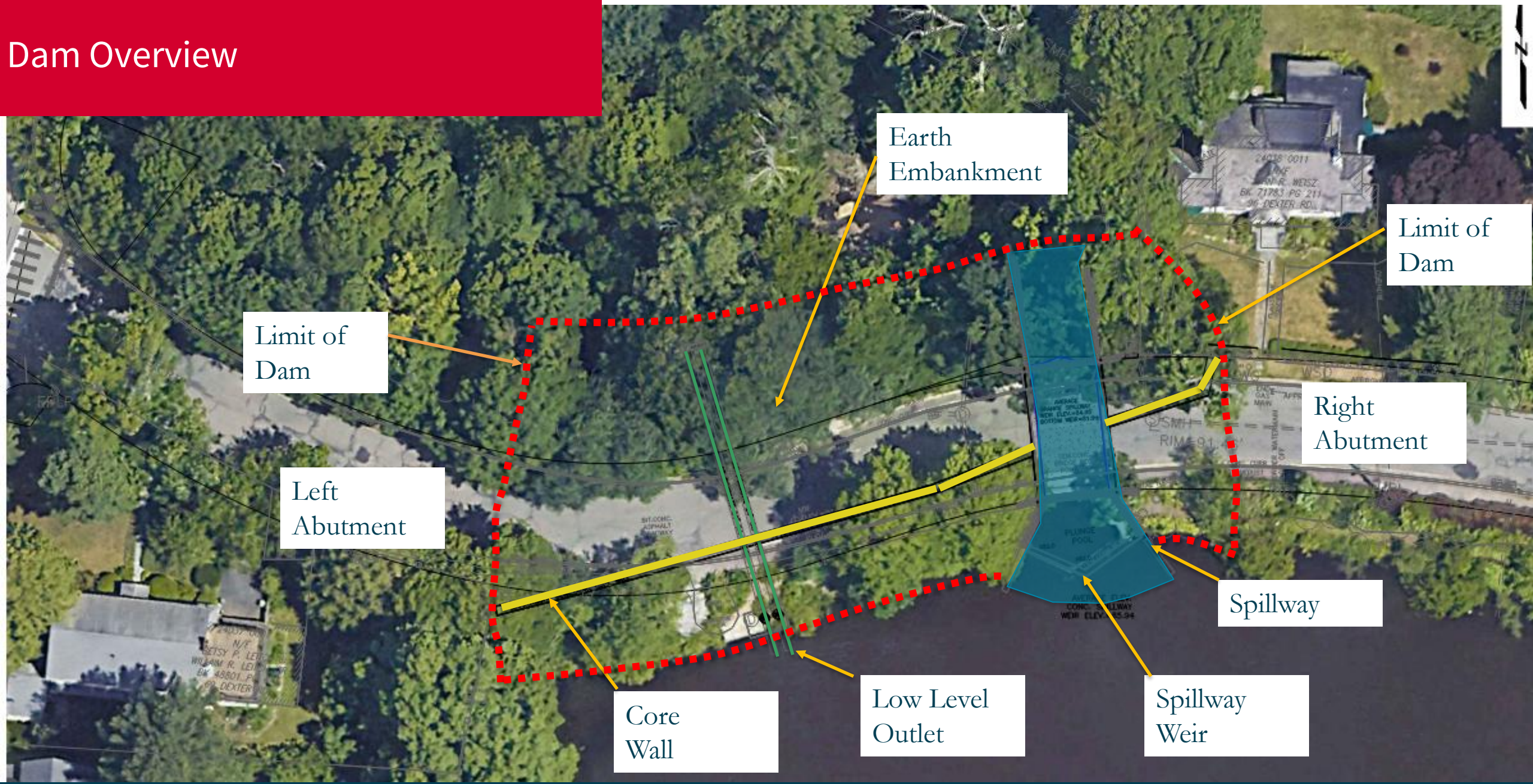
City of Newton

Public Facilities Presentation

BULLOUGH'S POND DAM REHABILITATION

6/4/2025

Dam Overview



Reasons For The Dam Rehabilitation

- The City is under the order of the Office of Dam Safety to address the “significant hazard” potential of the dam, which could lead to significant property damage, and/or loss of life
- Primary spillway is undersized
  - Overtopping likely during design storm.
  - Overtopping would likely lead to dam breach.
- Woody vegetation on the dam is required to be cleared
- Masonry repairs are needed at the spillway and low-level outlet

