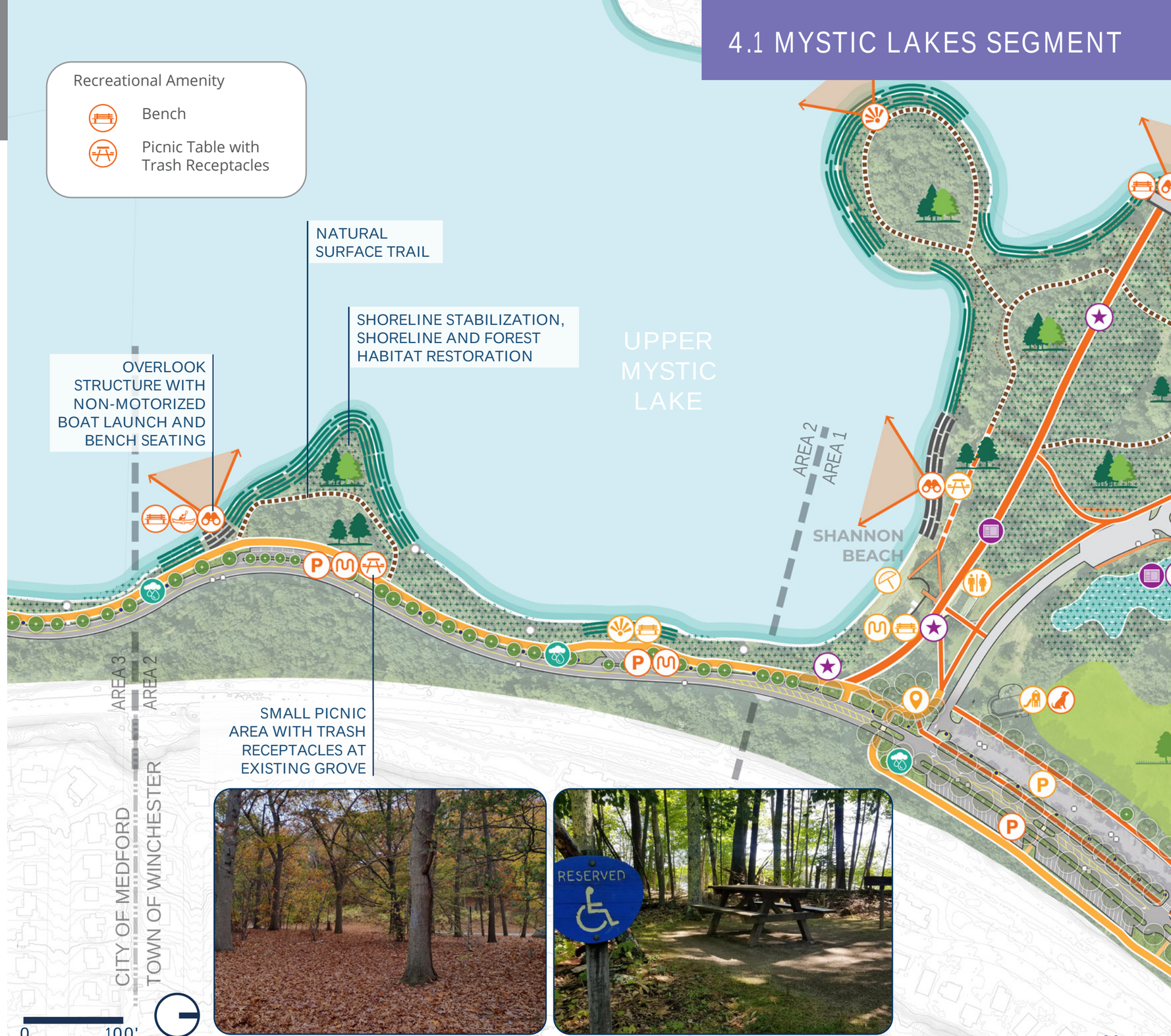
- A1 Path Network Improvements
  - Accessible Shared-use Path
  - Accessible Paved Path/Sidewalk
  - Accessible Unpaved Path
  - Natural Surface Trail
  - Fencing
  - Pedestrian Crosswalk
  - Wayfinding Signage
- A2 Scenic Viewpoint
- A3 Overlook Structure
  - Type 1: Visual Access to Water
  - Type 2: Physical Access to Water
- A4 Non-motorized Boat Launch
- A5 Recreational Amenities (see right for others)
- A6 Bike Rack
- Parking

ENVIRONMENTAL

- B1 Shoreline/Upland Stabilization
- B2 Habitat Restoration
  - Existing Tree
  - Proposed Tree
- B3 Stormwater Management

CULTURAL/HISTORICAL

- C1 Cultural/Historic Feature
- C2 Interpretive/Educational Signage
- C3 Potential Memorial/Art Location



AREA 3
OPPORTUNITIES

SAFETY, ACCESSIBILITY & RECREATIONAL

- A1 Path Network Improvements
  - Accessible Shared-use Path
  - Accessible Paved Path/Sidewalk
  - Accessible Unpaved Path
  - Natural Surface Trail
  - Fencing
  - Pedestrian Crosswalk
  - Wayfinding Signage
- A2 Scenic Viewpoint
- A3 Overlook Structure
  - Type 1: Visual Access to Water
  - Type 2: Physical Access to Water
- A4 Non-motorized Boat Launch
- A5 Recreational Amenities (see right for others)
- A6 Bike Rack
- P Parking

ENVIRONMENTAL

- B1 Shoreline/Upland Stabilization
- B2 Habitat Restoration
  - Existing Tree
  - Proposed Tree
- B3 Stormwater Management

CULTURAL/HISTORICAL

- C1 Cultural/Historic Feature
- C2 Interpretive/Educational Signage
- C3 Potential Memorial/Art Location



AREA 4
OPPORTUNITIES

SAFETY, ACCESSIBILITY & RECREATIONAL

- A1 Path Network Improvements
- Accessible Shared-use Path
- Accessible Paved Path/Sidewalk
- Accessible Unpaved Path
- Natural Surface Trail
- Fencing
- Pedestrian Crosswalk
- Wayfinding Signage
- A2 Scenic Viewpoint
- A3 Overlook Structure
- Type 1: Visual Access to Water
- Type 2: Physical Access to Water
- A4 Non-motorized Boat Launch
- A5 Recreational Amenities (see right for others)
- A6 Bike Rack
- P Parking

ENVIRONMENTAL

- B1 Shoreline/Upland Stabilization
- B2 Habitat Restoration
- Existing Tree
- Proposed Tree
- B3 Stormwater Management

CULTURAL/HISTORICAL

- C1 Cultural/Historic Feature
- C2 Interpretive/Educational Signage
- C3 Potential Memorial/Art Location



OVERLOOK ALONG ACCESSIBLE PATH OVER EXISTING OUTFALL WITH BENCH SEATING AND INTERPRETIVE SIGNAGE

LOWER MYSTIC LAKE

SHORELINE STABILIZATION & HABITAT RESTORATION

HABITAT RESTORATION

NATURAL SURFACE TRAIL

MEDFORD BOAT CLUB

MYST LAKE DAM

AREA 4
AREA 5

MYSTIC VALLEY PKWY

PINE RIDGE RD

PINE RIDGE TERRACE

AREA 3
AREA 4

ACCESSIBLE, UNPAVED PATH TOWARDS SCENIC VIEWPOINT

HABITAT RESTORATION

Recreational Amenity

- Bench
- Picnic Table with Trash Receptacles

OAK RIDGE ROAD

0 200'

CITY OF MEDFORD

OVERALL IMPROVEMENTS RECOMMENDATIONS



SAFETY, ACCESSIBILITY & RECREATIONAL

- A1 Path Network Improvements
  - Accessible Shared-use path
  - Accessible Paved Path/ Sidewalk
  - Accessible Unpaved Path
  - Natural Surface Trail
  - Fencing
  - Pedestrian Crosswalk
  - Wayfinding Signage
- A2 Scenic Viewpoint
- A3 Overlook Structure (2 Types)
  - Type 1: Visual Access to Water
  - Type 2: Physical Access to Water
- A4 Non-motorized Boat Launch
- A5 Recreational Amenity
  - Bench
  - Picnic Table with Trash Receptacles
  - Nature Play
  - Public Rest Amenities
  - Dog-friendly Amenity
- A6 Parking, Bike Rack

CULTURAL/HISTORICAL

- C1 Cultural/Historic Feature
- C2 Interpretive/Educational Signage
- C3 Potential Memorial/Art Location

ENVIRONMENTAL

- B1 Shoreline/Upland Stabilization
- B2 Habitat Restoration
- Existing Tree
- Proposed Tree
- B3 Stormwater Management

SAFETY & ACCESSIBILITY RECOMMENDATIONS

A1. TRAIL NETWORK & WAYFINDING



Wayfinding

Natural Surface Trail

Accessible, unpaved path along the shoreline

Accessible, paved sidewalk along the roadway

SAFETY & ACCESSIBILITY RECOMMENDATIONS

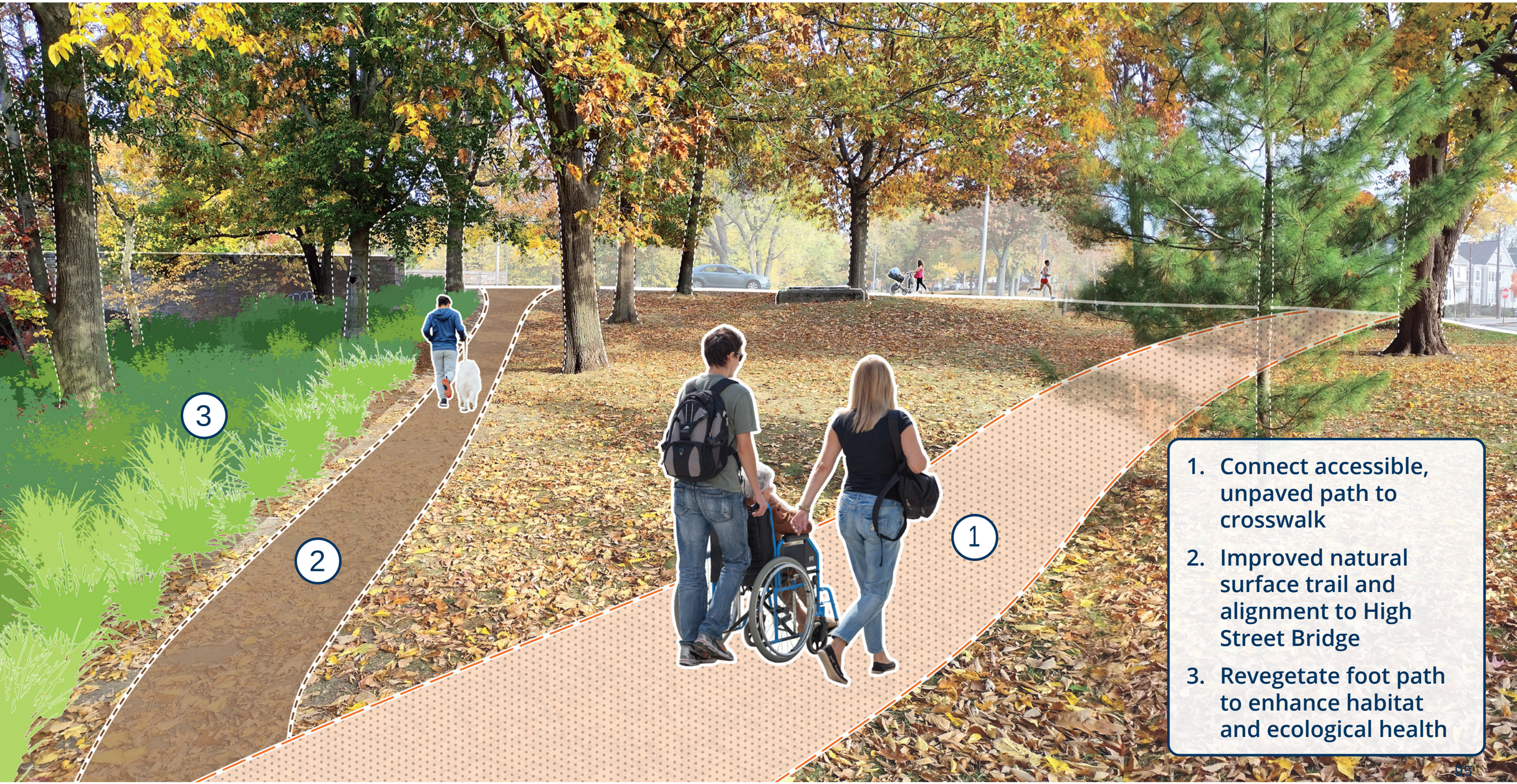
IMPROVEMENT RECOMMENDATIONS FOR ACCESSIBLE, UNPAVED PATH



Existing Conditions:
view looking north
towards High Street

SAFETY & ACCESSIBILITY RECOMMENDATIONS

IMPROVEMENT RECOMMENDATIONS FOR ACCESSIBLE, UNPAVED PATH



1. Connect accessible, unpaved path to crosswalk
2. Improved natural surface trail and alignment to High Street Bridge
3. Revegetate foot path to enhance habitat and ecological health

SAFETY & ACCESSIBILITY RECOMMENDATIONS

IMPROVEMENT RECOMMENDATIONS FOR ACCESSIBLE, UNPAVED PATH

Existing Conditions: narrow footpath along the Mystic River

SAFETY & ACCESSIBILITY RECOMMENDATIONS

IMPROVEMENT RECOMMENDATIONS FOR ACCESSIBLE, UNPAVED PATH



1. Realign accessible, unpaved path away from the critical root zone

2. Revegetate foot path to enhance habitat and ecological health

RECREATIONAL AMENITY RECOMMENDATIONS

A2. SCENIC VIEWPOINTS



Scenic viewpoint experience enhanced with seating, selective vegetative clearing and/or low understory plantings

RECREATIONAL AMENITY RECOMMENDATIONS

A3. OVERLOOK STRUCTURES



Overlook Type 1: Visual access to water only

Overlook Type 2: Physical access to water

RECREATIONAL AMENITY RECOMMENDATIONS

A4. NON-MOTORIZED BOAT LAUNCH LOCATIONS



Stepped Access

Seasonal Dock Access

RECREATIONAL AMENITY RECOMMENDATIONS

A5. RECREATIONAL AMENITIES

- Picnic Table with Trash Receptacles
- Bench Seating
- Nature Play
- Dog-friendly Amenities
- Public Rest Amenities
- Stormwater Outfall
- Existing Picnic Table
- Existing Bench
- Existing Basketball Court
- Existing Pickleball/ Tennis Courts
- Existing Playground



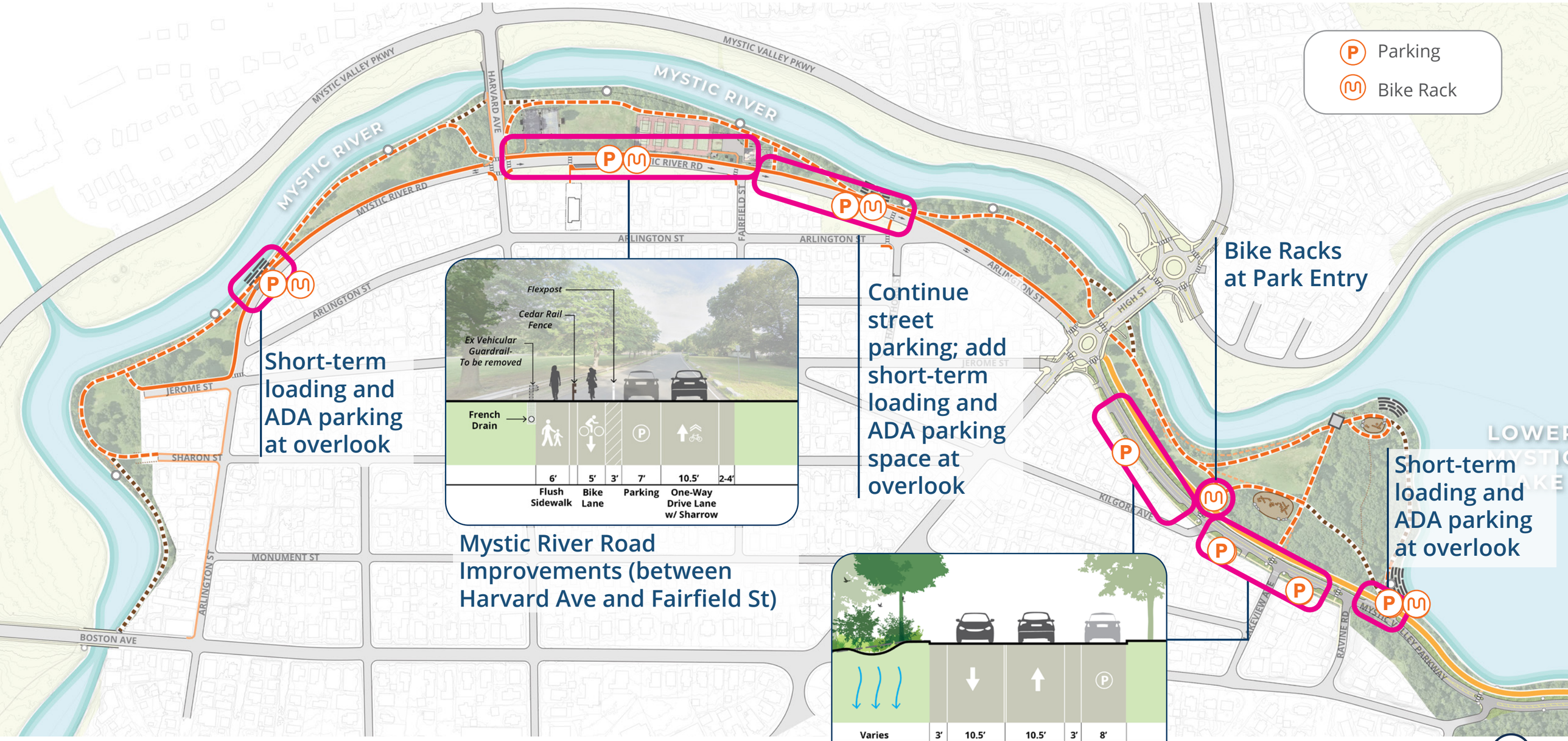
Backed Bench with ADA-accessible companion space

ADA-compliant picnic table with trash receptacles

0 300'

RECREATIONAL AMENITY RECOMMENDATIONS

A6. VEHICULAR AND BIKE PARKING



ENVIRONMENTAL RECOMMENDATIONS

B1/B2. SHORELINE STABILIZATION & HABITAT RESTORATION



Shoreline Stabilization and Habitat Restoration: invasive species removal and management, native plantings, no-mow zones, and bioengineering techniques

ENVIRONMENTAL RECOMMENDATIONS

B3. STORMWATER MANAGEMENT



Stormwater Management - Rain Gardens / Bioswale

CULTURAL/HISTORIC RECOMMENDATIONS

- Cultural/Historic Feature
- Interpretive/Educational Signage
- Potential Memorial/Art Location



Existing Cultural/Historic Feature

1. Middlesex Canal*
2. Mystic Pump Station*
3. Mystic Valley Parkway Bridge*
4. Dugger Park Memorial
5. Memorial Marker
6. Memorial Marker
7. Memorial Bench
8. High Street Bridge*
9. Paul Revere Ride Marker

*National Register - listed (NR)

Community Art / Memorial Elements

Interpretive / Educational Signage

0 300'

AREA 1 **OPPORTUNITIES**

SAFETY, ACCESSIBILITY & RECREATIONAL

- A1 Path Network Improvements
  - Accessible Shared-use Path
  - Accessible Paved Path/Sidewalk
  - Accessible Unpaved Path
  - Natural Surface Trail
  - Fencing
  - Pedestrian Crosswalk
  - Wayfinding Signage
- A2 Scenic Viewpoint
- A3 Overlook Structure
  - Type 1: Visual Access to Water
  - Type 2: Physical Access to Water
- A4 Non-motorized Boat Launch
- A5 Recreational Amenities (See right for others)
- A6 Bike Rack
- P Parking

ENVIRONMENTAL

- B1 Shoreline/Upland Stabilization
- B2 Habitat Restoration
  - Existing Tree
  - Proposed Tree
- B3 Stormwater Management

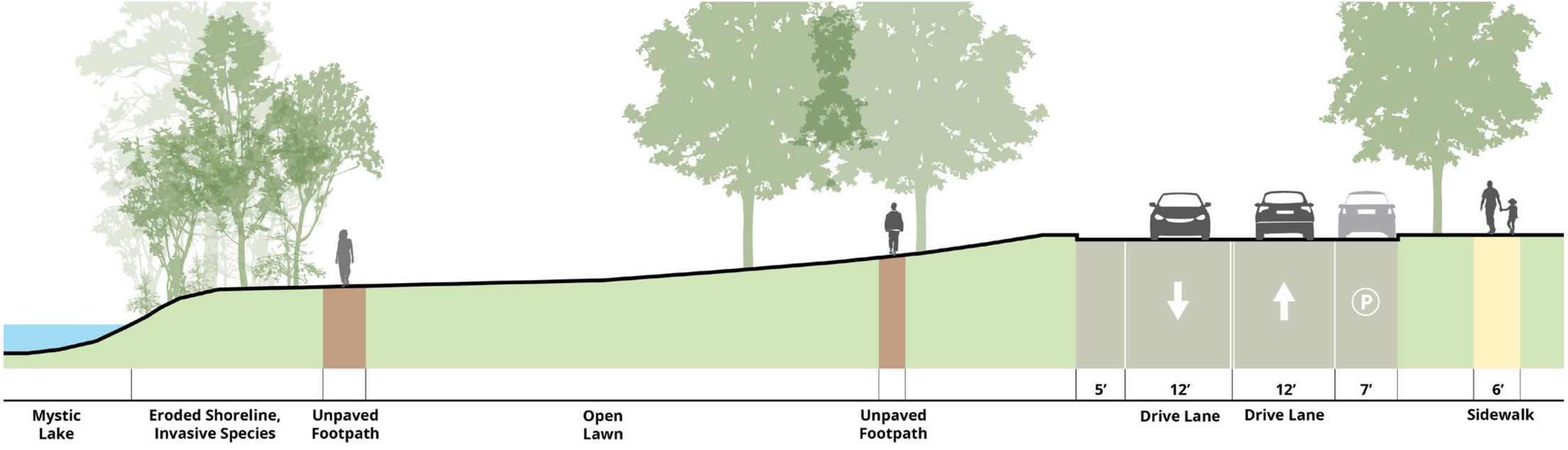
CULTURAL/HISTORICAL

- C1 Cultural/Historic Feature
- C2 Interpretive/Educational Signage
- C3 Potential Memorial/Art Location

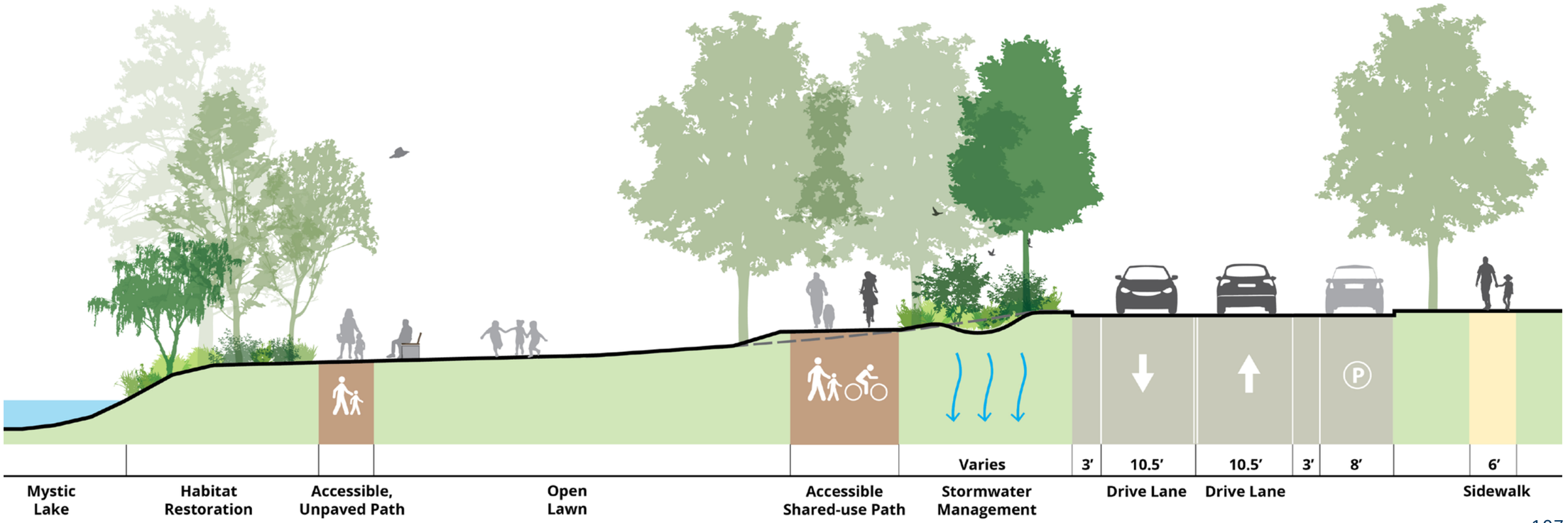


IMPROVEMENT RECOMMENDATIONS

EXISTING CONDITIONS



PROPOSED DESIGN



AREA 2
OPPORTUNITIES

SAFETY, ACCESSIBILITY & RECREATIONAL

- A1 Path Network Improvements
  - Accessible Shared-use Path
  - Accessible Paved Path/Sidewalk
  - Accessible Unpaved Path
  - Natural Surface Trail
  - Fencing
  - Pedestrian Crosswalk
  - Wayfinding Signage
- A2 Scenic Viewpoint
- A3 Overlook Structure
  - Type 1: Visual Access to Water
  - Type 2: Physical Access to Water
- A4 Non-motorized Boat Launch
- A5 Recreational Amenities (See right for others)
- A6 Bike Rack
- P Parking

