

Legend

- Whittenton Alternative
- Stoughton Alternative
- Existing Stations
- Proposed Stations
- Existing Stations to be Reconstructed
- Major Wetland Areas
- Freetown-Fall River State Forest
- Major Upland Areas

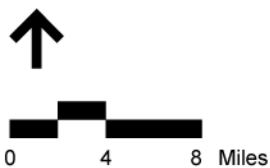
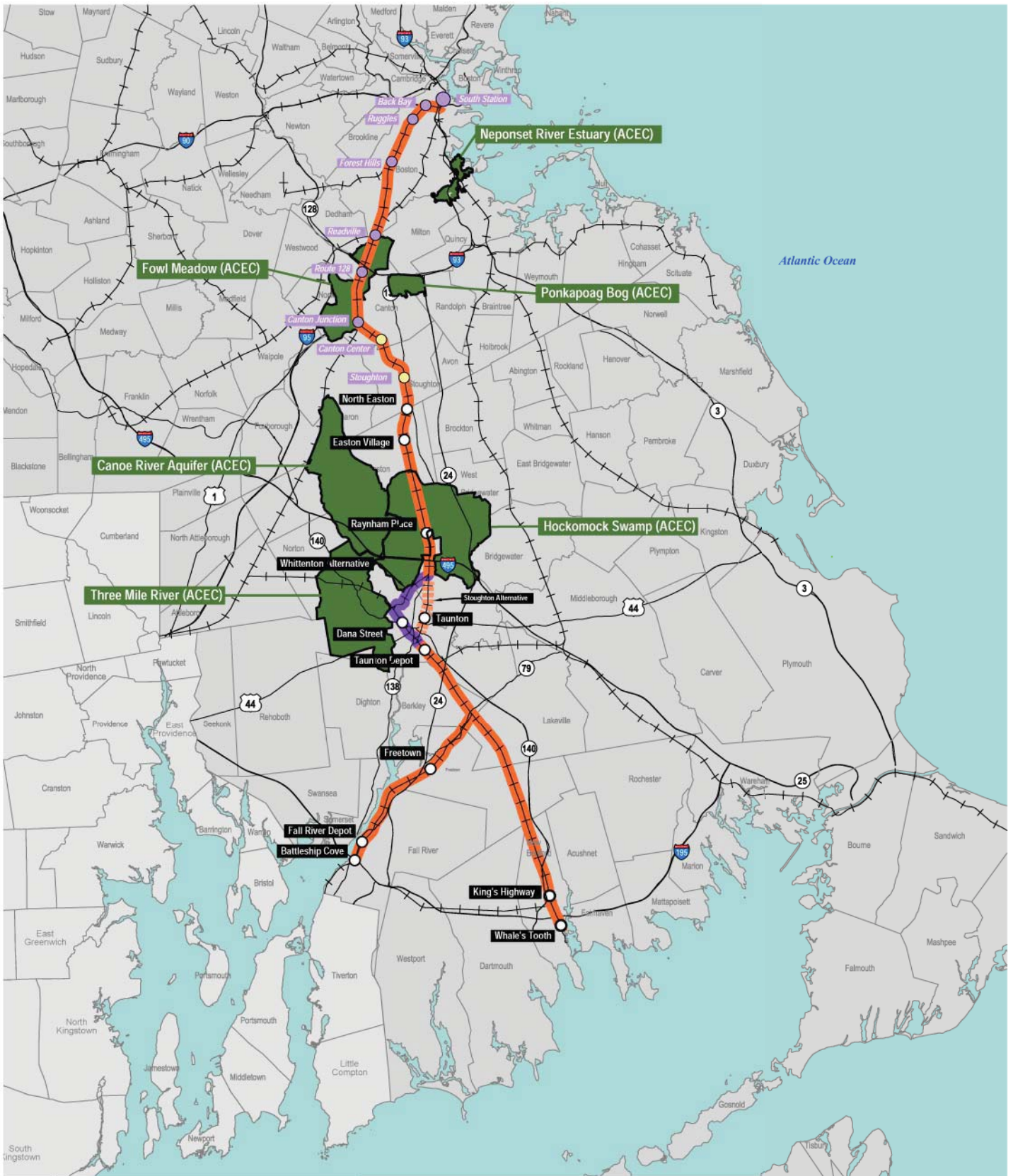


Figure 4.15-1
Major Wetland and Upland Natural Areas



Legend







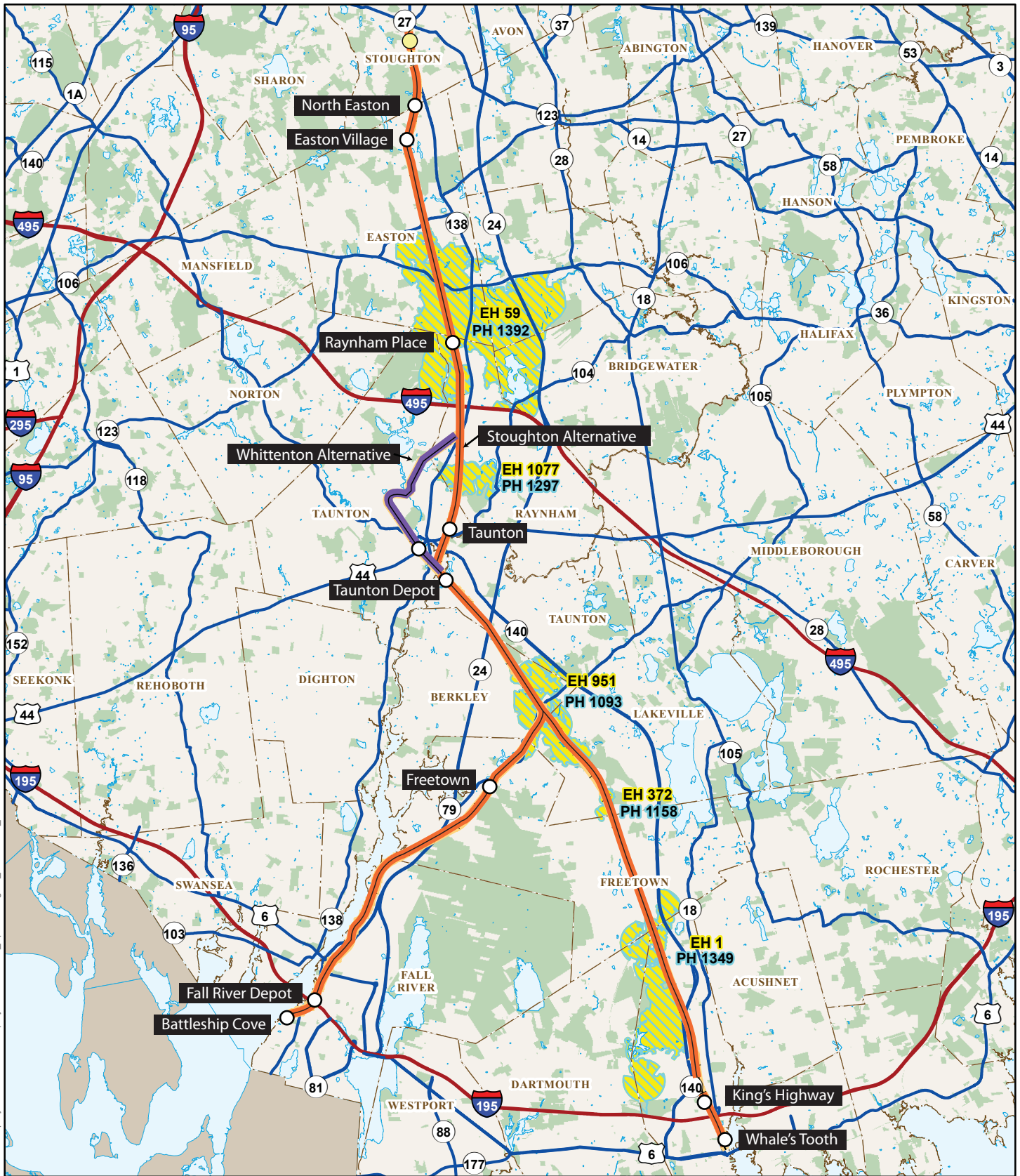
-  Whittenton Alternative
-  Stoughton Alternative
-  Existing Stations
-  Proposed Stations
-  Existing Stations to be Reconstructed
-  Areas of Critical Environmental Concern (ACEC)










