Innovative Approaches using Nature Based Features in New York and New Jersey

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Assistant Director NJ CPTAS,
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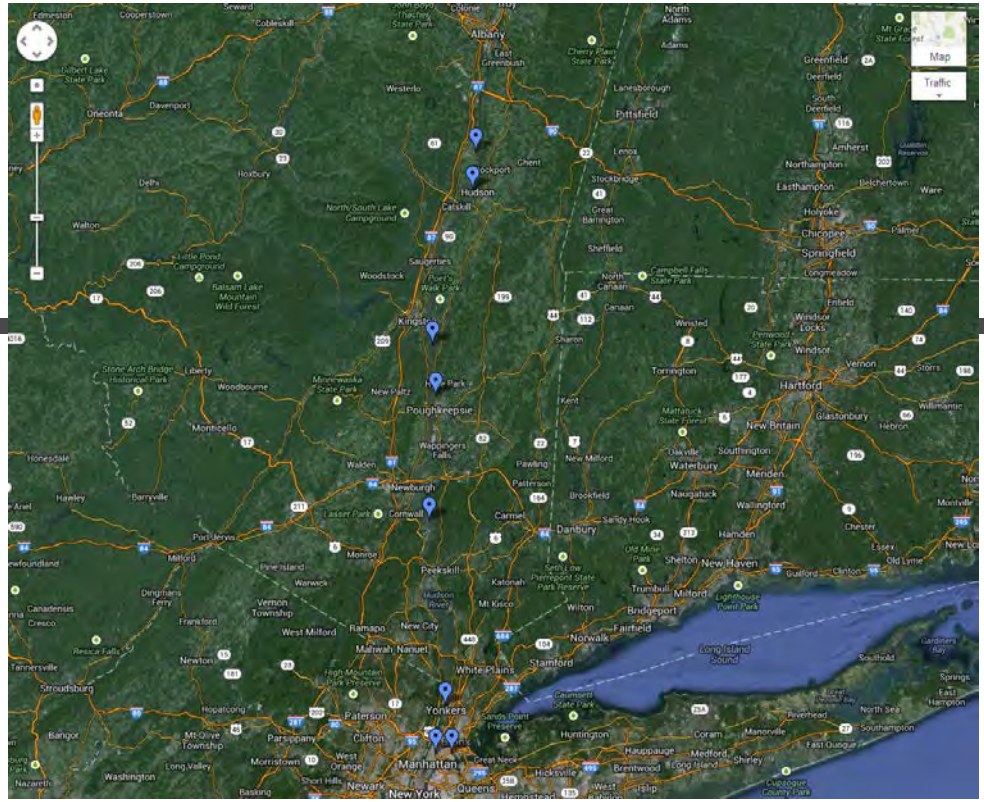
Natural and Nature-Based Approaches to Support Coastal Resilience and Risk Reduction
Washington D.C. – November 21-22, 2013



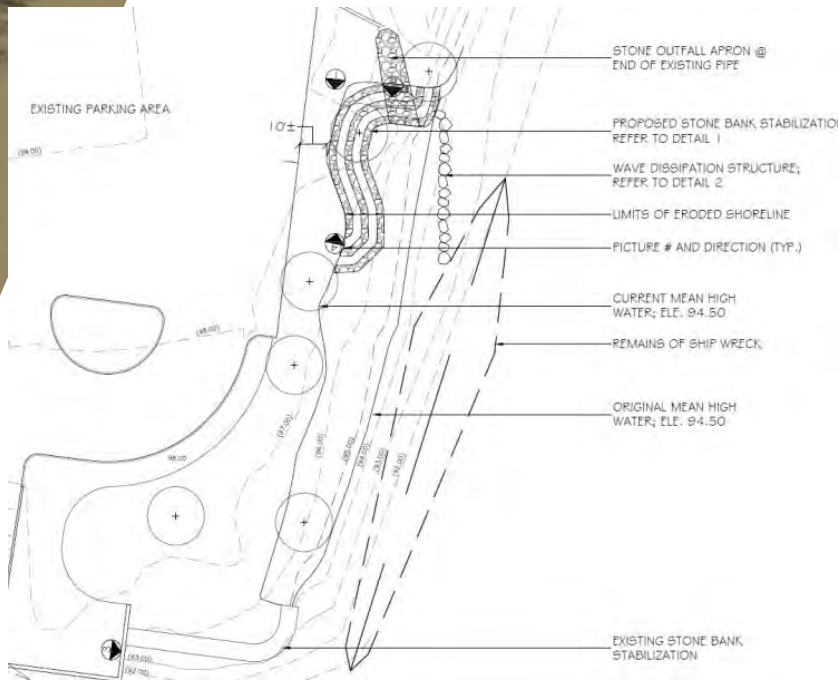
HRNERR, NYS DEC, Stevens, Cary Institute, and many others…