ENVIRONMENTAL

- B1 Shoreline/Upland Stabilization
- B2 Habitat Restoration
  - Existing Tree
  - Proposed Tree
- B3 Stormwater Management

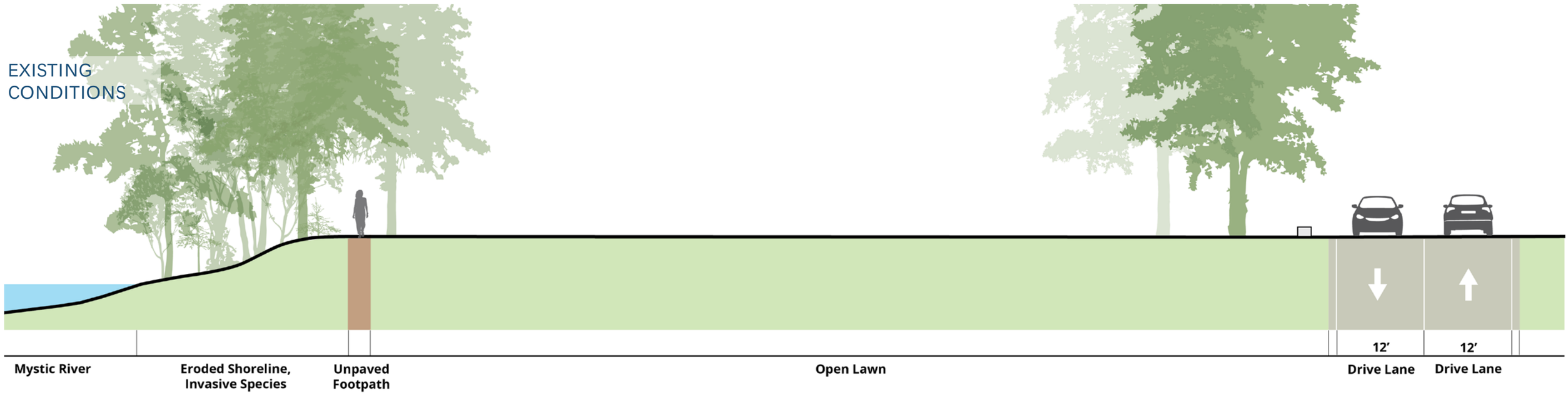
CULTURAL/HISTORICAL

- C1 Cultural/Historic Feature
- C2 Interpretive/Educational Signage
- C3 Potential Memorial/Art Location

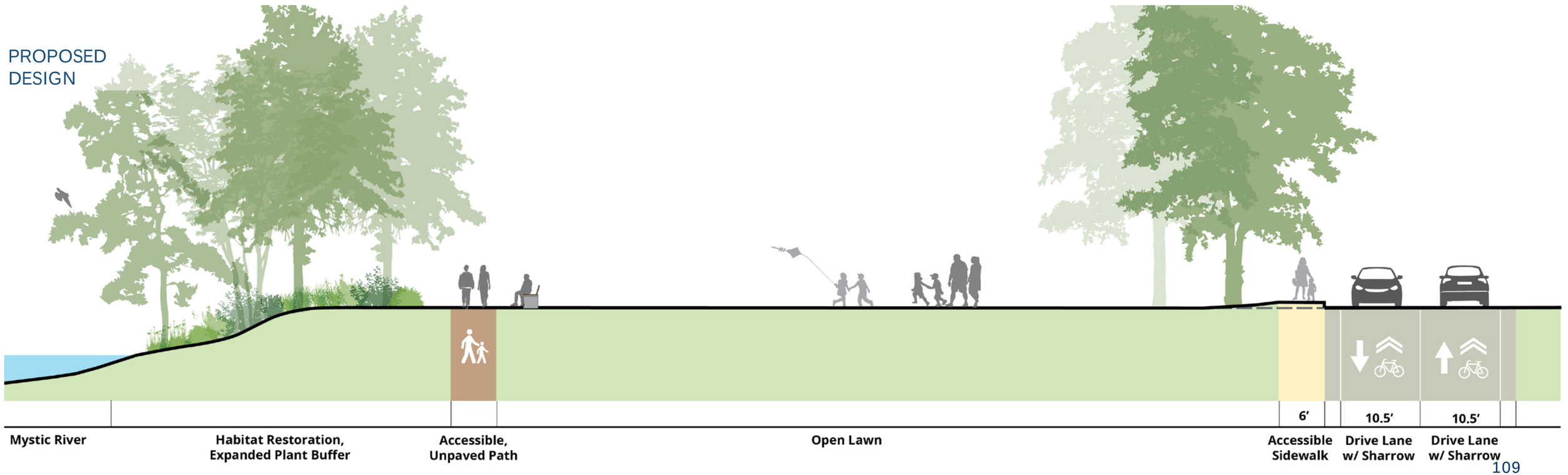


IMPROVEMENT RECOMMENDATIONS

EXISTING CONDITIONS



PROPOSED DESIGN



AREA 3
OPPORTUNITIES

SAFETY, ACCESSIBILITY & RECREATIONAL

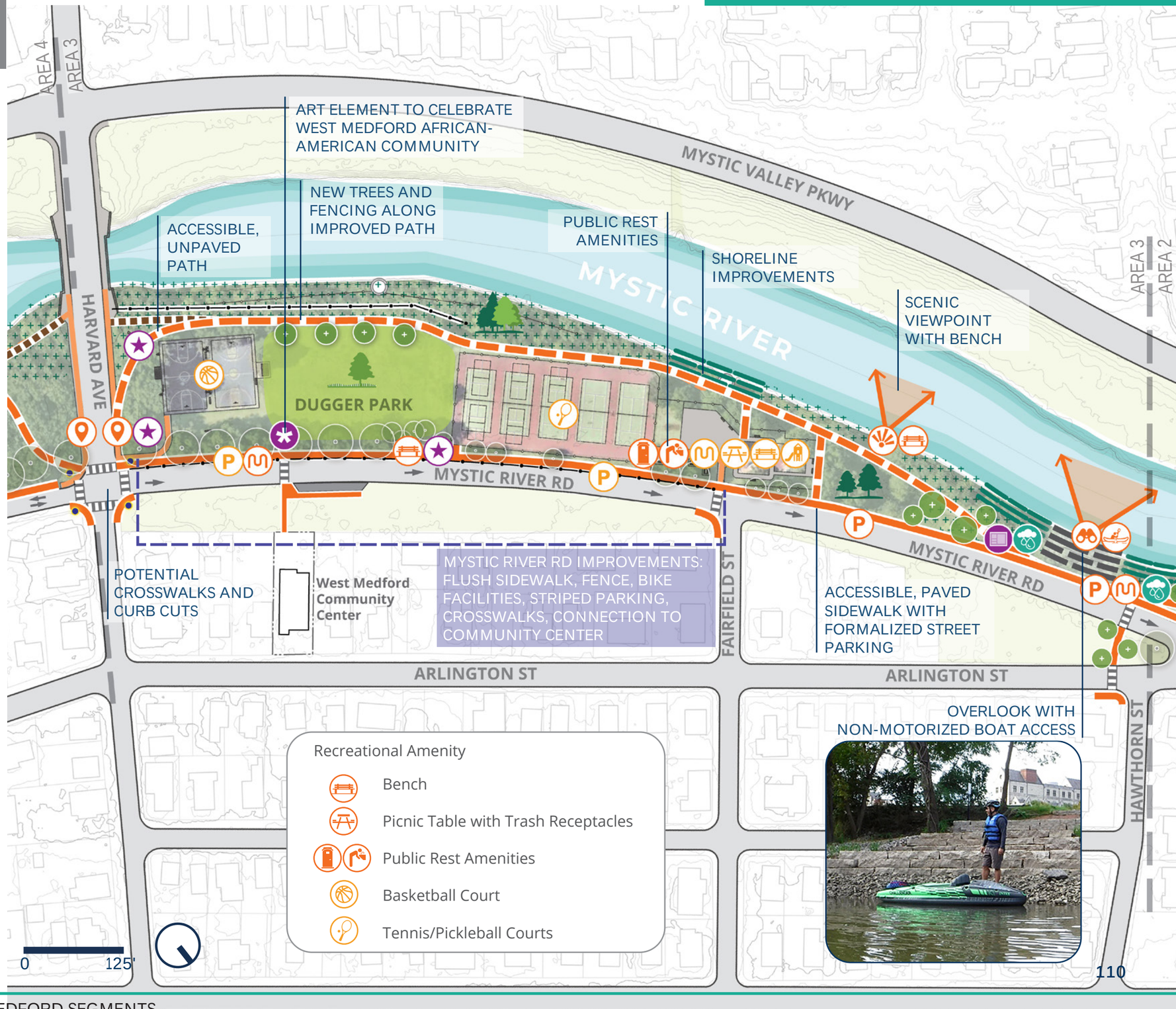
- A1 Path Network Improvements
  - Accessible Shared-use Path
  - Accessible Paved Path/Sidewalk
  - Accessible Unpaved Path
  - Natural Surface Trail
  - Fencing
  - Pedestrian Crosswalk
  - Wayfinding Signage
- A2 Scenic Viewpoint
- A3 Overlook Structure
  - Type 1: Visual Access to Water
  - Type 2: Physical Access to Water
- A4 Non-motorized Boat Launch
- A5 Recreational Amenities (See right for others)
- A6 Bike Rack
- P Parking

ENVIRONMENTAL

- B1 Shoreline/Upland Stabilization
- B2 Habitat Restoration
  - Existing Tree
  - Proposed Tree
- B3 Stormwater Management

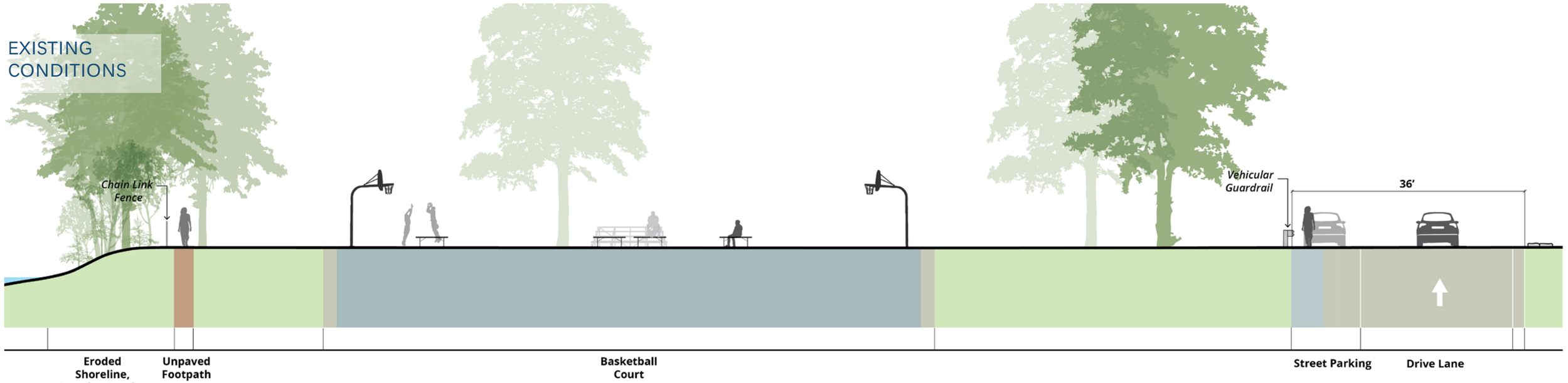
CULTURAL/HISTORICAL

- C1 Cultural/Historic Feature
- C2 Interpretive/Educational Signage
- C3 Potential Memorial/Art Location

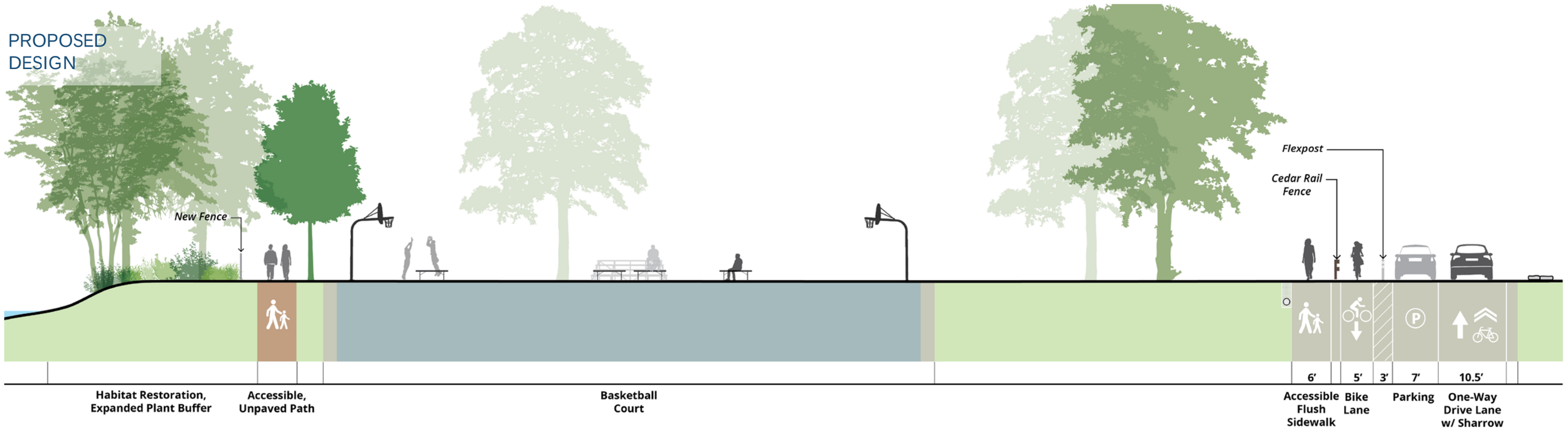


IMPROVEMENT RECOMMENDATIONS

EXISTING CONDITIONS



PROPOSED DESIGN



AREA 4
OPPORTUNITIES

SAFETY, ACCESSIBILITY & RECREATIONAL

- A1 Path Network Improvements
  - Accessible Shared-use Path
  - Accessible Paved Path/Sidewalk
  - Accessible Unpaved Path
  - Natural Surface Trail
  - Fencing
  - Pedestrian Crosswalk
  - Wayfinding Signage
- A2 Scenic Viewpoint
- A3 Overlook Structure
  - Type 1: Visual Access to Water
  - Type 2: Physical Access to Water
- A4 Non-motorized Boat Launch
- A5 Recreational Amenities (See right for others)
- A6 Bike Rack
  - Parking

ENVIRONMENTAL

- B1 Shoreline/Upland Stabilization
- B2 Habitat Restoration
  - Existing Tree
  - Proposed Tree
- B3 Stormwater Management

CULTURAL/HISTORICAL

- C1 Cultural/Historic Feature
- C2 Interpretive/Educational Signage
- C3 Potential Memorial/Art Location



SHORELINE IMPROVEMENTS

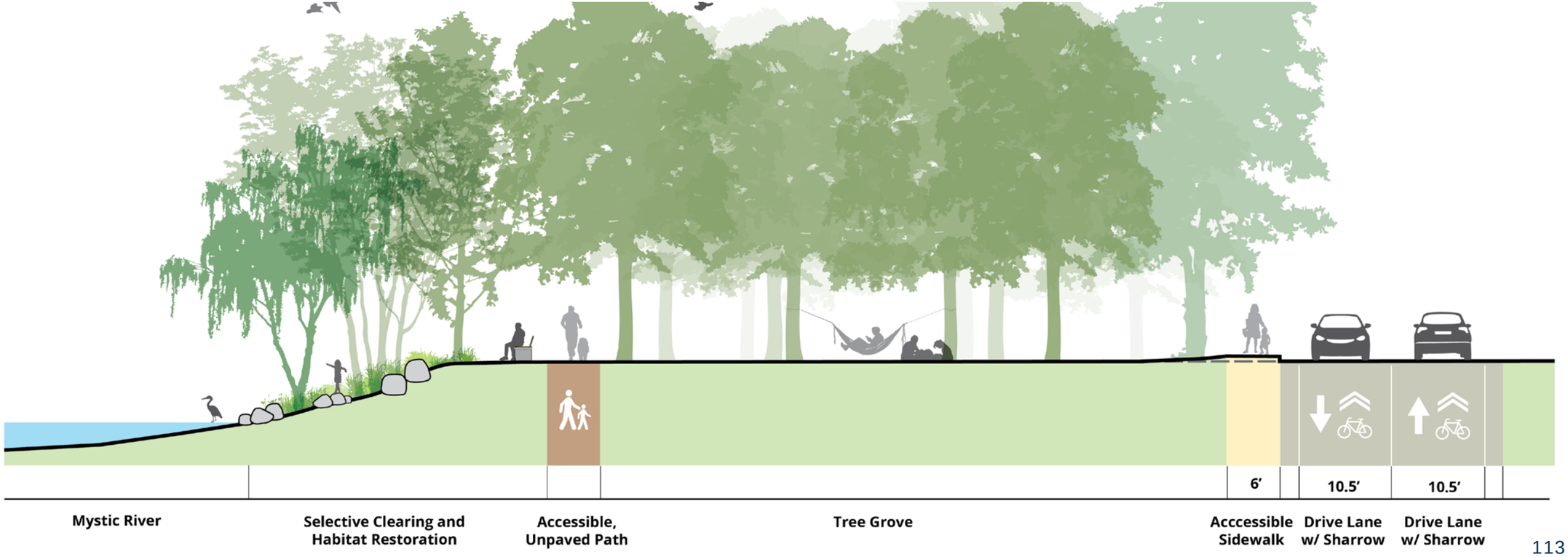
OVERLOOK WITH NON-MOTORIZED BOAT ACCESS

IMPROVEMENT RECOMMENDATIONS

EXISTING CONDITIONS



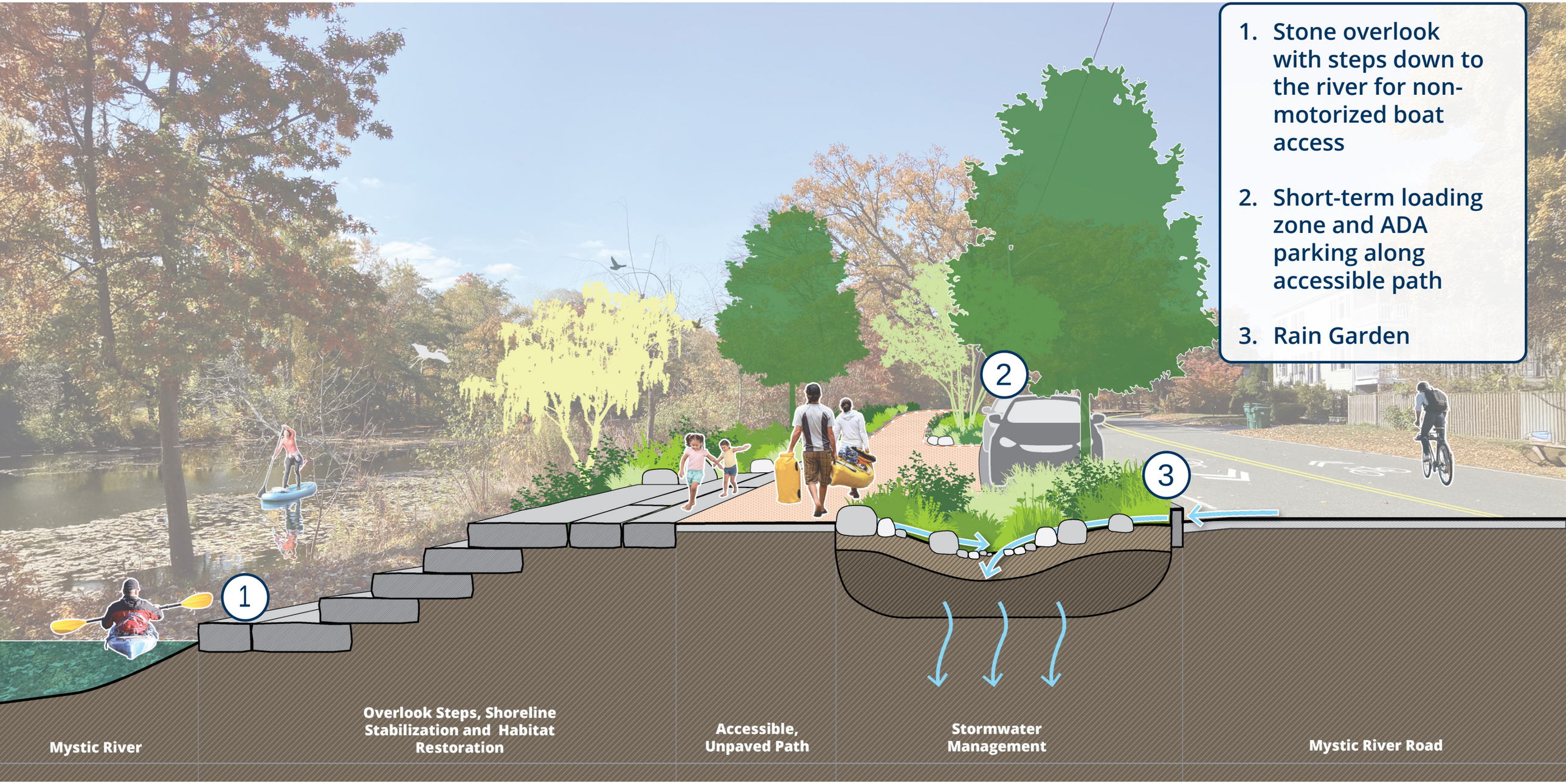
PROPOSED DESIGN



IMPROVEMENT RECOMMENDATIONS



IMPROVEMENT RECOMMENDATIONS



AREAS 5 & 6
OPPORTUNITIES

SAFETY, ACCESSIBILITY & RECREATIONAL

- A1 Path Network Improvements
  - Accessible Shared-use Path
  - Accessible Paved Path/Sidewalk
  - Accessible Unpaved Path
  - Natural Surface Trail
  - Fencing
  - Pedestrian Crosswalk
  - Wayfinding Signage
- A2 Scenic Viewpoint
- A3 Overlook Structure
  - Type 1: Visual Access to Water
  - Type 2: Physical Access to Water
- A4 Non-motorized Boat Launch
- A5 Recreational Amenities (See right for others)
- A6 Bike Rack
  - Parking

ENVIRONMENTAL

- B1 Shoreline/Upland Stabilization
- B2 Habitat Restoration
  - Existing Tree
  - Proposed Tree
- B3 Stormwater Management

CULTURAL/HISTORICAL

- C1 Cultural/Historic Feature
- C2 Interpretive/Educational Signage
- C3 Potential Memorial/Art Location



PART 5

DESIGN TOOLBOX

OVERALL RECOMMENDED IMPROVEMENTS

SAFETY, ACCESSIBILITY & RECREATIONAL

A1 Path Network Improvements

- Accessible Shared-use Path
- Accessible Paved Path/Sidewalk
- Accessible Unpaved Path
- Natural Surface Trail
- Fencing
- Pedestrian Crosswalk
- Wayfinding Signage

A2 Scenic Viewpoint

A3 Overlook Structure

- Type 1: Visual Access to Water
- Type 2: Physical Access to Water

A4 Non-motorized Boat Launch

A5 Recreational Amenity*

A6 Bike Rack

- Parking

ENVIRONMENTAL

B1 Shoreline/Upland Stabilization

B2 Habitat Restoration

- Existing Tree
- Proposed Tree

B3 Stormwater Management

CULTURAL/HISTORICAL

C1 Cultural/Historic Feature

C2 Interpretive/Educational Signage

C3 Potential Memorial/Art Location

Recreational Amenity*

- Bench, Picnic Table with Trash Receptacles
- Nature Play
- Public Rest Amenities
- Dog-friendly Amenity

