



Public Boat Ramp Stormwater Project

Improving water quality by treating stormwater pollution at public boat ramps across Cape Cod

Waquoit Bay Landing, Falmouth

25% Design Public Meeting

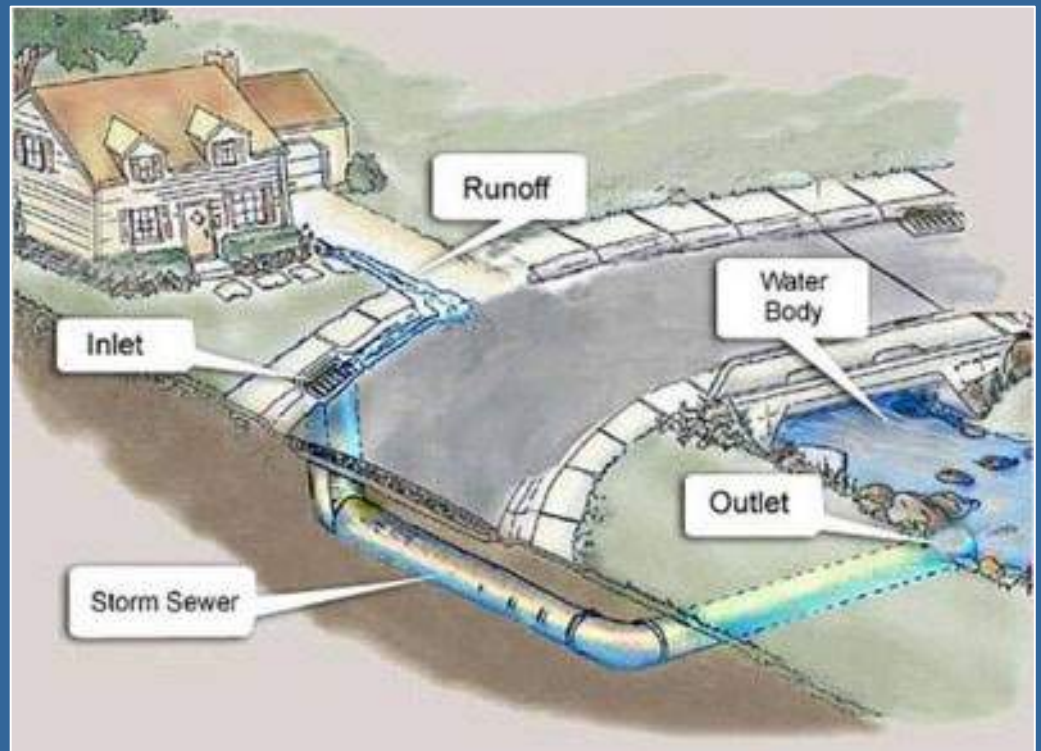
March 27, 2024

Jordan Mora, APCC



What is stormwater?

Water from rain or melting snow that flows across the land instead of being absorbed into the ground.



Why is it a problem?

- ◆ Impaired Water Quality:
Freshwater and Coastal
 - ◆ Nutrient impairment
 - ◆ Bacterial contamination
- ◆ Why public boat ramps?
 - ◆ Locations of direct discharge
with little to no treatment of
stormwater



What is the solution?

- ◆ Green system infrastructure best management practices (BMPs)
 - ◆ Mimic natural processes to remove pollutants and improve water quality and overall ecosystem health.
 - ◆ Porous surfaces
 - ◆ Vegetation



Project Overview



Short-term Goals:

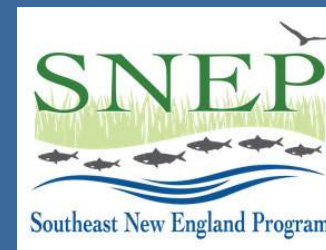
- ◆ Develop preliminary designs for twenty public boat ramps
- ◆ Advance plans for high priority sites through design and permitting to align for construction



Long-term Goals:

- ◆ Improve water quality
- ◆ Reduce shellfish bed and beach closures

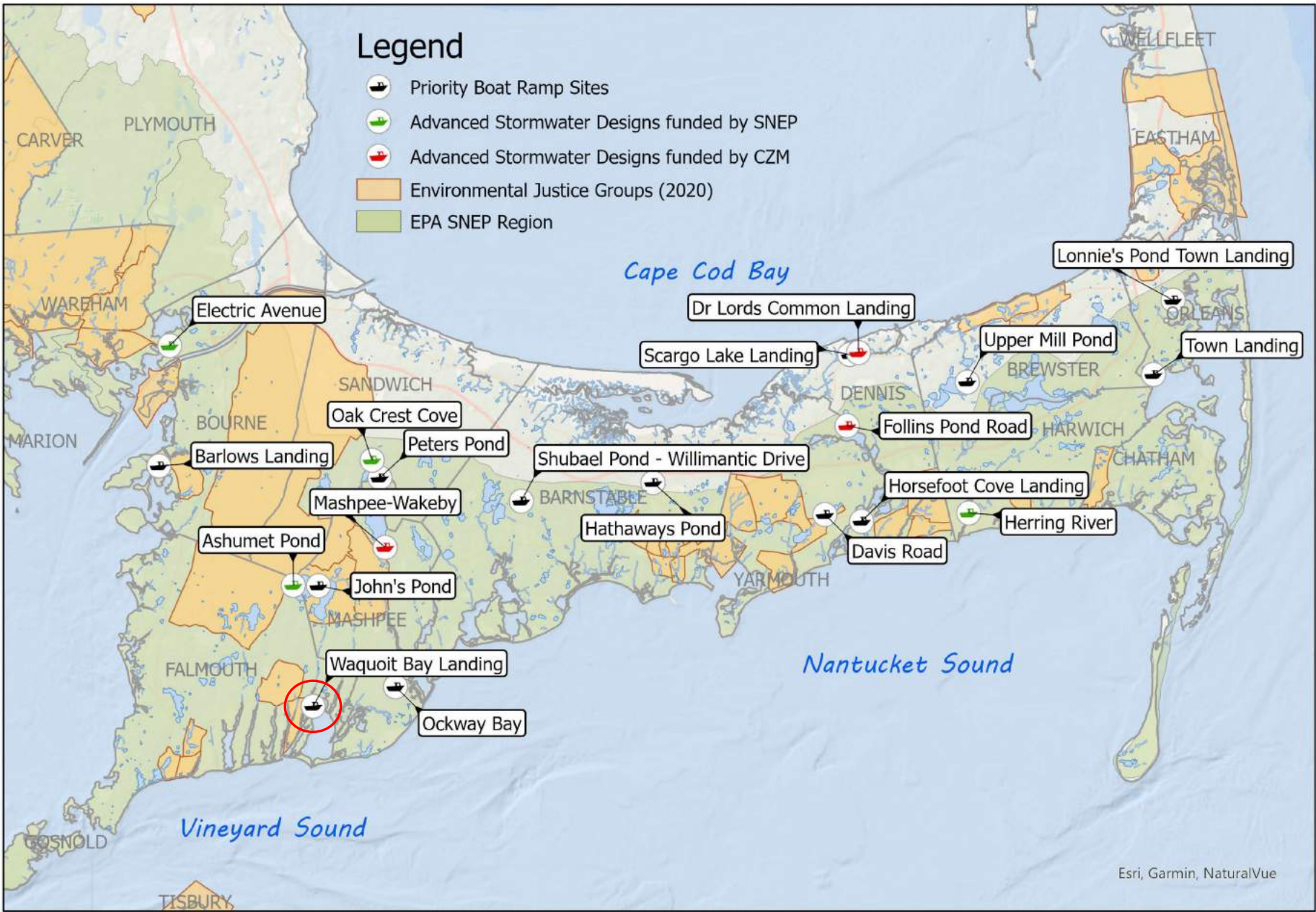
Project Funding:



& APCC Private Foundation Funds

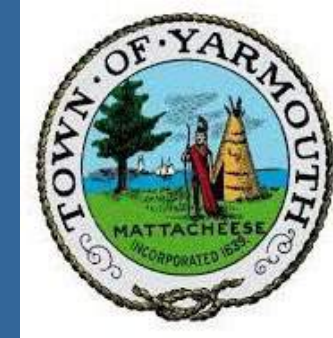
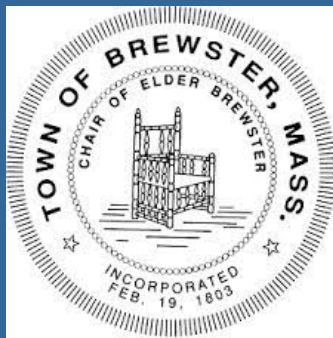
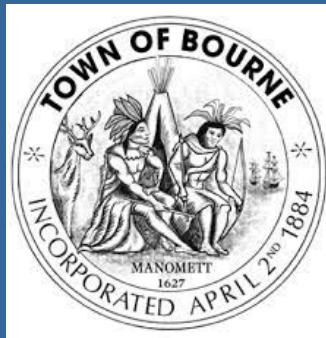
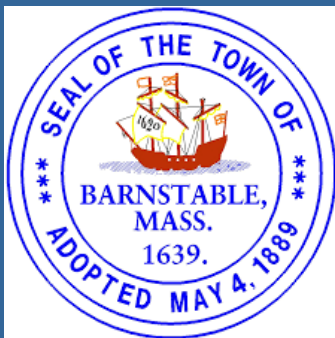
Legend

-  Priority Boat Ramp Sites
-  Advanced Stormwater Designs funded by SNEP
-  Advanced Stormwater Designs funded by CZM
-  Environmental Justice Groups (2020)
-  EPA SNEP Region





Project Partners



Waquoit Bay: Project Timeline

Completed 2022

- 20 sites prioritized by the towns and state staff
- Horsley Witten Group completed site assessments and concept designs

Concept Designs

Spring 2023

- APCC private foundation funding allocated for Waquoit Bay (FA)

Seek Funding & Coordinate with Partners

Winter 2023- 2024

- Complete field surveys
- Advance designs to 25%

Advance Designs

Present

- Securing funding to develop final design and apply for permits
- Construction anticipated for following funding cycle (~2027)

Final Design and Construction



For more information

<https://apcc.org/stormwater-management-at-public-boat-ramps/>



Cape Cod Boat Ramp Stormwater Retrofit Project



*Funding for this work has been provided to Association for the Preservation of Cape Cod (APCC) from a Southeast New England Program (SNEP) Watershed Grant, Massachusetts Office of Coastal Zone Management Coastal Habitat and Water Quality Grants, and private foundation funding. SNEP Watershed Grants are funded by the U.S. Environmental Protection Agency (EPA) through a collaboration with Restore America's Estuaries (RAE). For more on SNEP Watershed Grants, see www.snepgrants.org.