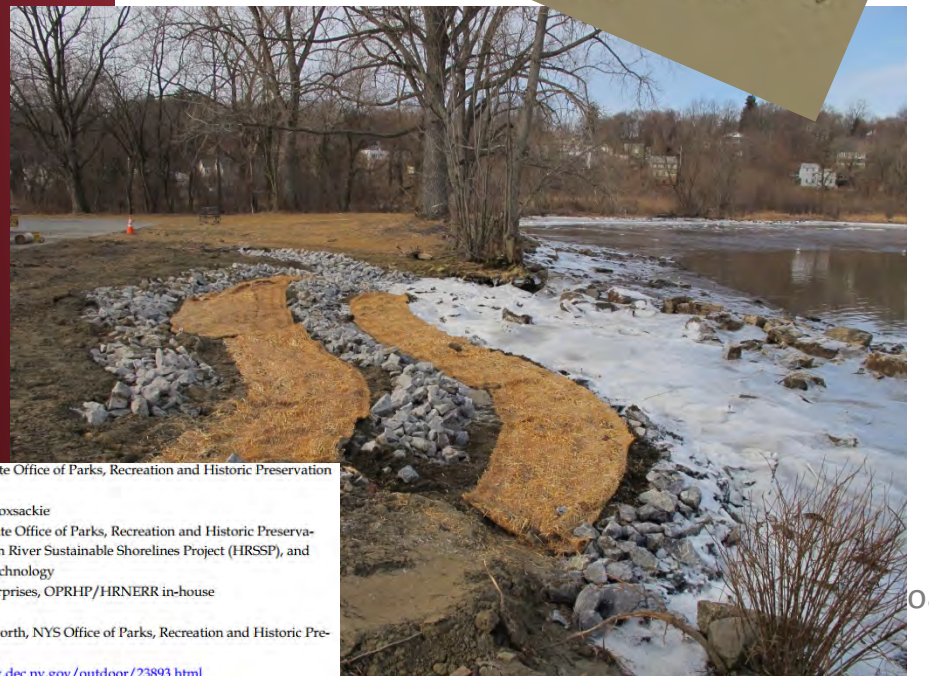
HUDSON RIVER SUSTAINABLE SHORELINES DEMONSTRATION SITE NETWORK

Habirshaw, NY

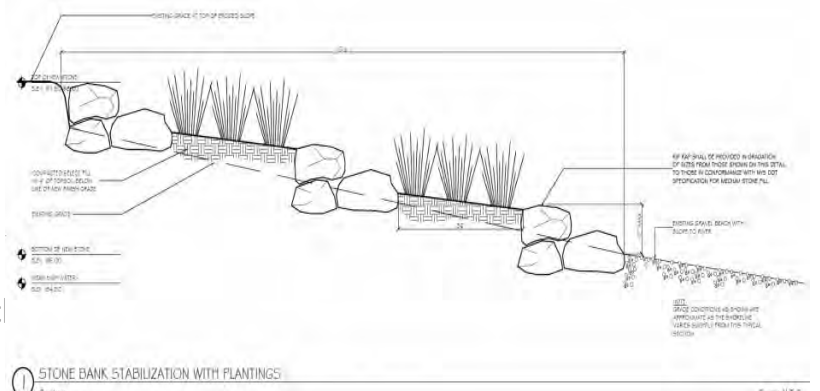
Owner: Westchester County
Manager: Beczak Environmental Education Center
Design: Creative Habitat Corp. & Westchester County Planning
Contractor: Burtis Construction Co.
Cost: $515,234
Grants Received: New York State Environmental Protection Fund ($250,000) and National Fish & Wildlife Foundation ($50,000)
Project Timeframe: 2003-2004

Coxsackie, NY





Owner: New York State Office of Parks, Recreation and Historic Preservation (OPRHP)
Manager: Village of Coxsackie
Design: New York State Office of Parks, Recreation and Historic Preservation (OPRHP), Hudson River Sustainable Shorelines Project (HRSSP), and Stevens Institute of Technology
Contractor: Moy Enterprises, OPRHP/HRNERR in-house
Cost: $20,000
Contact: Casey Holzworth, NYS Office of Parks, Recreation and Historic Preservation
Website: http://www.dec.ny.gov/outdoor/23893.html



Sustainable Shorelines Products

- Literature Reviews (engineering & ecology)
- Comparison of natural vs. engineered shoreline ecology
- Demonstration Site Network
- Physical Forces Analysis
- Forensic Analysis (underway)
- All available at:

http://www.hrnerr.org/hudson-river-sustainable-shorelines

NYC Parks, NYC EDC, MWA, Stevens, SeArc, many others…

URBAN ENVIRONMENTS

Bio/Green Walls

"a collection of approaches, all of which attempt to soften a traditionally hard edge through the introduction of ecologically friendly modifications"

"Walls or barriers that have been enhanced in any way to encourage habitat development"

<u>Example Projects</u>

Designing The Edge

Alternative Concrete Solutions

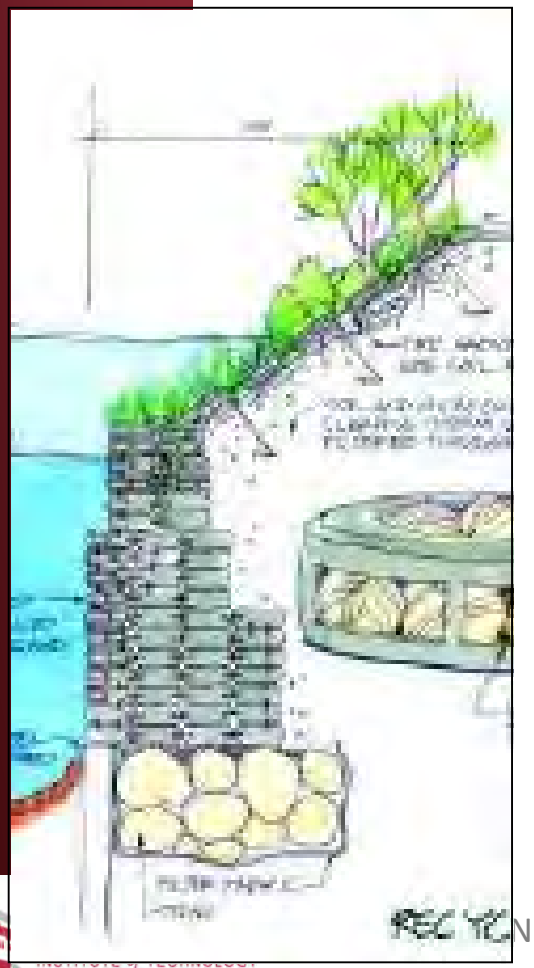
NYC Dept. of Parks and Recreation Designing the Edge

Objectives:

- Improve ecological value of urban shore
- Modify the waterfront edge to enhance safe access to the water by the public
- Increase compatibility with recreational users

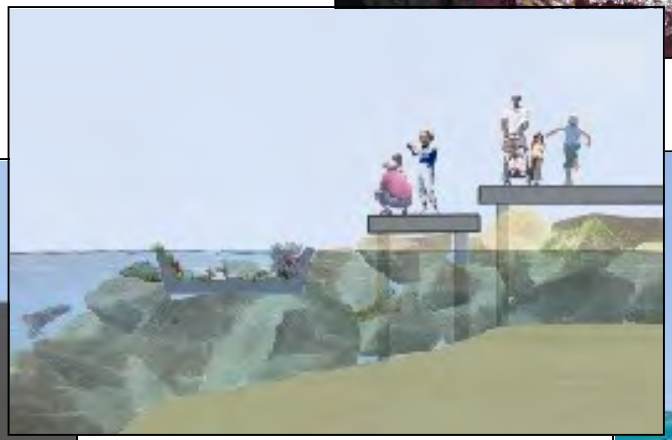
Owner: New York City Department of Parks & Recreation
Manager: New York City Department of Parks & Recreation
Capital Funding: New York City Department of Parks & Recreation, New York City Economic Development Corporation, NYC Mayoral Budget, and New York State Department of State (DOS).
Design: New York City Department of Parks & Recreation (landscape architects Emmanuel Thingue, Ricardo Hinkle and Marcha Johnson, Dewberry Engineers); and NYC Economic Development Corporation (landscape architect Greg Hoer with Parsons Brinkerhoff).