Inundation Map

Document Path: C:\Users\christine.suhonen\Desktop\Now\Bullough\GIS\InundationMap.mxd

Performed Alternative Assessment

- Considered nine (9) alternatives
- Focused on
- Used a rating system that included many factors including tree removal impacts

Alternative	Feasible and Addresses Spillway Deficiency
(1) Do Nothing	No
(2) Dam Removal	Yes
(3) Dredge Reservoir Sediments	No
(4) Modify LLO Operations	No
(5) Adding Auxiliary Spillway	No
(6) Modify Primary Spillway	Yes
(7) Install Sheet Pile Wall	Yes
(8) Modify Core Wall	Yes
(9) Downstream Erosion Protection	Yes

Recommended Alternative

- We strongly recommend the **Downstream Erosion Protection** – Articulated concrete blocks alternative
- Reasons for selection:
  - **Effective for safety** of lives and property
  - Construction has the **least impact** on the neighborhood
  - **Resists erosion and stops scour** before it damages the dam
    - SSP and Core wall options would allow scour and erosion of the dam.
  - This alternative is **expected to be well received by MADCR ODS**

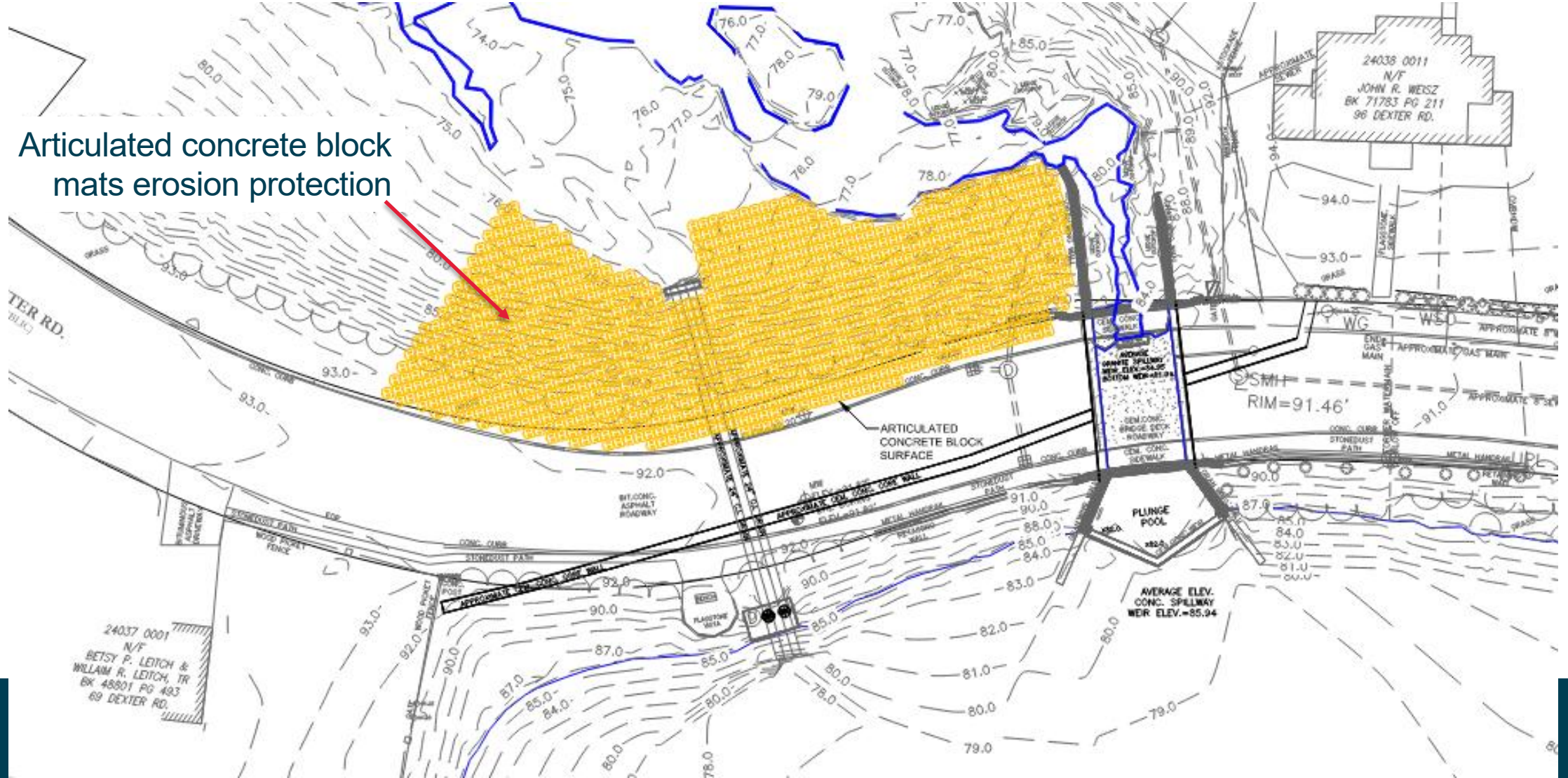
Discussion

Next Steps

- Grant Opportunities: Dam and Seawall Repair Program - EOEEA, Hazard Mitigation Assistance Grants - MEMA
- Proceed to final design, winter, spring
- Conservation Commission, at final design
- Office Of Dam Safety, at final design
- Construction bids, Funding request with City Council
- Construction in 2026

Backup Information

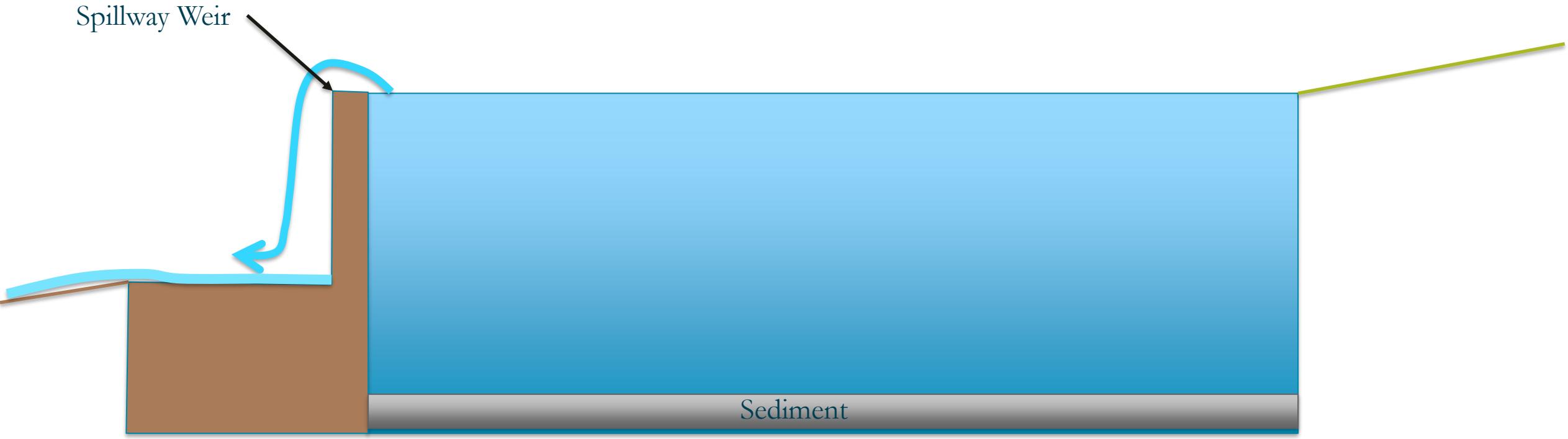
Selected Design– Downstream slope erosion protection



