

# Habitat Restoration and Green Infrastructure Planning for Staten Island's North Shore

Walker Park  
December 7, 2017

NYC Parks Forestry, Horticulture, and  
Natural Resources

Funded by the NYS Department of Environmental  
Conservation, Hudson River Estuary Program



# Meeting Purpose and Agenda

- Review scope of grant
- Present a draft vision and overview of natural resources conditions and restoration opportunities
- Solicit input on visions and goals
- Solicit input on north shore natural resources priorities





# Forestry, Horticulture, and Natural Resources

*"To conserve New York City's natural resources for the benefit of ecosystem and public health through acquisition, management, restoration, and advocacy using scientifically supported and sustainable research"*

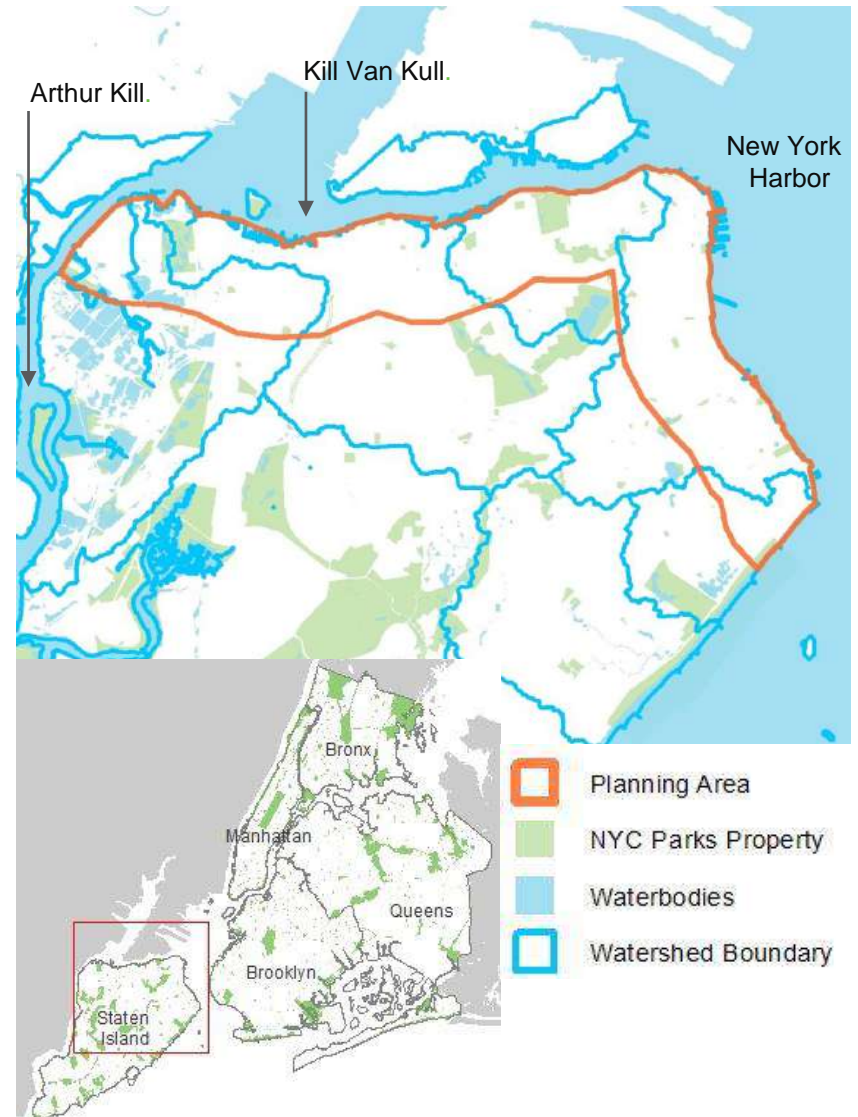


# New York State Department of Environmental Conservation Hudson River Estuary Program

*“Created by state law in 1987, the Hudson River Estuary Program develops knowledgeable and effective stewards of the estuary and its ecosystem using an understanding of ecology as a foundation for all of its work.”*

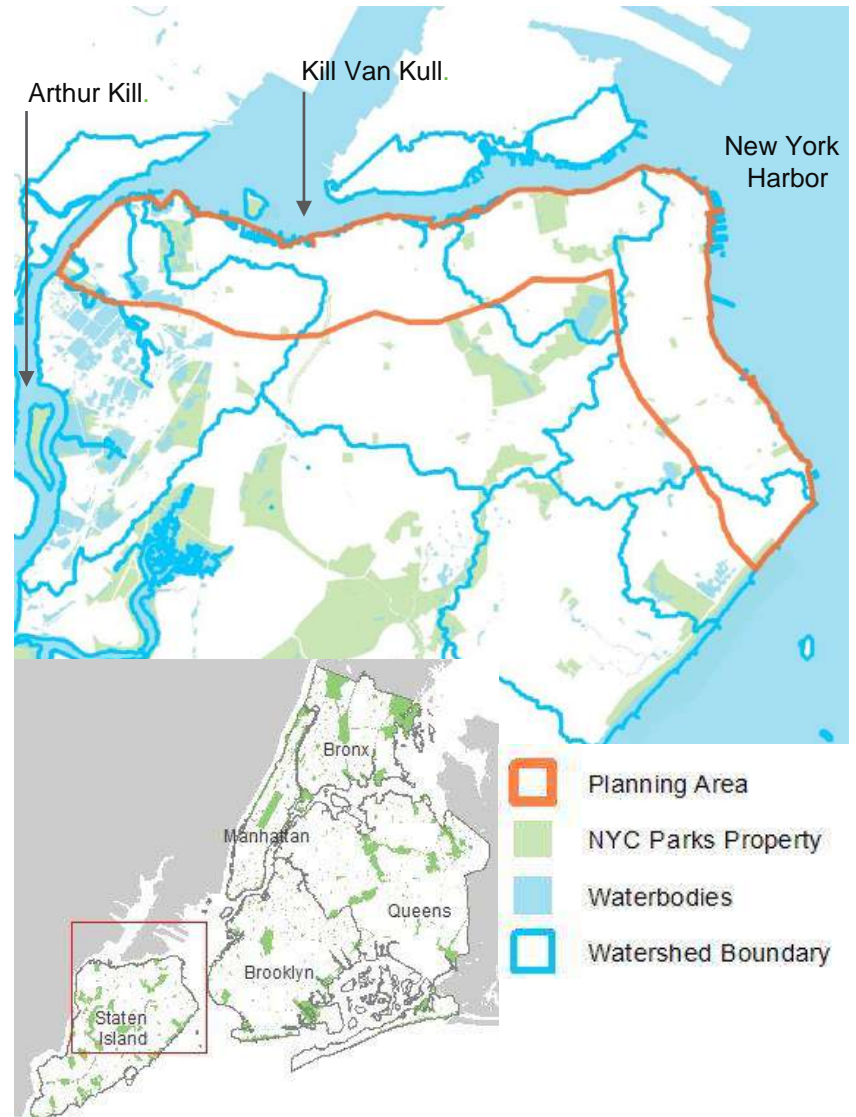
# Why the North Shore?

- Lack of dedicated natural resources planning
- Acceleration of development
- Environmental Justice
- Funding available



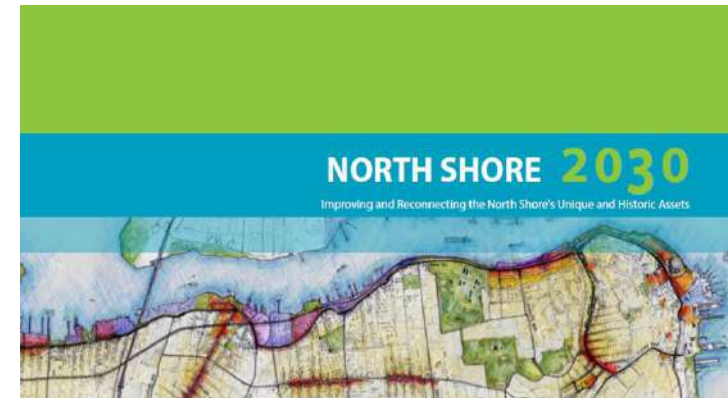
# What is a Watershed Plan?

- Facilitates protection of natural resources in your community
- Differs from Master Planning
- Identifies opportunities
- Gains consensus on priorities
- Path towards implementation of priority projects



# Past Planning

- West Brighton Brownfields Opportunity Area Report (EDC, NYC DCP 2016)
  - Snug Harbor identified as a Strategic Site for revitalizing waterfront
- North Shore 2030 (NYC DCP, NYC EDC, WBCLDC 2016)
  - Snug Harbor a potential stormwater management site and as a hub for waterfront access and transportation
- Comprehensive Waterfront Plan Vision 2020
  - Bluebelt designation at Snug Harbor and enhancement of the site for greenway and waterfront access
- Staten Island's Gold Coast (NSWCSI, 2008)
  - Documents 21 contaminated sites on north shore and their affects on community



## Draft Vision and Goals

Staten Island's North Shore is a valued ecological, economic, and social resource, anchored by the Snug Harbor Cultural Center and waterfront of the Kill Van Kull which provide a wealth of social, recreational, educational, and environmental opportunities.

- i. Restore, protect, and enhance natural resources to promote diverse, native ecological communities
- ii. Manage stormwater to alleviate local flooding and to improve water quality
- iii. Promote public engagement to increase community awareness, facilitate sustainable use, promote healthy living, and invite stewardship.





# Natural Resources Characterizations

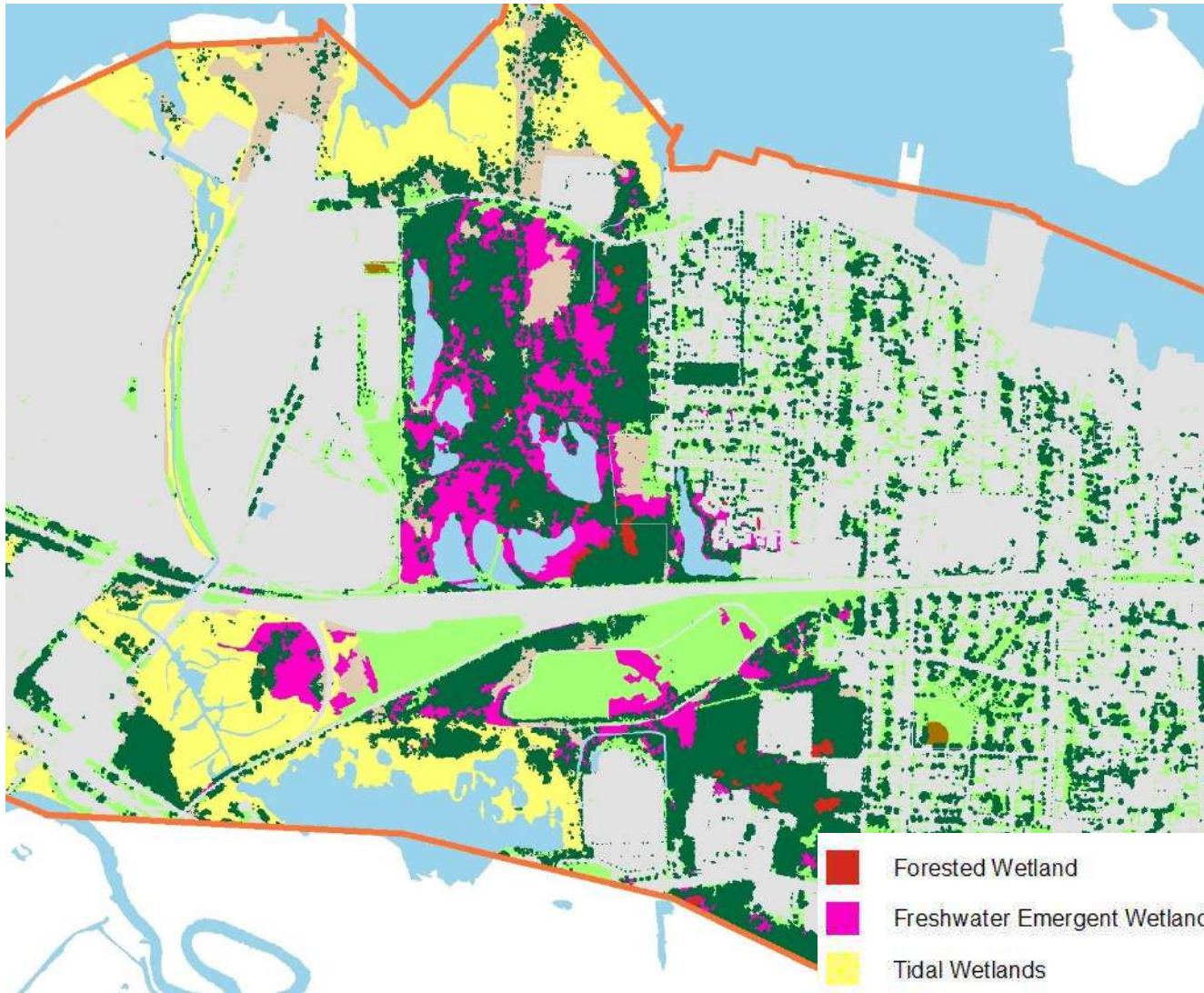
- Land Cover Overview
- Uplands and Forests
  - What are they
  - Where are they
  - Threats
  - Restoration Opportunities
- Streams and Floodplain Forests
- Freshwater Wetlands and Ponds
- Salt Marshes
- Green Infrastructure
- Street Trees