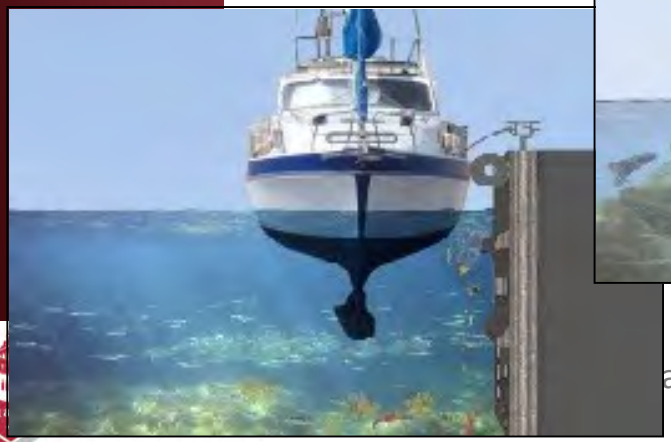
Finished Product



Enhanced Concrete Solutions

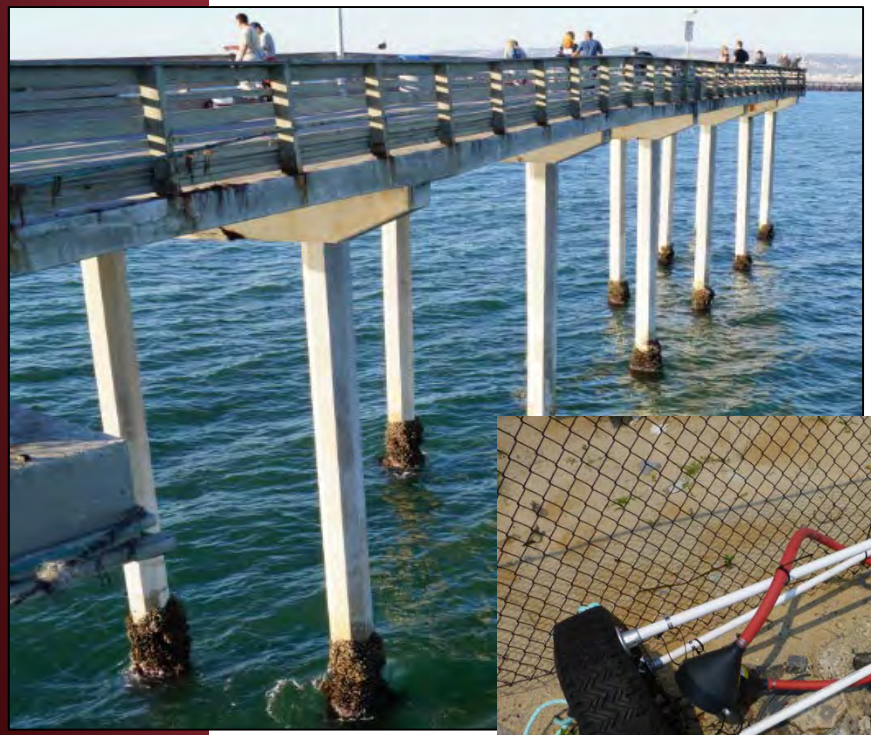
(Photos & Info Courtesy SeArc Consultants)

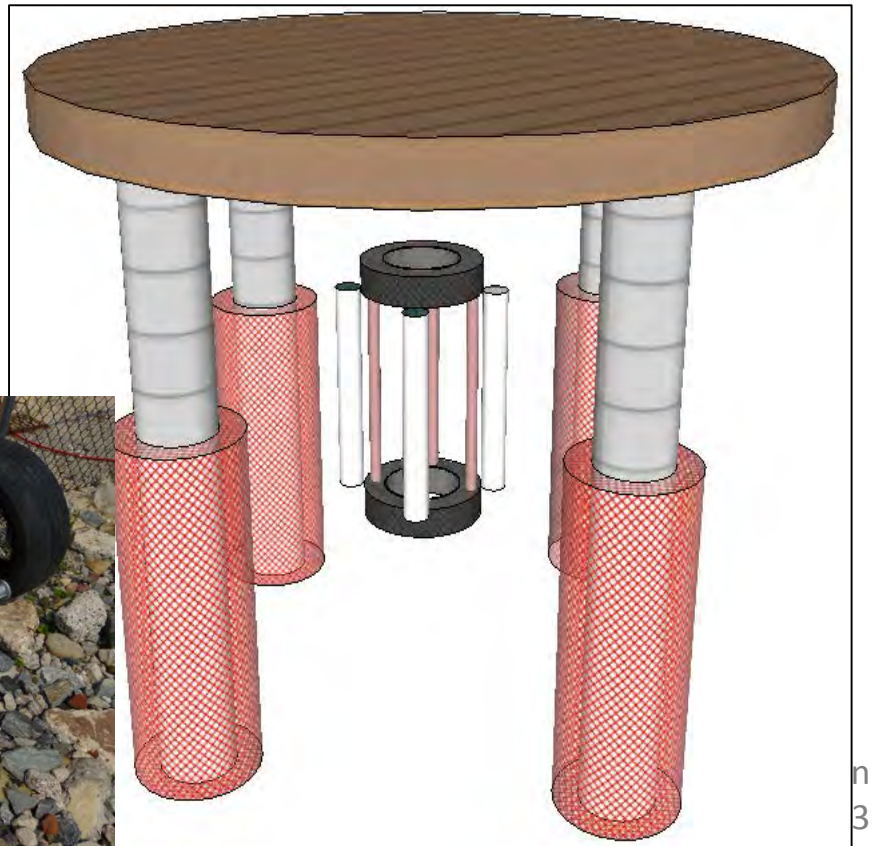




Oysters in Urban Environments

Andrew Rella Dissertation Research & NYC EDC "Changing the Course.." 2nd Place: Oyster Encasements for Pile Enhancement (http://www.nycedc.com/WaterfrontCompetition)





