



FSBPA Tech. Conference

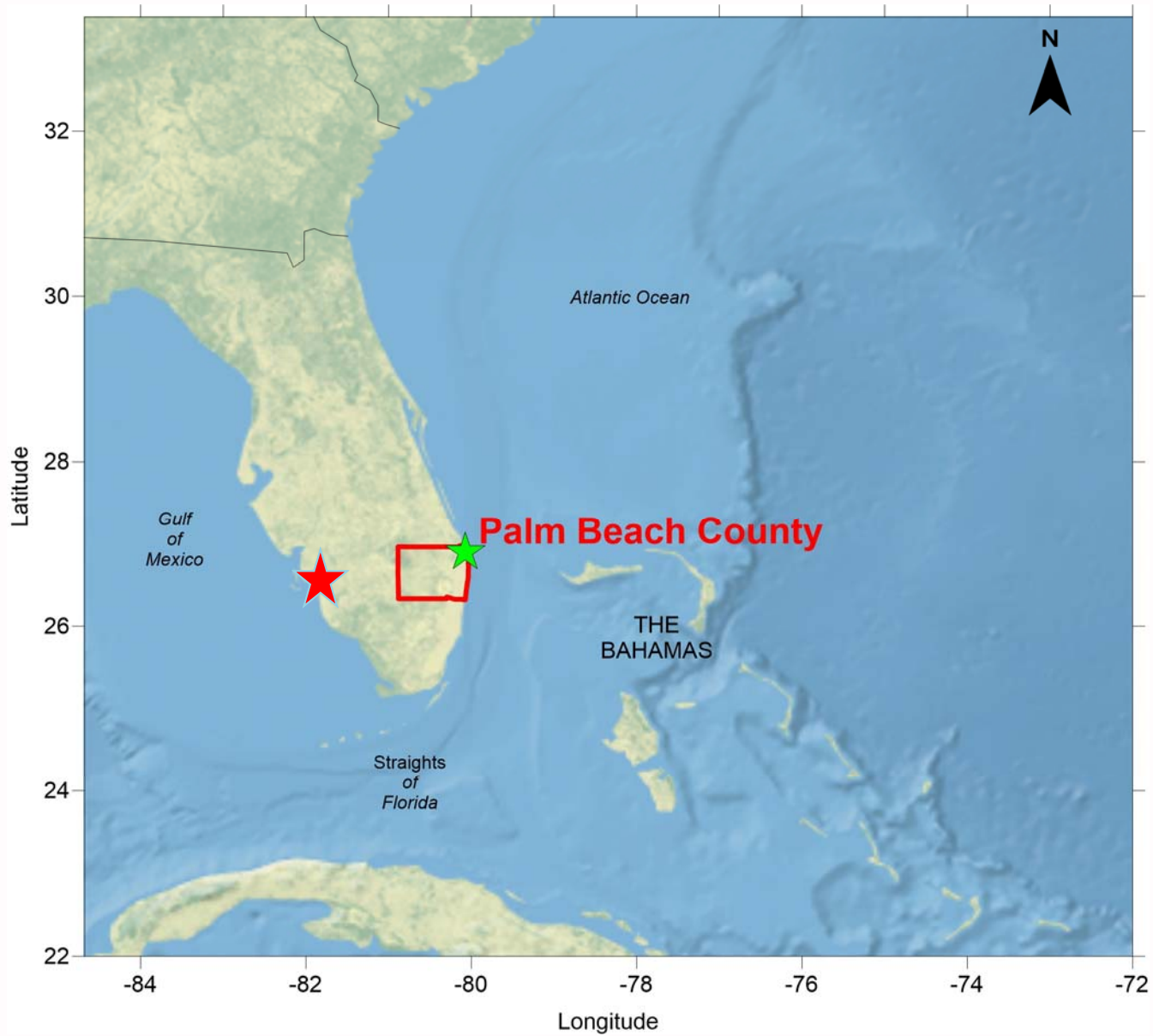


Navigating Borrow Area Challenges in Palm Beach County

**Steven Howard, P.E., D.CE (OAI)
Reubin Bishop (PBC ERM)
Andy Studt (PBC ERM)**

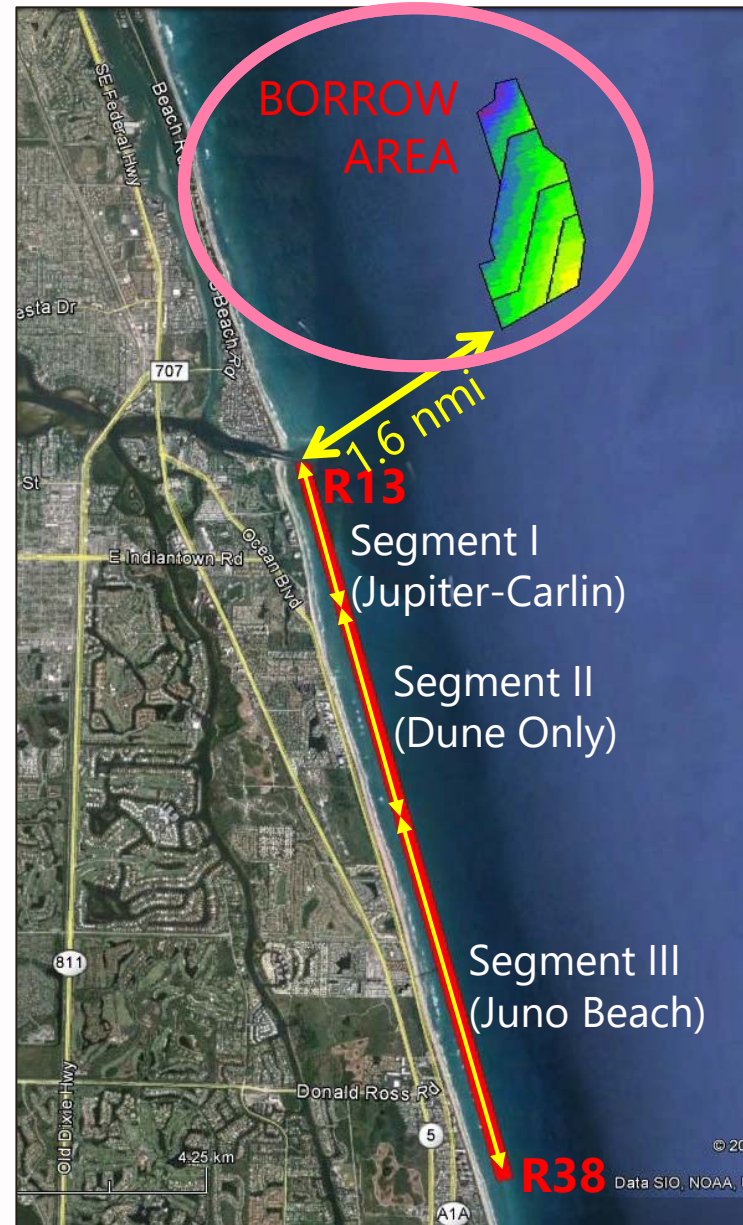
February 2, 2023

Palm Beach County, Florida

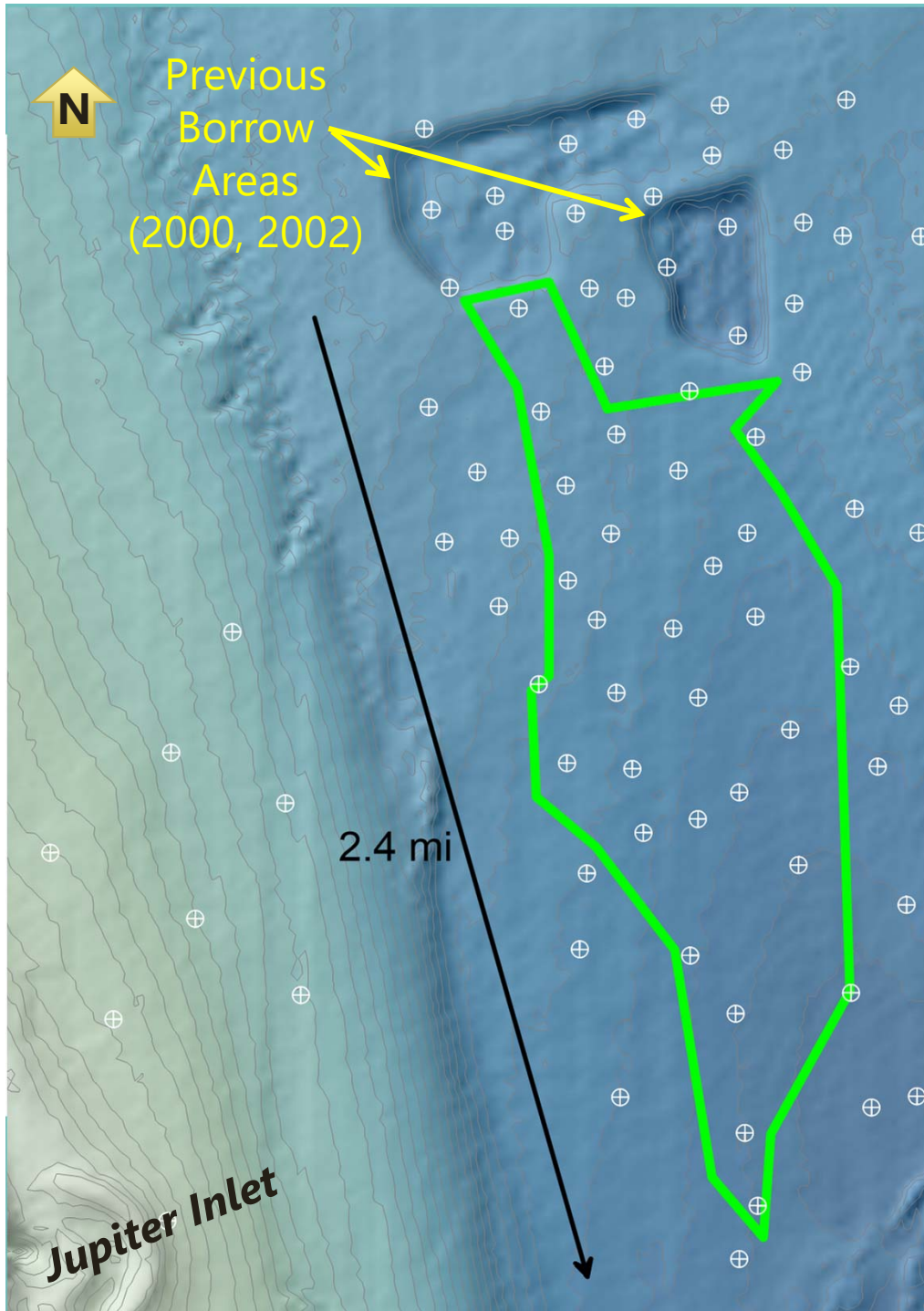


North County Comprehensive Shore Protection Project

- North County Comprehensive Shore Protection Project (NCCSPP)
