NORWALK POWER ECONOMIC IMPACT ANALYSIS

CITY OF NORWALK

PRESENTATION OF FINDINGS AND RECOMMENDATIONS 6/21/18

Photo Credit: Geoffrey Steadman

NORWALK The Sound of Connecticut

Manresa Association

Tighe&Bond Consulting Engineers Environmental Specialists

NINIGRET PARTNERS

FITZGERALD & HALLIDAY, INC. Innovative Planning, Better Communities

AGENDA

- Project schedule
- Site overview
- Summary of key issues/development constraints
- Reuse scenarios
- Next steps

PROJECT SCHEDULE

MANRESA ISLAND OVERVIEW

- In 1999 NRG Energy purchased the plant from CL&P for $58.7 million
- In 2012 the property was almost completely underwater during Hurricane Sandy
- Power plant was closed in June 2013
- No reuse of the site is currently planned

MANRESA ISLAND

MANRESA ISLAND

GENERAL SITE INFORMATION

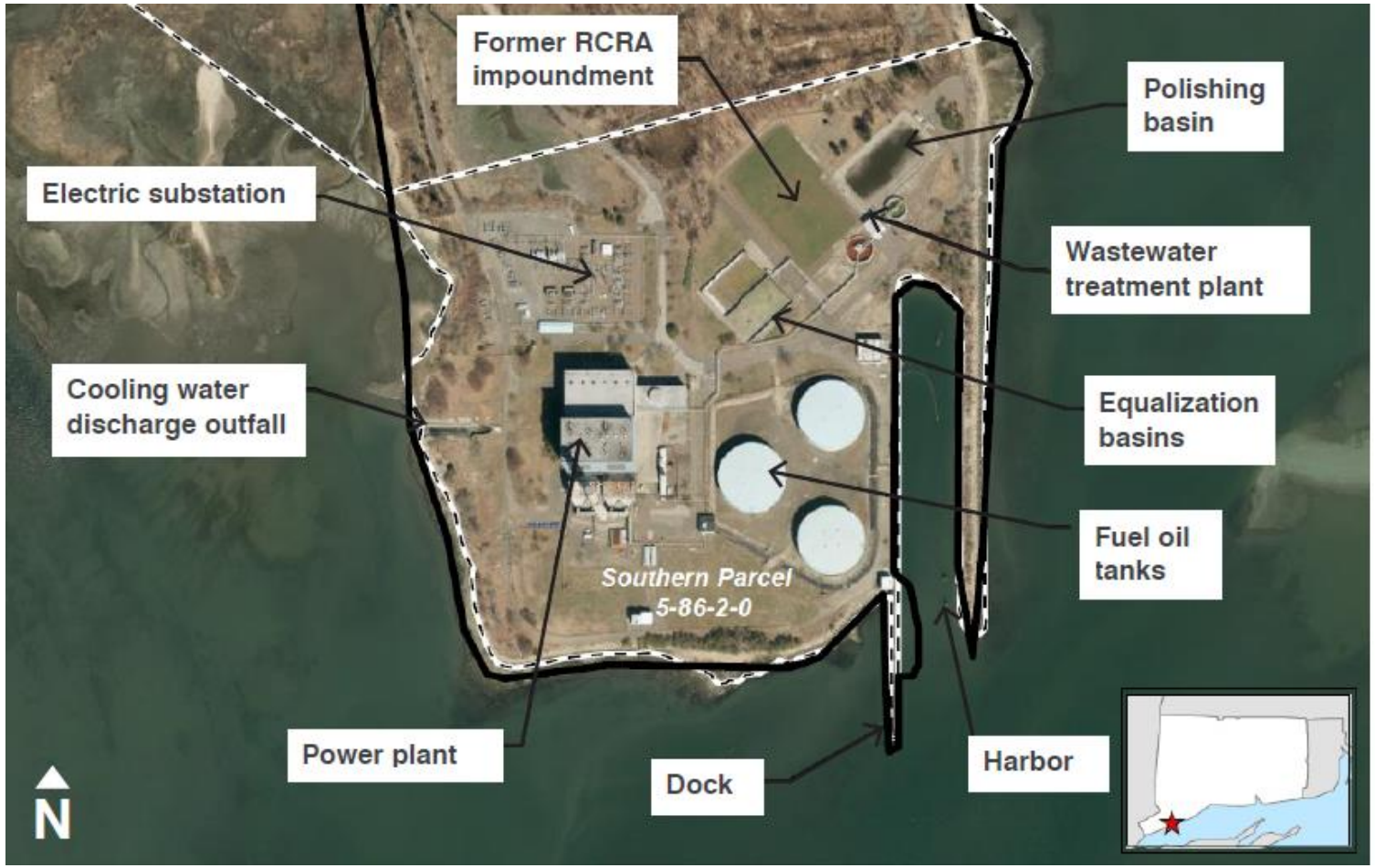
Northern Parcel

- 92 Acres
- Densely Wooded, Wetlands (freshwater and intertidal)
- Area of Historic Filling

GENERAL SITE INFORMATION

Southern Parcel

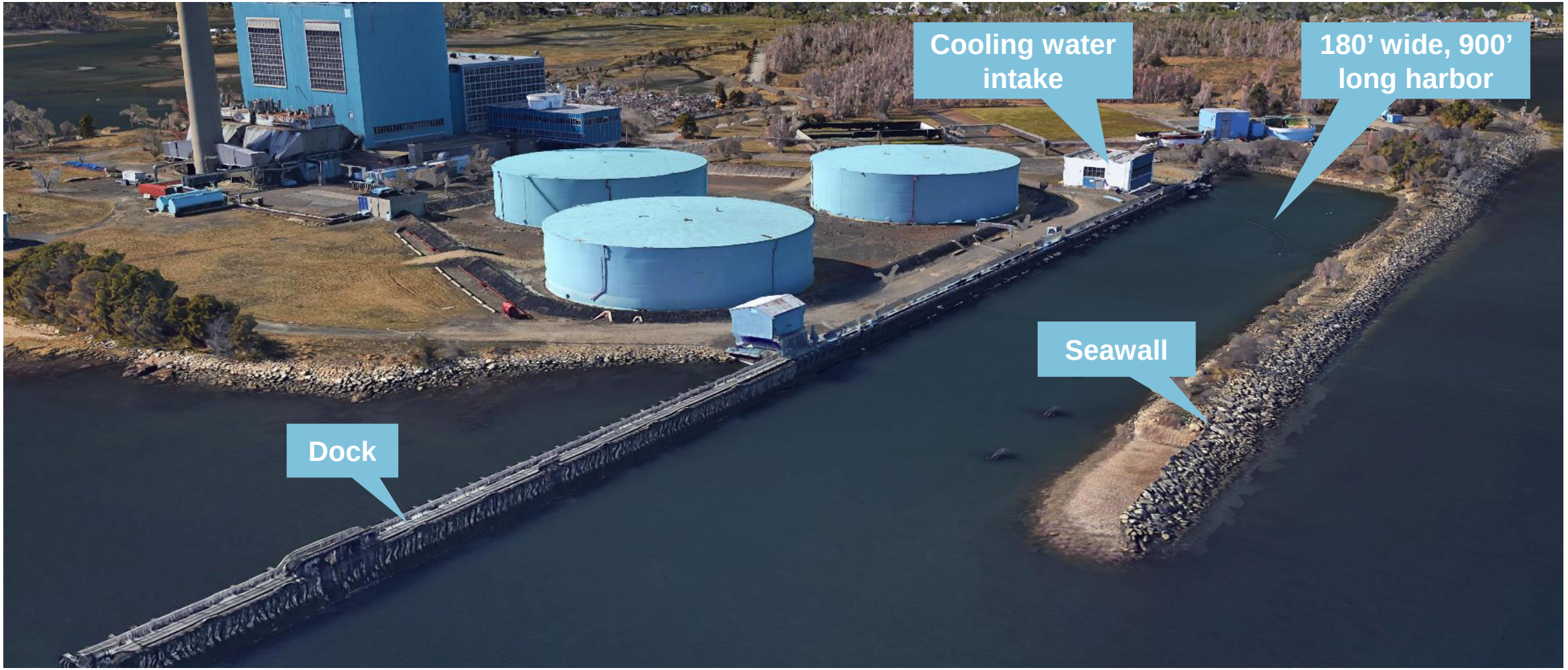
- 46 Acres
- Power Plant, Oil Tank Farm, Wastewater Treatment Plant and Associated Basins, Subsurface Cooling Water Structures, Harbor and Dock (Inactive)
- Active Electrical Substation



