

# The South Amelia Island Shore Stabilization Project: 25 Years Old and Planning for the Future

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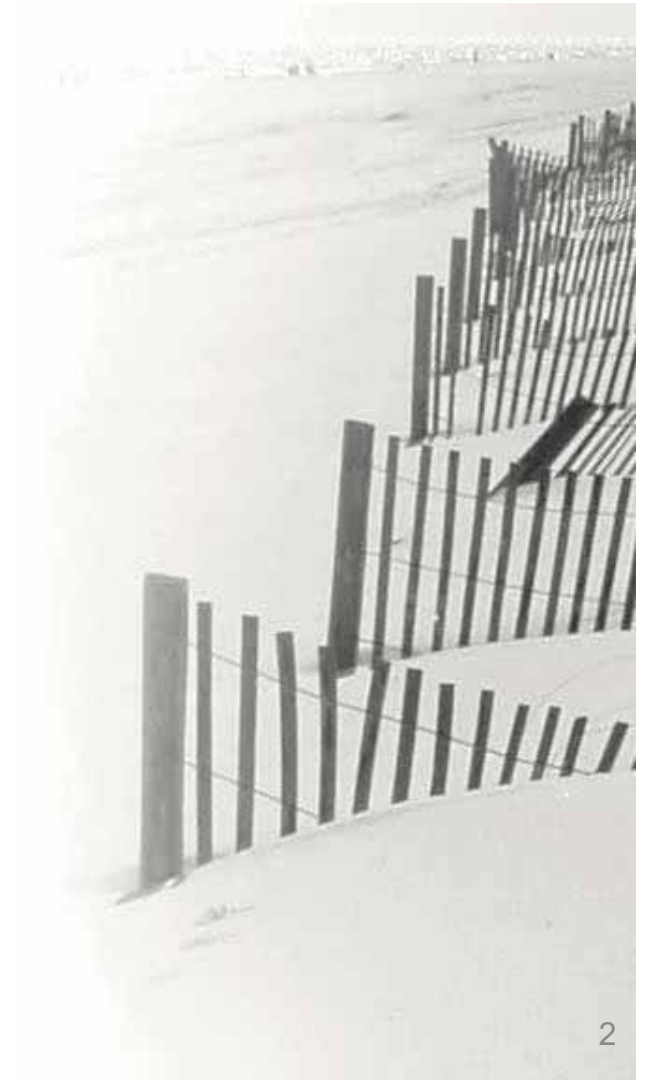
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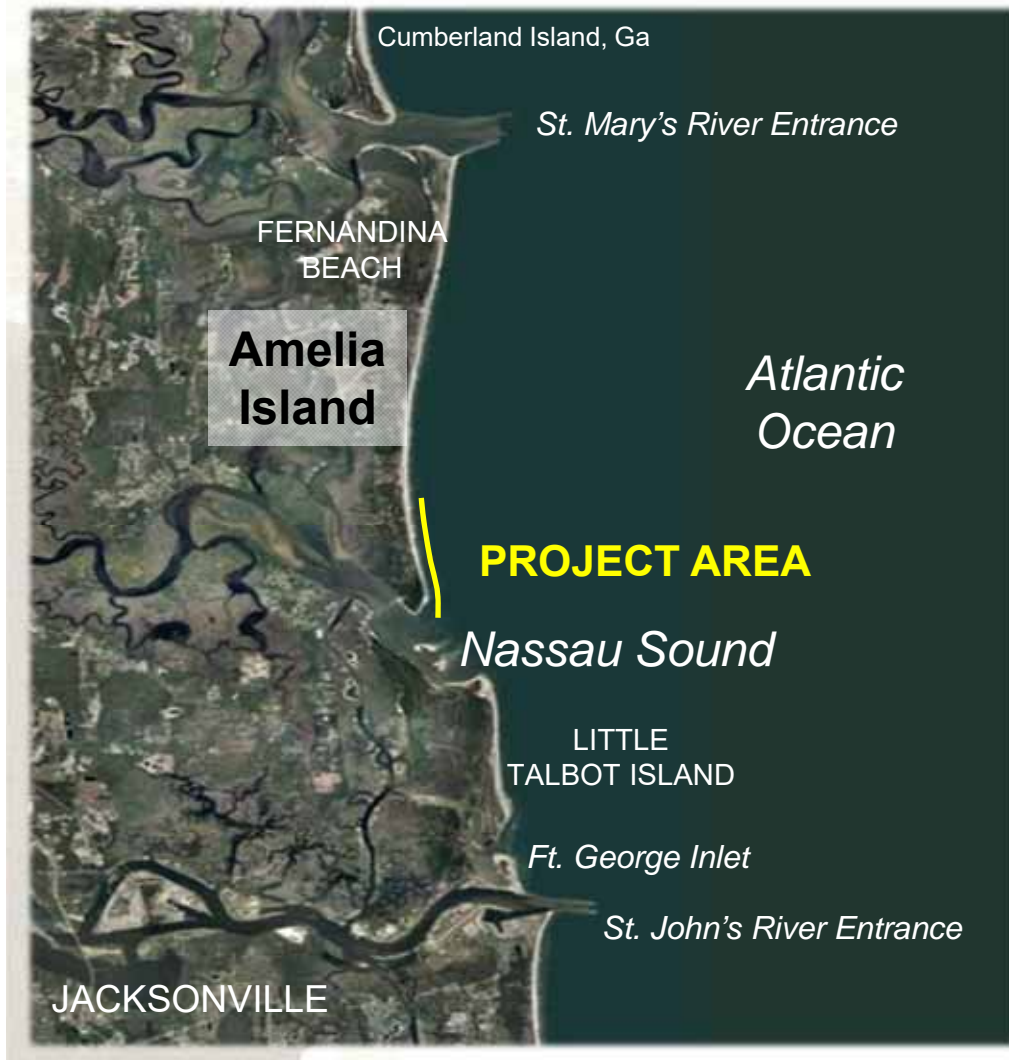
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06 November 2018 1

# Topics

- Project History
- Permitting for future work
- Borrow area development
  - Nassau Sound shoals
  - Delft3D modeling





## Regional Setting

- **Amelia Island:**
  - 13 miles
- **Project: 3.6 miles**
  - SAISS MSBU: 3.0 miles
  - State Park: 0.6 miles
- **R-59 to R-79**
  - Nassau County, FL

# Historical Perspective



# Beach Nourishment – 1994, 2002, and 2011



1994



2011



1994



2011



2011



# Amelia Island State Park – 2001



# Structural Stabilization – 2004 Amelia Island State Park



*Structures and fill  
have reclaimed about  
65 acres of dry habitat  
in the Park*



## Currently... at year 25



- **Survived Matthew & Irma**
- **Currently at Year 8 in cycle**
- **Time to re-permit...**