NEW JERSEY PROJECTS

Beaches & Dunes

- Horshoe crab / red knot
- ALS, NFWF, Conserve Wildlife Foundation, …

Reeds Beach - post Sandy

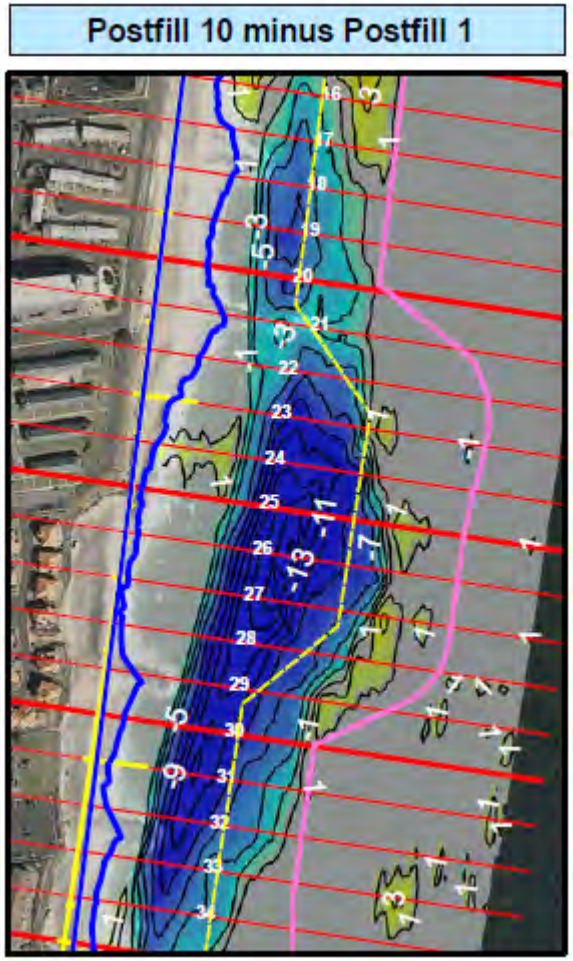
Reeds Beach - after restoration

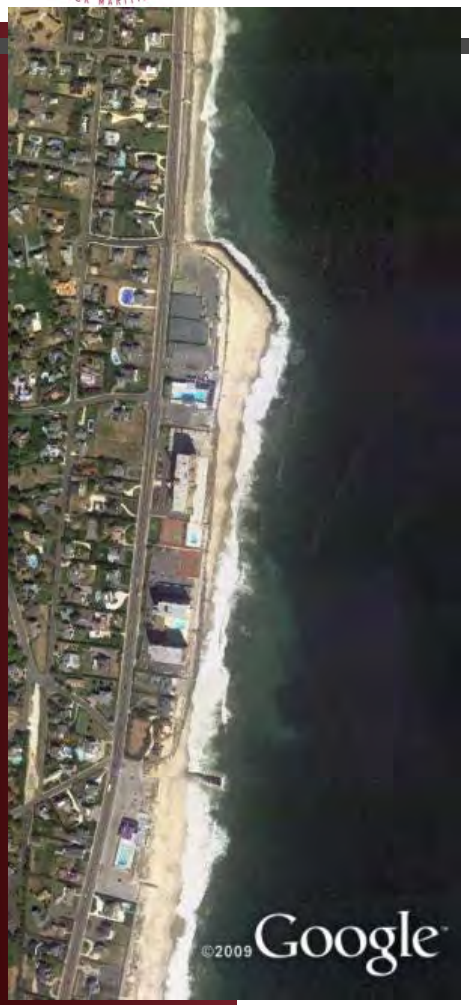
Photos: http://wetlandsinstitute.org/conservation/horseshoe-crab-conservation/post-sandy-emergency-restoration/

