



# Little River Dam Project

Little River Dam Removal and Restoration – Restoration NOI  
River Access Amenities – NOI

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July 13, 2023

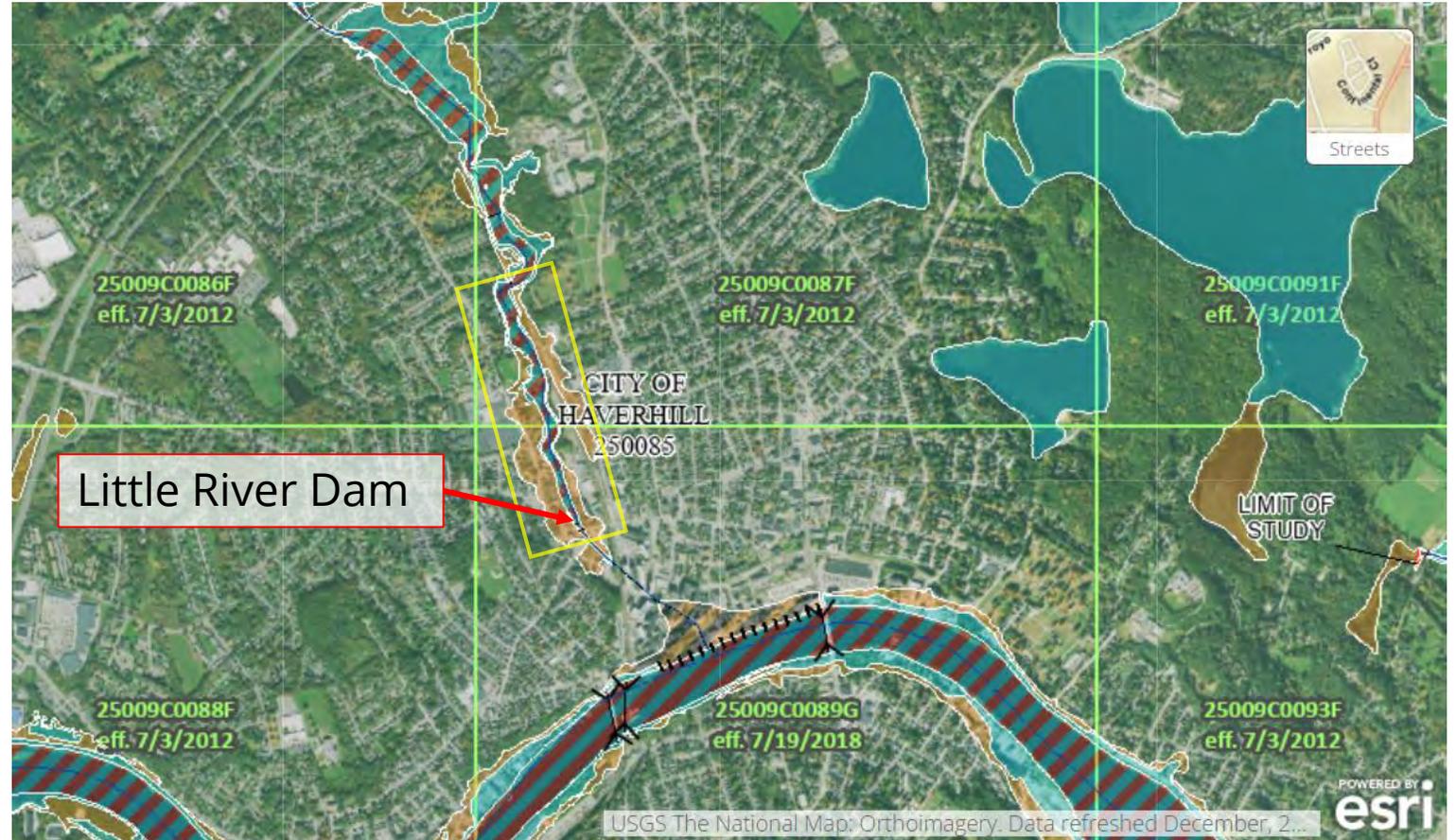




# Site Overview

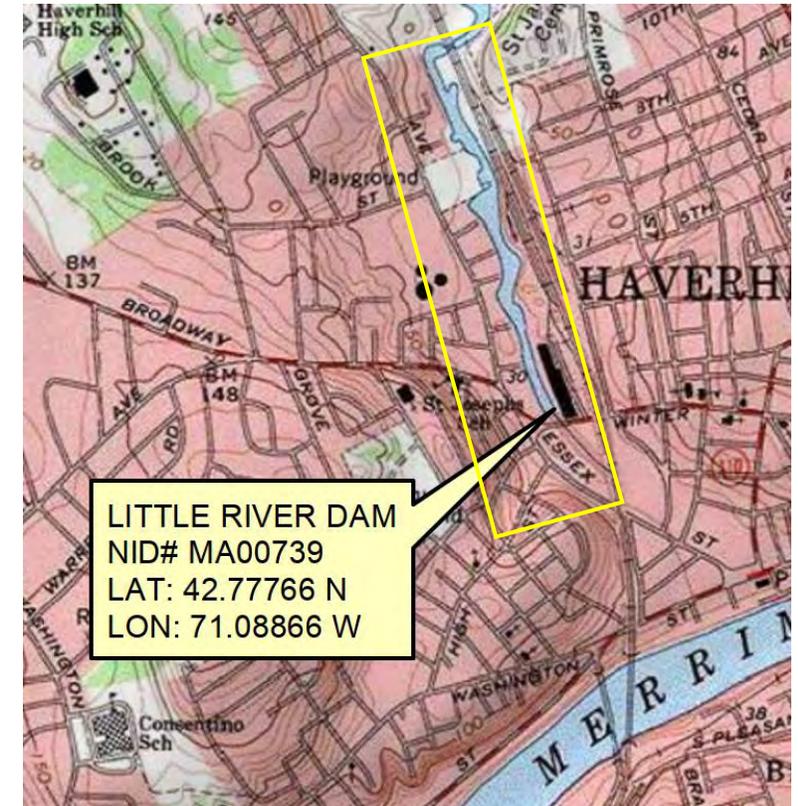


Figure 1: Project Limits of Hydraulic Analysis





# Site Background and Larger Context





# Project Objectives



- **Reduced flooding risk** in an **environmental justice** neighborhood.
- Increased **river access** point and public green space amenity.
- Increased **tree cover** in the downtown area.
- Increased **marketability of the Stevens Mill property**.
- **Address concerns related to ownership transfer** to the City.
- Removal of a barrier to **aquatic organism passage**.
- **Demonstration site** for nature-based solutions for riverbank restoration and stabilization.
- Jumping-off point for **larger urban river revitalization effort**.



# Proposed Activities

- River Restoration

- Dam Removal
- Dredge Little River upstream of dam for targeted sediment cleanup
- Install natural stone/boulder cross vanes
- Construct nature-like fishway stone/boulder weirs
- Construct low flow channel/area for fish passage and recreational boater access
- Construct bioengineered slope stabilization
- Install scour protection beneath the Winter Street bridge
- Install native plantings

Ecological  
Restoration NOI:

Little River Dam  
Removal and  
River Restoration

- Recreational Access

- Construct canoe/kayak launch
- Install fishing platform
- Construct pedestrian bridge
- Construct overlook at Winter Street
- Construct trail along east side of Little River

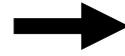
NOI:

Little River  
Community Access  
Improvements



# Little River Dam, Haverhill

Little River Dam, Existing Conditions  
March 2020



Rendering of Future Conditions:  
Dam Removal





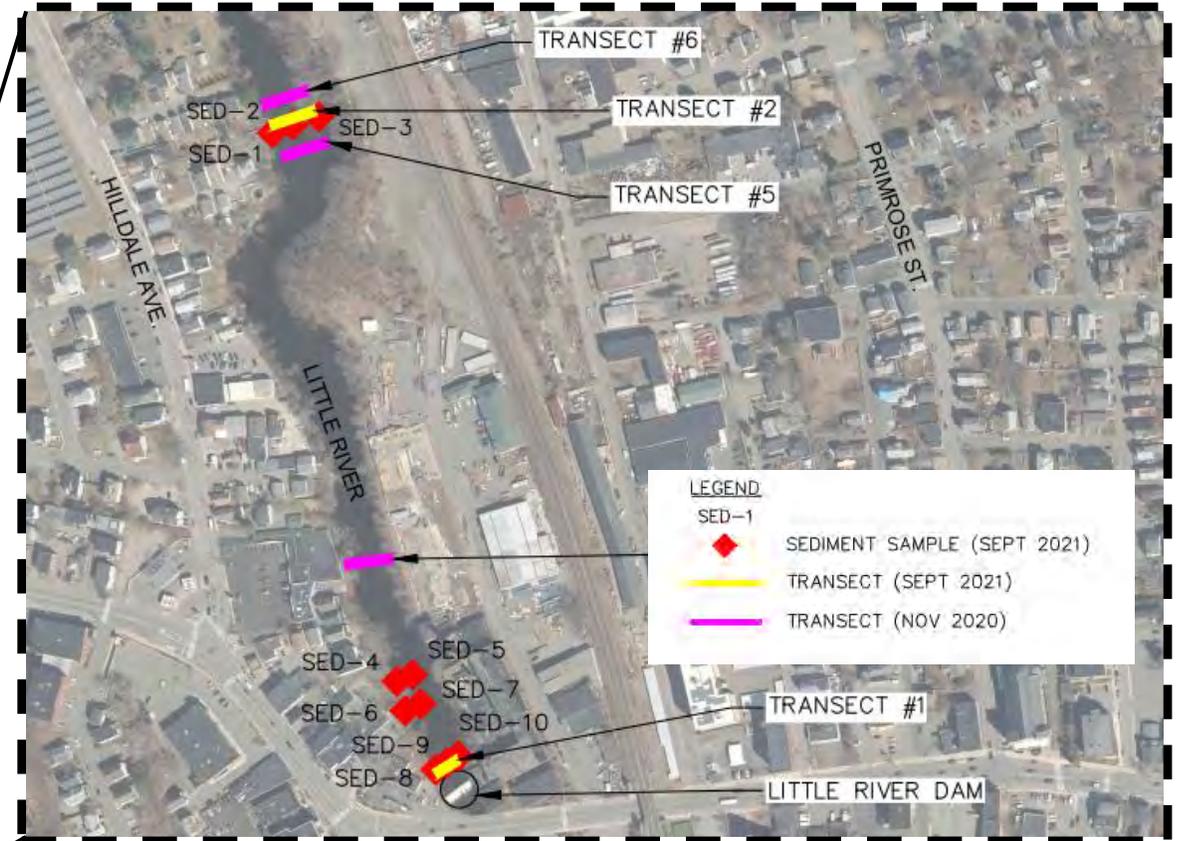
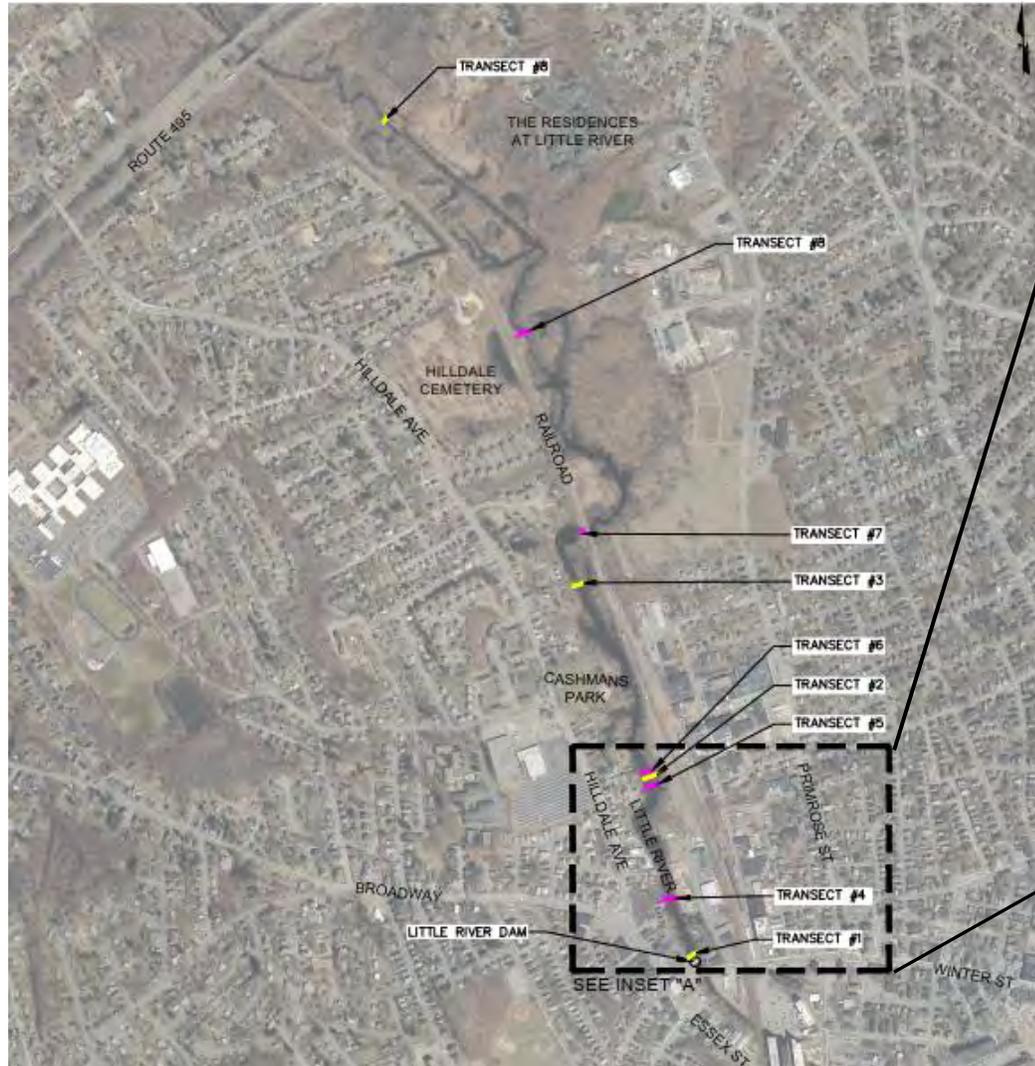
# Potential Impacts of Dam Removal



