

# NEW YORK DISTRICT

## HUDSON RARITAN ESTUARY ECOSYSTEM RESTORATION

Lisa Baron  
Project Manager, Civil Works Branch  
New York District  
Date: 12 December 2024



U.S. ARMY



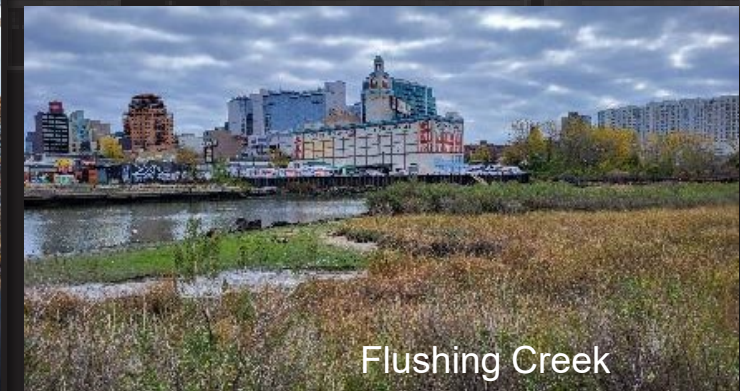
US Army Corps  
of Engineers®



Upper Bay, NY/NJ Harbor Estuary



Jamaica Bay Marsh Islands



Flushing Creek



U.S. ARMY



# Actions Achieving the Vision of a World Class Harbor Estuary





U.S. ARMY



# RESTORATION STUDY/PROJECT AREAS

- Hudson Raritan Estuary (HRE) encompasses a 25-mile radius around the Statue of Liberty
- HRE Area divided into 8 planning regions based on watersheds
- 13 million residents in HRE
- 2<sup>nd</sup> largest port in the nation
- 400 years of urbanization has significantly altered the estuary
- Upper Hudson River Feasibility Study included 125 miles

**HRE Video**

<https://youtu.be/1hisn42KwRg>





U.S. ARMY



# PROBLEMS IN NY/NJ HARBOR ESTUARY

- Long-term historic habitat loss and degradation via urbanization
  - ✓ Loss of > 99% freshwater wetlands
  - ✓ Loss of > 85% estuarine wetlands
  - ✓ Loss of >95% eelgrass beds
  - ✓ Loss of 100% oyster reefs
  - ✓ Loss of ~2,000 acres of marsh islands in Jamaica Bay since 1924
- Shoreline modification (bulkheads, embankments)
- Decrease in habitat diversity/increase in invasive species
- Fish passage impediments/habitat loss (dams, degraded shorelines)
- Flooding, ++++





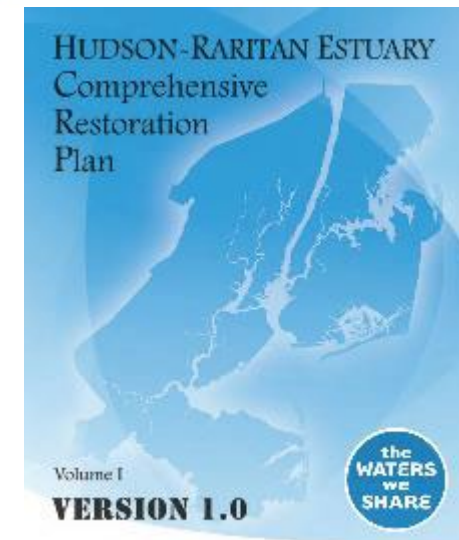
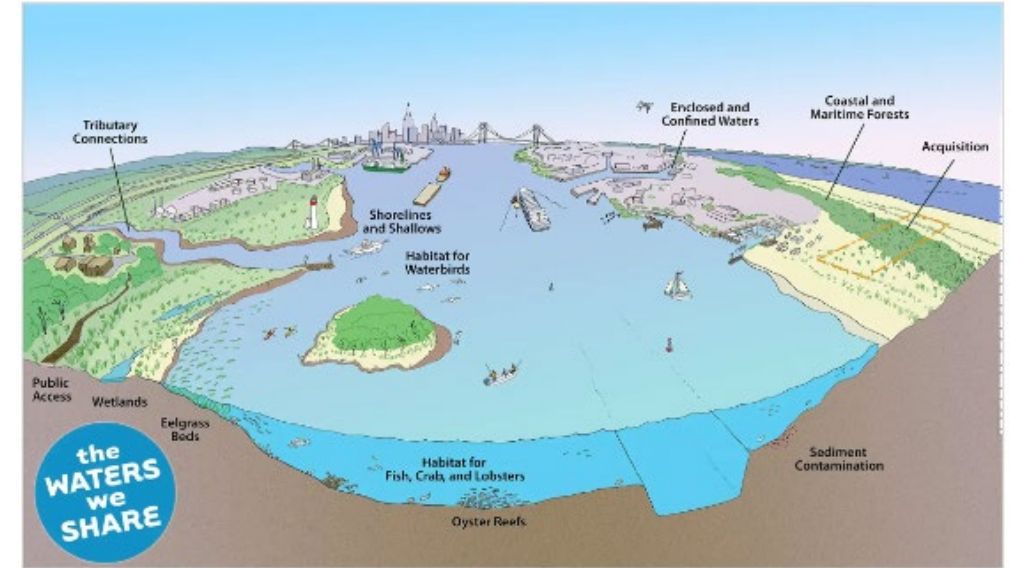
U.S. ARMY