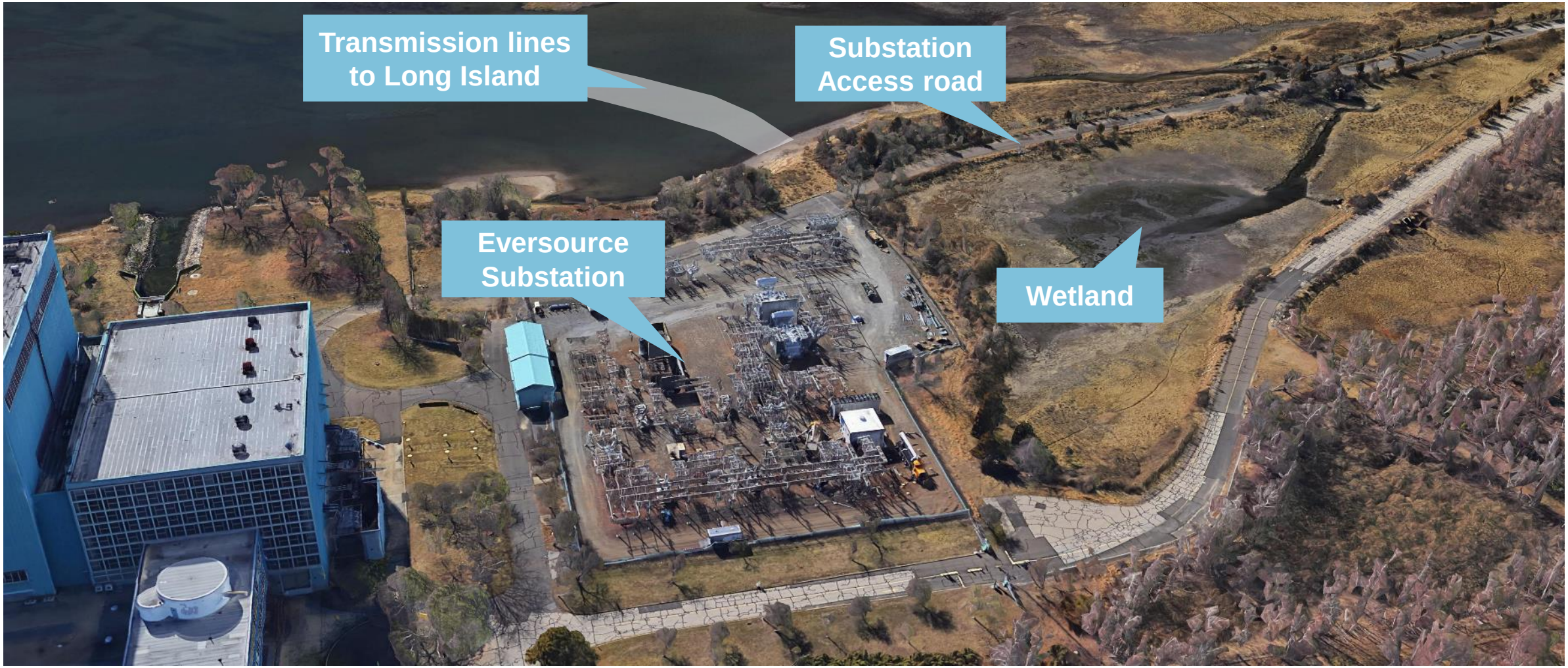
SITE FEATURES: POWER PLANT

SITE FEATURES: TANK FARM

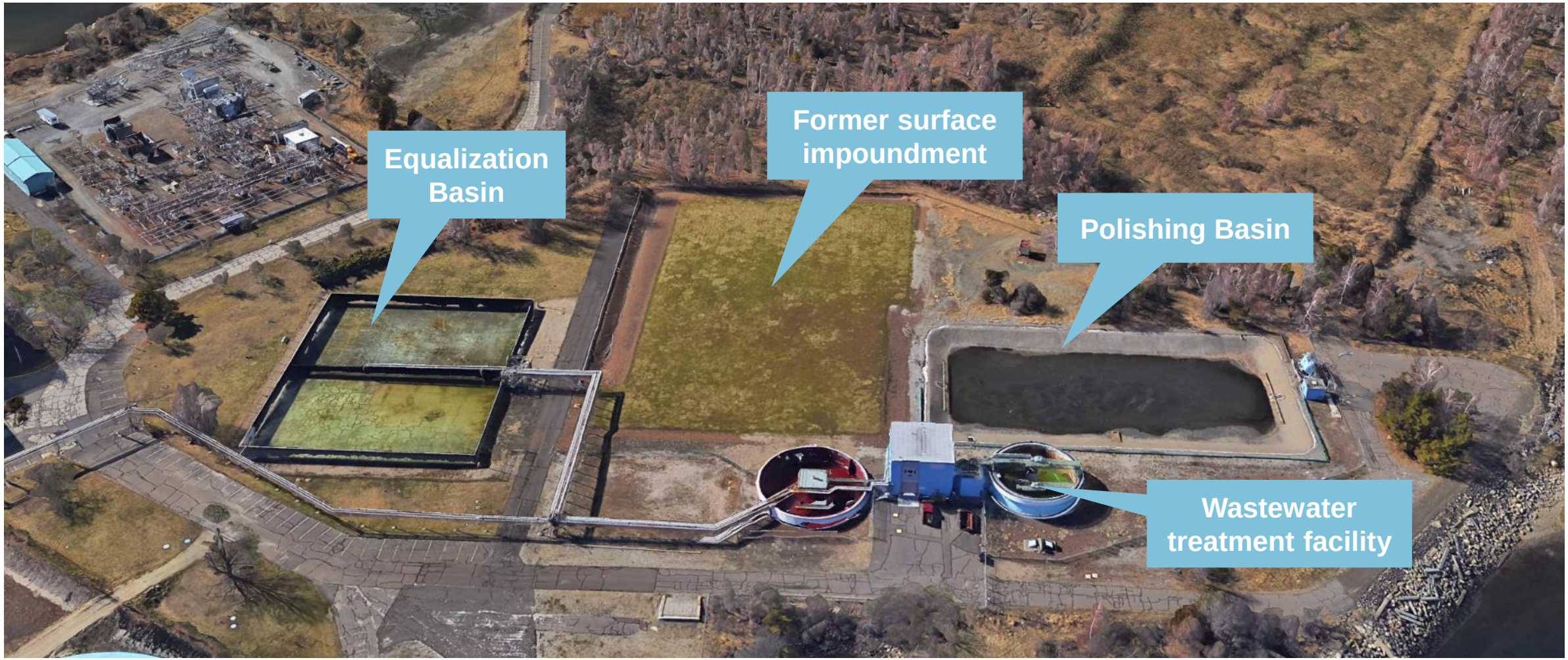
SITE FEATURES: HARBOR



SITE FEATURES: ELECTRICAL SUBSTATION

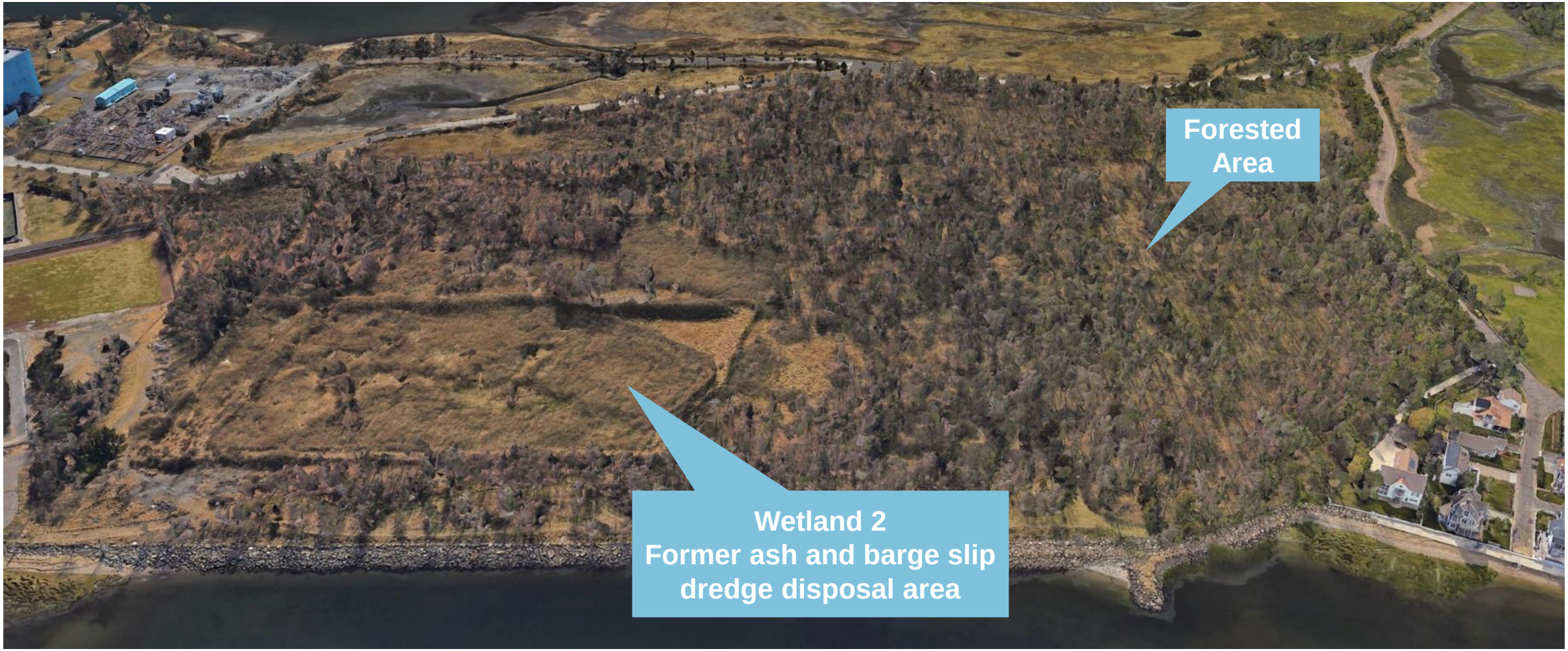


SITE FEATURES: WASTEWATER TREATMENT BASINS



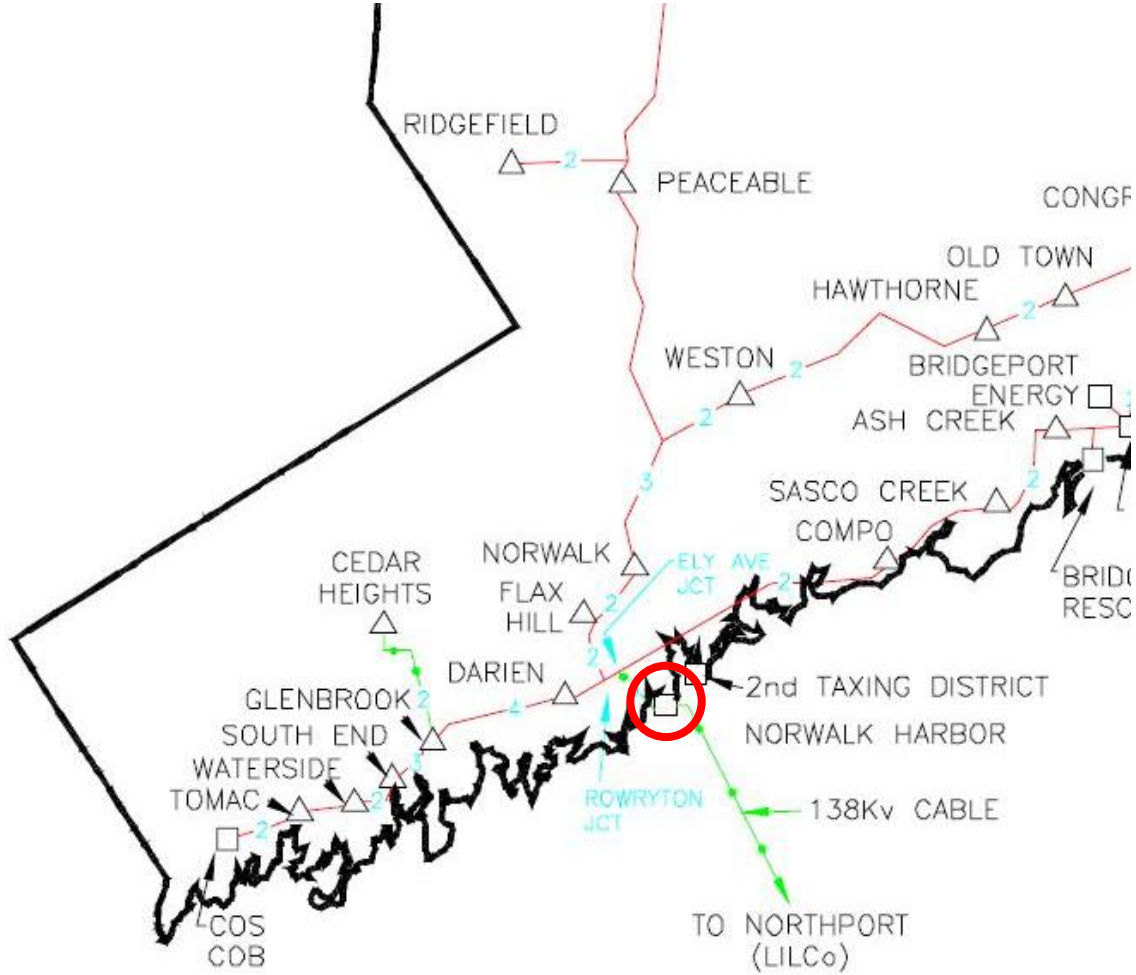
SITE FEATURES: WETLANDS

SITE FEATURES: FORESTED AREA



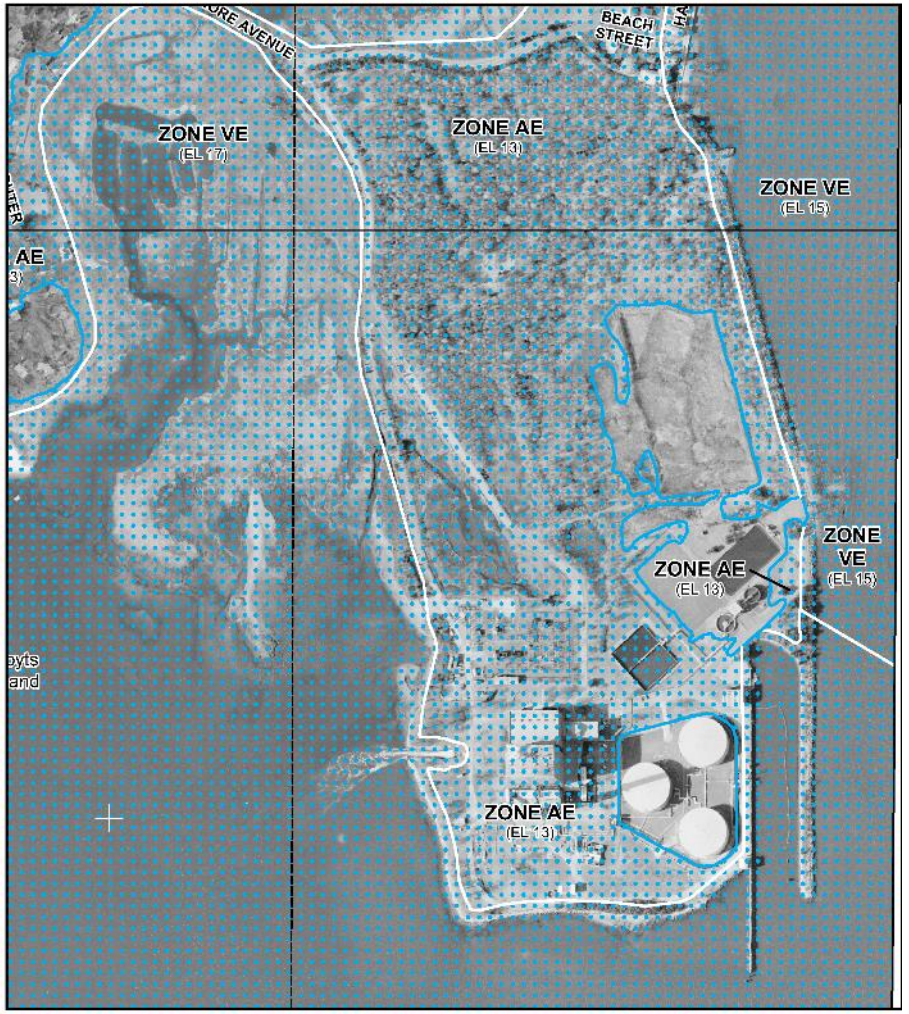
SITE FEATURES: ELECTRICAL SUBSTATION

- The electrical sub-station is critical infrastructure for the northeast power grid, connecting to Connecticut's only Cross-Sound cable to Long Island.
- The station occupies approximately 5 acres on the southern parcel and would need to be screened from adjacent development