- |                |                             |
|----------------|-----------------------------|
| Hydrologic     | - Increased Flow            |
| Hydraulic      | - Increased Velocity        |
| Infrastructure | - Exposure, Undermining     |
| Sediment       | - Quality, Movement         |
| Wells          | - Lower Groundwater Levels  |
| Wetlands       | - Lower Normal Water Levels |
| Recreation     | - Reduced Depth             |
| Aesthetics     | - Pond to River             |



# Sediment Sampling & Quality





# Fish Passage Considerations

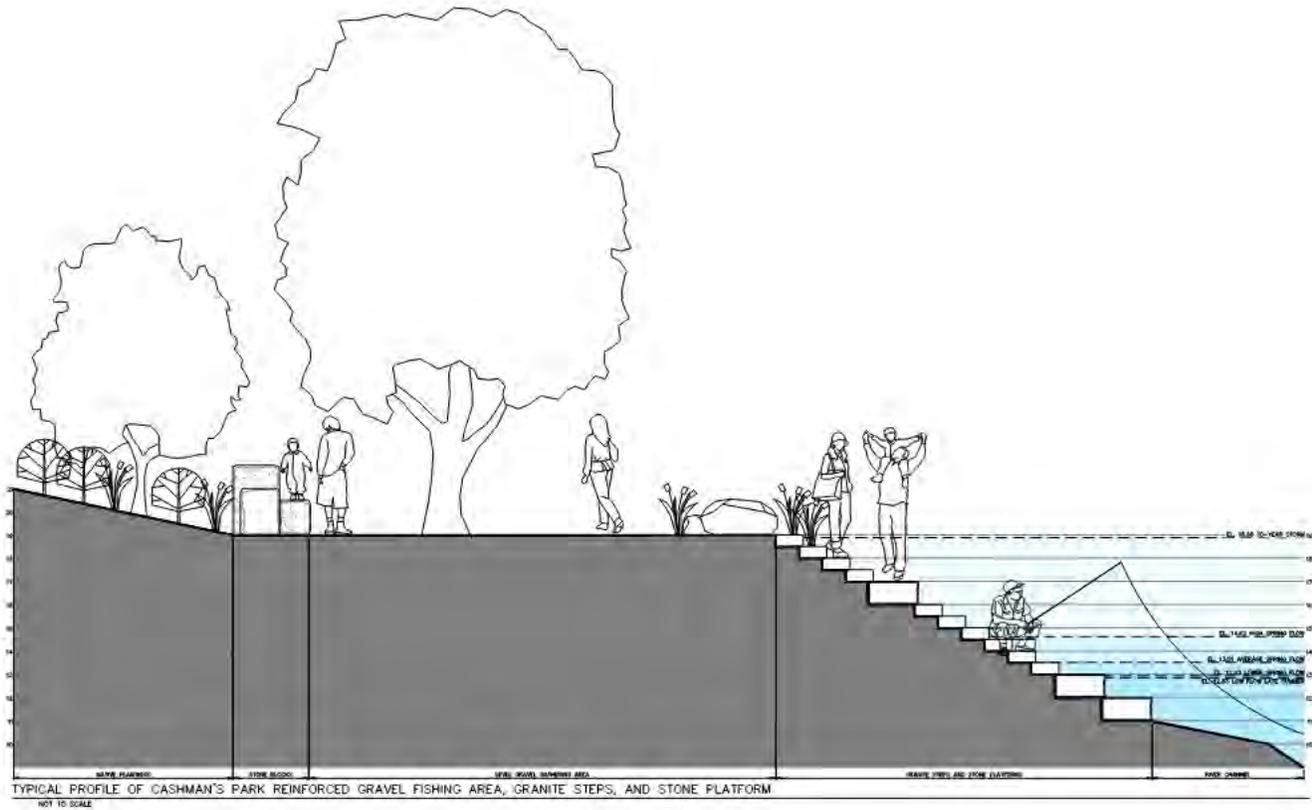
*Table 12: Summary of Biological Characteristics and Fishway Design Criteria for Target Species*

Target Species	Maximum Body Depth (in)	Burst Speed (ft/sec)	Cruising Speed (ft/sec)	Min. Flow Depth Required (ft)	USFWS Recommended Fishway Min. Weir Opening Width (ft)	USFWS Recommended Fishway Min. Weir Opening Depth (ft)	USFWS Recommended Fishway Min. Pool Depth (ft)
Alewife	3.5	6.0	1.0	0.6	2.50	0.75	2.00
Blueback herring	3.1	6.0	1.0	0.5	2.25	1.00	2.00
American eel (adult)	3.1	1.0	0.2	0.5	0.75	1.00	2.00
American shad	8.7	8.25	1.4	1.5	5.00	2.25	4.00
Rainbow Smelt	1.4	<b>3.25</b>	<b>0.5</b>	0.25	1.00	0.50	1.50
Striped Bass	<b>12.4</b>	5.25	0.9	<b>2.0</b>	<b>9.25</b>	<b>3.25</b>	<b>5.25</b>
Sea Lamprey	2.4	6.00	1.0	0.4	0.75	0.75	2.00
Gizzard Shad	6.4	4.00	0.7	1.1	3.50	1.75	3.25





