The Beneficial Use of Dredged Material for Marsh Restoration

NJDEP Living Shorelines Summit
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Goal: Marsh Restoration

NOT Dredged Material Disposal

Beneficial Use of Dredged Material is Strongly Encouraged

NJDEP in Learning Phase

Coastal Zone Regulatory Process

- General Permit 29 (within 1977 Tidelands line) or
- Individual Waterfront Development Permit &
- Tidelands License

- USACE Nationwide Permit 13 (Bank Stabilization) or
- USACE Nationwide Permit 27 (Habitat Restoration) or
- USACE CWA Section 404 Individual Permit
- CZM Consistency Determination
- Section 401 Water Quality Certificate

Important Project Design Parameters

Sediment Sampling & Testing

- Dredged material and marsh sediment should have similar physical characteristics and contaminant concentrations.
  - Sample sediment to be dredged
    - Bulk Sediment Chemistry - compare to SQGs
    - Elutriate - compare to Surface Water WQS
  - Sample surface sediment at marsh restoration site
    - Bulk Sediment Chemistry
- Sampling plans must be approved by NJDEP-ODST.

Important Project Design Parameters

Construction

- Dredged material placement thickness?
  - Detailed site survey
  - Biological Benchmarks
  - Maximum 3-6 inches on marsh plain
  - Dredged material characteristics
- Placement method(s) – how & where?
- Dredged material slurry containment methods?
- Timing restrictions (T/E species, nesting birds, etc.)

NJDEP NFWF Projects

- $3.42 million grant
- All work must be completed by August 2016
- Coordinated with USACE & NJDOT dredging projects
- Project Partners:
  - NJDEP – DFW, Land Use Regulation, Office of Science
  - The Nature Conservancy
  - Green Trust Alliance
  - The Wetlands Institute

NJDEP NFWF Project Objectives

- Evaluate the feasibility of using dredged material for marsh restoration
  - Thin-layer Placement
  - Marsh shoreline edge restoration
- Monitor and evaluate restoration projects to identify benefits and impacts
  - Storm damage buffering capacity
  - Erosion protection
  - Economic benefits