KEY ISSUE: FLOOD AND COASTAL ZONE

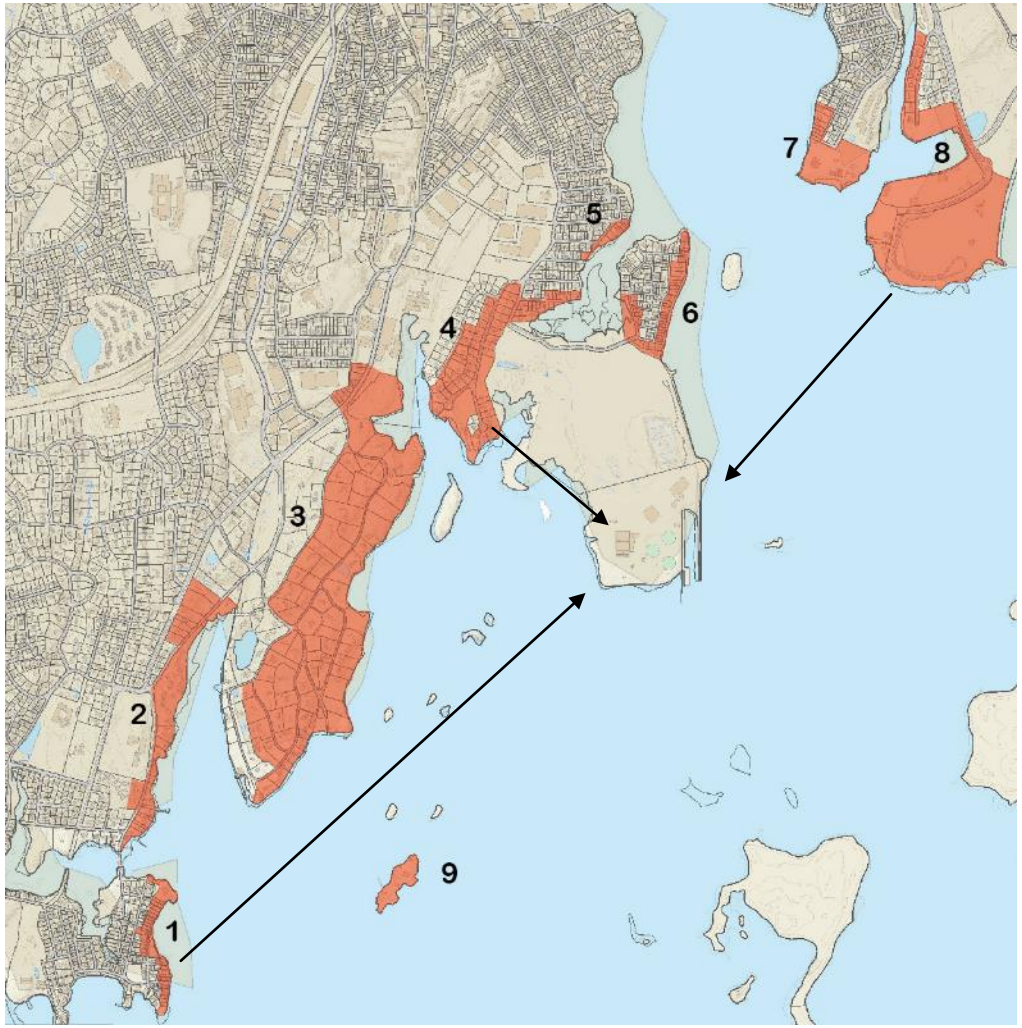
- Most of site is covered by zone VE or AE (1% annual chance of flooding/100 year flood zone)
- Contaminated soils could migrate off-site under a significant storm event such as a Hurricane



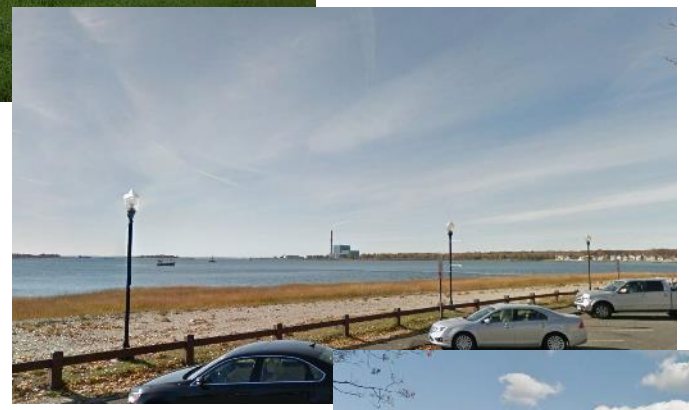
KEY ISSUE: POTENTIAL FISCAL IMPACT

- The 2017 assessed value of **land and structures** of the southern parcel, which includes the power plant, is $22,575,661. This is 0.189% of Norwalk's grand list.
- This generates **$565,000** in property tax revenue per year ($6.38 per capita) based on negotiated agreement with City.
- Demolition of taxable structures or a transfer of the property to a non-profit entity would result in a loss of property tax revenue that may require an increase in the City mill rate to replace the lost revenue.

KEY ISSUE: VISUAL IMPACT

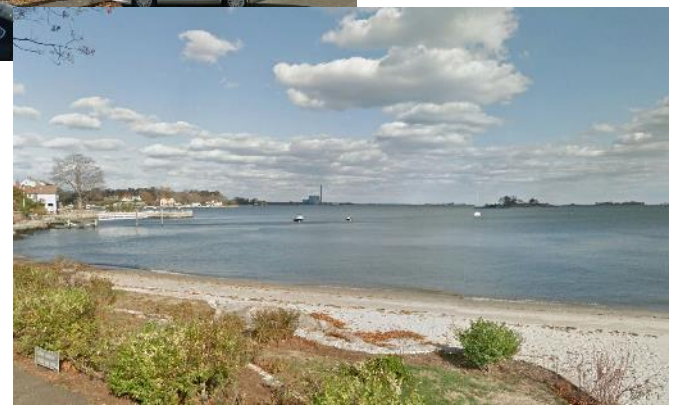


View From Area 4
(Outer Road)

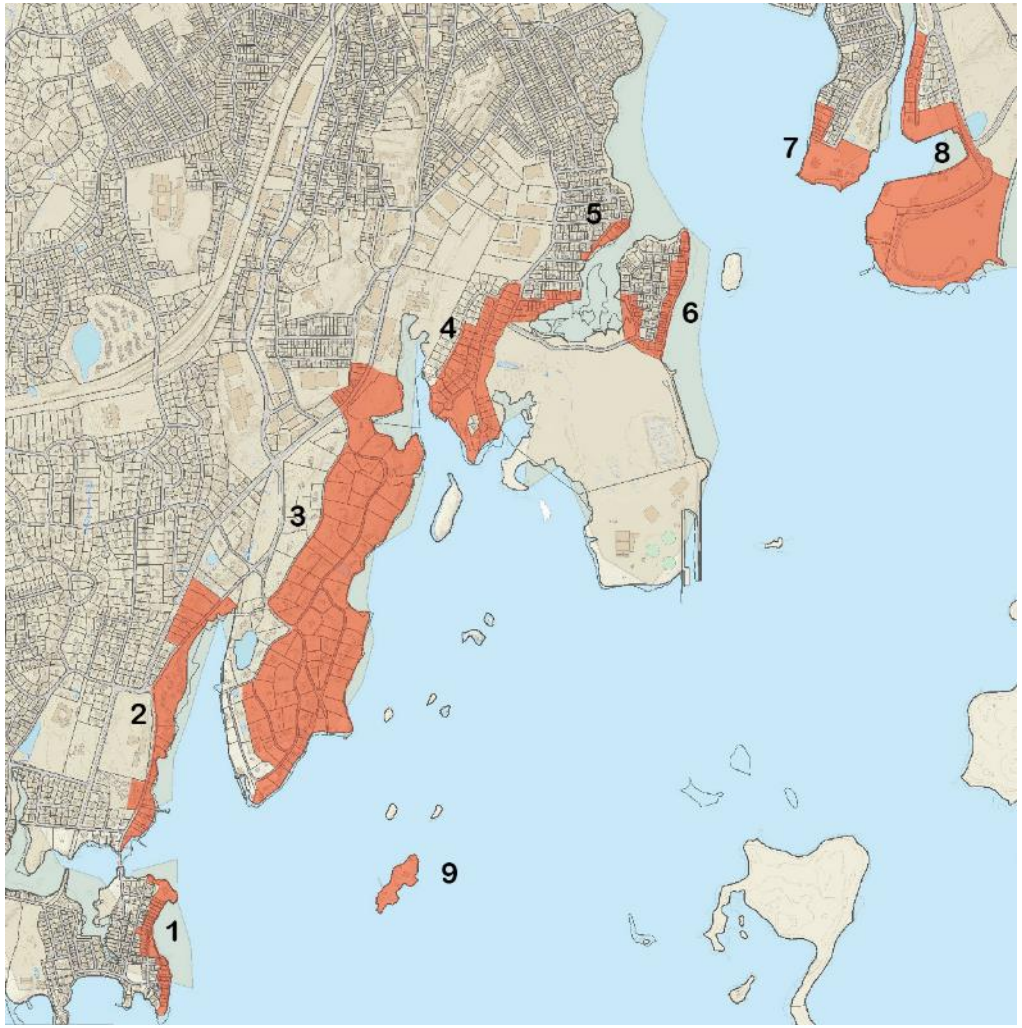


View From Area 8
(Calf Pasture Beach)

View From Area 1
(Bell Island)