SAFETY, ACCESS, RECREATIONAL

A1 PATH NETWORK IMPROVEMENTS

EXISTING CONDITIONS



Shoreline Path



Upland Path

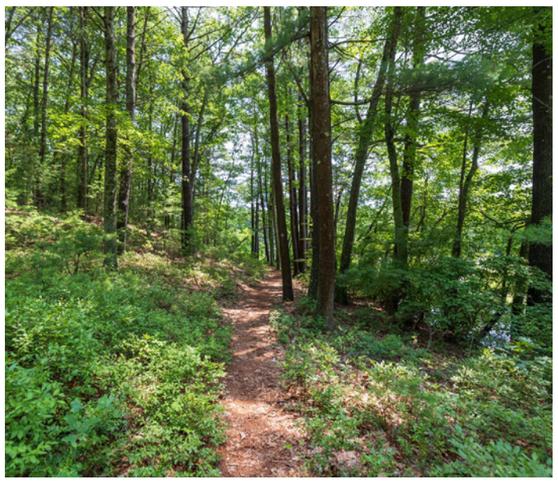
DESIGN TOOLBOX



Accessible Unpaved Path (stabilized stonedust)



Natural Surface Trail (wood chips)



Natural Surface Trail (dirt)



Accessible Paved Path/Sidewalk with Curb; Curb Cut Ramp and Crosswalk

SAFETY, ACCESS, RECREATIONAL

A1 PATH NETWORK IMPROVEMENTS

EXISTING CONDITIONS



Narrow footpath along steep, eroded embankment



Poorly defined, inclined path along severely eroded slopes

DESIGN TOOLBOX



Fencing - Metal Post and Cable



Fencing - Wood Post and Rope



Fencing - Wood Post and Rail



Informal Stone Steps



Stone Path Edge and Retaining Wall



Stone Path Edge

SAFETY, ACCESS, RECREATIONAL

A1 PATH NETWORK IMPROVEMENTS: WAYFINDING SIGNAGE

DESIGN TOOLBOX





Trail Markers





Gateway Markers



Trail Map Kiosk

SAFETY, ACCESS, RECREATIONAL

A2 SCENIC VIEWPOINT

EXISTING CONDITIONS



Historic High Street Bridge



Historic Bridge over Alewife Brook **and Mystic River Confluence**

DESIGN TOOLBOX



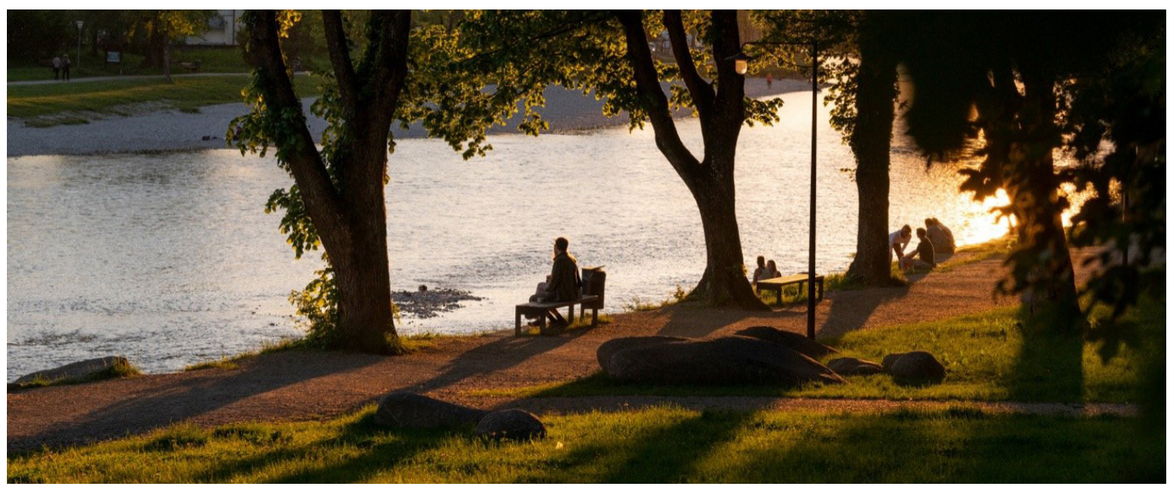
Acessible Bench Seating along Path



Selective Vegetative Clearing with informal stone block seating



Interpretive Signage



Tree-framed views

SAFETY, ACCESS, RECREATIONAL

A3 OVERLOOK STRUCTURE

EXISTING CONDITIONS



Severe erosion from street runoff and stormwater outfall



Eroded shoreline due to heavy foot **traffic and lack of understory**

DESIGN TOOLBOX

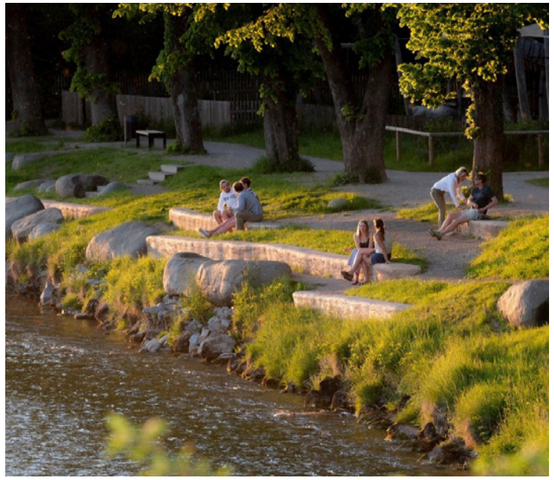
TYPE 1: VISUAL ACCESS



Deck cantilever over shoreline and connected to path at-grade



Hardscaped area close to water's edge with stone toe embankment



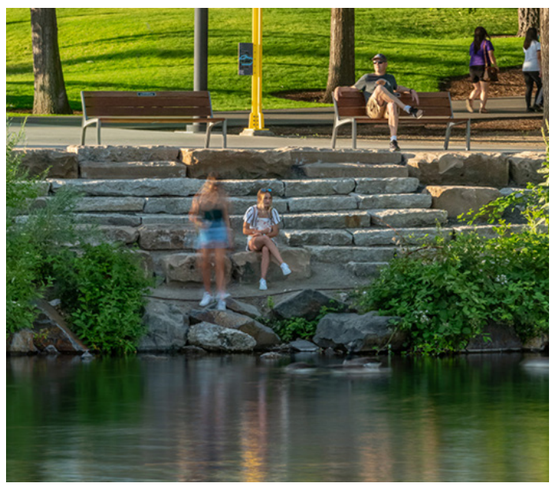
Block and boulder seating along revegetated and reinforced slope

TYPE 1: PHYSICAL ACCESS



Stone terraces down to water





Granite steps down to water

SAFETY, ACCESS, RECREATIONAL

A4 NON-MOTORIZED BOAT LAUNCH

EXISTING CONDITIONS



Eroded shoreline from heavy foot **traffic**

DESIGN TOOLBOX



Terraced or stepped access down to water



Confined sloped access for non-motorized boat





Seasonal Dock

SAFETY, ACCESS, RECREATIONAL

A5 RECREATIONAL AMENITY

DESIGN TOOLBOX



DCR Standard Backed Bench with ADA-accessible Companion Space



ADA-accessible Picnic Table



ADA-accessible Drinking Fountain with Bottle Filler and Pet Station



Dog Waste Station



Small Footprint Bike Rack







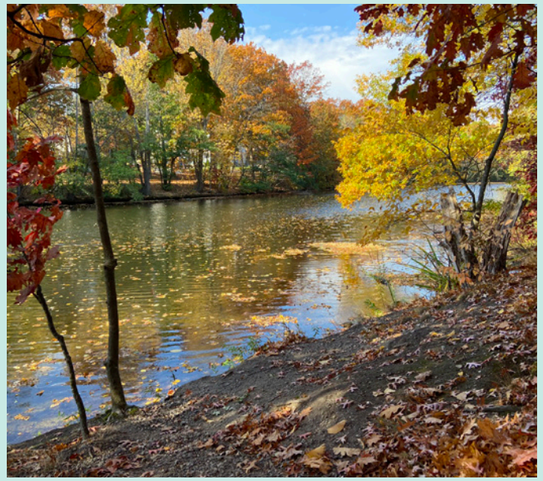


Nature Play / Outdoor Learning

ENVIRONMENTAL

B1 SHORELINE AND UPLAND STABILIZATION

EXISTING CONDITIONS



Shoreline erosion



Upland erosion

DESIGN TOOLBOX



Bioengineering Techniques to stabilize and revegetate the shoreline habitat



Stone toe reinforcement



Bioengineering Techniques to stabilize and revegetate the upland habitat



Diverse, multi-layered plantings

ENVIRONMENTAL

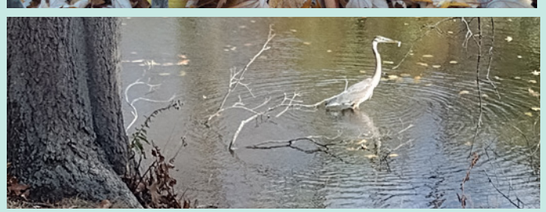
B2 HABITAT RESTORATION

EXISTING CONDITIONS



Invasive Species (Example: Oriental Bittersweet shown)





Existing Wildlife: Snapping turtle at shallow emergent marsh; heron at Mystic River

DESIGN TOOLBOX



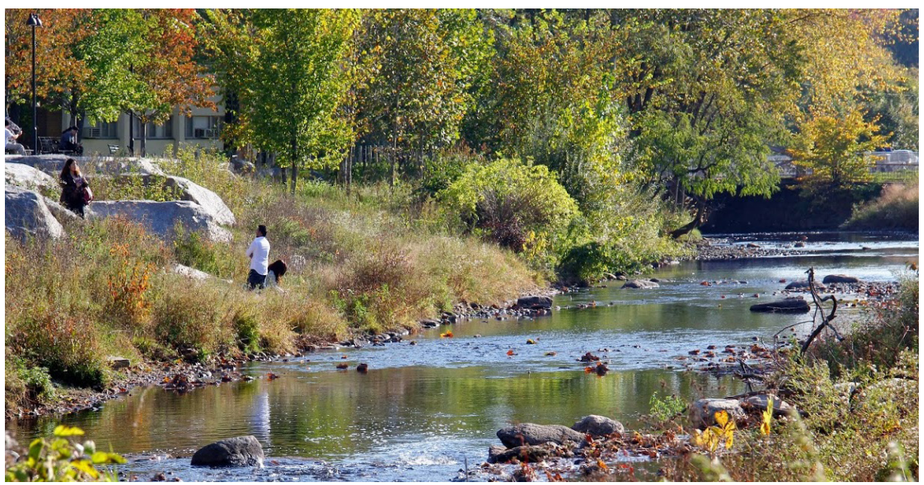




Protect existing native vegetation; remove and replace invasives with native plantings suitable for various **environmental conditions (shoreline, floodplain, upland forest, etc.)**



No-mow meadow zone to help stabilize and diversify shoreline habitat



Diverse, multi-layered revegetation along shoreline

ENVIRONMENTAL

B3 STORMWATER MANAGEMENT

EXISTING CONDITIONS



Street runoff; lack of street curbing



Stormwater outfall concentrates erosion issues

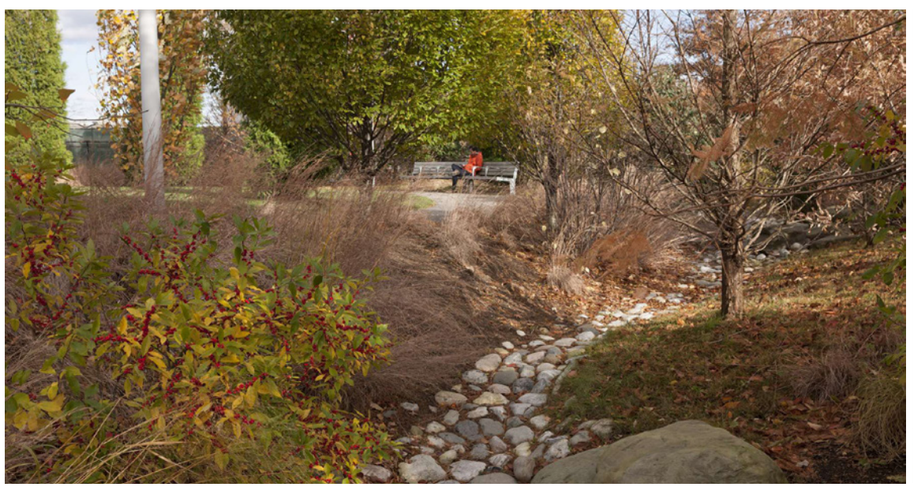
DESIGN TOOLBOX

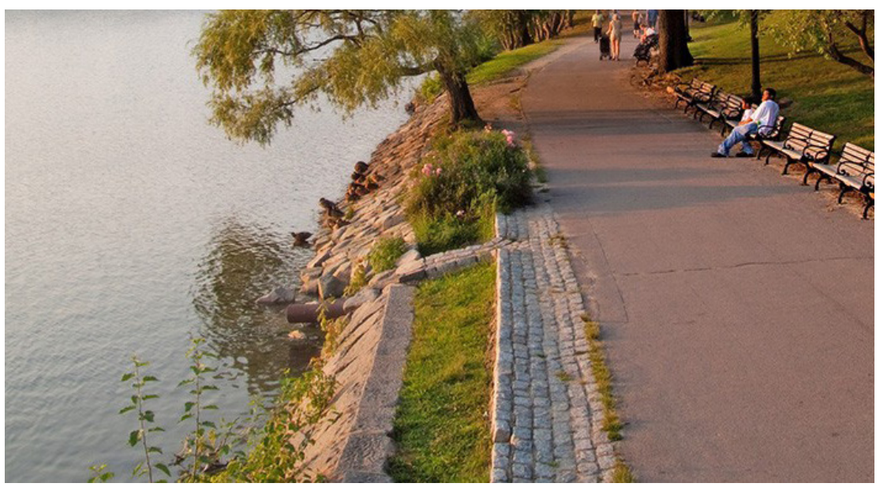






Curb streets to redirect street runoff towards rain gardens for stormwater capture and infiltration





Swales to help direct stormwater towards desired drainage points

CULTURAL/HISTORIC

C1 HISTORIC FEATURE REPAIR AND ENHANCE



Stone Bridge



Canal Crossing and Towpath



Stone Overlook (Former Symes River Aqueduct Site)

CULTURAL/HISTORIC

C2 INTERPRETIVE / EDUCATIONAL SIGNAGE



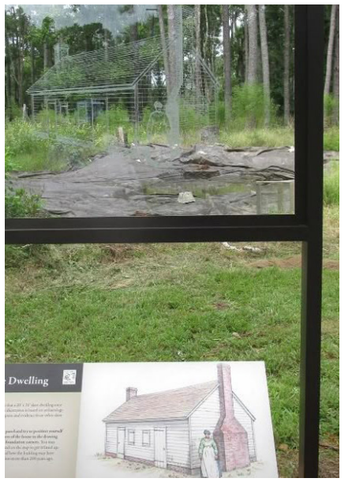








C3 ART / MEMORIAL ELEMENT









PART 6

OPINION OF PROBABLE COST

Mystic Shoreline Revitalization Plan					**$ 45,870**
MYSTIC LAKES PATH SEGMENT					
Medford & Winchester, MA					
**** INCLUDED IN 2024 MYSTIC LAKES PATH OPCC***					
	UNIT	***QUANTITY***	***UNIT PRICE-A***		
SITE PREPARATION AND DEMO*					**$ 150,000**
Clearing, Grubbing & Trimming					**$ 95,000**
Clearing and Grubbing (see invasive plant removal below; includes selective clearing at scenic viewpoints)	ls	1	$ 15,000.00		$ 15,000
Tree Removal: assume only remove hazard or dead trees	ls	1	$ 30,000.00		$ 30,000
Tree Protection	ls	1	$ 50,000.00		$ 50,000
Erosion Controls					**$ 55,000**
Erosion Control	lf	5000	$ 11.00		$ 55,000
SITE IMPROVEMENTS					**$ 810,900**
Unpaved Accessible Path					**$ 43,750**
Excavation	cy	250	$ 65.00		$ 16,250
Grading	sy	500	$ 4.00		$ 2,000
Stone Dust with Organic Loc Stabilizer	sf	4,500	$ 4.00		$ 18,000
Compacted Granular Subbase - 6" Depth	cy	83	$ 90.00		$ 7,500
Natural Surface Trail					**$ 200,350**
Grading, Widening, Realignment	sy	1,900	$ 4.00		$ 7,600
Shoreline Protection Fencing - Wood Post and Rope (Areas 1 and 3)	lf	855	$ 50.00		$ 42,750
Stone Edge/Walls - 18-24" Ht. (Area 1)	lf	500	$ 300.00		$ 150,000
Recreational Amenities					**$ 506,800**
ADA Accessible Picnic Table	ea	12	$ 5,000.00		$ 60,000
Backed Bench - DCR standard	ea	12	$ 3,800.00		$ 45,600
Overlook Type 1 - Visual Access to Water (Area 1 - Middlesex Canal Stone Overlook)	ls	1	$ 100,000.00		$ 100,000
Overlook Type 1 - Visual Access to Water (Area 4 - Wood Deck over Outfall)	ls	1	$ 50,000.00		$ 50,000
Overlook Type 2 - Physical Access to Water (Area 1 - Shannon Beach Picnic Area)	ls	1	$ 110,000.00		$ 110,000
Overlook Type 2 - Physical Access to Water (Area 1 - non-motorized boat access near Aberjona River)	ls	1	$ 50,000.00		$ 50,000
Overlook Type 2 - Physical Access to Water (Area 4 - non-motorized boat access near Parking Lot)	ls	1	$ 50,000.00		$ 50,000
Bike Rack with Concrete Pad	ea	12	$ 500.00		$ 6,000
Dog-friendly Amenities (Assume Dog Waste Receptacle with Concrete Footing)	ea	1	$ 1,200.00		$ 1,200
Trash Receptacle (Assume 1 at each picnic area)	ea	4	$ 3,500.00		$ 14,000
Drinking Fountain with Water Line Connection (Area 3 - Dam)	ls	1	$ 10,000.00		$ 10,000
Restroom Facility (Area 3 - Dam) - Portable Toilet	ea	2	$ 5,000.00		$ 10,000
Lighting* (in MLP estimation, no additional light in the project)					
Cultural/Historic Elements					**$ 60,000**
Interpretive Signage	ea	4	$ 10,000.00		$ 40,000
Stonebridge Repair (Area 1)	ls	1	$ 20,000.00		$ 20,000
SHORELINE STABILIZATION / HABITAT RESTORATION / GREEN INFRASTRUCTURE					**$ 7,770,300**
Shoreline Stabilization & Restoration					**$ 5,680,000**
Bioengineering - Severe Shoreline Erosion Areas, assume 25' of run	sf	41,000	$ 80.00		$ 3,280,000
Bioengineering - Light to Moderate Shoreline Erosion Areas, assume 20' of run	sf	40,000	$ 60.00		$ 2,400,000
Upland Planting					$ 60,800
Trees*					
Upland Native Plantings (to revegetate over existing foot paths)	sf	3,040	$ 20.00		$ 60,800
Open Lawn					**$ 33,000**
Lawn Seedmix (Area 1 - Hilltop Clearing)	sf	22,000	$ 1.25		$ 27,500
Lawn Seedmix (Area 3 - Dam)	sf	4,400	$ 1.25		$ 5,500
Planting Soils					**$ 1,996,500**
Planting Bed Soil (Imported Manufactured Soil) - 12" (for shoreline/upland revegation)	cy	22,000	$ 90.00		$ 1,980,000
Amended Existing Topsoil (for open lawn areas) - 6"	cy	500	$ 33.00		$ 16,500
			Construction Subtotal		***$ 8,731,200***
Contingencies					***$ 1,309,680***
Construction Contingency		15%			
			Total Project Cost Estimates		**$ 10,040,880**

OPINION OF PROBABLE COST

WEST MEDFORD SEGMENT

Mystic Shoreline Revitalization Plan					August 1, 2025
WEST MEDFORD SEGMENT					
Medford, MA					
	UNIT	*QUANTITY*	*UNIT PRICE-A*		
SITE PREPARATION AND DEMO					**$ 386,348.52**
Temporary Fencing					**$ 103,830.00**
Construction Fence (Sagamore to High St)	lf	1945	$ 14.00		$ 27,230.00
Construction Fence (High St to Harvard Ave)	lf	2340	$ 14.00		$ 32,760.00
Construction Fence (Harvard Ave to Sharon Ave)	lf	2060	$ 14.00		$ 28,840.00
Construction Gate with Crushed Stone	ea	3	$ 5,000.00		$ 15,000.00
Erosion Controls					**$ 139,590.00**
Erosion Control	lf	12690	$ 11.00		$ 139,590.00
Clearing, Grubbing & Trimming					**$ 110,000.00**
Tree Protection	ls	1	$ 50,000.00		$ 50,000.00
Root Pruning / Air Spading	ls	1	$ 30,000.00		$ 30,000.00
Tree Removal: assume only remove hazard or dead trees	ls	1	$ 30,000.00		$ 30,000.00
Demolition / Excavation - Hardscape					**$ 16,410.00**
Sawcut Asphalt Pavement along new sidewalks and curbing	lf	2,735	$ 6.00		$ 16,410.00
Demolition - Other					**$ 16,518.52**
Remove and Salvage Existing Granite Blocks along Arlington St/Mystic River Rd	ls	1	$ 10,000.00		$ 10,000.00
Strip topsoil and stock pile, average 12" thick - for new rain gardens	cy	593	$ 11.00		$ 6,518.52
SITE IMPROVEMENTS					**$ 2,365,728.39**
Roadway Improvements* (excluding MLP and Mystic River Road Project)					**$ 403,477.00**
New Granite Roadway Curb (along Arlington, Mystic River Rd, Jerome Street)	lf	2,735	$ 85.00		$ 232,475.00
New Asphalt Pavement - top course for patching roadway	sf	5470	$ 8.00		$ 43,760.00
Curb Extension - Mystic River Rd/Harvard Ave intersection	ea	4	$ 7,500.00		$ 30,000.00
Curb Ramp - Mystic River Rd/Harvard Ave intersection; Hawthorn St connection	ea	8	$ 7,500.00		$ 60,000.00
Pedestrian Crossing Striping	lf	150	$ 5.00		$ 750.00
Parking Striping	ea	56	$ 12.00		$ 672.00
4-8" Reflectorized Pavement Markings	lf	8,205	$ 2.00		$ 16,410.00
ADA Parking Symbol	ea	4	$ 600.00		$ 2,400.00
Sharrows	ea	28	$ 600.00		$ 17,010.00
Paved Sidewalk (assume 6' wide)					**$ 245,179.72**
Excavation	cy	760	$ 65.00		$ 49,381.94
Grading	sy	1,519	$ 4.00		$ 6,077.78
4" CIP Concrete Paving	sf	13,675	$ 12.00		$ 164,100.00
6" Gravel Base	cy	610	$ 42.00		$ 25,620.00
Unpaved Accessible Path (assume 6' wide) - includes Area 1					**$ 804,191.67**
Excavation	cy	2,292	$ 65.00		$ 148,958.33
Grading	sy	4,583	$ 4.00		$ 18,333.33
Stone Dust with Organic Loc Stabilizer	sf	41,250	$ 4.00		$ 165,000.00
Compacted granular subase 6"	cy	4,583	$ 90.00		$ 412,500.00
Wayfinding Signage	ea	9	$ 3,000.00		$ 27,000.00
Chain-link Fencing at Dugger Park; 6' HT.	lf	450	$ 72.00		$ 32,400.00
Natural Surface Trail Improvements (assume 4' wide) - includes Area 1					**$ 3,680.00**
Grading, Widening, Realignment	sy	920	$ 4.00		$ 3,680.00
Stair at Boston Ave Bridge (Area 6)					**$ 25,000.00**
Granite Stairs with Handrail, Guardrail	ls	1	$ 15,000.00		$ 15,000.00
Removal of Section of Boston Ave Bridge Guardrail	ls	1	$ 10,000.00		$ 10,000.00
Recreational Amenities					**$ 565,200.00**
ADA Accessible Picnic Table (Area 1)	ea	5	$ 5,000.00		$ 25,000.00
Backed Bench - DCR standard	ea	11	$ 3,800.00		$ 41,800.00
Overlook Type 1 - Visual Access to Water (Area 1 - Pump Station)	ls	1	$ 50,000.00		$ 50,000.00
Overlook Type 2 - Physical Access to Water (Area 1 - Non-motorized boat launch near Ravine Rd)	ls	1	$ 50,000.00		$ 50,000.00
Overlook Type 2 - Physical Access to Water (Area 1 - Peninsula Tip at Picnic Area and Nature Play)	ls	1	$ 50,000.00		$ 50,000.00
Overlook Type 2 - Physical Access to Water (Area 3 - Non-motorized boat launch near Hawthorn St)	ls	1	$ 110,000.00		$ 110,000.00
Overlook Type 2 - Physical Access to Water (Area 5 - Non-motorized boat launch between Harvard Ave and Jerome St)	ls	1	$ 110,000.00		$ 110,000.00
Nature Play Area	ea	2	$ 50,000.00		$ 100,000.00
Bike Rack on Concrete Pad	ea	5	$ 500.00		$ 2,500.00
Dog-friendly Amenities (Assume Dog Waste Receptacle with Concrete Footing)	ea	2	$ 1,200.00		$ 2,400.00
Trash Receptacle (Assume 1 at each picnic area)	ea	1	$ 3,500.00		$ 3,500.00
Drinking Fountain with Water Line Connection (Area 3 - Dugger Park)	ls	1	$ 10,000.00		$ 10,000.00
Restroom Facility (Area 3 - Dugger Park)	ea	2	$ 5,000.00		10,000
Lighting					**$ 179,000.00**
DCR decorative light pole with footing and ductbank for wiring (North of High Street and at Harvard Ave/Mystic River Road Intersection)	ea	5	$ 25,000.00		$ 125,000.00
Street Lighting - Ductbank for wire in 2" PVC, 18" below grade + 18"x18" handholes	lf	360	$ 150.00		$ 54,000.00
Cultural/Historic/Art Elements					**$ 140,000.00**
Interpretive Signage	ea	4	$ 10,000.00		$ 40,000.00
Art Element	ea	2	$ 50,000.00		$ 100,000.00
SHORELINE STABILIZATION / HABITAT RESTORATION / GREEN INFRASTRUCTURE					**$ 3,619,920.46**
Shoreline Stabilization & Restoration					**$ 1,980,000.00**
Bioengineering, assume 20' of run	sf	33,000	$ 60.00		$ 1,980,000.00
Open Lawn					**$ 267,887.50**
Lawn Seedmix (for existing open lawn areas and revegetating over foot paths)	sf	214,310	$ 1.25		$ 267,887.50
Upland Plantings					**$ 652,400.00**
Upland Invasive Plant Removal	sf	26,000	$ 2.00		$ 52,000.00
Trees - Deciduous - 2.5"-3 Caliper (Street Trees for Areas 2-6)	ea	22	$ 1,800.00		$ 39,600.00
Upland - Native Plantings (and to revegetate over ex foot paths)	sf	28,040	$ 20.00		$ 560,800.00
Planting Soils					**$ 258,892.22**
Horticultural Subsoil - 12" (for shoreline/upland revegetation)	cy	731	$ 85.00		$ 62,135.00
Planting Bed Soil (Imported Manufactured Soil) - 12" (for shoreline/upland revegation)	cy	731	$ 90.00		$ 65,790.00
Amended Existing Topsoil - 6" (for open lawn areas)	cy	3,969	$ 33.00		$ 130,967.22
Rain Garden					**$ 460,740.74**
Rain Garden - Native Plantings - assume (8) 2000sf rain gardens	sf	16,000	$ 20.00		$ 320,000.00
Rain Garden Planting Medium (24" depth)	cy	1,185	$ 85.00		$ 100,740.74
Drainage Structure	ea	8	$ 5,000.00		$ 40,000.00
				Construction Subtotal	***$ 6,371,997.37***
Contingencies					***$ 955,799.61***
Construction Contingency		15%			
				Total Project Cost Estimates	**$ 7,327,796.98**