NFWF Grant Project Sites

Middle Township Site

Middle Township Black Skimmer Habitat

~ 0.5 acre site

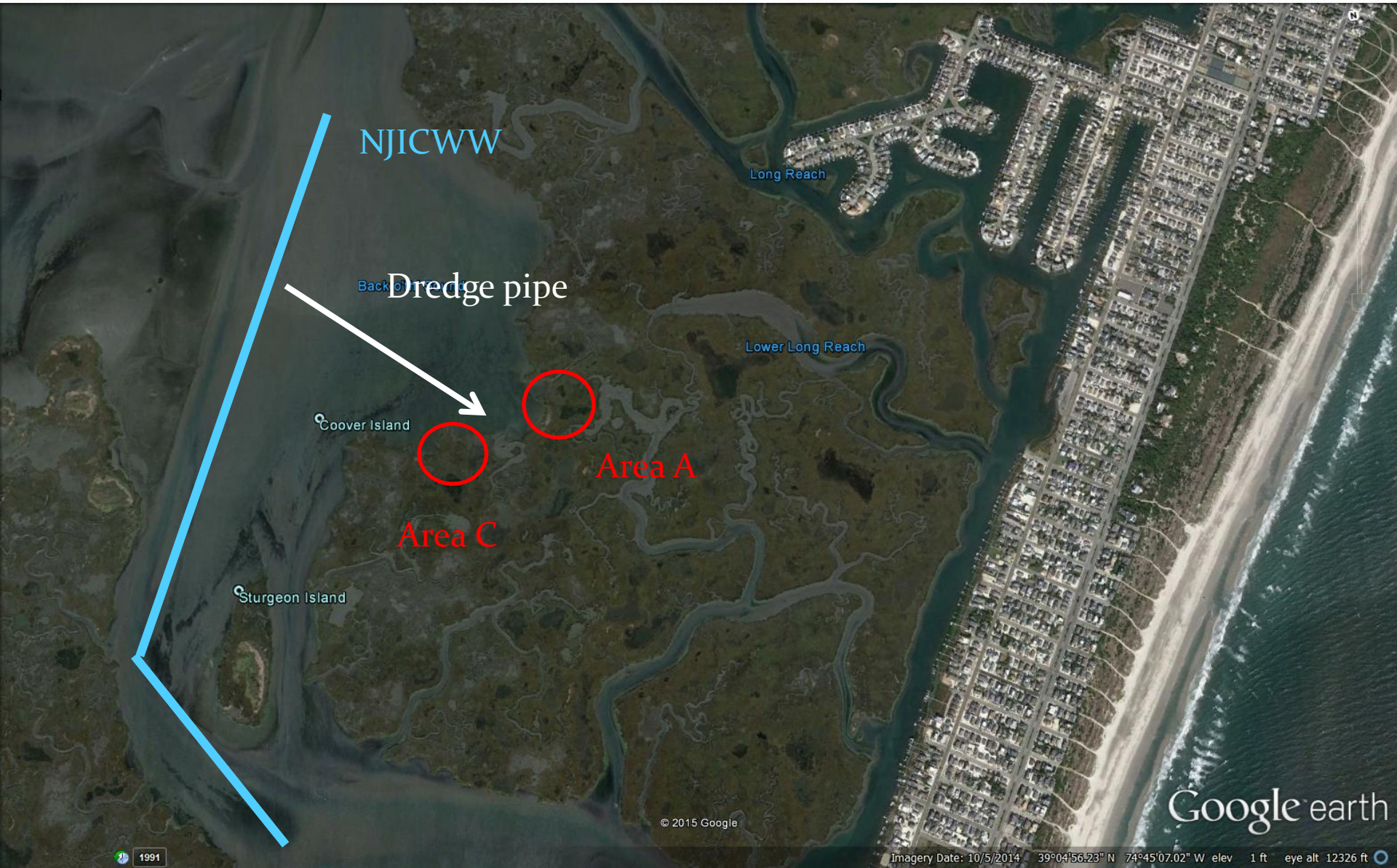
Dredged Material - 96% fine sand

Middle Twp. Thin-Layer Placement Pilot Project


~150 feet


~50 feet

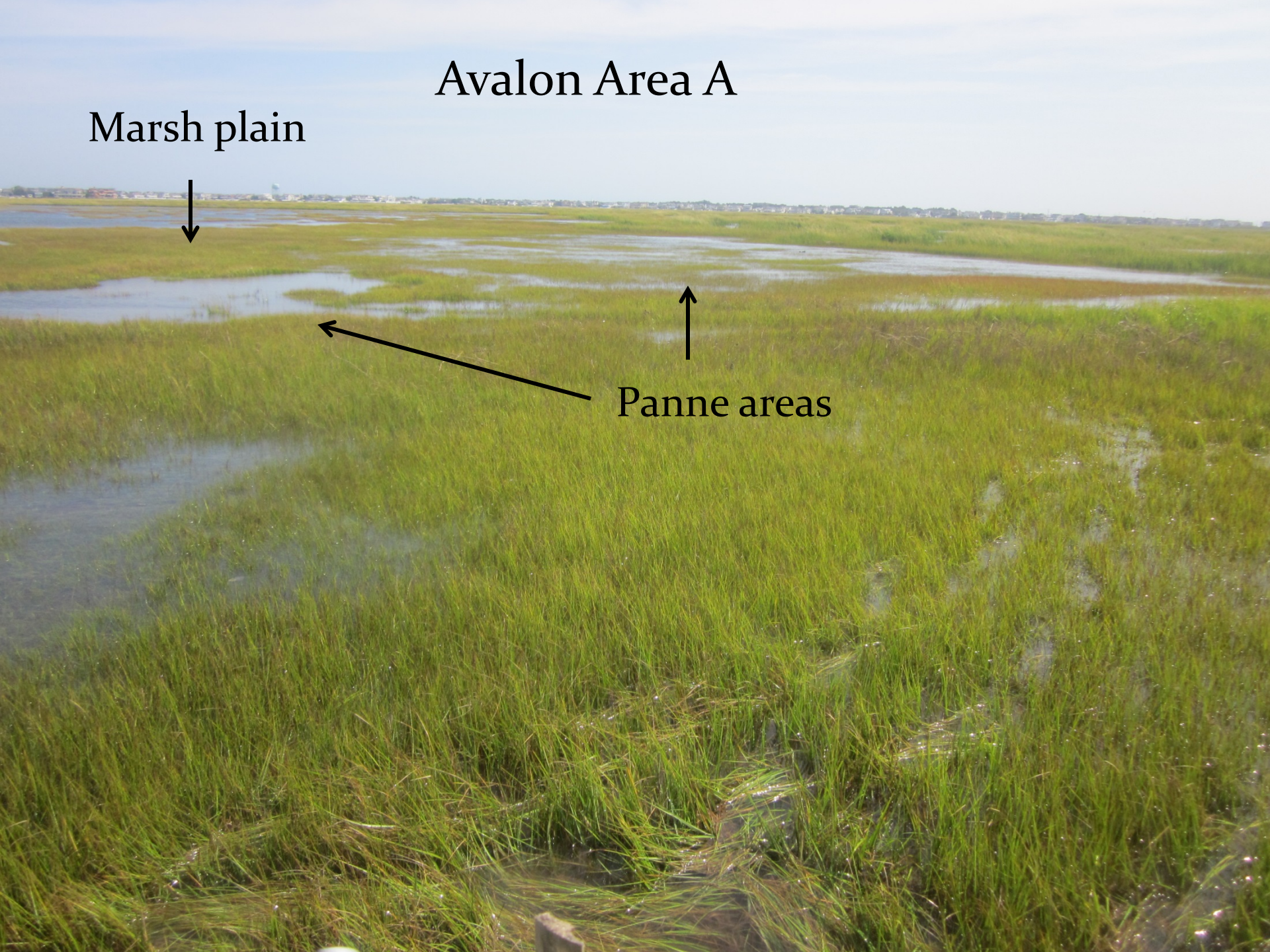
Avalon Thin Layer Placement Pilot Project