# HUDSON RARITAN ESTUARY COMPREHENSIVE RESTORATION PLAN

5



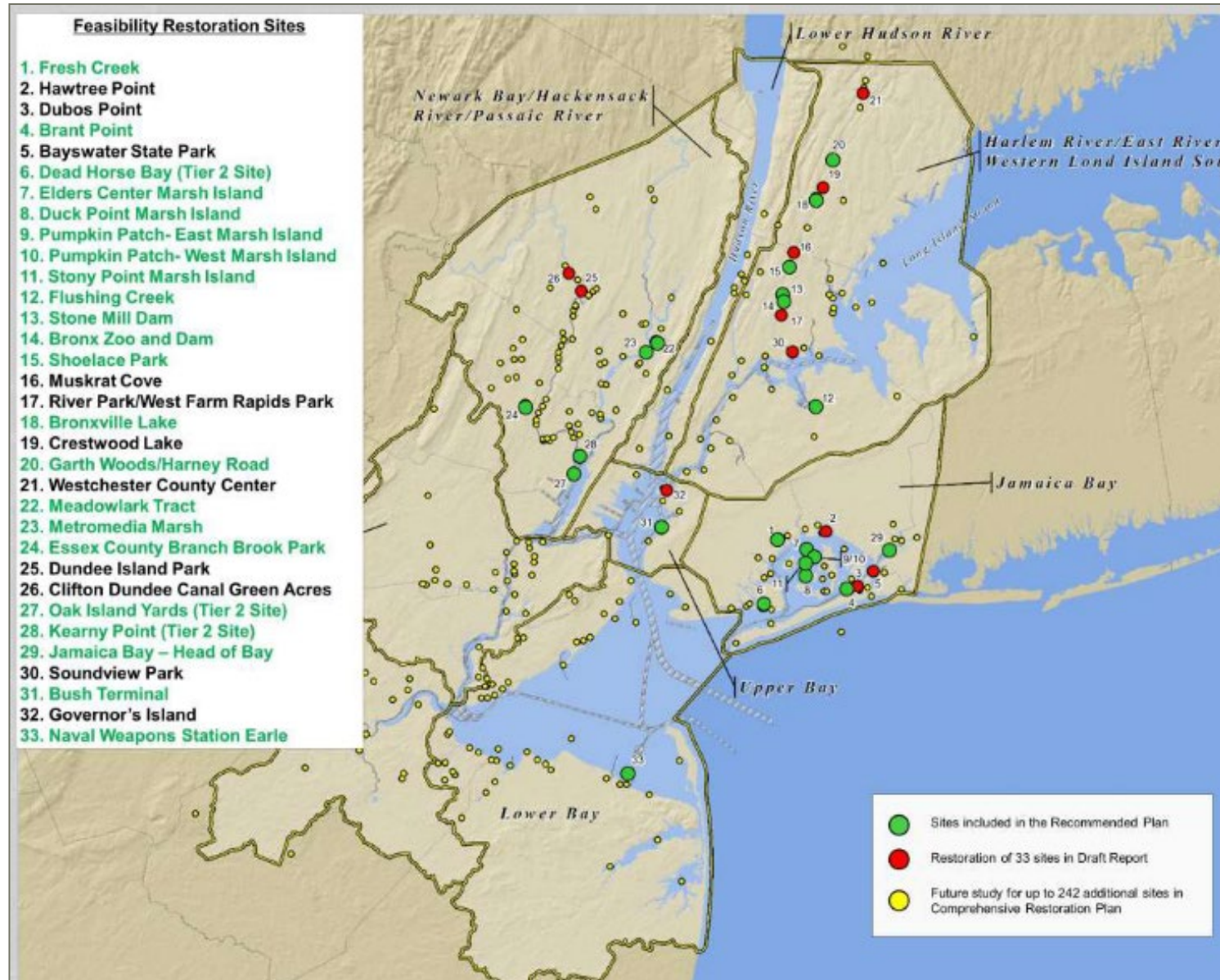
- Objective of the HRE Study was to restore ecological function, structure and dynamic processes that have been degraded or lost from human activities.
- Development of the HRE Comprehensive Restoration Plan as first step of the Feasibility Study with the PANYNJ.
- The HRE Comprehensive Restoration Plan (CRP, 2009 and 2016) was developed with inputs and contributions from Federal, State and Municipal Resource Agencies, Academia, and Non-Profit Organizations.
  - ✓ Framework, Master Plan and Blueprint for the Region
  - ✓ Defines Program Goals and Objectives
  - ✓ Identifies Restoration Opportunities
  - ✓ Describes potential Strategies for successful implementation
  - ✓ Managed by the Harbor Estuary Program Restoration Work Group





