Watershed Management Project Updates

Fresh Pond Advisory Board
21 March 2024

HATCH

Agenda

1. 2024/FY25 Projects

2. Black's Nook Pond Dredging Grant

3. Pine Grove Soils Assessment and Pilot Project

4. Discussion

Spring 2024 Construction Projects
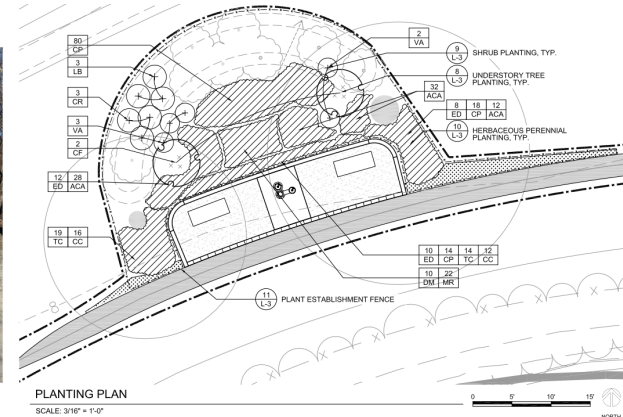
Little Fresh Pond Shoreline Reconstruction

FLEXIBLE POROUS PAVING PATH + LANDING

EXTENDED FENCE

EXISTING TREE TO REMAIN

STONE SLAB RAMP + BOULDERS

BLACK LOCUST TIMBER

PREFERRED OPTION - PERSPECTIVE PHOTOMONTAGE
Little Fresh Pond Dog Beach
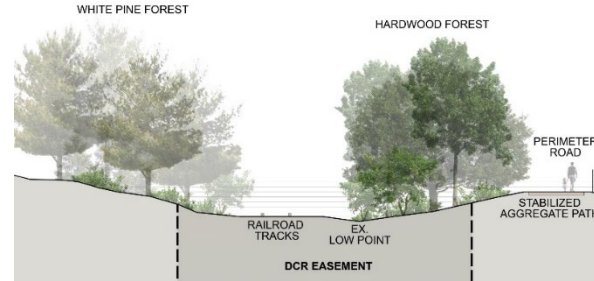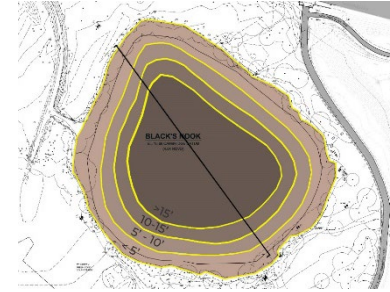
Birch Grove Seating Area and Fountain

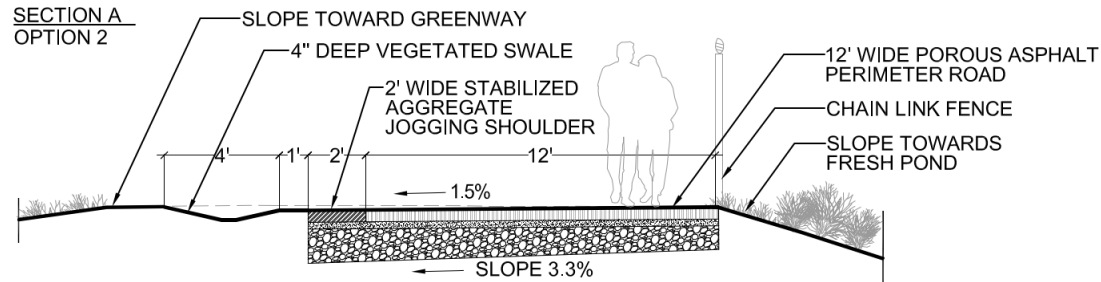Seating Area with Drinking Fountain

PLANTING PLAN
SCALE: 3/16" = 1'-0"