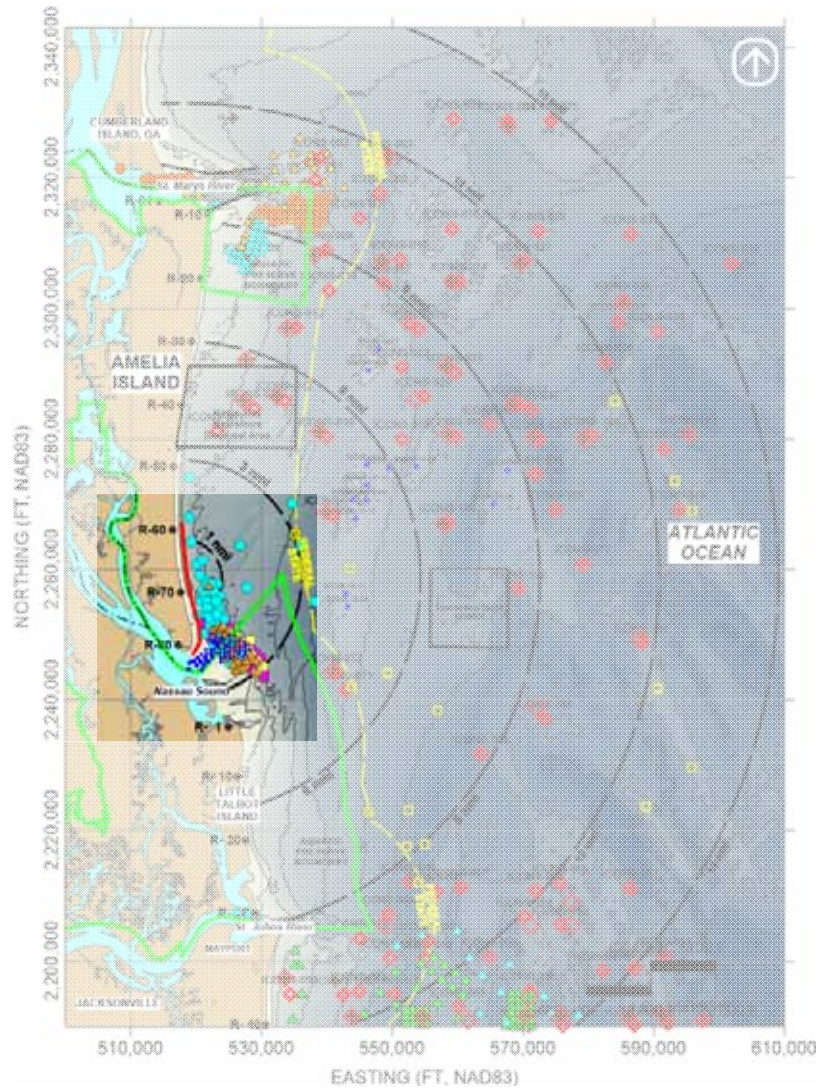




# Searching for Sand

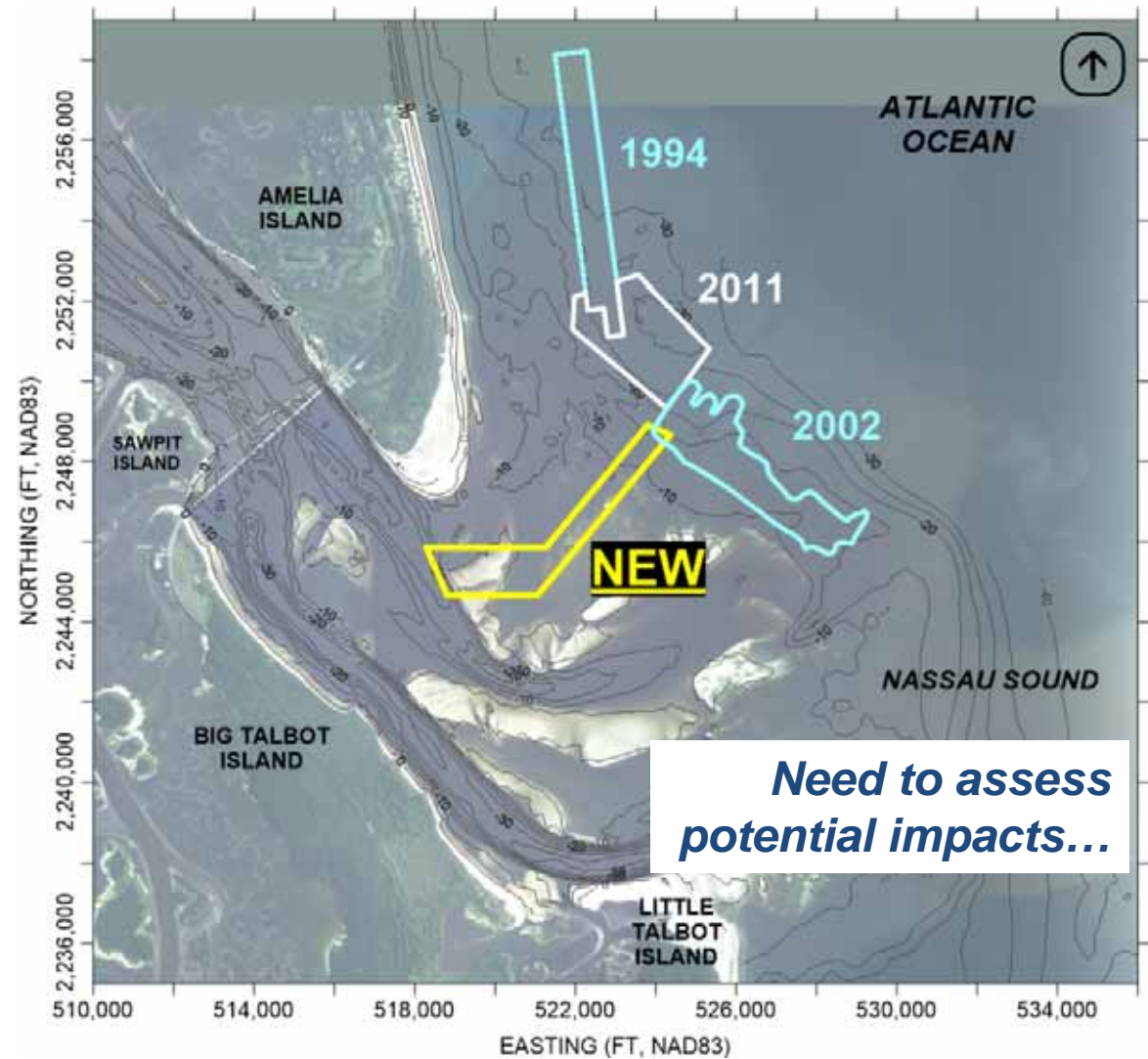
and searching...

and searching...