- NCCSPP Combines Jupiter-Carlin and Juno Beach Projects to facilitate regional management as a contiguous project
- Five construction events to date:
 - 3 major renourishments ('19, '20, '21)
 - 2 dune enhancements ('20 & '22)



Offshore Borrow Search



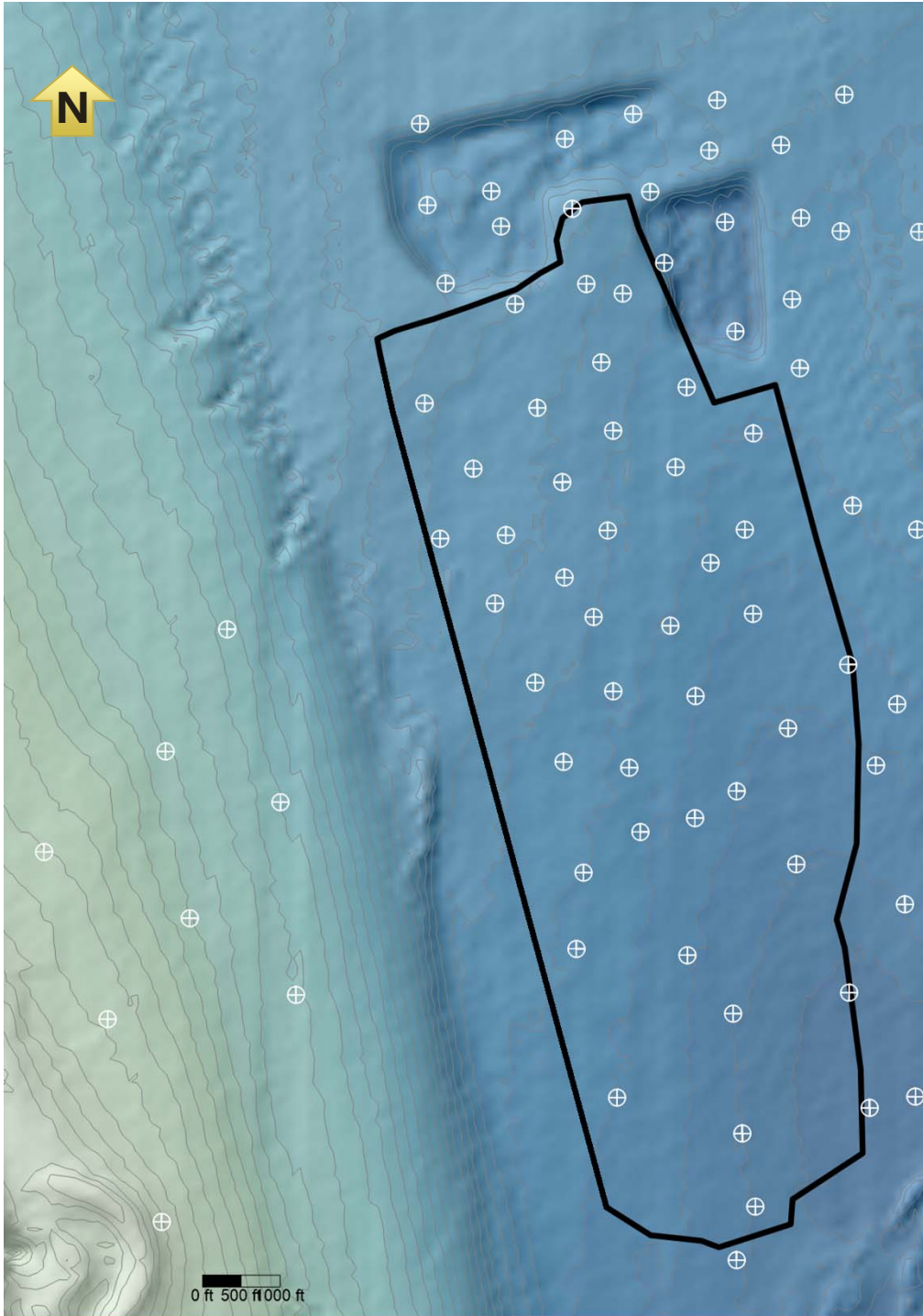
- Previously identified potential borrow area
- 1.6 nmi northeast of Jupiter Inlet
- 703 acres
- Only limited data from 1995-2000