Figure 4.15-2
Areas of Critical Environmental
Concern (ACECs)

Printing Date: 2/26/2013
\\MA\GIS\projects\101\11_00\GIS\project\FEIS\Rare_Species\Fig2-1_Whittenton_Alt.mxd



Legend

-  Whittenton Alternative
-  Stoughton Alternative
-  Existing Stations
-  Proposed Stations
-  Existing Stations to be Reconstructed
- Rare Species**
-  NHESP Priority Habitat of Rare Species
-  NHESP Priority Habitat of Rare Species

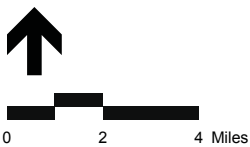
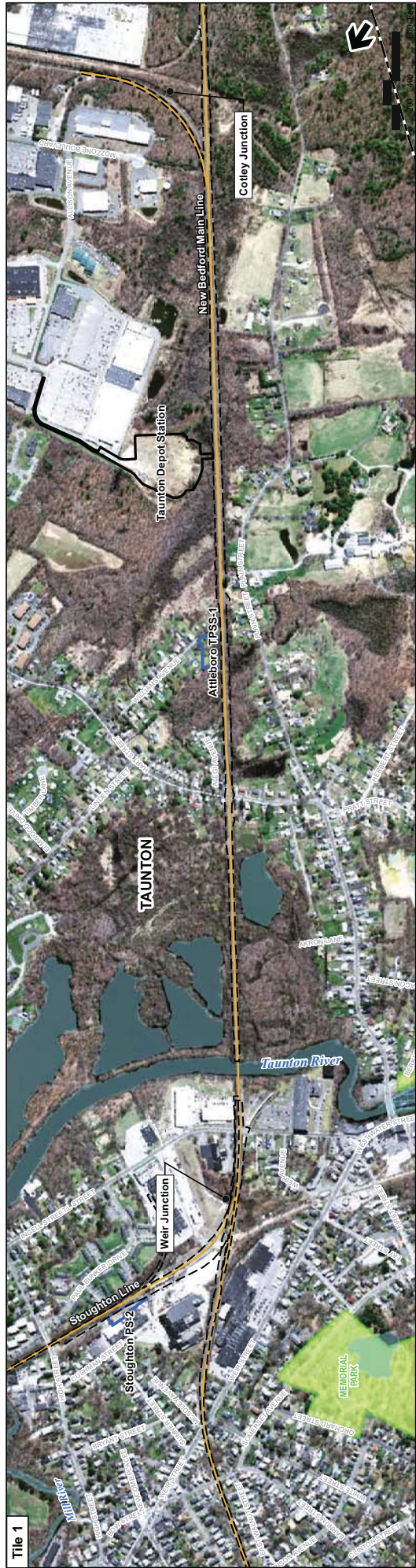


Figure 4.15-3
NHESP Priority and Estimated
Habitat of Rare Species



Tile 1



Tile 2

Legend

- MBTA Commuter Rail Station
- MBTA Commuter Rail
- Town Boundaries
- Proposed Alternative Alignment
- Limit of Work for Proposed Station/Layover Facility
- Limit of Permanent Impact for Proposed Rail
- Traction Power Station*

- Protected Open Space
- NHESP Priority Habitats of Rare Species
- NHESP Estimated Habitats of Rare Wildlife
- Open Water
- Impacted NHESP Habitats
- Area of Critical Environmental Concern (ACEC)

Figure 4.15-4

All Rail Alternatives

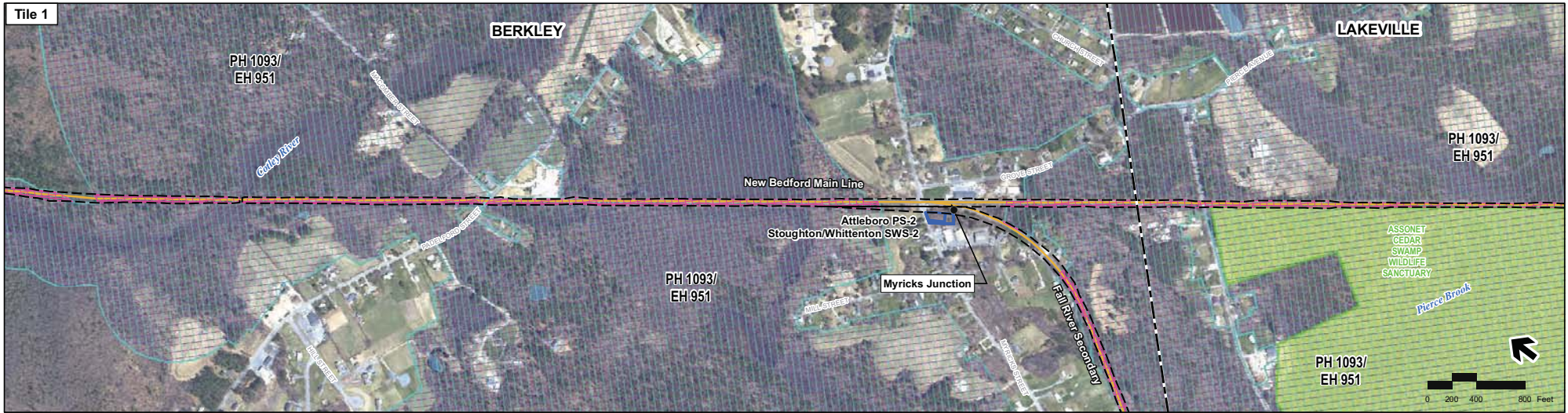
New Bedford Mainline

(Sheet 1 of 5)

Threatened & Endangered Species

Index Map

* Traction power stations are only required for electric rail alternative



Printing Date: 7/12/2009
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- Legend**
- MBTA Commuter Rail Station
 - MBTA Commuter Rail
 - Town Boundaries
 - Proposed Alternative Alignment
 - ▭ Limit of Work for Proposed Station/ Layover Facility
 - ▭ Limit of Permanent Impact for Proposed Rail
 - ▭ Traction Power Station*
 - ▭ Protected Open Space
 - ▭ NHESP Priority Habitats of Rare Species
 - ▭ NHESP Estimated Habitats of Rare Wildlife
 - ▭ Open Water
 - ▭ Impacted NHESP Habitats
 - ▭ Area of Critical Environmental Concern (ACEC)

* Traction power stations are only required for electric rail alternative

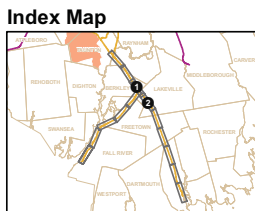


Figure 4.15-5
All Rail Alternatives
New Bedford Mainline
(Sheet 2 of 5)
Threatened & Endangered Species



