Building a Resilient Future

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Disaster Resilience Challenges - New Haven Transit Corridor

Upland Stormwater Cannot Drain Due to Storm Surge, Adds to Flooding

Stormwater Choke Point Dictated by Railyard

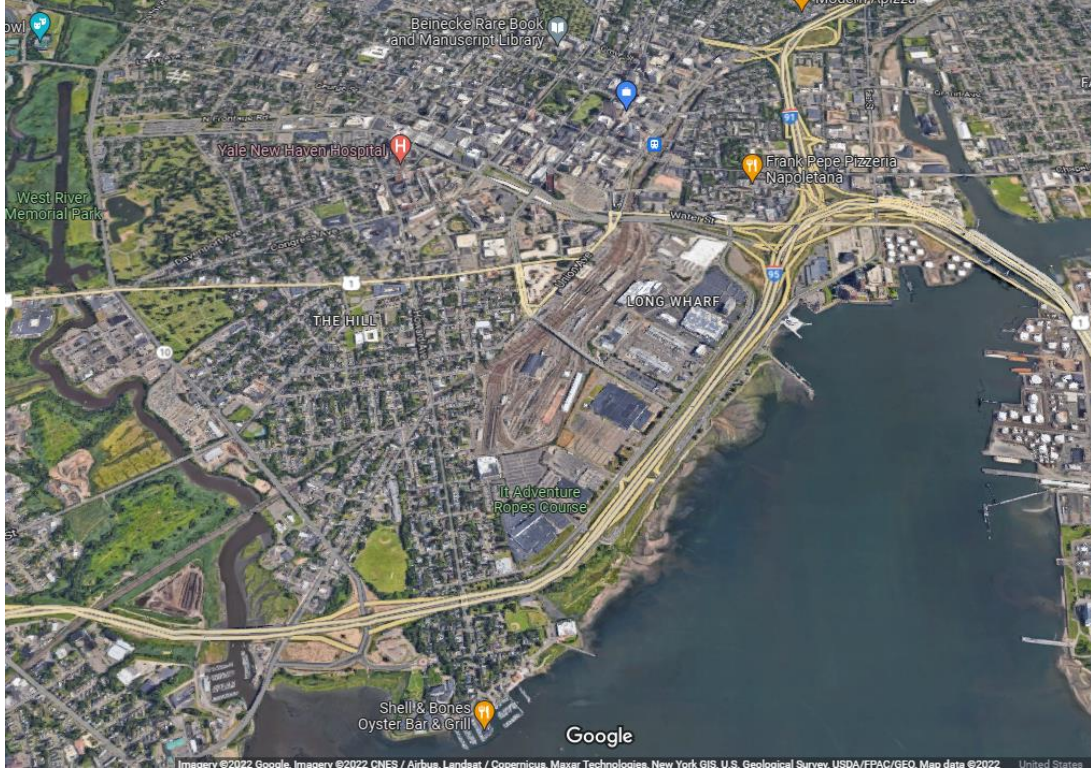
Insufficient Drainage Capacity Under Railyard