Offshore Borrow Search

Expanded study area in 2015

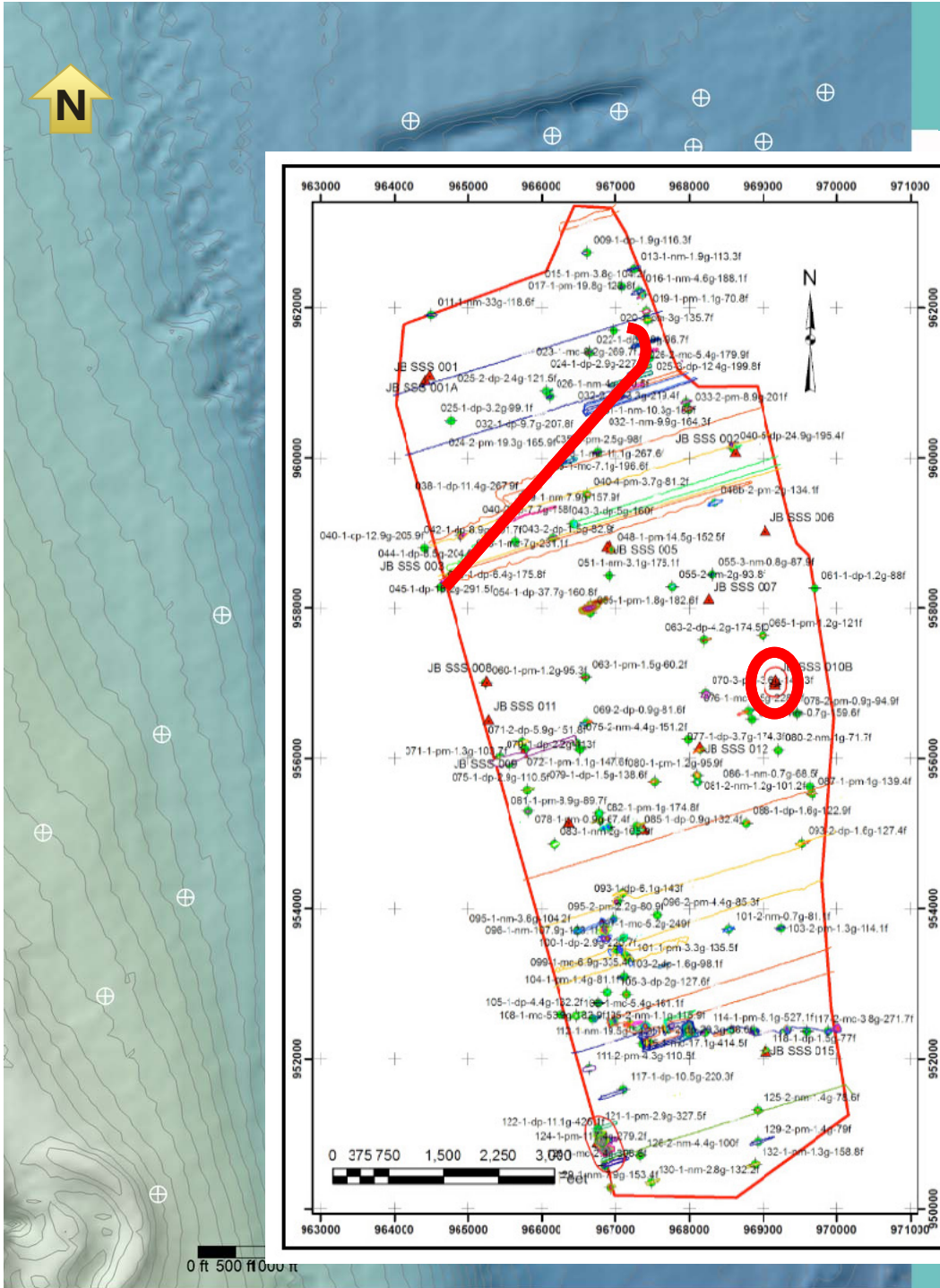
- Side-scan survey
- Sub-Bottom survey
- Magnetometer survey
- Cultural resource survey



Offshore Borrow Search

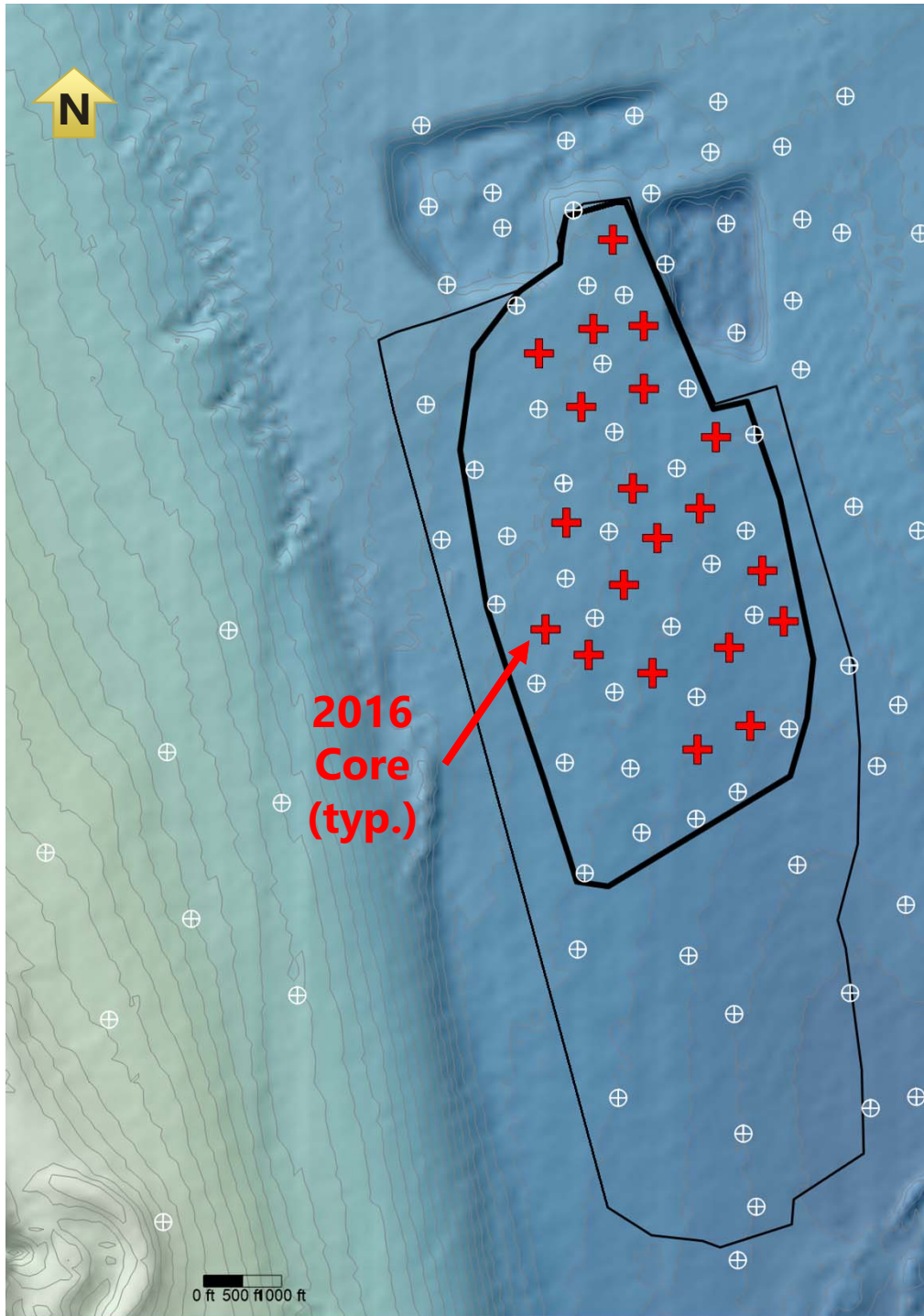
Expanded study area in 2015

- Side-scan survey
- Sub-Bottom survey
- Magnetometer survey
- Cultural resource survey
- Two major voidance areas