# North Shore Habitats

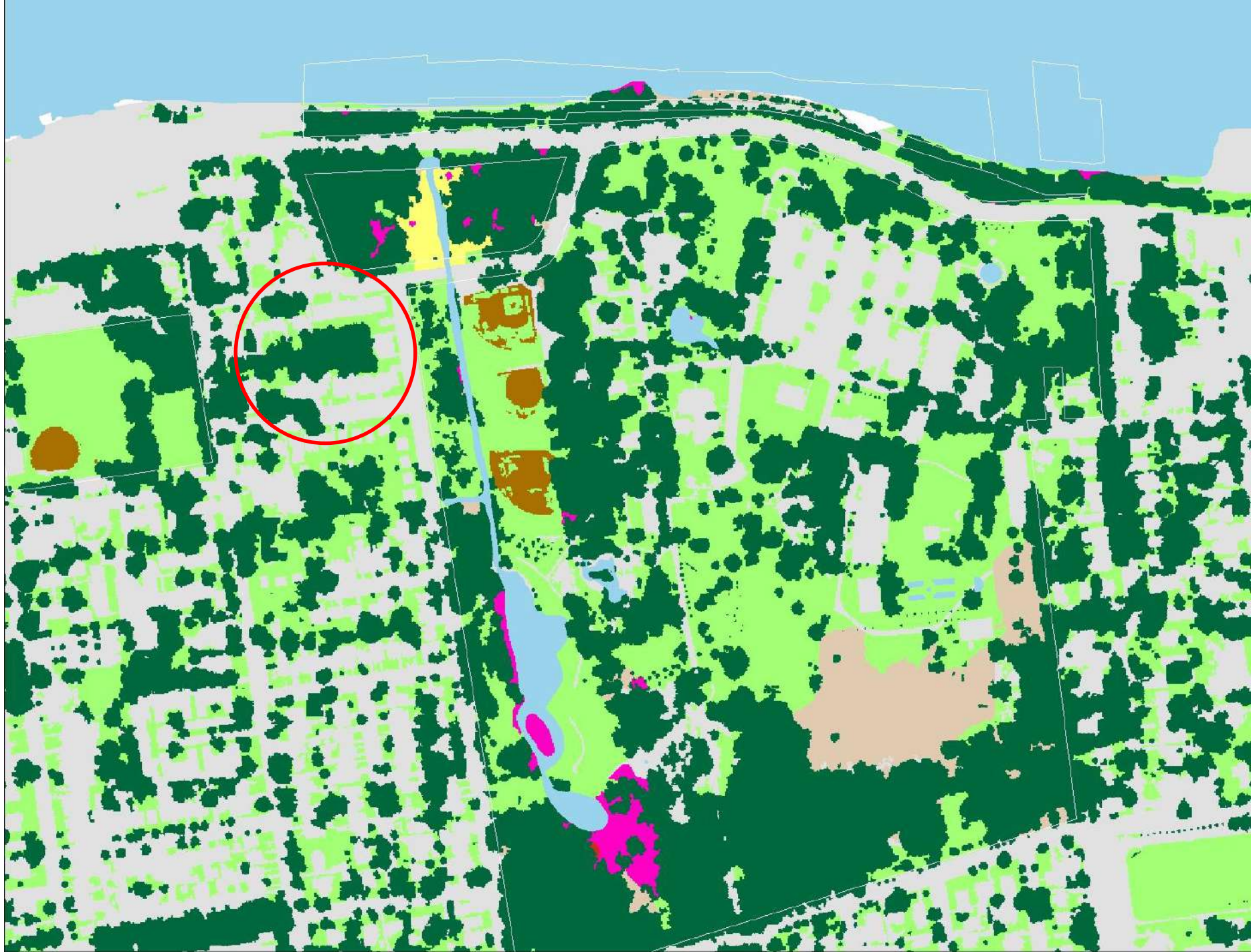


# North Shore Habitats



- |  |   |
|--|---|
|  Forested Wetland             |  Bare Soil           |
|  Freshwater Emergent Wetlands |  Lawn                |
|  Tidal Wetlands               |  Water               |
|  Tree Canopy Cover            |  Impervious Surfaces |
|  Upland Grass/Shrub           |   |





# Harbor Brook

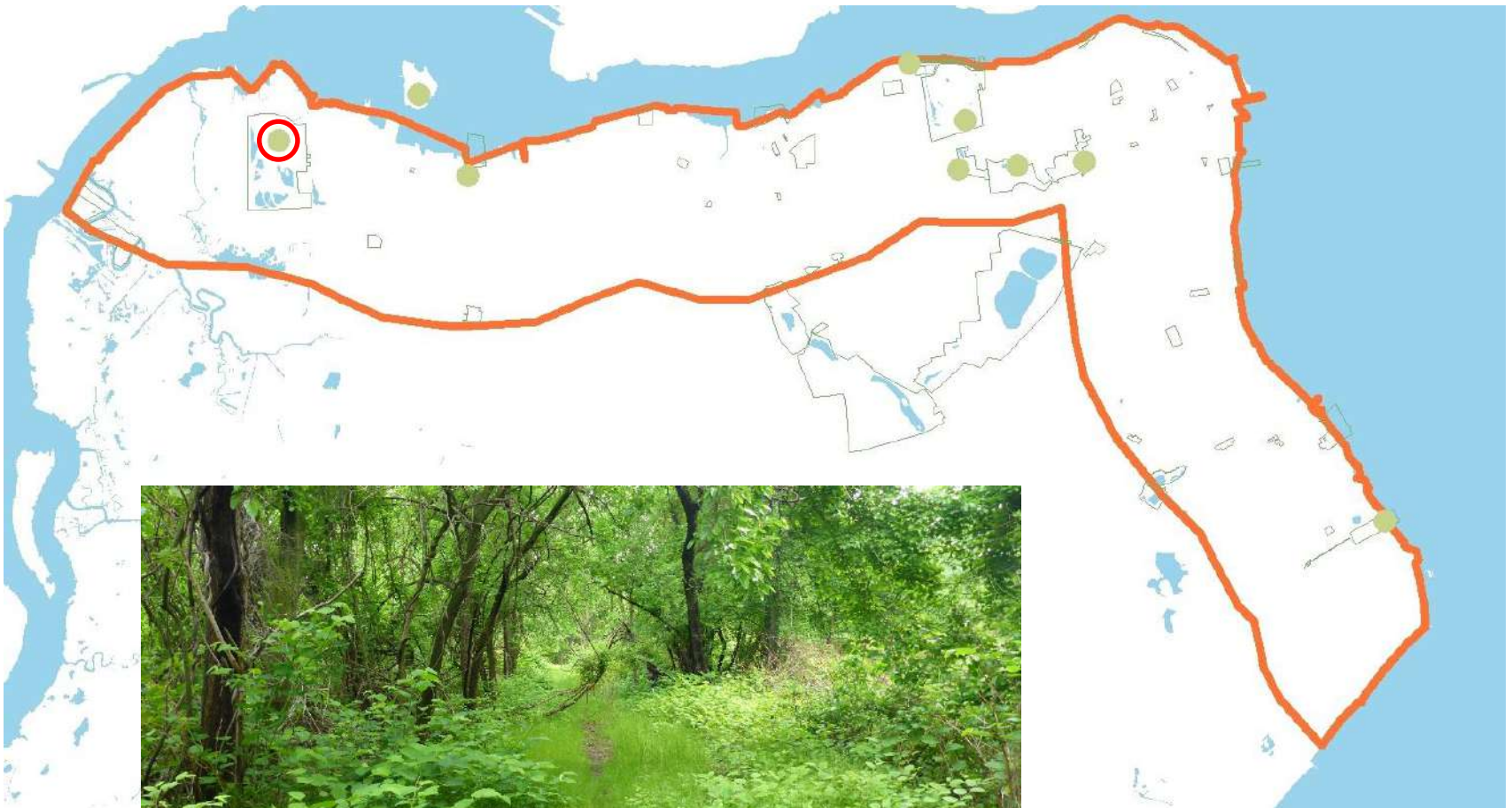


# Uplands and Forests

- Forests
  - Oak – Hickory forests
  - Provide habitat for wide diversity of species
- Serpentine Uplands
  - Greenish-blue bedrock outcrops and nutrient-poor shallow soils
  - Rare geology in New York, only known from Staten Island
  - Ex. Jones Woods
- Threats to these systems
  - Invasive plants
  - Dumping
  - Off-road Vehicles
  - Fragmentation