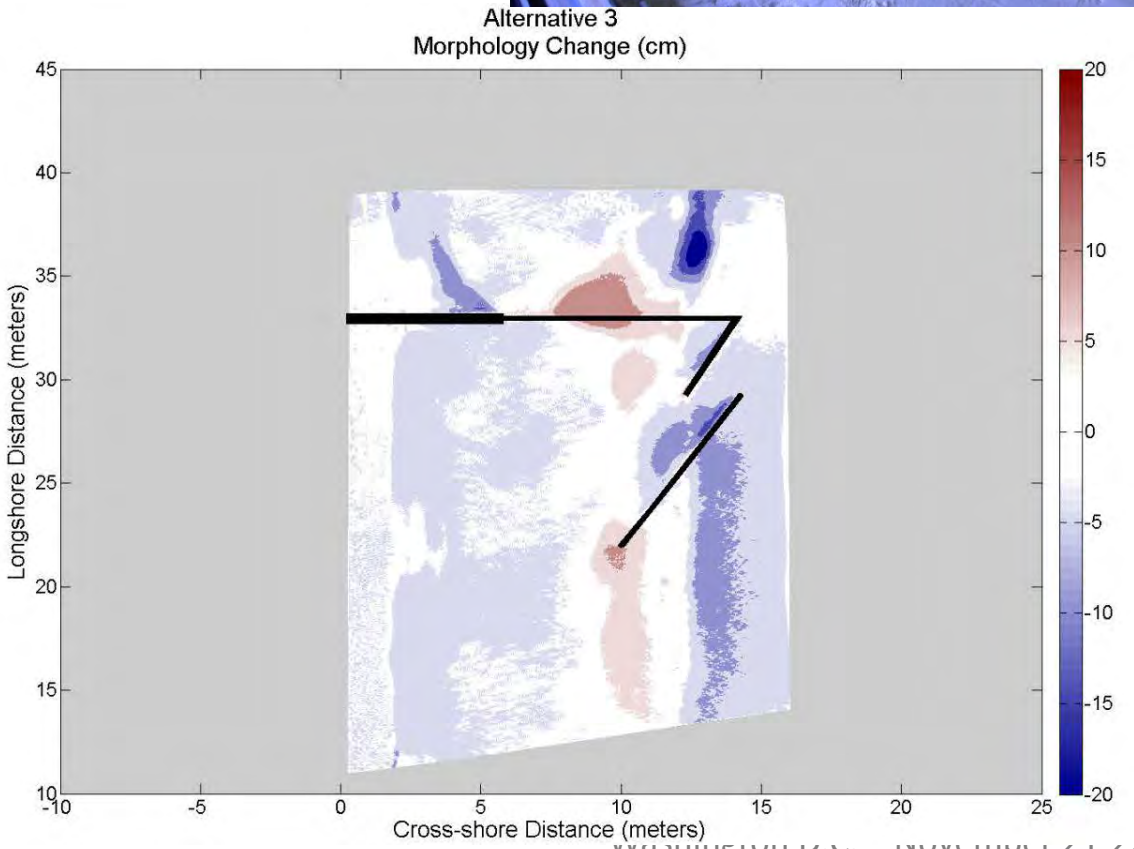
Non-Traditional Beach Fills

Feeder Evolution

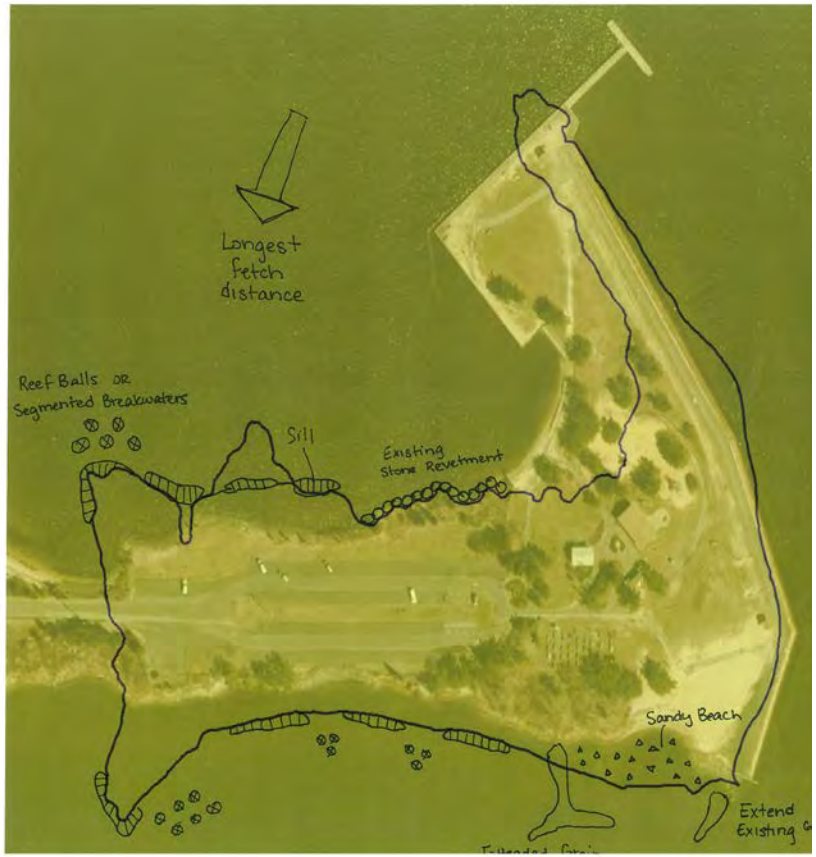
- Rapid initial adjustment of feeder feature
  - 8’ vertical in 16 days
- 15’ of vertical erosion and 250’ of recession of feeder over initial 3 months
- 52% of the material remained in placement area after 10 months
- 84% accounted for within 2 miles of placement area (longshore transport)




©2009 Google


Alternative 3
Morphology Change (cm)
Longshore Distance (meters)
Cross-shore Distance (meters)
45
40
35
30
25
20
15
10
-10
-5
0
5
10
15
20
25
20
15
10
5
0
-5
-10
-15
-20

Opportunities



Mordecai Island

Partnership for the Delaware Estuary & Rutgers Haskins Lab

DELSI PROJECT

Maurice River

BEFORE: Marina in New Jersey's Heislerville Fish and Wildlife Management Area in April of 2010.

BEFORE: Day of installation of coconut-fiber (coir) logs and mats in New Jersey's Heislerville Fish and Wildlife Management Area in May of 2010.

AFTER: One year later, June 2011, native marsh grass can be seen flourishing in the soil that has collected behind the new "living shoreline." Not only does this defend land against destructive waves, but also it serves as fish habitat during high tides.

AFTER: September 2011- the site remained stable after Hurricane Irene and Tropical Storm Ike.

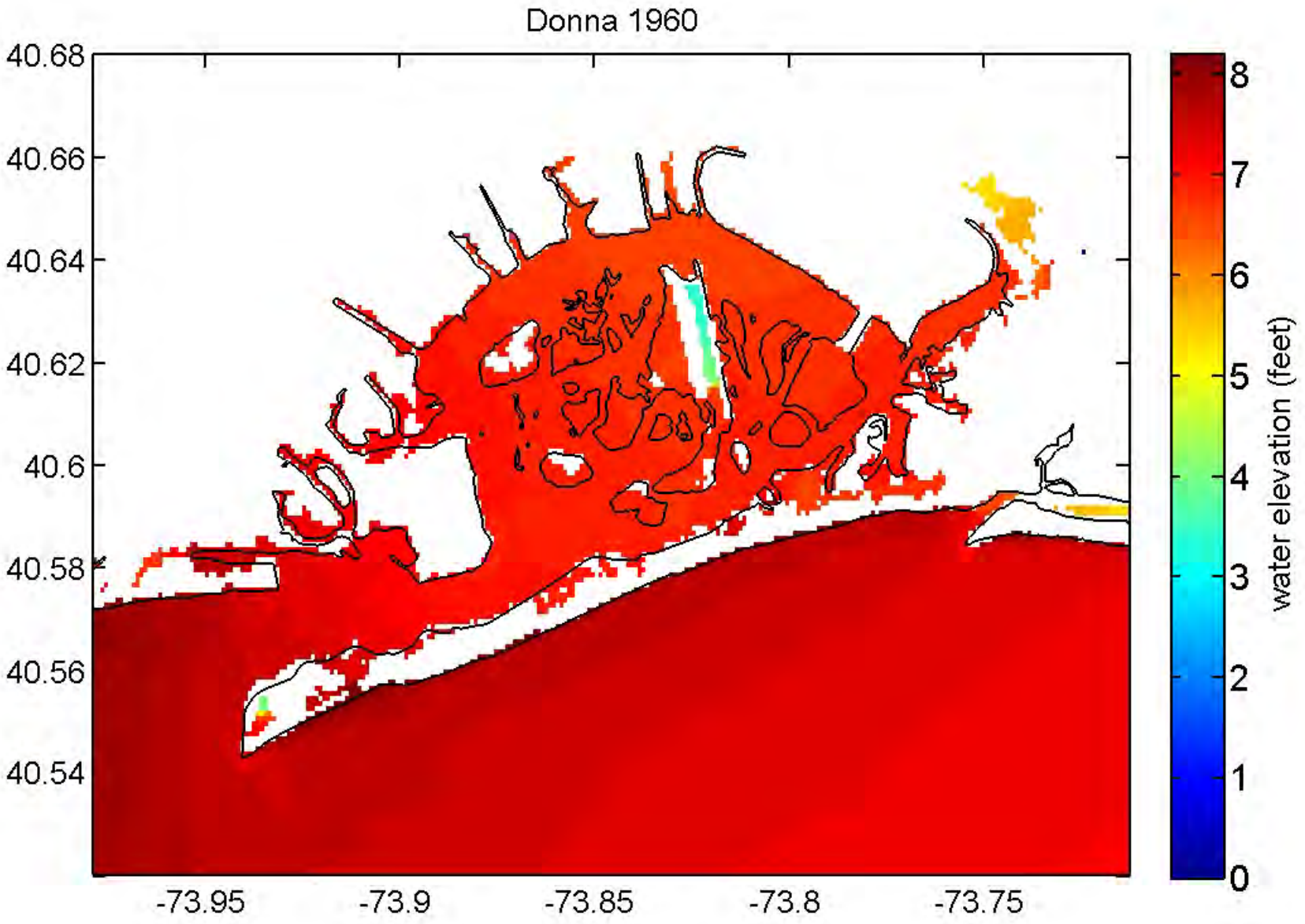
Photos courtesy Partnership for Delaware Estuary & Rutgers Haskins Lab