Printing Date: 6/25/2009
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- Legend**
- MBTA Commuter Rail Station
 - MBTA Commuter Rail
 - Town Boundaries
 - Proposed Alternative Alignment
 - ▭ Limit of Work for Proposed Station/Layover Facility
 - ▭ Limit of Permanent Impact for Proposed Rail
 - ▭ Traction Power Station*
 - ▭ Protected Open Space
 - ▨ NHESP Priority Habitats of Rare Species
 - ▨ NHESP Estimated Habitats of Rare Wildlife
 - ▭ Open Water
 - ▨ Impacted NHESP Habitats
 - ▭ Area of Critical Environmental Concern (ACEC)

* Traction power stations are only required for electric rail alternative

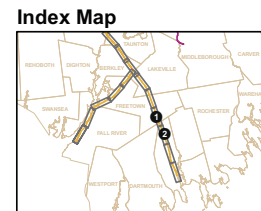


Figure 4.15-6
 All Rail Alternatives
 New Bedford Mainline
 (Sheet 3 of 5)
 Threatened & Endangered Species



Printing Date: 7/12/2009
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- Legend**
- MBTA Commuter Rail Station
 - MBTA Commuter Rail
 - Town Boundaries
 - Proposed Alternative Alignment
 - ▭ Limit of Work for Proposed Station/Layover Facility
 - ▭ Limit of Permanent Impact for Proposed Rail
 - ▭ Traction Power Station*
 - ▭ Protected Open Space
 - ▨ NHESP Priority Habitats of Rare Species
 - ▨ NHESP Estimated Habitats of Rare Wildlife
 - ▭ Open Water
 - ▨ Impacted NHESP Habitats
 - ▭ Area of Critical Environmental Concern (ACEC)

* Traction power stations are only required for electric rail alternative

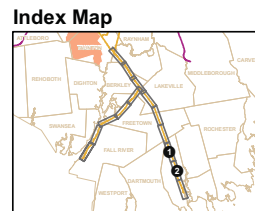


Figure 4.15-7
 All Rail Alternatives
 New Bedford Mainline
 (Sheet 4 of 5)
 Threatened & Endangered Species



Printing Date: 7/12/2019
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Legend

- MBTA Commuter Rail Station
- MBTA Commuter Rail
- - - Town Boundaries
- Proposed Alternative Alignment
- ▭ Limit of Work for Proposed Station/Layover Facility
- ▭ Limit of Permanent Impact for Proposed Rail
- ▭ Traction Power Station*
- ▭ Protected Open Space
- ▨ NHESP Priority Habitats of Rare Species
- ▨ NHESP Estimated Habitats of Rare Wildlife
- ▭ Open Water
- ▨ Impacted NHESP Habitats
- ▭ Area of Critical Environmental Concern (ACEC)

* Traction power stations are only required for electric rail alternative

Index Map

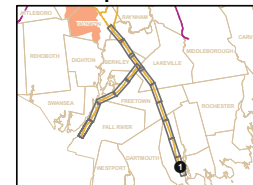
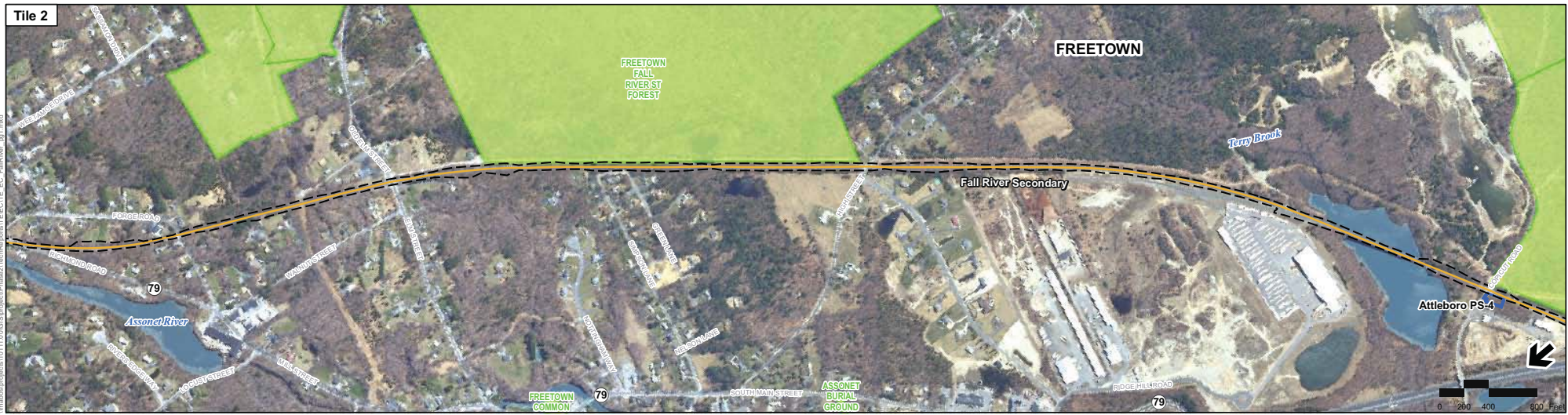


Figure 4.15-8
 All Rail Alternatives
 New Bedford Mainline
 (Sheet 5 of 5)
 Threatened & Endangered Species



Printing Date: 7/12/09
 filename: projects\10111_0003\Species\main2\North\main\TILE1.TIF EC - Fall River - 011.mxd

- Legend**
- MBTA Commuter Rail Station
 - MBTA Commuter Rail
 - Town Boundaries
 - Proposed Alternative Alignment
 - Limit of Work for Proposed Station/ Layover Facility
 - Limit of Permanent Impact for Proposed Rail
 - Traction Power Station*
 - Protected Open Space
 - NHESP Priority Habitats of Rare Species
 - NHESP Estimated Habitats of Rare Wildlife
 - Open Water
 - Impacted NHESP Habitats
 - Area of Critical Environmental Concern (ACEC)

* Traction power stations are only required for electric rail alternative

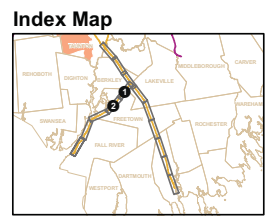
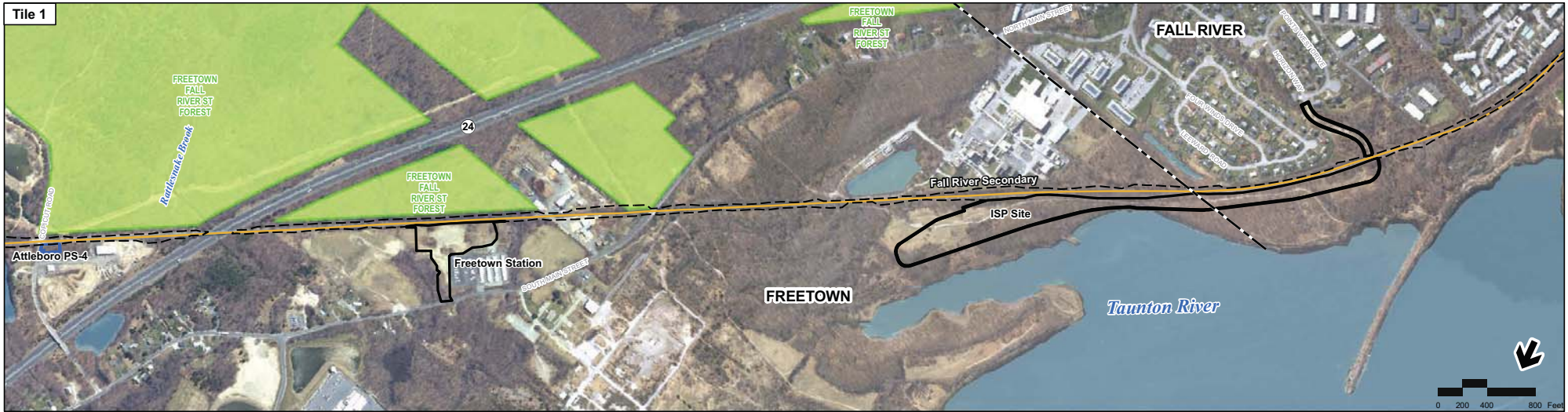