Avalon Thin Layer Placement Project

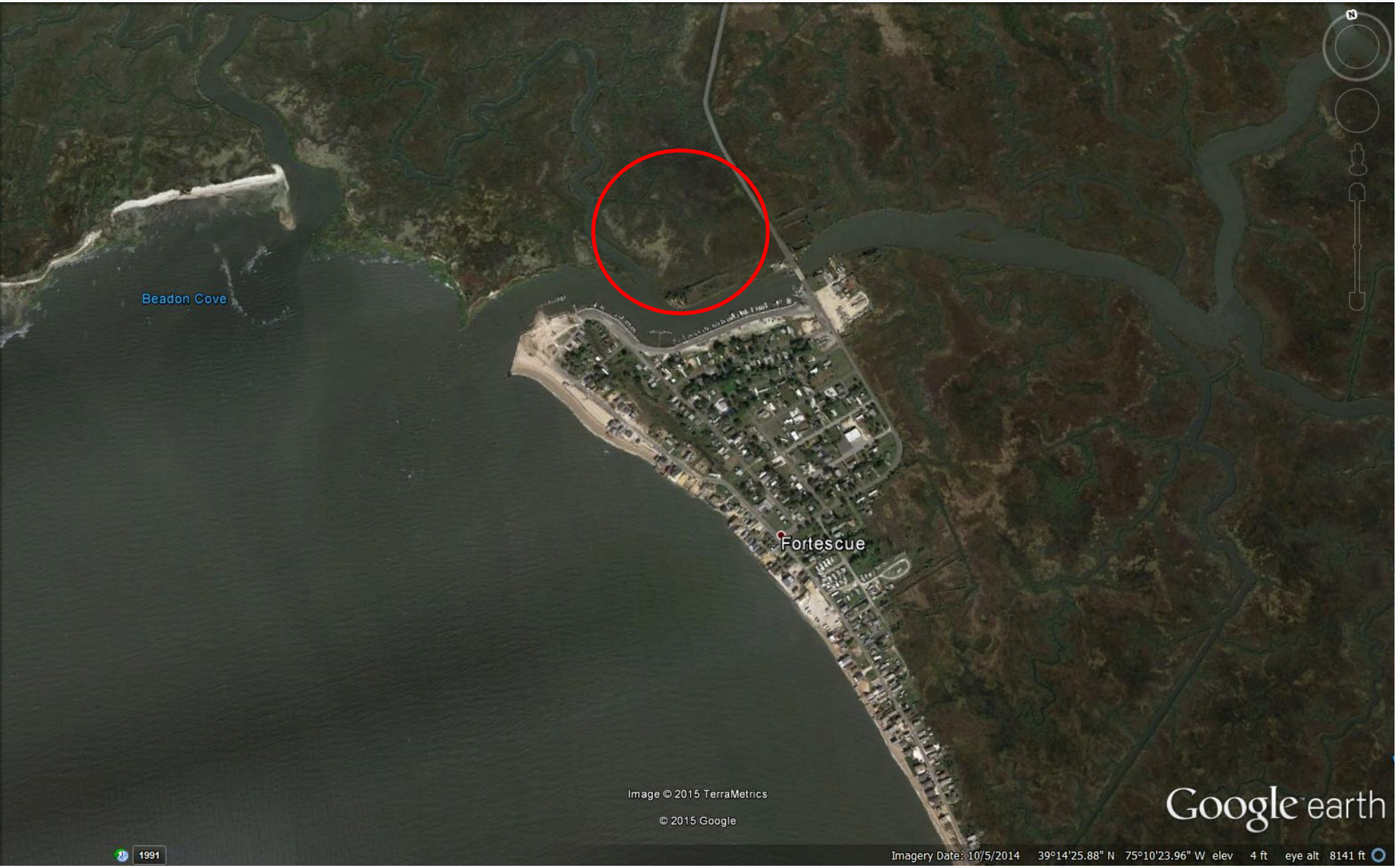
- Pilot Project: ~ 5,000 CY placed on ~ 5 acres
  - Dredged Material: 16% clay + 50% silt + 34% fine sand
  - TLP (< 6 in) on marsh plain
  - Fill pannes (~ 1 ft)
- Sediment sampling and testing (dioxins/furans)
- Full scale project: 40+ acres using ~ 70,000 CY
  - Shoreline edge restoration
  - Awaiting evaluation of dioxin/furan issue