APPENDICES

APPENDIX A

LANDSCAPE AND SHORELINE ASSESSMENT MEMO

Mystic Shoreline Revitalization Plan for West Medford and the Mystic Lakes -

Landscape and Shoreline Assessment Memo

Mystic Valley Parkway, Medford, MA 02155

TO: Karl Alexander

FROM: Iris Lin, Senior Landscape Architect; Robert Uhlig, Vice President

DATE: February 18, 2025

In early November 2024, Halvorson | Tighe & Bond Studio landscape architects conducted multiple site walks to perform comprehensive landscape and shoreline assessments along the eastern shoreline of Mystic Lakes—extending from Aberjona Bridge in Winchester to High Street in Medford— and along the eastern shoreline of the Mystic River, from High Street to Boston Avenue in Medford. Tighe & Bond wetland scientists prepared a Natural Areas Assessment and Invasive Species Survey Technical Memo, documenting the findings of a natural area survey and a non-native species inventory within the project area. Together, these two assessment memos provide a comprehensive understanding of shoreline conditions in terms of environmental health, as well as natural and recreational resources.

This assessment builds upon the earlier conceptual study for the Mystic Lakes Shared Use Path project, which focused on improving safety, accessibility, and connectivity along Mystic Valley Parkway. That project focused on enhancing the shared-use path experience while improving recreational opportunities and ecological health around Mystic Lakes. In contrast, the current Natural Areas Assessment project focuses on the peninsulas north of High Street and the linear parkland north of Boston Avenue. Its primary objectives are to evaluate existing landscape resources, assess environmental conditions, and develop strategies for enhancing recreational opportunities, restoring habitats, and improving overall environmental health.

Project Area

The project area consists of a linear park system located within the towns of Winchester and Medford, Massachusetts, bounded by Mystic Valley Parkway and Mystic River Road to the east, and Upper and Lower Mystic Lakes and the Mystic River define the western boundary. The northern limit is marked by the mouth of the Aberjona River, and the Boston Avenue Bridge over the Mystic River forms the southern boundary.

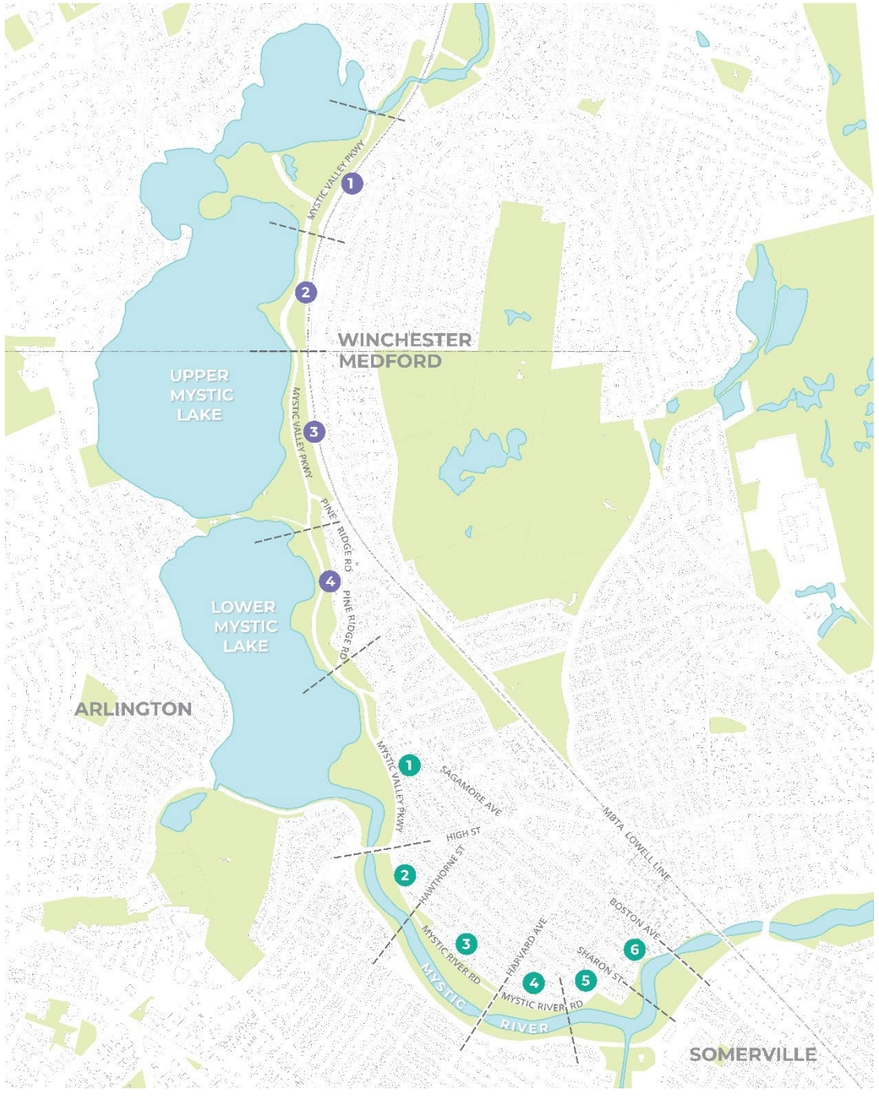
Methods

This assessment involved a visual survey and evaluation of the project area from three perspectives:

- **Environmental:** Focused on erosion, vegetation (including plant communities, invasive species, and general soil conditions), and topography.
- **Recreational:** Focused on safety, accessibility, viewsheds, trail networks and conditions, landscape character zones (such as open spaces, wooded areas, meadows, shorelines, and wetlands), and site furnishings and amenities.
- **Cultural:** Focused on significant structures and interpretive opportunities.

The project area is divided into two distinct segments based on the changes in landscape character. **The Mystic Lakes Segment** features natural wooded peninsulas and shoreline along the Mystic Lakes. **The West Medford Segment** consists of a linear parkland integrated within residential neighborhoods along the Mystic River. The landscape character narrative and assessment are organized sequentially from north to south and consist of **10 sub-areas**.

LANDSCAPE ARCHITECTURE, PLANNING + URBAN DESIGN



Key Map

Mystic Lakes Segment of the Mystic Shoreline Revitalization Plan

Mystic Lakes Segment Area 1- Shannon Beach Peninsula between Aberjona Bridge to Shannon Beach

The Shannon Beach Peninsula extends from the Aberjona Bridge to Shannon Beach and is a favored destination due to its proximity to Shannon Beach amenities, making it an ideal spot for active and passive recreational activities. The western section of the peninsula features a parking lot, playground, open lawn, paved path, Shannon Beach, picnic area, and restroom facilities. In contrast, the eastern section remains in its natural state, characterized by a White Pine-Oak Forest with a mature understory of vegetation.

While there is a well-established network of footpaths in the wooded area, a lack of a designated trail system with proper signage leads to confusion and unintended environmental impacts, such as adverse impacts to ground level vegetation resulting in erosion, especially along the southern shoreline of the peninsula. Severe erosion is caused by steep slopes, insufficient understory vegetation, and human activity, posing threats to topsoil, slope stability, and water quality, as well as safety risks to visitors using unofficial footpaths. To address these issues, it is crucial to restrict human access and activities to select areas and restore slopes with native plantings, stabilized surfacing and protected by barriers/ devices that visually integrate with the landscape. Implementing both short-term and long-term restoration, protection and stabilization strategies will help restore the area and prevent further degradation. Additionally, establishing a well-designed trail network with clear directional and informational signage would enhance the visitor experience by guiding them along safe paths and reducing environmental impact.

The shoreline near the Shannon Beach picnic area also suffers from erosion due to excessive visitor access. Implementing stepping boulders at the shoreline to support recreational activities while simultaneously stabilizing the shoreline, balancing user enjoyment with environmental preservation. The flat open space on the hilltop is ideal for picnics and natural play, catering to families and groups seeking leisure activities.

The granite overlook structure, a remnant of the Middlesex Canal, offers a scenic viewing point of the Upper Mystic Lake, providing a platform for overlooks. Developing scenic overlooks and integrating an accessible Middlesex Canal Walk enhances recreational appeal, offering visitors beautiful views of the lakes and shoreline. Adding interpretive signage and

seating further enriches the visitor experience, providing educational opportunities and places to rest.

The roundabout area at the end of the maintenance driveway is another excellent location for a scenic overlook, given its accessibility via the paved walkway from the parking lot.



Figure 1. Erosion on steep slope



Figure 2. Middlesex Canal and towpath

Mystic Lakes Segment Area 2 – South of Shannon Beach to Medford/Winchester Town Line

The stretch from Shannon Beach to the town line between Medford and Winchester features a narrow and steep shoreline bordered by Mystic Valley Parkway and Upper Mystic Lake. This area occasionally experiences erosion due to stormwater runoff and human activities. A guardrail along the path ensures visitor safety and discourages unauthorized lake access. The peninsula near the parking lot remains in a natural state, covered with a White Pine-Oak Forest and understory vegetation. Two unmarked footpaths connect the parking lot to the eastern point of the peninsula, where a level area beneath the Oak tree grove, approximately 50 feet from the parking lot, offering an ideal spot for picnics, catering to families and groups seeking leisure activities.

Severe erosion at the eastern point results from steep slopes, insufficient understory vegetation, and human activity. Given the steep slope and the potential danger it poses to visitors, implementing protective measures and restoration strategies help stabilize the area and prevent further degradation. Limiting human access and restoring the slopes with native plants are crucial steps to ensure the long-term stability and safety of the site.

There is potential to establish a loop trail through the high point of the peninsula to the southern end of the parking lot. This high point is an excellent location for an overlook and seating, providing visitors a place to relax and enjoy the view. South of the parking lot is a popular spot for kayak launching. However, the approximately 10-foot elevation change from the parking lot to the water level is currently non-accessible, prompting visitors to traverse steep slopes, exacerbating erosion. Developing an elevated, accessible ramp with retaining walls to accommodate the elevation change would allow people to use this area as a launch point without impacting slope stability. Restoring the shoreline and slope with vegetation will further stabilize the area.



Figure 3. Open area under Oak tree grove



Figure 4. Area used for kayak launch with non-accessible and unstable slopes.

Mystic Lakes Segment Area 3: Medford/Winchester Town Line to Mystic Dam

The narrow and steep shoreline bounded by Mystic Valley Parkway and Upper Mystic Lake in Area 3 experiences occasional erosion due to stormwater runoff and human activities. Temporary fencing could be installed to aid in the restoration of vegetation on the slopes, with signage educating visitors on the environmental benefits of accessing the water only from designated points. This area features two parking lots, which could serve as more suitable access points to the water for visitors.

Between the southernmost parking lot and the lake lies a small flat area popular for picnicking, fishing, and kayak launching. However, erosion remains a significant issue along the shoreline. Enhancements are needed to improve recreational experiences and water

quality. Suggested improvements include restoring the shoreline with native vegetation and possibly implementing hardscape treatments to stabilize the area while accommodating recreational activities.

The peninsula, bounded by the southernmost parking lot and the dam entry drive, is dominated by beautiful mature oak forest in the north and south portions. The hilltop lacks mature tree canopy and is dominated by Staghorn Sumac and garlic mustard while the area adjacent to the dam parking lot was previously disturbed and cleared and invasive species have emerged to become the dominant species.

A footpath runs along the shoreline from this parking lot to the dam parking lot at a higher elevation. The path benefits from a small hill and dense vegetation that blocks traffic noise from Mystic Parkway, creating a quieter and more secluded experience for visitors.

To enhance safety and accessibility, recommendations are to widen the trail and provide protection where the trail is adjacent to steep slopes to the lake. The slope of the trail may exceed the FSTAG (Forest Service Trail Accessibility Guidelines) standard for accessibility, so the new trail layout to be adjusted to meet the standard. Additionally, recommendations include integrating scenic overlooks and seating areas along the trail to enhance the visitor experience, offering beautiful views of the lakes and the surrounding landscape.



Figure 5. The small flat area adjacent to the parking lot is popular for picnicking



Figure 6. Narrow footpath adjacent to steep slope

Mystic Lakes Segment Area 4: South of Mystic Dam to Pine Ridge Road

In Area 4, there are two distinct peninsulas. The northern peninsula is less frequented, with a less visible footpath that runs closer to the shoreline in both distance and elevation. Meanwhile, the Parkway and multi-use path are situated on much higher ground. The relatively flat topography of this peninsula makes the development of an accessible path feasible. The area is characterized by dense understory vegetation and a diverse canopy of both deciduous and evergreen trees. Given its limited recreational value and minimal erosion, recommendations are to maintain the current conditions.

The southern peninsula features a footpath at a lower elevation, closer to the water level, while the multi-use path along the Parkway is positioned at a higher elevation and separated by a small hill. The footpath meanders through the wooded area with significant elevation changes, making accessibility challenging. This peninsula is also more affected by invasive species, and the overall vegetation quality is rated as poor to fair. Recommendations include improvements to managing invasive species and enhancing the vegetation to improve the ecological health of this area.



Figure 7. Less visible footpaths at the northern peninsula.



Figure 8. View of Mystic Dam

West Medford Segment of the Mystic Shoreline Revitalization Plan

The proximity of residential neighborhoods and quiet streets gives the linear parkland an intimate and relaxing atmosphere. Comprising open lawns and a mature tree canopy, the park sits at a relatively low elevation, only a few feet above the water level, while footpaths follow the steep riverbank. Mature oak trees dominate the landscape, particularly along the western edge, where tree groves naturally frame multiple open lawn areas.

Several streets intersect the park at higher elevations, creating a sloped transition zone between the roadway and parkland. The footpath traversing this slope may exceed accessibility standards outlined in the Federal Standards for Trails Accessibility Guidelines (FSTAG). Recommendations include improvements to accessibility, and alternative routes connecting street intersections to the riverwalk. Additionally, footpaths also appear along the western edge of adjacent streets to the east. The existing footpaths vary in width from 3 to 8 feet and consist of diverse ground conditions, including dirt, gravel, and exposed tree roots.

Uncontrolled foot traffic has led to soil compaction, increased runoff, erosion, and inhibited vegetation regrowth. Recommendations include establishing a well-designed, accessible trail network with clear directional, and informational signage to enhance the visitor experience by guiding users along safe paths while reducing environmental impact.

The adjacent roadway lacks curbs, with granite blocks placed instead to deter vehicle access. However, this does not effectively control nor direct stormwater runoff from leaving the road therefore it sheet flows onto the adjacent park and over the banks into the lake. Recommendations include implementing green infrastructure solutions, such as permeable paving, bioswales, or rain gardens when designing and implementing a paved walkway along the street to help filter sediments and pollutants and manage and mitigate stormwater.

Severe erosion is also evident at the bridge embankment due to the steep slope and lack of stabilizing vegetation. Additionally, occasional erosion spots along the shoreline are likely caused by frequent human activity at scenic viewpoints. Recommendations include designing and implementing designated overlooks in these areas to support recreational activities while simultaneously stabilizing the shoreline—balancing user enjoyment with environmental preservation.



Figure 9. Footpath along river bank



Figure 10. Open lawn under tree grove

West Medford Segment Area 1: Peninsula between Pine Ridge Road and High Street

This large peninsula is a popular destination for passive recreation, largely due to its proximity to nearby residential neighborhoods. It features two well-used footpaths: one follows the Mystic River shoreline, while the other runs parallel to Mystic Valley Parkway, connecting to High Street. A third, intermediate path meanders through open lawns and wooded areas, with all three converging at the northern end of the peninsula. Additionally, an elevated path atop a utility bank extends east-west from Lakeview Avenue to the shoreline, providing a scenic lookout with sweeping views of Lower Mystic Lake to the right and the Mystic River to the left.

However, uncontrolled foot traffic has led to soil compaction, increased runoff, and erosion, impacting both the landscape and ecological health of the area. Recommendations include establishing a well-designed trail network with clear directional and informational signage to enhance the visitor experience by guiding them along safe, sustainable paths while minimizing environmental degradation.

The east-west utility path effectively divides the peninsula into two distinct landscape areas: a sunny open lawn and a shaded wooded section characterized by Mesic Hardwood Forest and diverse understory vegetation. Fallen tree trunks scattered throughout the forest create natural features that add visual and ecological interest. The western tip of the peninsula, with its ample tree canopy and open understory, provides an inviting setting for picnics and family

gatherings. Additionally, the gently sloping shoreline in this area offers potential for safe water access. The open lawn remains a well-used space, supporting a variety of activities, including family outings, outdoor play for young children from nearby daycares, and individual recreation.



Figure 11. Open area under tree grove for family activities

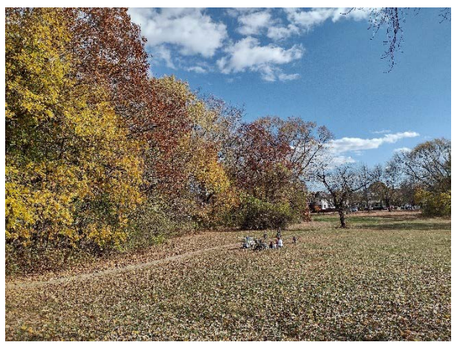


Figure 12. Open lawn to the south

West Medford Segment Area 2: Between High Street and Hawthorn Street

This area serves as a transition between a busy commercial district and a quieter residential neighborhood. The landscape is defined by mature deciduous tree groves and open lawns, creating a natural buffer from the street. Recommendations include enhancing outdoor activities, strategically placed seating along designated trails and at the edges of open lawns. When designing the trail, care should be taken to minimize impacts on the root zones of existing trees while preserving the scenic character of the current footpath.



Figure 13. A sloped transition zone between the roadway and parkland. The footpath traversing this slope may exceed accessibility standards

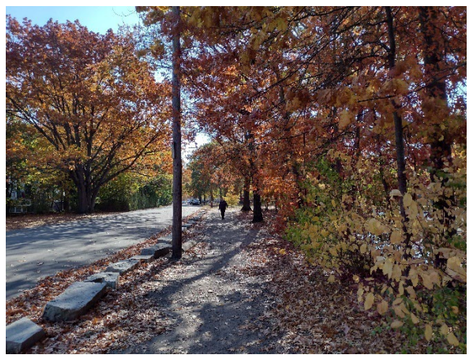


Figure 14. Granite blocks placed along roadway edge to deter vehicle access.

West Medford Segment Area 3: Between Hawthorn Street and Harvard Avenue

Nestled between residential neighborhoods and the Mystic River, this area has the character of a neighborhood park. It features a playground, tennis courts, an open lawn, and basketball courts with bleachers. Street parking is available along the one-way Mystic River Road.

Similar to West Medford Segment Area 2, the shoreline experiences occasional erosion, and the footpath has uneven surfaces. A wider planting buffer with overgrown vegetation and a deteriorating chain-link fence separates the tennis courts from the river, partially obstructing views. Recommendations to enhance the visitor experience and maintain the trail character including removing invasive species and fence with a more open design or natural screening, allowing for continuous river views along the pathway.



Figure 15. Tree roots and erosion on the footpath



Figure 16. Wooded area between tennis courts and Mystic River

West Medford Segment Area 4: Between Harvard Avenue and 46 Mystic River Road

This area shares a similar landscape character with Area 6, featuring an oak tree grove and a large open space. However, the footpath along the river is less distinct, with numerous shallow tree roots exposed on the surface.

In front of 46 Mystic River Road, the space narrows significantly, and severe erosion is present due to concentrated stormwater runoff and a lack of vegetative cover. Unlike other sections, this portion of Mystic River Road is two-way, with no street parking allowed. Recommendations given the level terrain, include considerations for a small parking lot, incorporating green infrastructure to help mitigate erosion and manage stormwater runoff effectively.



Figure 17. Severe erosion in front of 46 Mystic River Road due to concentrated stormwater runoff.



Figure 18. The level area could be considered for a small parking lot.

West Medford Segment Area 5: Between 46 Mystic River Road and Sharon Avenue

Located at the end of two dead-end streets, this area features a large wooded buffer between the open space and nearby residences. The river takes a sharp turn here, and a slightly elevated open space at the corner provides a scenic overlook with expansive views, including a sightline to the stone arch bridge across the river. Adding seating elements in this area would enhance the visitor experience, allowing people to relax and take in the scenery.

With no direct roadway access, this area offers a safe and quiet environment, particularly for young children. To improve accessibility and usability, recommendations include removal of the overgrown invasive species in the wooded area, expanding the available open space for public enjoyment.



Figure 19. Open lawn at the end of dead-end street.

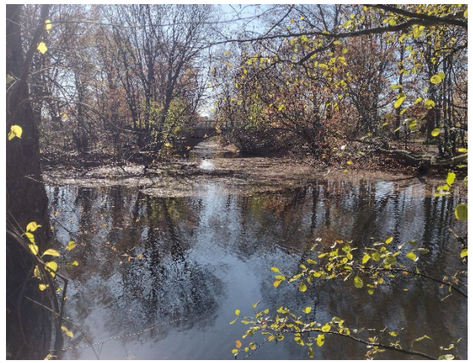


Figure 20. Stone arch bridge across Mystic River.



Figure 21. footpath between residential backyard fence and Mystic River



Figure 22. End of the footpath at the Boston Avenue

West Medford Segment Area 6: Between Sharon Avenue and Boston Avenue

This final stretch of parkland is narrow and heavily shaded. The footpath is constrained between residential backyard fences and a shoreline lined with invasive Norway maples, ending at the elevated Boston Avenue. The path surface is uneven due to exposed tree roots, making navigation challenging.

A significant presence of invasive species further complicates maintenance, and effective management would likely require cooperation from adjacent property owners. Given the limited space and accessibility challenges, this area has lower value for outdoor recreation and is a lower priority for future development.

APPENDIX B

RESOURCE AREA DELINEATION REPORT

Mystic Lakes Path Improvement Project
Resource Area Delineation Report

Mystic Valley Parkway, Medford, MA 02155

TO: Robert Uhlig, Vice President; Iris Lin, Senior Landscape Architect

FROM: Lucas Fromm, Environmental Scientist; Amanda Houle, PWS, CERP, Principal Environmental Scientist

DATE: ~~February 5, 2024~~ Revision Date: February 4, 2025

This memorandum has been revised to incorporate information gathered from additional wetland resource investigations conducted between October 31 and November 19, 2024. This updated memorandum includes additional information pertaining to wetland resources associated with Upper and Lower Mystic Lakes, and the Mystic River.