Figure 4.15-9
All Rail Alternatives
Fall River Secondary
 (Sheet 1 of 3)
Threatened & Endangered Species



Printing Date: 7/1/2009
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- Legend**
- MBTA Commuter Rail Station
 - MBTA Commuter Rail
 - Town Boundaries
 - Proposed Alternative Alignment
 - ▭ Limit of Work for Proposed Station/Layover Facility
 - ▭ Limit of Permanent Impact for Proposed Rail
 - ▭ Traction Power Station*
 - ▭ Protected Open Space
 - ▨ NHESP Priority Habitats of Rare Species
 - ▨ NHESP Estimated Habitats of Rare Wildlife
 - ▭ Open Water
 - ▨ Impacted NHESP Habitats
 - ▭ Area of Critical Environmental Concern (ACEC)

* Traction power stations are only required for electric rail alternative

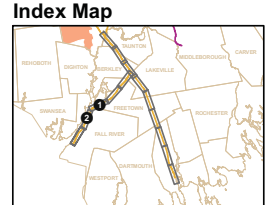


Figure 4.15-10
 All Rail Alternatives
 Fall River Secondary
 (Sheet 2 of 3)
 Threatened & Endangered Species



Printing Date: 7/1/2019
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Legend

- MBTA Commuter Rail Station
- MBTA Commuter Rail
- Town Boundaries
- Proposed Alternative Alignment
- Limit of Work for Proposed Station/Layover Facility
- Limit of Permanent Impact for Proposed Rail
- Traction Power Station*
- Protected Open Space
- NHESP Priority Habitats of Rare Species
- NHESP Estimated Habitats of Rare Wildlife
- Open Water
- Impacted NHESP Habitats
- Area of Critical Environmental Concern (ACEC)

* Traction power stations are only required for electric rail alternative

Index Map



Figure 4.15-11
All Rail Alternatives
Fall River Secondary
(Sheet 3 of 3)
Threatened & Endangered Species



- Legend**
- MBTA Commuter Rail Station
 - ▭ Proposed Stations
 - MBTA Commuter Rail
 - Proposed Alternative
 - Town Boundaries
 - Protected Open Space
 - ▨ NHESP Priority Habitats of Rare Species
 - ▨ NHESP Estimated Habitats of Rare Wildlife

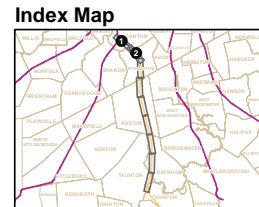
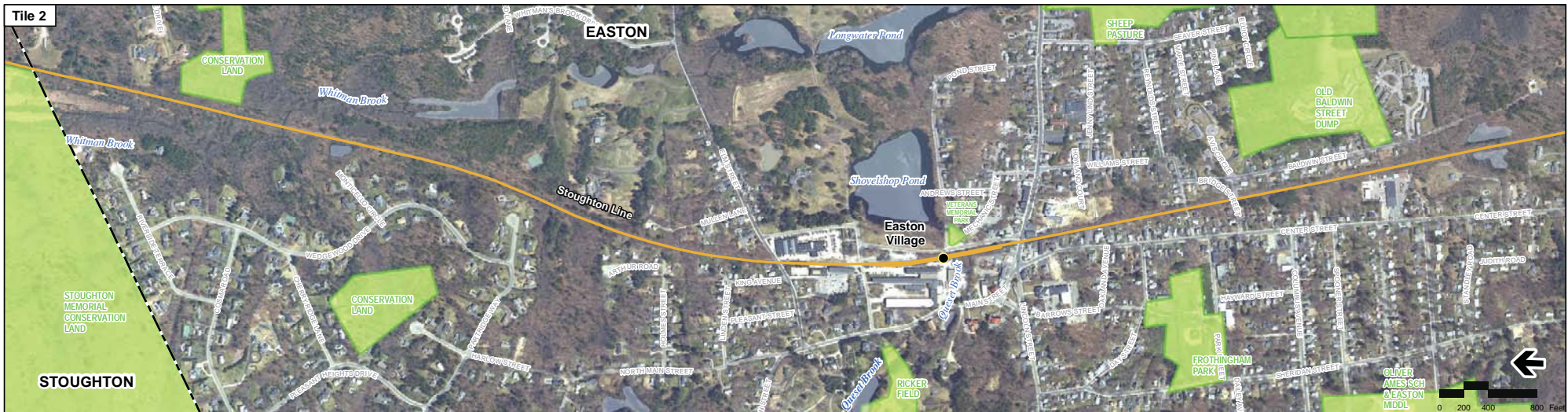


Figure 4.15-12
Stoughton Alternative
(Sheet 1 of 4)
Threatened & Endangered Species
Polygons



Printing Date: 1/31/2013
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- Legend**
- MBTA Commuter Rail Station
 - Proposed Stations
 - MBTA Commuter Rail
 - Proposed Alternative
 - Town Boundaries
 - Protected Open Space
 - ▨ NHESP Priority Habitats of Rare Species
 - ▨ NHESP Estimated Habitats of Rare Wildlife

Index Map

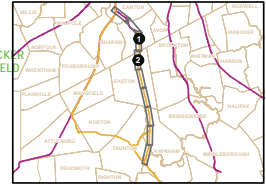


Figure 4.15-13
Stoughton Alternative
(Sheet 2 of 4)
Threatened & Endangered Species
Polygons

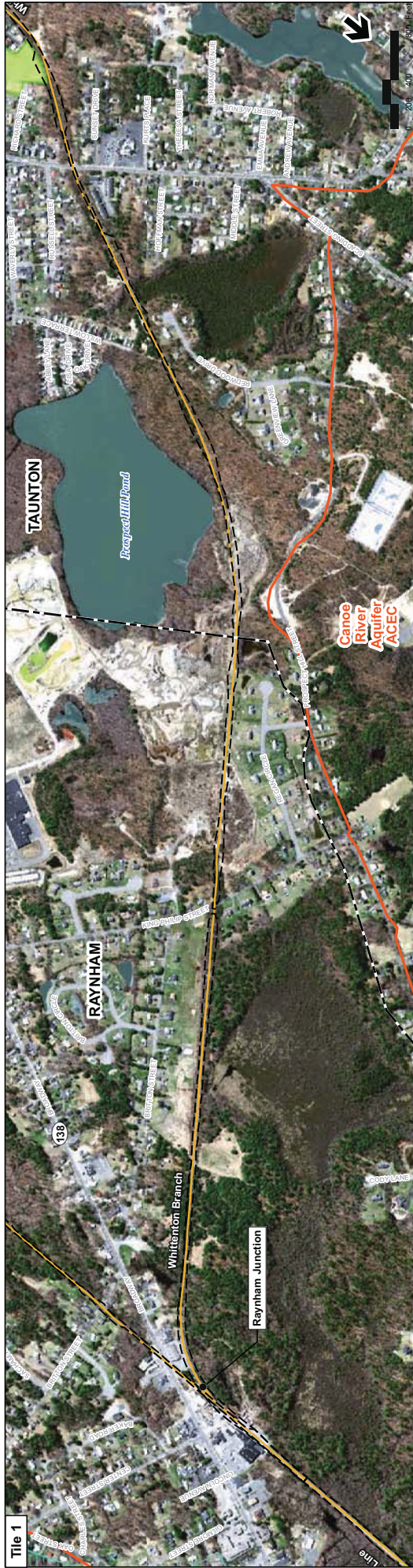
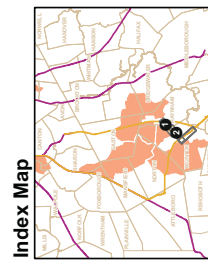