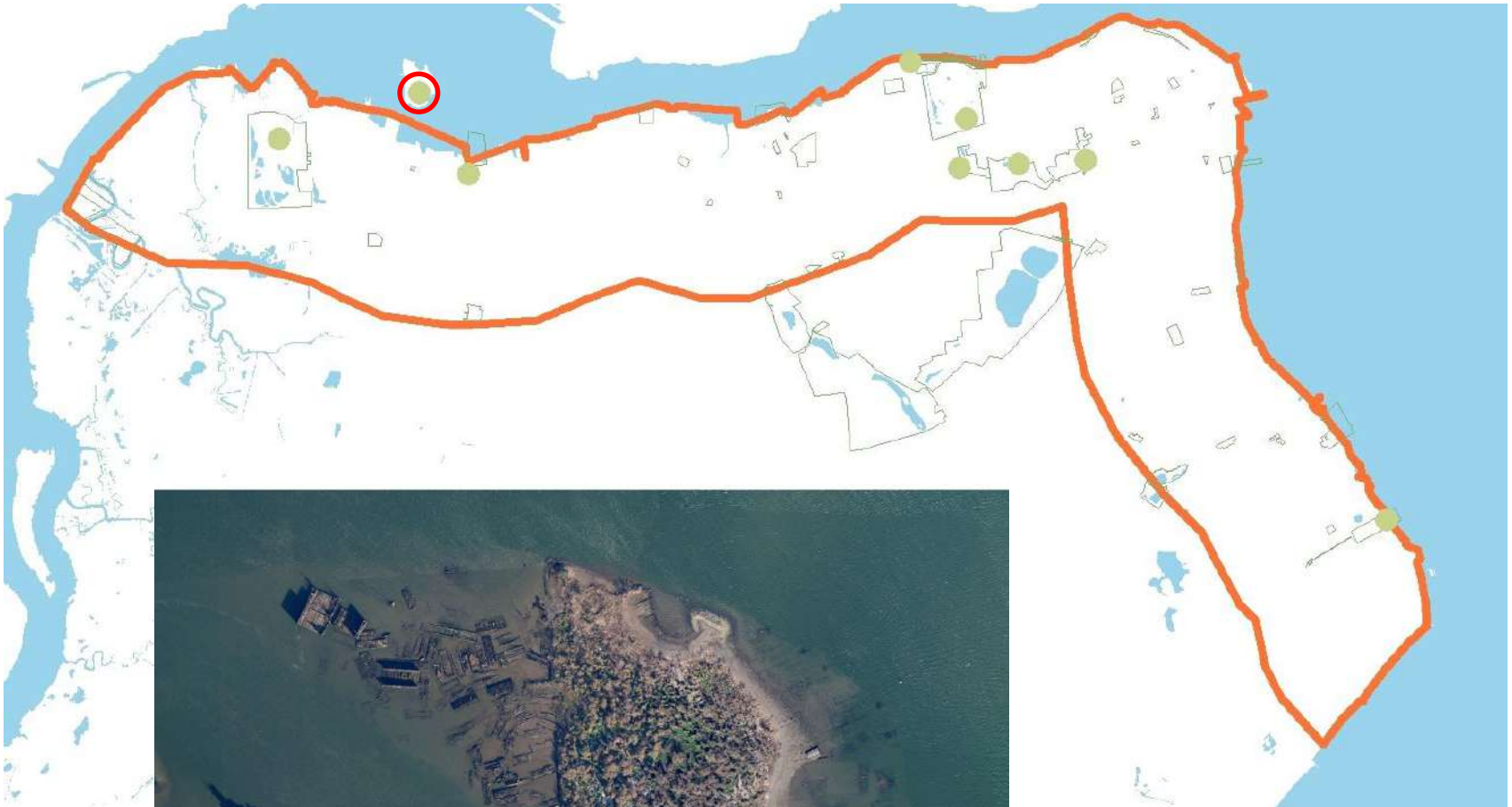
# Uplands and Forests Opportunities



Mariner's Marsh

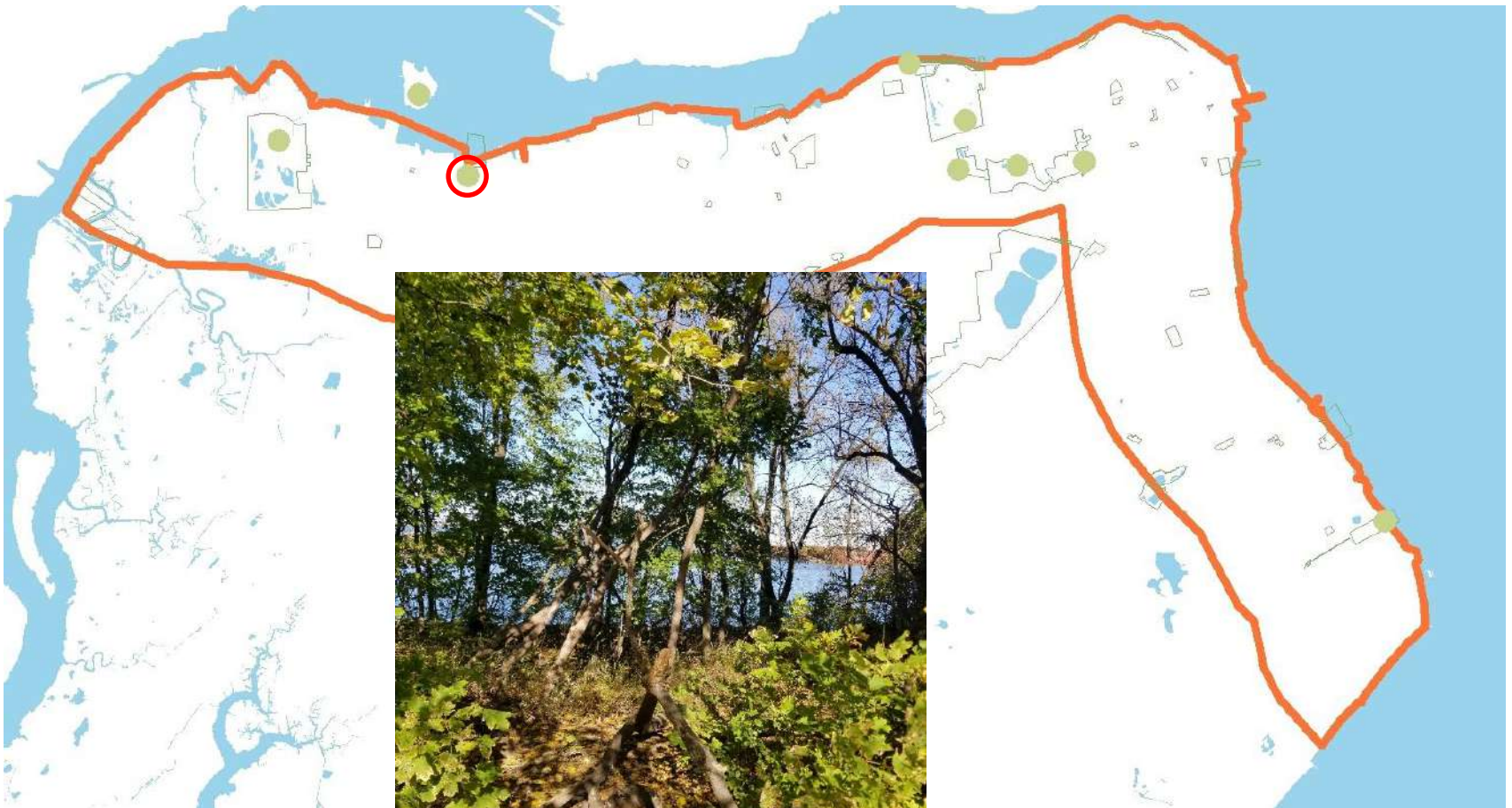


# Uplands and Forests Opportunities



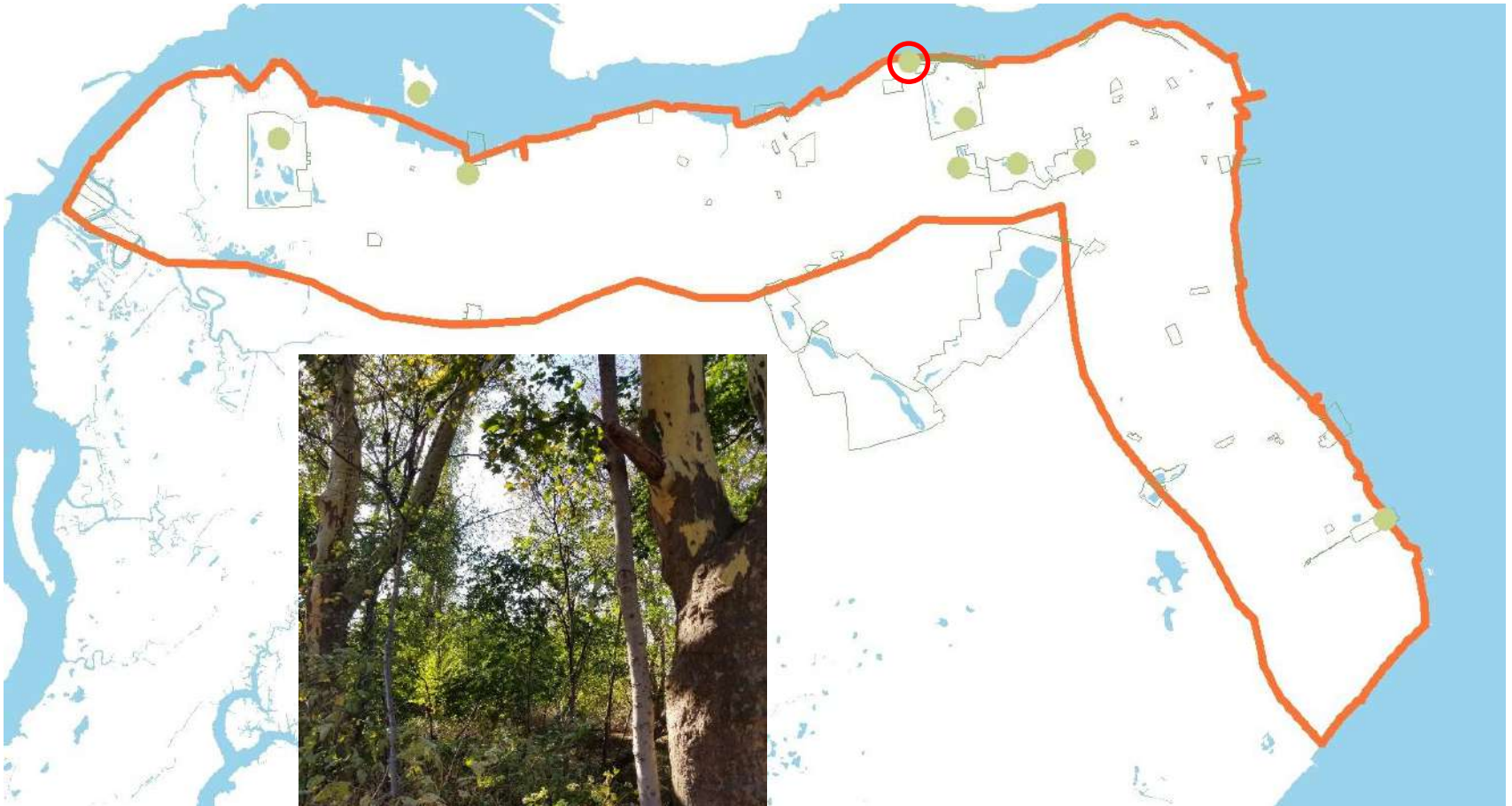
Shooter's Island

# Uplands and Forests Opportunities



Richmond Terrace  
Wetlands