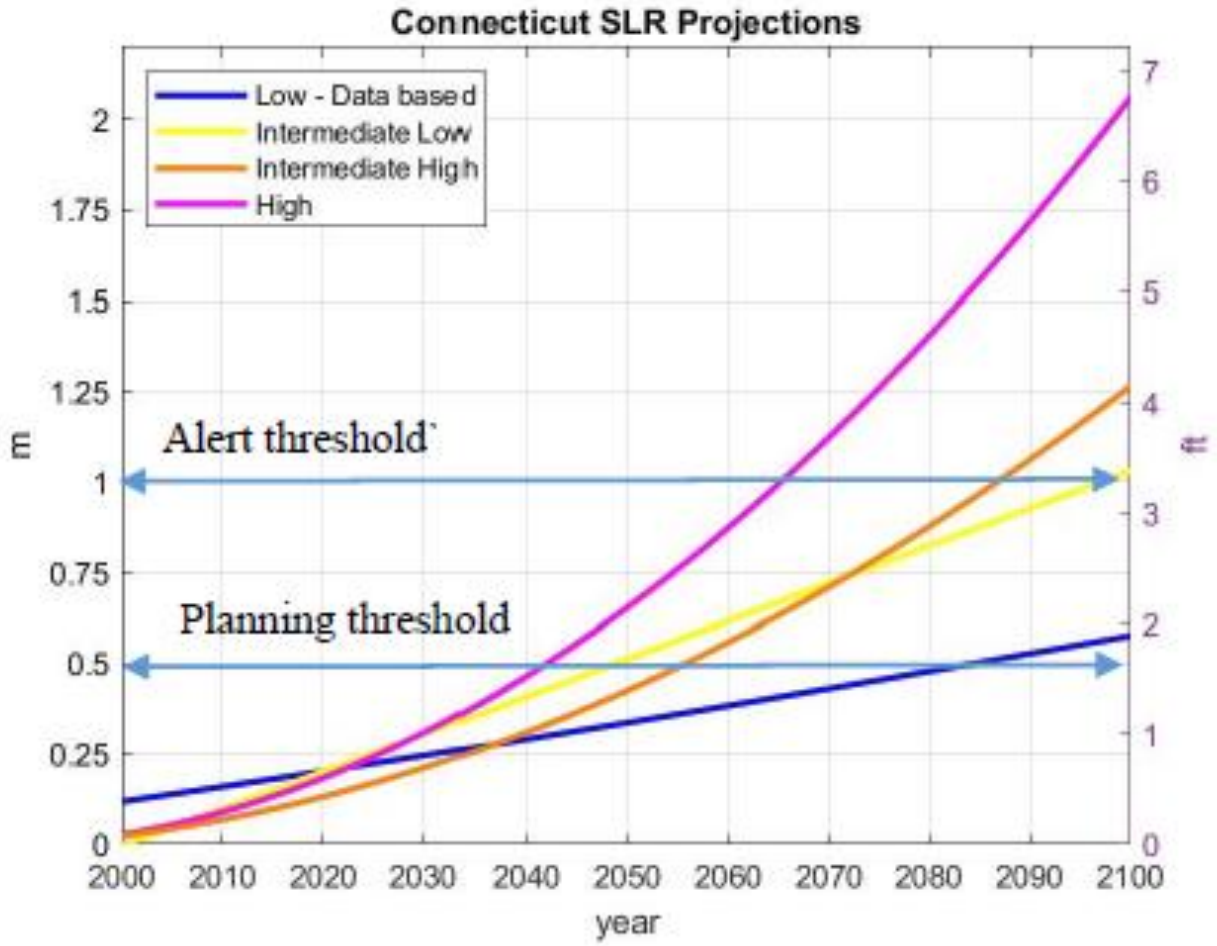
Northeast Corridor Railyard

Existing Area Floods From Storm Surge and Stormwater Runoff

Storm Surge Erodes Shoreline and Floods District Past Rail Yard


Approximate location of today's shoreline
Approximate location of the New Haven Rail Yard
6TH WARD
5TH WARD
4TH WARD
NEW HAVEN HARBOR
SOUTH PART of City of NEW HAVEN
TOWN OF NEW HAVEN.


Beinecke Rare Book and Manuscript Library
Yale New Haven Hospital
Frank Pepe Pizzeria Napoletana
West River Memorial Park
THE HILL
LONG WHARF
It Adventure Ropes Course
Shell & Bones Oyster Bar & Grill
Google



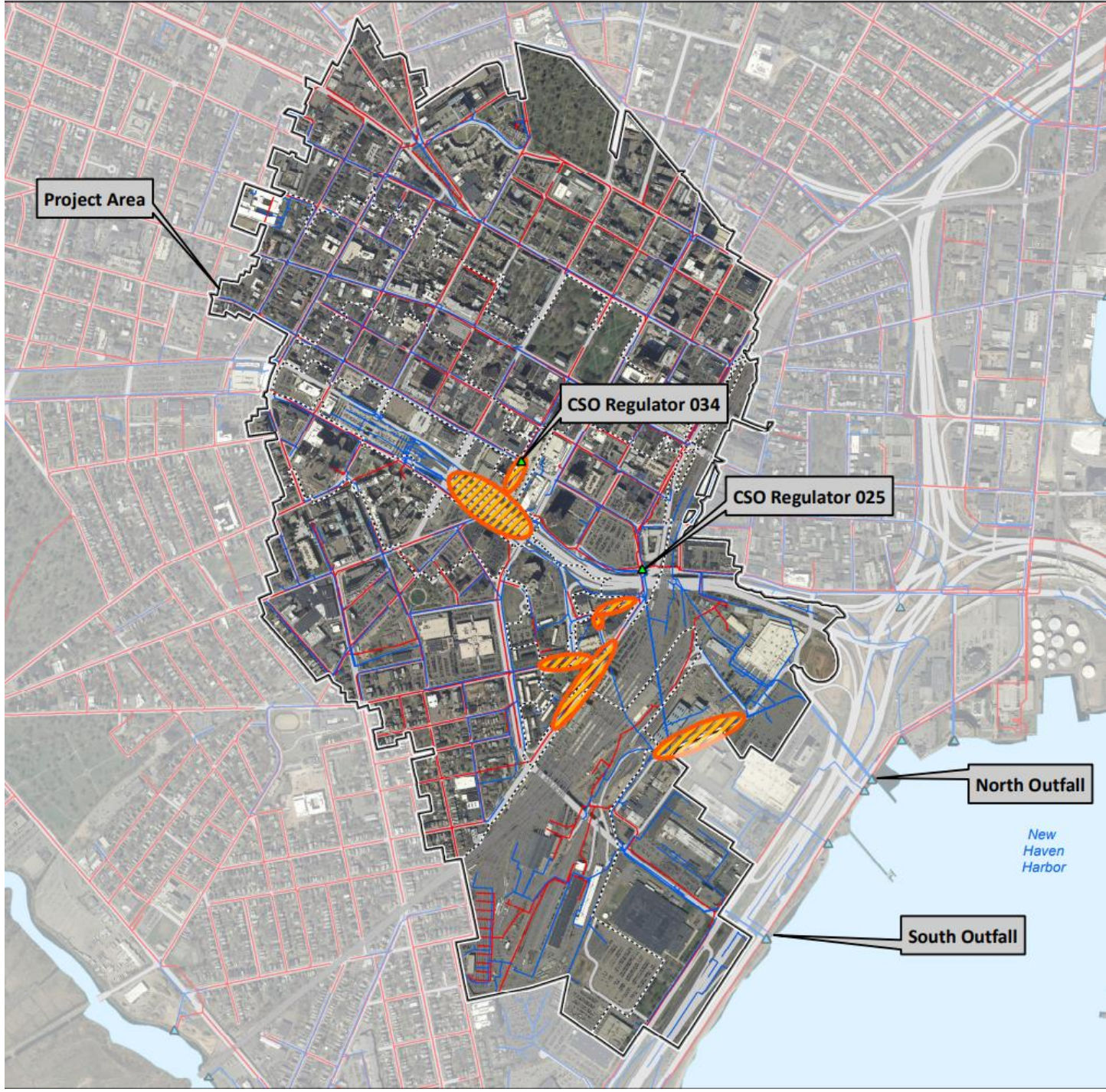
- ✓ **Increased sea level**
- ✓ **Increased intensity and freq. of rainfall**
- ✓ **Increased major combined storm events**