Figure 4.15-16
Whittenton Alternative
(Sheet 1 of 2)
Threatened & Endangered Species

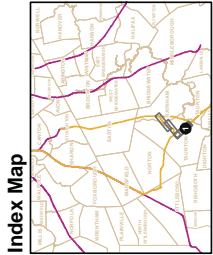


- Legend**
- MBTA Commuter Rail Station
 - MBTA Commuter Rail Layover Facility
 - Town Boundaries
 - Proposed Alternative Alignment
 - Limit of Work for Proposed Station/Layover Facility
 - Limit of Permanent Impact for Proposed Rail
 - Traction Power Station*
 - Protected Open Space
 - NHESP Priority Habitats of Rare Species
 - NHESP Estimated Habitats of Rare Wildlife
 - Open Water
 - Impacted NHESP Habitats
 - Area of Critical Environmental Concern (ACEC)

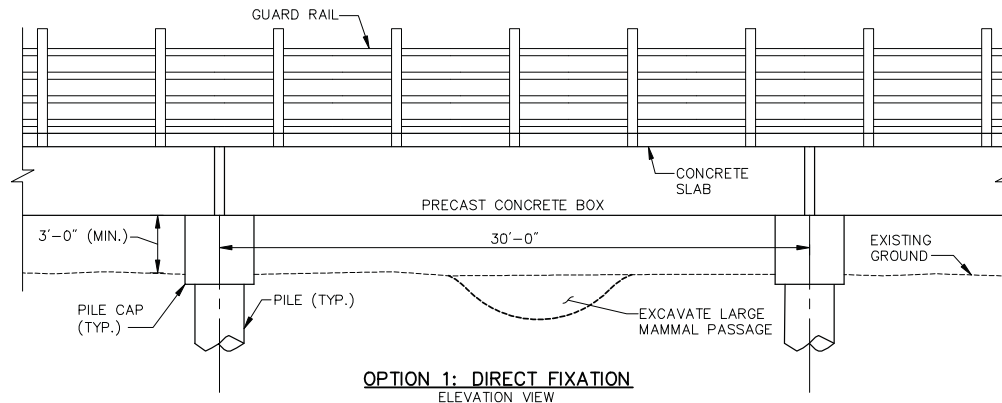
* Traction power stations are only required for electric rail alternative



Figure 4.15-17
Whittenton Alternative
(Sheet 2 of 2)
Threatened & Endangered Species
Polygons

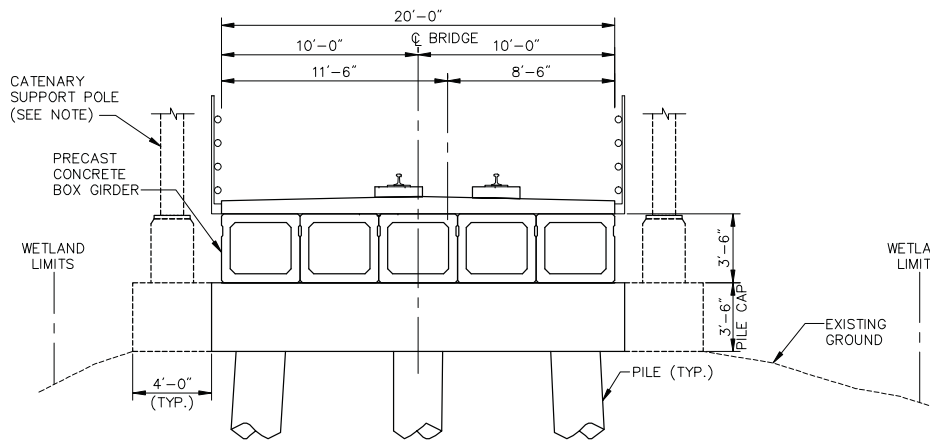


- Legend**
- MBTA Commuter Rail Station
 - MBTA Commuter Rail
 - Town Boundaries
 - Proposed Stations
 - Proposed Alternative
 - Protected Open Space
 - NHESP Priority Habitats of Rare Species
 - NHESP Estimated Habitats of Rare Wildlife

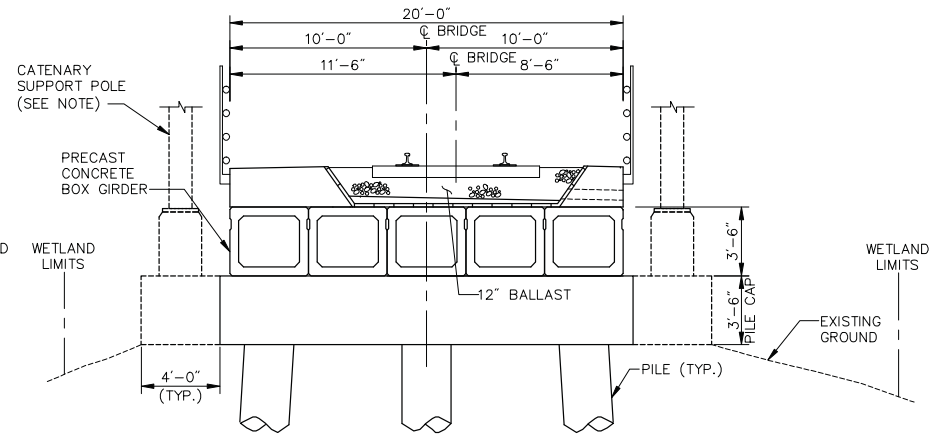


OPTION 1: DIRECT FIXATION
ELEVATION VIEW

NOTE: EVERY SEVENTH PILE CAP WILL BE LENGTHENED TO SUPPORT THE CATENARY SUPPORT POLES (SPACED AT 210' O.C.).



OPTION 1: DIRECT FIXATION
CROSS-SECTION AT PILES

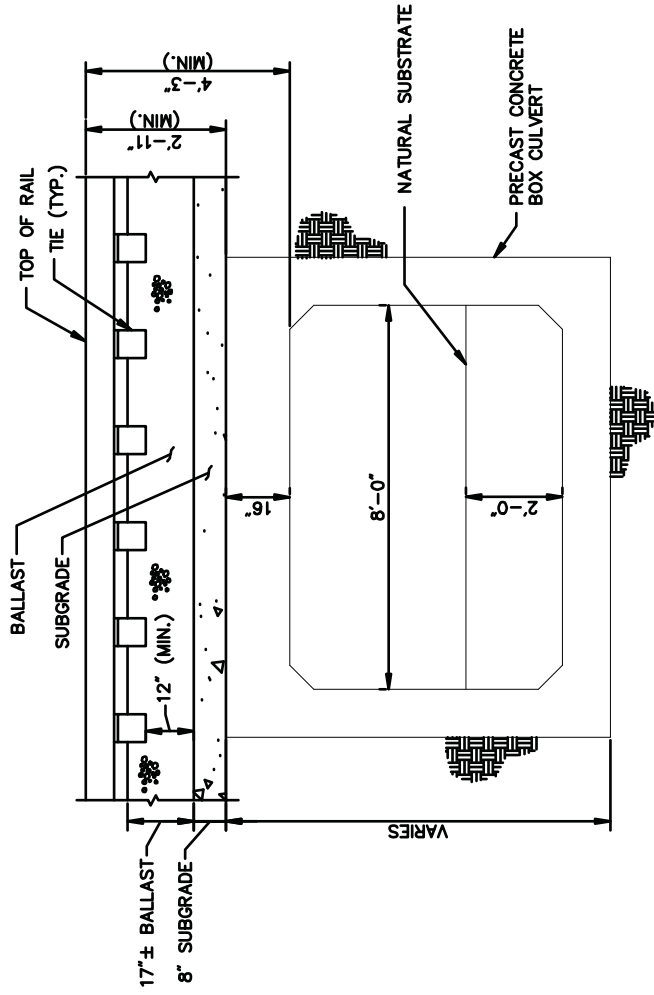


OPTION 2: BALLAST DECK
CROSS-SECTION AT PILES

W:\Work\p\B\B\10111.00\Drawings\m\B\B\10111_27_508_HOCKOMOCK.dwg Printing Date: 7/2/2019