Photos courtesy Partnership for Delaware Estuary & Rutgers Haskins Lab

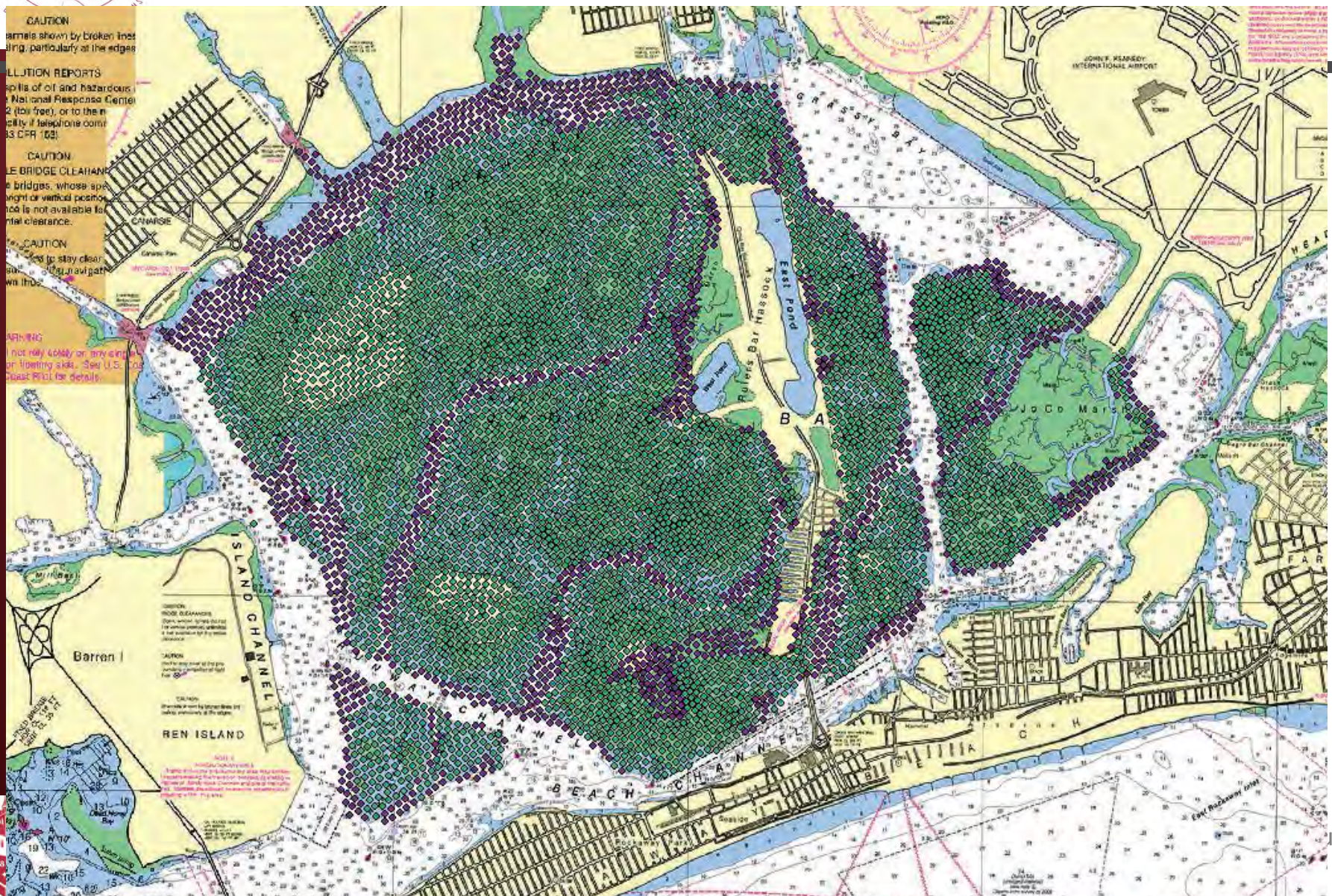
Oysters in NJ

RESEARCH

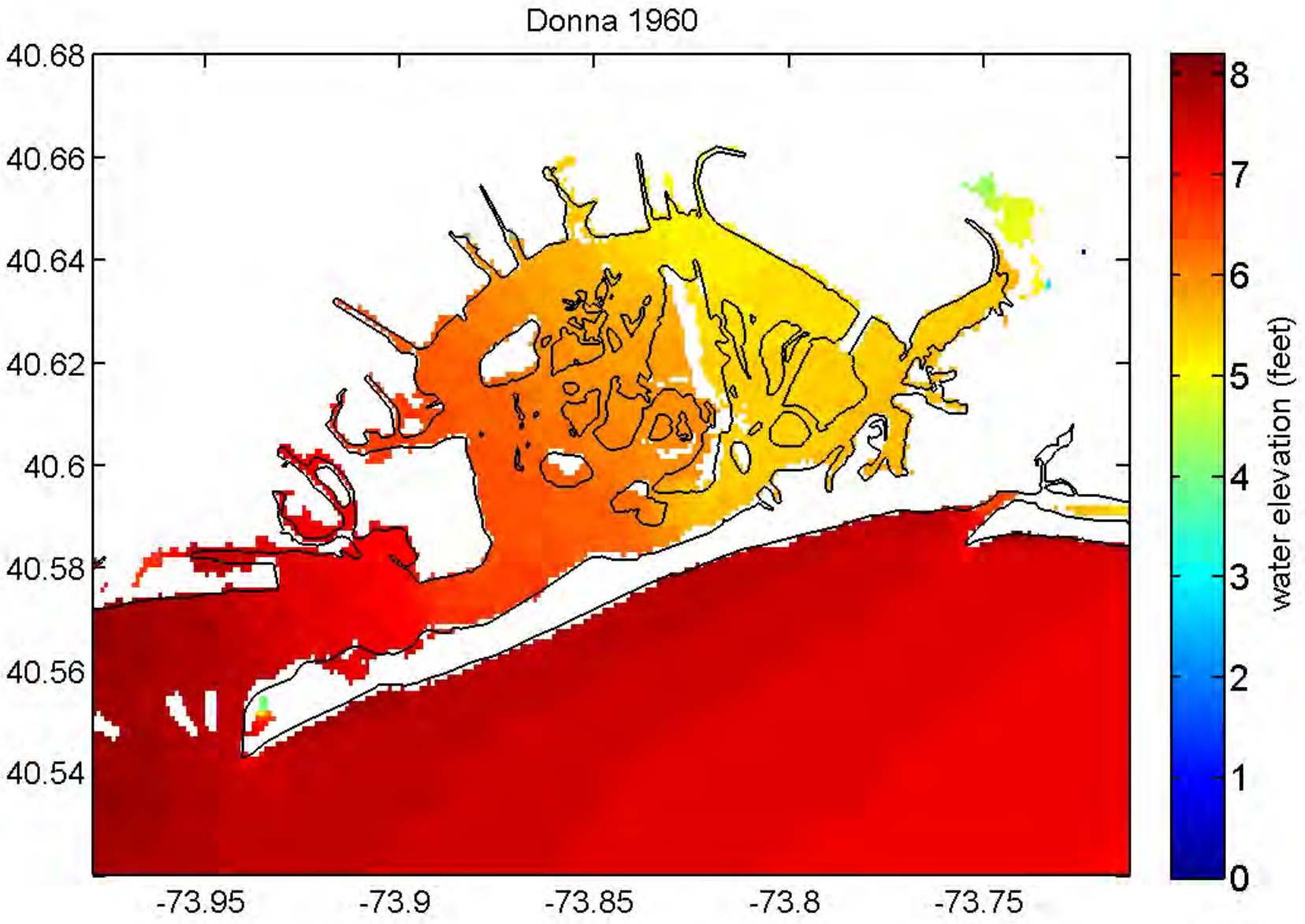