# Uplands and Forests Opportunities



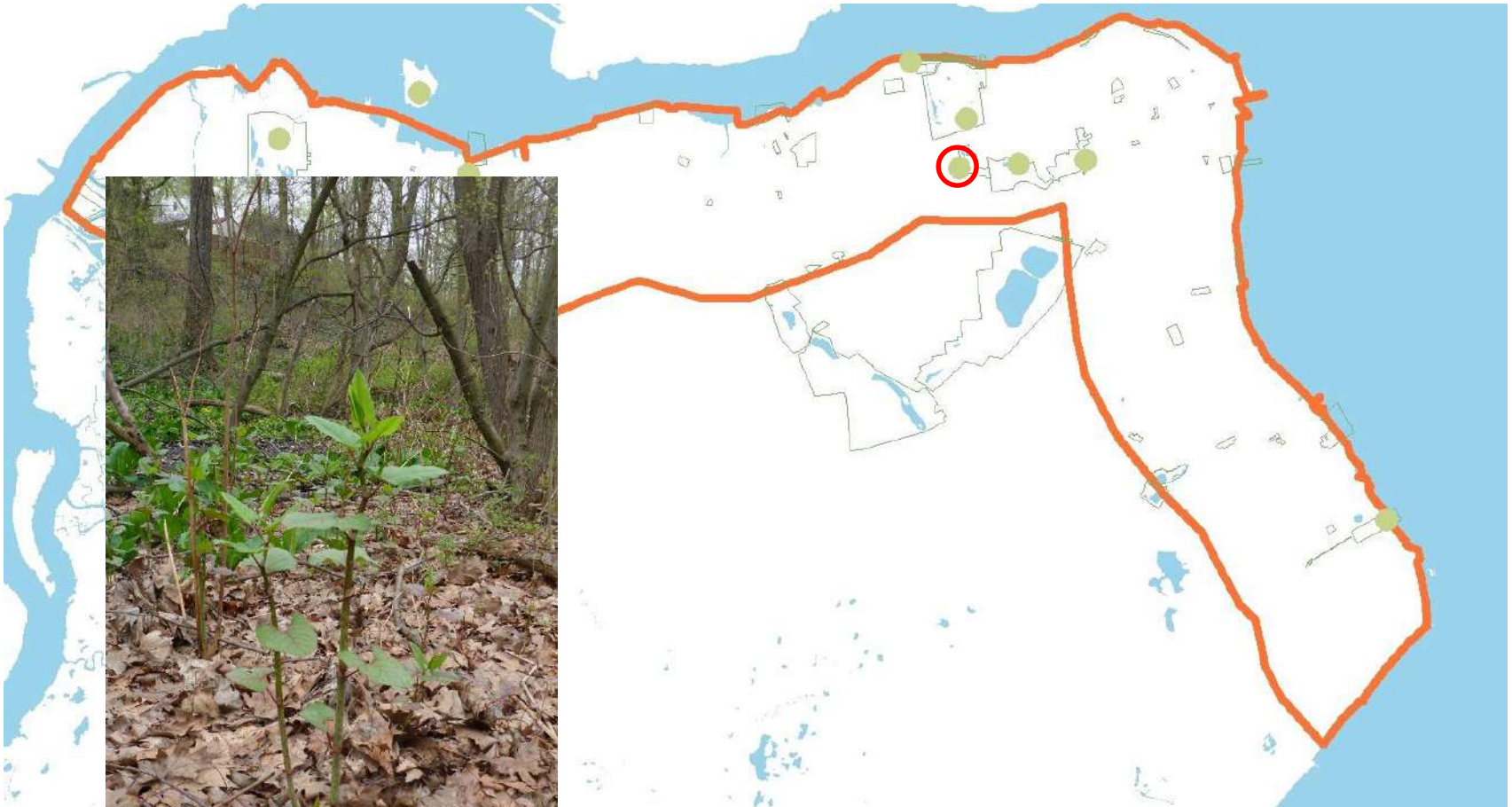
Snug Harbor

# Uplands and Forests Opportunities



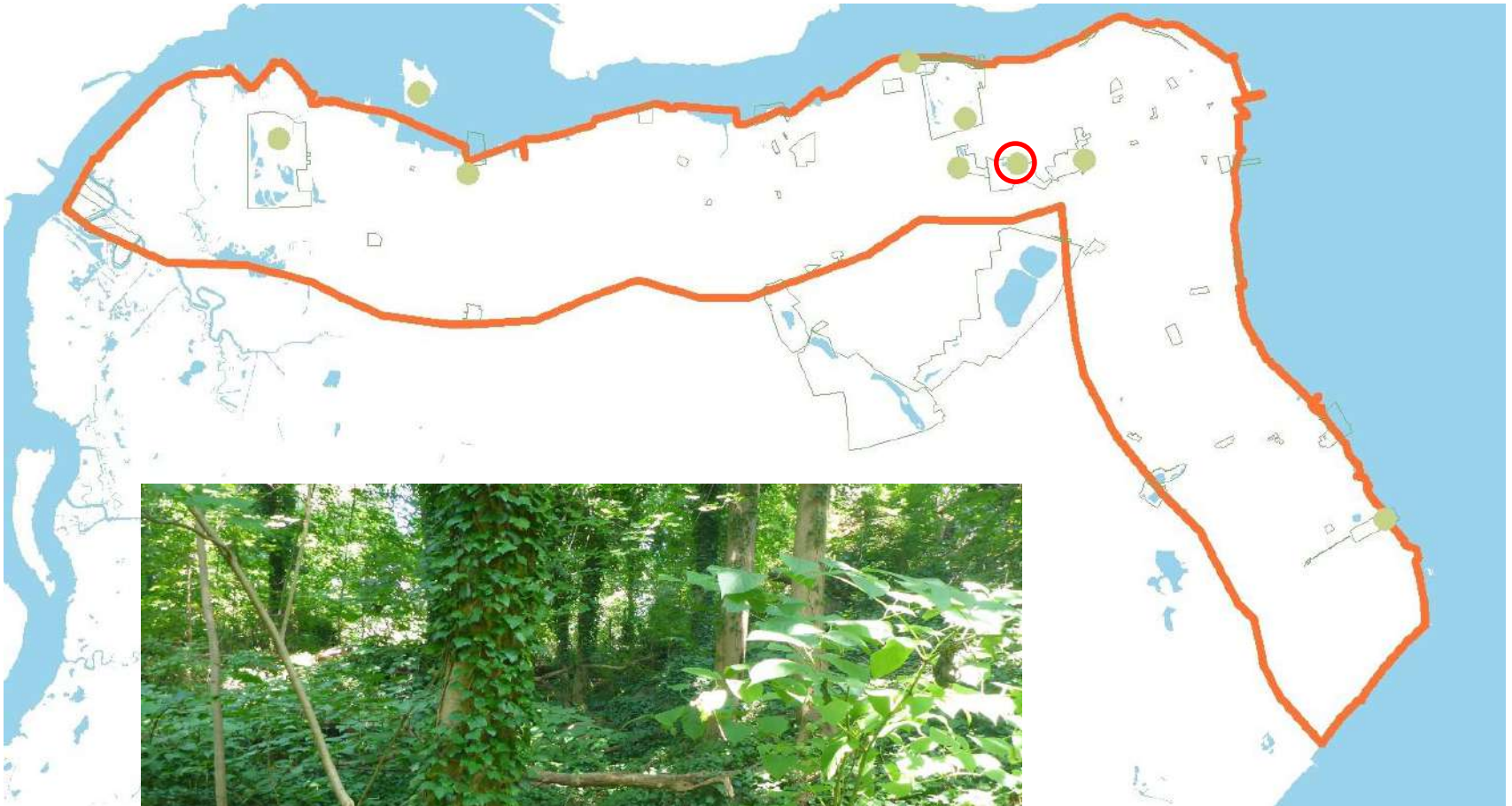
Snug Harbor

# Uplands and Forests Opportunities



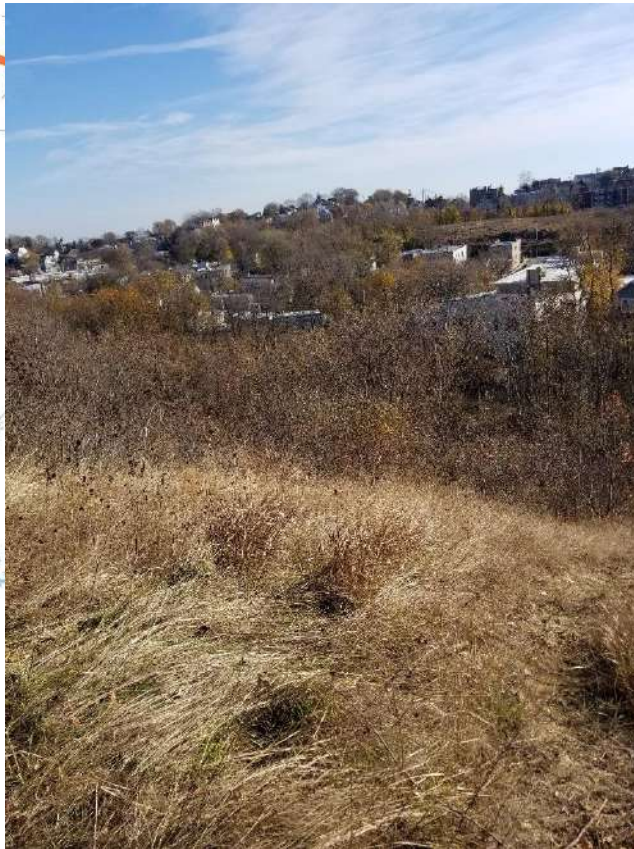
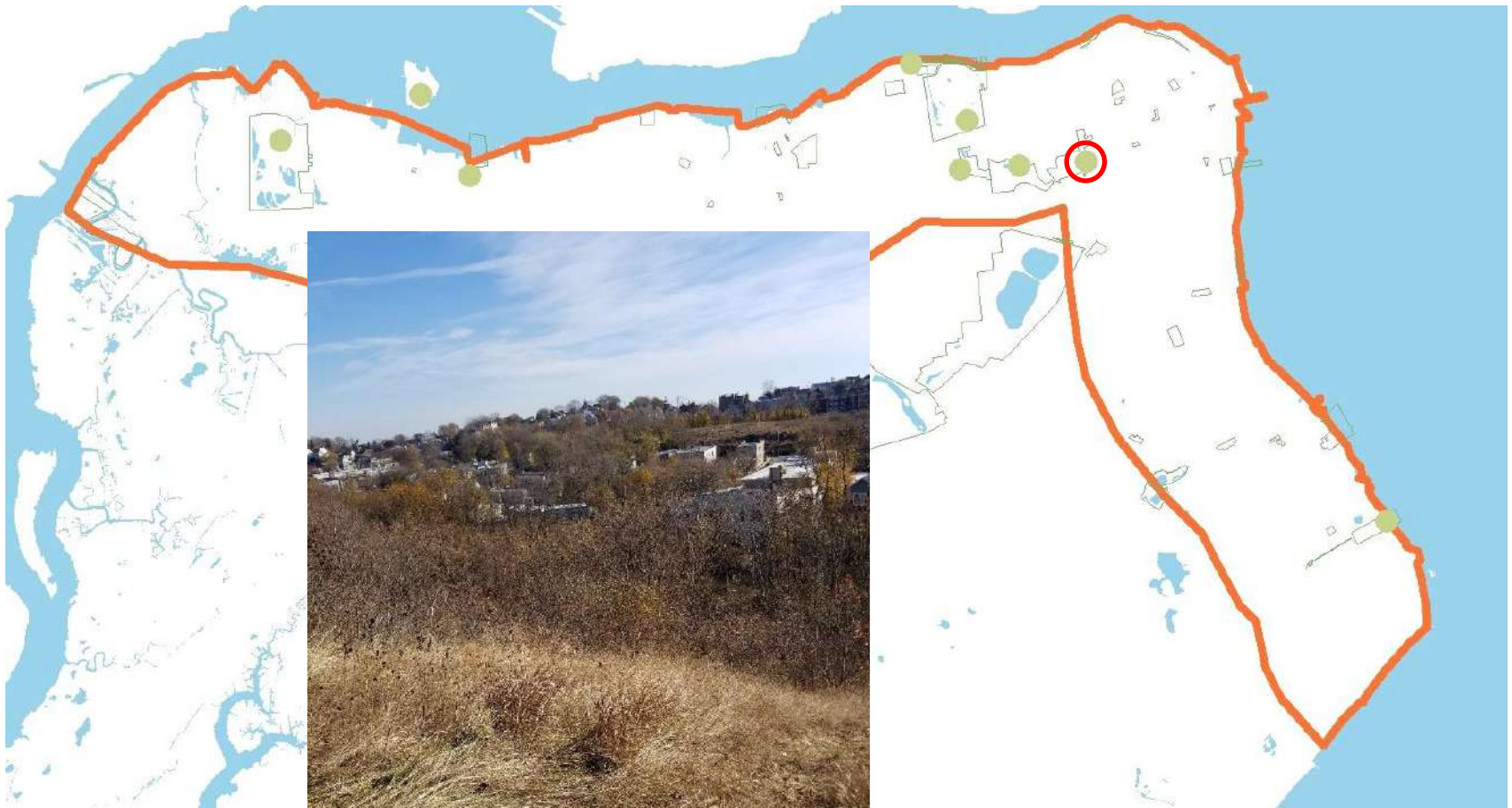
Allison Pond Park