Recent Timeline

01/18/22 – GEI Engaged
03/11/22 – Initial Kickoff Meeting with City and Bullough's Pond Association
03/28/22 – Meeting with City and DCR ODS
11/2022 – GEI issues draft Alternative Report
12/15/22 – GEI presented viable options to City and Bullough's Pond Association
02/23 – GEI issues final Alternative Report
03/05/23 – Meeting with City and DCR ODS
03/27/24 – Meeting with City and Bullough's Pond Association
10/09/24 – Meeting with City and Bullough's Pond Association
11/20/24 – Public Facilities Meeting
01/21/25 – Meeting with City and Bullough's Pond Association
04/23/25 – Public Facilities Meeting

Pond With Sediment



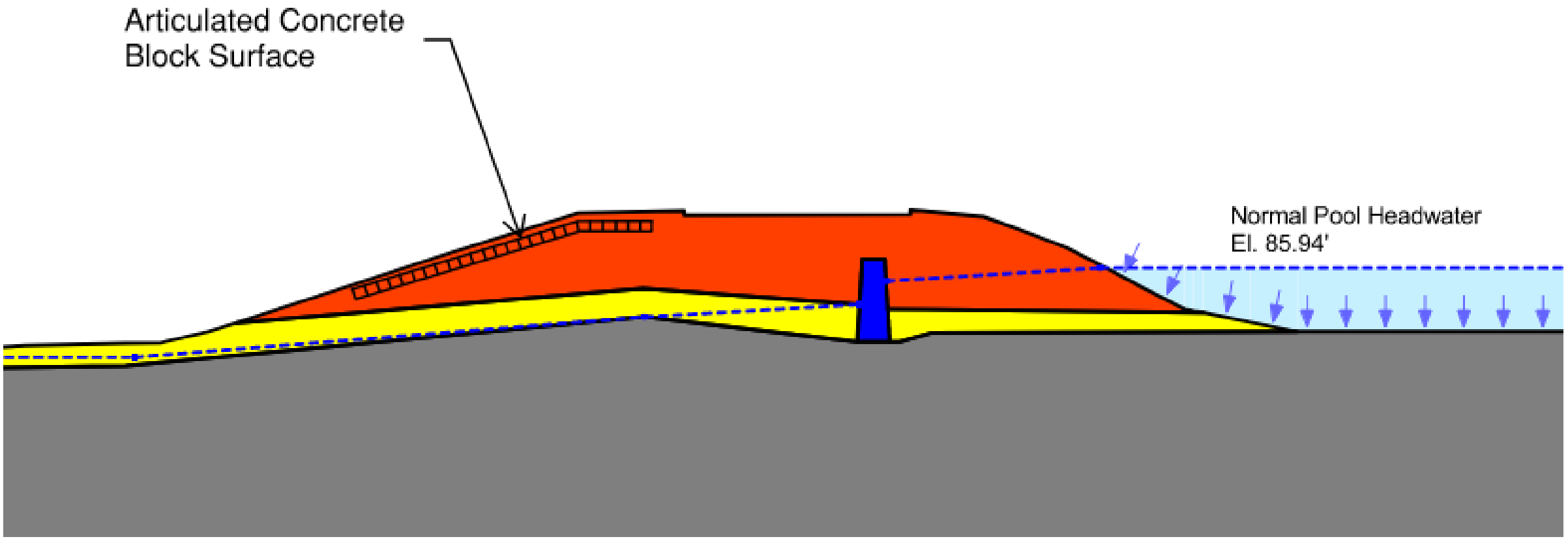
Pond without Sediment

Selected Design

DCR Requirement (302 CMR 10.14 (6)) for Significant Hazard Potential, Intermediate Size, Existing Dams:

- *The spillway system shall have a capacity to pass a flow resulting from a design storm, unless the applicant provides calculations, designs and plans to show that the design flow can be stored, passed through, or passed over the dam without failure occurring.*
- SDF = 100-year storm event