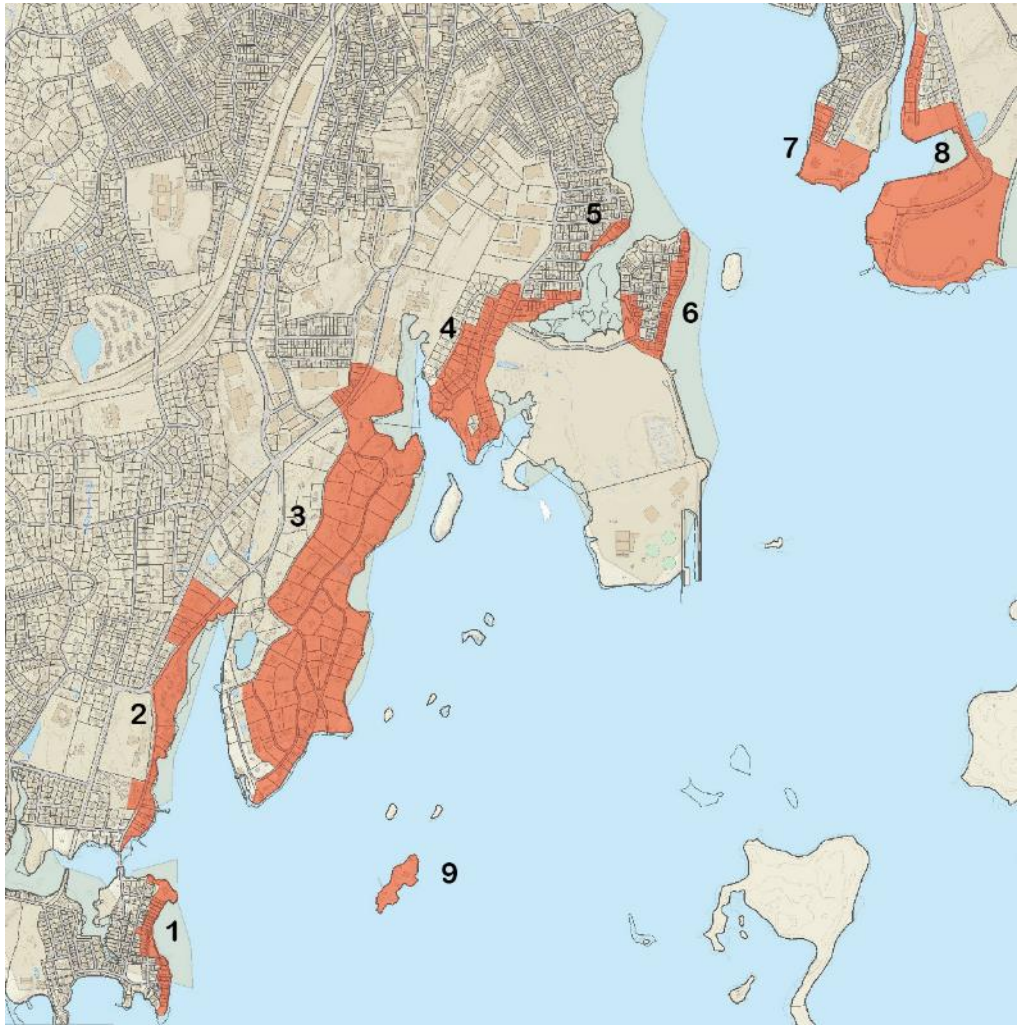


KEY ISSUE: VISUAL IMPACT



- 288 properties have a view of the Manresa power plant and/or smokestack
- The total assessed value of those properties is $467,780,489 and they currently generate $11,902,207 per year in property taxes

KEY ISSUE: VISUAL IMPACT

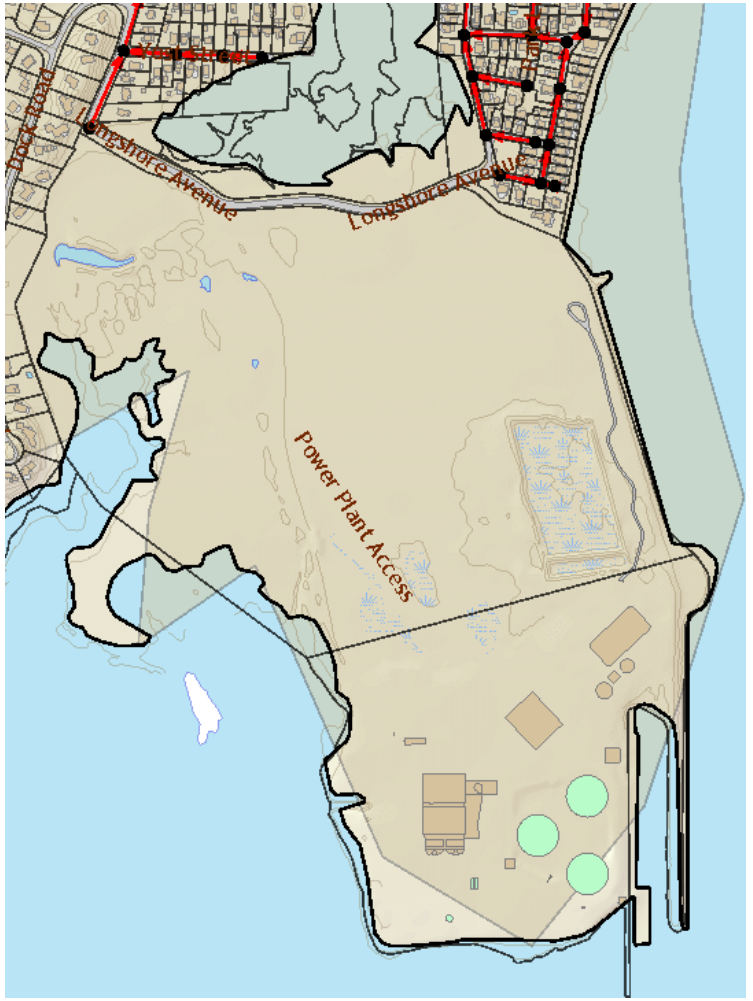


If assessed property values are increased by the removal of the power plant, additional tax revenue could be generated at the following rates:

Increase	Tax Revenue	Revenue Increase
5%	$12,497,317	$595,110
10%	$13,092,427	$1,190,221
15%	$13,687,538	$1,785,331
20%	$14,282,648	$2,380,441

KEY ISSUE: LIMITED UTILITY INFRASTRUCTURE

- There are no sewer facilities on the site
- Sewer mains are located 0.5 miles north of southern parcel
- Gas transmission line is approximately 3 miles north of the site. This distance is most likely prohibitive of the development of a gas turbine power facility.



KEY ISSUE: EXISTING ZONING IS RESTRICTIVE

- The current zoning (B Residence District) allows only single family residential development by right
- Planned residential development and limited institutional uses such as nursing homes or educational facilities are allowed by special permit
- Commercial and industrial uses are not permitted, with the exception of a utility use by special permit

KEY ISSUE: LIMITED SITE ACCESS

- The site is only accessible via one route (Woodward/ Longshore Avenues)
- The roadways are narrow local roadways and are primarily residential
- This site is 0.75 miles from an arterial or collector roadway, 1.5 miles from rail transit and 2.0 miles from I-95

KEY ISSUE: SITE BIODIVERSITY

Site Contains Unique or Sensitive Habitats

- Salt Marsh (esp. high marsh)
- Intertidal flats
- Freshwater emergent wetlands
- Coastal shrubland
- Coastal forest
- Essential Fish Habitat

KEY ISSUE: SITE BIODIVERSITY

Site provides breeding or foraging habitat for:

- CT Listed Species (SC, T, & E)
- Fish Spp. under Purview of the New England & Atlantic States Marine Fisheries Commissions
- Other flora and fauna listed as “Greatest Conservation Need” in the CT Wildlife Action Plan

EXAMPLES OF SPECIES OF "GREATEST CONSERVATION NEED" KNOWN TO OCCUR AT THE SITE

- Common Tern (SC) (Foraging)
- Least Tern (T) (Foraging)
- Bald Eagle (T) (Winter foraging)
- Peregrine Falcon (T) (Foraging
- Great Egret (T) (Foraging)
- Snowy Egret (T) (Foraging)
- Yellow-crowned Night-heron (SC) (Breeding)
- Diamond-backed Terrapin (SC) (Breeding)

ADDITIONAL RARE SPECIES ARE SUSPECTED OF OCCURRING AS WELL

- Saltmarsh Sparrow (SC) (Breeding)
- Brown Thrasher (SC) (Breeding)
- Glossy Ibis (SC) (Breeding)
- Winter owl roosts

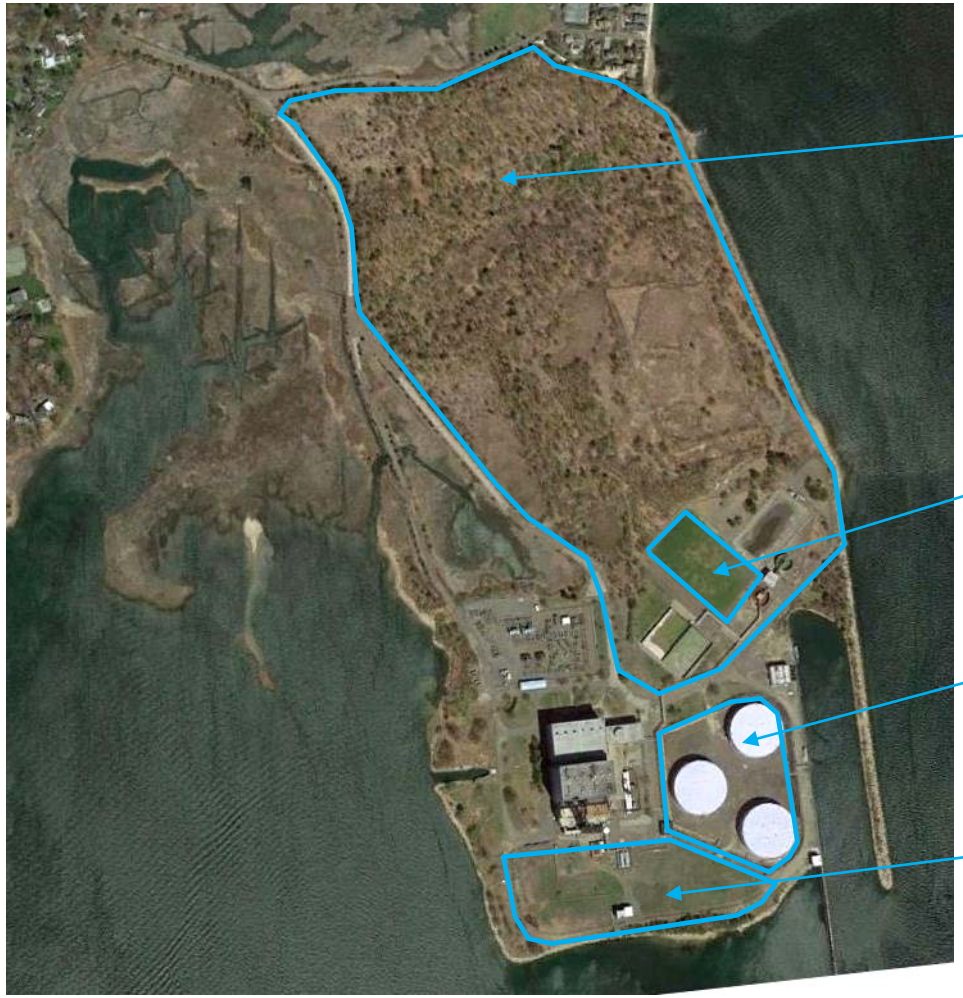
KEY ISSUE: COASTAL RESILIENCY

- Any new development will need to be resilient to predicted future changing meteorological forcing events (e.g., storms of greater frequency and intensity)
- Redevelopment of the site may present an opportunity to improve the resiliency of the shoreline to prevent migration of contaminated materials off of the site

Stratford shoreline destruction caused by Hurricane Sandy

KEY ISSUE: SITE CONTAMINATION

Manresa Island prior to development of Power Plant



Coal ash fill: arsenic, beryllium, thallium, nickel contamination in both soil and groundwater

Former surface impoundment arsenic, beryllium, cadmium, chloride, lead, nickel groundwater contamination