Waquoit Bay
(Seapit) Landing
Boat Ramp

Public Meeting

March 27, 2024



agenda



- Green Stormwater Infrastructure
- Why Waquoit Bay Landing?
- Existing Conditions
- Site Assessments/Resource Areas
- Proposed Conditions
- Q/A

Green Stormwater Infrastructure (GSI)

Mimic Nature



Structural Practices

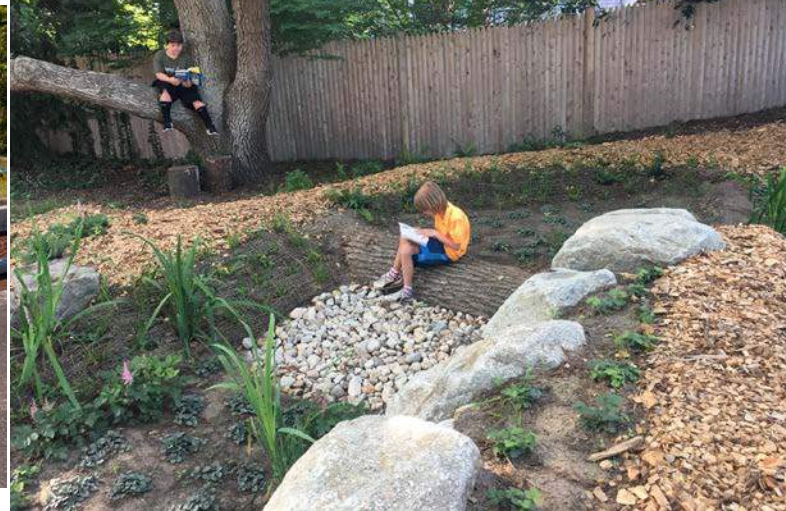
- Infiltration
- Filters
- Wet Practices
- Rainwater Harvesting

Non-structural Practices

- Pavement Removal
- Revegetation
- Source Control
- Public Education

Green Stormwater Infrastructure (GSI)

Mimics Nature



Project Background – Why Waquoit Bay Landing?



- Public Access
- Shellfishing Area
- Impaired Waters
- Within 1-mile from EJ Community
- No existing stormwater management

Existing Conditions



- Total Drainage Area = 3.2 acres
- 18% Impervious (0.58 ac)

Existing Conditions



- Town Road and Parking Lot
- State Ramp
- Existing Stormwater Infrastructure
 - Trench Drain - Clogs
 - No Treatment
- Tight, steep site

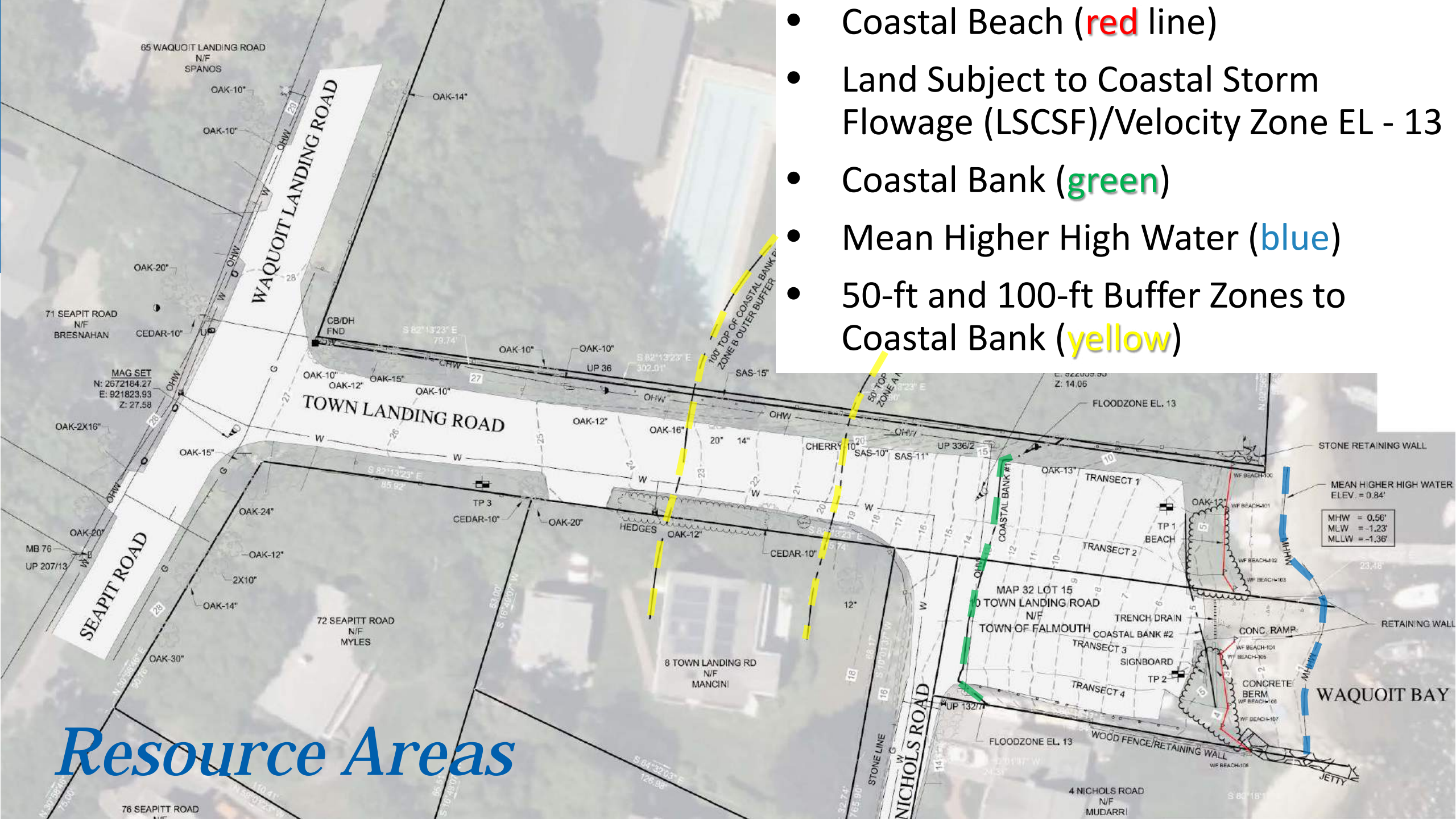
Nichols Road (private)