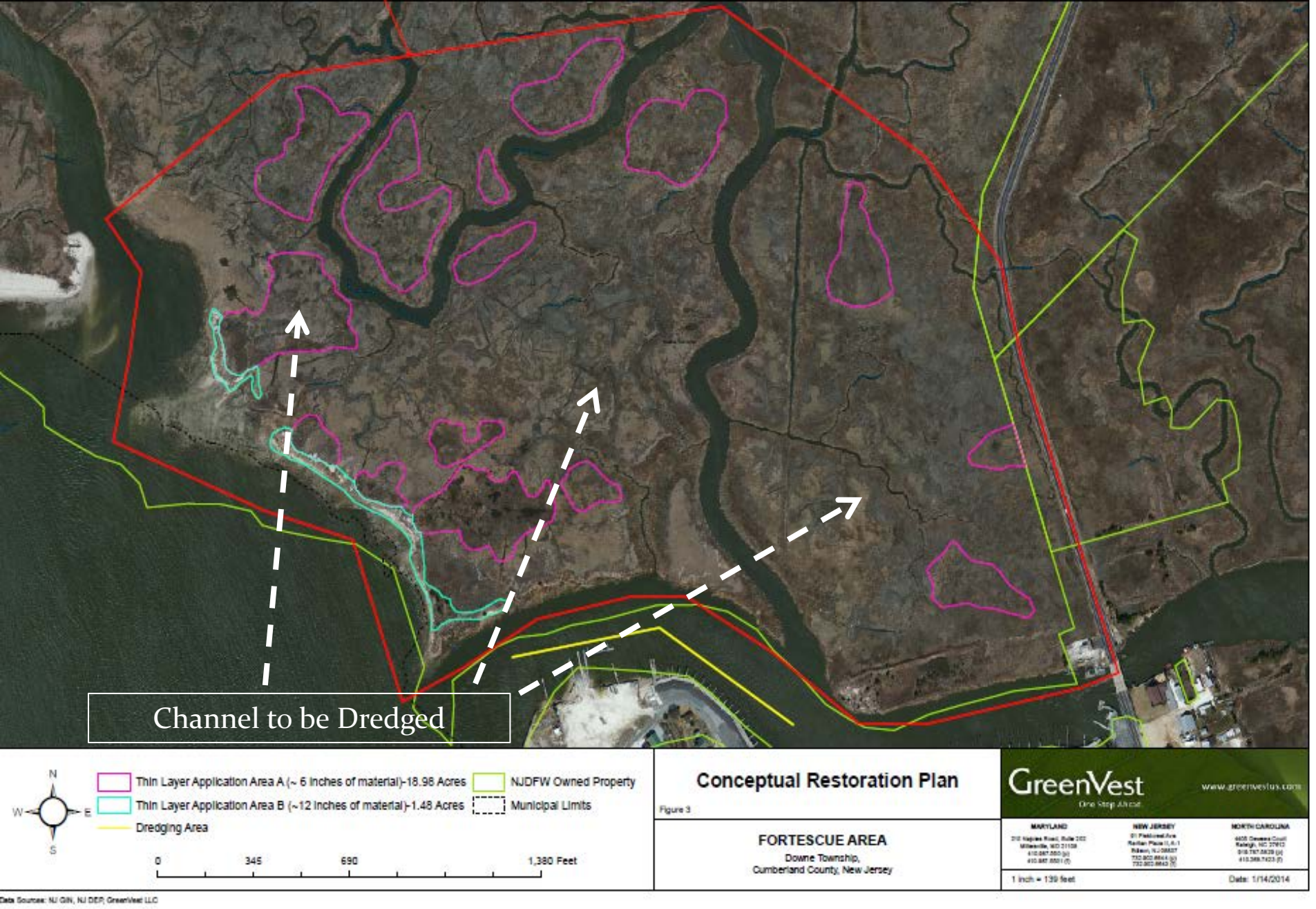
Avalon Area C


Avalon Area A
Marsh plain
Panne areas


TLP Spray
Coir logs

Fortescue Site





Fortescue Thin-Layer Placement – Fall 2015

Lessons Learned

- Need detailed site surveys
  - Design project
  - Establish target elevations: Bio-benchmarks
  - As-Built & Monitor Elevations
- Adaptive Management is Critical
  - Control flow of dredged material slurry
  - Personnel, equipment, and supplies on-site
  - Coordinate with dredging operations
- Monitoring Critical to evaluate project success/failure
  - Long-term (3-5 years)
  - Corrective actions? (eg. planting)


Any Questions?