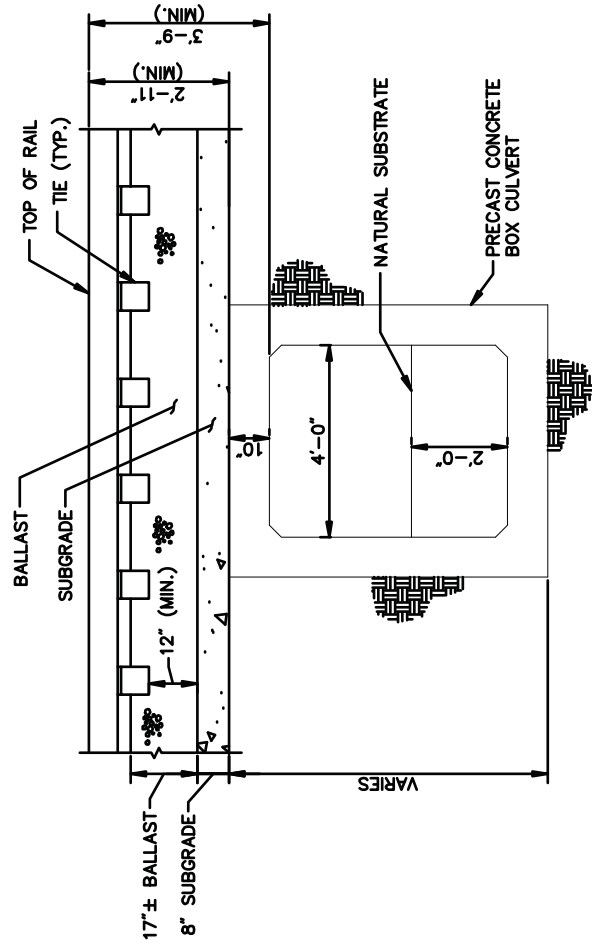


Figure 4.15-18
Trestle Through
Hockomock Swamp



8'-0" WIDE PRECAST CONCRETE BOX CULVERT

SCALE: 1/4" = 1'-0"

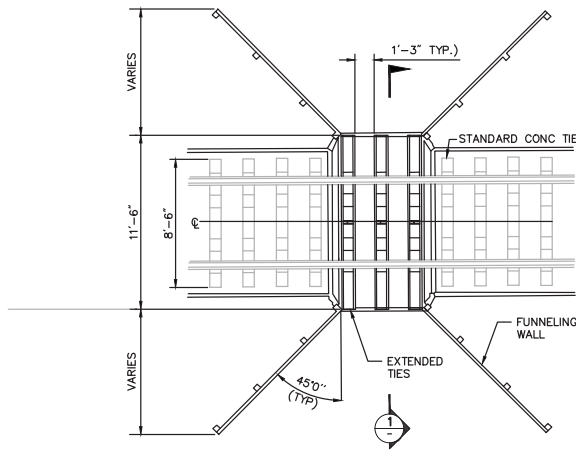


4'-0" WIDE PRECAST CONCRETE BOX CULVERT

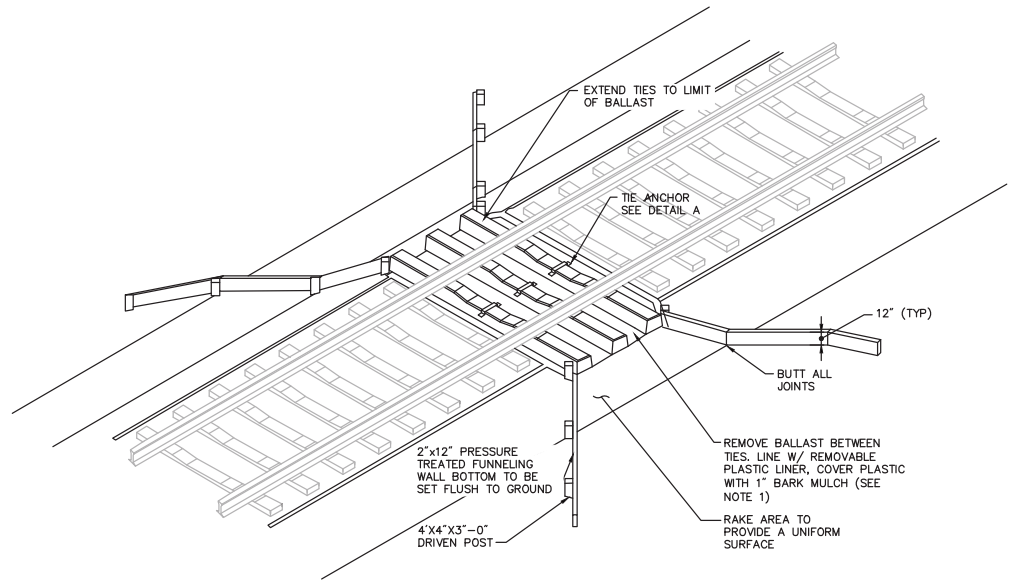
SCALE: 1/4" = 1'-0"

Figure 4.15-19

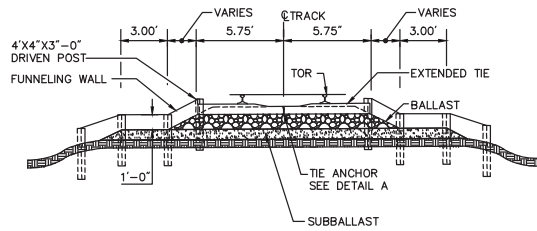
Typical Cross Sections
Concrete Block Culvert