Building a Resiliency Pipeline

- Hill to Downtown Storm Sewer Improvements
  - $2.5M to construct green infrastructure
  - $1.5M to study and design inland flood solution
- Long Wharf Flood Study
  - $400k to plan and design strategy for coping with storm surge

Hill to Downtown Storm Sewer Improvements

- Study resulted in following preferred alternative:
  - New 10-foot diameter pipe from Union Avenue to new outfall structure in Harbor
  - 1185-cfs pump station
  - Diversion of drainage from 54 acres to West River
  - Relief pipes from Temple Street and Columbus Avenue



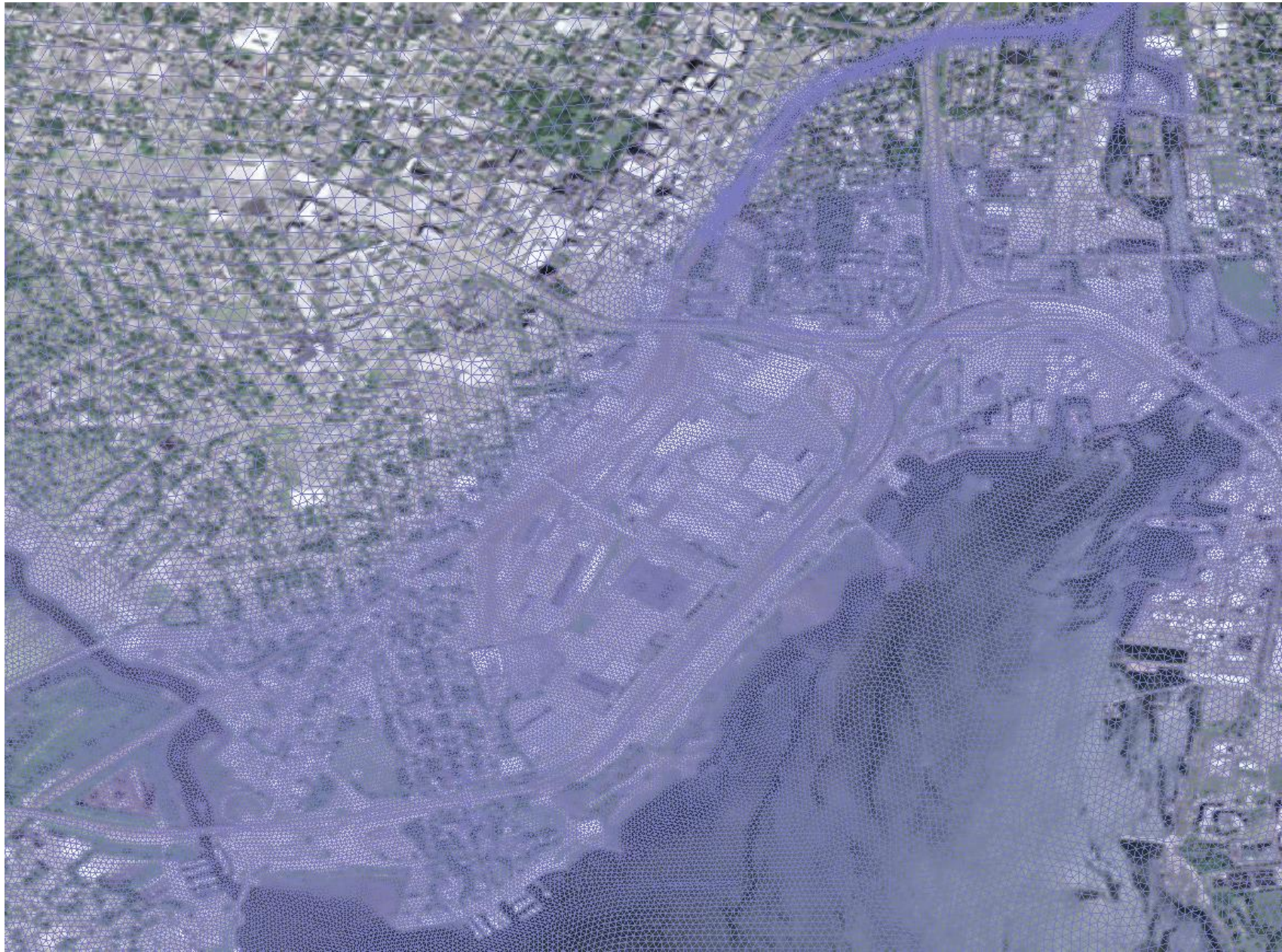
CDBG-DR Planning & Design Study for Long Wharf