Site Assessments



- Coastal Beach (red line)
- Land Subject to Coastal Storm Flowage (LSCSF)/Velocity Zone EL - 13
- Coastal Bank (green)
- Mean Higher High Water (blue)
- 50-ft and 100-ft Buffer Zones to Coastal Bank (yellow)



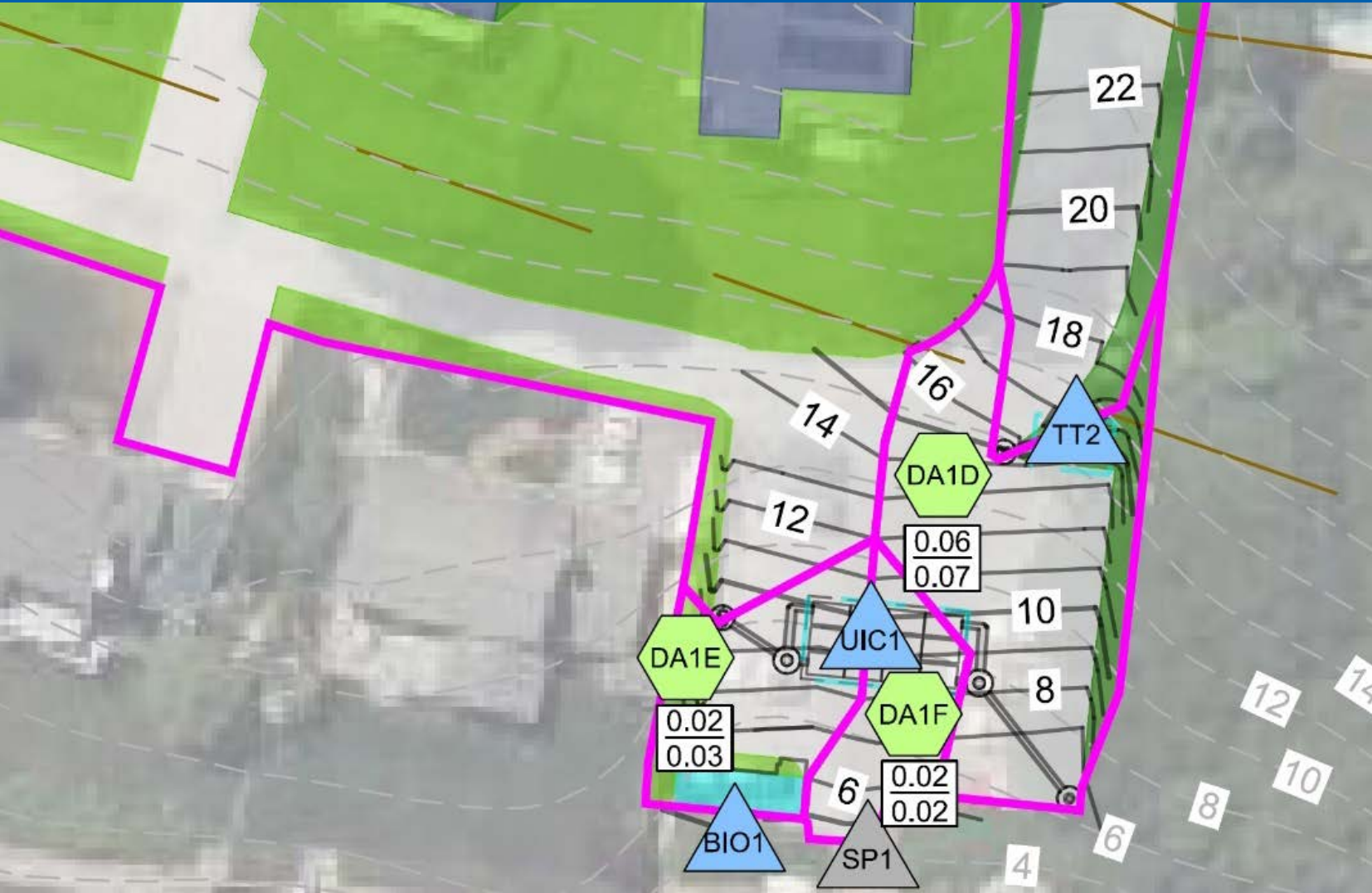
Resource Areas

Proposed Conditions



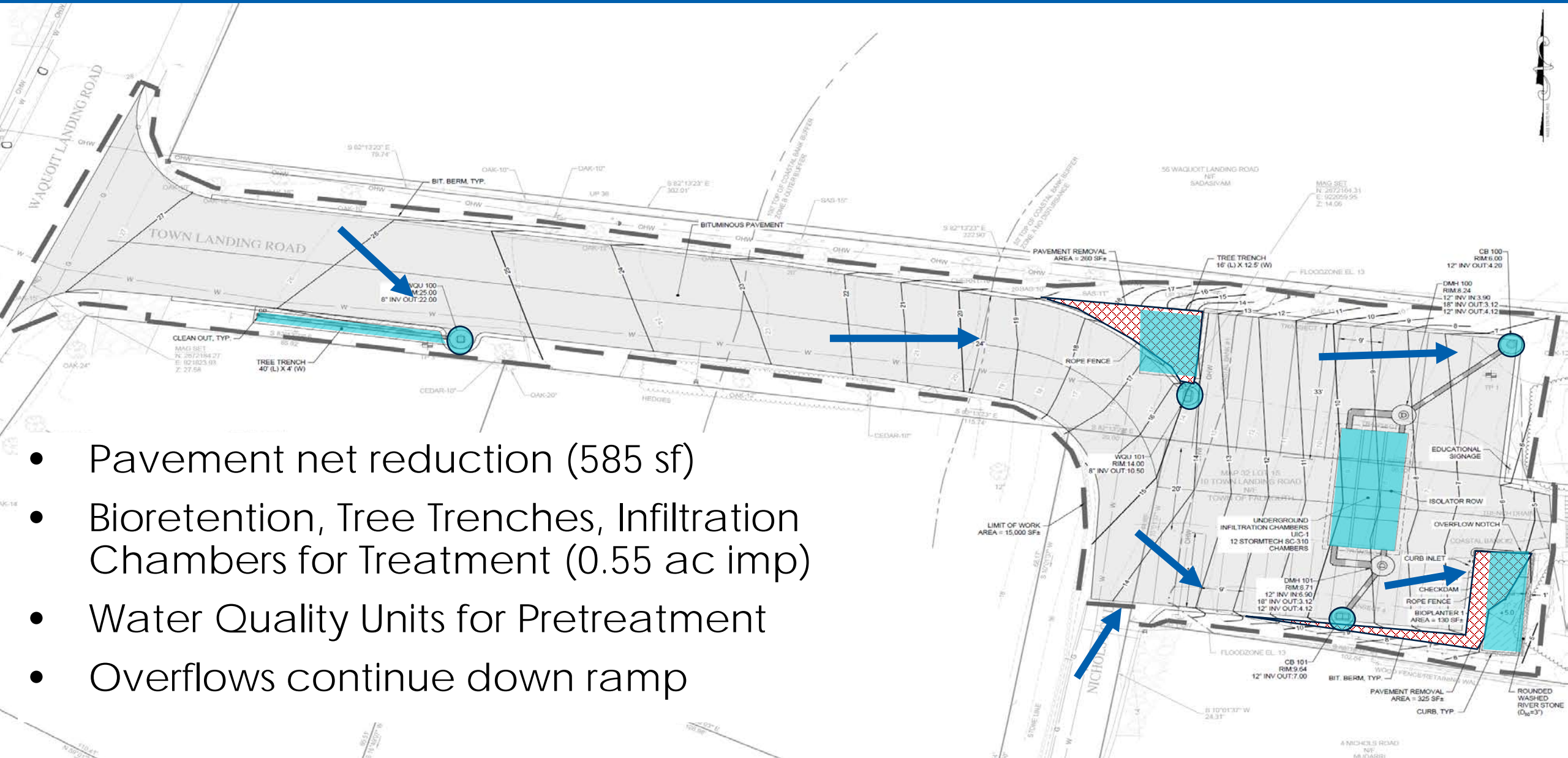