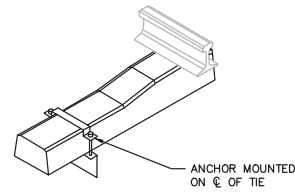
BETWEEN-TIE CROSSING PLAN
NTS



BETWEEN-TIE CROSSING
NTS



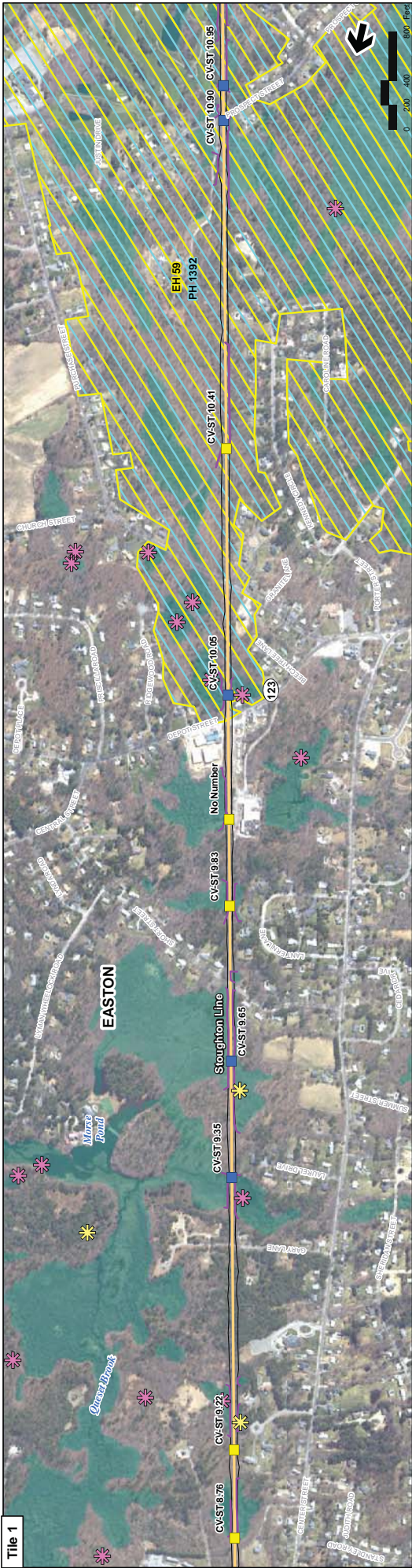
SECTION 1
NTS



TIE ANCHOR DETAIL A
NTS

- NOTES:**
- CONTRACTOR TO REMOVE BALLAST BETWEEN TIES AND LINE AREA WITH 40 MIL HDPE FORMED TIGHTLY BETWEEN TIES. CONNECT TO CONC TIES WITH CONC ANCHORS

Figure 4.15-20
Between-tie Crossing



Tile 1



Tile 2

Legend

- MBTA Commuter Rail Station
- MBTA Commuter Rail
- - - Town Boundaries
- Proposed Stations
- Stoughton Line
- Limit of Disturbance (LOD)

Wetlands

- Wetland Delineation
- Wetland

Vernal Pools

- ☼ Certified Vernal Pool
- ☼ Potential Vernal Pool

Bridges

- ▲ Constrained by Physical Characteristics Recommended to meet MA River and Stream Crossing Standards
- ▲ Recommended to meet MA River and Stream Crossing Standards

Crossings

- ✕ Between-tie Crossing
- ✕ Tunnel Crossing
- ✕ Wildlife Crossing
- ✕ Type to be Determined

Culverts

- Hydraulic Analysis, Replace in kind, or Eliminate
- Recommended to be Daylighted
- Recommended to meet MA River and Stream Crossing Standards

Rare Species

- NHESP Priority Habitat of Rare Species
- NHESP Estimated Habita of Rare Wildlife

Index Map

Figure 4.15-21
Stoughton Alternative
Stoughton Line
(Sheet 1 of 2)

**Mitigation Measures
Threatened & Endangered Species**

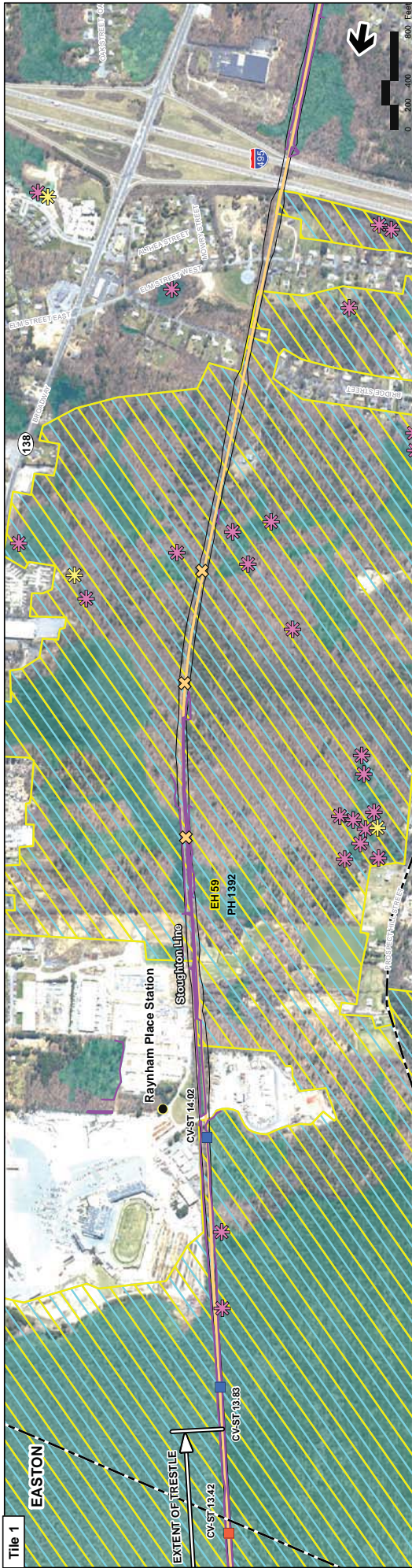
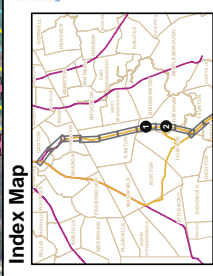


Figure 4.15-22
 Stoughton Alternative
 Stoughton Line
 (Sheet 2 of 2)

Mitigation Measures
 Threatened & Endangered Species



- Legend**
- MBTA Commuter Rail Station
 - MBTA Commuter Rail
 - Town Boundaries
 - Proposed Stations
 - Stoughton Line
 - Limit of Disturbance (LOD)
- Wetlands**
- Wetland Delineation
 - Wetland
- Vernal Pools**
- Certified Vernal Pool
 - Potential Vernal Pool
- Bridges**
- Constrained by Physical Characteristics Recommended to meet MA River and Stream Crossing Standards
 - Recommended to meet MA River and Stream Crossing Standards
- Crossings**
- Between-ile Crossing
 - Tunnel Crossing
 - Wildlife Crossing, Type to be Determined
- Culverts**
- Hydraulic Analysis, Replace in kind, or Eliminate
 - Recommended to be Daylighted
 - Recommended to meet MA River and Stream Crossing Standards
- Rare Species**
- NHESP Priority Habitat of Rare Species
 - NHESP Estimated Habita of Rare Wildlife



Legend

- MBTA Commuter Rail Station
- MBTA Commuter Rail
- Town Boundaries
- Proposed Stations
- Stoughton Line
- Limit of Disturbance (LOD)

Wetlands

- Wetland Delineation
- Wetland

Vernal Pools

- ★ Certified Vernal Pool
- ★ Potential Vernal Pool

Bridges

- ▲ Constrained by Physical Characteristics Recommended to meet MA River and Stream Crossing Standards

Crossings

- ✕ Between-Hill Crossing
- ✕ Tunnel Crossing
- ✕ Wildlife Crossing, Type to be Determined

Culverts

- Hydraulic Analysis, Replace in kind, or Eliminate
- Recommended to be Daylighted
- Recommended to meet MA River and Stream Crossing Standards

Rare Species

- NHESP Priority Habitat of Rare Species
- NHESP Estimated Habitat of Rare Wildlife

Index Map

Figure 4.15-24

All Rail Alternatives

New Bedford Main Line

(Sheet 2 of 4)

Mitigation Measures

Threatened & Endangered Species



Legend

- MBTA Commuter Rail Station
- MBTA Commuter Rail
- Town Boundaries
- Proposed Stations
- Stoughton Line
- Limit of Disturbance (LOD)

Wetlands

- Wetland Delineation
- Wetland

Vernal Pools

- Certified Vernal Pool
- Potential Vernal Pool

Bridges

- Constrained by Physical Characteristics Recommended to meet MA River and Stream Crossing Standards
- Recommended to meet MA River and Stream Crossing Standards

Crossings

- Between-ile Crossing
- Tunnel Crossing
- Wildlife Crossing, Type to be Determined

Culverts

- Hydraulic Analysis, Replace in kind, or Eliminate
- Recommended to be Daylighted
- Recommended to meet MA River and Stream Crossing Standards

Rare Species

- NHESP Priority Habitat of Rare Species
- NHESP Estimated Habitat of Rare Wildlife