Modern-day landscape



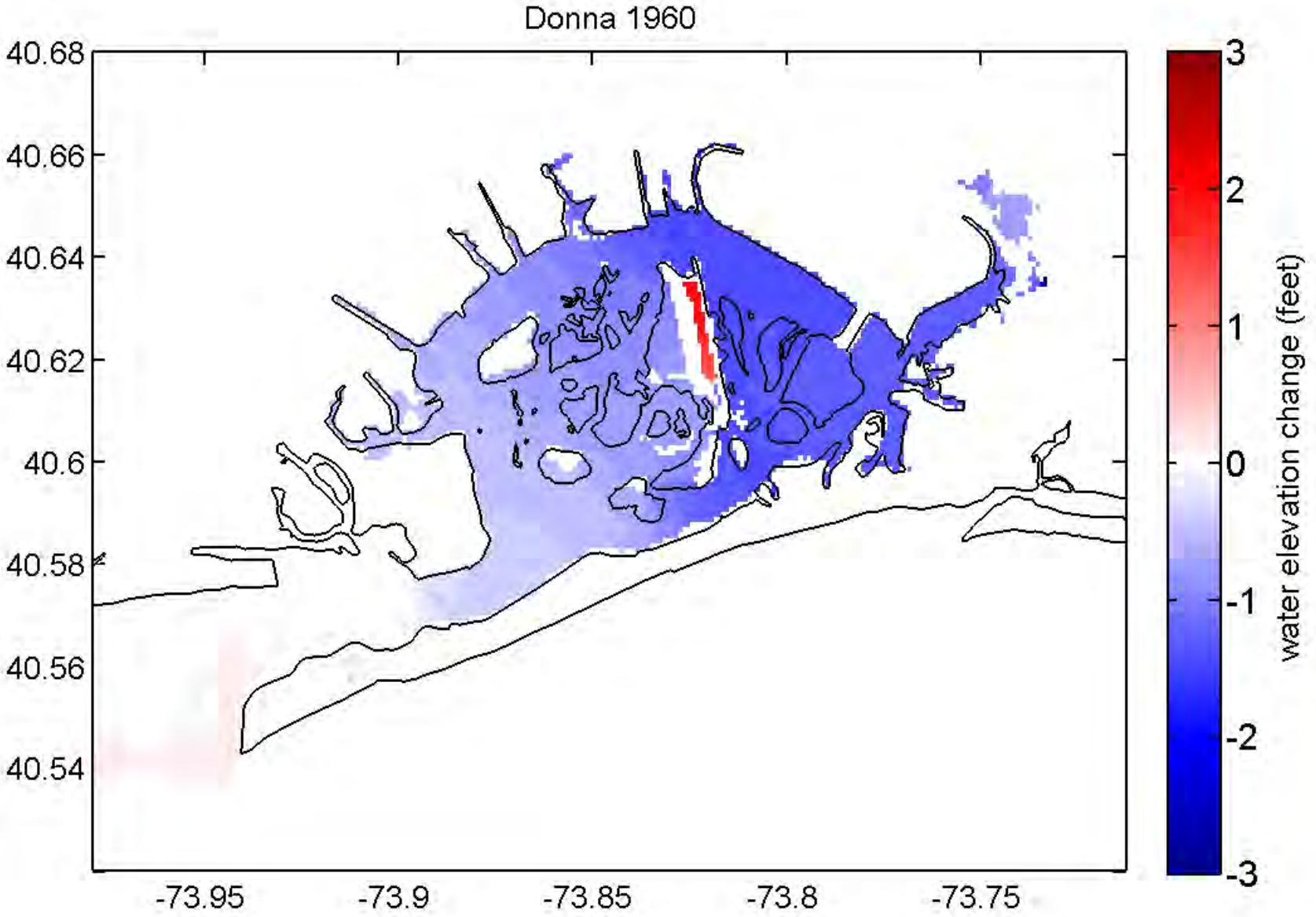
Hypothetical landscape modifications
Purple-shallowed channel; green – restored wetland islands