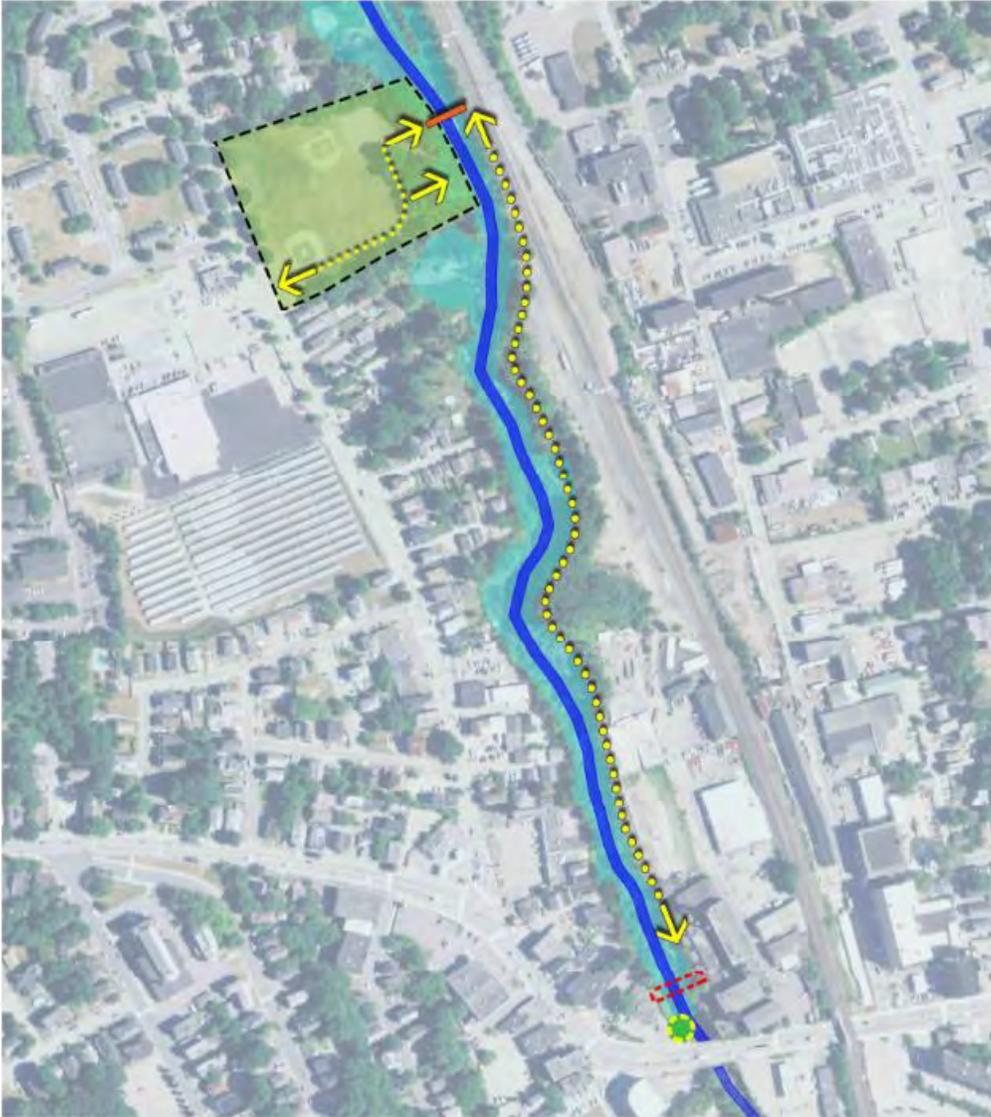
# Concept Design



DATE: _____			SEALED	DATE: _____	 <b>FUSS &amp; O'NEILL</b> 1000 STATE STREET, SUITE 100 HAVERHILL, MASSACHUSETTS 01830 PHONE: 978.373.1100 WWW.FUSS-ONEILL.COM	CITY OF HAVERHILL CONSTRUCTION DETAILS LITTLE RIVER DAM REMOVAL AND RESTORATION (HAVERHILL, MASSACHUSETTS)	DATE: _____
DRAWN BY: _____							DATE: _____
CHECKED BY: _____						CD-508	
SCALE: _____							