On December 8 and 15, 2023, Tighe & Bond conducted a wetland resource area investigation along the route of the proposed Mystic River Bikeway located off Mystic Valley Parkway in Medford, Massachusetts. Between October 31 and November 19, 2024, Tighe & Bond revisited the site to conduct additional wetland resource investigations along the shoreline of Upper and Lower Mystic Lake and extended the delineation southward along the shoreline of the Mystic River to the Boston Avenue Bridge over the Mystic River. This report summarizes the findings of the investigations, and a photographic log and FEMA Flood Hazard Mapping panels are also enclosed.

Methods

Wetlands were delineated in accordance with the procedures outlined in the Massachusetts Department of Environmental Protection (MassDEP) guidelines (September 2022) and 310 CMR 10.00, as well as the *U.S. Army Corps of Engineers Wetlands Delineation Manual*, Technical Report Y-87-1 (January 1987), the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region* (January 2012), and the Town of Medford Wetlands Protection Bylaw and implementing regulations. Locations of wetland boundaries were GPS surveyed using ArcGIS Field Maps paired with a sub-meter Trimble R1 GNSS Receiver.

Resource Area Descriptions

Six wetland resource areas were delineated within the boundaries of the investigation area: an inland Bank to the Aberjona River (Wetland Flag Series 1A-1 ➔ 1A-22, 1B-1 ➔1B-5), an inland Bank to the Mystic River (Wetland Flag Series 2A-1 ➔ 2A-28, 5A-1 ➔ 5A-81), an inland Bank to Upper Mystic Lake (Wetland Flag Series 3A-1 ➔ 3A-5, 3B-1 ➔ 3B-98, 3C-1 ➔ 3C-55), an inland Bank to Lower Mystic Lake (Wetland Flag Series 4A-1 ➔ 4A-55), a Bordering Vegetated Wetland (BVW; Wetland Flag Series 4B-1 ➔ 4B-2) associated with Lower Mystic Lake, and a BVW associated with Upper Mystic Lake (Wetland Flag Series 3D-1 ➔ 3D-25). Additionally, four areas regulated as Land Under Water Bodies and Waterways (LUWW) were identified and are associated with the delineated resources: Aberjona River, Mystic River, Upper Mystic Lake, and Lower Mystic Lake. The 200-foot Riverfront Area to the Mystic and Aberjona Rivers and Bordering Land Subject to Flooding (BLSF) also occur within the investigation area.

These areas are all subject to jurisdiction under the Massachusetts Wetlands Project Act ("WPA"; 310 CMR 100) and Town of Medford General Wetlands Protect Bylaw ("Bylaw"). Inland Bank and BVW are also afforded a jurisdictional 100-foot Buffer Zone under the WPA

and local bylaw. The Bylaw also affords all wetland resource areas, exclusive of the 100-foot Buffer Zone, a 25-foot no work zone.

Inland Bank/Mean Annual High Water

Four inland Bank were identified within the investigation area and are described in more detail below. Inland Bank is regulated under 310 CMR 10.54(2) as:

> (a) *a portion of the land surface which normally abuts and confines a water body. It occurs between a water body and a vegetated bordering wetland or adjacent flood plain, or in the absence of these, it occurs between a water body and an upland. A Bank may be partially or totally vegetated, or it may be comprised of exposed soil, gravel, or stone.*
> (c) *The upper boundary of a Bank is the first observable break in the slope or the mean annual flood level, whichever is* ***lower*** (emphasis added). *The lower boundary of a Bank is the mean annual low flow level.*

As per the Town Bylaw (Rules and Regulations of the Medway Conservation Commission, §19.02), inland Bank is defined as:

> *A bank is the portion of the land surface which normally abuts and confines a water body. It occurs between a water body and a vegetated bordering wetland and adjacent flood plain, or, in the absence of these, it occurs between a water body and an upland. A bank may be partially or totally vegetated, or it may be comprised of exposed soil, gravel or stone.*
>
> *The upper boundary of a bank is the first observable break in the slope or the mean annual flood level, whichever is* ***higher****, (*emphasis added*) and it may be outside the line of the bordering vegetated wetlands. The lower boundary of a bank is the mean annual low flow level.*

Bank to Aberjona River (Wetland Flag Series 1A/1B)

Wetland Flag Series 1A demarcates the limits of the inland Bank to the Aberjona River. The Bank's lateral limits coincide with the river's mean annual high water (MAHW) level, which remains relatively constant due to a dam on the southern end of Upper Mystic Lake. The Bank ranges from six inches to three feet in height and is nearly vertical for its length. The bank is composed primarily of concrete retaining walls, with some sandy loam with significant gravel inclusions present along unaltered portions of the Bank. Vegetation identified on the Bank included, but was not limited to, poison ivy (*Toxicodendron radicans*, FAC), oriental bittersweet (*Celastrus orbiculatus*, UPL), red oak (*Quercus rubra*, FACU), and red maple (*Acer rubrum*, FAC).

Bank to Mystic River (Wetland Flag Series 2A/5A)

Wetland Flag Series 2A demarcates the limits of the inland Bank and MAHW to the Mystic River which flows out of Lower Mystic Lake to the High Street Bridge. Flag Series 5A demarcates the limits of the inland Bank and MAHW to the Mystic River between the High Street Bridge and the Boston Avenue Bridge. The Bank consists of steep slopes comprised of sandy loam with significant gravel inclusions for most of its length. Banks were vertical to nearly vertical, ranging from two feet to six feet in height. Observed vegetation on the Banks included, but was not limited to, red oak, poison ivy, multiflora rose (*Rosa multiflora,* FACU), common buckthorn (*Rhamnus cathartica*, FAC), Japanese barberry (*Berberis thunbergii,* FACU), burning bush (*Euonymous alatus,* NC), Japanese knotweed (*Fallopia japonica,* FACU), European fringe tree (*Euonymous europeaus,* NC), Norway maple (*Acer platanoides*), European alder (*Alnus glutinosa,* FACW), black walnut (*Juglans nigra,* FACU), pin oak

(*Quercus palustris,* FACW), black cherry (*Prunus serotina,* FACU), and silver maple (*Acer saccharinum,* FACW).

Bank to Upper Mystic Lake (Wetland Flag Series 3A/3B/3C)

Wetland Flag Series 3A, 3B, and 3C demarcate the limits of the inland Bank to Upper Mystic Lake. The Bank's lateral limits coincide with the lake's mean annual flood level, which remains relatively constant due to the presence of the Mystic Lakes Dam on the south end of the lake. The Bank ranges from a sandy beach relatively level to the lake level to three feet in height and is nearly vertical for most of its length and is composed primarily of sandy soils with significant gravel inclusions. The northern terminus of the flag series coincides with the mouth of the Aberjona River, while the southern edge of the flag series coincides with a peninsula that leads to the Mystic Lakes Dam. This dam serves as the defining feature separating the Upper and Lower Mystic Lakes. Vegetation observed on the Bank included, but was not limited to, red oak, European alder, red maple, Japanese knotweed, white pine (*Pinus strobus,* FACU), five-leaved false indigo bush (*Amorpha fruticosa,* FACW), glossy buckthorn (*Frangula alnus*, FAC), speckled alder (*Alnus incana,* FACW), highbush blueberry (*Vaccinium corymbosum*, FACW).

Bank to Lower Mystic Lake (Wetland Flag Series 4A)

Wetland Flag Series 4A demarcates the limits of the inland Bank to Lower Mystic Lake. The Bank's lateral limits coincide with the lake's mean annual flood level, which remains relatively constant due to the presence of the Mystic Lakes Dam on the northern end of the lake. The Bank ranges from six inches to three feet in height and is nearly vertical for its length and is composed primarily and sandy soils with significant gravel inclusions. At its southern end, the lake outlet functions as the source of the Mystic River. Vegetation observed on the Bank included, but was not limited to, common greenbrier (*Smilax rotundifolia,* FAC), white pine, red oak, speckled alder, European alder, highbush blueberry, oriental bittersweet, Norway maple, five-leaved false indigo bush, Japanese knotweed, and red maple.

Bordering Vegetated Wetland

BVW is regulated under 310 CMR 10.55(2) as:

> *(a) BVW are freshwater wetlands which border on creeks, rivers, streams, ponds and lakes… Bordering Vegetated Wetlands are areas where the soils are saturated and/or inundated such that they support a predominance of wetland indicator plants…*

Additionally, the Town Bylaw (Rules and Regulations of the Medway Conservation Commission, §20.02) defines BVW as:

> *Freshwater wetlands are vegetated wetlands… They are areas where the topography is low and flat, and where the soils are annually saturated…The boundary of vegetated wetland is the line within which 50 percent or more of the vegetational community consists of the wetland plant species.*

BVW to Lower Mystic Lake

Wetland Flag Series 4B demarcates the limits of a BVW to Lower Mystic Lake. The wetland is a Palustrine Scrub-Shrub (PSS) / Palustrine Forested (PFO) wetland on the fringe of Lower Mystic Lake, bound by forested uplands to the south side.

Hydrologic indicators observed included geomorphic position (D2) and microtopographic relief (D4). Soils were determined to be hydric, and met the criteria for the Sandy Mucky Mineral (S1) hydric soil indicator. Commonly identified vegetation included, but was not limited to,

highbush blueberry and red maple. While tree canopies overhung the wetland, the red maple trees were rooted primarily outside of the wetland.

BVW to Upper Mystic Lake

Wetland Flag Series 3D demarcates a BVW to Upper Mystic Lake. This wetland is characterized as a Palustrine Unconsolidated Mud Bottom Seasonally Flooded (PUB3C) wetland bordered by PSS/PFO vegetation. This BVW is separated from Upper Mystic Lake by an approximately 50-foot-long drainageway. The BVW is perched approximately two feet above the elevation of Upper Mystic Lake. Observed hydric indicators included inundation visible on Aerial Imagery (B7), Sparsely Vegetated Concave Surface (B8), Surface Soil Cracks (B6), and Geomorphic Position (D2). Soils were determined to be hydric and met the criteria for the Sandy Mucky Mineral (S1) hydric soil indicator. Commonly identified vegetation included silver maple, northern arrowwood (*Viburnum dentatum,* FAC), yellow flag iris (*Iris pseudacorus,* OBL), and common buttonbush (*Cephalanthus occidentalis,* OBL). A common snapping turtle (*Chelydra serpentina*) was observed within the drainageway during the delineation.

Land under Water Bodies and Waterways

LUWW is regulated under 310 CMR 10.56(2) and the Town Bylaw (Rules and Regulations of the Medway Conservation Commission, §21.02) as:

> *(a) …the land beneath any creek, river, stream, pond, or lake. Said land may be composed of organic muck or peat, fine sediments, rocks, or bedrock.*
> *(c) The boundary of Land Under Water Bodies and Waterways is the mean annual low water level.*

Aberjona River

LUWW associated with the Aberjona River was observed to have an unconsolidated bottom with little aquatic vegetation growth. Water visibility was approximately 12 inches, with a brown tint to the water and little suspended sediment observed. Water levels within the Aberjona River were observed to be relatively constant due to the impoundment on Upper Mystic Lake.

Mystic River

LUWW associated with the Mystic River was observed to have an unconsolidated bottom with interspersed cobbles and boulders along the river shallows. Water visibility was to a depth of approximately 12 inches, with a brown tint to the water and little suspended sediment observed. Fauna or faunal activity observed included Canadian geese *(Branta canadensis)* present in the water and on the nearby shore. Water levels within the Mystic River were observed to be relatively constant due to the impoundment on Upper Mystic Lake.

Upper Mystic Lake

LUWW associated with the Upper Mystic Lake was observed to have an unconsolidated bottom with no aquatic vegetation within the investigation area. Water visibility was to a depth of approximately 12 inches, with a brown tint to the water and little suspended sediment observed. Fauna or faunal activity observed included Canadian geese and mute swans (*Cygnus olor*) present in the water and on the nearby shore. Water levels were observed to be relatively constant due to the impoundment on the southern end of the Lake.

Lower Mystic Lake

LUWW associated with the Lower Mystic Lake was observed to have an unconsolidated bottom with no aquatic vegetation within the investigation area. Water visibility was to a depth of approximately 12 inches, with a brown tint to the water and little suspended sediment

observed. Water levels within Lower Mystic Lake were observed to be relatively constant due to the impoundment on the northern end of the lake.

Land Subject to Flooding

As regulated under 310 CMR 10.57(2), Bordering Land Subject to Flooding is defined as:

> *(1) an area with low, flat topography adjacent to and inundated by flood waters rising from creeks, rivers, streams, ponds, or lakes. It extends from the banks of these waterways and waterbodies; where a bordering vegetated wetland occurs, it extends from said wetland.*

Additionally, the Town Bylaw (Rules and Regulations of the Medway Conservation Commission, §22.02) defines BLSF as:

> *…an area which floods from a rise in a bordering waterway or water body. Such areas are likely to be significant to flood control and storm damage prevention.*

Both 310 CMR 10.57 and the Town Bylaw define the bordering of BLSF as:

> *The boundary of bordering land subject to flooding is the estimated maximum lateral extent of flood water which will theoretically result from the statistical 100-year frequency storm. Said boundary shall be that determined by reference to the most recently available flood profile data prepared for the community within which the work is proposed under the National Flood Insurance Program (NFIP, currently administered by the Federal Emergency Management agency, successor to the U.S. Department of Housing and Urban Development). Said boundary, so determined, shall be presumed accurate. This presumption may be overcome only by credible evidence from a registered professional engineer or other professional competent in such matters. Where NFIP Profile data is unavailable, the boundary of bordering land subject to flooding shall be the maximum lateral extent of flood water which has been observed or recorded.*

The Federal Emergency Management Agency (FEMA) flood hazard mapping (Panel Nos. 25017C0409E and 25017C0417E, effective June 4, 2010) was consulted to evaluate the presence of jurisdictional Land Subject to Flooding within the Project Area. The area contains 100-year floodplains along the Aberjona and Mystic Rivers as well as along sections of Upper and Lower Mystic Lakes. Therefore, BLSF is present within the investigation area. All BLSF was designated Zone AE with base flood elevation ranging from 14 feet at the mouth of the Aberjona River to 13 feet at the top of the Mystic Lakes Dam. Below the Mystic Lake Dam, base flood elevation was recorded at 7 feet.

Riverfront Area (RFA)

The Aberjona and Mystic Rivers are depicted as perennial streams on the USGS topographic quadrangles for the investigation area. Therefore, these rivers are afforded a 200-foot Riverfront Area that extends laterally from the MAHW lines of these rivers, in accordance with 310 CMR 10.58.

Riverfront Area associated with the Aberjona River to the north of the stream (right bank) was comprised of a parking area for the MBTA Wedgemere Commuter Rail, the Mystic Valley Parkway, and suburban residential housing. RFA to the south of the stream (left bank) consisted of an undeveloped wooded area and the MBTA railway.

Riverfront Area associated with the Mystic River to both the west and east of the stream (right and left bank, respectively) consisted of a forested bank, grassy, undeveloped open space,

and the Mystic Valley Parkway. The Mystic River Path is also located within RFA to the east of the Mystic River.

Rare Species

The Massachusetts Natural Heritage and Endangered Species Program (NHESP) Atlas (15th edition, effective August 2021) was reviewed during the preparation of this memorandum. The project was determined to be outside of both *Estimated Habitats of Rare Wildlife* and *Priority Habitats of Rare Species*.

Conclusions

Within the Project Area, the following wetland resources areas were identified: four inland Bank, two Bordering Vegetated Wetlands, four Land under Water Bodies and Waterways, Bordering Land Subject to Flooding associated with the two lakes and the two rivers, and Riverfront Area to the Aberjona and Mystic Rivers. These areas are regulated under the Massachusetts Wetlands Protection Act (MAWPA) and the Town of Medford Wetland Bylaw. Any impacts within 100 feet of inland Bank and BVW (i.e., MAWPA "Buffer Zone") and/or within 200 feet of the Aberjona and Mystic Rivers may require authorization from the Medford Conservation Commission. Additionally, the Town Bylaw establishes a 25-foot no work zone around all wetland resource areas, exclusive of the 100-foot buffer zone.

Work within the BVW, lakes, and perennial streams may also be subject to other state and federal regulations.

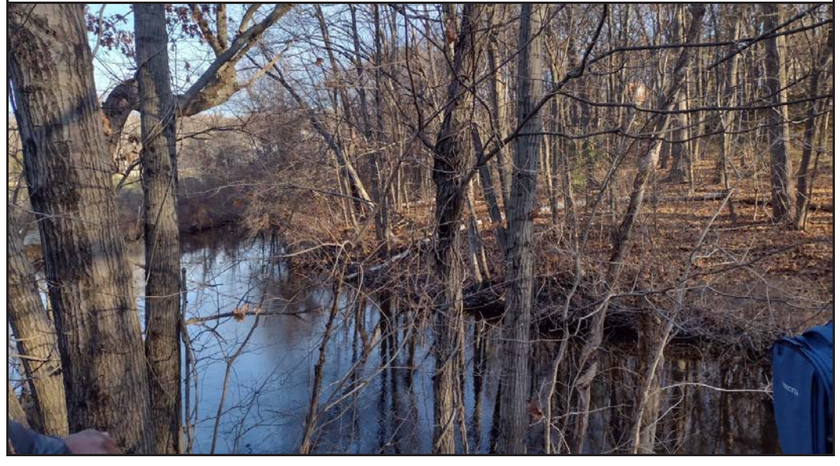
Photographic Log

Tighe&Bond

Client: Mystic River Watershed Association **Job Number:** M5073-004

Site: Mystic Lakes Parkway, Medford, MA

Photograph No.: 1	**Date:** 12/15/2023	**Direction Taken:** Northwest
Description: View of the inland Bank of the Aberjona River, as taken from the Mystic Valley Parkway.		



Photograph No.: 2	**Date:** 11/01/2024	**Direction Taken:** West
Description: View of the inland Bank to Upper Mystic Lake.		



Photographic Log

Tighe&Bond

Client: Mystic River Watershed Association **Job Number:** M5073-004

Site: Mystic Lakes Parkway, Medford, MA

Photograph No.: 3	**Date:** 10/31/2024	**Direction Taken:** South
Description: Overview of the BVW adjacent to Upper Mystic Lake.		



Photograph No.: 4	**Date:** 12/15/2023	**Direction Taken:** West
Description: View of the BVW adjacent to Lower Mystic Lake.		



Photographic Log

Tighe&Bond

Client: Mystic River Watershed Association **Job Number:** M5073-004

Site: Mystic Lakes Parkway, Medford, MA

Photograph No.: 5	**Date:** 12/15/2023	**Direction Taken:** North
Description: View of the inland Bank to Lower Mystic Lake.		



Photograph No.: 6	**Date:** 12/15/2023	**Direction Taken:** North
Description: Overview of the inland Bank to Lower Mystic Lake.		



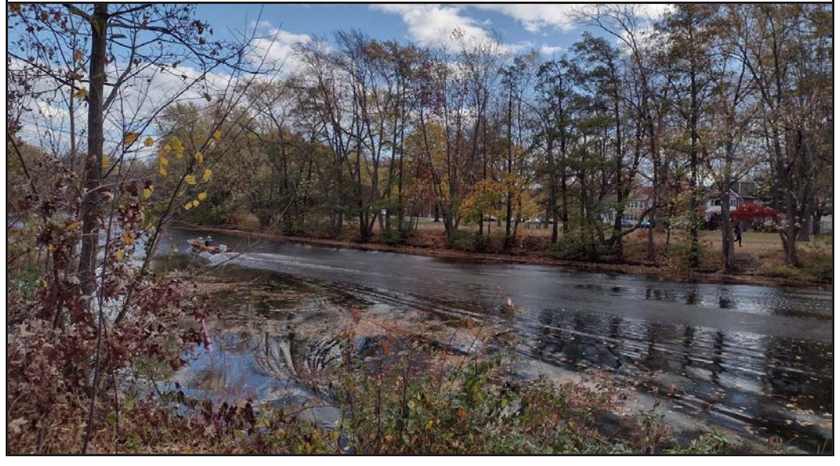
Photographic Log

Tighe&Bond

Client: Mystic River Watershed Association **Job Number:** M5073-004

Site: Mystic Lakes Parkway, Medford, MA

Photograph No.: 7	**Date:** 11/07/2024	**Direction Taken:** Southwest
Description: View of the Mystic River.		



Photograph No.: 8	**Date:** 10/31/2024	**Direction Taken:** North
Description: View of common snapping turtle (*Chelydra serpentina*) observed within drainageway between Upper Mystic Lake and the associated BVW.		



National Flood Hazard Layer FIRMette

FEMA

71°8'50"W 42°26'49"N



Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN — Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 / 17.5 — Cross Sections with 1% Annual Chance Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

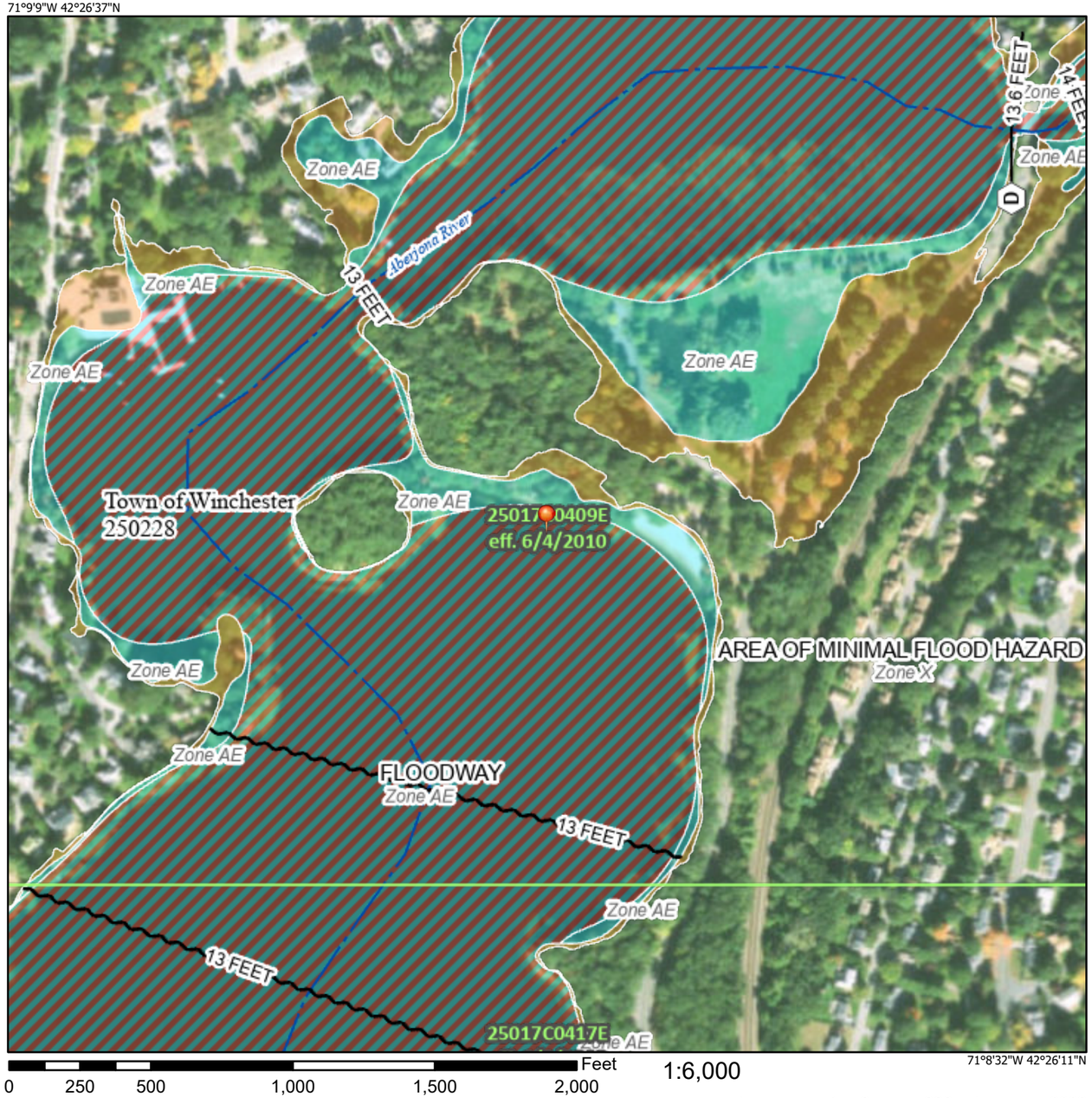
This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 1/29/2024 at 4:17 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

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National Flood Hazard Layer FIRMette

71°9'9"W 42°26'37"N



Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
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MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