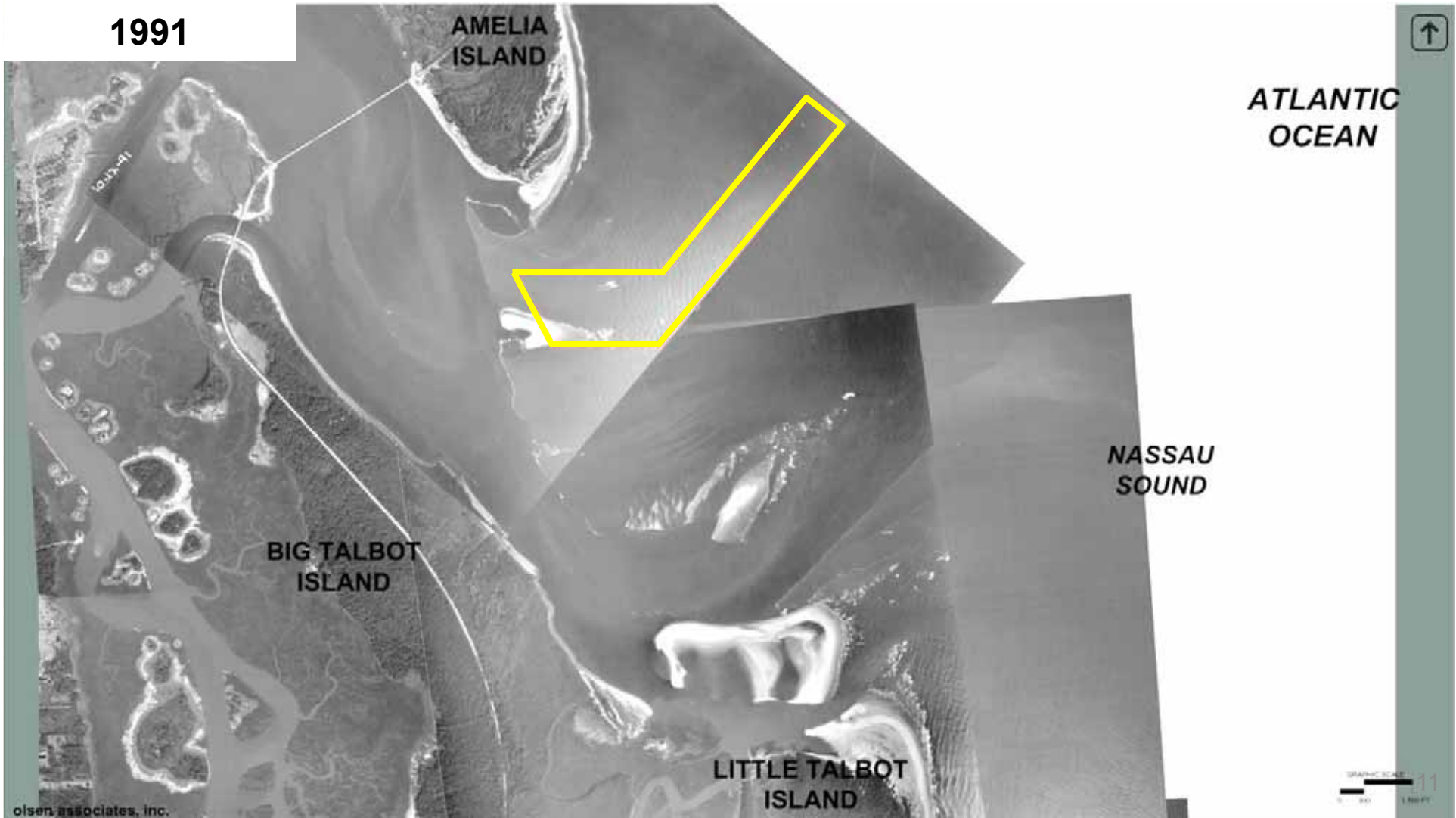


# Borrow Area Development: Nassau Sound

- Create new tidal channel
- Provide needed sand
- Create a reusable source
- Minimize benthic impact
- Potentially relieve stress on some inlet shoals



1991



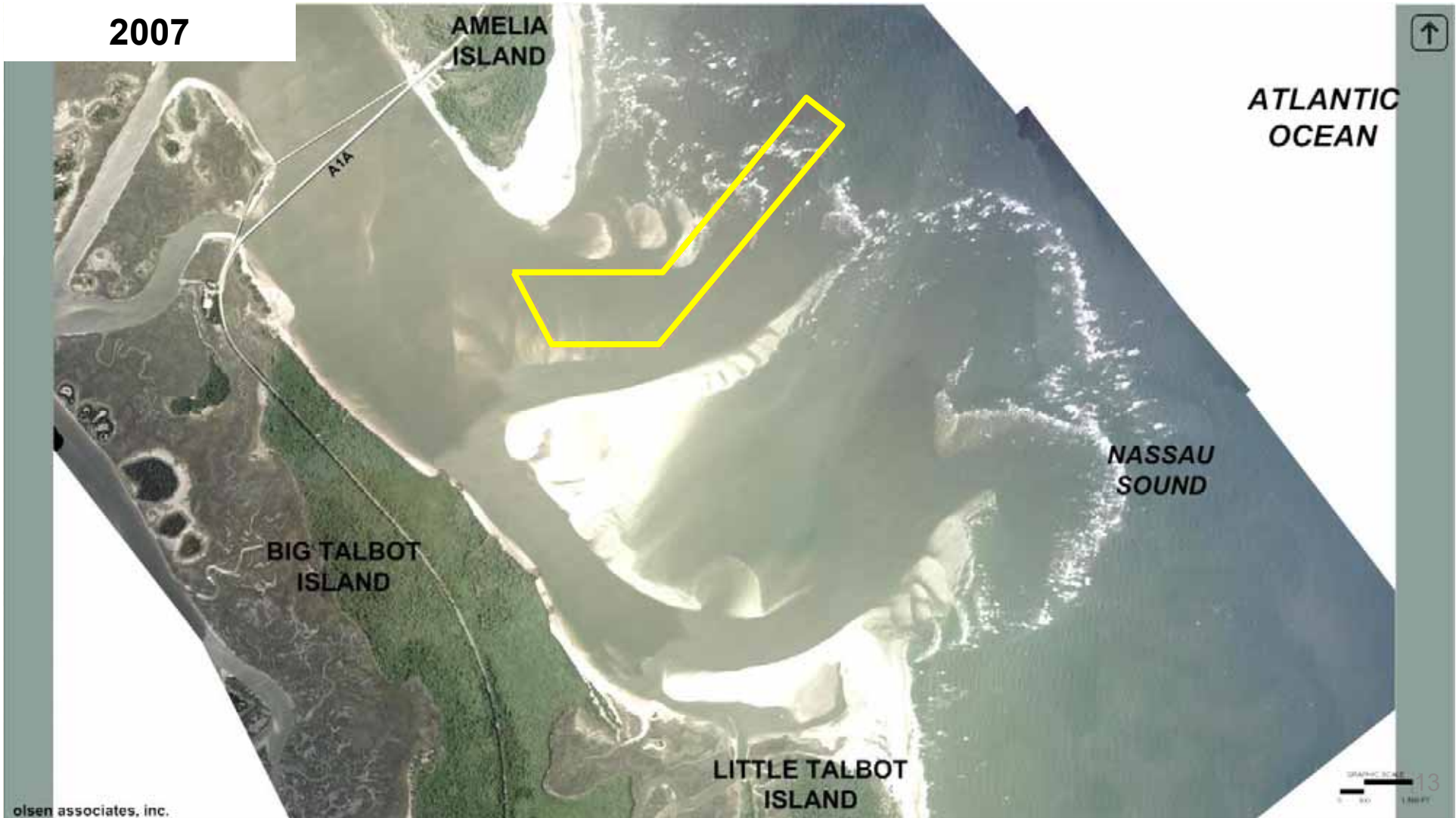
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2001