City Plan led study resulted in three key elements:

(1) Temporary flood/surge control (deployables)

(2) Living Shoreline/Habitat Restoration

(3) Permanent Flood Protection

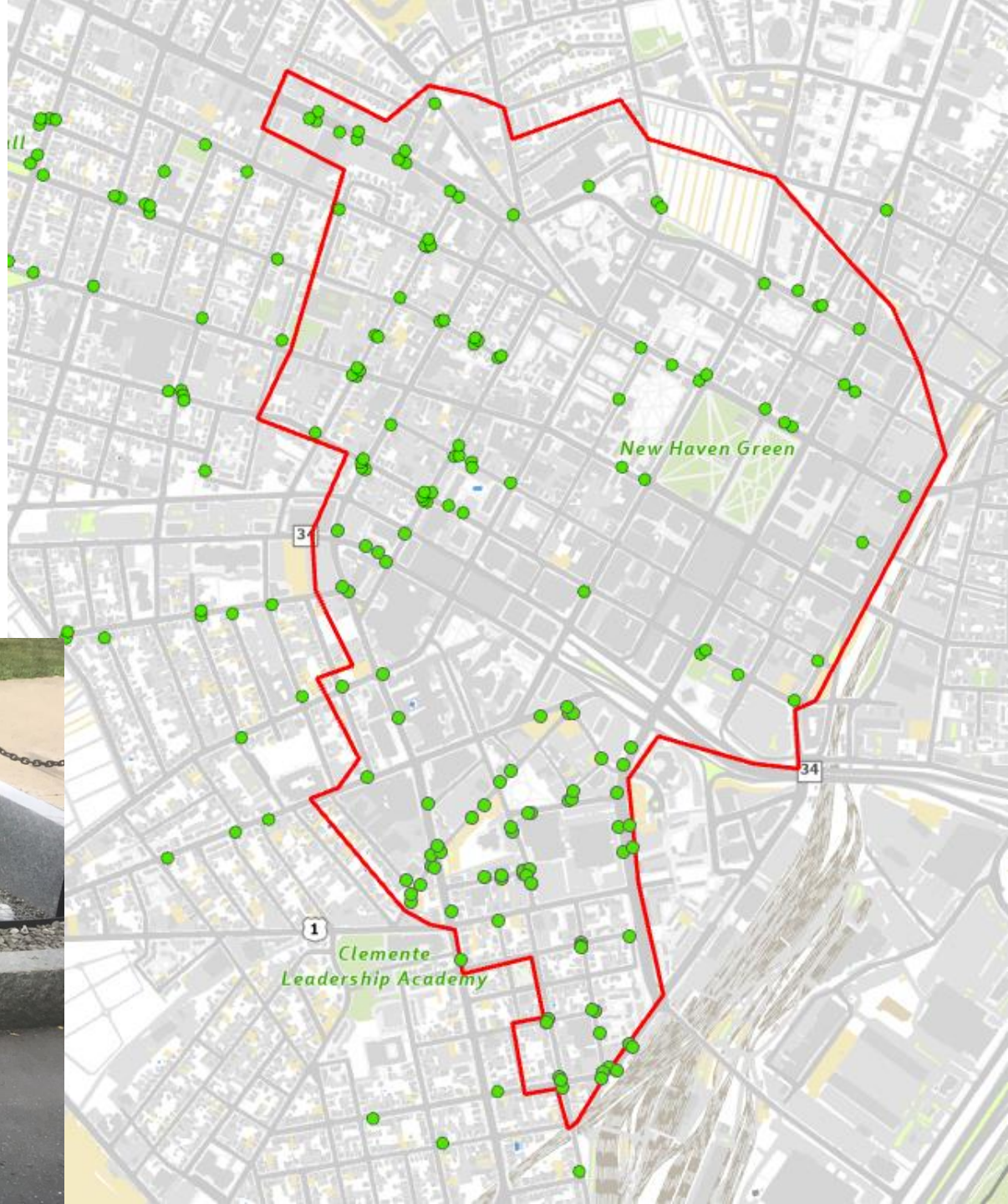


(right) GZA High Resolution Model Mesh

Turning Plans into Action

Hill to Downtown Storm Sewer Improvements

- 179 ROW bioswales installations downtown
- 286 installations citywide



BRIC - $36.8M

(1) 3,200 LF, 10-foot diameter pipe and outfall structure

(2) Living Shoreline/Habitat Restoration

ACOE - $160M

(1) Temporary flood/surge control (deployables)