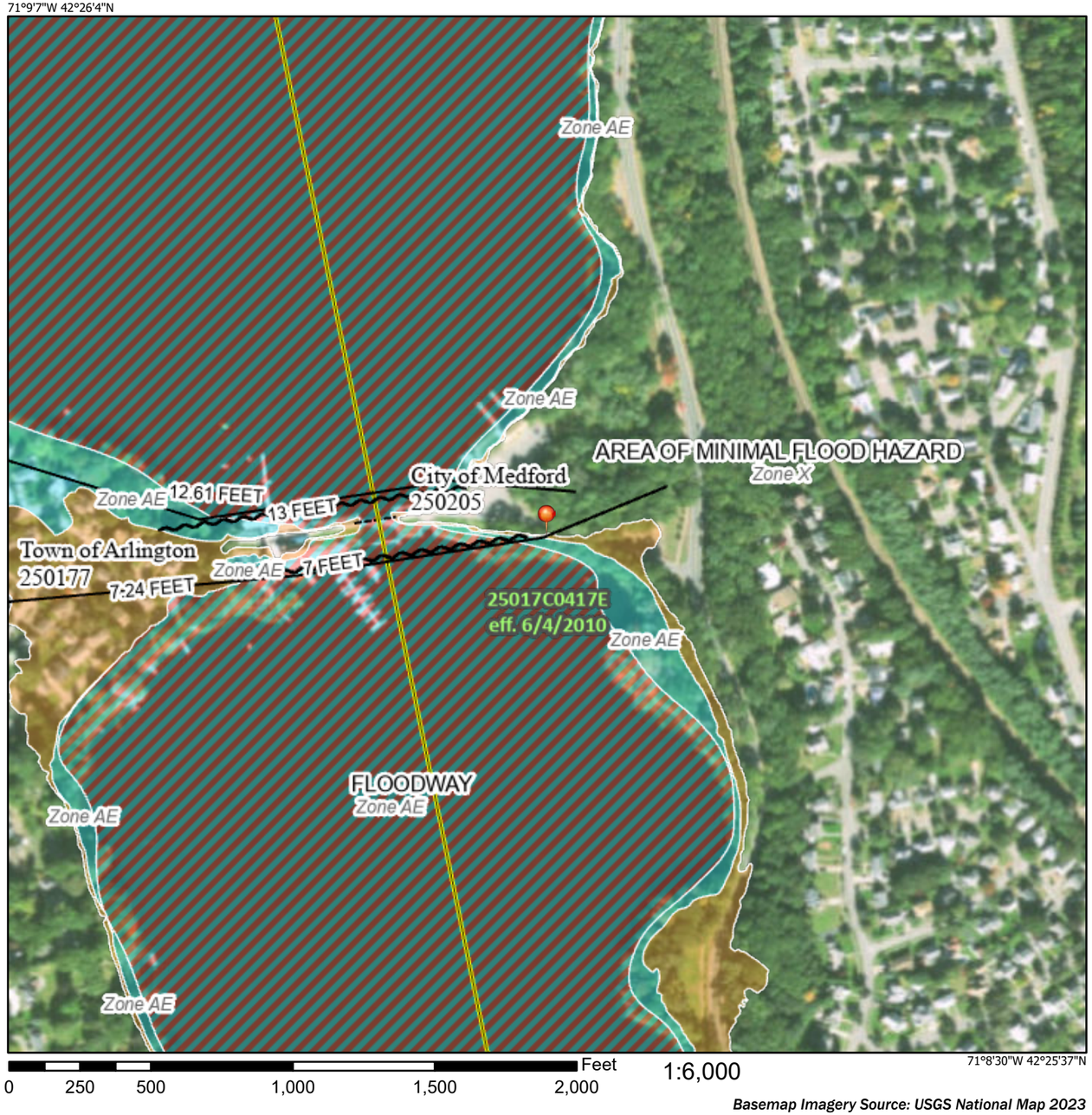
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National Flood Hazard Layer FIRMette



Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
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- Hydrographic Feature

MAP PANELS
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- Unmapped

N

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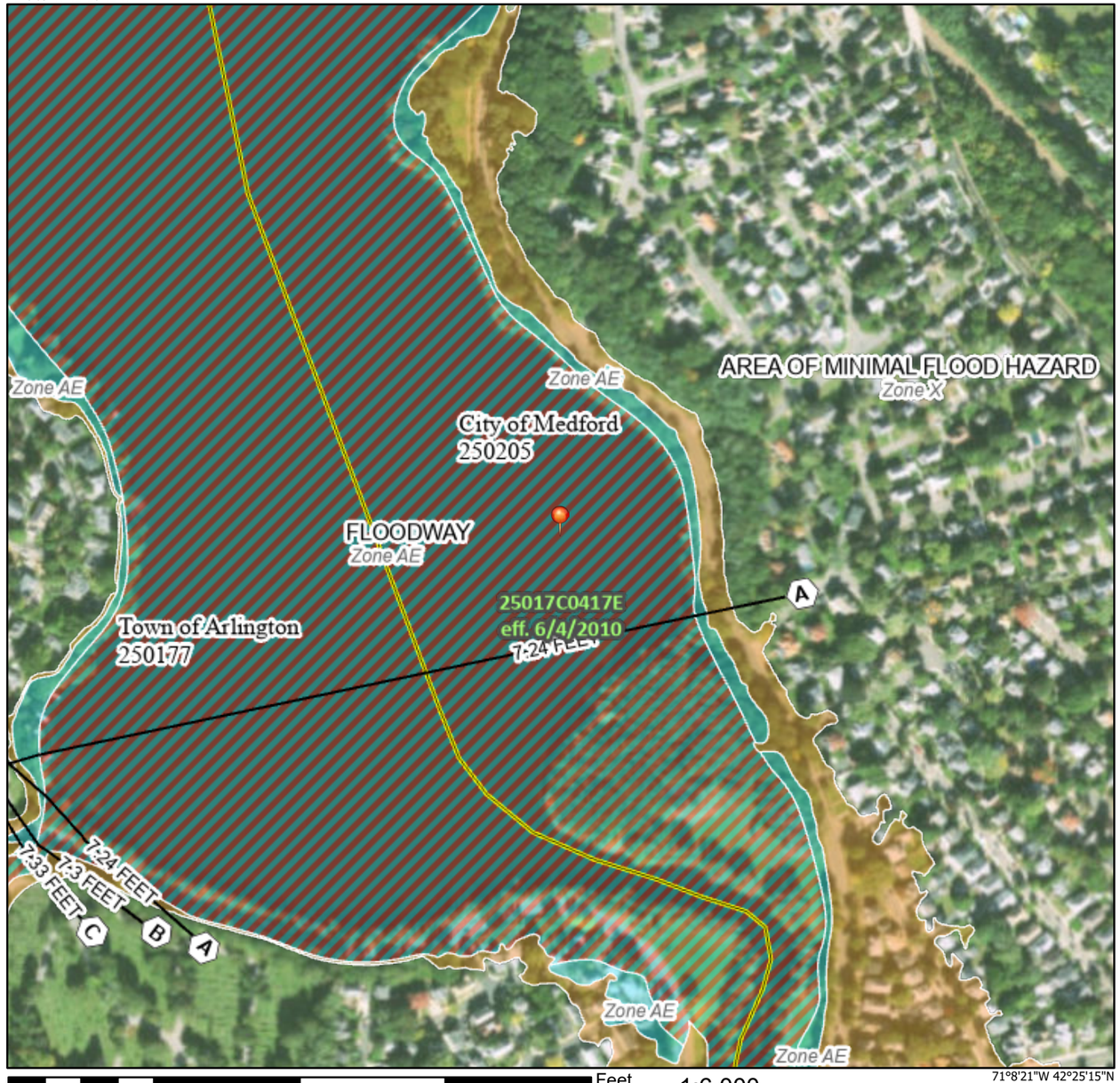
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National Flood Hazard Layer FIRMette

71°8'59"W 42°25'42"N



Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
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MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

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National Flood Hazard Layer FIRMette

FEMA

71°8'49"W 42°25'21"N



Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
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- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

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National Flood Hazard Layer FIRMette

71°8'20"W 42°25'10"N



Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
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APPENDIX C

NATURAL AREAS ASSESSMENT AND INVASIVE SPECIES SURVEY

Mystic Shoreline Revitalization Plan for West Medford and the Mystic Lakes -

Natural Areas Assessment and Invasive Species Survey

Mystic Valley Parkway, Medford, MA 02155

TO: Robert Uhlig, Vice President; Iris Lin, Senior Landscape Architect

FROM: Lucas Fromm, Environmental Scientist; Amanda Houle, PWS, CERP, Principal Environmental Scientist

DATE: January 22, 2025

Between October 31 and November 19, 2024, Tighe & Bond conducted a natural resource area survey and non-native species inventory along the route of the proposed Mystic River Bikeway located off Mystic Valley Parkway in Winchester and Medford, Massachusetts. This report summarizes our field findings. A photographic log, non-native species distribution map, and species invasiveness status list are also enclosed.

Project Area

The Project Area consists of a linear park space that is located within the communities of Winchester and Medford, Massachusetts. The Project Area is bound by Mystic Valley Parkway and Arlington Street to the east. The western limit of the Project Area is defined by Upper and Lower Mystic Lake, and the Mystic River. The northern limit of the Project Area is defined by the mouth of the Aberjona River, while the Boston Avenue Bridge over the Mystic River demarcates the Project Area's southern limit.

Methods

Plant species observed on-site were classified in accordance with *Flora Novae Angliae* dichotomous key. Plant invasiveness status was determined via classifications provided by the Massachusetts Invasive Plant Advisory Group (MIPAG) *Invasive Plant List* (https://massnrc.org/mipag/). Non-native plant species observed on-site that were not classified as invasive in the *Invasive Plant List* were also inventoried to assist in future planning and rapid response efforts. Non-native status of plants not listed on the *Invasive Plant List* was determined from the Biota of North America Program (BONAP) online database (bonap.org).

Natural community classifications were determined in accordance with *Classification of the Natural Communities of Massachusetts (*Swain, 2020)[1] to the extent practicable. However, given the disturbance history of the Mystic Lakes and significant presence of non-native species on-site, numerous portions of the Project Area did not directly correlate to any of the described natural communities. In these instances, community designation is based off species distribution, topography, and soil moisture regime observed during the invasive species survey.

[1] Swain, P. C. 2020. Classification on the Natural Communities of Massachusetts. Massachusetts Division of Fisheries and Wildlife, Westborough, MA.

TECHNICAL MEMORANDUM Tighe&Bond

Invasive Species Mapping

Invasive and non-native species present on-site were characterized in accordance with the MIPAG *Invasive Plant List*. For the purposes of this study any non-native species listed within the *Invasive Plant List* were catalogued, regardless of listed invasiveness status. Invasive species present throughout the project site were lumped into 33 distinct polygons based on site topography, geographic distribution, and species distribution. Sections of the project are where no non-native species were observed or that consisted of maintained lawn were not assigned a unique polygon. Polygon locations and associated non-native species are depicted in Figure 1. MIPAG invasiveness status of each surveyed non-native species is provided as an attachment.

Soils

According to USDA NRCS [online] Soil Survey of Middlesex County, MA (MA017), the Project Area is broadly divided into two major soil units; Hinckley loamy sand (253C) and Udorthents, wet substratum (655). Hinckley loamy sand comprised the major soil unit to the north of the Mystic Lakes Dam, while Udorthents, wet substratum was dominant to the south. A brief description of the soil series follows:

According to the NRCS Official Soil Series Descriptions, *"The Hinckley series consists of very deep, excessively drained soils formed in glaciofluvial materials. They are nearly level through very steep soils on outwash terraces, outwash plains, outwash deltas, kames, kame terraces, and eskers. Saturated hydraulic conductivity is high or very high. Slope ranges from 0 to 60 percent. Mean annual temperature is about 7 degrees C, and mean annual precipitation is about 1143 mm."*

Parent material for udorthents is described as, *"Loamy alluvium and/or sandy glaciofluvial deposits and/or loamy glaciolacustrine deposits and/or loamy marine deposits and/or loamy basal till and/or loamy lodgment till."*

Natural Communities Descriptions

The Mystic River Parkway lies within the Boston Basin Ecoregion (221Aa)[2]. This ecoregion is characterized by low, rolling topography dominated by urban and suburban development. This ecoregion has been subject to heavy historical disturbance and most natural vegetation has been removed. Patches of oak and white pine-oak forest persist on the landscape; however, nearly half of the plant species present within the ecoregion are non-native. Natural communities present along the Mystic Lakes Parkway were reflective of the broader ecoregion, with uplands dominated by White Pine-Oak and Oak-Hardwood forests with a significant population of non-natives present within the understory.

Species assemblages encountered on-site can be broadly categorized into eight natural communities. Primary factors influencing natural community distribution included topography,

[2] Cleland, D.T.; Freeouf, J.A.; Keys, J.E.; Nowacki, G.J.; Carpenter, C.A.; and McNab, W.H. 2007. Ecological Subregions: Sections and Subsections for the conterminous United States. Gen. Tech. Report WO-76D [Map on CD-ROM] (A.M. Sloan, cartographer). Washington, DC: U.S. Department of Agriculture, Forest Service, presentation scale 1:3,500,000; colored.

moisture regime, disturbance history, and geomorphic position. These eight communities are each described in more detail below.

White-Pine Oak Forest

Upland forest associated with the northern-most peninsula present within the Project Area (Map Sheets 1 and 2) is characterized as a White-Pine Oak Forest. White Pine (*Pinus strobus*) and red oak (*Quercus rubra*) dominate the overstory. Other native tree and shrub species present within the subcanopy include white birch (*Betula papyrifera),* sassafras (*Sassafras albidum*), witch-hazel (*Hamamelis virginiana*). Fringing patches of eastern hemlock (*Tsuga canadensis*), sweet pepperbush (*Clethra alnifolia*), small bayberry *(Morella caroliniensis*), and buttonbush (*Cephalanthus occidentalis*) were also observed along the forest edge. A thicket of low-bush blueberry (*Vaccinium angustifolium*) is present along the north-facing slope of the peninsula.

Non-native species observed within the White Pine-Oak Forest include Norway maple (*Acer platanoides*), European spindle tree (*Euonymous europeaus*), European alder (*Alnus* glutinosa), honeysuckle (*Lonicera spp.*), common buckthorn (*Rhamnus cathartica*), privet (*Ligustrum spp.*), oriental bittersweet (*Celastrus orbiculatus*), porcelain berry (*Ampelopsis brevipeduncula*ta) and English ivy (*Hedera helix*). Non-native species located within the White-Pine Oak forest are depicted on Polygons 9-12.

Anthropogenically-Disturbed Shoreline and Bank

The shoreline and bank of Upper and Lower Mystic Lake as well as the Mystic River comprise a continuous ecological community (Map Sheets 1-7), with similar dominant and non-native species present throughout the project site. The Mystic Lakes Dam, which separates Upper and Lower Mystic Lake, maintains a consistent water level throughout the system. The shoreline was described as Lacustrine Littoral Unconsolidated Cobble-Gravel Shore (L2US1h[3]). Shoreline and bank vegetation showed notable zonation with European alder forming the dominant canopy tree along the shoreline and red oak and pin oak (*Quercus palustris*) dominant along the upper bank.

From the Mystic Lakes Dam south, American beech (*Fagus grandifolia*) and Norway maple are also present within the forest canopy, in addition to the dominant oak species. Occurrences of silver maple (*Acer saccharinum*), black locust (*Robinia pseudoacacia*), black cherry (*Prunus serotina*), and black walnut (*Juglans nigra*) were also observed along the shoreline of the Mystic River. Polygons 1-8, 14-16, 19-22, 24-25, and 27-32 highlight the distribution of non-native species along the bank and shoreline.

Non-native species observed along the bank and shoreline include European alder, Japanese barberry (*Berberis thunbergii*), oriental bittersweet, burning bush, European spindle tree, Japanese knotweed, glossy buckthorn (*Frangula alnus*), privet, honeysuckle, common buckthorn, Japanese yew *(Taxus cuspidata*), five-leaved false indigo bush (*Amorpha fruticosa*), privet (*Ligustrum spp.)*, multiflora rose (*Rosa multiflora*), common mugwort (*Artemesia vulgaris*), autumn olive (*Elaeagnus umbellata*), honeysuckle, curly dock (*Rumex crispus*), climbing nightshade (*Solanum dulcamara*), European barberry (*Berberis vulgaris*),

[3] Federal Geographic Data Committee. 2013. Classification of wetlands and deepwater habitats of the United States. FGDC-STD-004-2013. Second Edition. Wetlands Subcommittee, Federal Geographic Data Committee and U.S. Fish and Wildlife Service, Washington, DC.

garlic mustard (*Alliaria petiolata*), common periwinkle (*Vinca minor*), Norway maple, and common tansy (*Tanacetum vulgare*).

Aquatic non-native species observed along the shoreline included yellow flag iris and purple loosestrife. These species generally occurred in small, discrete patches and were observed throughout the Project Area. Additionally, one nutlet of the invasive water chestnut (*Trapa natans*), was observed along the shoreline of Polygon 20 (Map Sheet 4).

Deep Emergent Marsh

A pocket of Deep Emergent Marsh was present along the northern shoreline of the upper peninsula adjacent to Polygon 1 (Map Sheets 1 and 2). Native vegetation observed within the Deep Emergent Marsh included, but was not limited to, cattail (*Typha spp.*). Observed non-native species observed within the Deep Emergent Marsh included purple loosestrife (*Lythrum salicaria*) and yellow flag iris.

Shallow Emergent Marsh

Polygon 13 (Map Sheet 1 and 2) encapsulates a Shallow Emergent Marsh and associated fringing bank flora. At the time of the site assessment, no water was present within the marsh. Native fringing vegetation included, but was not limited, to silver maple, smooth arrowwood (*Viburnum dentatum*), black elderberry (*Sambucus nigra*), and buttonbush. Non-native vegetation included burning bush, privet, glossy buckthorn, yellow flag iris (*Iris pseudacorus*), and oriental bittersweet. The marsh primarily received stormwater runoff from maintained grass uplands surrounding the marsh and the marsh has no defined inlet. The marsh drains northward into Upper Mystic Lake via a channelized outlet. During the site visit, a snapping turtle (*Chelydra serpentina*) was observed within the outlet.

Sumac Shrubland

Polygon 18 (Map Sheet 3) defines a wooded hill adjacent to the Mystic Lakes Dam. A grove of staghorn sumac (*Rhus typhina*) dominates the summit of the hill and is underlain by non-native garlic mustard. The southern portion of the hill appears to have been heavily excavated, and was potentially utilized as a borrow-pit during the construction of the Mystic Lakes Dam. Red oak forms the dominant canopy tree along the sloped portions of the hill, with American beech, white pine, Norway maple, and white birch also present.

Non-native species observed within the sumac shrubland and surrounding hillslope included Norway maple, garlic mustard, oriental bittersweet, five-leaved false indigo bush, Japanese barberry, European spindle tree, Japanese knotweed, glossy buckthorn, and multiflora rose.

Japanese Knotweed Thicket

Polygon 23 (Map Sheet 4) defines a homogenous grove of invasive Japanese knotweed. This grove is approximately 0.12 acres in extent and is bordered by Hardwood Forest to the west and maintained lawn to the east.

Mesic Hardwood Forest

Polygon 26 (Map Sheet 5) defines a low-lying mesic hardwood forest that abuts the outlet of Lower Mystic Lake into the Mystic River. Tree species present within mesic hardwood forest included red oak, white oak (*Quercus alba*), Norway maple, silver maple, black cherry, black locust, and American basswood (*Tillia americana*).

Non-native species observed within Polygon 26 included Norway Maple, Japanese yew, oriental bittersweet, burning bush, glossy buckthorn, English ivy, privet, common buckthorn, multiflora rose, and climbing nightshade.

Rare Species

The Massachusetts Natural Heritage and Endangered Species Program (NHESP) Atlas (15th edition, effective August 2021) was reviewed during the preparation of this memorandum. The project was determined to be outside of both *Estimated Habitats of Rare Wildlife* and *Priority Habitats of Rare Species*.

Conclusions

Natural communities observed throughout the Project Area were broadly reflective of the larger Boston Basin Ecoregion, having been subject to extensive past disturbance and exhibiting a high percentage of non-native species. Community distributions within the Mystic Lakes Project Pathway were largely driven by a combination of topography, moisture regime, disturbance history, and geomorphic position. Non-natives were present throughout the Project Area, with the greatest concentrations occurring within low-lying areas and along the banks of the Upper and Lower Mystic Lakes and Mystic River.

"J:\M\M5073 Mystic River Watershed Assoc\004 - Mystic Shoreline Natural Areas Assessment\11 Wetlands\Invasive Species and Eco Assessment"

APPENDIX C

Photographic Log

Tighe&Bond

Client: Mystic River Watershed Association **Job Number:** M5073-004

Site: Mystic Lakes Parkway, Medford, MA

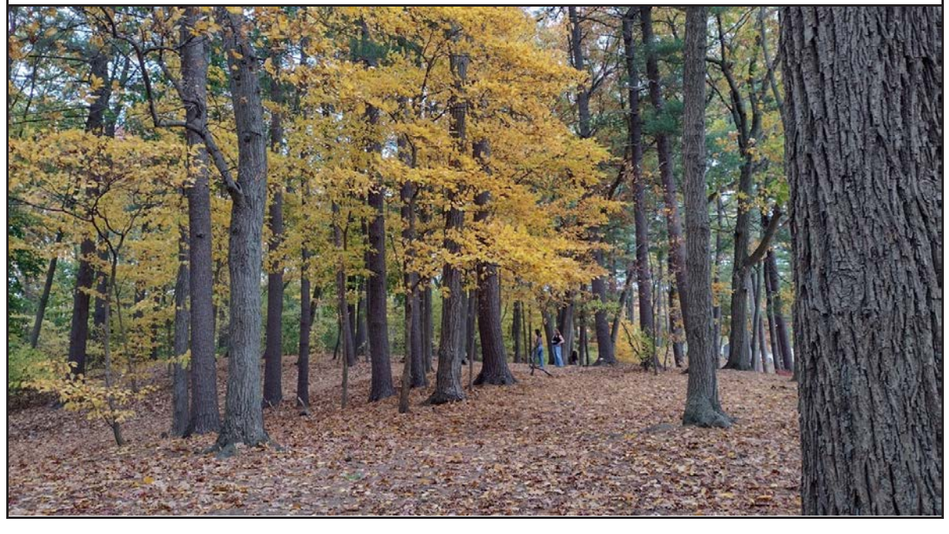
Photograph No.: 1	**Date:** 10/31/2024	**Direction Taken:** West

Description: View of northern shoreline of the upper peninsula. View from Polygon 3 (Map Sheets 1 and 2).



Photograph No.: 2	**Date:** 10/31/2024	**Direction Taken:** East

Description: View of typical vegetation present in White Pine-Oak Forest defined by Polygons 9-12 (Map Sheets 1 and 2).



Photographic Log

Tighe&Bond

Client: Mystic River Watershed Association **Job Number:** M5073-004

Site: Mystic Lakes Parkway, Medford, MA

Photograph No.: 3	**Date:** 10/31/2024	**Direction Taken:** South

Description: View of Palustrine Shrub Swamp bordering the Shallow Emergent Marsh defined by Polygon 13 (Map Sheets 1 and 2).



Photograph No.: 4	**Date:** 10/31/2024	**Direction Taken:** Southeast

Description: View of typical bank vegetation along Upper Mystic Lake. View from Polygon 8 (Map Sheets 1 and 2).



Photographic Log

Tighe&Bond

Client: Mystic River Watershed Association **Job Number:** M5073-004

Site: Mystic Lakes Parkway, Medford, MA

Photograph No.: 5	**Date:** 10/31/2024	**Direction Taken:** Northwest

Description: View of bank vegetation and typical substrate north of the Mystic Lake Dam. From Polygon 15 (Map Sheet 3).



Photograph No.: 6	**Date:** 10/31/2024	**Direction Taken:** North

Description: View of the low-lying Mesic Hardwood Forest adjacent to the source of the Mystic River. View of Polygon 26 (Map Sheet 5).



Photographic Log

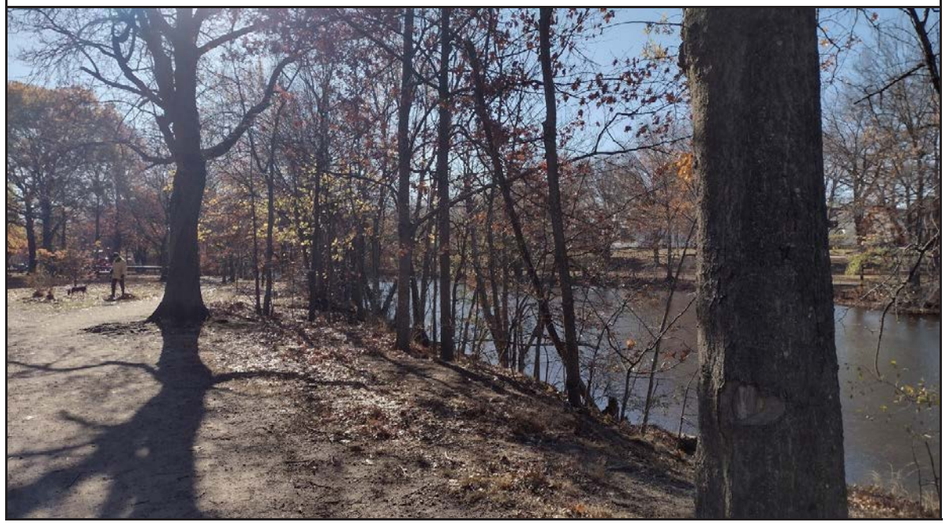
Tighe&Bond

Client: Mystic River Watershed Association **Job Number:** M5073-004

Site: Mystic Lakes Parkway, Medford, MA

Photograph No.: 7	**Date:** 10/31/2024	**Direction Taken:** South

Description: View of Palustrine Shrub Swamp vegetation typical of Wetland 1A.