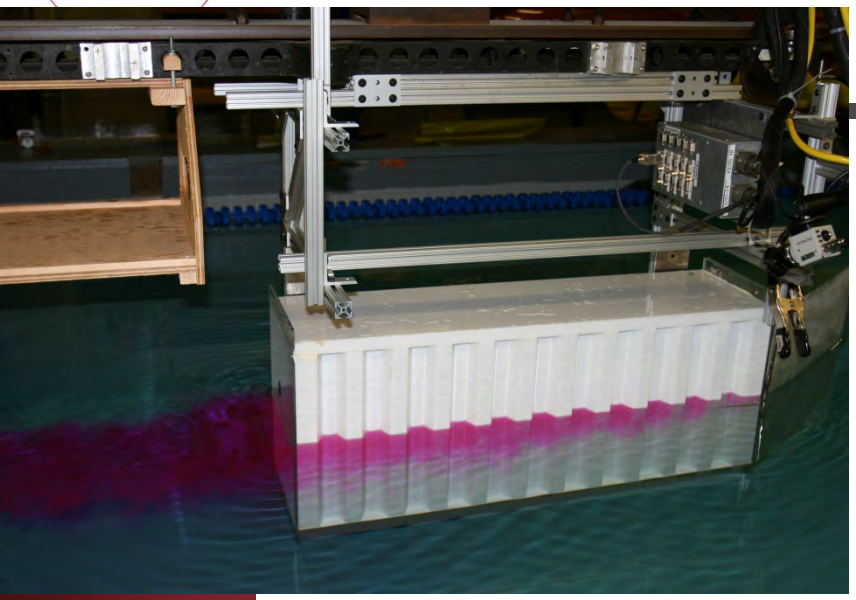
Modified landscape



DIFFERENCE: reduction of 0.5-1.5 ft in SWEL

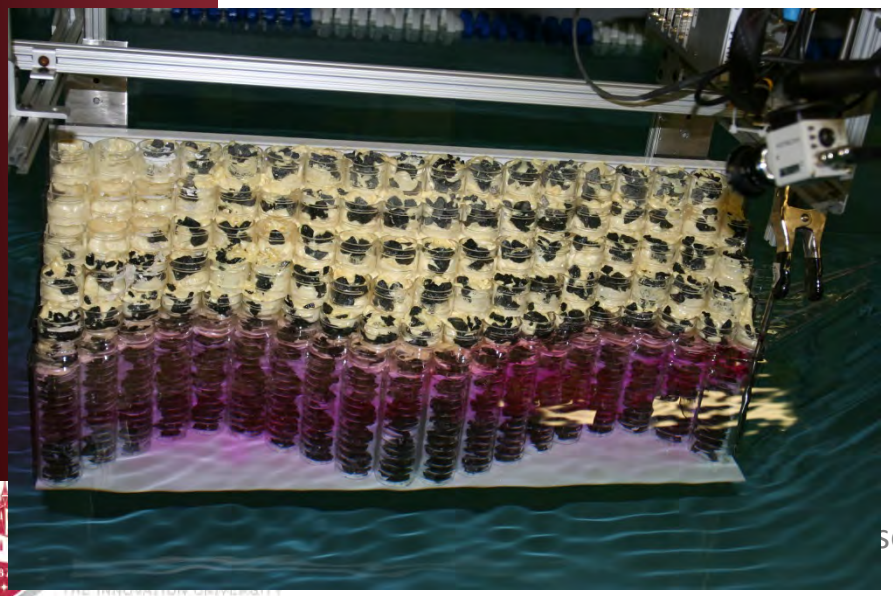


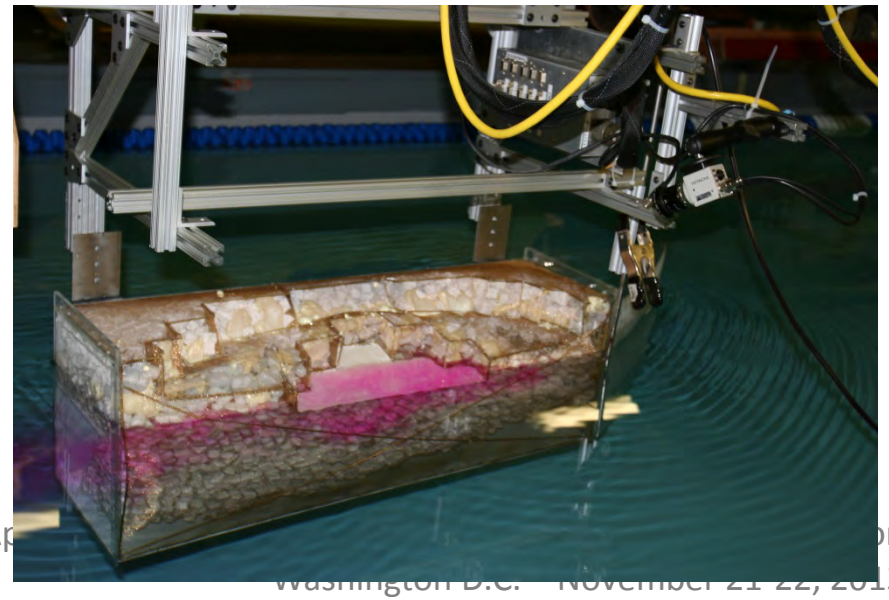
Physical Models



Tested the effect the wall had on;

- % Current Reduction
- Wake Dissipation





For More Info

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