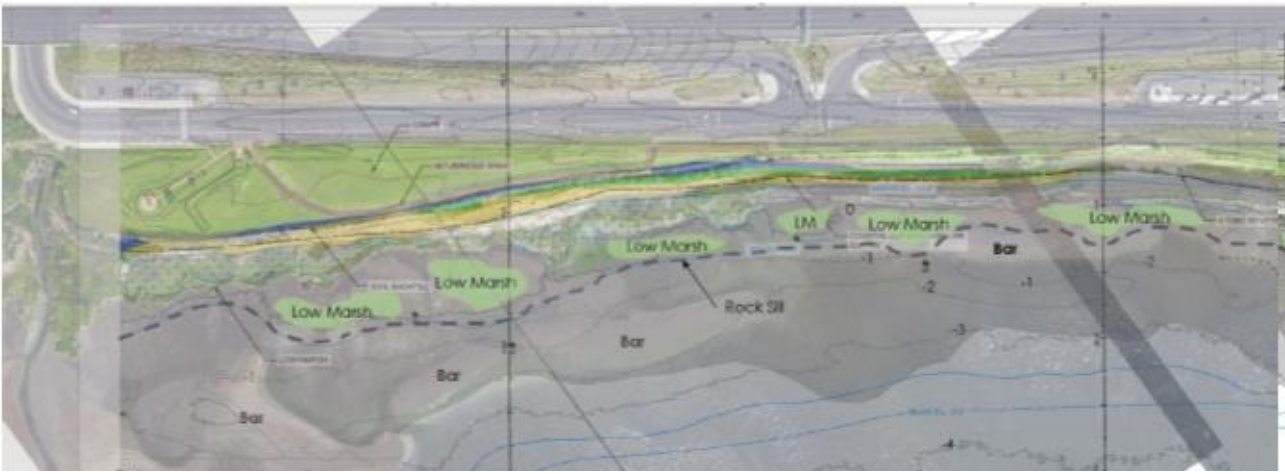
(2) Permanent Flood Protection

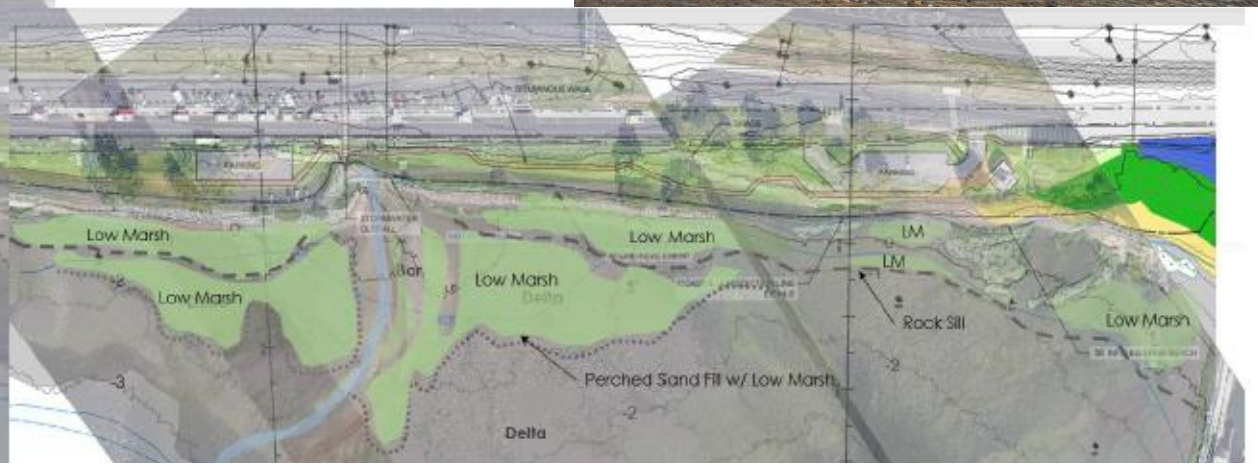
(3) 1185-cfs pumping station

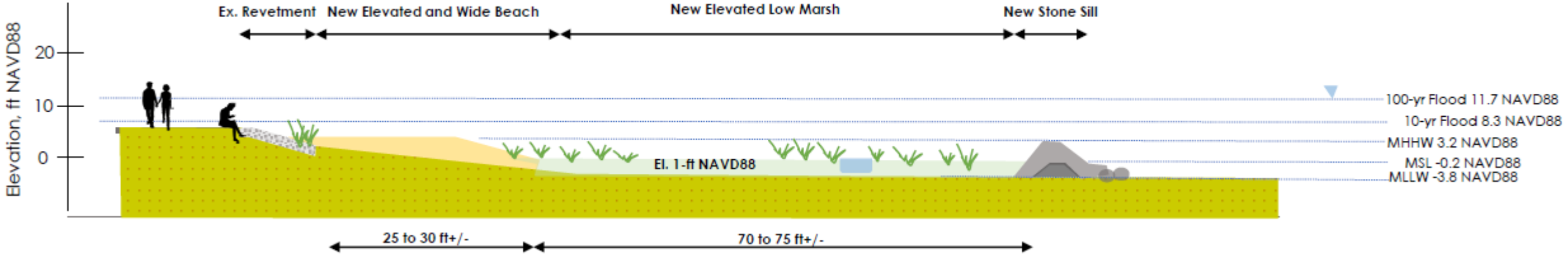