U.S. ARMY

# HRE RESTORATION OPPORTUNITIES





# RESTORATION MEASURES

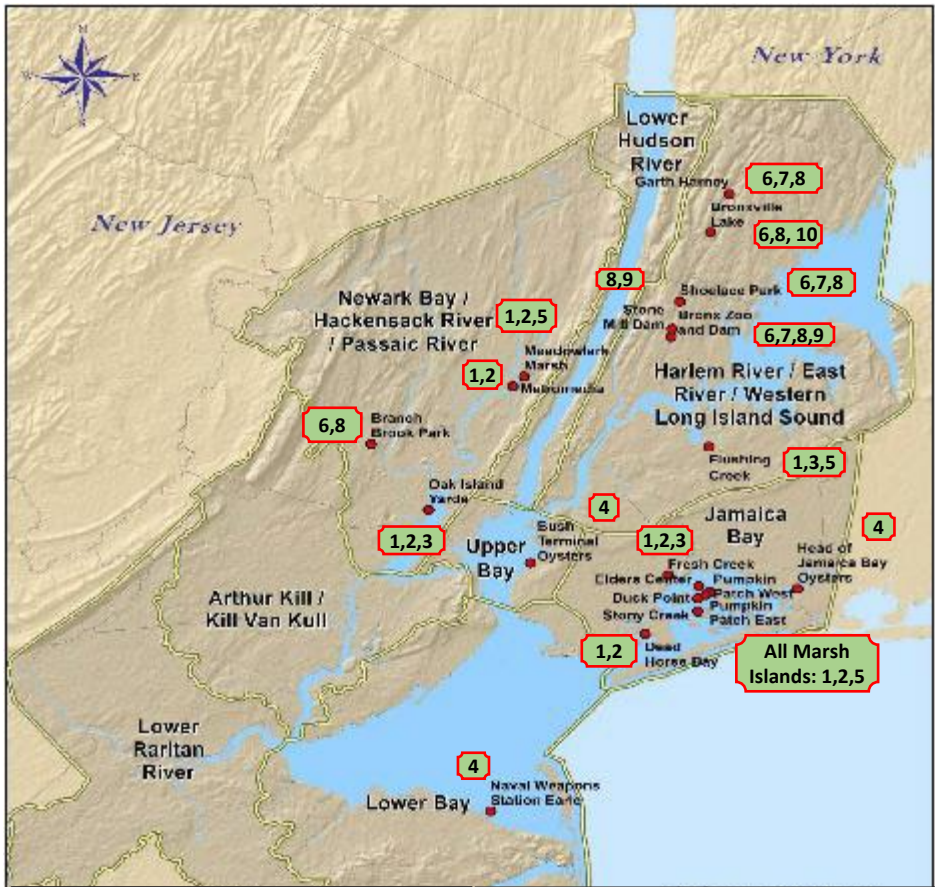
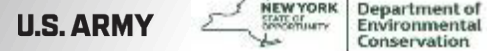
U.S. ARMY