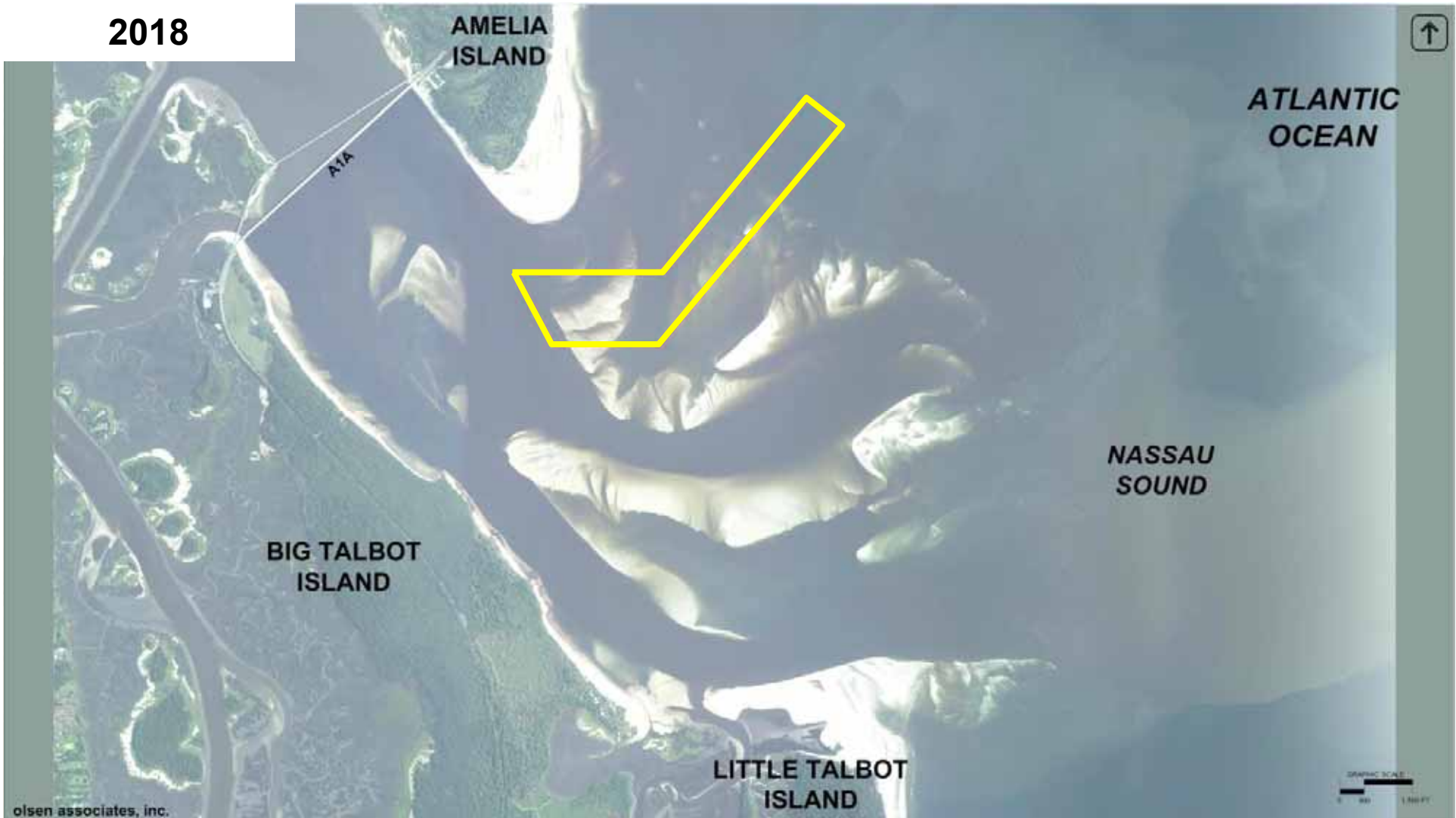


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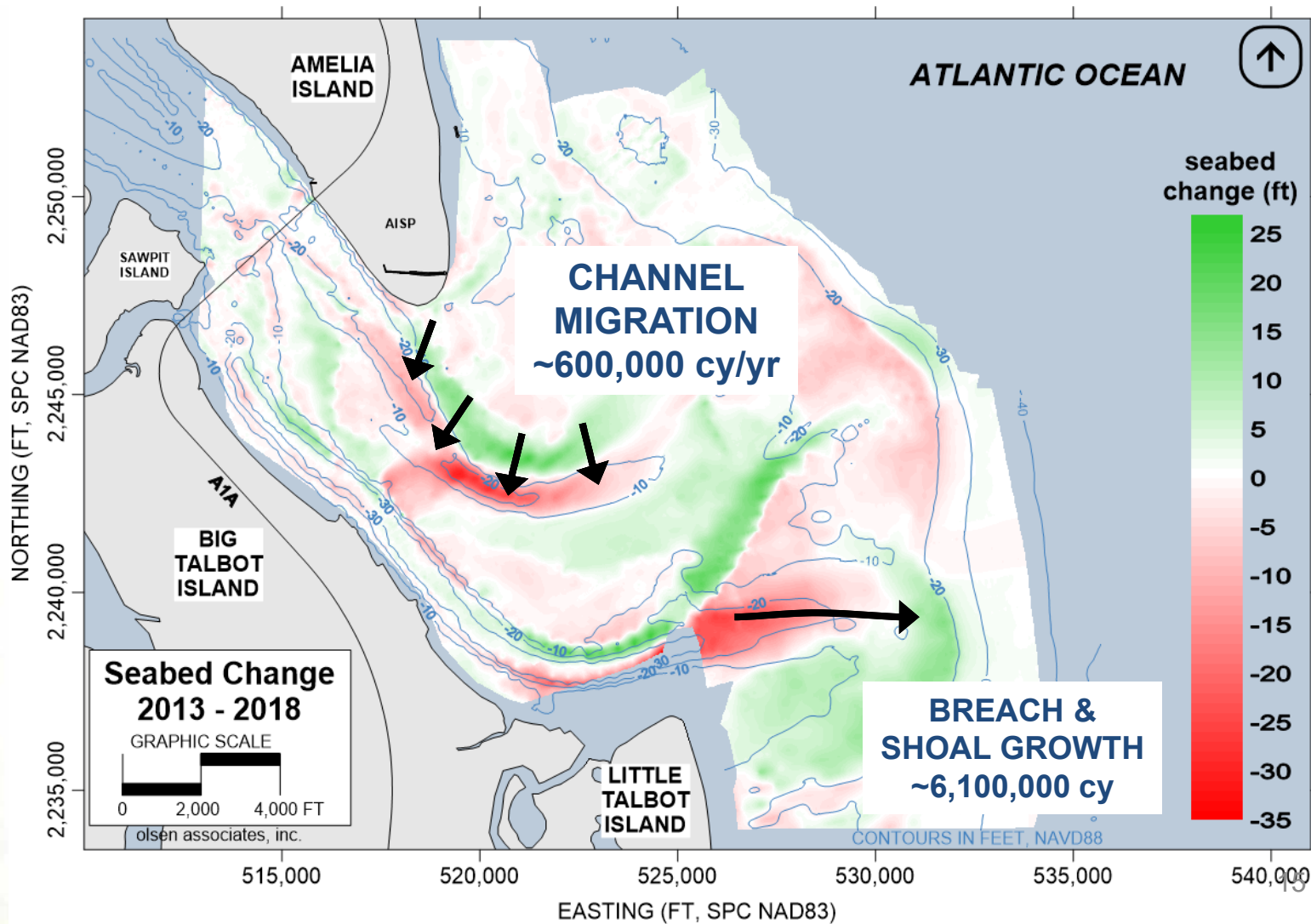
2007