Selected Design– Downstream slope erosion protection

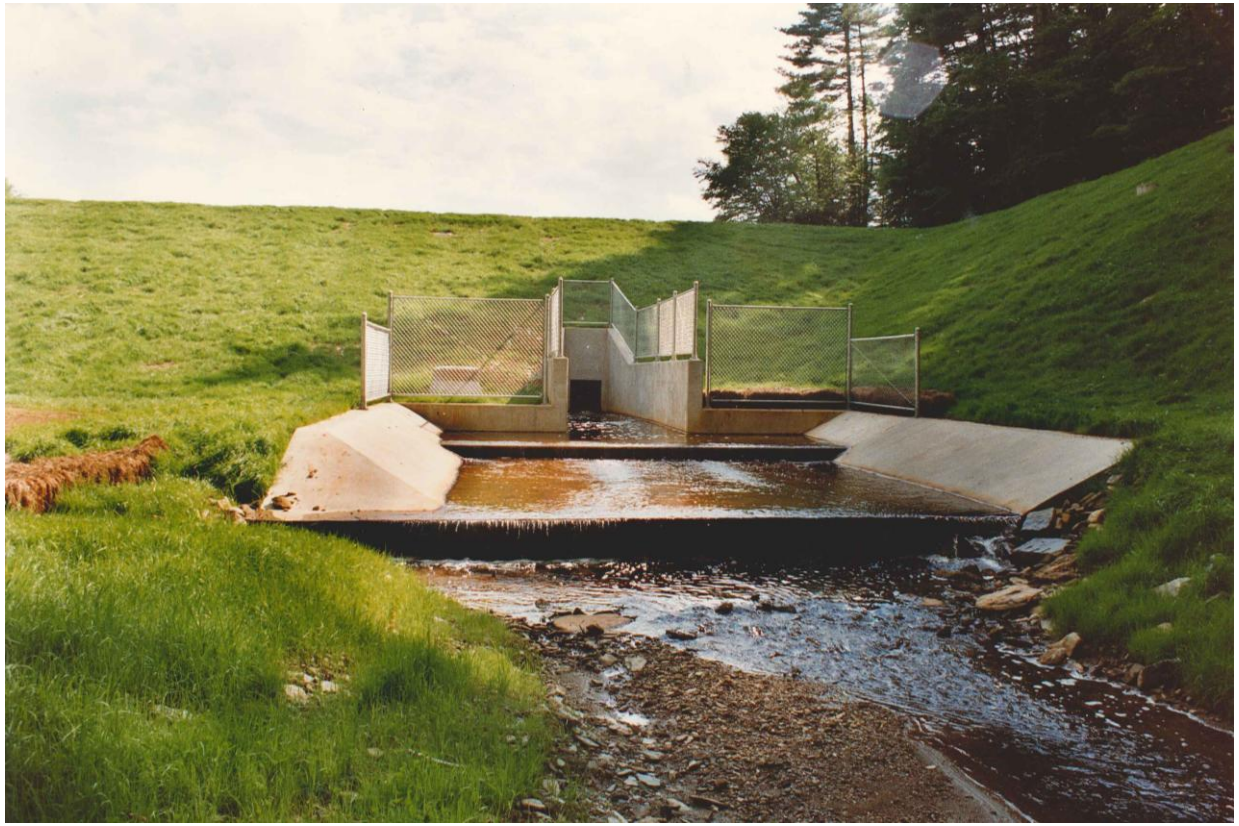


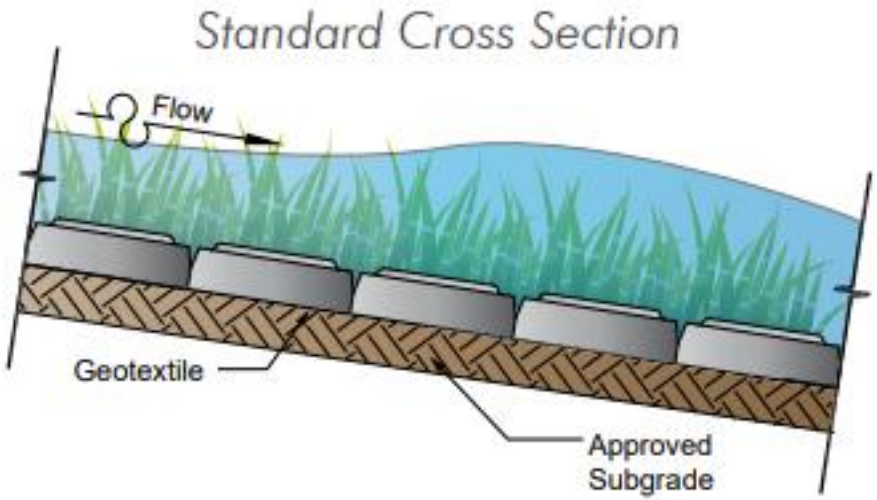
Selected Design– Downstream slope erosion protection

