



Baseline Conditions and Water Resource Problems

- Region has been heavily industrialized since the mid-nineteenth century
- Degraded wetlands, discharges of effluents into the river, and dumping of industrial waste resulting in contaminated sediments in the river that has adversely impacted fish and wildlife habitat
- Passaic River primarily consist of bulkheads, riprap slopes or unvegetated rock and mud flats bordered by developed land or upland parks.
- Hydrology has been altered by water control structures impeding passage for migratory fish
- Within Passaic River watershed, 78 miles of historic rivers, creeks, and tributaries have been lost to filling, draining, or conversion to storm pipes; studies estimate wetland losses over 80%
- Historic wetland loss transformed the Hackensack Meadowlands into a less diverse, brackish tidal marsh with a 60% loss in wetland area.



Newark Bay/Hackensack River/Lower Passaic River

HRE-Passaic River “Source” Feasibility Study Background

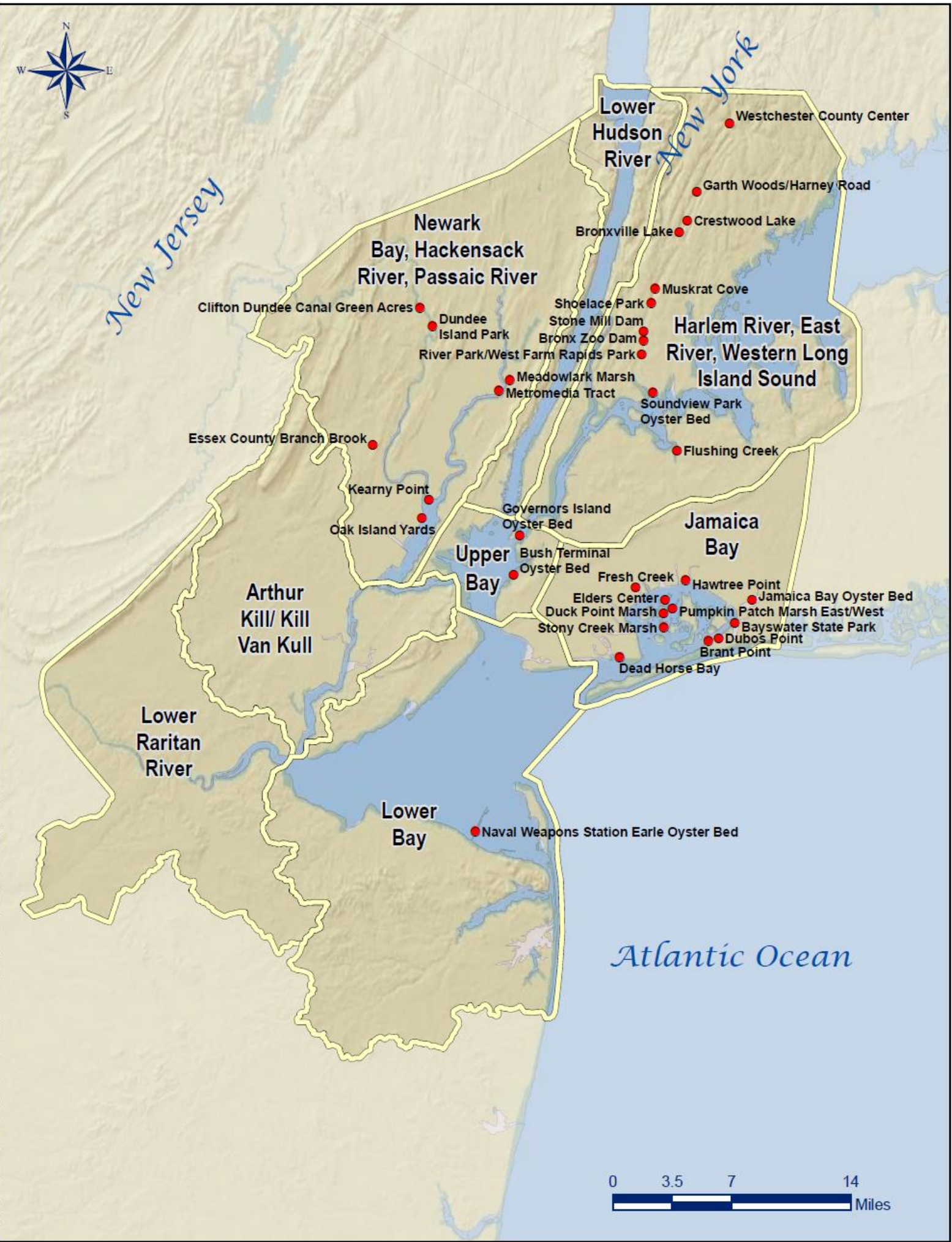
- Study Resolution (1999), HRE Reconnaissance Report (2001) and Feasibility Cost Share Agreement executed with NJDOT (2003) and Governmental Partnership with USEPA, NOAA, USFWS, and NJDEP to comprehensively remediate and restore the 17-miles of the Lower Passaic River and tributaries.
- Total of 52 restoration opportunities were identified as “Tier 1” (29 sites that could advance without remediation) and “Tier 2” sites (23 requiring USEPA remediation prior to restoration).
- Sites were screened in coordination with NJDEP, other partner agencies, Community Advisory Group (CAG) and a design charrette with NJDEP and NOAA (June 2015).
- Five (5) sites were selected and evaluated for future restoration (2015-2016).
- USEPA released the Record of Decision (ROD) for the cleanup of the lower 8.2 miles of the River (April 2016) and initiated remedial design for next four years with Occidental Chemical (September 2016).