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Offshore Borrow Search



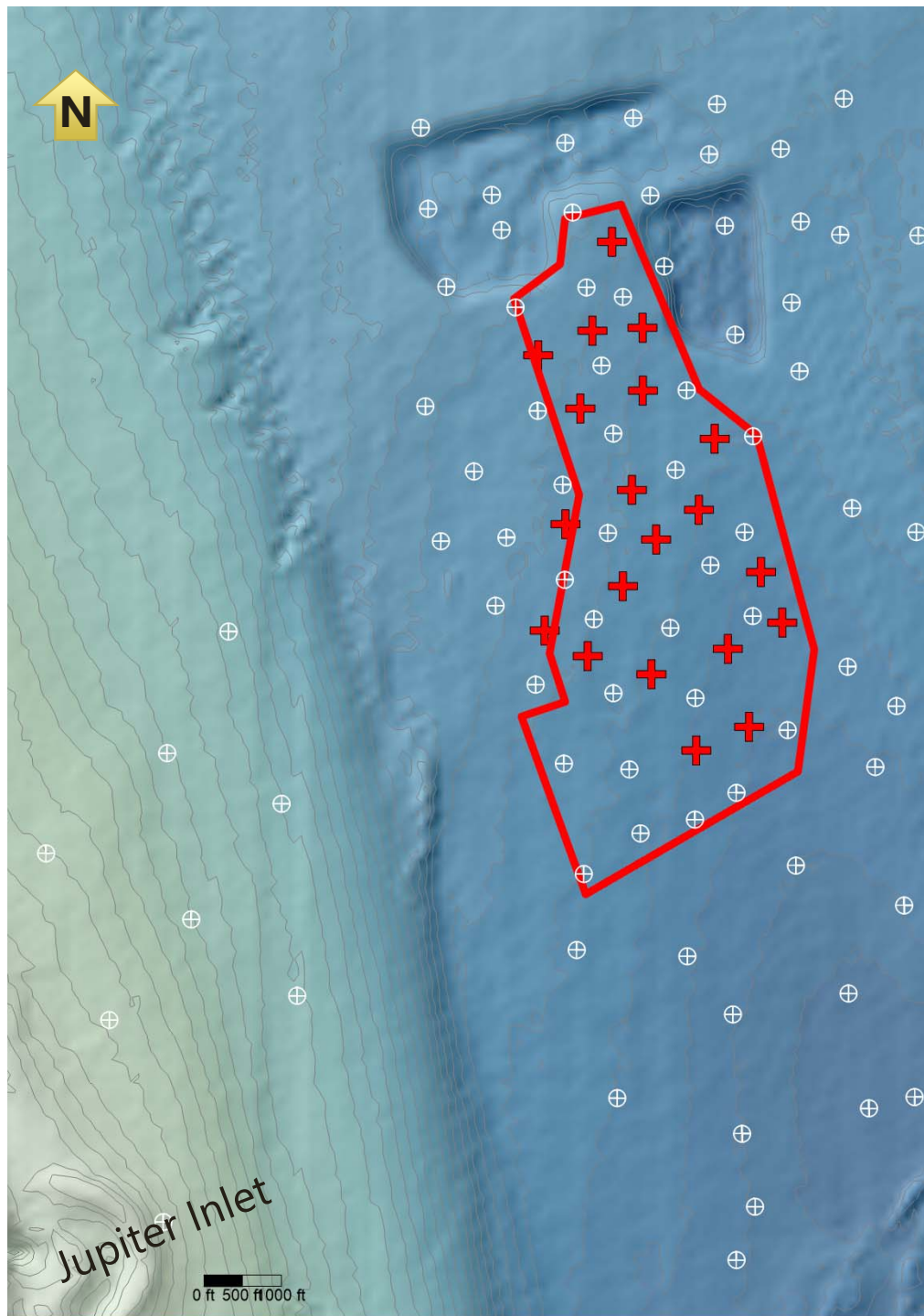
Area refined per remote sensing data

- More vibracores collected in 2016



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Proposed Offshore Borrow Area



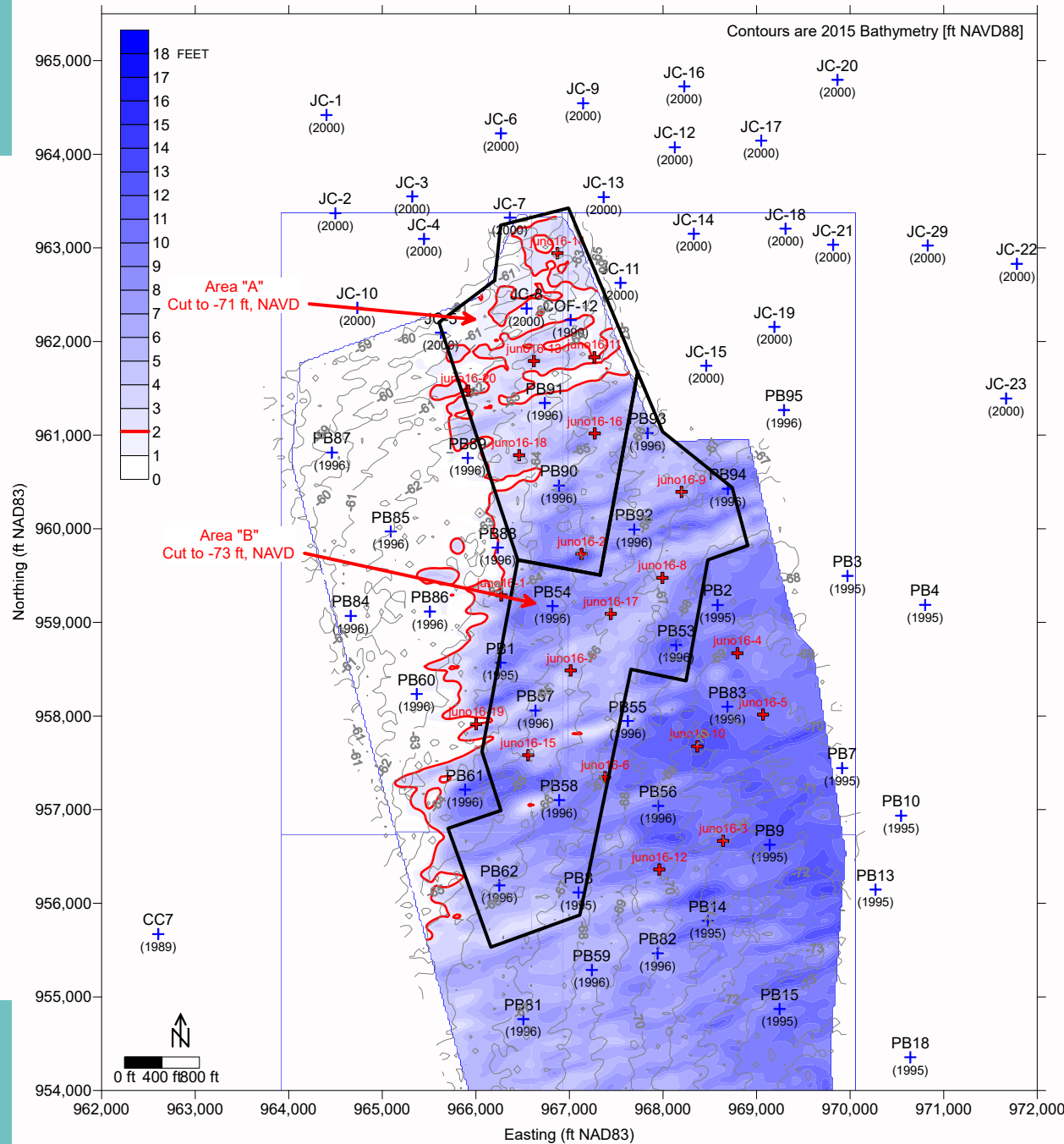
Final Footprint:

- 1.6 nmi northeast of Jupiter Inlet
- Spans 477 acres
- Ambient depth ranges 60-70 ft
- 1,300+ ft from nearest reef



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Borrow Area Development

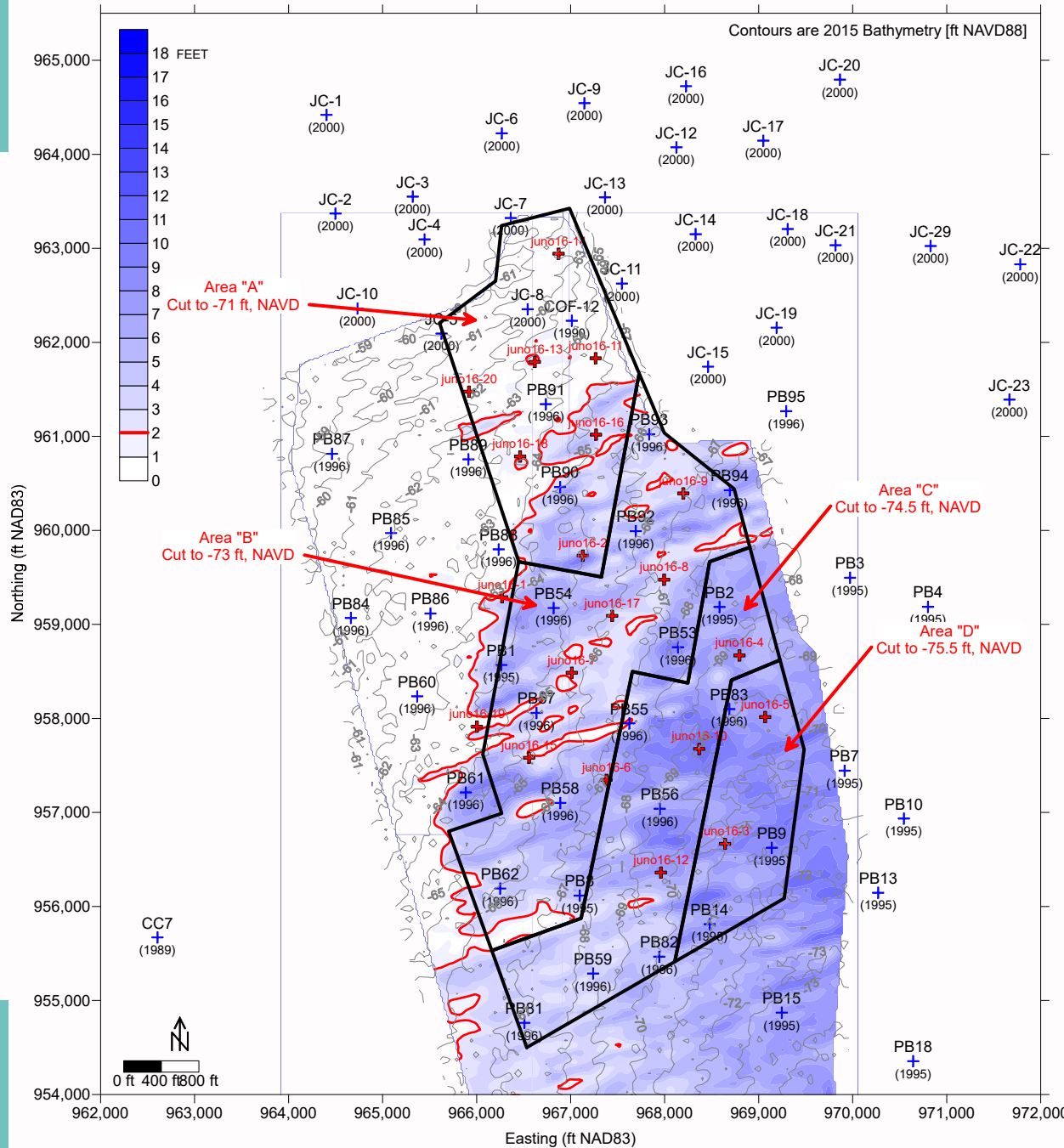


Isopach Thickness Between Primary Reflector and -73 ft



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Borrow Area Development

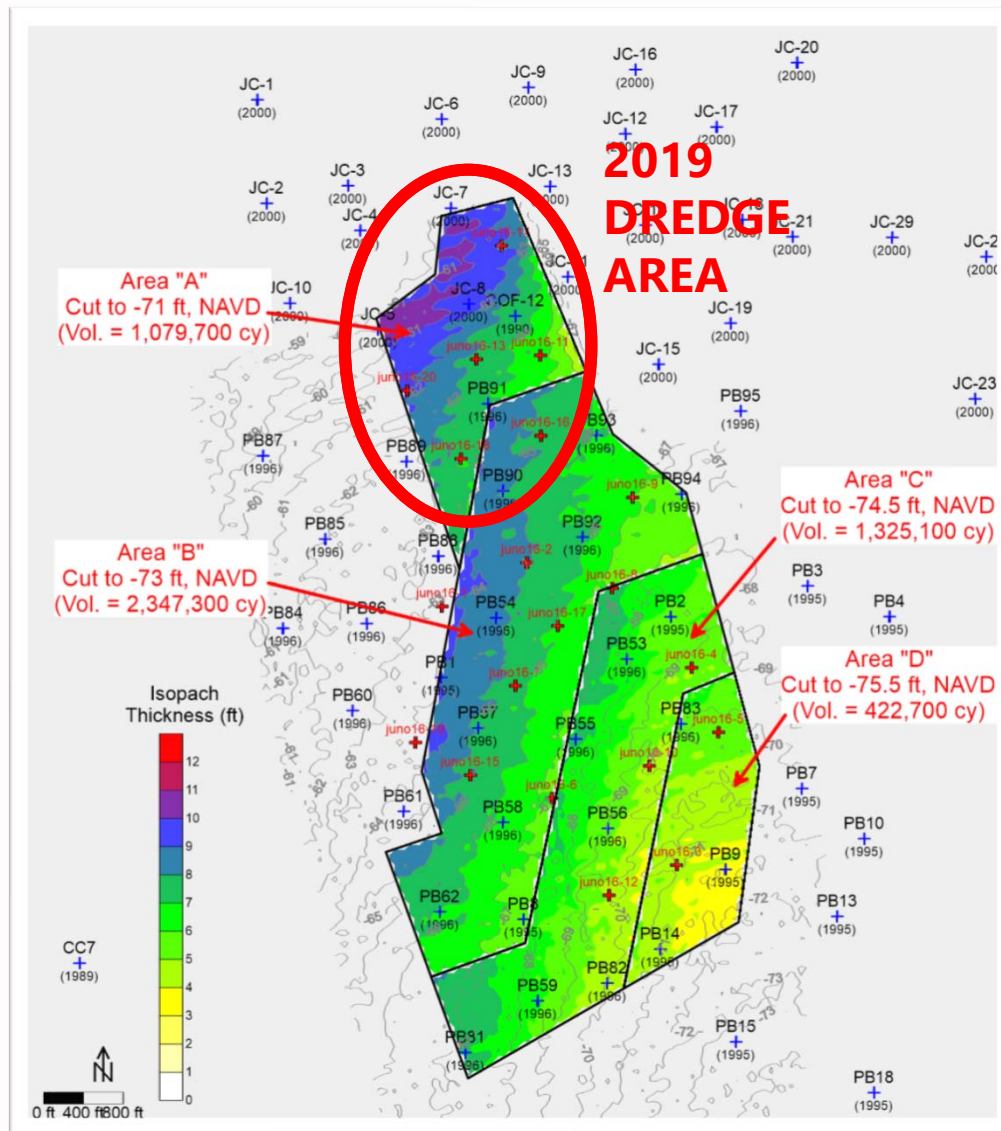