Figure 15: Tentatively Selected Plan- Alternative 3B, Enhanced Embankr

The Long Wharf Marsh

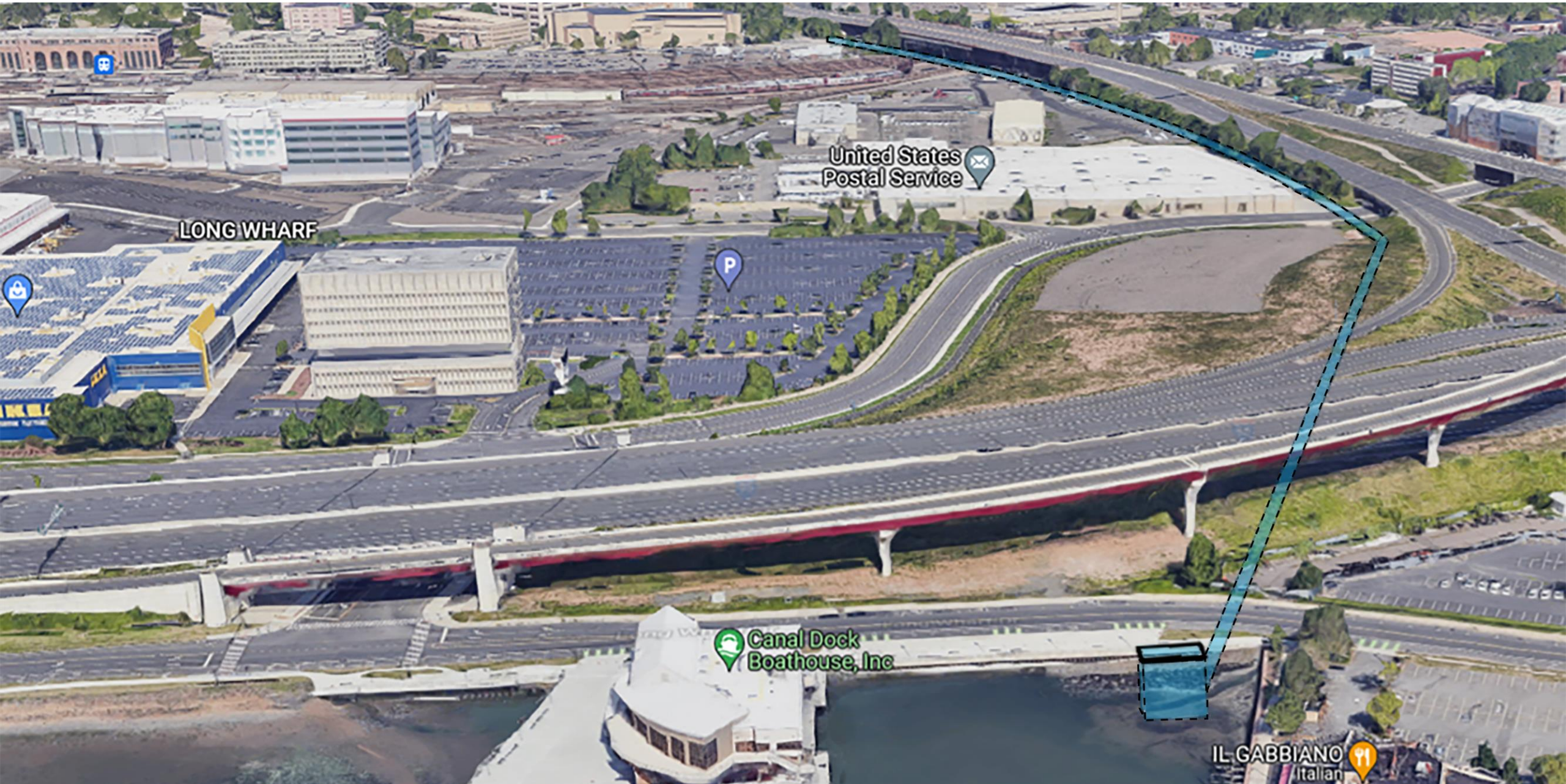
… a Fringe Marsh Living Shoreline in the Long Wharf District