HRE-Hackensack Meadowlands Ecosystem Restoration “Source” Feasibility Study Background

- Study Resolution (1999), HRE Reconnaissance Report (2001) and Feasibility Cost Share Agreement executed with NJ Meadowlands Commission (2003) (currently NJ Sports and Exposition Authority [NJSEA]).
- Preparation of the Meadowlands Environmental Site Information Compilation (MESIC) Report (USACE, 2004) and the Meadowlands Comprehensive Restoration Implementation Plan (MCRIP) (USACE, 2010).
- MESIC Report identified 50 sites that were evaluated and screened using available data and 18 sites were identified as “critical restoration opportunities”.
- A subset of these sites were advanced followed by suspension of progress in 2013.
- Two (2) sites were selected and evaluated for future restoration (2015-2016).

Tentatively Selected Plan within Newark Bay/Hackensack River/Lower Passaic River

Restoration Site	Measures/Target Ecosystem Characteristic	First Level Costs			Non-Federal Sponsors (Congressional Reps)
		Federal	Non-Federal	Total	
Lower Passaic River					
Essex County Branch Brook Park	Invasive plant removal; Channel dredging; Shoreline restoration; Public access improvement	\$14,228,500	\$7,661,500	\$21,890,000	NJDEP (Payne, NJ-10 & Sires, NJ-8)
Dundee Island Park	Restoration of riparian vegetation; Bank stabilization; Public access improvement	\$1,768,000	\$952,000	\$2,720,000	NJDEP (Pascrell, NJ-9)
Clifton Avenue Dundee Canal Green Acres Purchase	Emergent wetland/forest restoration; shoreline stabilization; Shallow water habitat restoration; public access	\$7,767,500	\$4,182,500	\$11,950,000	
Kearny Point (Tier 2)	Create low/high marsh and tidal channels; Enhance maritime forest; Debris and invasive plant removal; Public access; Contaminated sediment remediation	\$37,563,500	\$20,226,500	\$57,790,000	NJDEP (Sires, NJ-8)
Oak Island Yards (Tier 2)	Create tidal low/high marsh and new tidal channels; Debris, fill and invasive plant removal; Public access	19,266,000	10,374,000	\$29,640,000	NJDEP (Payne, NJ-9)
Hackensack River					
Meadowlark Marsh	Create tidal low/high marsh; Restore tidal flow; Reconnect habitats; Debris, fill and invasive plant removal; Restoration/creation of maritime forest	\$27,079,000	\$14,581,000	\$41,660,000	NJSEA, NJDEP (Pascrell)
Metromedia Tract	Create tidal low/high marsh and scrub-shrub; Establish maritime upland; Remove invasive plant species; Restore tidal flow/reconnect habitats	\$21,131,500	\$11,378,500	\$32,510,000	
Total		\$128,804,000	\$69,356,000	\$198,160,000	



Restoration Opportunities/Measures

- Habitat improvements
- Emergent wetland creation (Low/High Marsh)
- Forested scrub shrub wetland creation
- Invasive species removal and native plantings
- Bank stabilization
- Shoreline softening
- Secondary benefits of water quality improvements
- Public education/access
- Stream geomorphology restoration
- Sediment load reduction
- Beneficial re-use of material onsite
- Coordinated comprehensive remediation and restoration advancing Urban Waters Federal Partnership for Lower Passaic River





# LOWER PASSAIC RIVER RESTORATION SITES

## Essex County Branch Brook Tentatively Selected Plan Design:

- Invasive plant removal and planting of native vegetation ( 13.7 ac).
- Channel dredging to restore freshwater stream and floodplain (23.52 ac).
- Debris removal and erosion control on the banks and shorelines with stormwater control and planting native understory vegetation along (10,320 lf).
- Support to ongoing public access improvements through development of 12 new public interpretive signs.
- Restoration design also coordinated with Essex County Department of Parks, Recreation and Cultural Affairs and Branch Brook Park Alliance/Care of the Park Movement to complement local park improvements.