# Uplands and Forests Opportunities



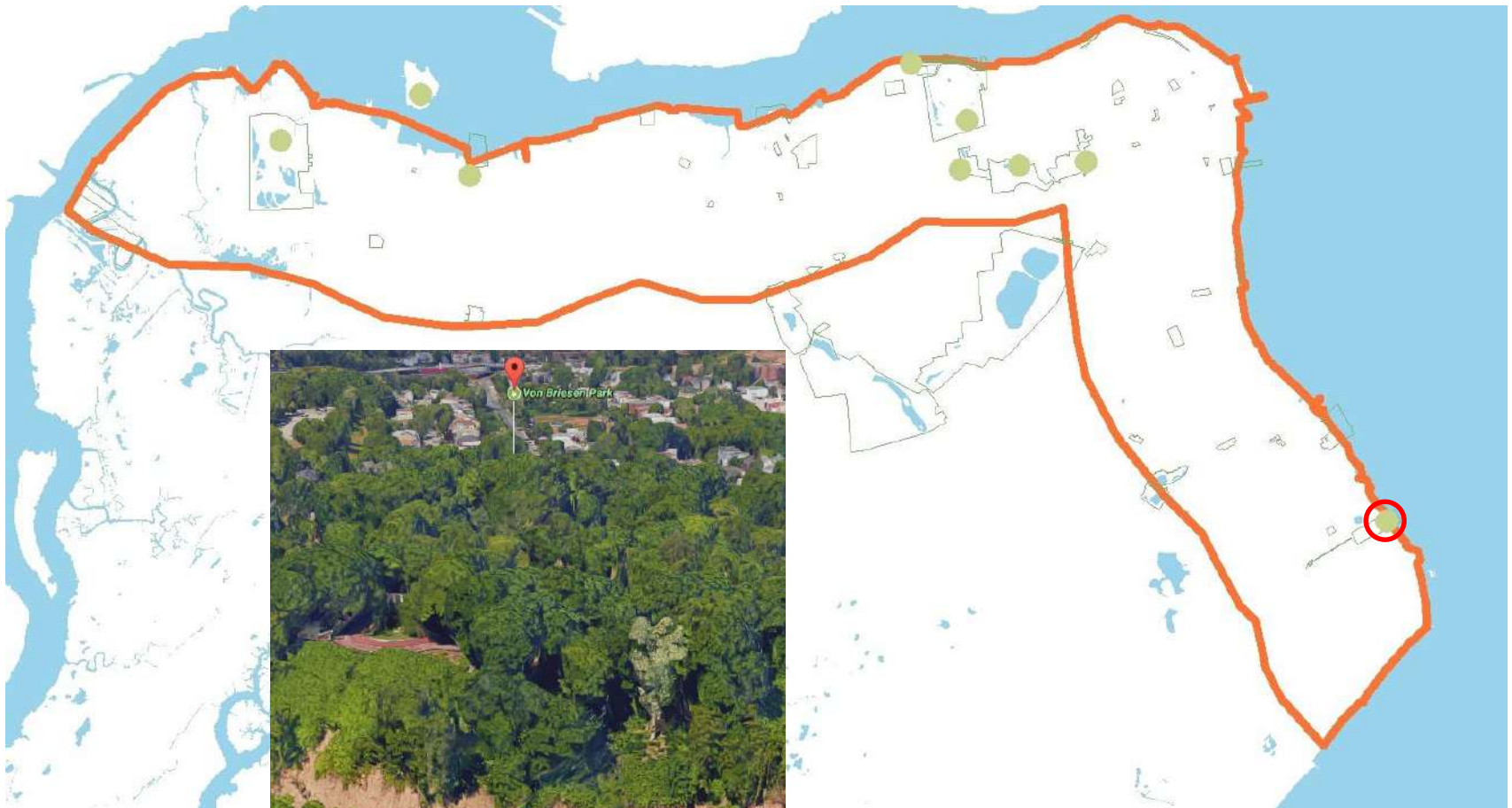
Goodhue Park

# Uplands and Forests Opportunities



Jones Woods

# Uplands and Forests Opportunities



Von Briesen Park



# Streams and Floodplain Forests

- Floodplain Forests
  - Vegetated buffers around streams
  - Provides water quality benefits
- Streams
  - Provides habitat for invertebrates
  - 116 bird species identified in Goodhue Park and 122 bird species identified at Snug Harbor, including uncommon species such as Glossy Ibis and Common Nighthawk
  - Harbor Brook is the only connected stream system on North Shore
- Threats to these systems
  - Invasive plants
  - Erosion
  - Dumping
  - Stormwater runoff



# Freshwater Wetlands & Ponds

- Freshwater Wetlands and Ponds
  - Wet soils result in different plant communities
  - Habitat for numerous birds including the threatened Least Bittern and several raptors including Sharp-shinned Hawk, Northern Harrier
  - Habitat for amphibians and reptiles
  - Improves water quality, mitigate flooding
- Threats to these systems
  - Erosion
  - Nutrient loading
  - Harmful algal blooms



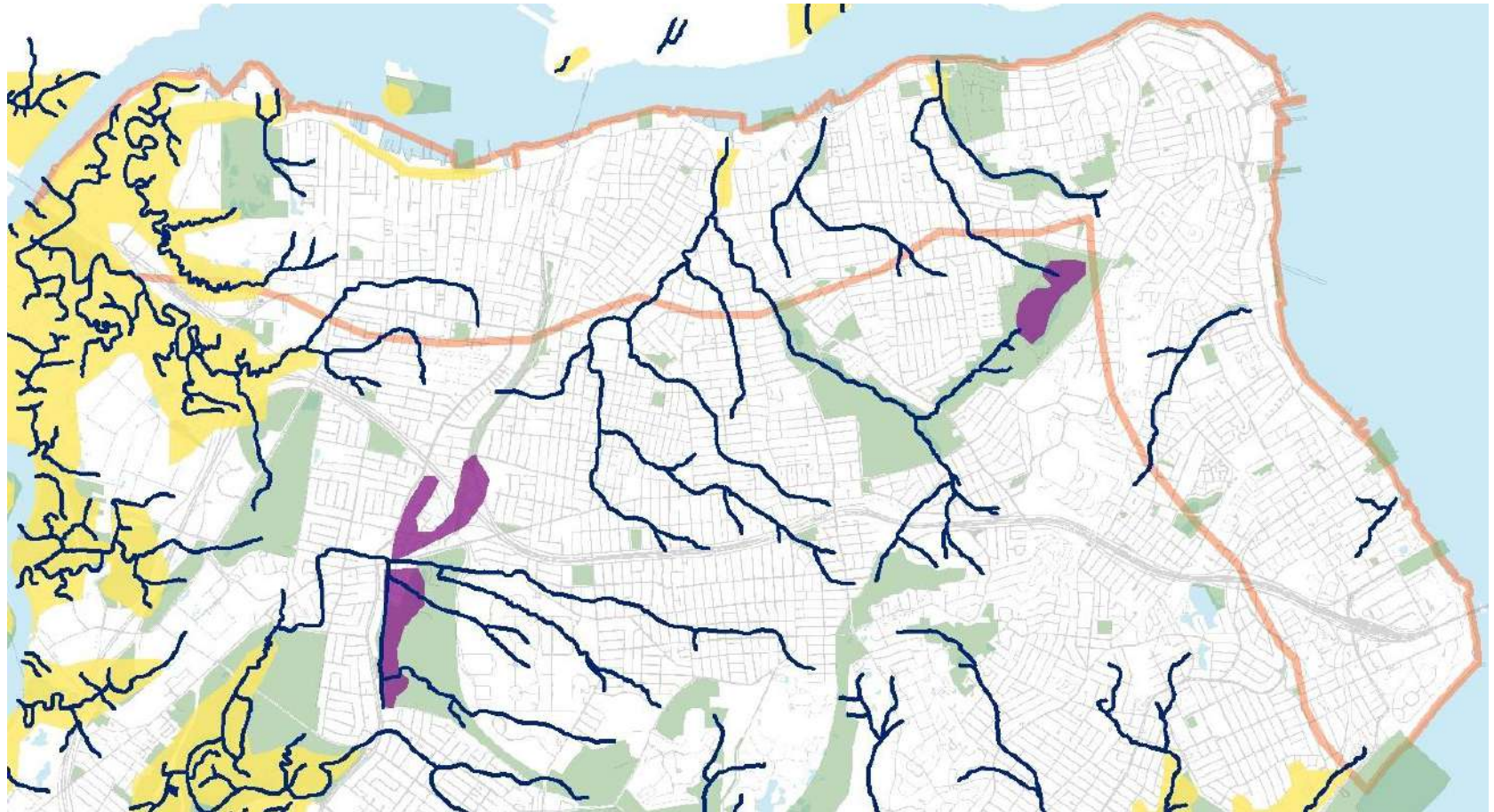
*Groundwater fed emergent wetland at Goodhue Park*



*Goodhue Pond*

# North Shore Site Characteristics

## Historic Streams and Wetlands



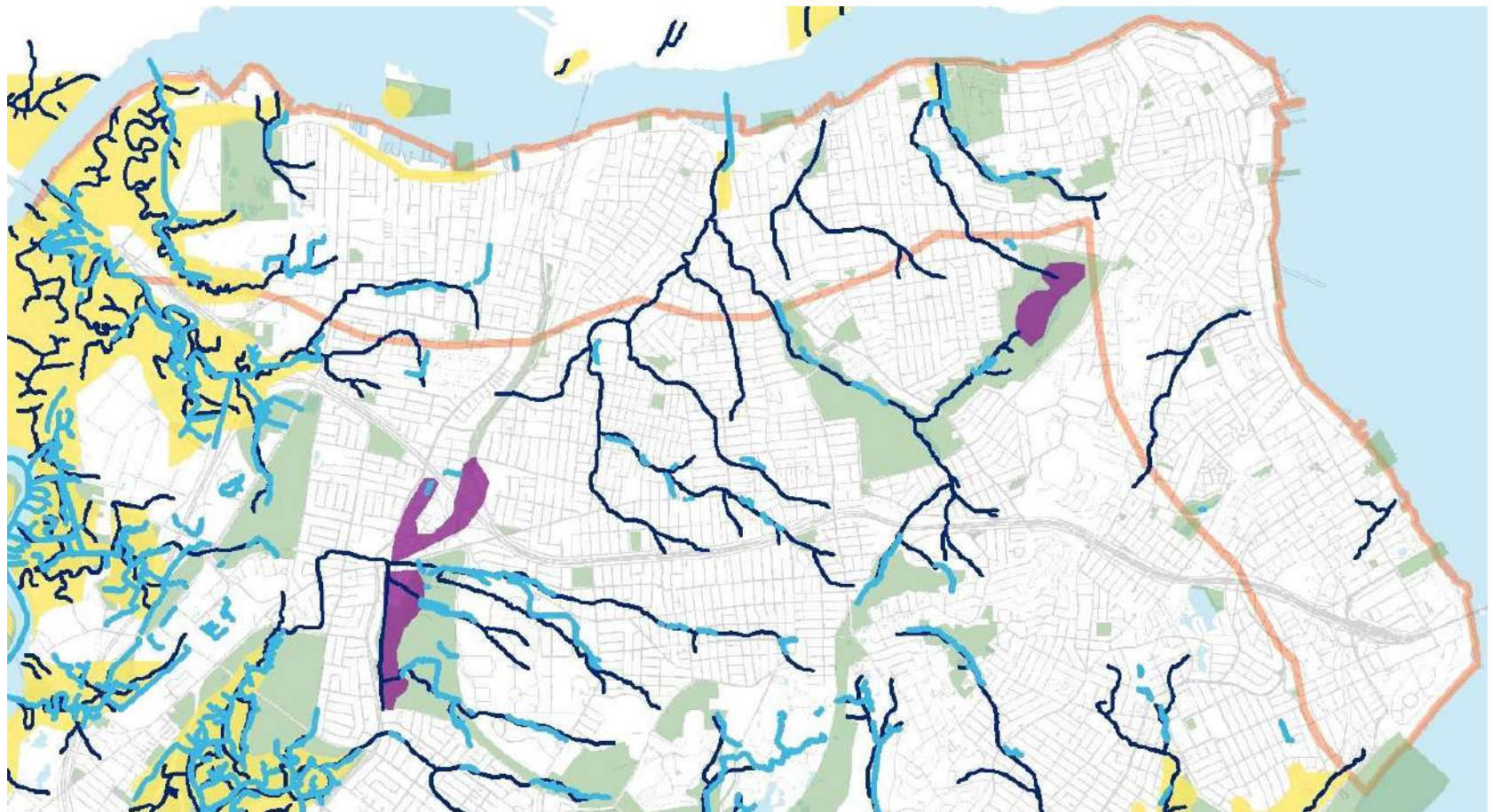
- NYC Parks Property
- Roadbed
- Historic Streams
- Historic Wetlands
- Freshwater
- Tidal