Index Map

Figure 4.15-25
All Rail Alternatives
New Bedford Main Line
(Sheet 3 of 4)

**Mitigation Measures
Threatened & Endangered Species**

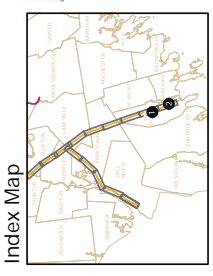


Tile 1



Tile 2

Figure 4.15-26
All Rail Alternatives
New Bedford Main Line
(Sheet 4 of 4)



Legend

- MBTA Commuter Rail Station
- MBTA Commuter Rail
- Town Boundaries
- Proposed Stations
- Stoughton Line
- CADES Index of Ecological Integrity Top 50% of the Landscape

Wetlands

- Wetland Delineation
- Wetland

Vernal Pools

- Certified Vernal Pool
- Potential Vernal Pool

Bridges

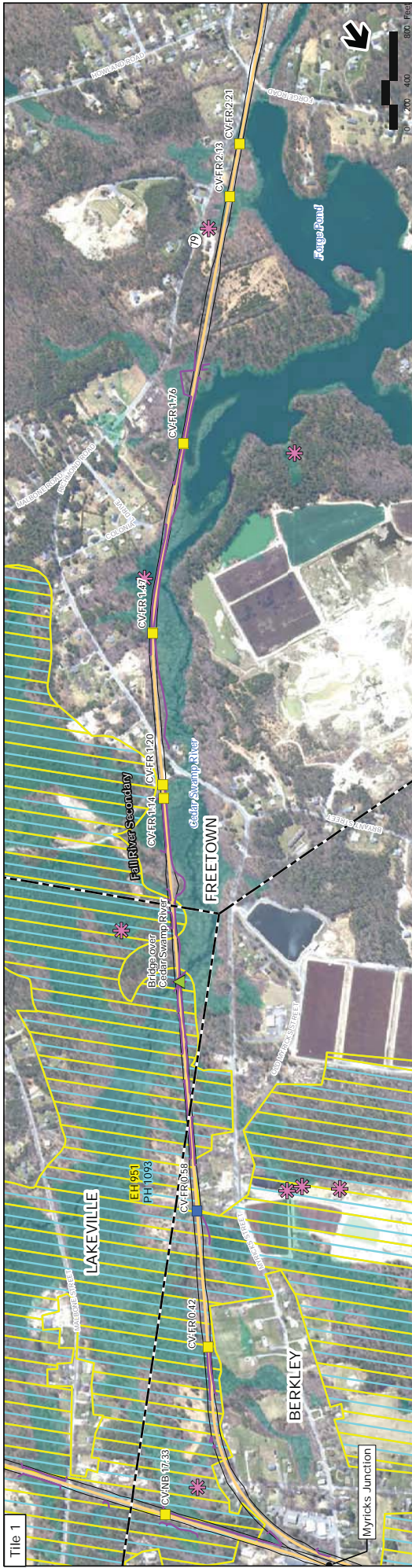
- ▲ Constrained by Physical Characteristics Recommended to meet MA River and Stream Crossing Standards
- ▲ Recommended to meet MA River and Stream Crossing Standards

Crossings

- ✕ Between-ile Crossing
- ✕ Tunnel Crossing
- ✕ Wildlife Crossing, Type to be Determined

Culverts

- Hydraulic Analysis, Re place in kind, or Eliminate
- Recommended to be daylighted
- Recommended to meet MA River and Stream Crossing Standards



Legend

- MBTA Commuter Rail Station
- MBTA Commuter Rail
- Town Boundaries
- Proposed Stations
- Sloughion Line
- Limit of Disturbance (LOD)

Wetlands

- Wetland Delineation
- Wetland
- Vernal Pools
- Certified Vernal Pool
- Potential Vernal Pool

Bridges

- ▲ Constrained by Physical Characteristics Recommended to meet MA River and Stream Crossing Standards
- ▲ Crossings
- ▲ Between-Hill Crossing
- ▲ Tunnel Crossing
- ▲ Wildlife Crossing, Type to be Determined

Culverts

- Hydraulic Analysis, Replace in kind, or Eliminate
- Recommended to be Daylighted
- Recommended to meet MA River and Stream Crossing Standards

Rate Species

- NHESP Priority Habitat of Rare Species
- NHESP Estimated Habita of Rare Wildlife

Index Map

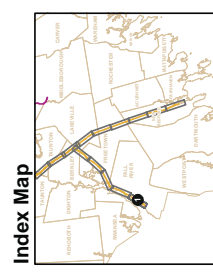
Figure 4.15-27
All Rail Alternatives
Fall River Secondary
(Sheet 1 of 3)

Mitigation Measures
Threatened & Endangered Species



Tile 1

Figure 4.15-29
 All Rail Alternatives
 Fall River Secondary
 (Sheet 3 of 3)
 Mitigation Measures
 Threatened & Endangered Species



Legend

- MBTA Commuter Rail Station
- MBTA Commuter Rail
- Town Boundaries
- Proposed Stations
- Stoughton Line
- CAPS Index of Ecological Integrity Top 50% of the Landscape

Wetlands

- Wetland Delineation
- Wetland

Vernal Pools

- Certified Vernal Pool
- Potential Vernal Pool

Bridges

- ▲ Constrained by Physical Characteristics Recommended to meet MA River and Stream Crossing Standards

Crossings

- ✕ Between-ile Crossing
- ✕ Tunnel Crossing
- ✕ Wildlife Crossing, Type to be Determined

Culverts

- Hydraulic Analysis, Replace in kind, or Eliminate
- Recommended to be Daylighted
- Recommended to meet MA River and Stream Crossing Standards



Legend

- MBTA Commuter Rail Station
- MBTA Commuter Rail
- Town Boundaries
- Proposed Stations
- Stoughton Line
- CAES Index of Ecological Integrity
- Top 50% of the Landscape

Wetlands

- Wetland Delineation
- Wetland

Vernal Pools

- Certified Vernal Pool
- Potential Vernal Pool

Bridges

- Constrained by Physical Characteristics
- Recommended to meet MA River and Stream Crossing Standards

Crossings

- Between-Hole Crossing
- Tunnel Crossing
- Wildlife Crossing, Type to be Determined

Culverts

- Hydraulic Analysis, Replace in kind, or Eliminate
- Recommended to be Daylighted
- Recommended to meet MA River and Stream Crossing Standards

Index Map

Figure 4.15-30

Whittenton Alternative
(Sheet 1 of 2)

Mitigation Measures
Threatened & Endangered Species

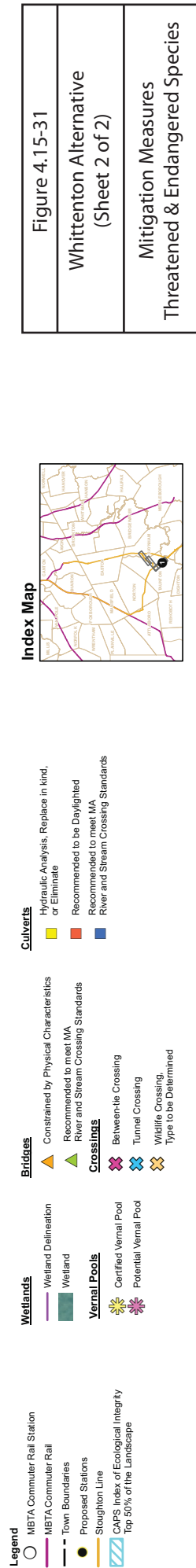


Figure 4.15-31
Whittenton Alternative
(Sheet 2 of 2)
Mitigation Measures
Threatened & Endangered Species