**PROJECT FIRST COST (Oct 2016): \$21,890,000**

## Dundee Island Park Tentatively Selected Plan Design:

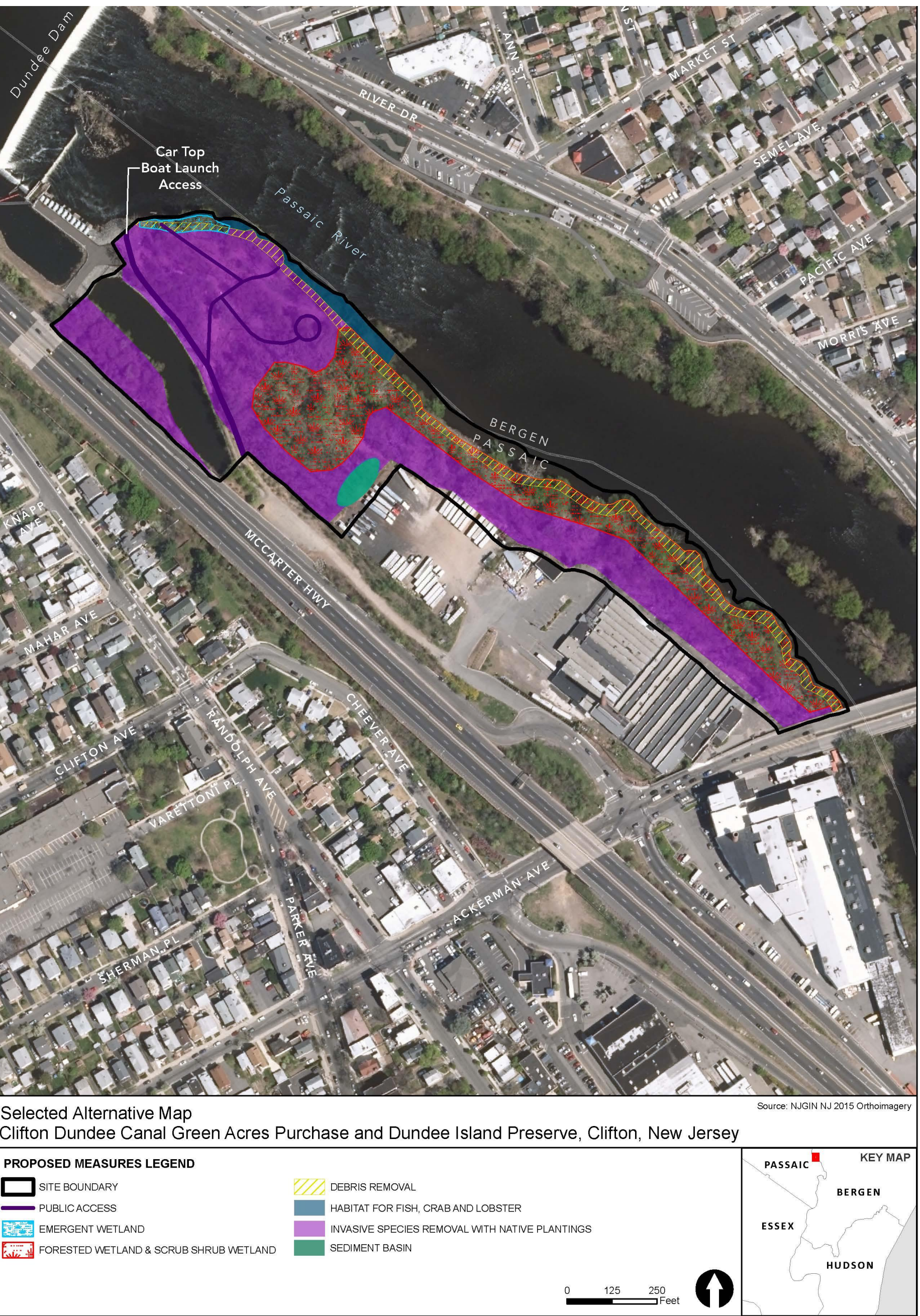
- Debris removal, natural bank vegetation preservation, bank stabilization and shoreline softening by planting willow stakes in the existing riprap stream bank (~0.71 ac).
- Restoration of riparian vegetation through removal of debris and invasive plant species and planting of native trees and shrubs (~1.23 ac).
- Support City of Passaic plans for public access improvements through development of site trail and enhancement of existing trail (~1,580 lf).
- Restoration to be coordinated with NJDEP, Trust for Public Land (TPL), County of Passaic and City of Passaic. The restoration would be a key component of the local plans for a community park following receipt of a NJDEP grant to TPL and additional City of Passaic funding.