- DA1A = 0.5 ac/30% imp **Tree Trench**
- DA1B = 0.14 ac/70% imp **Tree Trench**
- DA1C & DA1D = 2.4 ac/12% imp **Infiltration Chambers**

Proposed Conditions



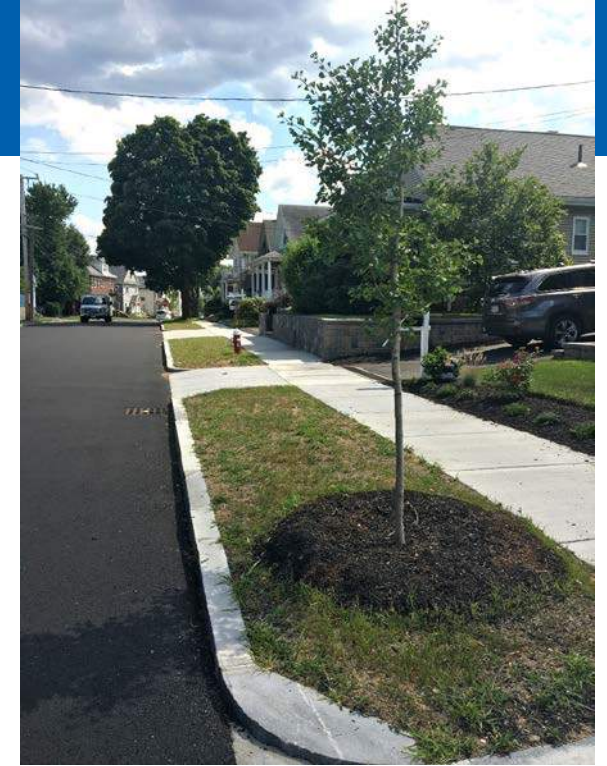
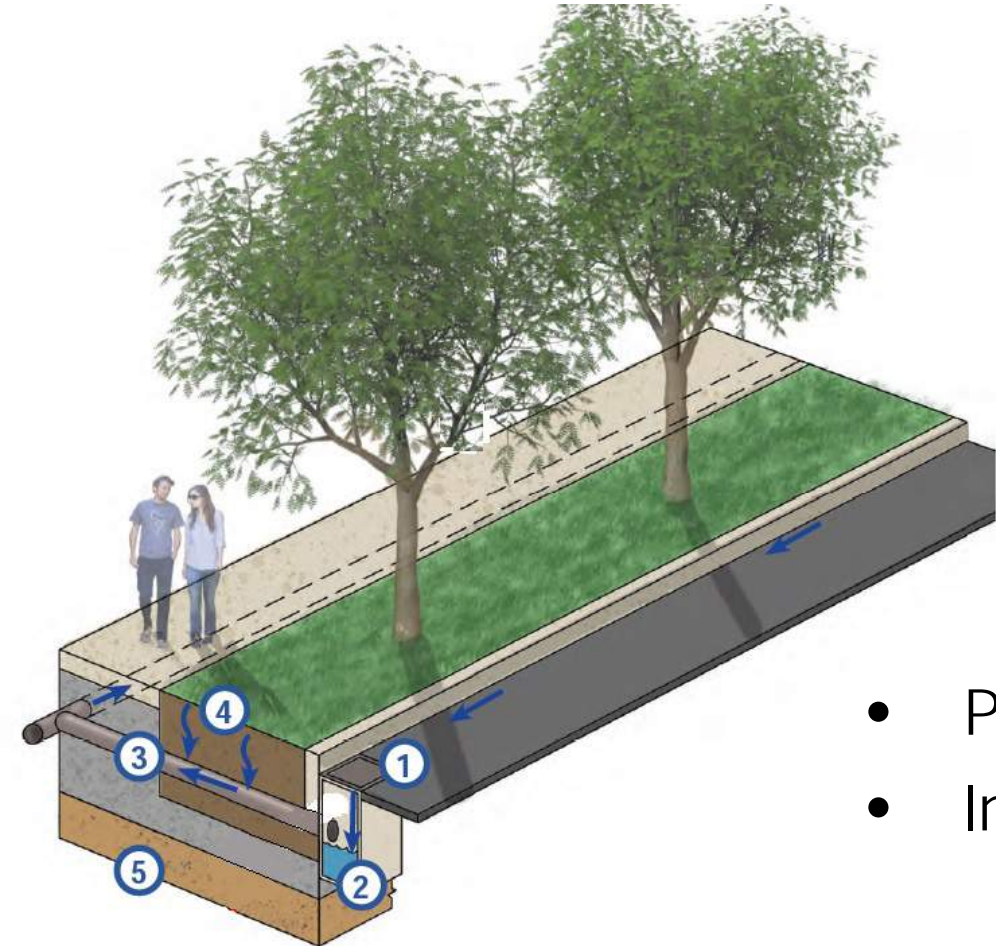
- DA1C & DA1D = 2.4 ac/12% imp Infiltration Chambers
- DA1E = 0.03 ac/67% imp Bioretention
- DA1F = 0.02 ac/100% imp Unmanaged