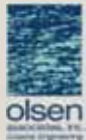
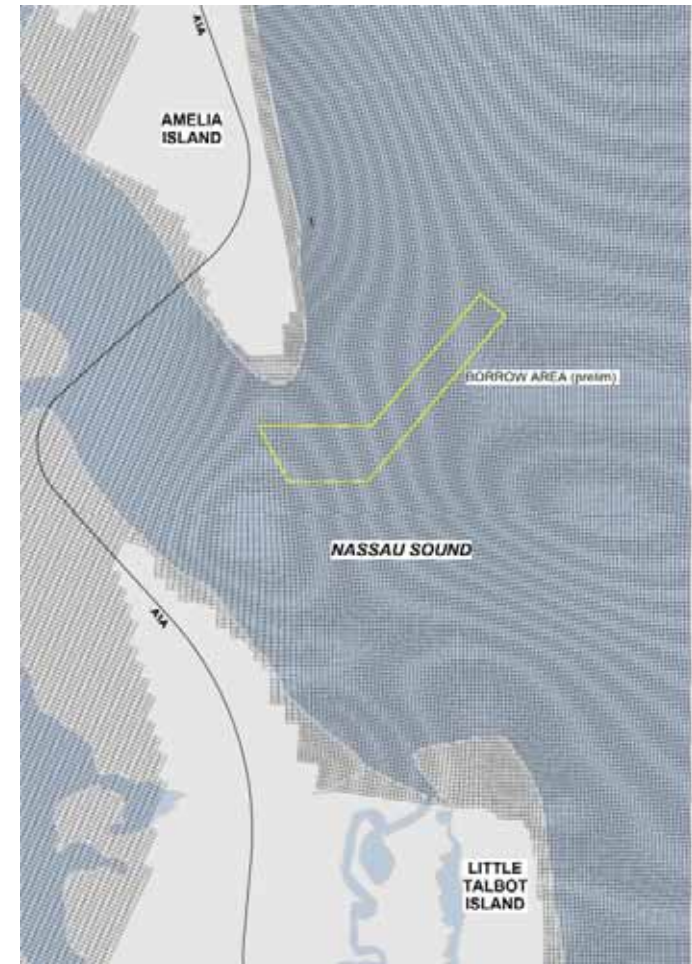
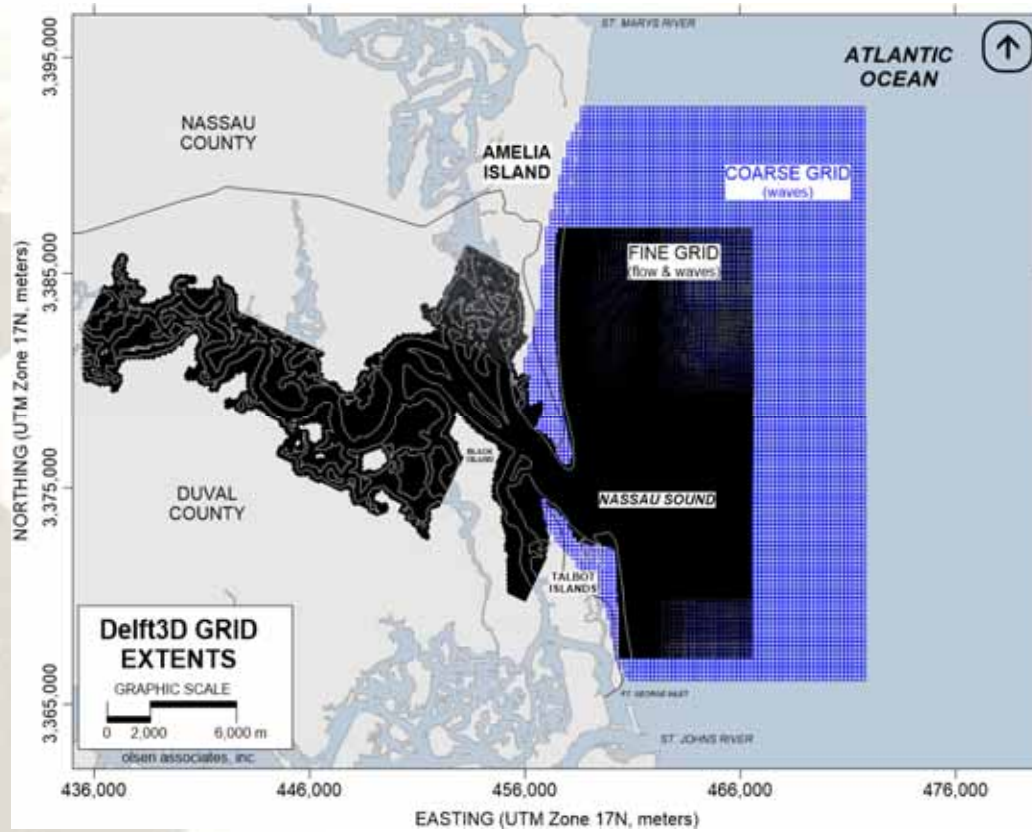
2018