Photograph No.: 8	**Date:** 10/31/2024	**Direction Taken:** South

Description: View of typical bank vegetation along the southern terminus of the Project Area at Polygon 32 (Map Sheet 7).

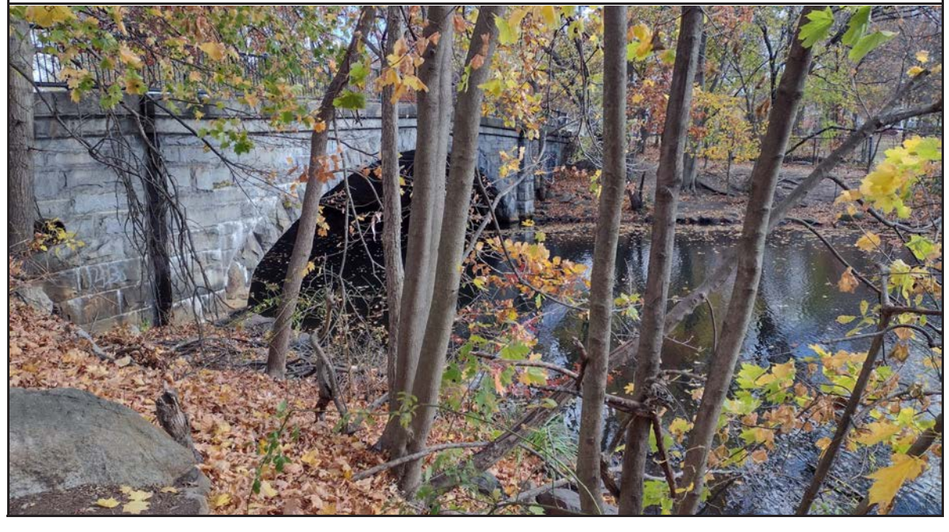
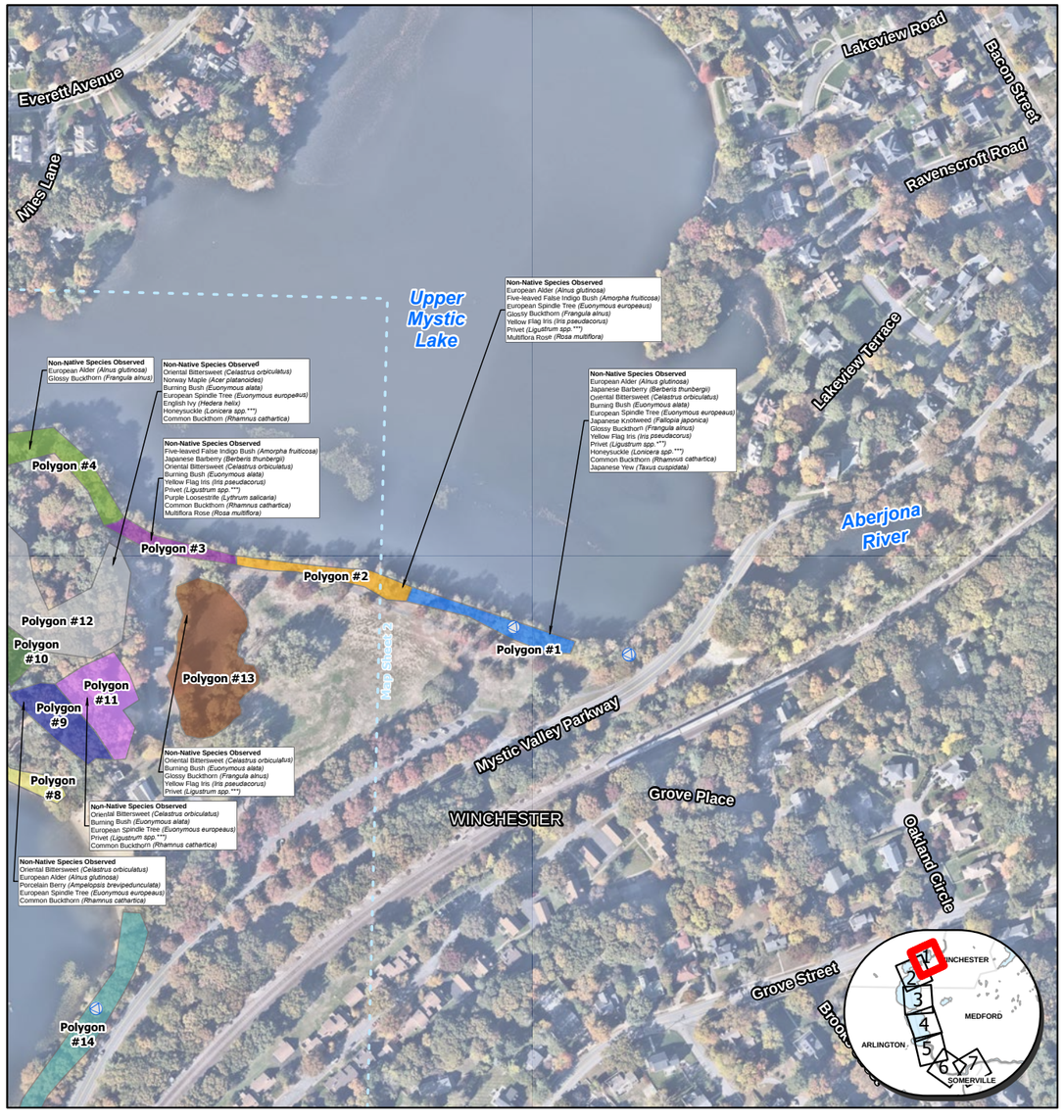


FIGURE 1
AERIAL
January 2025

Mystic River Parkway Invasive Species
Survey and Assessment
Winchester, Medford, and Somerville Massachusetts



Polygon Number

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33

Culvert
Mapsheet Matchline

Tighe&Bond

Based on latest Nearmap Imagery.
*Invasiveness Status determined based off the Massachusetts Invasive Plant Advisory Group Invasive Plant List
**Non-native status of plants not listed on the MIPAG Invasive Plant List was determined from Native Plant Trust (GoBotany) listing status
***Species level determination was not possible giving field conditions, but plant Genus is considered generally invasive in MA
****Nutlets were found on shoreline during site walk with MYRWA and MA DEM on 11/8/2024

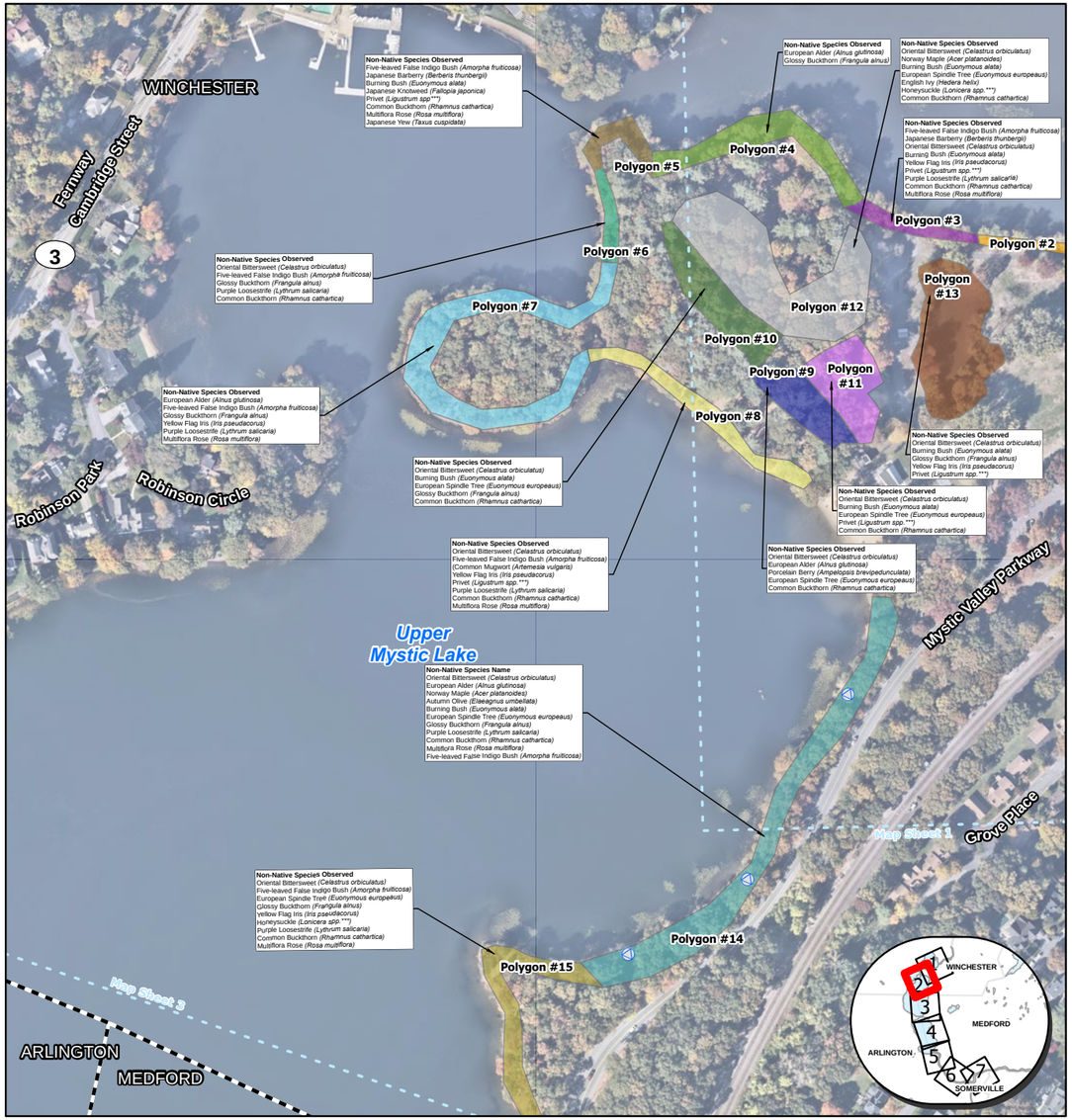
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FIGURE 1
AERIAL
January 2025

Mystic River Parkway Invasive Species
Survey and Assessment
Winchester, Medford, and Somerville Massachusetts



Polygon Number

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 Culvert Mapsheet Matchline

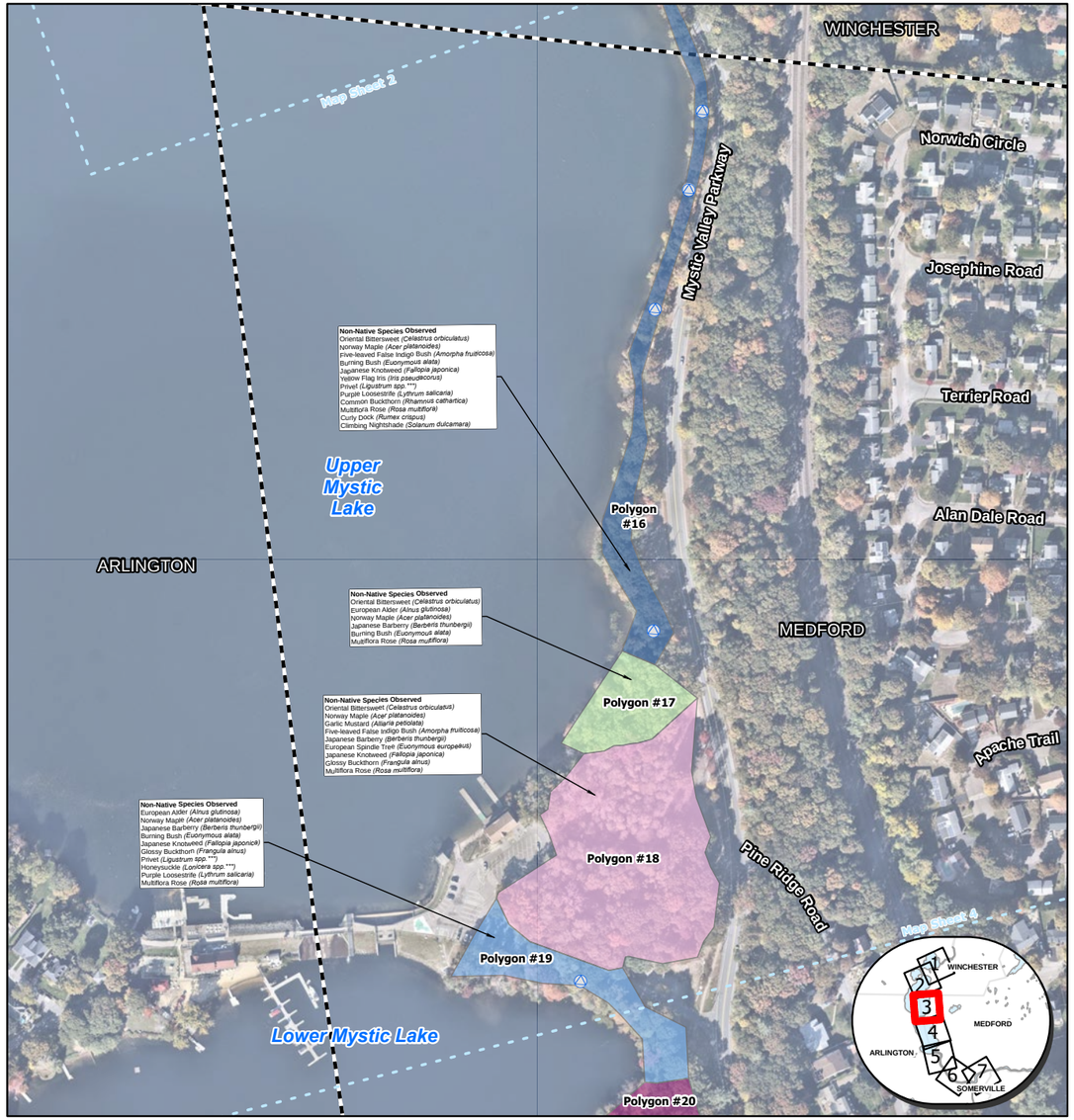
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FIGURE 1
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January 2025

Mystic River Parkway Invasive Species
Survey and Assessment
Winchester, Medford, and Somerville Massachusetts



Polygon Number

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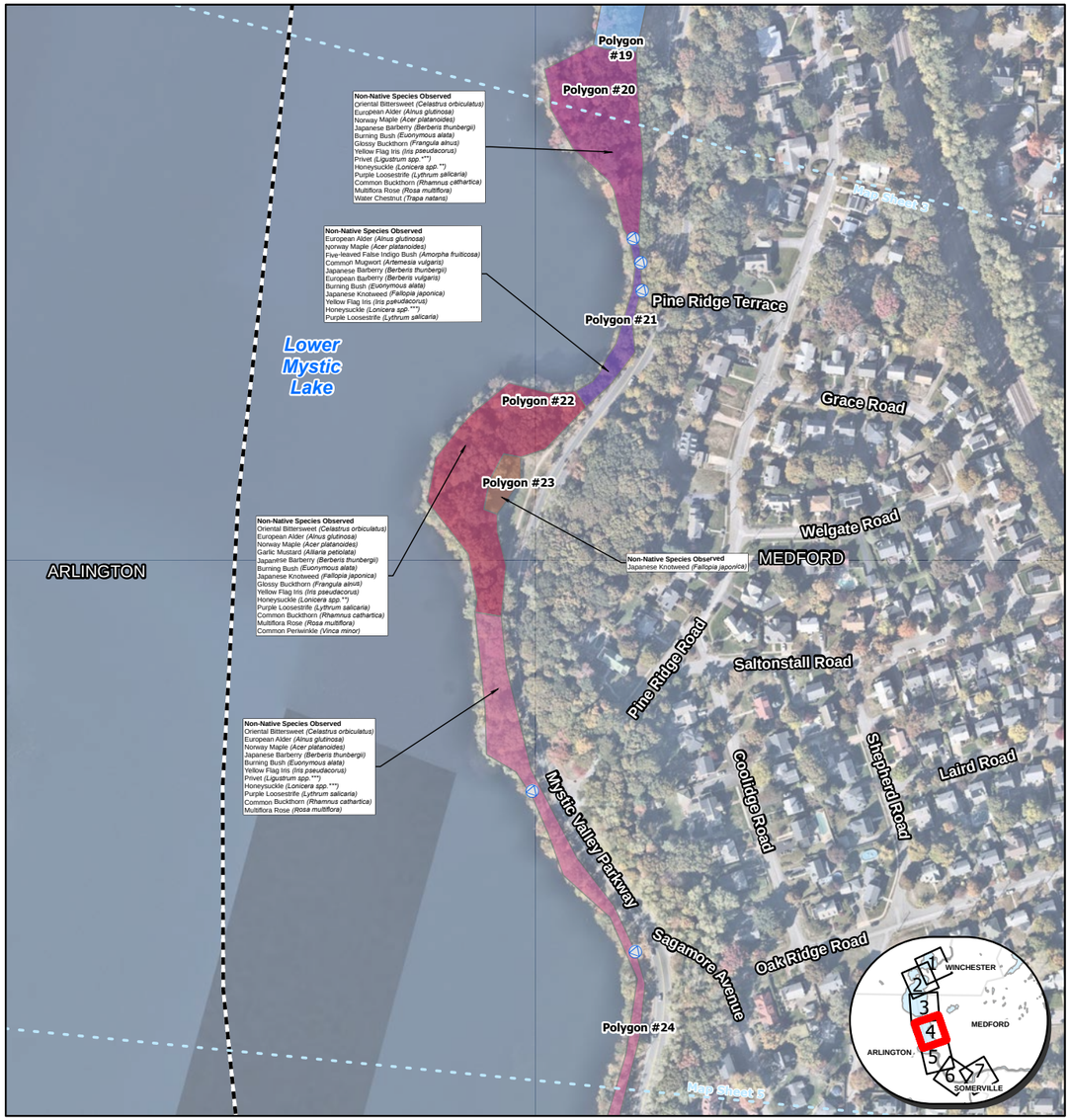
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FIGURE 1
AERIAL
January 2025

Mystic River Parkway Invasive Species
Survey and Assessment
Winchester, Medford, and Somerville Massachusetts



Polygon Number

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 Culvert Mapsheet Matchline

Tighe&Bond

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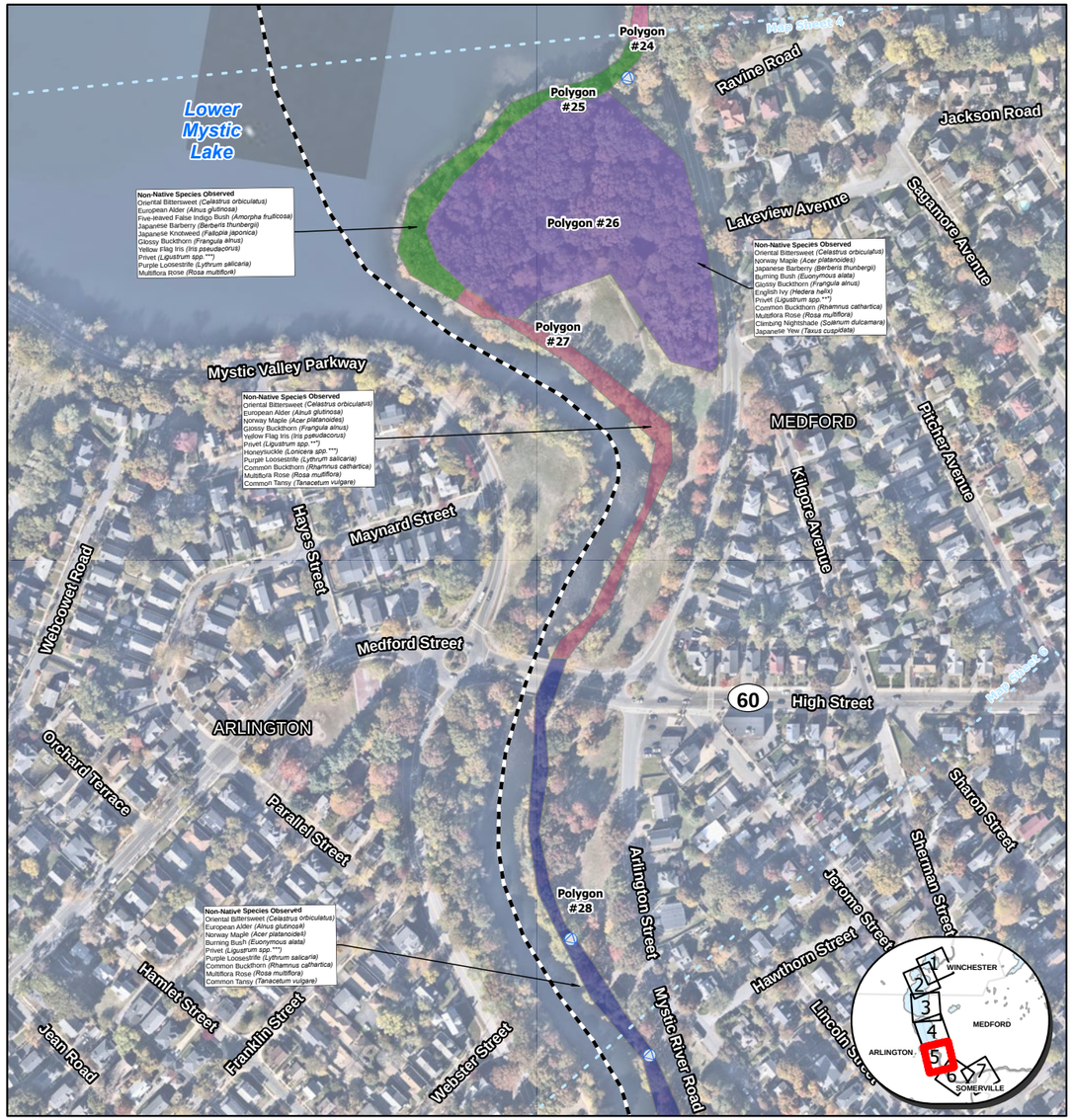
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FIGURE 1
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January 2025

Mystic River Parkway Invasive Species
Survey and Assessment
Winchester, Medford, and Somerville Massachusetts



Polygon Number

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 Culvert Mapsheet Matchline

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Based on latest Nearmap Imagery.
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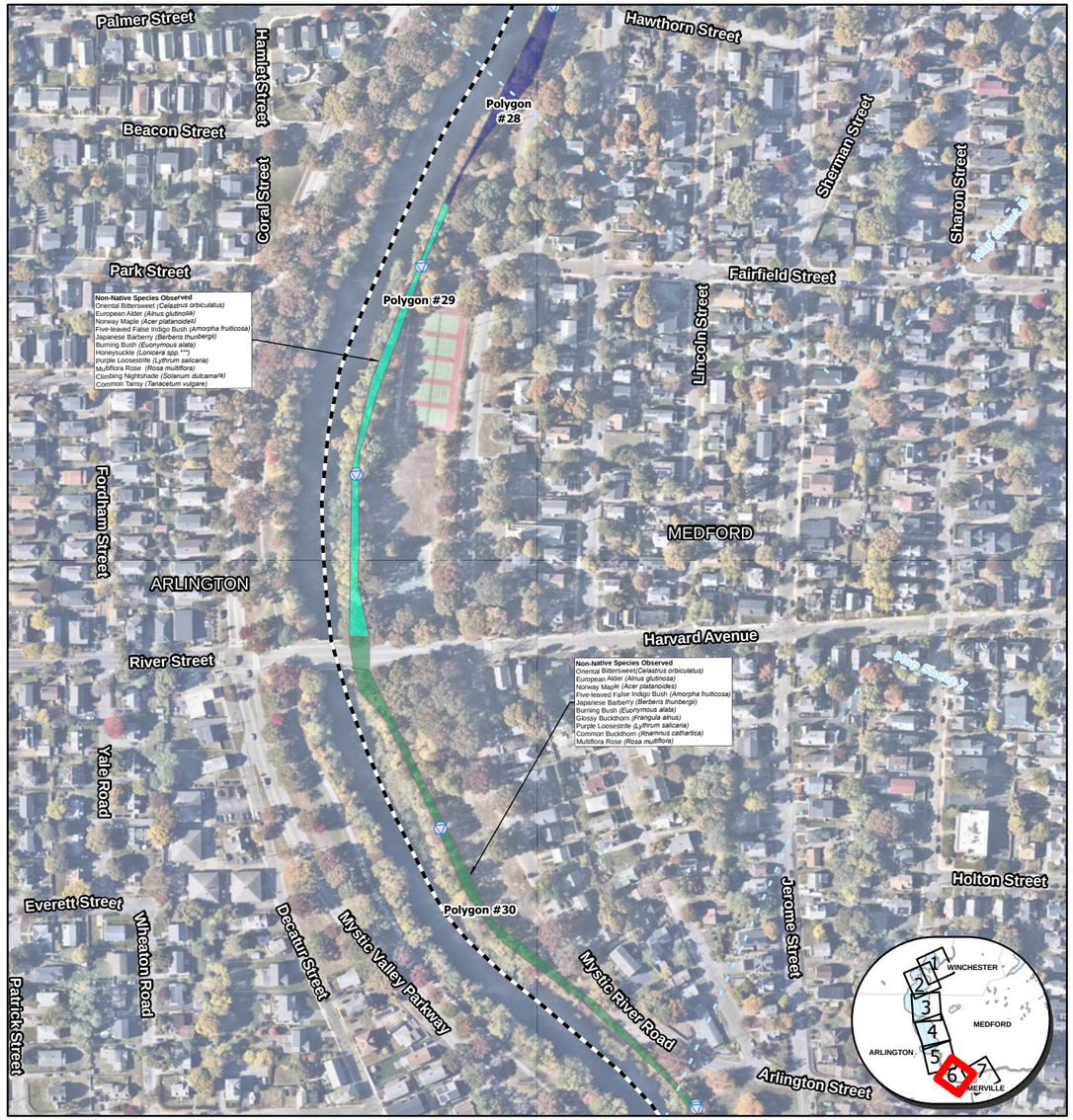
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FIGURE 1
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January 2025