Tank farm: arsenic contamination in soil, zinc contamination in groundwater

Former coal storage site: arsenic contamination in soil

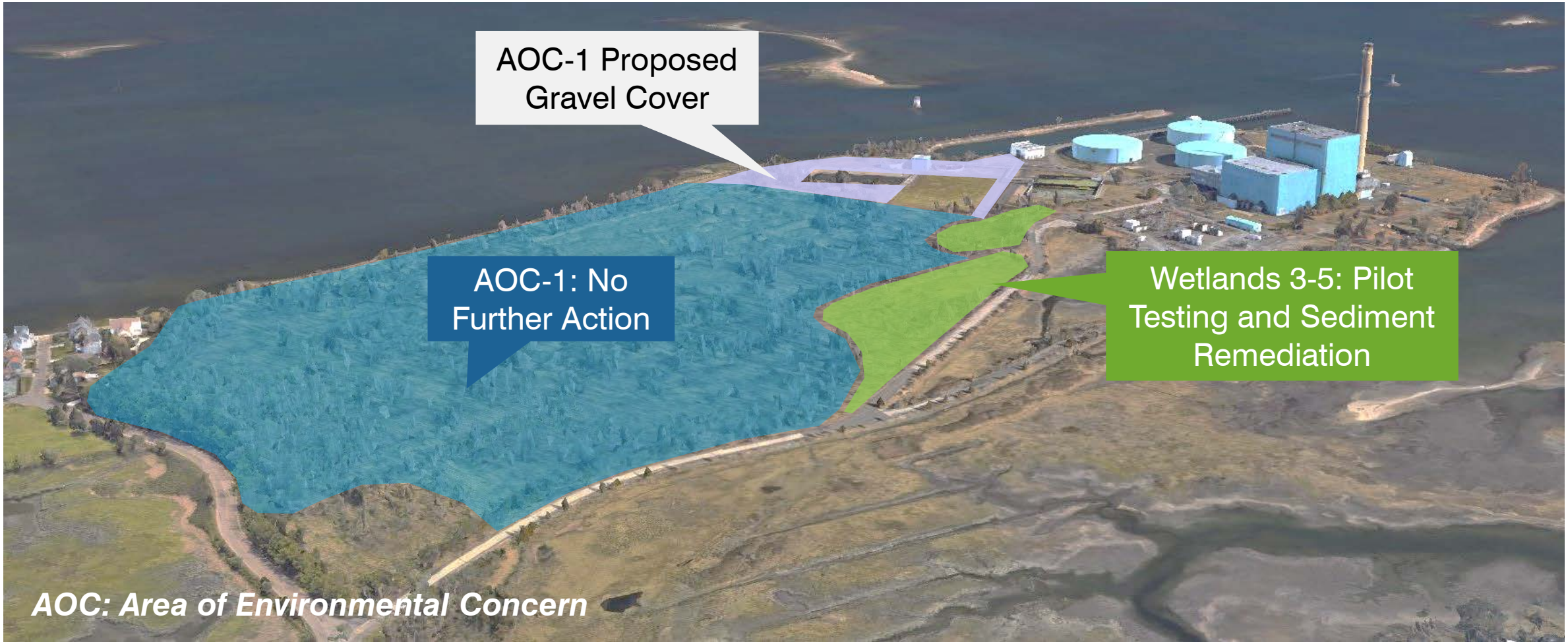
REGULATORY SUMMARY

- Site is enrolled in the Connecticut Department of Energy and Environmental Protection (CT DEEP) Property Transfer Program as a result of transfer of property from CL&P to NRG in 1999
- The CTDEEP/ USEPA have been addressing investigations and remedial activities under a Combined Program (Property Transfer Program/ RCRA Closure) since 2006

SITE REMEDIATION RELATED ACTIVITIES

- NRG has proposed to spend about $500,000 on soils remediation and up to $1.8 million for wetlands remediation.
- Site Remedial Planning and Activities: 2009-Current
  - 2009: Limited Remedial Action Plan, to remove isolated areas of sediments
  - 2011: Preliminary Technical Impracticability Assessment for Groundwater
  - 2013: Engineering Control Submittal
  - 2013: Site Specific Industrial/Commercial Direct Exposure Criteria Request
  - 2017-2018: Ongoing Sediment Backfill Pilot Test (Wetlands W-5 and W-4)

CURRENT REMEDIAL APPROACH PROPOSED BY NRG
(AOC-1 COAL ASH DISPOSAL AREA AND WETLANDS 3-5)



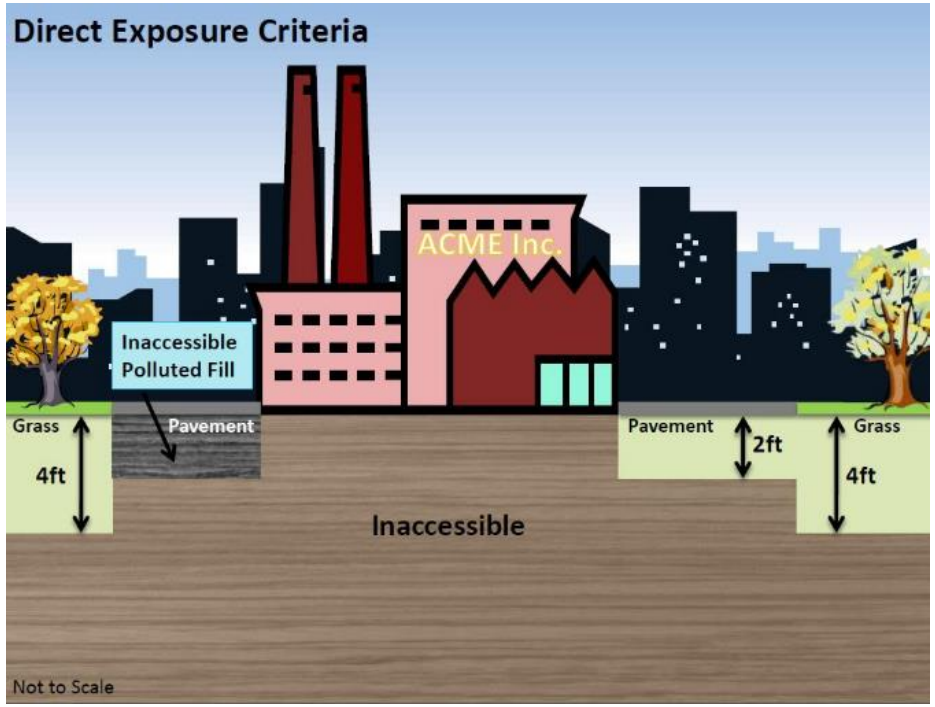
CURRENT REMEDIAL APPROACH PROPOSED BY NRG
(AOC-4 FORMER COAL STORAGE AREA)

AOC: Area of Environmental Concern

Photo Credit: Geoffrey Steadman

MORE EXTENSIVE REMEDIATION WOULD BE NECESSARY TO SUPPORT NON-INDUSTRIAL/COMMERCIAL USES

- Residential development of the site, or a comparable use that places people in direct contact with soils, would require more extensive remediation.
- Contaminated soils must be excavated and/or covered to a depth of 4 feet in landscaped areas and 2 feet in areas covered by pavement.
- Demolition of power plant structures could require remediation of soils currently below those structures.



CONCEPTUAL REMEDIAL APPROACH

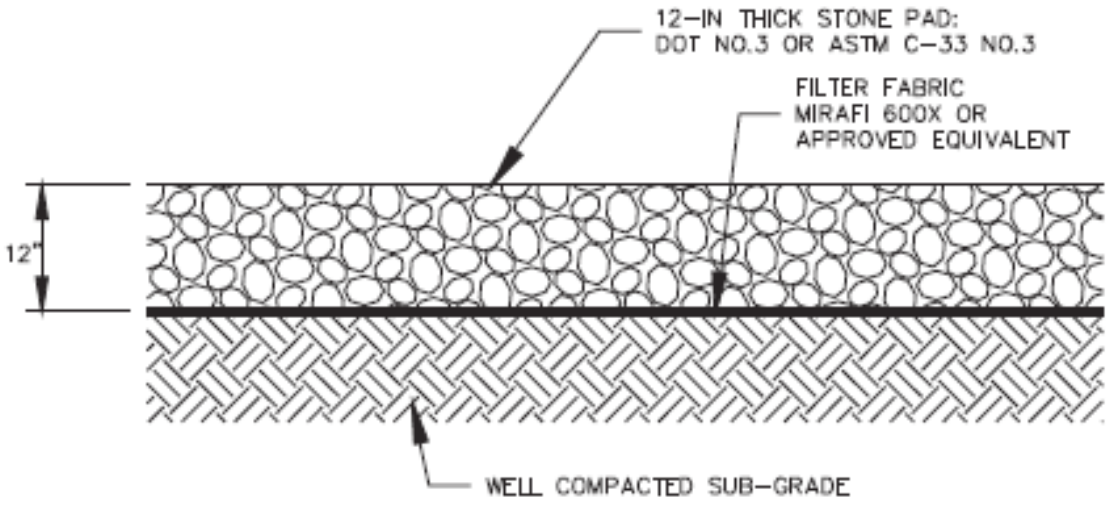
Engineered Control of contaminated soils is a potential remedial strategy

- Engineered Control is a permanent physical structure (i.e., pavement or soil cover) designed to safely isolate pollutants. Designed to require minimum maintenance, promote drainage, minimize erosion, and minimize subsidence. This approach is used as an alternative to removing and remediating contaminated soils.
- Can be used in specific circumstances with CTDEEP Approval:
  - The CTDEEP Commissioner has determined, after providing notice and an opportunity for a public hearing, that the cost of remediating the polluted soil is significantly greater than the cost of installing and maintaining an Engineered Control and outweighs the risk of failure of the control.
  - Engineered Control must be requested by the property owner.

CONCEPTUAL REMEDIAL APPROACH

Use of Engineered Control in Unpaved Areas

- Grassed Area/ Gravel Paths: 1-foot of clean soil on top of a Demarcation Layer



CONCEPTUAL REMEDIAL APPROACH

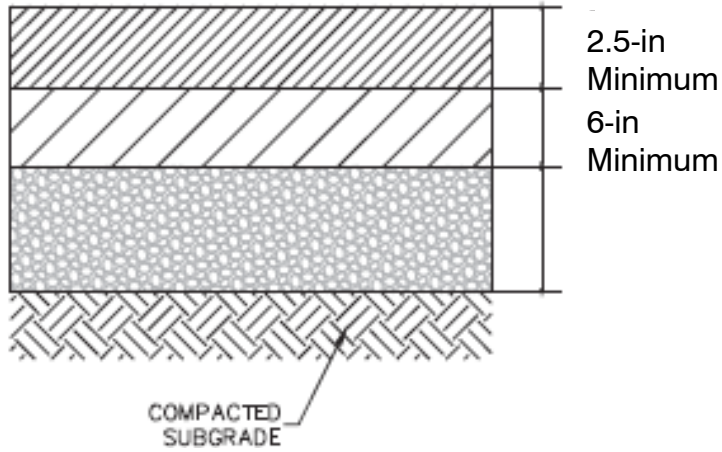
Use of Engineered Control in Unpaved Areas

- Solar Array on Concrete Ballast
- 2-feet of clean soil overlying a demarcation barrier