Stormwater Components



- Pavement net reduction (585 sf)
- Bioretention, Tree Trenches, Infiltration Chambers for Treatment (0.55 ac imp)
- Water Quality Units for Pretreatment
- Overflows continue down ramp

Tree Trench

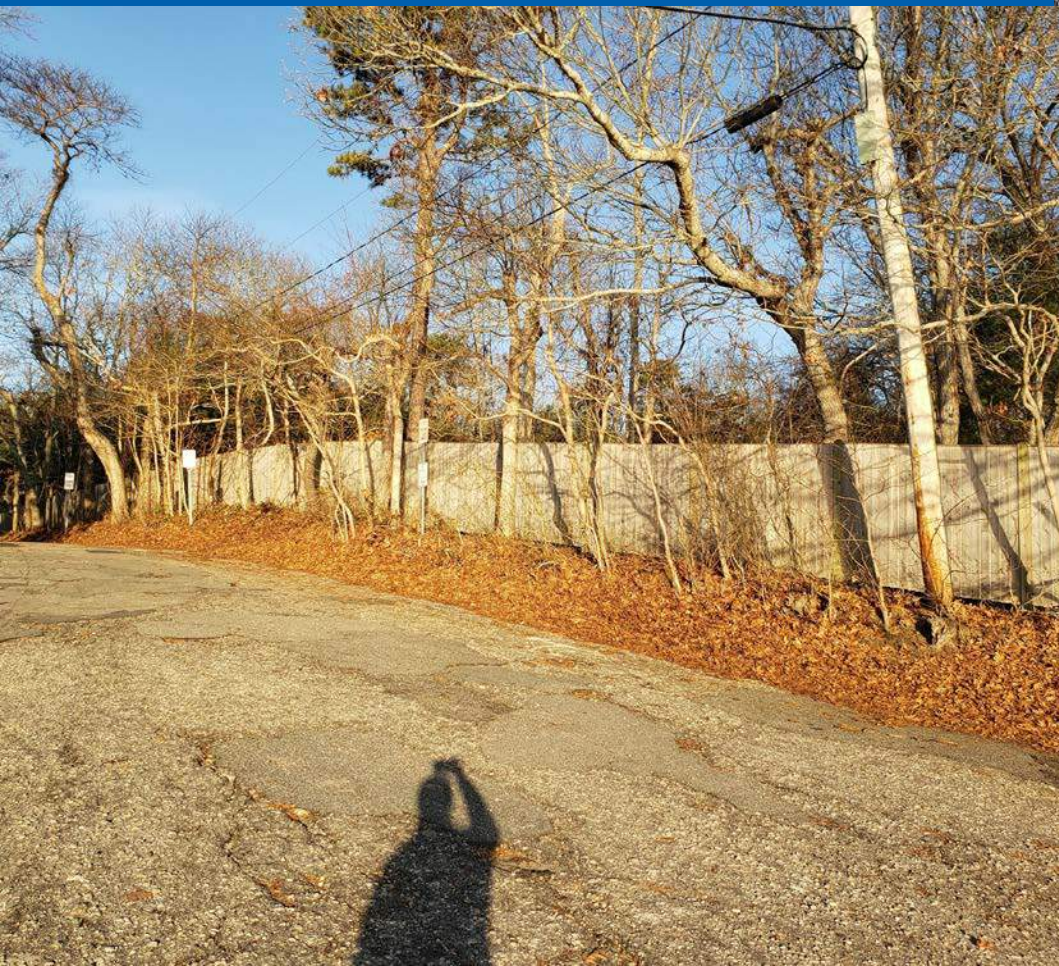


- Proprietary pretreatment unit
- Infiltration trench with tree for nutrient uptake