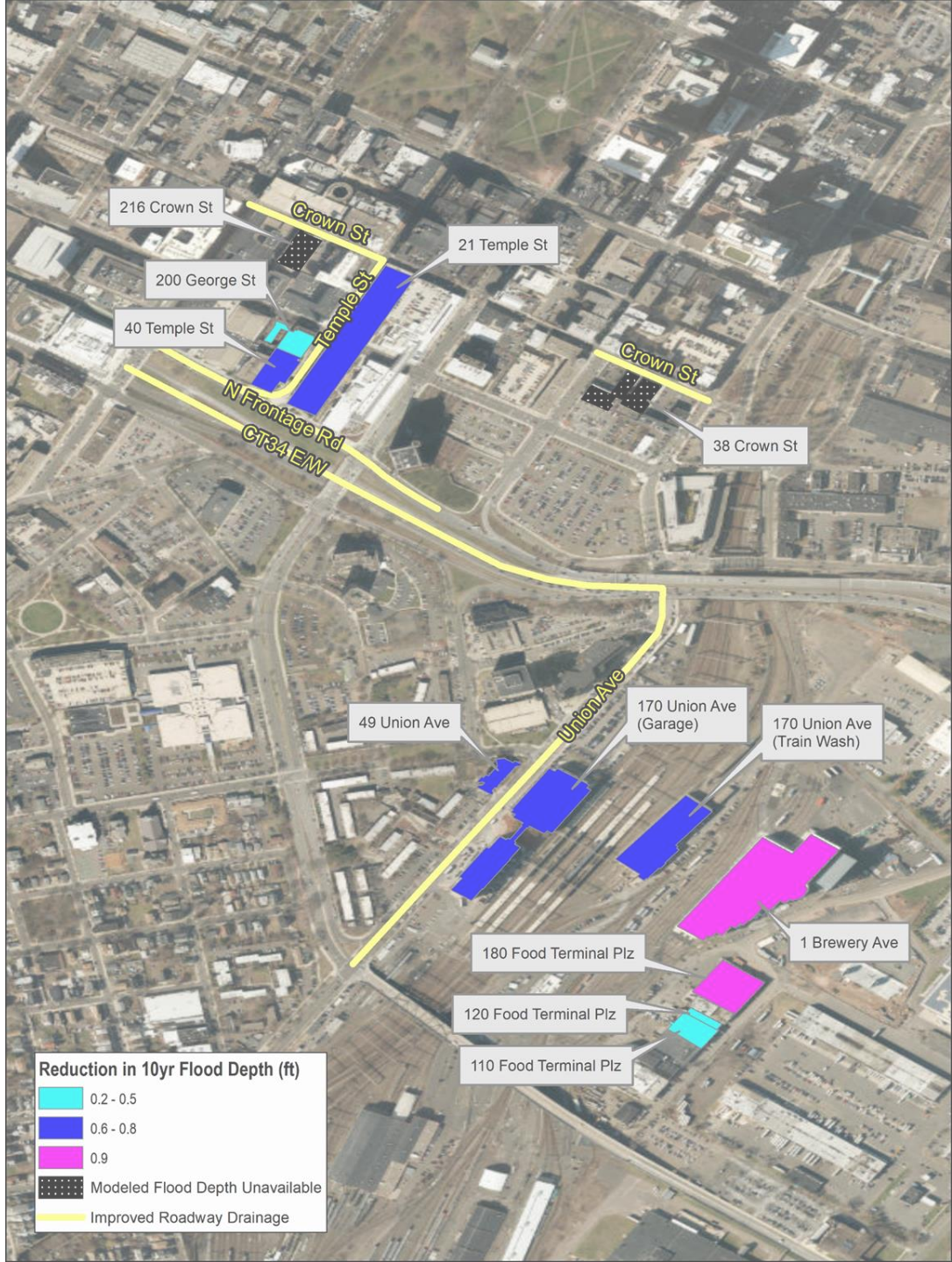
New 10-foot diameter pipe and outfall structure – FEMA BRIC