Isopach Thickness Between Primary Reflector and -75.5 ft



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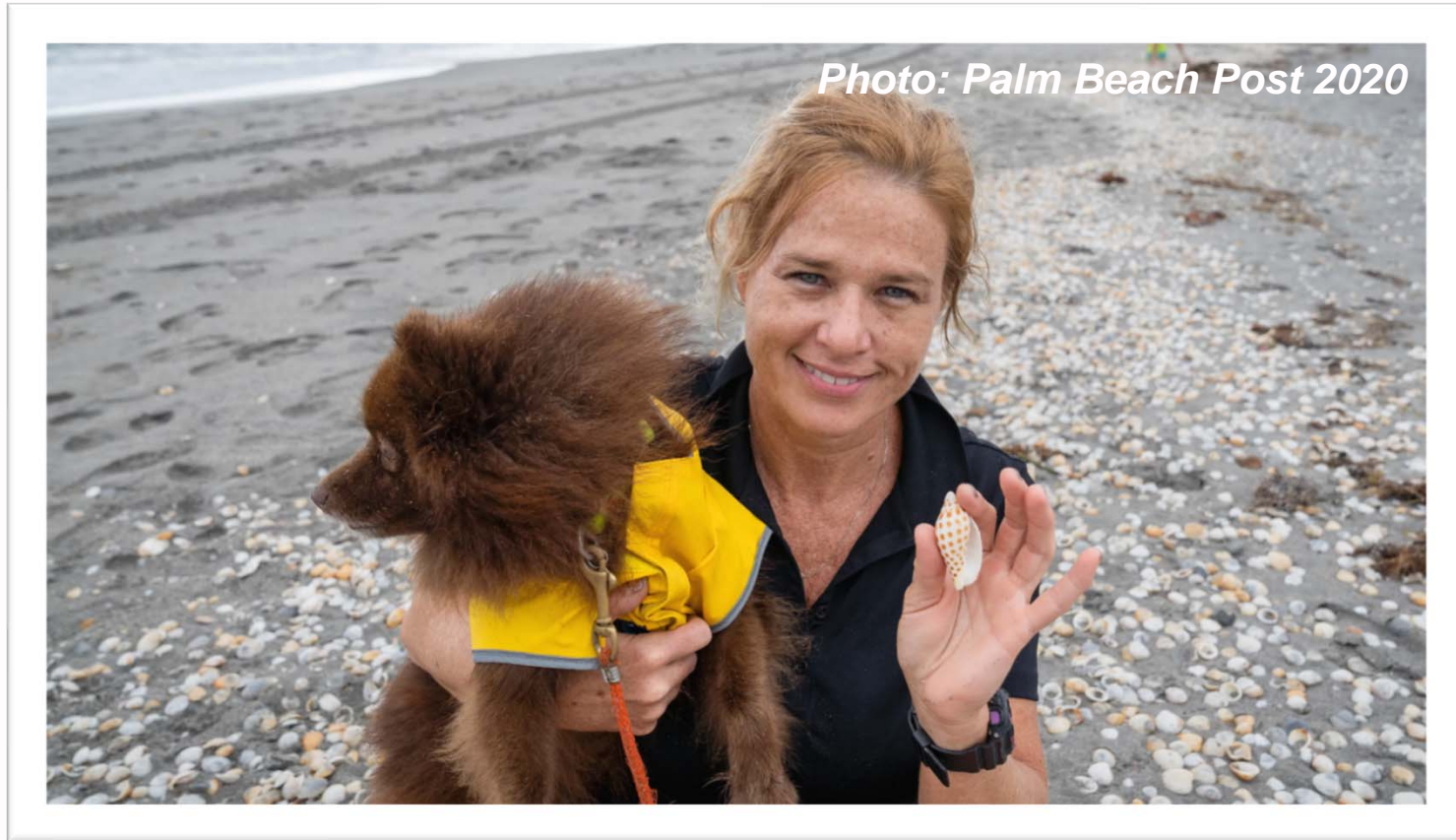
North County SPP



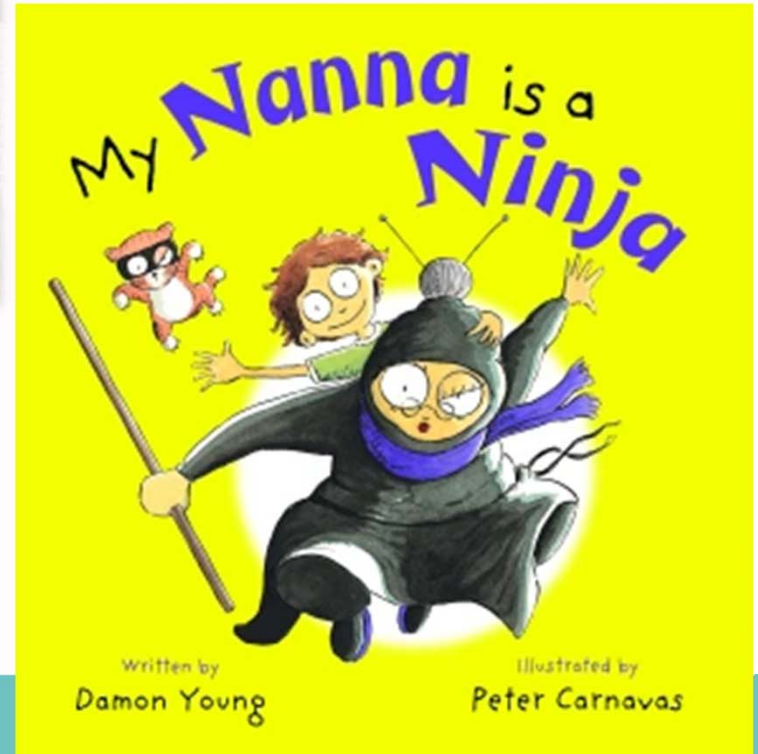
- Borrow Area Design
 - Four subdivisions
 - Cuts -71 to -75.5 ft, NAVD88
 - Capacity for multiple renourishments
- Hydraulic screening recommended
- Segment I partially constructed Winter 2019 (0.5Mcy)



Everyone loves seashells!!!