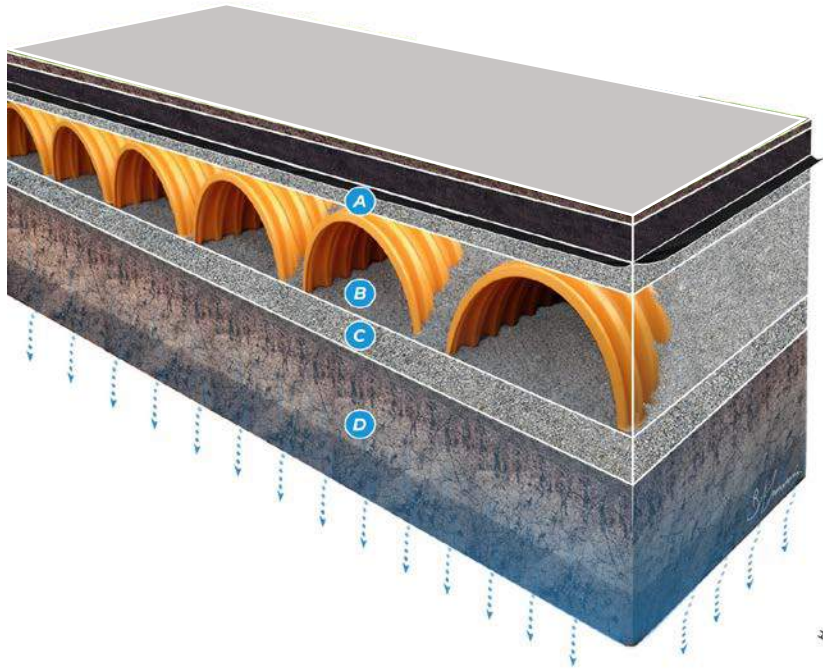
Tree Trench 1



Tree Trench 2

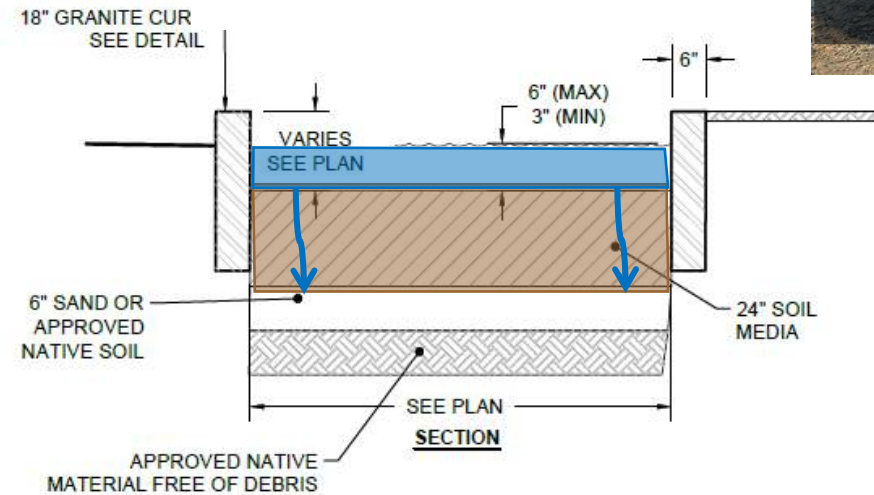
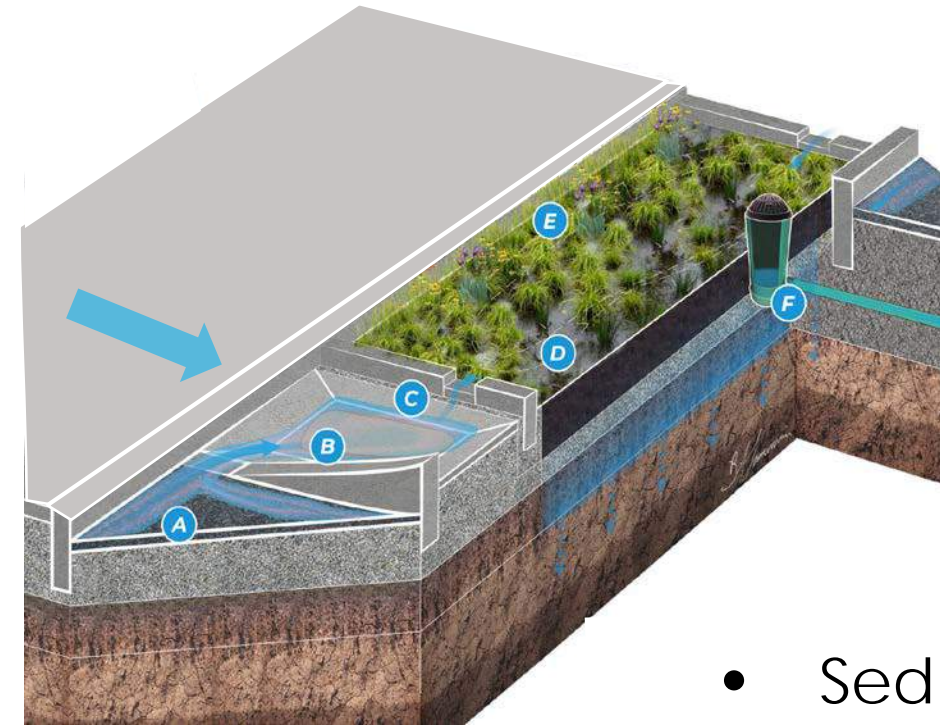
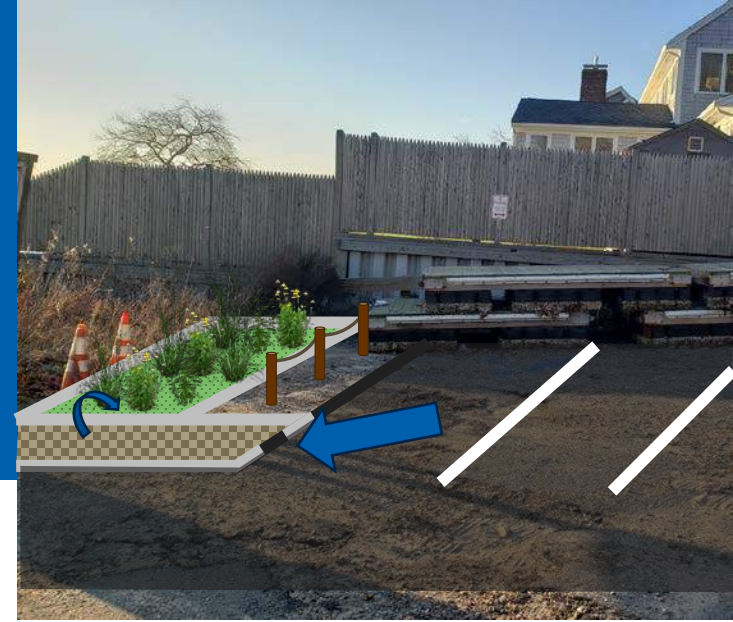