CONCEPTUAL REMEDIAL APPROACH

Use of Engineered Control in Paved Areas

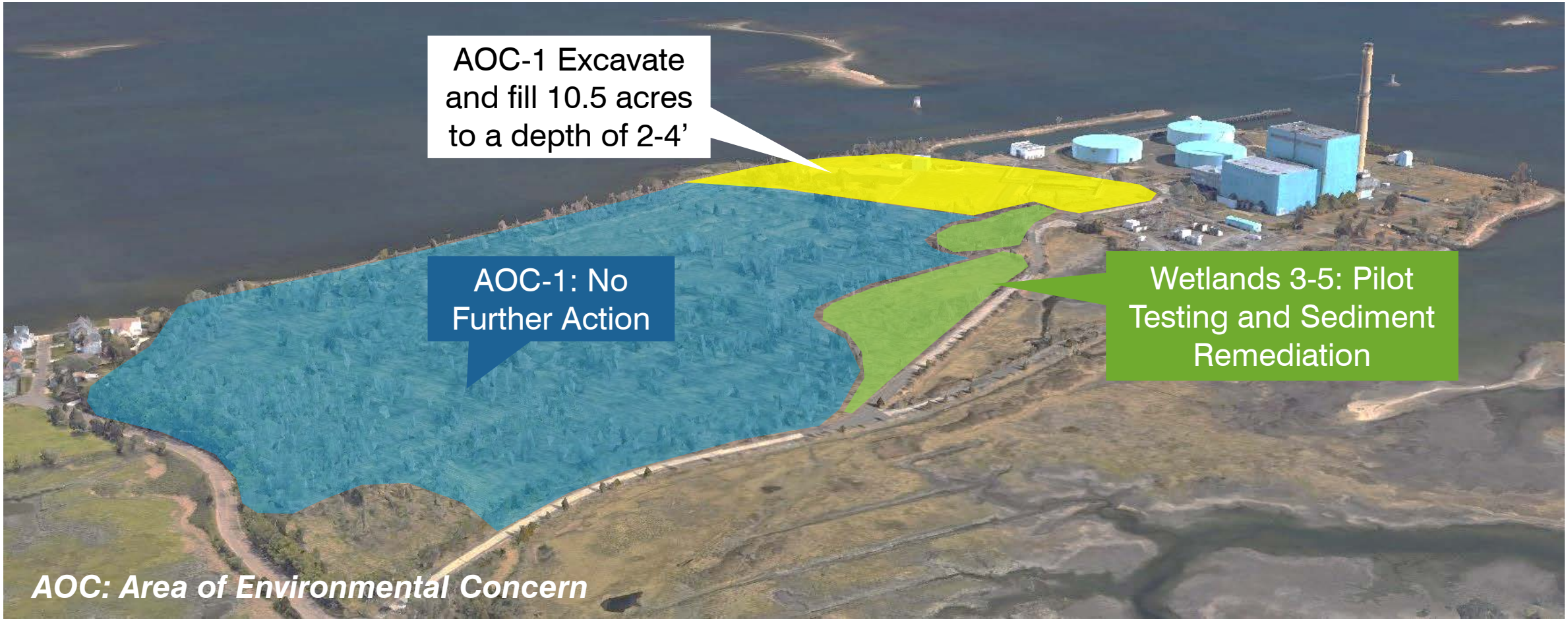
- Minimum of 2.5-inches of asphalt or 3-inches of reinforced concrete with a subbase of 6-inches of gravel.
- Paved areas (e.g., parking lots, roadways) and building foundations may be used as surface barriers or caps over contaminated soil. Capping in place involves creating and maintaining a hard surface, usually concrete or asphalt, over contamination. The result is a high strength, low permeability cover that reduces surface water infiltration and stabilizes contaminated soils. As a result, the cap prevents contact with the contaminated soil and contaminant mobility is limited protecting ground water.



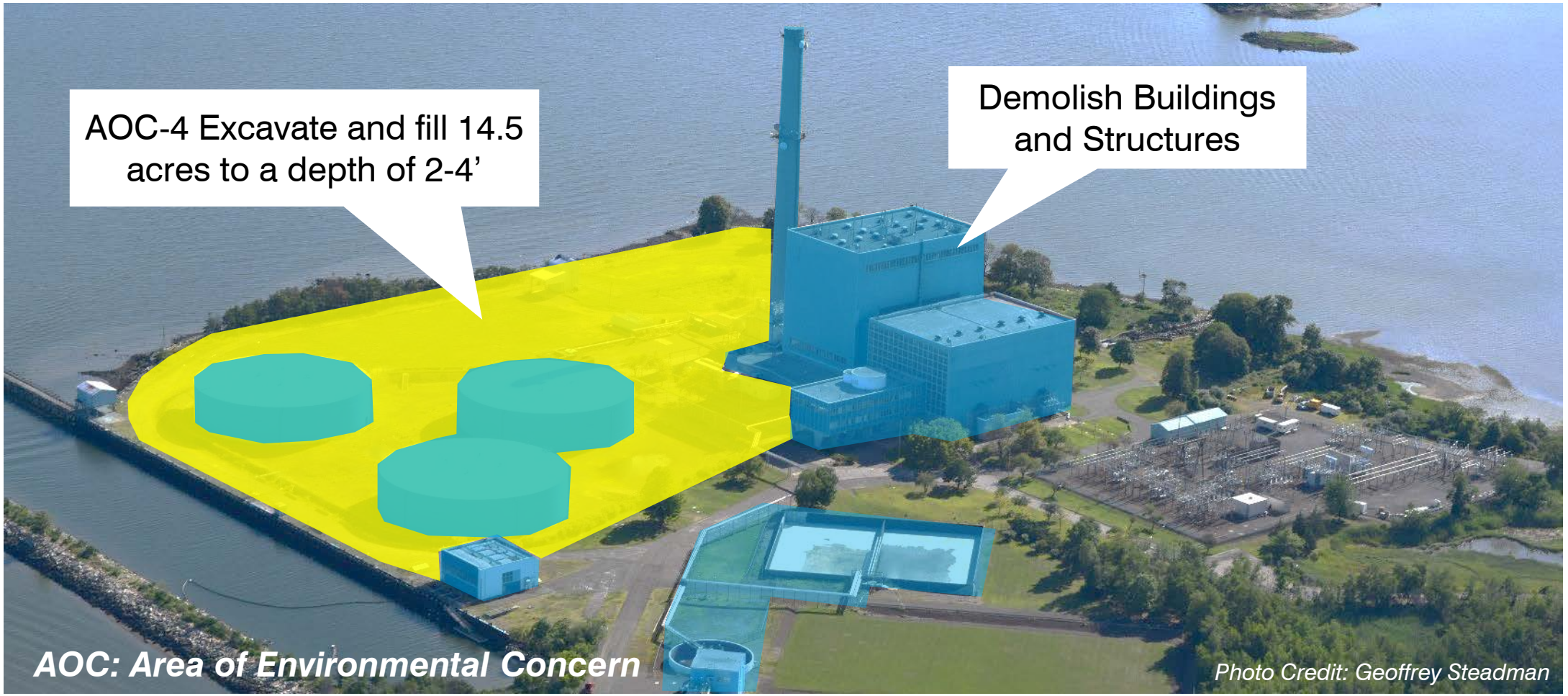
ENGINEERED CONTROL PROCESS

- CTDEEP Review and Input is Required
  - Part 1: Conceptual Engineering Control Approach and Background Information. (CTDEEP Concurrence is required to proceed)
  - Part 2: Detailed engineering design, implementation schedule, operation and maintenance plan, and financial assurance.
  - After Engineering Control is Implemented:
    - Environmental Land Use Restriction filed on land records
    - Financial Assurance
    - Long Term Inspection, Maintenance and Monitoring
    - Annual Reporting

RECOMMENDED REMEDIAL APPROACH: EXCAVATION
(AOC-1 COAL ASH DISPOSAL AREA AND WETLANDS 3-5)



RECOMMENDED REMEDIAL APPROACH: EXCAVATION (AOC-4 FORMER COAL STORAGE AREA)



KEY ISSUE: MARKET CONDITIONS

- Based on market trends and conditions **residential development** is the most likely driver of reuse of this property, however…
- High density housing (mid-rise apartment or condominium buildings) would be required to cover the cost of remediation on the site and overcome the limitation of construction in a flood zone.
- Local roadways cannot readily support the volume of traffic generated by high density housing.
- There would be strong local community opposition to high density housing on Manresa Island

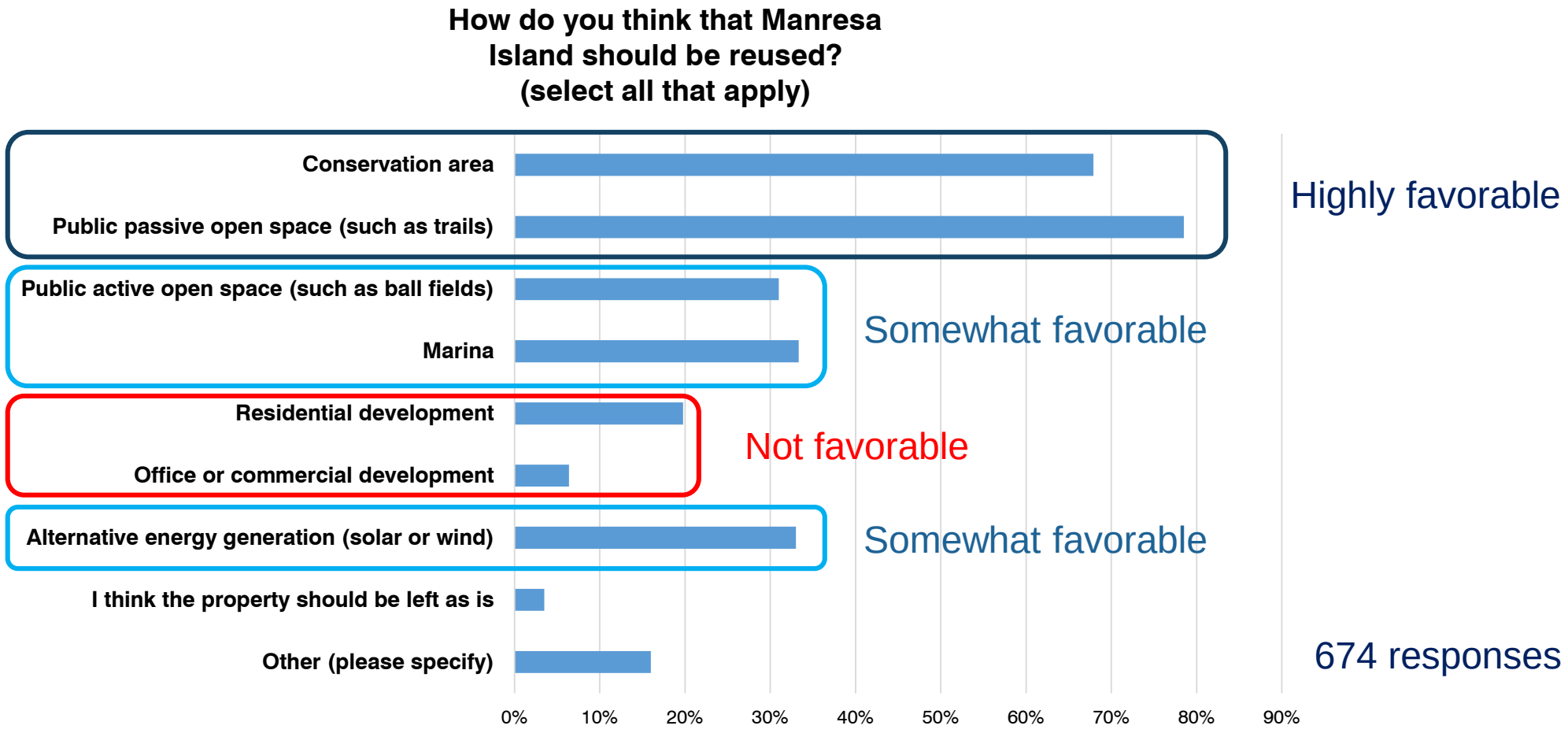
ASSESSMENT OF REUSE OPTIONS

Reuse Scenario	Visual Impact	Traffic Impact	Ecological Benefit	Allowed by Zoning	Anticipated Public Support	Property Tax Revenue Impact	Remediation Cost	POCD Supportive
Conservation	Low	Low	High	Yes	High	Negative	Low	High
Passive open space	Low	Low	High	Yes	High	Negative	Moderate	High
Marina	Moderate	Moderate	Low	No	Moderate	Neutral	Moderate	Moderate
Low Density Residential	Moderate	Low	Low	Yes	Moderate	Neutral	High	Moderate
Medium Density Residential	Moderate	Moderate	Low	Yes	Low	Positive	High	Moderate
High Density Residential	High	High	Low	No	Low	Positive	High	Low
Solar Farm	Low	Low	Moderate	Special Permit	Moderate	May be subject to Municipal Agreement	Low	Moderate
Educational Facility	Low	Moderate	Low	No	Moderate	Moderate	Moderate	Moderate