- Wetland Restoration
  - ✓ Removal of invasive species
  - ✓ Excavation and regrading to improve hydrology
  - ✓ Native plantings
- Jamaica Bay Marsh Island Restoration
  - ✓ Beneficial Use of dredged material from Operation & Maintenance Projects
  - ✓ Wetland restoration
- Riverine Habitat Restoration
  - ✓ Shoreline stabilization and softening
  - ✓ Riverbed modification
  - ✓ Channel modification
  - ✓ Hydrologic and geomorphologic improvements (deepening, in-stream structures)
  - ✓ Freshwater wetlands – reestablish native species
- Fish Passage Connectivity
  - ✓ Dam Removal (Full or Partial)
  - ✓ Fish ladders
  - ✓ Culvert modifications
- Oyster Restoration
  - ✓ Expansion of smaller regional partner projects
  - ✓ Various structures/techniques (spat on shell, gabions, castles/pyramids, reef balls, )





# HRE RESTORATION PROGRAM



1. Estuarine Wetlands (381 ac)	6. Freshwater Wetlands (50 ac)
2. Tidal Channel Restoration (16 ac)	7. Streambank Restoration (1.6 m)
3. Maritime Forest (27 ac)	8. Bed Restoration (72 ac)
4. Oyster Reefs (52 ac)	9. Fishways on Bronx River
5. Shallow Water Habitat (39 ac)	10. Sediment Forebay

**Authorized Total First Cost: \$421,435,000**

**Fully funded cost: \$720,799,000 (FY25)**

- “Project” Authorized by Water Resources Development Act (WRDA) 2020 and 2022
- Construction authorized for 20 individual projects that will restore a mosaic of 621 acres of Nationally Significant Habitat
- Construction sequencing over next 25 years
- Authorized Future Spin-Off Feasibility Studies (e.g., Harlem River)
- Feasibility Report identified 133 Comprehensive Restoration Plan Sites (of 296) can serve as Natural and Nature Based Features





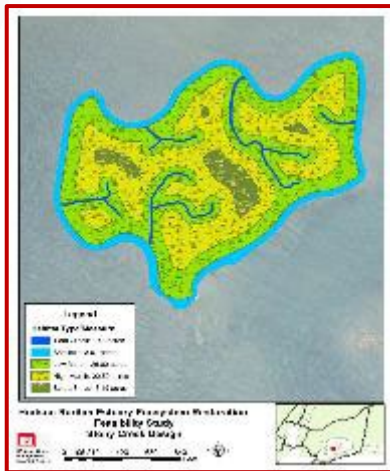
U.S. ARMY

# ONGOING HRE RESTORATION PROJECTS



Total Federal Appropriations since 2022: \$32,703,000 through annual Appropriations Acts and Bipartisan Infrastructure Law + Non-Fed Funding (35%)

- Initiated Engineering and Design for 7 of 20 restoration sites/projects that will result in the Restoration of >200 acres of mosaic of habitat (oysters, tidal and freshwater wetlands, maritime forest, bed/channel) and fish passage along the Bronx River.
- Projects will provide significant ecological benefits as well as secondary coastal storm risk management benefits serving as Natural and Nature Based Features.



Stony Creek Marsh Island



Duck Point Marsh Island



Fresh Creek



Flushing Creek



Bronx Zoo & Dam/Stone Mill Dam



Oysters at NWSE



# Spring Creek North Ecosystem Restoration

U.S. ARMY (Continuing Authorities Program)



NOTES:  
 1. NYC Parks project area boundaries are approximate.  
 2. Orthometry obtained from Esri.