Underground Infiltration Chambers



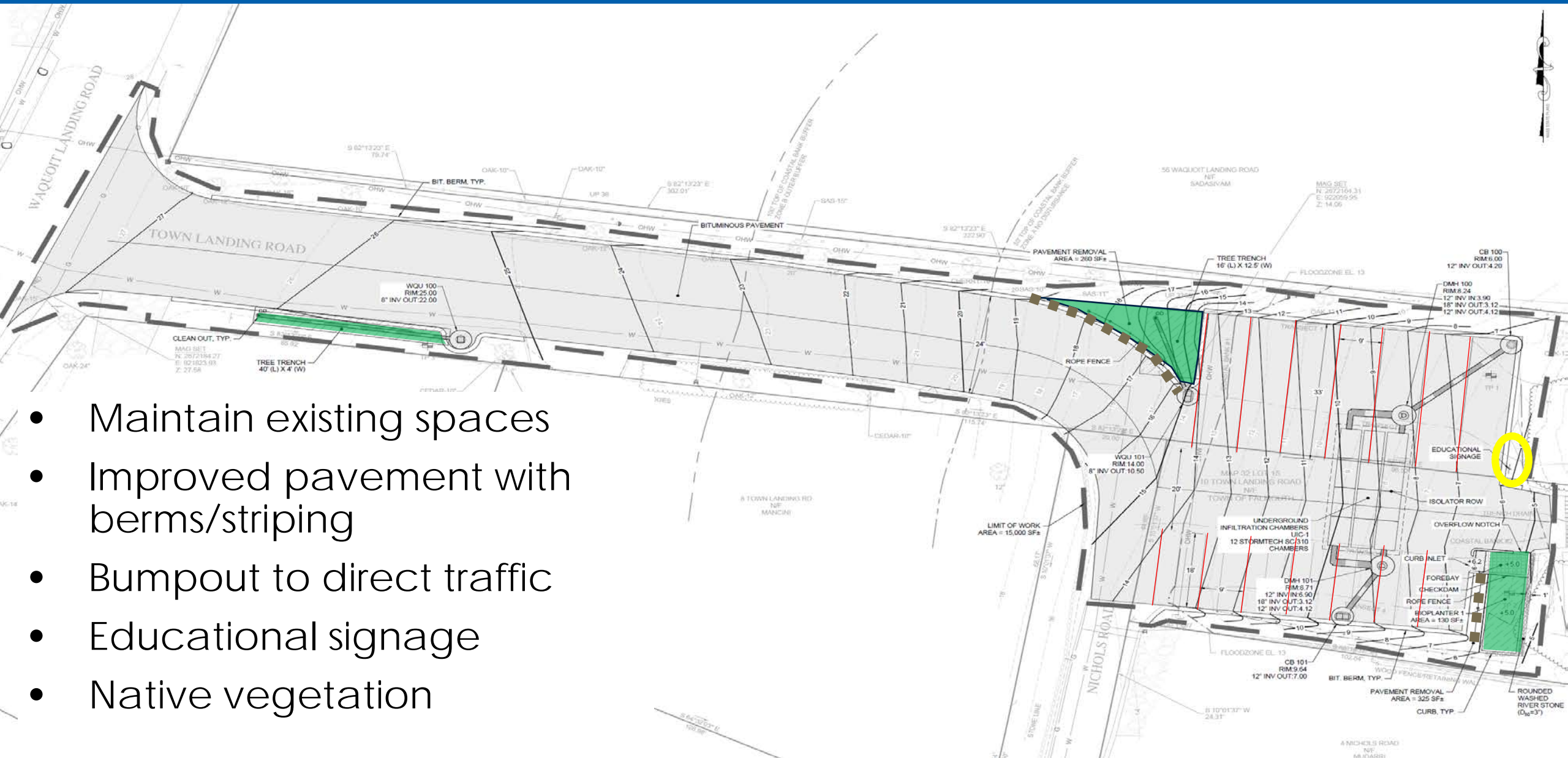
- Isolator row for pretreatment

Hard-edged Bioretention



- Sediment forebay pretreatment
- Infiltrating bioretention with native plants

Site Amenity Components



- Maintain existing spaces
- Improved pavement with berms/stripping
- Bumpout to direct traffic
- Educational signage
- Native vegetation



Thank
You!

Questions?