NYC Parks

# North Shore Site Characteristics

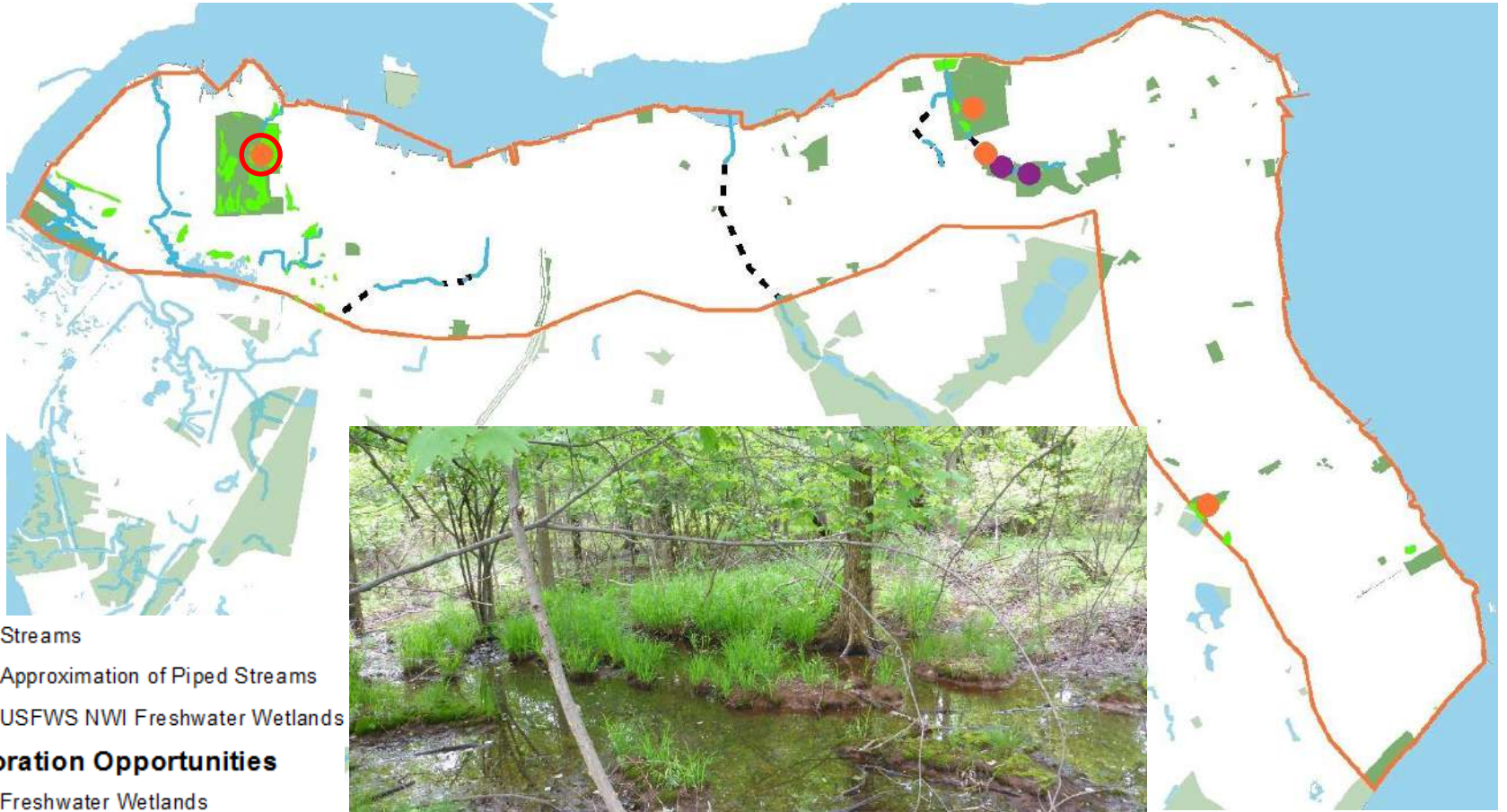
## Historic Streams and Wetlands



- NYC Parks Property
- Roadbed
- Historic Streams
- Current Streams
- Historic Wetlands
- Freshwater
- Tidal



# Streams, Freshwater Wetlands, and Ponds Opportunities

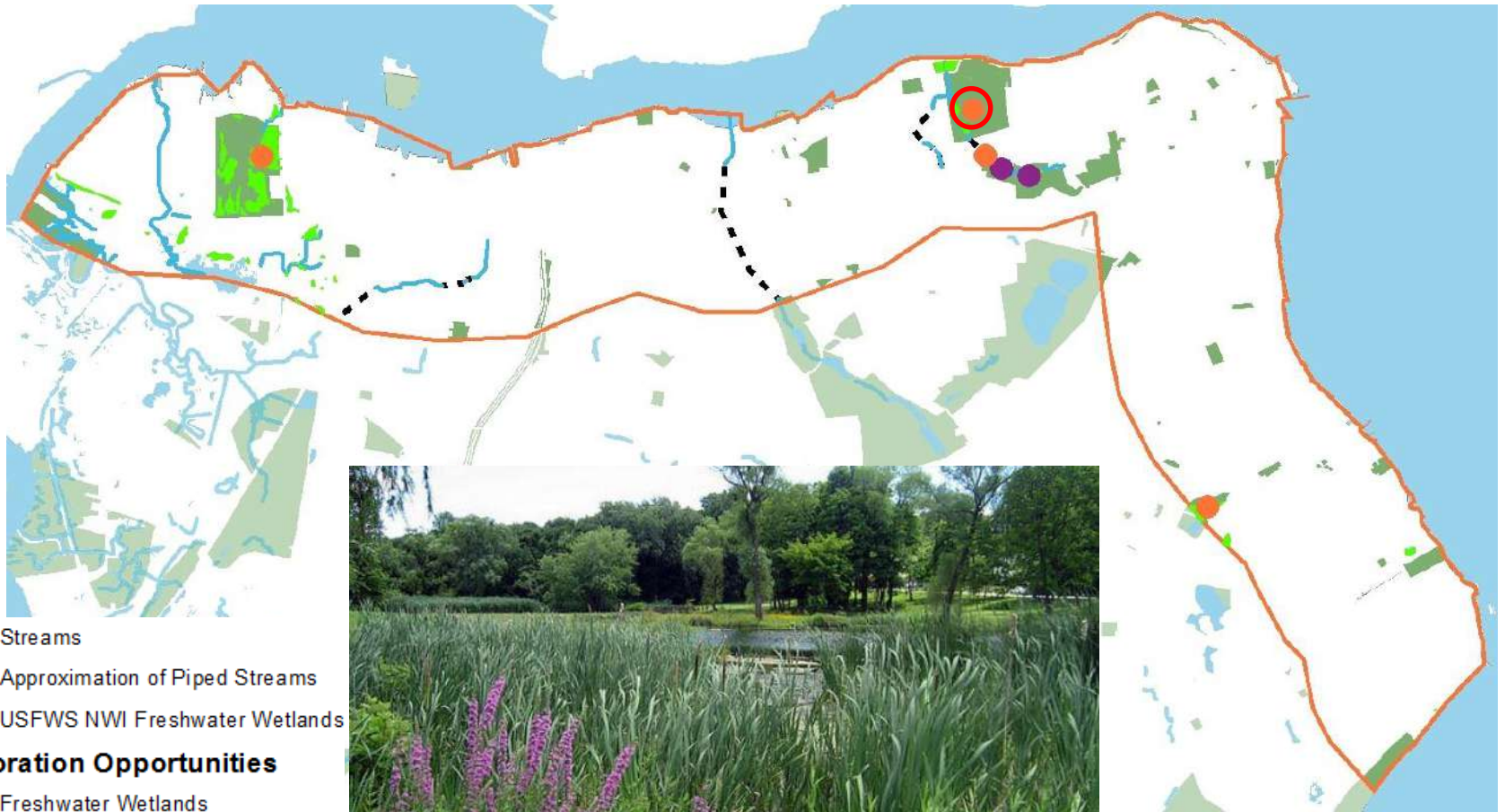


- Streams
- Approximation of Piped Streams
- USFWS NWI Freshwater Wetlands
- Restoration Opportunities**
  - Freshwater Wetlands
  - Stream

Mariner's Marsh



# Streams, Freshwater Wetlands, and Ponds Opportunities



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### Restoration Opportunities

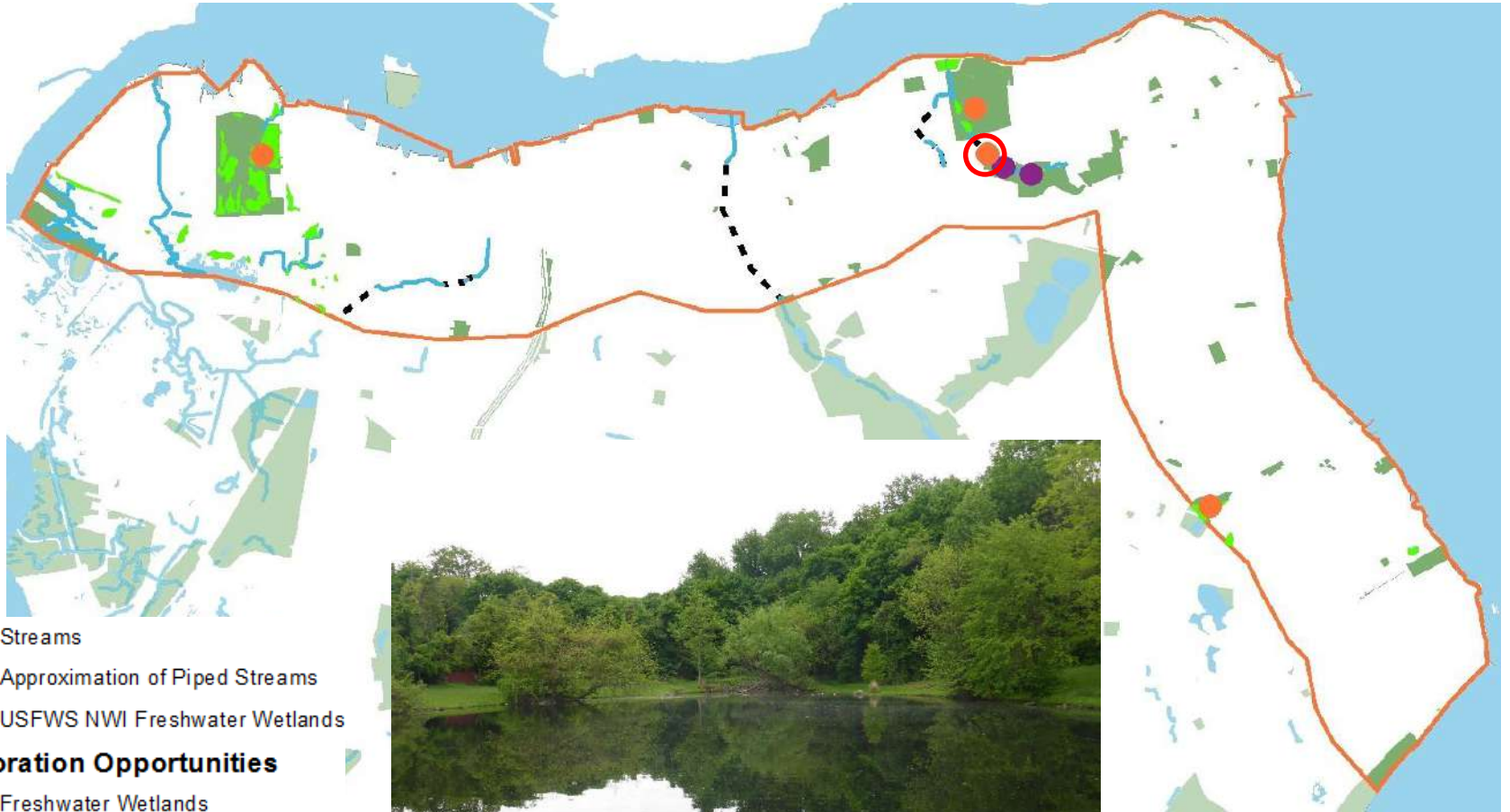
- Freshwater Wetlands
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Snug Harbor