**PROJECT FIRST COST (Oct 2016): \$2,720,000**

## Clifton Dundee Canal Green Acres Tentatively Selected Plan Design:

- Debris and invasive vegetation removal, re-grading, and planting of native emergent wetland (0.1 ac).
- Debris, fill and invasive vegetation removal and planting with native trees and shrubs to restore and create habitat for waterbirds (2.84 ac).
- Restoration and stabilization of riparian forest. Invasive species removal and planting with native vegetation to create a forest accessible to avian migrants and residents. Grading to improve hydrology and soil stability within the riparian zone (5.50 ac).
- Remove debris along stable shoreline (0.82 acres).
- Support Dundee Island Preserve plans for improvements to riparian floodplain by reconnecting riparian buffers and floodplains to the estuary to provide a range of quality habitats to aquatic organisms.
- Debris removal, improvement of shallow water habitat with incorporation and/or preservation of natural cobble and riffle structures (0.27 ac).
- Installation of sediment basin to treat stormwater runoff (0.11 ac).
- Support Dundee Island Preserve plans to improve public access. Creation of public trails through native vegetation habitat (1,081 lf), public overlook (0.01 ac), and public boat launch with access road.

**PROJECT FIRST COST (Oct 2016): \$11,950,000**





# PASSAIC RIVER RESTORATION SITES

## Kearny Point Tentatively Selected Plan Design:

- Re-establishment of existing low marsh along the eastern portion of the point and creation of new marsh along the western portion of the point. Creation of native emergent low marsh (8.77 ac).
- Debris and invasive vegetation removal and planting native emergent high marsh vegetation (1.69 ac).
- Debris, fill and invasive vegetation removal and planting with native trees and shrubs (1.84 ac).
- Stabilization of riparian forest and protection of area for continued use by bald eagles.
- Creation of new tidal channels (0.49 ac).
- Creation of an elevated path system that spans several habitats and that leads to a public overlook (4,455 lf).

**PROJECT FIRST COST (Oct 2016): \$57,790,000**



## Oak Island Yards Tentatively Selected Plan Design:

- Restoration and creation of low marsh (7.13 ac).
- Creation of new tidal channels (1,821 lf).
- Debris and invasive vegetation removal, re-grading and planting of native emergent high marsh vegetation (0.73 ac).
- Debris, fill and invasive vegetation removal and planting of native trees and shrubs (4.0 ac).
- Stabilization of riparian forest by removing invasive species and planting with native vegetation (1.86 ac).
- Debris removal and preservation of natural bank vegetation (0.23 ac).
- Invasive plant removal and creation of habitat connectivity along new mudflats/tidal channels (1.02 ac) and existing habitat (1.32 ac).
- Provide Oyster Reef habitat (0.08 acres- with State policy change- not included in cost).
- Improved public access to water and increased opportunities for boating, hiking, education, and passive recreation by upgrading existing pedestrian path, replacing portion of path with pier deck system on southern perimeter of property (3,711 lf), and constructing overlook pier and dock for kayak and canoe launch (0.04 ac).