Everyone loves seashells!!!



Everyone loves seashells!!!



This is a Temporary public pick pile as a result of screening beach appropriate sand during beach renourishment activities. Pick shells at your own risk, use caution. Take only a few shells each day so others can enjoy. Be courteous. 

“This is a Temporary public pick pile as a result of screening beach appropriate sand during beach renourishment activities

Pick shell at your own risk, use caution. Take only a few shells each day so others can enjoy. Be courteous.”

*Thank you,
PBC Parks & PBC ERM*

Everyone loves seashells???

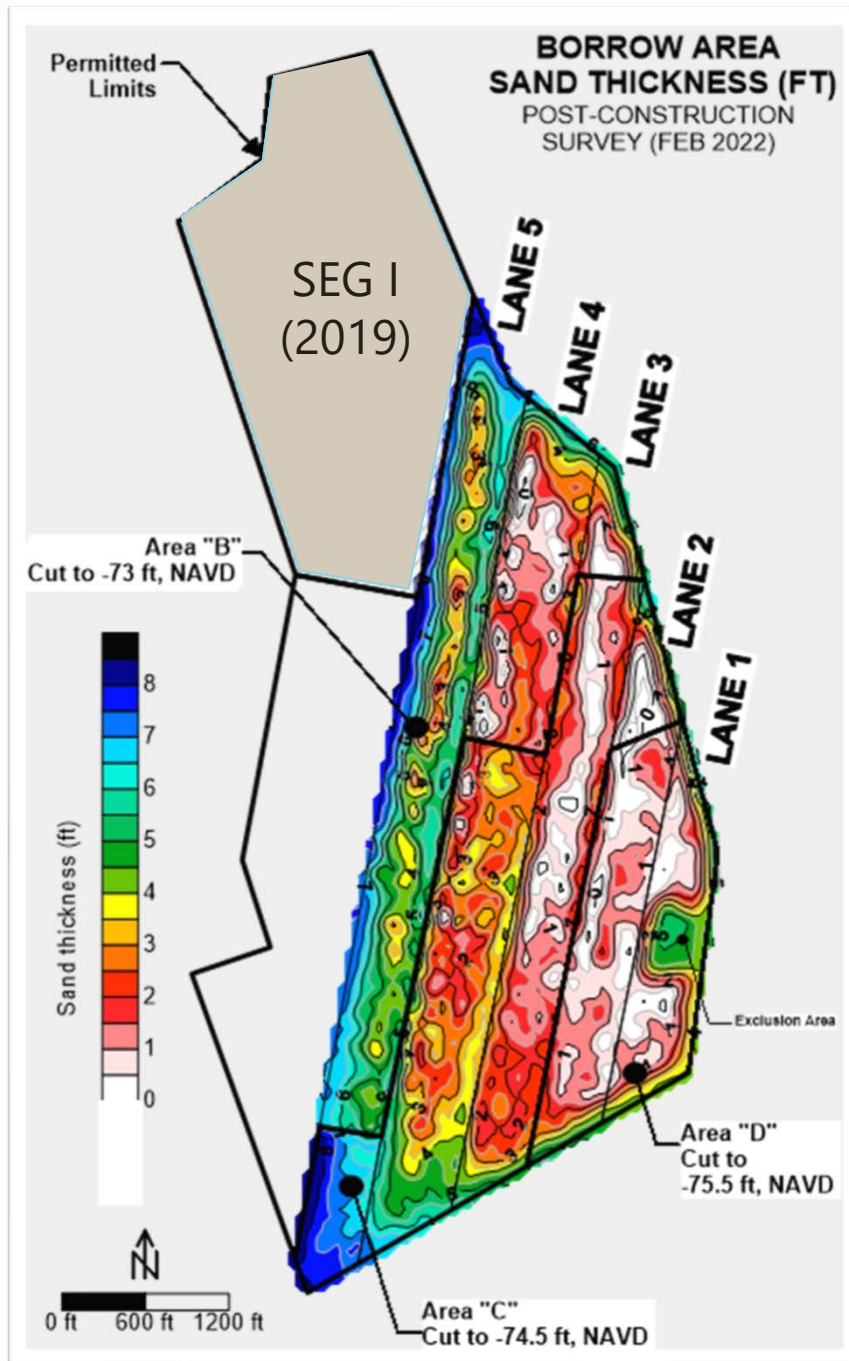


Photo: PBC ERM



Mechanical screens
used in 2019 (Seg. I)
quickly clogged.

Only ~220 cy
screened.



North County SPP

- OAI re-optimized remaining borrow area in 2020
 - Maximize quality
 - Maximize resource
- Contract required use of Fluidized Rock Screeners
- Two phased construction:
 - Segment III (2020)
 - Segment I (2021)

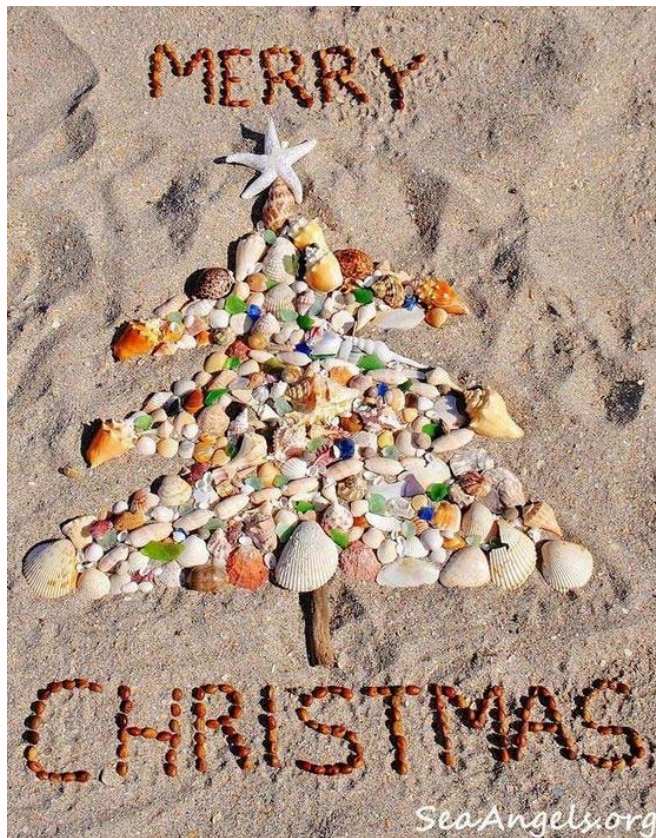
Technological Advances in Construction (Segment III, 2020)