2024 Planning And Design Projects

– Pine Grove Pilot Project Restoration Plantings

– Perimeter Road - Porous Paving Improvements

– Black's Nook Pond EOED FY 25 Inland Dredging Grant for Habitat Improvement
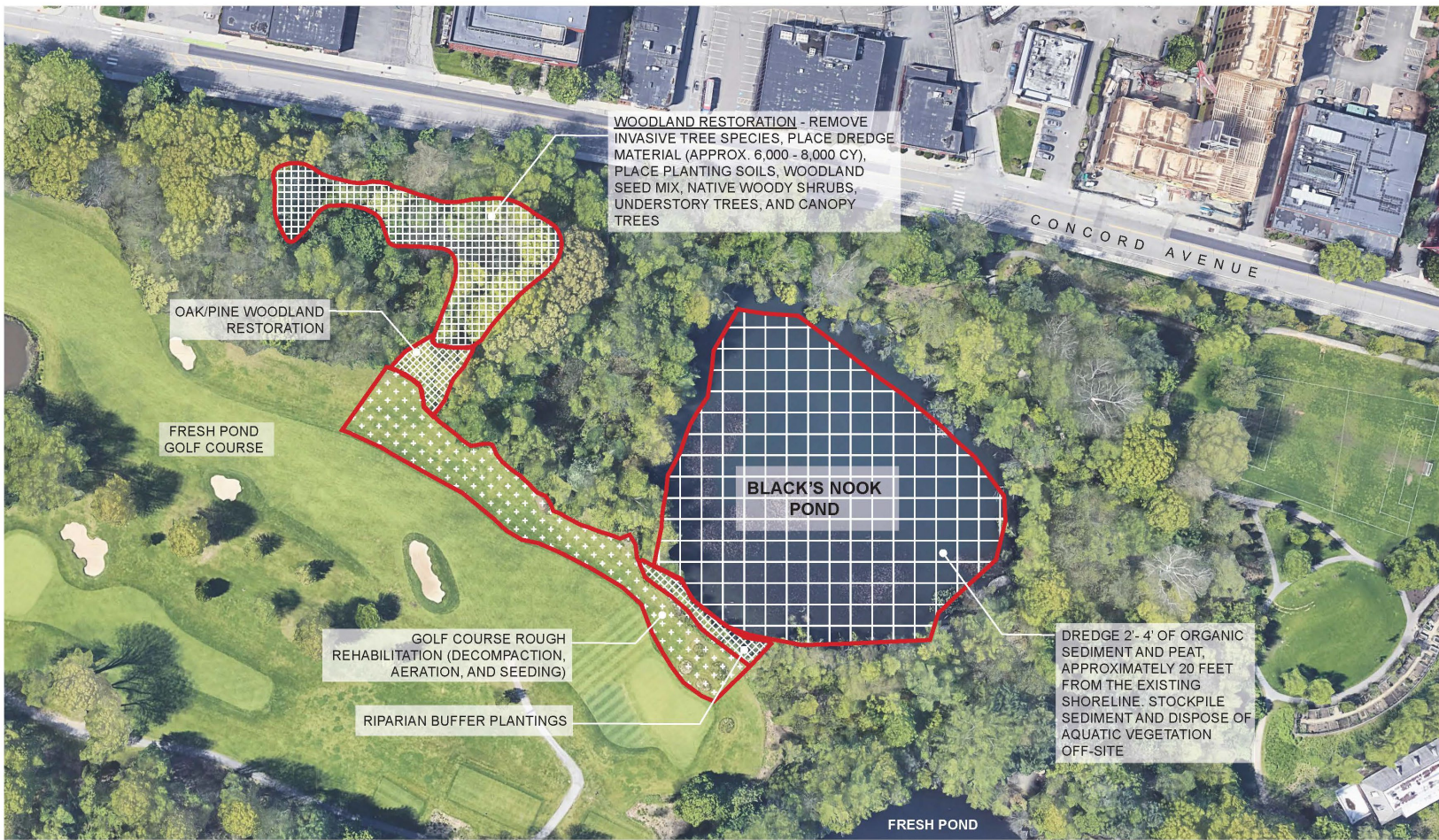
Black's Nook Pond Ecosystem Health Improvements Project

FY25 Inland Dredging Pilot Project Grants (EOED)

- ✓ "Restore or improve the health of freshwater ecosystems".

- ✓ Up to $300,000 for design and permitting.

- ✓ One application per municipality.

- ✓ Submitted 3/1/2024; Start date for awarded contracts is 7/1/2024.