# Recent Seabed Changes 2013 - 2018

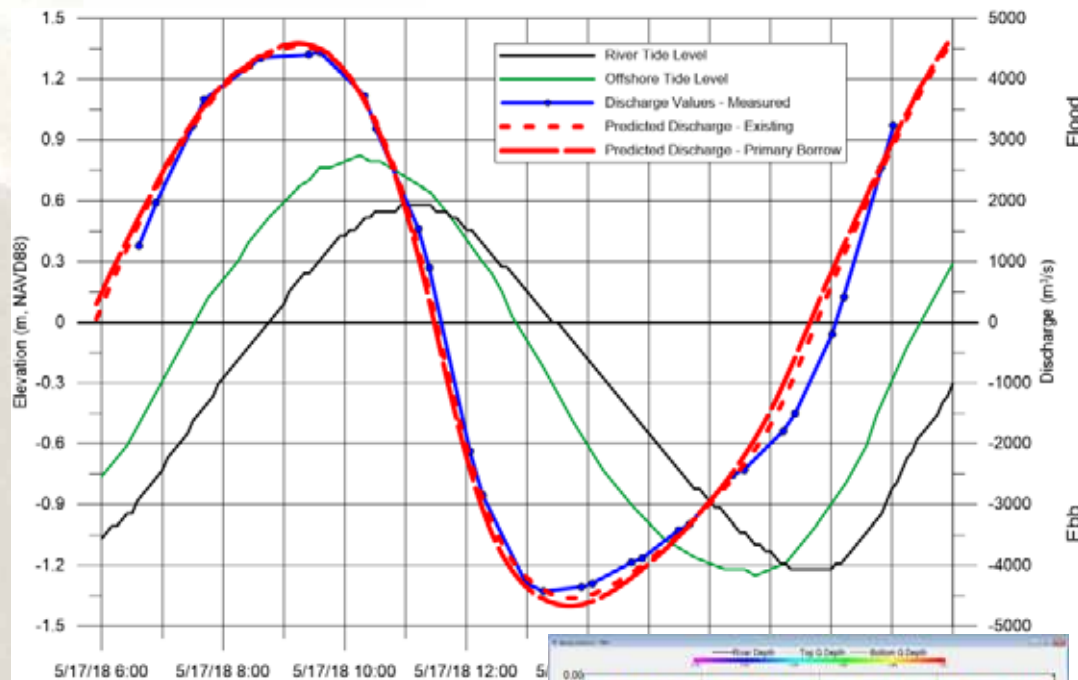


# Numerical Modeling (Delft3D)

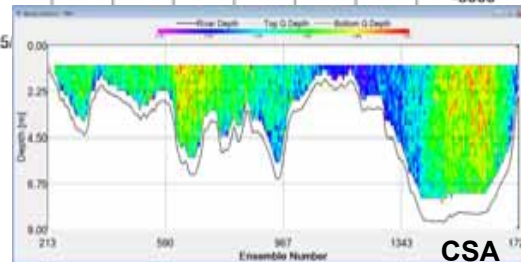




# Field Measurements for Calibration

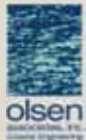
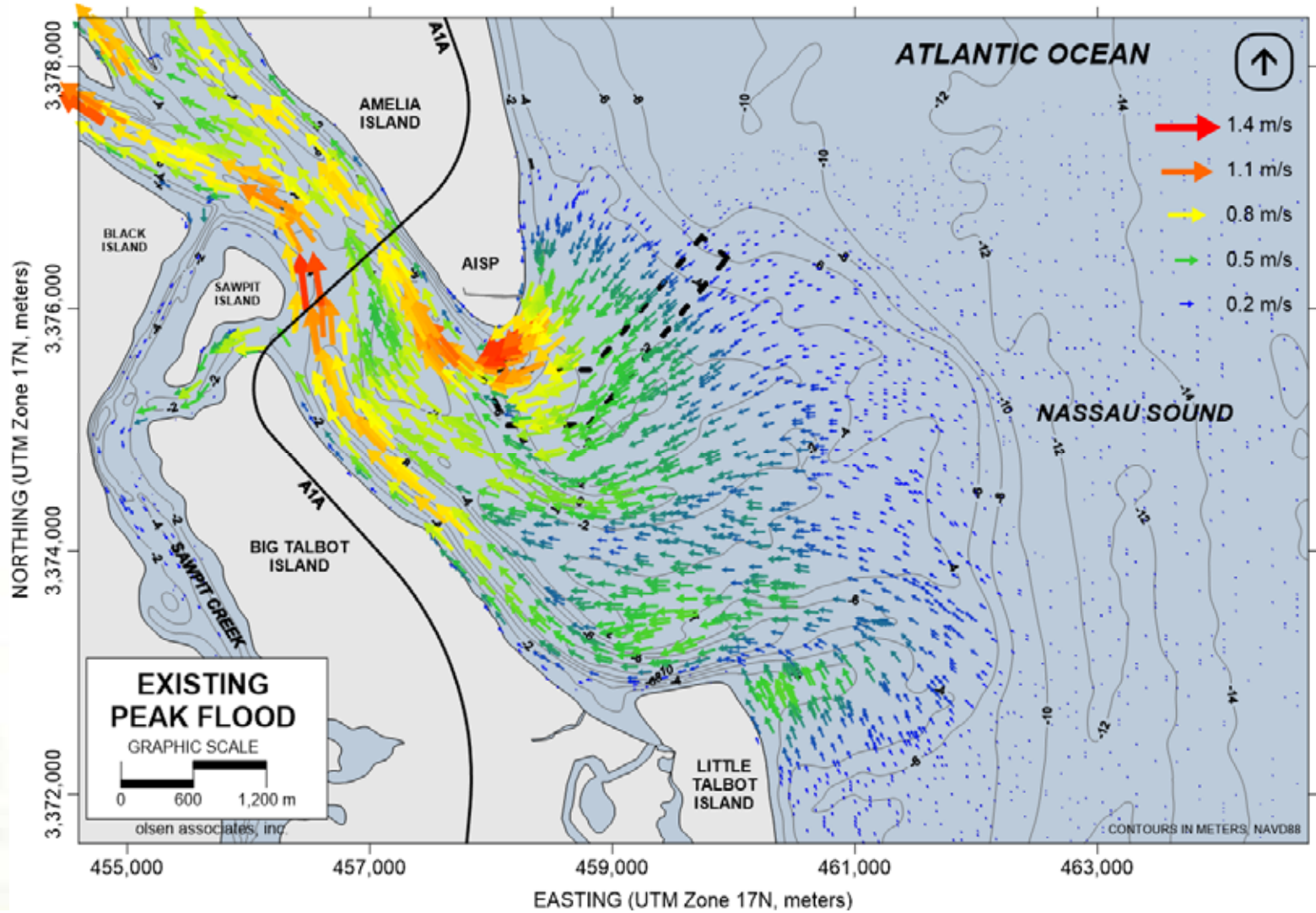


- Water surface elevations
  - Tide gages (3 locations)
- Current measurements
  - Measured by ADCP
  - Discharge calculations
  - Tidal Prism
    - 16.7 billion gallons in (flood)
- Offshore wave measurements



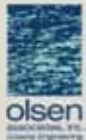
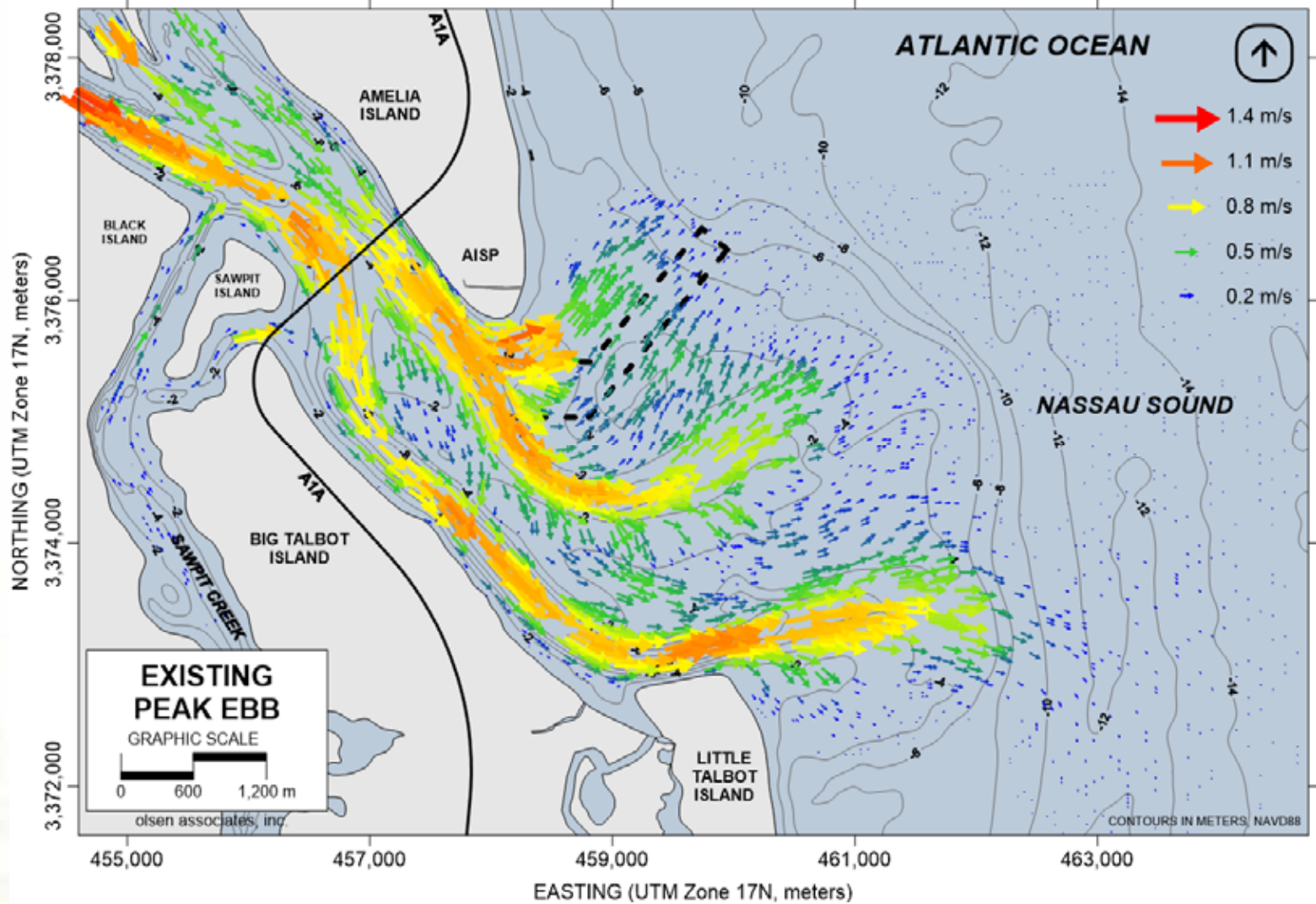
# Tidal Flows