# Streams, Freshwater Wetlands, and Ponds Opportunities



Allison Pond Park

- Streams
- Approximation of Piped Streams
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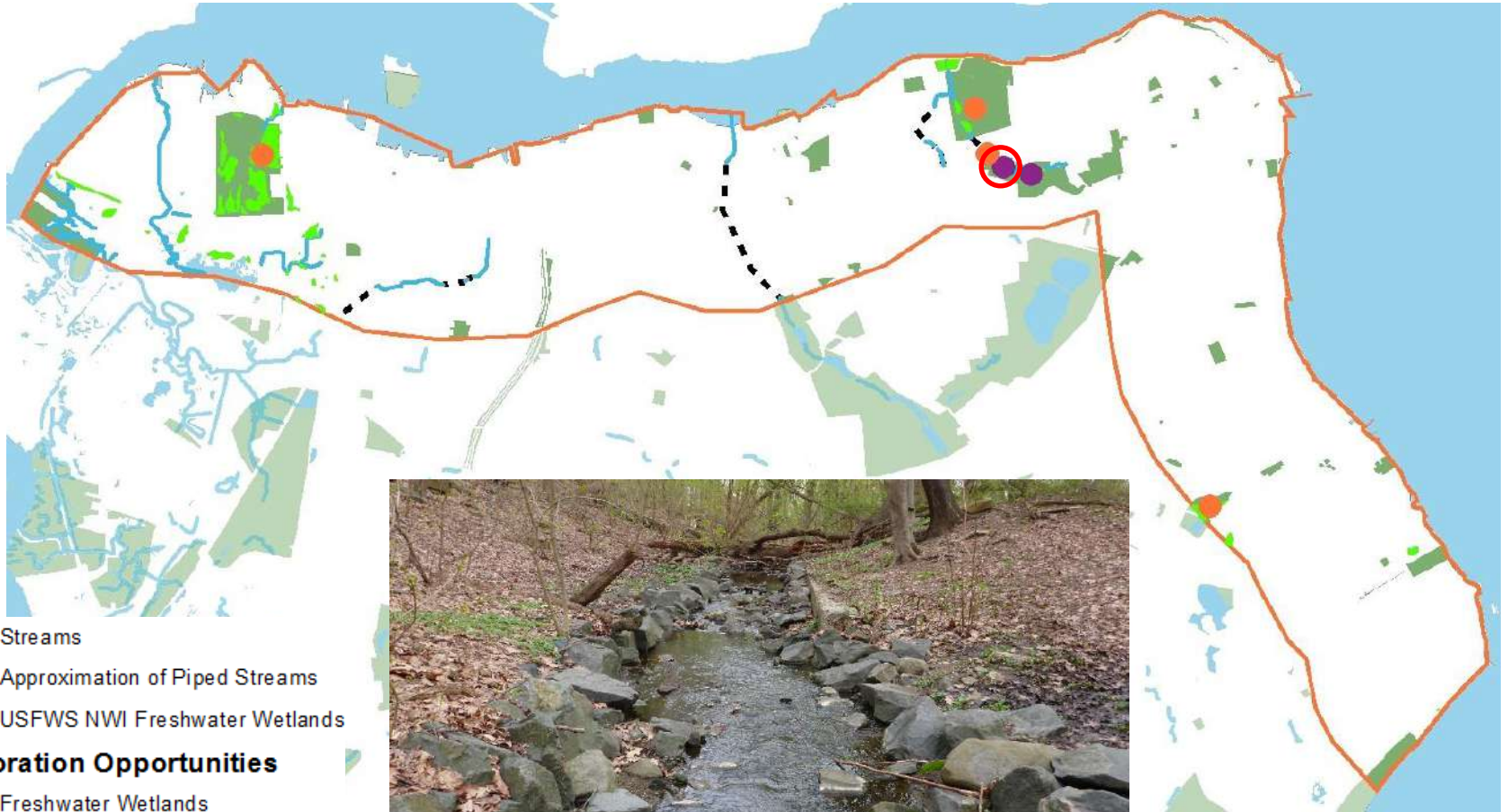
## Restoration Opportunities

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NYC Parks

# Streams, Freshwater Wetlands, and Ponds Opportunities



- Streams
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### Restoration Opportunities

- Freshwater Wetlands
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NYC Parks

Allison Pond Park



# Streams, Freshwater Wetlands, and Ponds Opportunities

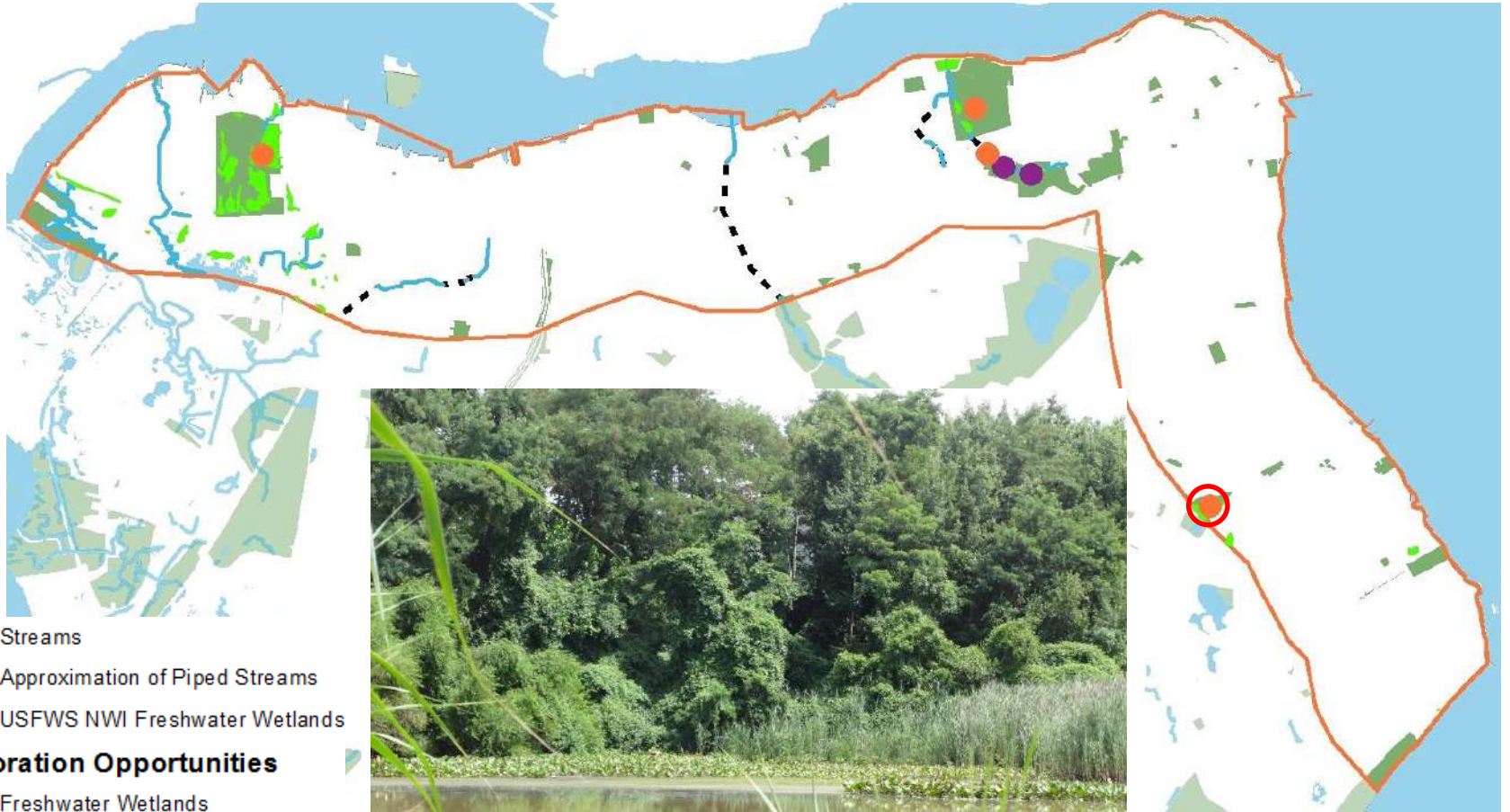


Goodhue Park

- Streams
  - Approximation of Piped Streams
  - USFWS NWI Freshwater Wetlands
- Restoration Opportunities**
- Freshwater Wetlands
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# Streams, Freshwater Wetlands, and Ponds Opportunities



- Streams
- Approximation of Piped Streams
- USFWS NWI Freshwater Wetlands

## Restoration Opportunities

- Freshwater Wetlands
- Stream



NYC Parks

Eibs Pond

# Salt Marshes

- Tidal Wetlands
  - Some of the most ecologically productive habitats on earth
  - Historically common on North Shore
  - Uncommon and migrating species of birds such as bald eagle, red-necked grebe, horned grebe, red-bellied woodpecker, peregrine falcon, black skimmer, yellow-crowned night-heron, and others
- Threats to these systems
  - Pollution/Oil Spills
  - Marine Debris
  - Erosion
  - Sea Level Rise