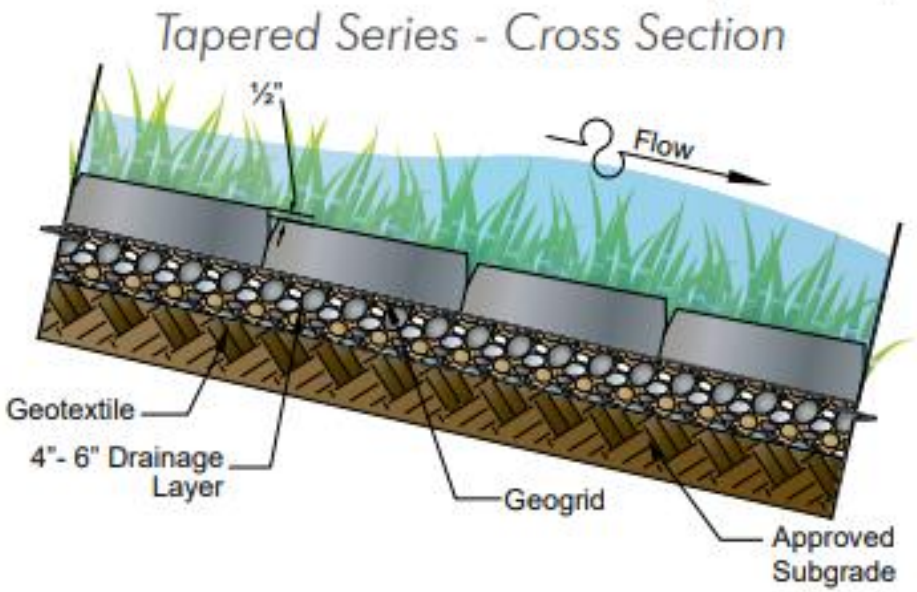
Downstream slope erosion protection elements:

- Remove trees and vegetation
- Strip ~1 feet depth, grade smooth and compact
- Place bedding layers
- Place articulated concrete block mattresses ~8,200 SF area
- Cover with seeded topsoil