REUSE OPTIONS NOT ADVANCED FOR CONSIDERATION

Use	Primary Limitation	Secondary Limitations
Low Density Housing	Market limitations due to former use	Cost of remediation, lack of public benefit, low ecological value
High Density Housing	Traffic generation and visual impact	Not supported by POCD, lack of infrastructure, lack of community support
Hotel or Resort	Traffic generation and visual impact	Not supported by POCD, lack of infrastructure, lack of nearby complementary services
Manufacturing or Warehousing	Traffic generation, inadequate roadway infrastructure	Not supported by POCD, low ecological function, lack of community support, lack of public benefit
Retail/Services	Traffic generation and remoteness of location	Not supported by POCD, lack of infrastructure, lack of nearby complementary services, lack of community support
Office	Traffic generation	Not supported by POCD, lack of community support
Gas Turbine Peak Power Plant	Lack of proximity to gas transmission line	
Wind Farm	Insufficient wind speed and consistency	Visual impact

KEY ISSUE: PUBLIC OPINION



RECOMMENDED REUSE SCENARIOS

Based upon extensive site analysis, market analysis, and community engagement, we recommend the following potential reuses of the site:

- Conservation
- Solar energy production and storage
- Marina and Boat Launch
- Education Facility
- Medium Density Residential Development

CONSERVATION OPTION

- Recommended for the 92 acre northern parcel
- Remedial strategy would be “natural attenuation”
- Roadways would be maintained, access to areas outside of roadways would be prohibited
- Perimeter of conservation area would be fenced and/or signed to deter access
- The property could be transferred to the City or a land trust organization

CONSERVATION OPTION

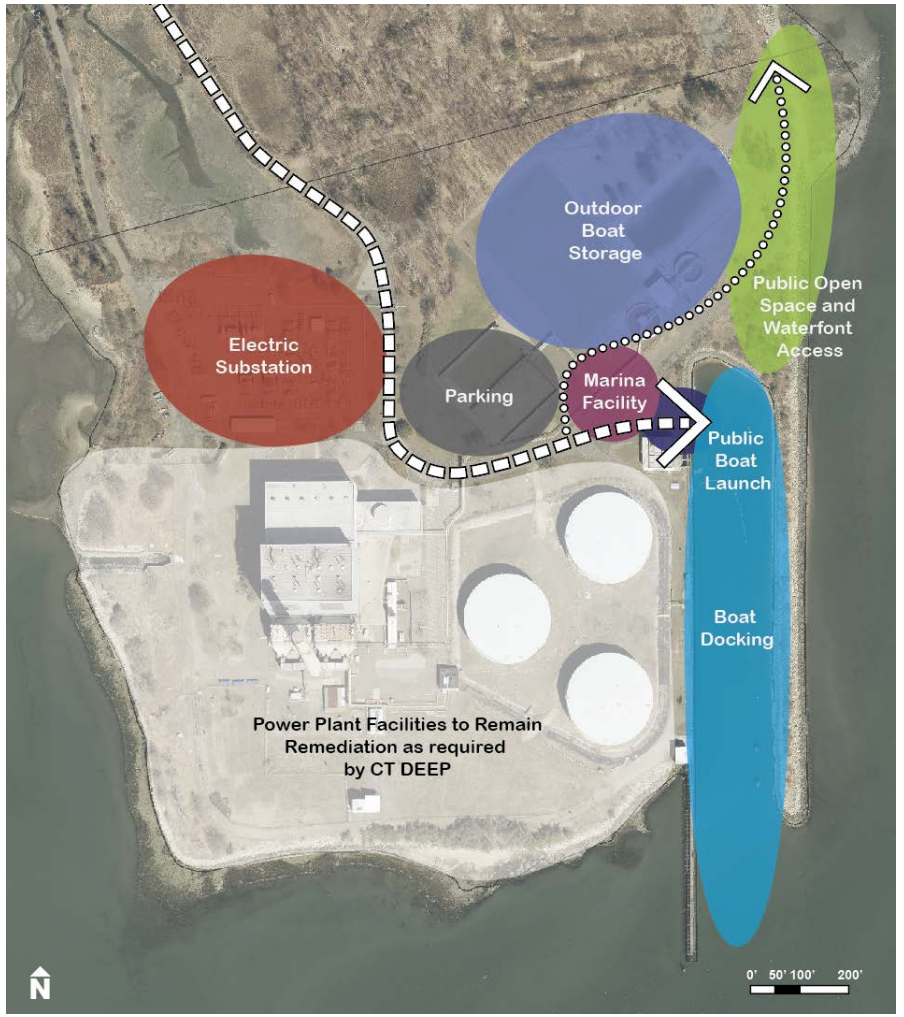
Potential for pathways along the shore, but would require remediation and access prevention in those areas

Bluff Point State Park, Groton, CT Source: connecticutexplorer.blogspot.com

RECOMMENDED REUSE CONCEPTS

Marina and Public Boat Launch

- Site access via existing roadway, potential to convert that roadway to a City right-of-way
- Public access to waterfront
- Power plant facilities would remain, remediation would occur as required by CT DEEP



RECOMMENDED REUSE CONCEPTS

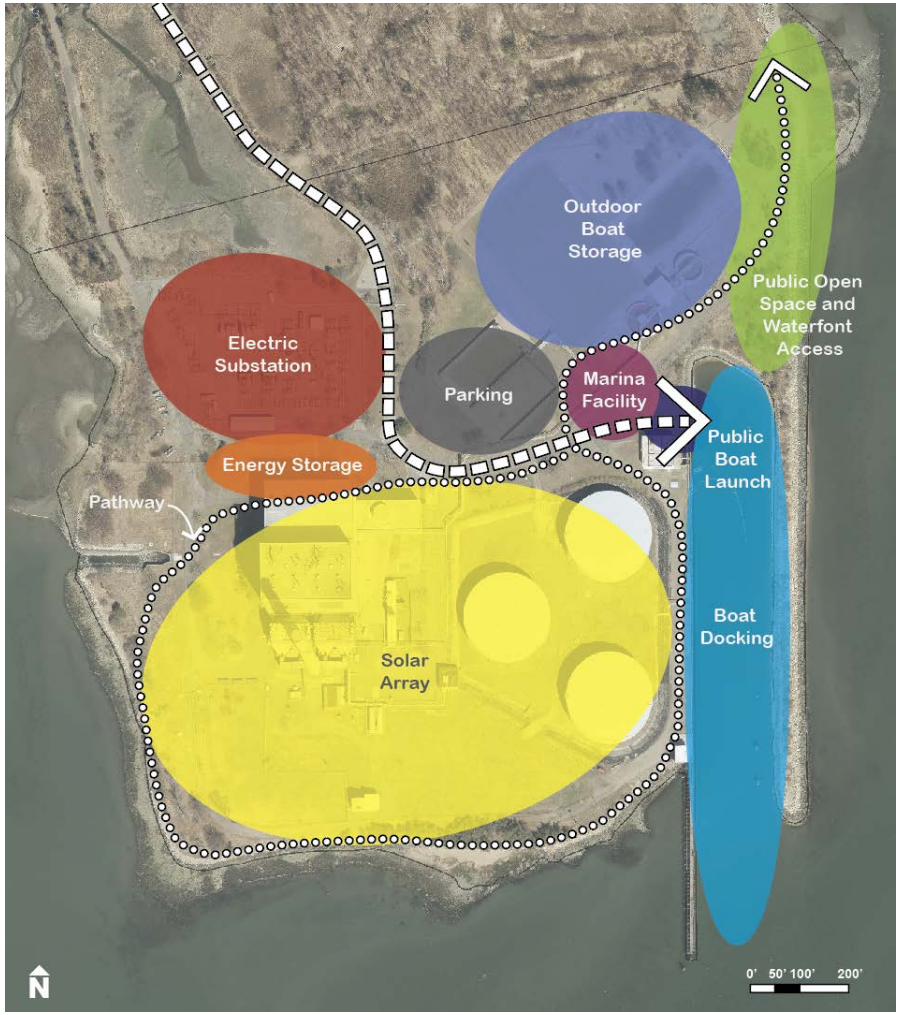
Marina with Residential Development

- Marina could be developed independent of the residential development
- Marina would add significant value to the residential development
- Medium density development located on the southernmost extent of the site

RECOMMENDED REUSE CONCEPTS

Marina with Solar Farm

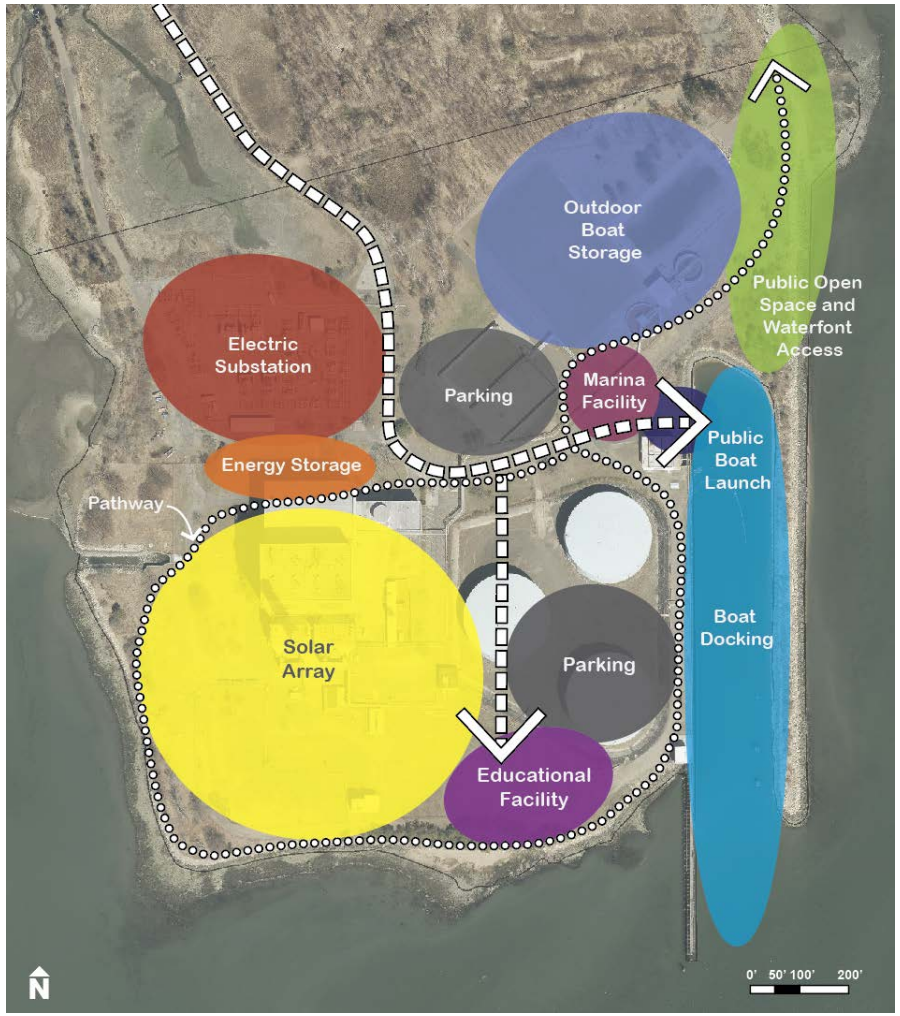
- Solar farm would occupy southernmost extent of the site
- Potential for energy storage facility supporting solar array
- Potential for waterfront pathway surrounding the solar farm



RECOMMENDED REUSE CONCEPTS

Marina with Solar Farm and Educational Facility

- Potential for energy storage facility supporting solar array
- Potential educational facility at water's edge