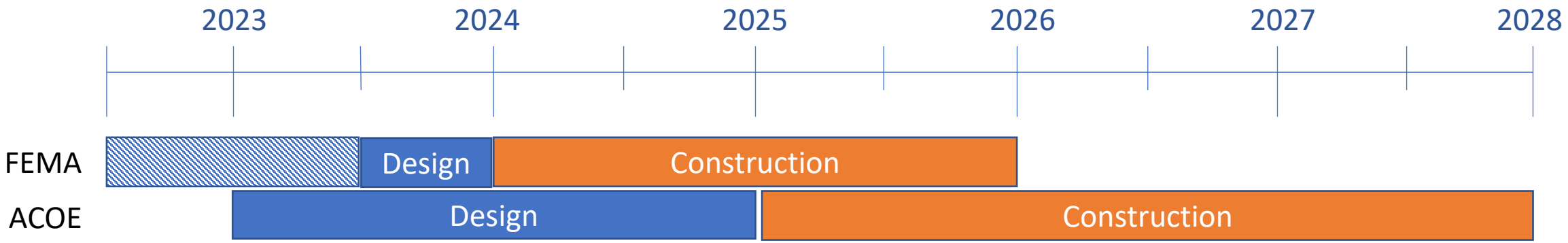
Full Build with ACOE Pump Station

FEMA BRIC Grant Lessons Learned

- Partner early
- BCA is important and very challenging
- Meeting specific grant requirements – e.g. BCEGS
- Phasing projects

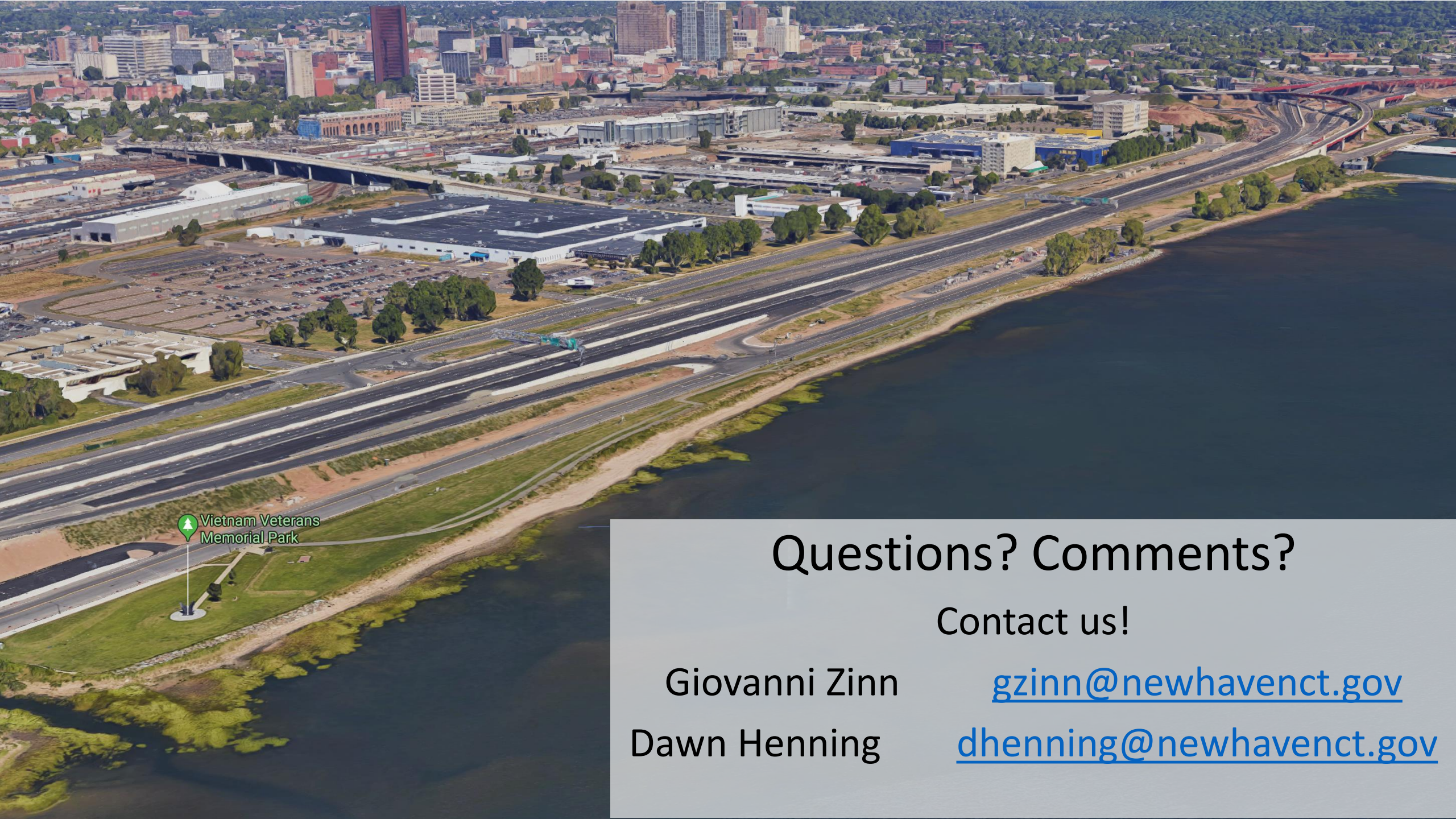


Next Steps



- 10-foot diameter Pipe and Outfall (FEMA BRIC)
  - 6 months design
  - 2.5 years construction

- Floodwall and Pump Station (ACOE)
  - 2 years design
  - 3 years construction



Questions? Comments?

Contact us!

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