**PROJECT FIRST COST (Oct 2016): \$29,640,000**



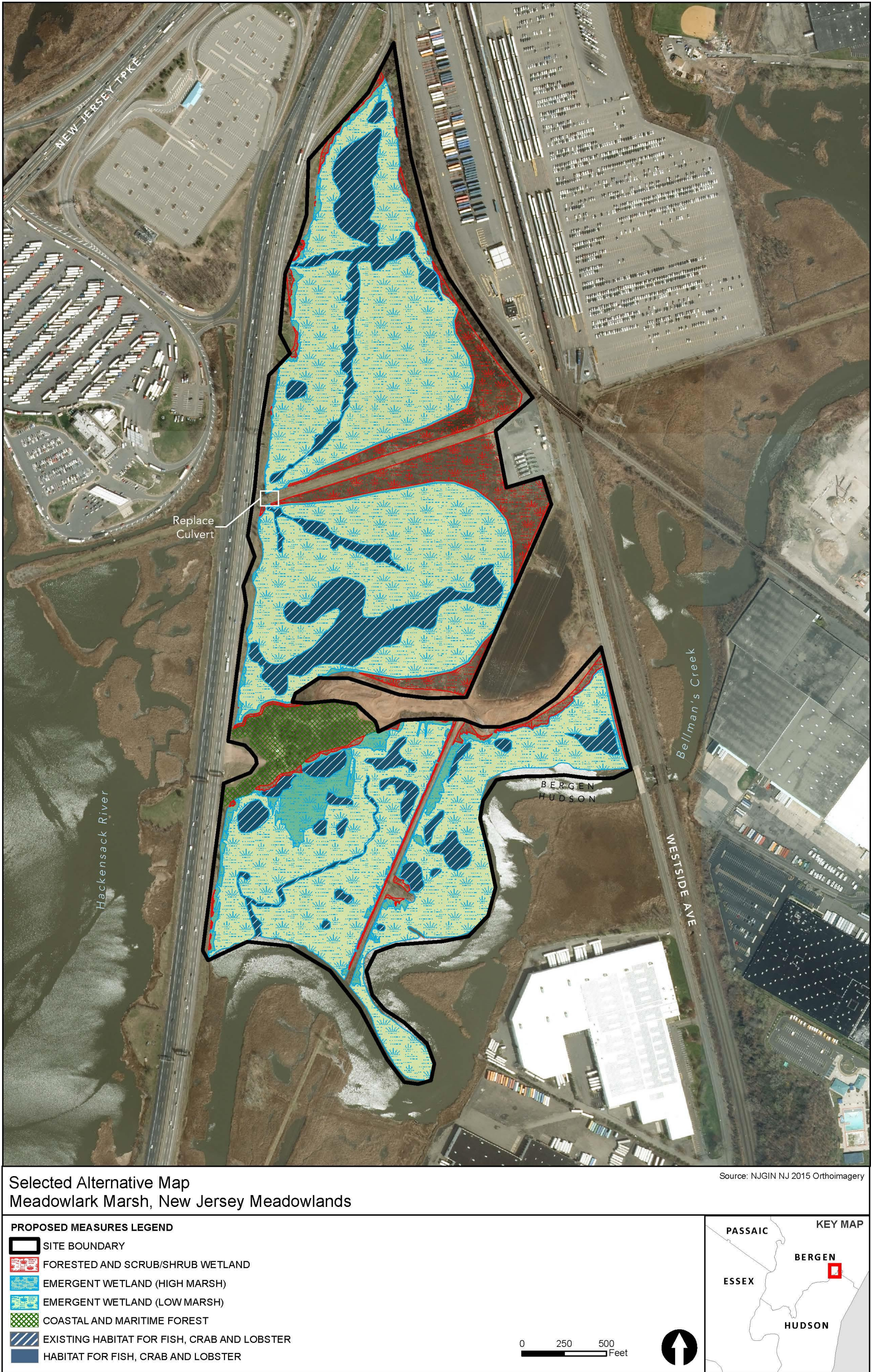


# HACKENSACK RIVER RESTORATION SITES

## Meadowlark Marsh Tentatively Selected Plan Design:

- Invasive species removal and native species planting of low marsh (60.21 ac) and high marsh (4.64 ac)
- Debris, fill and invasive vegetation removal and planting of native trees and shrubs to restore and create habitat (1.89 ac).
- Restoration/creation of maritime forest habitat (3.21 ac).
- Removal of invasive species to restore existing mudflats/tidal channels and associated habitats within the interior marsh (~12.72 ac).

**PROJECT FIRST COST (Oct 2016): \$41,660,000**



## Metromedia Tract Tentatively Selected Plan Design:

- Reconnect fragmented areas within the parcel, introduce new tidal channels and make improvements to the existing channels.
- Create approximately 50.6 acres of low marsh, 4.1 acres of high marsh, 3.5 acres of scrub-shrub and 1.1 acres of maritime upland
- Removal of approximately 38,000 cy of excavated material to an upland disposal facility in order to remove the top 0.6 inches of invasive root mass.

**PROJECT FIRST COST (Oct 2016): \$32,510,000**