Articulated Concrete Blocks







From conetec.com

From Shoretec.com

Jones Pond Dam in New Hampshire

Labyrinth/Piano Key Weir

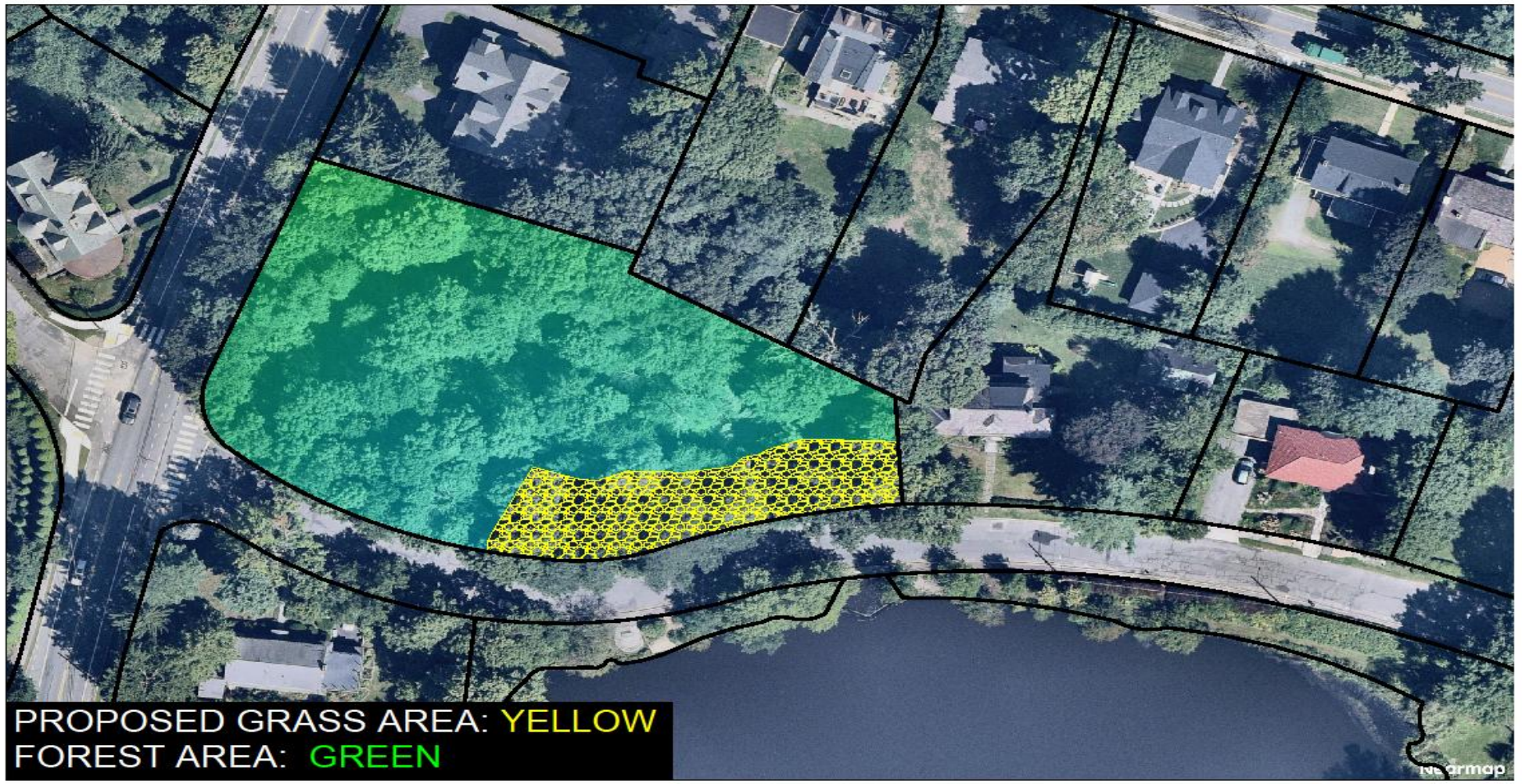
- Labyrinth weirs are effective under low head conditions (typically less than a few feet).
- The Bullough's Pond:
  - Weir El 85.9 ft
  - Peak Water Surface Elevation = El 94.5 ft
  - Head at weir = 8.6 ft
- Rough order of Cost Estimate = $10M to $20M dollars
  - Significant Concrete work
  - Likely new bridge
  - Downstream rock excavation
- Will require full tree (199) removal

Tree and Wood Vegetation Removal

- All trees/woody vegetation would need to be removed from the upstream slopes
- All trees/woody vegetation would need to be removed from the downstream slopes
- Total of 199 trees would be removed, 0-5” = 143; >6” = 56.

Tree Removal Plan

Downstream
Forest vs Proposed Grass Area



Tree Removal Estimate, Probable Construction Costs

Alternative	1 – Steel Sheet Pile	2 – Core Wall Raise	Selected Design, Downstream Erosion Protection
Tree Removal Estimate	172 trees	172 trees	199 trees
2024 Const. Cost	$2,900,000	$3,500,000	$2,300,000
Tree Removal Fee	$200,000	$200,000	$300,000
Utility Relocation/ Road Restoration	$650,000	$650,000	--
Total 2024 Opinion of Probable Cost	$3.75 Mil	$4.35 Mil	$2.6 Mil

Environmental & Dam Safety Permits

- Order of Conditions under the Massachusetts Wetlands Protection Act (Newton Conservation Commission).
- Chapter 253 Dam Safety Permit (DCR-Office of Dam Safety).
- Section 106 Historical Notification (Mass. Heritage Commission).
- Chapter 91 license review by the Massachusetts Department of Environmental Protection (MADEP).
- Water Quality Certification by MADEP under Section 401.
- Review by the U.S. Army Corps of Engineers under Section 404.
- Environmental Notification Form for Massachusetts Environmental Policy Act Office.