# Concept Designs





# Direct Resource Area Impacts

## Dam Removal and River Restoration NOI

Resource Area	Extent of Impact
Bank	5,100 lf
Bordering Vegetated Wetland	22,570 sf (0.5 ac)
Land Under Water Bodies and Waterways	415,400 sf (9.5 ac) 10,360 cy dredging
Bordering Land Subject to Flooding	10,300 sf (0.2 ac)
Riverfront Area	83,730 sf (1.9 ac)

## River Access Amenities NOI

Resource Area	Direct Permanent Impacts
Bank	103 lf
Bordering Vegetated Wetland	525 sf (0.01 ac)
Land Under Water Bodes and Waterways	1,460 sf (0.03 ac) 0 cy dredging
Bordering Land Subject to Flooding	16,911 sf (0.4 ac)
Riverfront Area	53,608 sf (1.2 ac)



# Upstream Wetlands - Potential Alterations

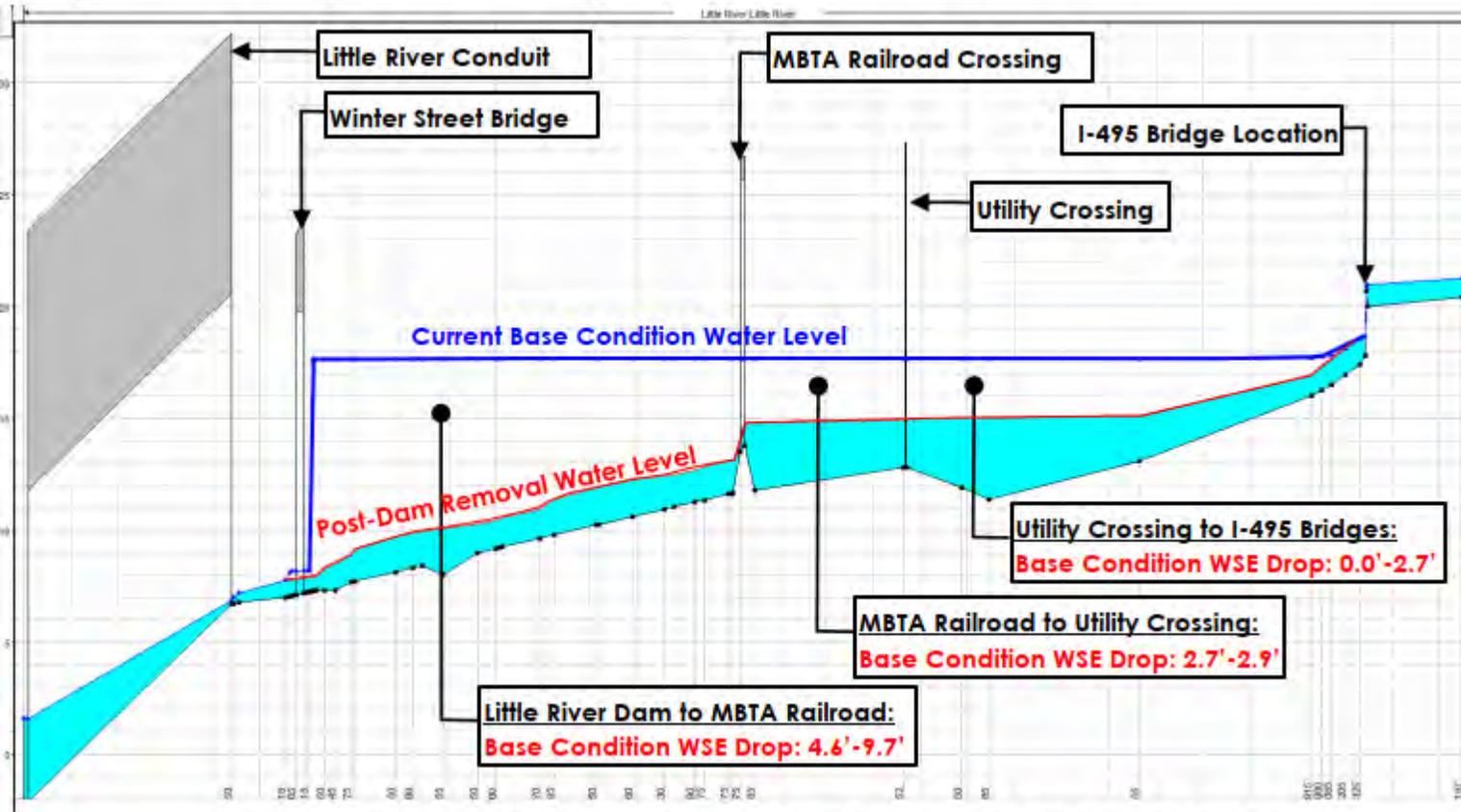


Figure 6: Pre- Versus Post-Dam Removal Base Condition Water Surface Profiles

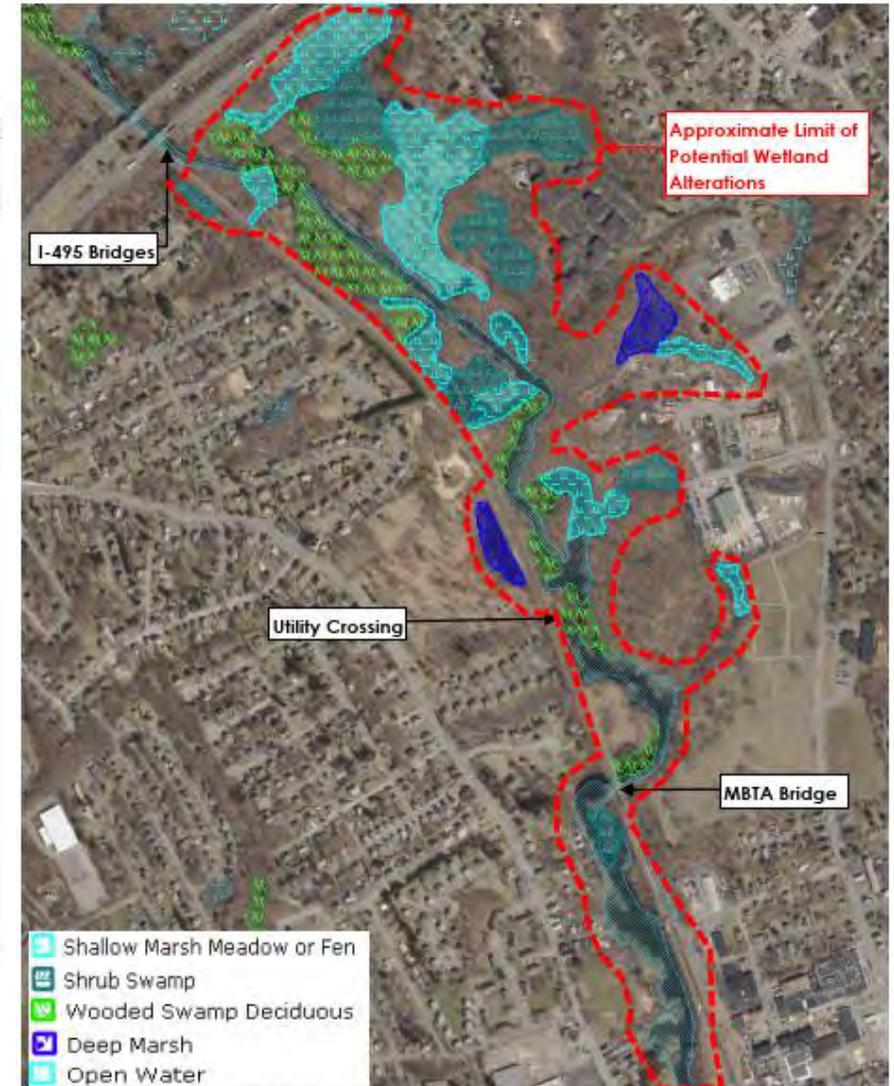


Figure 7: Wetland Communities Upstream of the Little River Dam



# Contact Information



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