WOODLAND RESTORATION - REMOVE INVASIVE TREE SPECIES, PLACE DREDGE MATERIAL (APPROX. 6,000 - 8,000 CY), PLACE PLANTING SOILS, WOODLAND SEED MIX, NATIVE WOODY SHRUBS, UNDERSTORY TREES, AND CANOPY TREES

OAK/PINE WOODLAND RESTORATION

FRESH POND GOLF COURSE

BLACK'S NOOK POND

GOLF COURSE ROUGH REHABILITATION (DECOMPACTION, AERATION, AND SEEDING)

RIPARIAN BUFFER PLANTINGS

DREDGE 2'- 4' OF ORGANIC SEDIMENT AND PEAT, APPROXIMATELY 20 FEET FROM THE EXISTING SHORELINE. STOCKPILE SEDIMENT AND DISPOSE OF AQUATIC VEGETATION OFF-SITE

CONCORD AVENUE

FRESH POND

ECOSYSTEM HEALTH & DREDGING CONCEPT PLAN

Black's Nook In-Pond Restoration Project

FEBRUARY 2024

CAMBRIDGE WATER DEPARTMENT

HATCH

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0   100'   200'   300'   400'   500'
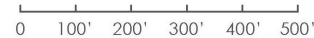
PINE GROVE PROJECT AREA
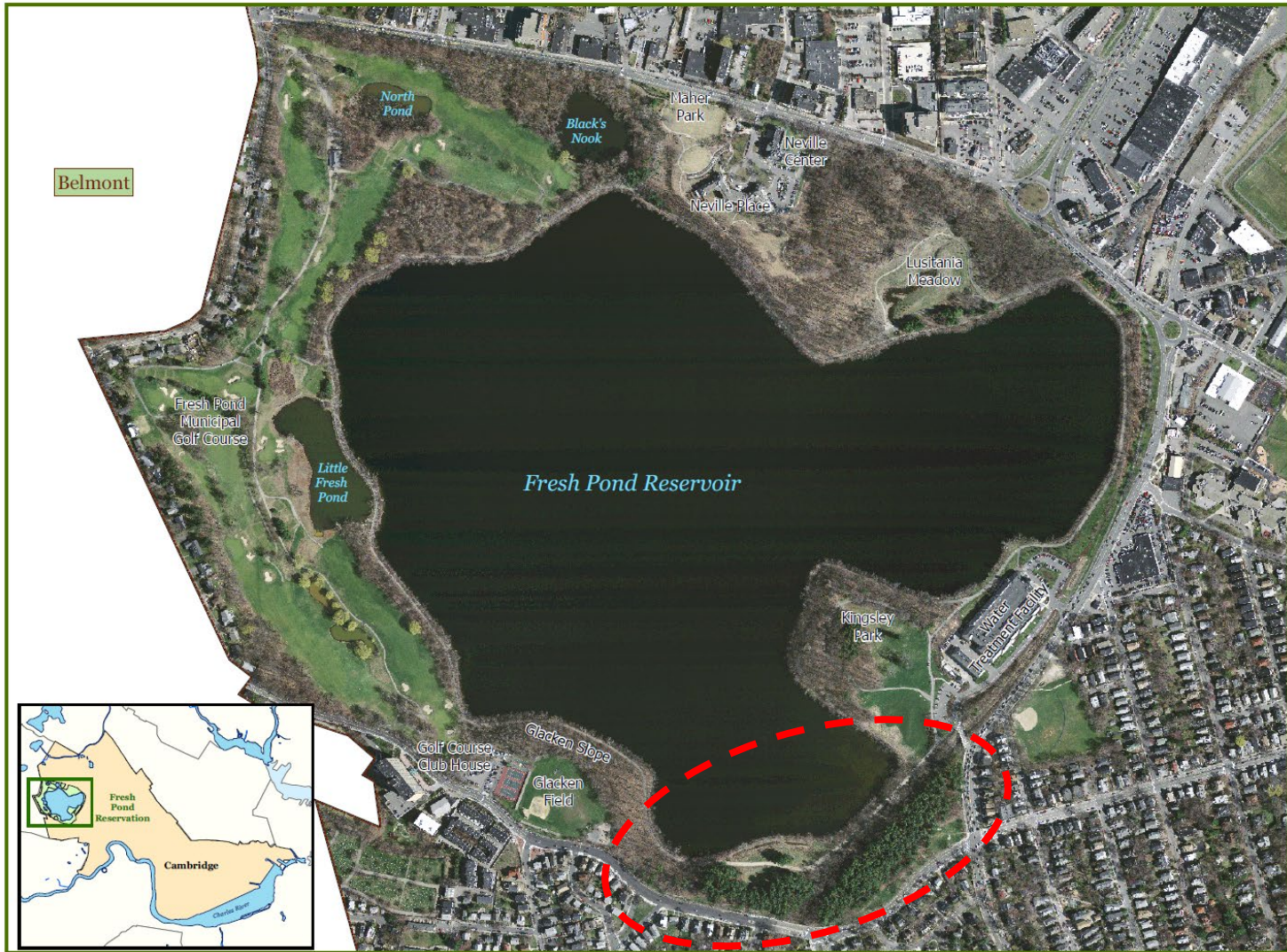
PINE GROVE RESTORATION