incoming tide:  
pre-dredge



# Tidal Flows

outgoing tide:  
pre-dredge

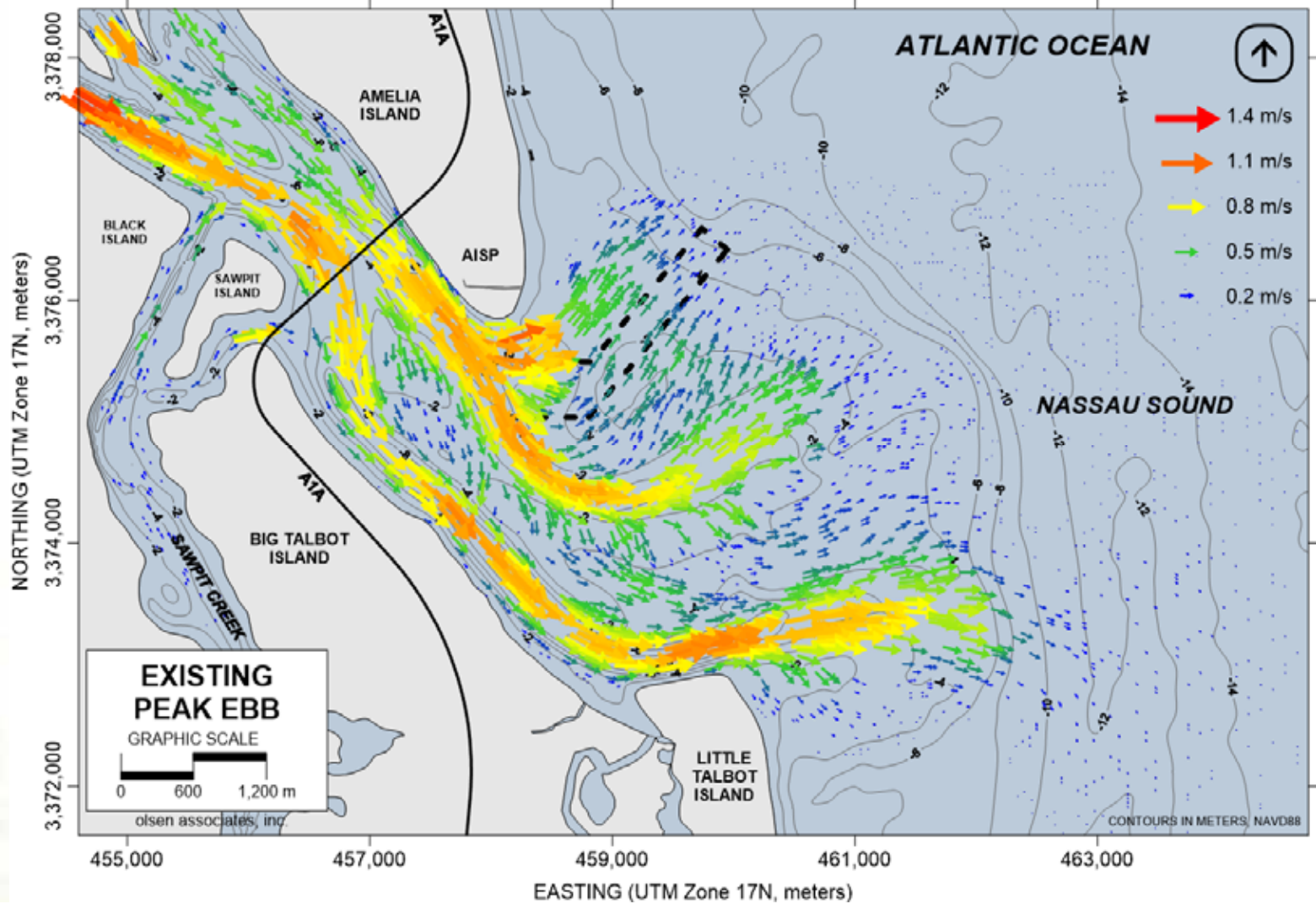


# Field Observation (Nov. 6<sup>th</sup>)



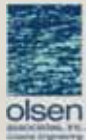
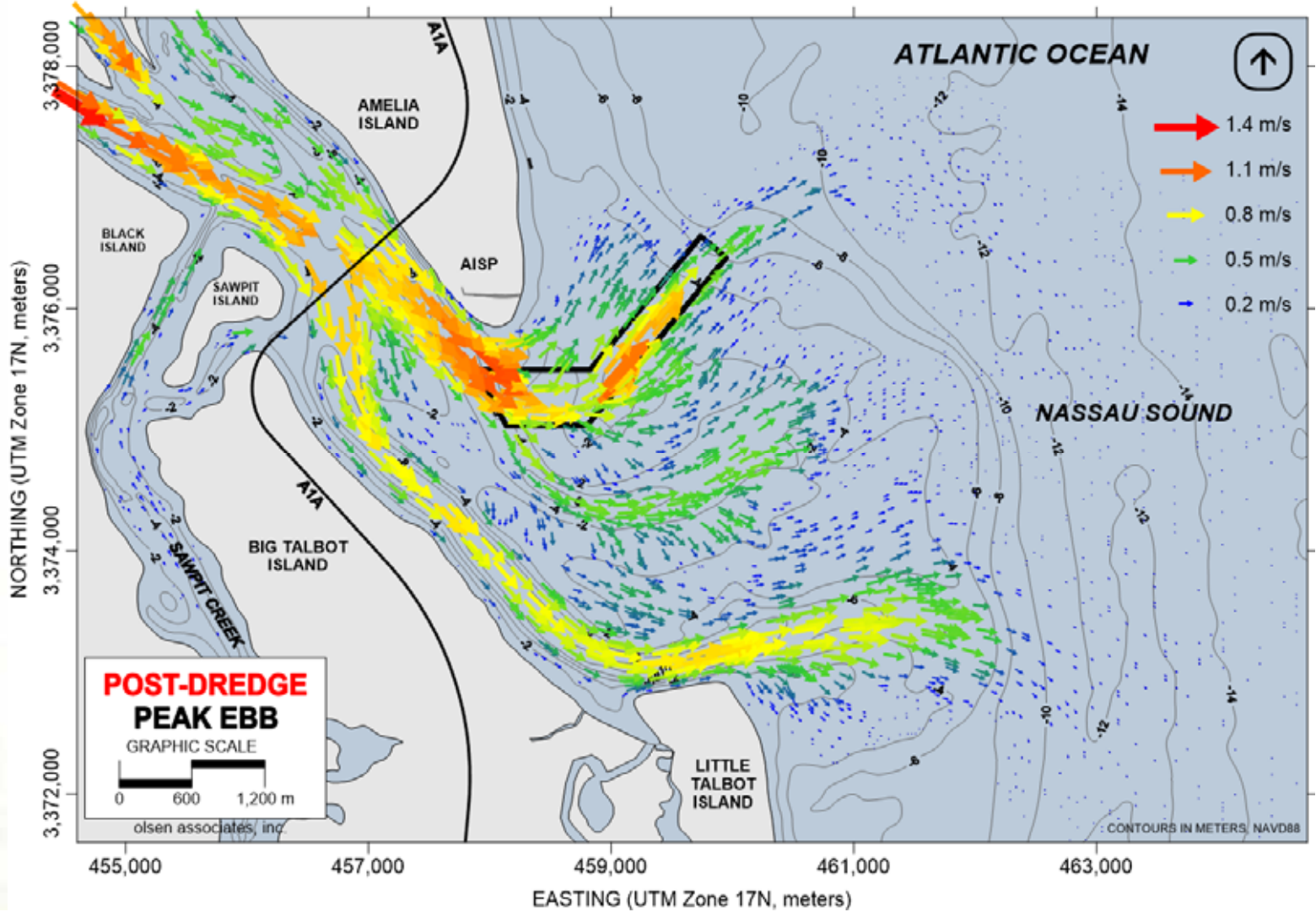
# Tidal Flows