MARINA REUSE CONCEPT

- 110 Slip Marina
- 6-acre Boat Yard
- Public Parking (60 spaces)
- Marina Parking (120 spaces)
- Public Boat Launch
- Potential Remedial Cost: **$8 Million**
  - (Wastewater Structure Removal: $1 Million)

MARINA REUSE CONCEPT

Comparable: Norwalk Shore and Country Club and Norwalk Cove Marina: 26 acres total

MARINA/SOLAR FARM REUSE CONCEPT

- Marina Facilities
- 2.5 MW Solar Array
- 1 acre battery energy storage site
- Waterfront pathway
- Potential Remedial Cost: **$25.5 Million**
  - (Power Plant/ Wastewater Plant Removal: $9 Million)

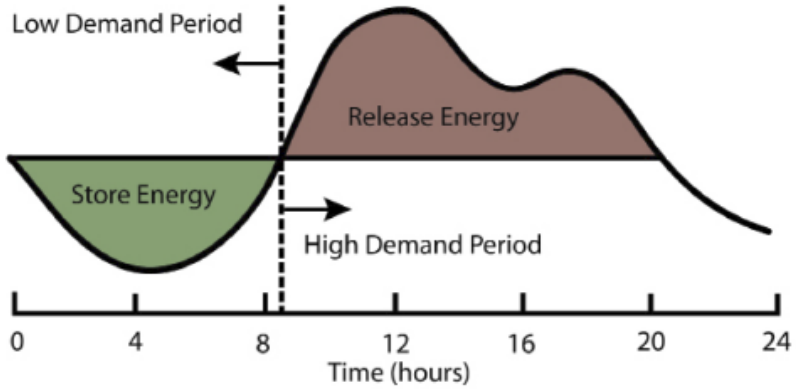
SOLAR FARM

Comparable: East Lyme 23 acre, 5 Megawatt/hour solar field

ENERGY STORAGE

- Lithium-Ion energy storage could be used to provide energy during peak demand periods or to balance energy supply from a solar farm.
- The CT regulatory environment does not incentivize battery based energy storage.

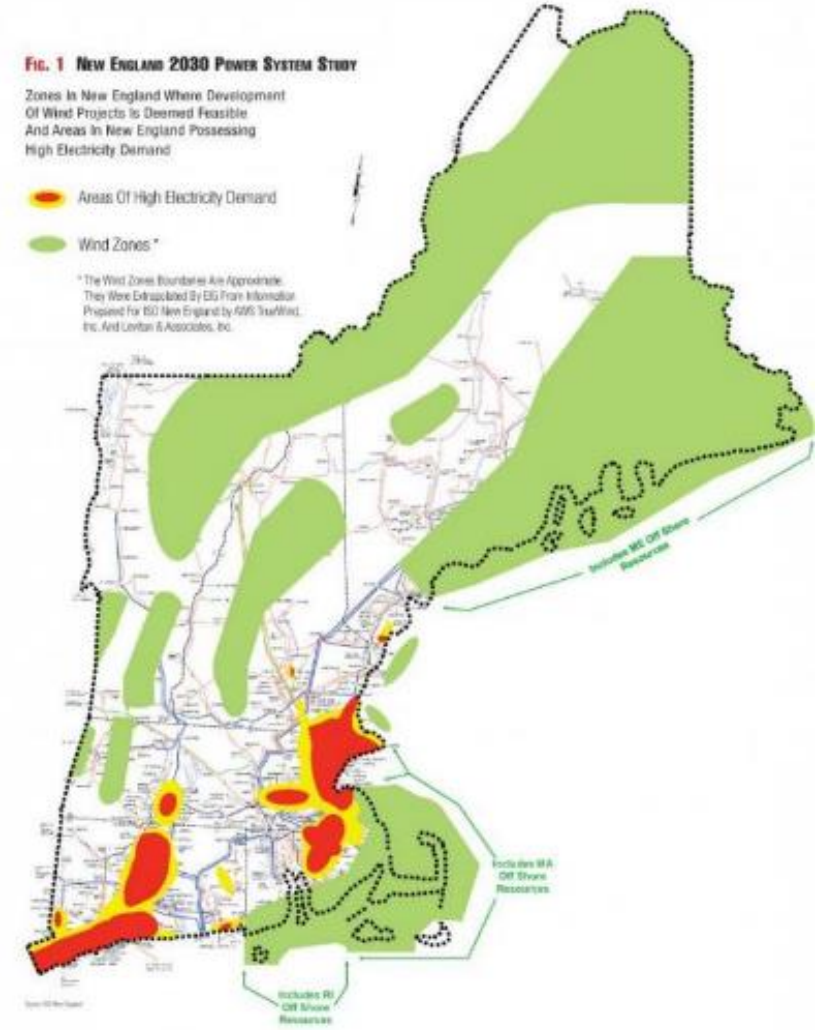
Daily Energy Storage and Load Leveling[17]



GENERATION OUTLOOK

According to the ISO New England 2030 Power System Study:

Although each of the Greater CT, SWCT, and NEMA/Boston areas are likely to have sufficient resources in the long term to meet their representative reserve requirements, ***the placement of fast-start, energy-efficiency, and economical baseload resources in these areas would improve system performance****, especially in the short term for the NEMA/Boston area.*



MARINA/SOLAR/EDUCATIONAL REUSE CONCEPT

- Marina Facility
- 1.5 MW Solar Farm
- Waterfront Pathways
- 50,000-100,000 sf educational facility with 300 parking spaces
- Potential Remedial Cost: **$25.2 Million**
  - (Power Plant/ Wastewater Plant Removal: $9 Million)

EDUCATION FACILITY

Goodwin College in East Hartford is a successful example of waterfront brownfield redevelopment for educational purposes

MARINA AND RESIDENTIAL REUSE CONCEPT

- Marina Facilities
- 76 development parcels 7,500 sf to 0.5 acres
  - 30 waterfront parcels
  - 46 internal parcels
- Electric substation would be screened by grading and/or landscaping
- Potential Remedial Cost: >**$30 Million**
  - (Power Plant/ Wastewater Plant Removal: $9 Million)

MARINA AND RESIDENTIAL REUSE CONCEPT

Comparable: Harborview Avenue, Norwalk

KEY FINDINGS/PROJECT NEEDS

- The cost of site clean-up to support recommended reuses ranges from $8 million $30 million or more. Further investigation of the site will be required to accurately assess remedial approach and cost.
- There is likely as much as a $20 million gap between the cost of demolition of all site structures and remediation and the financial viability of redeveloping the site.
- The Connecticut Regulatory Environment is not as supportive as surrounding states in allowing for the development of utility scale solar farms and battery energy storage.
- CT regulatory changes are needed to allow a more open process for the engagement of power purchase agreements between utilities and solar providers, as well as to incentivize the development of battery energy storage.
- Clean up and reuse of the site may need to occur in multiple phases, and the site may need to be divided into different development areas/parcels

STATEMENT FROM NRG 6/20/18

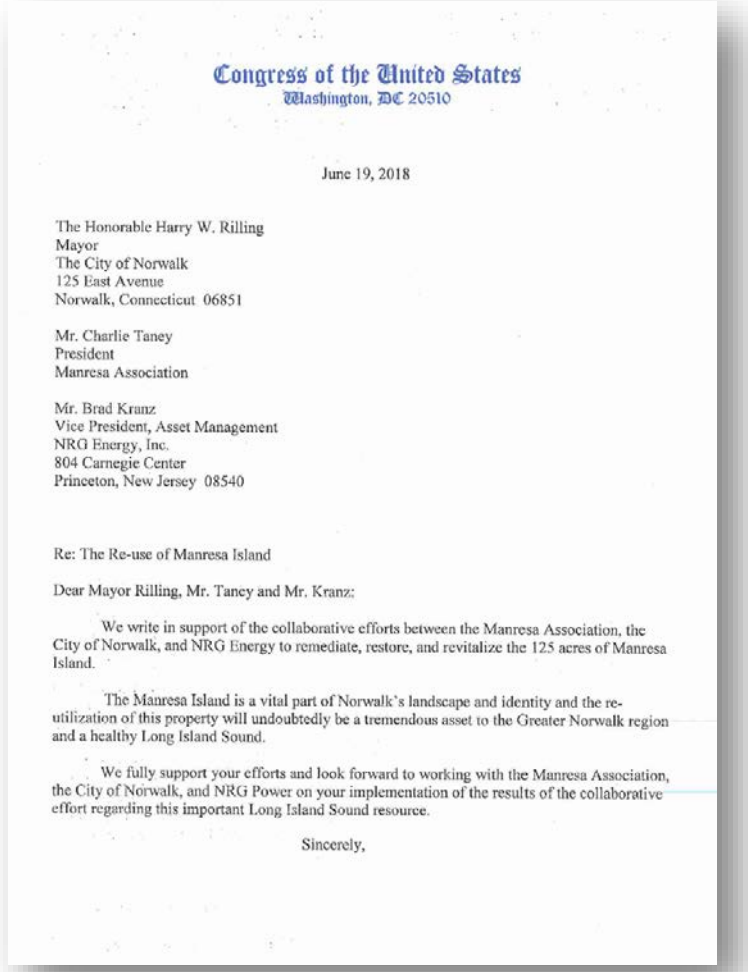
"NRG congratulates Mayor Rilling and the greater Norwalk Community for the work they have done over the past year with their consultant Fitzgerald and Halliday on the economic analysis and reuse concepts for NRG's Norwalk Harbor power generation site. NRG has been pleased to be included in this process and to have participated in meetings with both City officials and the community. We all share the ***common goal of finding a productive reuse for the site that brings economic, environmental and societal benefits*** *to the greater Norwalk Community, as NRG has done during the 18 years of ownership of the site. We believe this process is providing a useful forum for exchange of ideas, to identify a range of possibilities and better understand the larger community interests. We are confident that* ***the work done here by the community will be a useful tool to inform and guide a future proposal for redevelopment and reuse of the site. While it is premature to put a timeframe on when that might be, NRG shares a common interest in seeing the site transformed*** *and which may include finding a suitable partner or buyer for the site. In the meantime, we will continue to work directly with the Mayor and his office to ensure that the City is kept up to date. We greatly appreciate the opportunity to make this statement and look forward to continuing our collaborative relationship."*

JOINT STATEMENT FROM SENATORS BLUMENTHAL, MURPHY, AND CONGRESSMAN HIMES 6/19/18

"We write in support of collaborative efforts between the Manresa Association, the City of Norwalk, and NRG Energy to remediated, restore and revitalize the 125 acres of Manresa Island.

The Manresa Island is a vital part of Norwalk's landscape and identity and the re-utilization of this property will undoubtedly be a tremendous asset to the Greater Norwalk region and a healthy Long Island Sound.

We fully support your efforts and look forward to working with the Manresa Association, the City of Norwalk, and NRG Power on your implementation of the results of the collaborative effort regarding this important Long Island Sound resource."



Congress of the United States
Washington, DC 20510

June 19, 2018

The Honorable Harry W. Rilling
Mayor
The City of Norwalk
125 East Avenue
Norwalk, Connecticut 06851

Mr. Charlie Taney
President
Manresa Association

Mr. Brad Kranz
Vice President, Asset Management
NRG Energy, Inc.
804 Carnegie Center
Princeton, New Jersey 08540

Re: The Re-use of Manresa Island

Dear Mayor Rilling, Mr. Taney and Mr. Kranz:

We write in support of the collaborative efforts between the Manresa Association, the City of Norwalk, and NRG Energy to remediate, restore, and revitalize the 125 acres of Manresa Island.

The Manresa Island is a vital part of Norwalk's landscape and identity and the re-utilization of this property will undoubtedly be a tremendous asset to the Greater Norwalk region and a healthy Long Island Sound.

We fully support your efforts and look forward to working with the Manresa Association, the City of Norwalk, and NRG Power on your implementation of the results of the collaborative effort regarding this important Long Island Sound resource.

Sincerely,

NEXT STEPS

- Produce final study report including additional financial feasibility analysis, and recommended strategies to advance remediation and reuse of the site
- Final report anticipated to by complete by August of 2018