Mystic River Parkway Invasive Species
Survey and Assessment
Winchester, Medford, and Somerville Massachusetts



Polygon Number

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 33

Culvert

Mapsheet Matchline

Tighe&Bond

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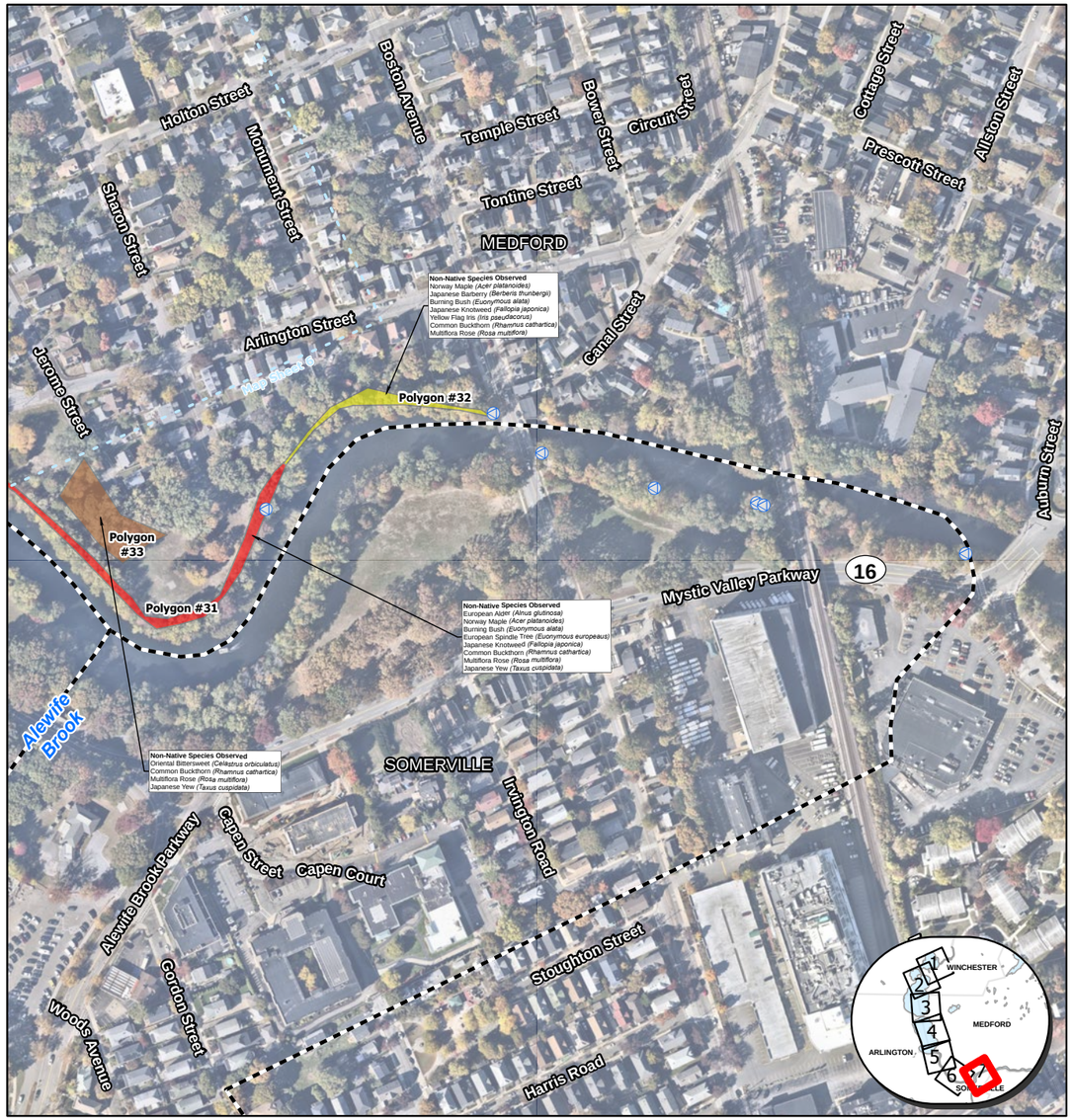
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FIGURE 1
AERIAL
January 2025

Mystic River Parkway Invasive Species
Survey and Assessment
Winchester, Medford, and Somerville Massachusetts



Polygon Number

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33

Culvert

Mapsheet Matchline

Tighe&Bond

Based on latest Nearmap Imagery.
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M-5073

Massachusetts Invasive Plant Advisory Group Invasive Plant List

Common Name	Scientific Name	Invasiveness Status[1,2]
Norway Maple	*Acer platanoides*	Invasive
Garlic mustard	*Alliaria petiolata*	Invasive
European alder	*Alnus glutinosa*	Invasive
Five-leaved false indigo bush	*Amorpha fruiticosa*	Non-native
Porcelain berry	*Ampelopsis brevipedunculata*	Likely Invasive
Common mugwort	*Artemesia vulgaris*	Non-native
Japanese barberry	*Berberis thunbergii*	Invasive
European barberry	*Berberis vulgaris*	Likely Invasive
Oriental bittersweet	*Celastrus orbiculatus*	Invasive
Autumn Olive	*Elaeagnus umbellata*	Invasive
Burning bush	*Euonymous alata*	Invasive
European spindle tree	*Euonymous europeaus*	Non-native
Japanese knotweed	*Fallopia japonica*	Invasive
Glossy buckthorn	*Frangula alnus*	Invasive
English Ivy	*Hedera helix*	Non-native
Yellow flag iris	*Iris pseudacorus*	Invasive
Privet	*Ligustrum spp.* [3]	Likely Invasive
Honeysuckle	*Lonicera spp.* [3]	Invasive
Purple loosestrife	*Lythrum salicaria*	Invasive
Common buckthorn	*Rhamnus cathartica*	Invasive
Multiflora rose	*Rosa multiflora*	Invasive
Curly dock	*Rumex crispus*	Non-native
Climbing Nightshade	*Solanum dulcamara*	Non-native
Common tansy	*Tanacetum vulgare*	Non-native
Japanese Yew	*Taxus cuspidata*	Non-native
Water chestnut[4]	*Trapa natans*	Invasive
Common periwinkle	*Vinca minor*	Non-native

[1]Invasiveness Status determined based off the Massachusetts Invasive Plant Advisory Group Invasive Plant List

[2]Non-native status of plants not listed on the MIPAG Invasive Plant List was determined from Native Plant Trust (GoBotany) listing status

[3]Species level determination was not possible giving field conditions, but plant Genus is considered generally invasive in MA

[4]Nutlets were found on shoreline during site walk with MYRWA and MA DEM on 11/8/2024

Common Name	Scientific Name	Invasiveness Status[1,2]	Polygon 1	Polygon 2	Polygon 3	Polygon 4	Polygon 5	Polygon 6	Polygon 7	Polygon 8	Polygon 9	Polygon 10	Polygon 11	Polygon 12	Polygon 13	Polygon 14	Polygon 15	Polygon 16	Polygon 17	Polygon 18
Norway Maple	*Acer platanoides*	Invasive												X		X		X	X	X
Garlic mustard	*Alliaria petiolata*	Invasive																		X
European alder	*Alnus glutinosa*	Invasive	X	X		X			X		X					X			X	
Five-leaved false indigo bush	*Amorpha fruiticosa*	Non-native		X	X		X	X	X	X						X	X	X		X
Porcelain berry	*Ampelopsis brevipedunculata*	Likely Invasive									X									
Common mugwort	*Artemesia vulgaris*	Non-native								X										
Japanese barberry	*Berberis thunbergii*	Invasive	X		X		X												X	X
European barberry	*Berberis vulgaris*	Likely Invasive																		
Oriental bittersweet	*Celastrus orbiculatus*	Invasive	X		X			X		X	X	X	X	X	X	X	X	X	X	X
Autumn Olive	*Elaeagnus umbellata*	Invasive														X				
Burning bush	*Euonymous alata*	Invasive	X		X		X					X	X	X	X	X		X	X	
European spindle tree	*Euonymous europeaus*	Non-native	X	X							X	X	X	X		X	X			X
Japanese knotweed	*Fallopia japonica*	Invasive	X				X											X		X
Glossy buckthorn	*Frangula alnus*	Invasive	X	X		X		X	X			X			X	X	X			X
English Ivy	*Hedera helix*	Non-native												X						
Yellow flag iris	*Iris pseudacorus*	Invasive	X	X	X				X	X					X		X	X		
Privet	*Ligustrum spp.* [3]	Likely Invasive	X	X	X		X			X			X		X					
Honeysuckle	*Lonicera spp.* [3]	Invasive	X											X			X	X		
Purple loosestrife	*Lythrum salicaria*	Invasive			X			X	X	X						X	X	X		
Common buckthorn	*Rhamnus cathartica*	Invasive	X		X		X	X		X	X	X	X	X		X	X	X		
Multiflora rose	*Rosa multiflora*	Invasive		X	X		X		X	X						X	X	X	X	X
Curly dock	*Rumex crispus*	Non-native																X		
Climbing Nightshade	*Solanum dulcamara*	Non-native																X		
Common tansy	*Tanacetum vulgare*	Non-native																		
Japanese Yew	*Taxus cuspidata*	Non-native	X				X													
Water chestnut[4]	*Trapa natans*	Invasive																		
Common periwinkle	*Vinca minor*	Non-native																		

Common Name	Scientific Name	Invasiveness Status[1,2]	Polygon 19	Polygon 20	Polygon 21	Polygon 22	Polygon 23	Polygon 24	Polygon 25	Polygon 26	Polygon 27	Polygon 28	Polygon 29	Polygon 30	Polygon 31	Polygon 32	Polygon 33
Norway Maple	*Acer platanoides*	Invasive	X	X	X	X		X		X	X	X	X	X	X	X	
Garlic mustard	*Alliaria petiolata*	Invasive				X											
European alder	*Alnus glutinosa*	Invasive	X	X	X	X		X	X		X	X	X	X	X		
Five-leaved false indigo bush	*Amorpha fruiticosa*	Non-native			X				X				X	X			
Porcelain berry	*Ampelopsis brevipedunculata*	Likely Invasive															
Common mugwort	*Artemesia vulgaris*	Non-native			X												
Japanese barberry	*Berberis thunbergii*	Invasive	X	X	X	X		X	X	X			X	X		X	
European barberry	*Berberis vulgaris*	Likely Invasive			X												
Oriental bittersweet	*Celastrus orbiculatus*	Invasive		X		X		X	X	X	X	X	X	X			X
Autumn Olive	*Elaeagnus umbellata*	Invasive															
Burning bush	*Euonymous alata*	Invasive	X	X	X	X		X		X		X	X	X	X	X	
European spindle tree	*Euonymous europeaus*	Non-native													X		
Japanese knotweed	*Fallopia japonica*	Invasive	X		X	X	X		X						X	X	
Glossy buckthorn	*Frangula alnus*	Invasive	X	X		X			X	X	X			X			
English Ivy	*Hedera helix*	Non-native								X							
Yellow flag iris	*Iris pseudacorus*	Invasive		X	X	X		X	X		X					X	
Privet	*Ligustrum spp.* [3]	Likely Invasive	X	X				X	X	X	X	X					
Honeysuckle	*Lonicera spp.* [3]	Invasive	X	X	X	X		X			X		X				
Purple loosestrife	*Lythrum salicaria*	Invasive	X	X	X	X		X	X		X	X	X	X			
Common buckthorn	*Rhamnus cathartica*	Invasive		X		X		X		X	X	X		X	X	X	X
Multiflora rose	*Rosa multiflora*	Invasive	X	X		X		X	X	X	X	X	X	X	X	X	X
Curly dock	*Rumex crispus*	Non-native															
Climbing Nightshade	*Solanum dulcamara*	Non-native								X			X				
Common tansy	*Tanacetum vulgare*	Non-native									X	X	X				
Japanese Yew	*Taxus cuspidata*	Non-native								X					X		X
Water chestnut[4]	*Trapa natans*	Invasive		X													
Common periwinkle	*Vinca minor*	Non-native				X											

[1]Invasiveness Status determined based off the Massachusetts Invasive Plant Advisory Group Invasive Plant List
[2]Non-native status of plants not listed on the MIPAG Invasive Plant List was determined from Native Plant Trust (GoBotany) listing status
[3]Species level determination was not possible giving field conditions, but plant Genus is considered generally invasive in MA
[4]Nuttets were found on shoreline during site walk with MYRWA and MA DEM on 11/8/2024

APPENDIX D

CONCEPTUAL LEVEL DESIGN PERMITTING ASSESSMENT

Mystic Shoreline Revitalization Plan for West Medford and the Mystic Lakes – Conceptual Level Design Permitting Assessment

TO: Karl Alexander, Greenways Program Manager, MyRWA

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COPY: Robert Uhlig, FASLA, LEED AP, Vice President of Landscape Architecture & Urban Design, Halvorson

DATE: August 26, 2025

Introduction

The Mystic Shoreline Revitalization Plan for West Medford and the Mystic Lakes involves the redevelopment of an approximately three-mile stretch of an existing pedestrian path and associated landscape enhancements bordering the pathway along the Mystic Valley Parkway in Medford and Winchester. The proposed work will enhance the path to become a multi-use trail with safety and accessibility improvements, while creating recreational opportunities, improving connections to the broader parkway system, and protecting significant cultural and ecological resources.

An initial permitting assessment for the first phase of the project was issued on June 24, 2024. The first project phase focused on the redevelopment of the existing path between High Street (Route 60) in Medford and Bacon Street at the Wedgemere MBTA Station in Winchester. The project was subsequently expanded south to Boston Avenue in Medford. The project scope was also expanded following the initial permitting assessment to include shoreline stabilization measures along the Banks of Upper Mystic Lake, Lower Mystic Lake, and the Mystic River to address seriously eroded sections of the shoreline. Habitat restoration was also added during the scope expansion to include the removal of invasive species and native plantings. Additionally, multiple non-motorized boat launches are proposed as part of this expanded scope. As such, this permitting assessment has been updated to reflect the expanded scope of the proposed Mystic Shoreline Revitalization Plan for West Medford and the Mystic Lakes.

Permitting

The proposed project is anticipated to require authorizations under multiple regulatory programs relative to environmental resources. As part of the conceptual design phase of this project, Tighe & Bond has completed an assessment of anticipated permits required for the proposed project. The following sections of this memorandum describe the permitting requirements anticipated for the chosen design alternative.

Anticipated Permits

A summary of potential anticipated permits required for the chosen alternative is provided in Table 1. The proposed project will involve work within jurisdictional wetland resource areas subject to jurisdiction under local, state, and federal regulations. Of note, the incorporation of multiple non-motorized boat launches into the conceptual design expands the permitting requirements for this project, as this element expands the project impacts to include work within jurisdictional waterbodies.

This assessment assumes that any work within Land Under Water will not exceed 5,000 square feet and will not require Section 401 Water Quality Certification. Should that threshold be exceeded, authorization under that regulatory program would be required. In addition, the project does not fall within *Priority Habitats of Rare Species* or *Estimated Habitats of Rare Wildlife* based on a review of the Massachusetts Natural Heritage and Endangered Species Program (NHESP) Atlas (15th edition; August 1, 2021) and review under the Massachusetts Endangered Species Act (MESA) will not be required.

TABLE 1
Summary of Anticipated Regulatory Permits and Authorizations

Regulatory Agency	Statute / Authority	Permit, Review, Approval
Local		
Medford Conservation Commission	Massachusetts Wetlands Protection Act (M.G.L. c. 131 §40)	Order of Conditions (OOC)
Winchester Conservation Commission	Massachusetts Wetlands Protection Act (M.G.L. c. 131 §40)	Order of Conditions (OOC)
State		
Massachusetts Department of Environmental Protection (MassDEP)	Massachusetts Public Waterfront Act (M.G.L. c. 91)	MassDEP Waterways License
Massachusetts Executive Office of Energy and Environmental Affairs (EEA)	Massachusetts Environmental Policy Act (MEPA; M.G.L. c. 30 §§61-62L)	Expanded Environmental Notification Form & Environmental Impact Report (within 1 mile of Environmental Justice Communities)
Massachusetts Historical Commission (MHC) / Massachusetts Board of Underwater Archaeological Resources (MA BUAR)	Section 106 of the National Historic Preservation Act of 1966 (16 U.S.C. §§ 470a et seq.) and M.G.L. c. 9 §§26-27C	Project Notification Form
Federal		
US Army Corps of Engineers	Federal Clean Water Act (33 U.S.C. §1344 et seq.) / General Permits for the Commonwealth of Massachusetts	Pre-Construction Notification
US Environmental Protection Agency	Federal Clean Water Act (33 U.S.C. §1251 et seq.)	National Pollutant Discharge Elimination System (NPDES) General Permit for Discharges from Construction Activities
US Environmental Protection Agency	44 CFR Section 60.3 (d) (3)	No-Net Rise Analysis

Wetlands Protection Act Notice of Intent

The proposed path improvements, shoreline stabilization measures, and habitat restoration are anticipated to involve work within a combination of the following resources: inland Bank, the 200-foot Riverfront Area to the Aberjona River and Mystic River, Bordering Land Subject to Flooding (BLSF), and the 100-foot Buffer Zone to inland Bank and Bordering Vegetated Wetlands (BVW). Additionally, the potential non-motorized boat launches are assumed to

result in impacts to inland Bank and Land Under Waterbodies and Waterways (LUWW) associated with Upper Mystic Lake. These are jurisdictional resource areas regulated by the Massachusetts Wetlands Protection Act (WPA; M.G.L. c. 131, § 40) and its implementing regulations (310 CMR 10.00). Accordingly, we have assumed that Notice of Intent (NOI) filings will be required with both the Medford and Winchester Conservation Commissions and MassDEP to authorize the project under the WPA and local bylaws. This process generally takes two months from the date of submittal, including public notice timelines, public hearings, and permit issuance.

Chapter 91 Waterways License

The proposed non-motorized boat launches are located within Upper Mystic Lake and Lower Mystic Lake which are designated as Great Ponds and within the Mystic River, a non-tidal river upon which public funds have been expended. As such, the proposed non-motorized boat launches are subject to jurisdiction under Chapter 91: Waterways. Depending on the configuration and design development for the launches, a Chapter 91 License may be required. This involves preparation of a Chapter 91 license application and project plans in the required License format for submittal to MassDEP, and public notice requirements. Based upon our experience with similar projects, MassDEP's review process takes on average nine to twelve months for issuance of a License upon receipt of a complete application.

Massachusetts Environmental Policy Act (MEPA)

It is anticipated that the preferred alternative will exceed wetlands review thresholds defined under 301 CMR 11.03, and that the preparation and submittal of an Environmental Notification Form (ENF) will be required for the proposed work, as the proposed activities will require an Agency Action (i.e., MassTrails Grant, Chapter 91 License). At present, it is assumed that the chosen design will require MEPA review in the form of an Expanded Environmental Notification Form (ENF). Specifically, the project has potential to exceed alteration of ½ acre or more of "other wetlands" which include Riverfront Area and BLSF.

Additionally, MEPA regulations related to Environmental Justice will also affect this project, as the project area is located within one mile of an Environmental Justice (EJ) population. The MEPA Public Involvement Protocol for Environmental Justice Populations (EJ Protocol), effective January 1, 2022, applies to this project and requires pre-filing coordination with EEA staff, as well as outreach and coordination with community-based organizations (CBOs). The EJ Protocol also establishes the requirement for a mandatory EIR for projects within one mile of EJ populations (five miles if the project exceeds a review threshold for air quality). These respective radii are the "designated geographic area" or DGA for the project. As this project is located within one mile of 28 EJ populations (classified as "minority, income, and English isolation populations") it will require an EIR.

Projects required to submit an EIR under 301 CMR 11.06(7)(b) may request that MEPA review be shortened from the typical three-step review process (ENF, Draft EIR, Final EIR). Specifically, a Proponent may request that the Secretary allow a Single EIR under 301 CMR 11.06(8) or a "Rollover" EIR under 301 CMR 11.06(13). Because no other mandatory EIR thresholds are met for the Project, and given the limited impacts associated with the work, anticipate that a dual Expanded ENF (EENF) and Proposed Environmental Impact Report (EIR) (with a request that MEPA issue a "rollover EIR") could be filed.

Massachusetts Historical Commission / Board of Underwater Archaeological Resources

Any new construction projects or renovations to existing structures that require funding, licenses, or permits from any state or federal governmental agencies must be reviewed by the State Historic Preservation Officers, including the Massachusetts Historical Commission (MHC), the Massachusetts Board of Underwater Archaeological Resources (MABUAR), and

pertinent Tribal Historic Preservation Officers (THPOs) for impacts to historic and archaeological properties in accordance with Section 106 of the National Historic Preservation Act of 1966 and 950 CMR 71. The purpose of this review is to confirm that projects minimize or mitigate adverse effects to properties listed in the National and/or State Register of Historic Places. A Project Notification Form (PNF) will be completed and submitted to relevant parties. If the expected review under the Massachusetts Environmental Policy Act (MEPA) will be required, a copy of the MEPA ENF will be provided to these agencies to initiate historical review and will preclude the need to file a PNF. A basic historic review generally takes one month from the date of receipt of a complete application, provided a finding of no effect is issued and no additional studies or submittals are required. Based on a preliminary review of the Project Site, there are several listed historic and/or archeological sites within and adjacent to the anticipated limits of work. This includes the Mystic Valley Parkway and the Mystic Lakes. As such, it is anticipated that additional studies and/or submittals to MHC and MABUAR may be required.

Section 404 Army Corps Pre-Construction Notification

Depending on configuration and design development, the potential non-motorized boat launches are subject to jurisdiction under Section 404 of the Federal Clean Water Act due to work within Waters of the United States (WOTUS). The Corps' General Permits (GP) for the Commonwealth of Massachusetts cover specific activities within the limits of Corps' jurisdiction as stated in each of the activity GPs. The total temporary and permanent impact area is used to determine if a project is eligible for Self-Verification, Pre-Construction Notification, or Individual Permit coverage. The project appears to qualify for authorization as a Pre-Construction Notification under multiple GP categories, including GP 5: Boat Ramps and Marine Railways and GP 24: Temporary Construction, Access, and Dewatering.

The Pre-Construction Notification will be submitted to the Corps, and will be concurrently reviewed by other federal agencies, including the U.S. Environmental Protection Agency (EPA), the Federal Emergency Management Agency (FEMA), and the U.S. Fish & Wildlife Service (USFWS). In addition to environmental factors, the MA General Permit requires notification of the SHPO, THPOs, and the MABUAR per Section 106 of the National Historic Preservation Act. The PCN process generally takes four months, following the Corps' receipt of a complete application.

National Pollutant Discharge Elimination System (NPDES)

It is anticipated that the work will result in greater than one acre of ground disturbance. As such, the project will require the preparation of a Stormwater Pollution Prevention Plan (SWPPP) and coverage under a NPDES Construction General Permit (CGP) issued by the US Environmental Protection Agency (EPA). Generally, the selected contractor will be required to prepare the SWPPP and obtain coverage under the CGP approximately 14 days prior to the start of construction.

FEMA No-Net Rise Analysis

The limits of the proposed work lie within the Zone AE Special Flood Hazard Area (SFHA) regulatory floodway to the Aberjona and Mystic Rivers as well as sections of Upper and Lower Mystic Lakes (Panel Nos. 25017C0409E and 25017C0417E, effective June 4, 2010). Any proposed work within the floodway will require a no-net rise analysis to verify that the proposed work has not resulted in an increase in the Base Flood Elevation (BFE). Should a rise of 0.01 feet or greater be anticipated, the Code of Federal Regulations Chapter 44 (44 CFR) Section 60.3 (d) (3) specifies that a Conditional Letter of Map Revision (CLOMR) would be required.