*Arlington Marsh*



*Richmond Terrace Wetlands*

# Salt Marshes Opportunities



Arlington Marsh

# Salt Marshes Opportunities



Shooter's Island



# Salt Marshes Opportunities



Richmond Terrace  
Wetlands

# Salt Marshes Opportunities



Heritage Park

# Salt Marshes Opportunities



Snug Harbor



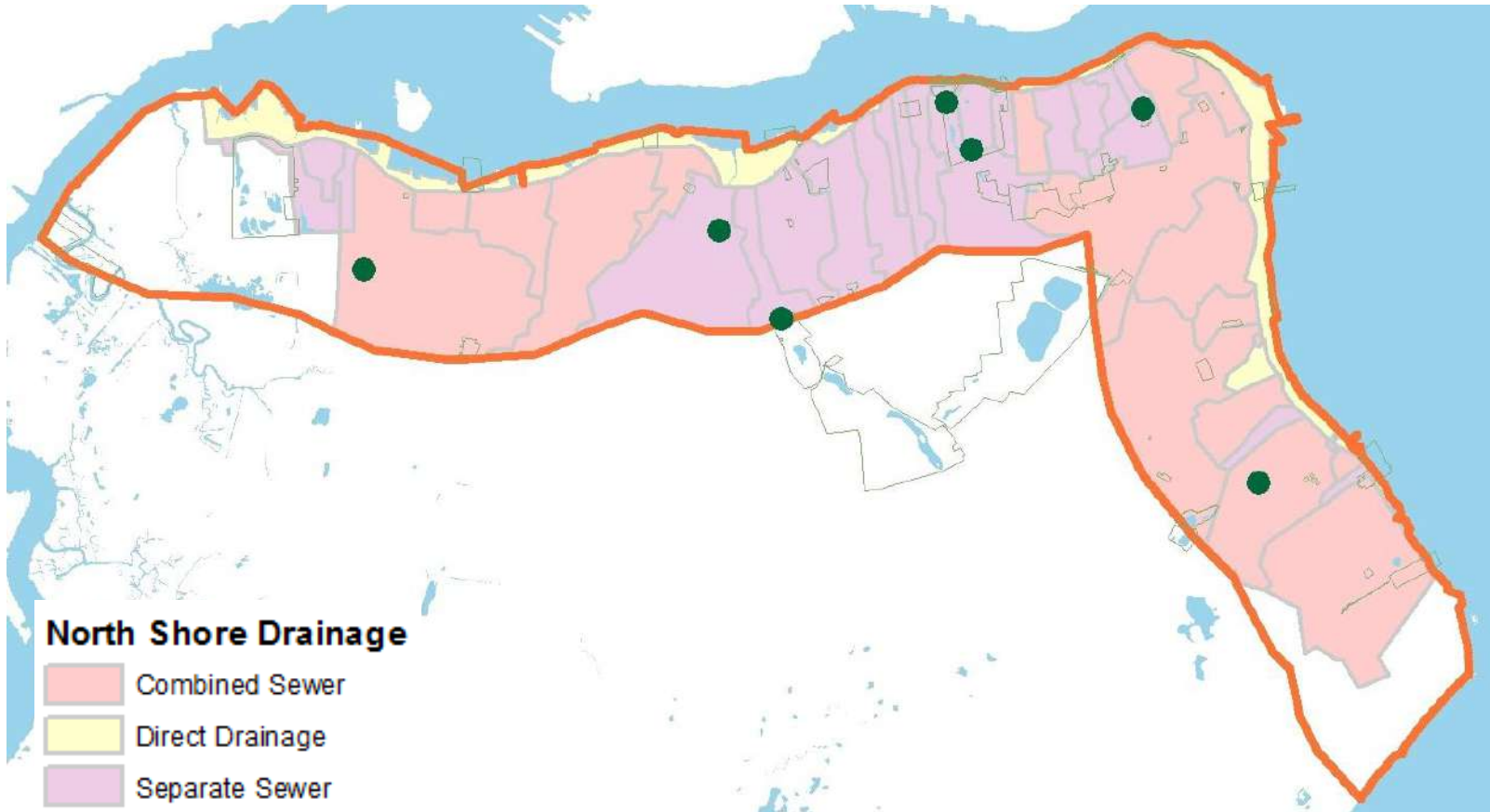


# Green Infrastructure

- Bioswales
  - Streetside stormwater intervention
  - Retains water, mitigating surface runoff and sewer system overload
  - Captures pollutants and provides micro-habitats
- Subsurface Storage
  - Detains water until opportune time to release
  - Mitigates flooding and sewer overload
- Blue Belts
  - Modifies wetland and stream systems to manage stormwater



# Green Infrastructure

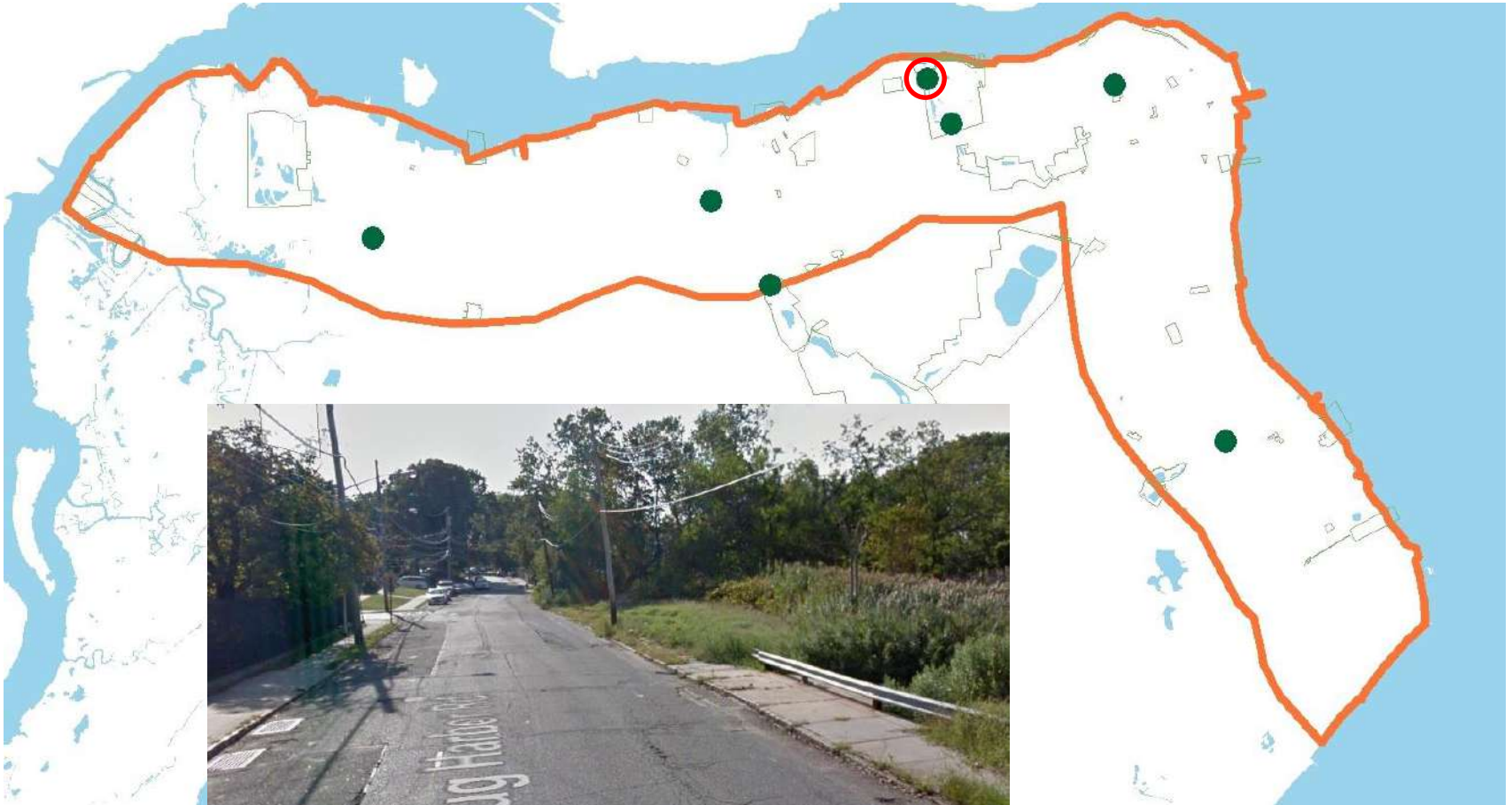


# Green Infrastructure Opportunities



Clove Lakes Park

# Green Infrastructure Opportunities



Snug Harbor:  
Snug Harbor Road

# Green Infrastructure Opportunities



Snug Harbor:  
Harbor Brook Bluebelt

# Green Infrastructure Opportunities



Playgrounds

# Green Infrastructure Modeling

## Model Output

- Least Viable for GI
- 
- 
- Most Viable for GI



Harlem River Watershed Plan, Bronx, 2017

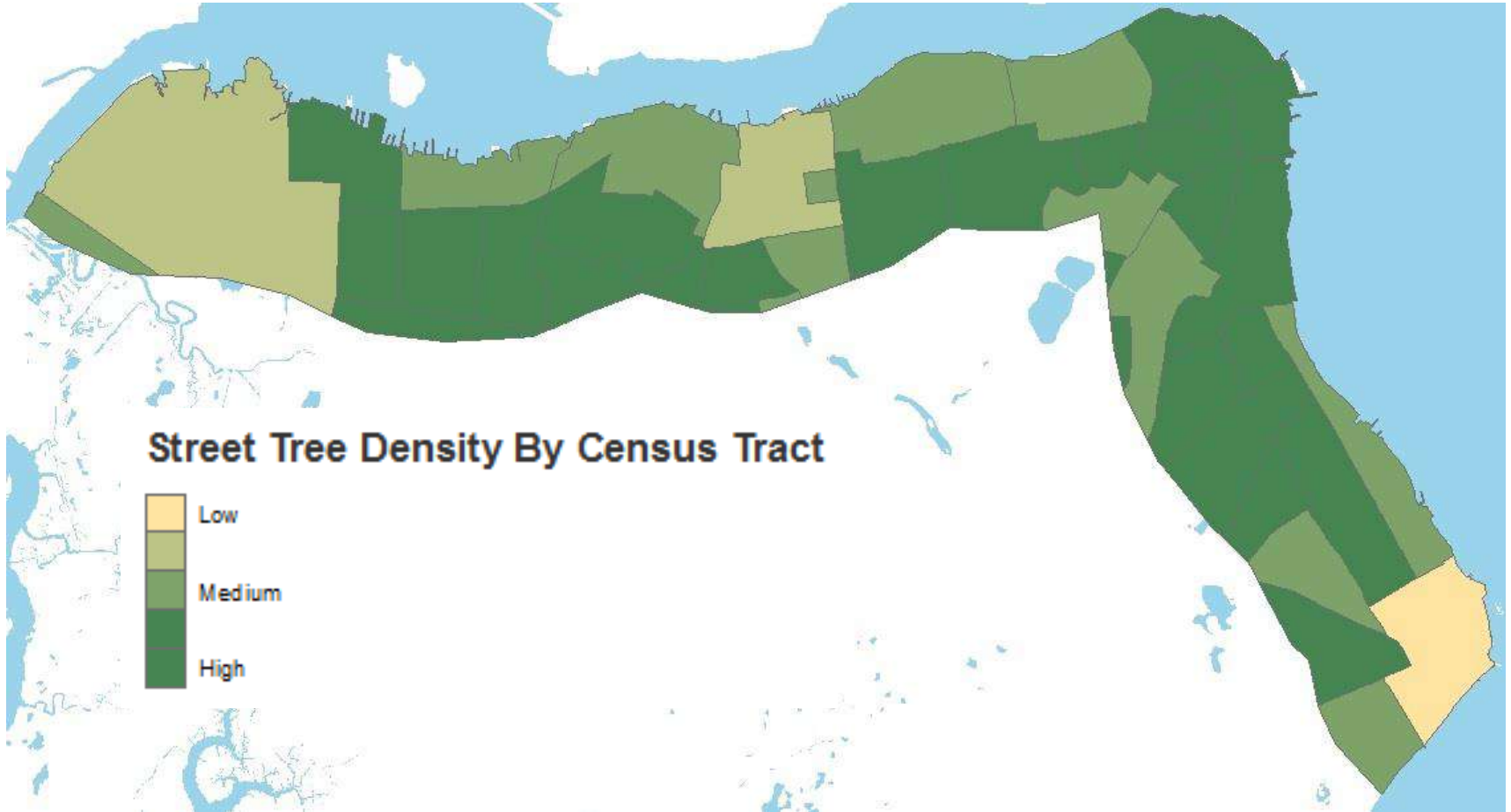
# Street Trees

- Street Trees
  - Provides shade and cooling via evapotranspiration
  - Air pollution mitigation
  - Connectivity to larger natural areas
- Stormwater
  - Tree guards
- Maintenance and Stewardship
  - Excellent educational resource
  - Green Neighborhoods Program





# Street Trees Opportunities



NYC Parks Street Tree Census, 2015

## Breakout Session Visions and Goals

Staten Island's North Shore is a valued ecological, economic, and social resource, anchored by the Snug Harbor Cultural Center and waterfront of the Kill Van Kull which provide a wealth of social, recreational, educational, and environmental opportunities.

- i. Restore, protect, and enhance natural resources to promote diverse, native ecological communities
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## Next Steps

- Continue coordinating with project partners (Ongoing)
- Get Webpage Live (Ongoing)
- Incorporate feedback (January 2018)
- Complete Green Infrastructure Modeling (Feb 2018)
- Advance Snug Harbor Conceptual Design (May 2018)
- Second community meeting (Target: June 2018)

# Thank You!



**View from Richmond Terrace Wetlands**

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