Map Projection: NAD 1983 StatePlane New York Long Island FIPS 3104 Feet

## WETLAND RESTORATION CONCEPT

SPRING CREEK NORTH  
 ECOSYSTEM RESTORATION PROJECT  
 BOROUGH OF BROOKLYN & QUEENS  
 NEW YORK CITY, NEW YORK

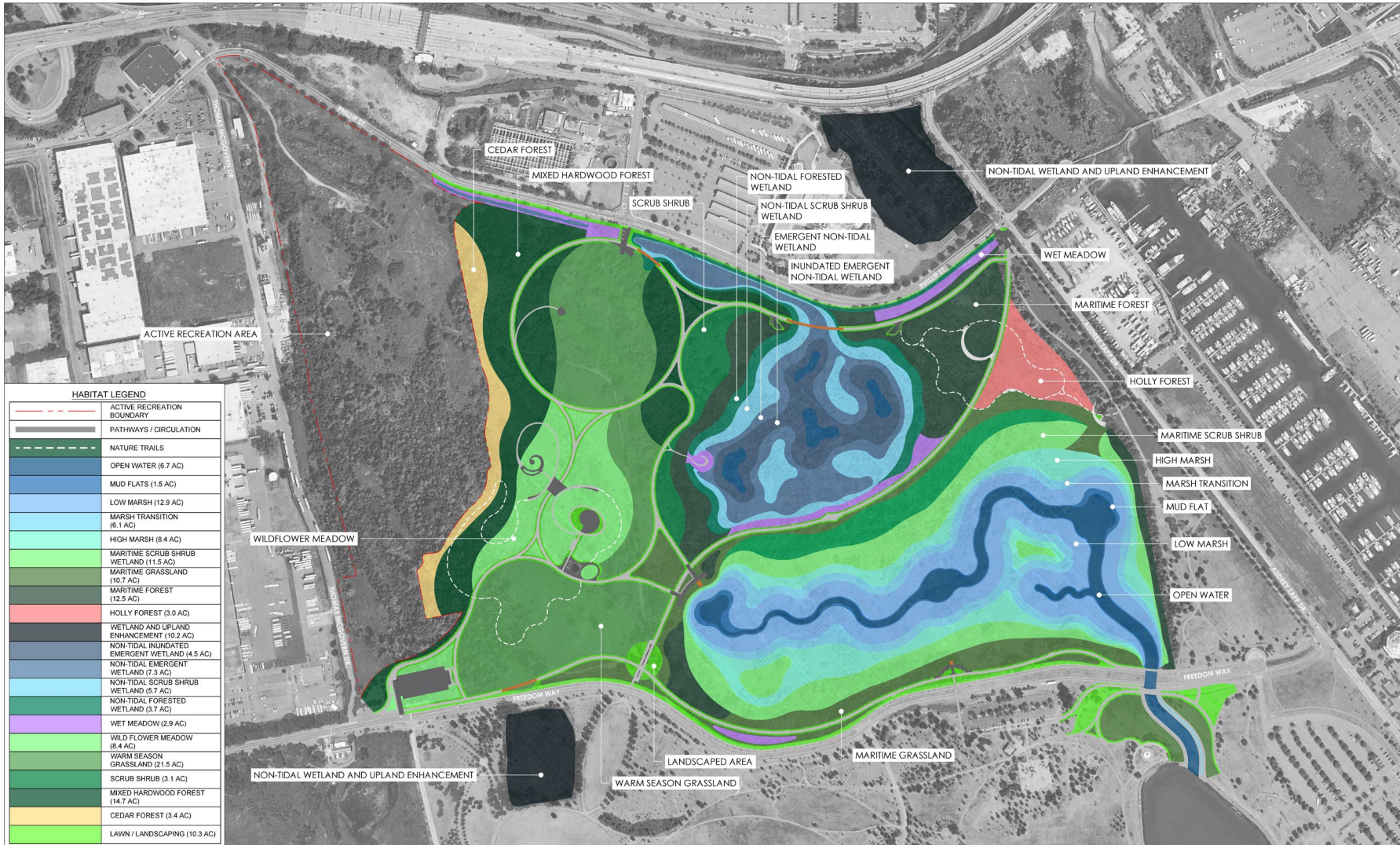


- Restoration of 43.2-acres including:
  - ✓ 18.8 acres of wetlands
  - ✓ 24.4 acres of maritime uplands
- Restoration through:
  - ✓ excavating and recontouring uplands to intertidal elevations;
  - ✓ removing invasives species and replanting;
  - ✓ restoring existing degraded wetlands with Thin Layer Placement techniques
- **Project was ADVERTISED on 23 September 2024- SAM.GOV**
- **Bid Opening: 16 January 2025**
- **Construction Spring 2025**



U.S. ARMY

# LIBERTY STATE PARK RESTORATION



Statue Entrance



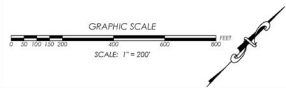
Wetland Bird Blind



Liberty Hills- City View



Wetland Promenade



**LIBERTY STATE PARK - 2022 HABITAT CONCEPT**  
 JERSEY CITY, HUDSON COUNTY, NEW JERSEY  
 NJDEP ONRR - USACE



**PRINCETON HYDRO**  
 SCIENCE DESIGN ENGINEERING

www.PrincetonHydro.com



U.S. ARMY



# Actions Achieving the Vision of a World Class Harbor Estuary