Kingsley Park

Glacken Slope

Fresh Pond

Glacken Field

Perimeter Road

Watertown/Cambridge Greenway

Fresh Pond Parkway

Weir Meadow

Huron Ave

UMass Soil Analysis
Laboratory Results and Conclusions

1. Topsoils classified as Loam to Fine Sandy Loam.

2. Soil profile for both test pits is suitable for white pine and typical of a mature forest.

3. Percentage of organic matter, nutrient and salt levels are within acceptable ranges.

4. The very low acidity level (pH) of upper soils may be contributing to poor germination and /or white pine seedling establishment (4.3 to 5.0).

5. Acceptable pH range = 5.0 to 6.0 for white pine.

6. Other factors may include: low sunlight; invasive plant allelopathy; and/or insects and disease.

Soil Foodweb Laboratory, NY
Soils Analysis - Summary

Two (2) samples submitted (October 2023).

Excellent levels of bacteria and fungi.

Good levels of protozoa; flagellates, amobae, and ciliates present.

No nematodes detected.

No biological conditions present that would limit pine seedling growth.

Pilot Project Goals

1. Develop a better understanding of the Pine Grove understory and lack of white pine regeneration.

2. Monitor health and prolong life of the existing mature white pines.

3. Create a more diverse habitat utilizing native trees, shrubs, and groundcovers (White Pine-Oak Forest Community).

Pine Grove Pilot Project

Pilot Plot Variables:

1. <u>Control Plot</u> (no fencing).

2. Four or five 10m x 10m fenced enclosures (same aspect, slope and elevation).

3. Sunlight/shade.

4. Native plants – size, ages, seedlings, containers, bare root, and seed mixes.

5. Forest floor – existing duff layer; pine needles; composted leaf litter.

6. EcM (Ectomycorrhiza) inoculant additive.

Pine Grove Pilot Project
Native Plant Palette

CANOPY

- White pine, red/black oak, American beech, Canadian hemlock (?).

UNDERSTORY

- Black birch, black cherry, witch hazel, maple-leaf viburnum, huckleberry.

GROUNDCOVERS

- Pennsylvania sedge, Canada mayflower, bracken fern, white wood aster, wild sarsaparilla, partridgeberry.

Pine Grove Pilot Project

Data Collection

1. Plant growth, coverage, phenology, and disease.

2. Mammal browsing.

3. Insects and their plant hosts.

4. Invasive plant species.

5. Training by Earthwise Aware (EwA) scientists (Action-driven nature conservation).

6. Monitoring and data input by volunteers.
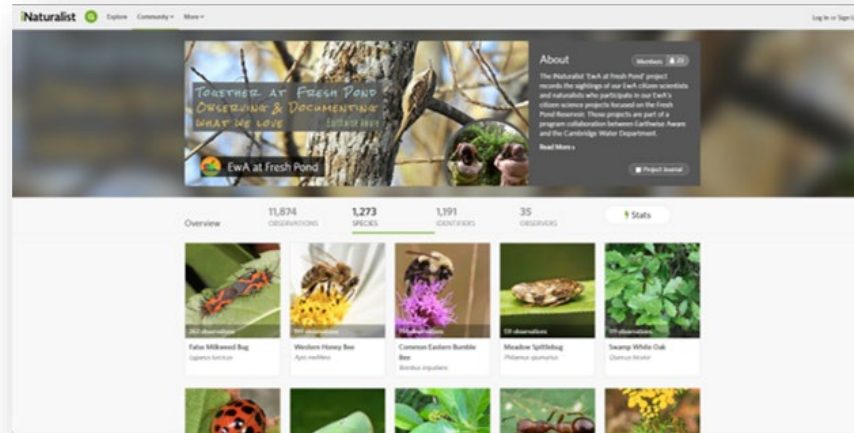
Pine Grove Pilot Project
Spring/Summer 2024 Action Items

1. Remove Norway maples less than 6" caliper (completed).

2. Identify the plot locations and secure with animal-proof fencing.

3. Document and remove invasive species.

4. Document existing plants and arthropods.

5. Plant native species by altering size, diversity, surface condition, and soil amendments.