outgoing tide:  
pre-dredge

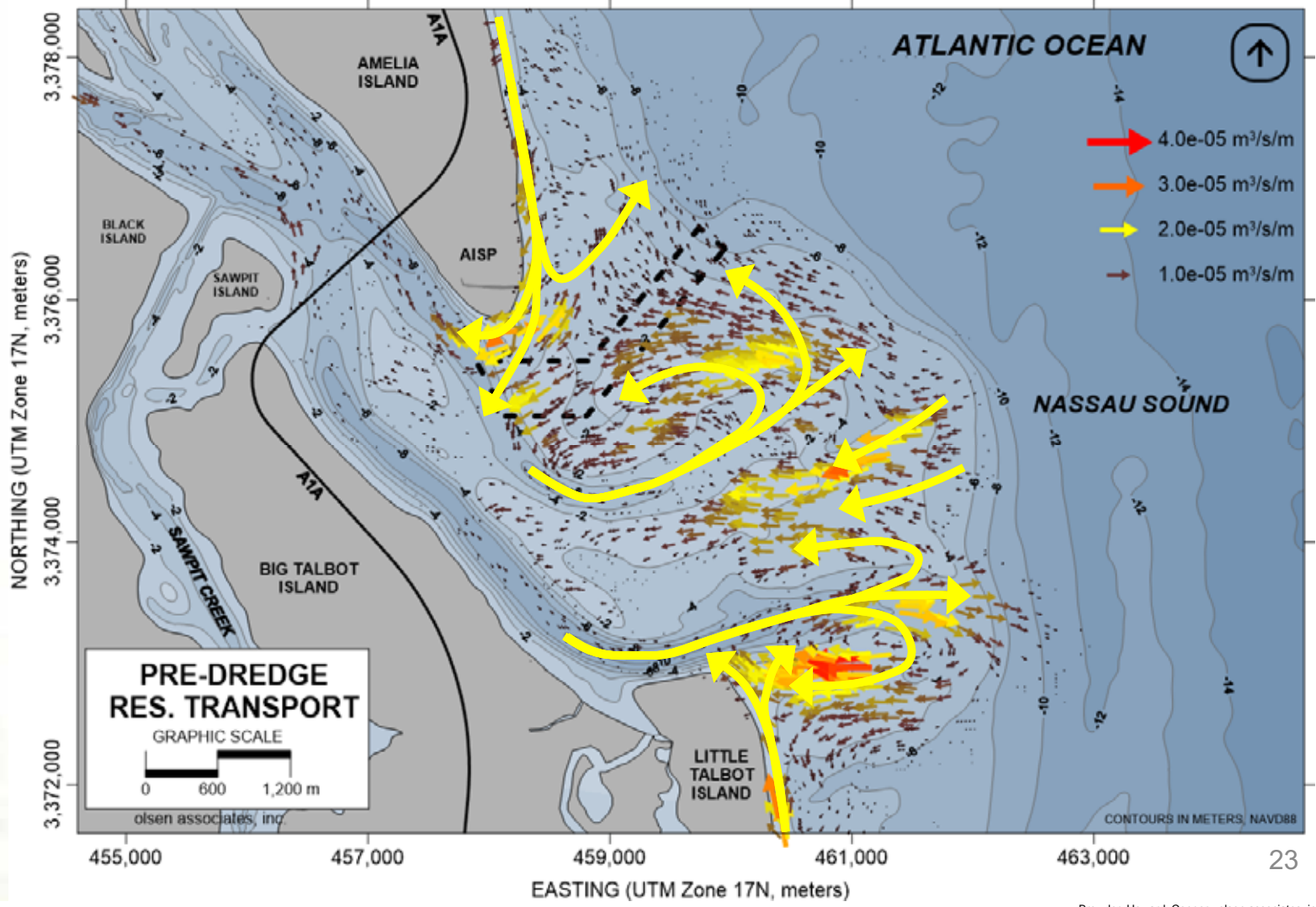


# Initial Tidal Flows

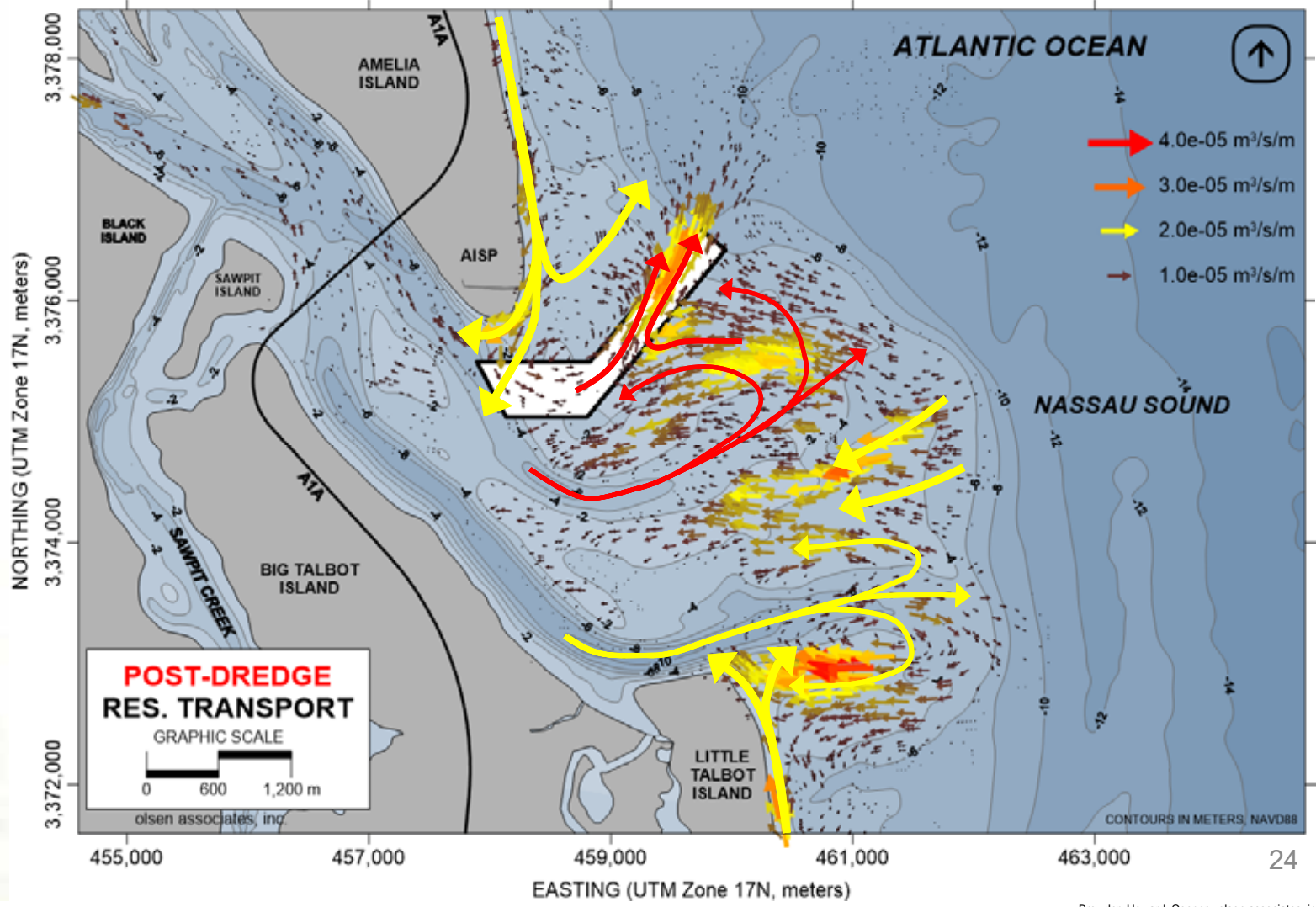
outgoing tide:  
post-dredge



# Predicted Residual Sediment Transport (pre-dredge)



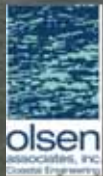
# Initial Predicted Residual Sediment Transport (post-dredge)





# South Amelia Island

- 25 years of shore protection
- Working toward the next 25
- Developing a renewable, sustainable borrow source



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