EXTRACTOR 330: Fluidized Rock Systems

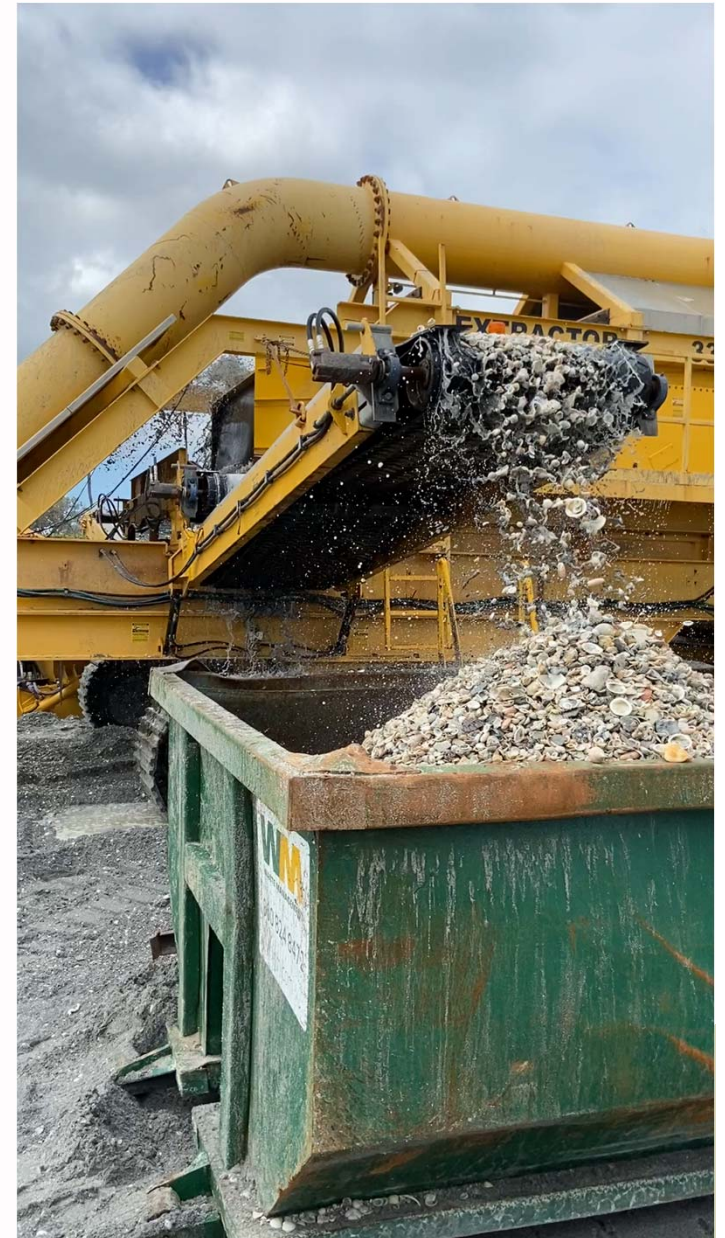


Dredge Screening, 12/24/2020

Seg. III (2020): Single screener deployed
Initial screen: $\frac{3}{4}$ "



Load #1 Pump-out: >24hrs



2020 Dredge Screening, Take 2



**11,550 cy of Shell
Screened**



2020 Renourishment: Segment III (Juno Beach)

PRE-PROJECT
OCT. 2019



2020 Renourishment: Segment III (Juno Beach)

POST-PROJECT
FEB. 2021



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Technological Advances in Construction (Segment I, 2021)

Photo: PBC-ERM (2021)

EXTRACTOR 330: Fluidized Rock Systems



Technological Advances in Construction (2021)



Video: Fluidized Rock Systems

2021 Dredge Screening



2,660 cy Shell
Screened



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PBC ERM Sea Turtle Program

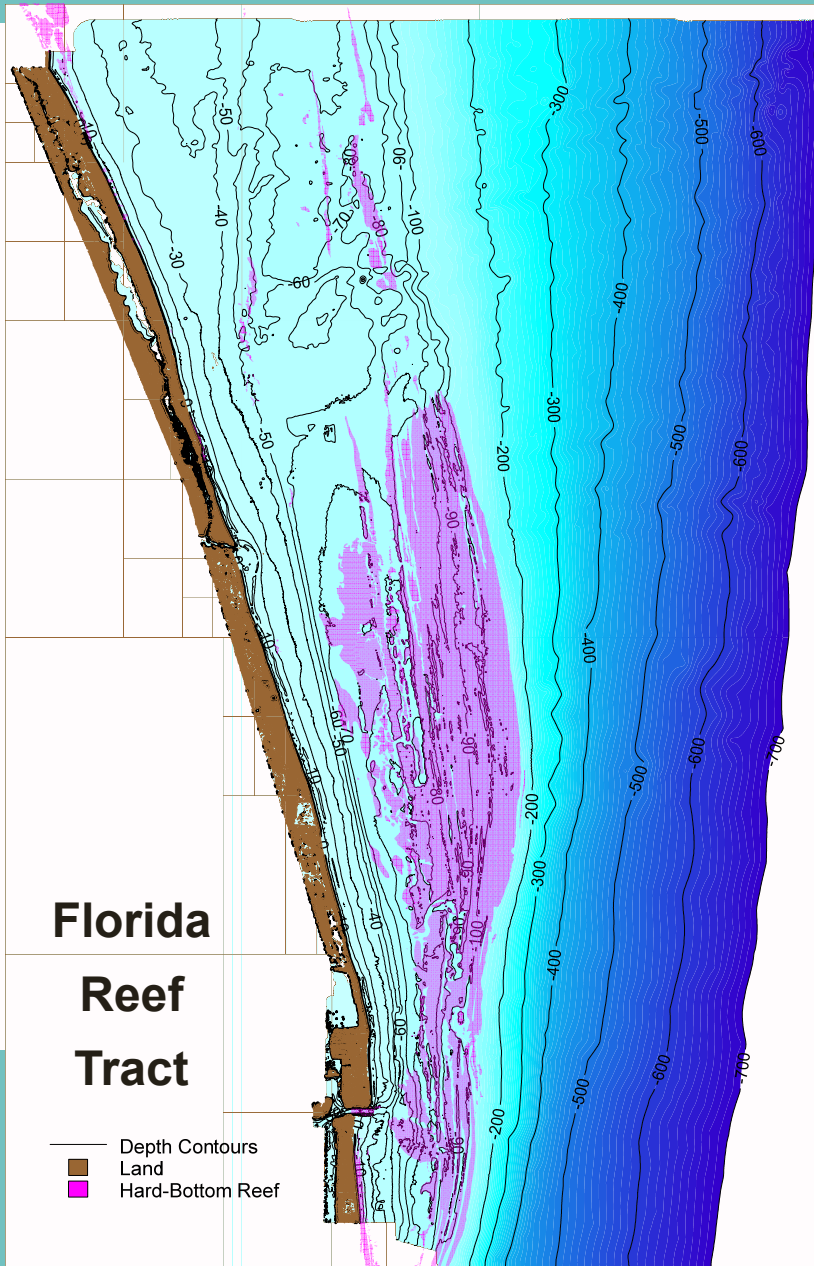
PBC has highest nesting density in the Country

PBC's sea turtle program is in its 25th year

Nesting data suggest project-effects are on consistent with historical nourishments



Looking ahead...



Offshore sand is a diminishing resource in SE Florida

Offshore is high complex and environmentally sensitive

Developing technology can help fully develop known resources



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No one loves rocks!!!

Juno Beach 2010 Renourishment (PBC)

- Extensive rock in 2010 borrow area located off Singer Island
- Required post-construction screening
 - Expensive
 - Time consuming
- Often under-represented in vibracores.

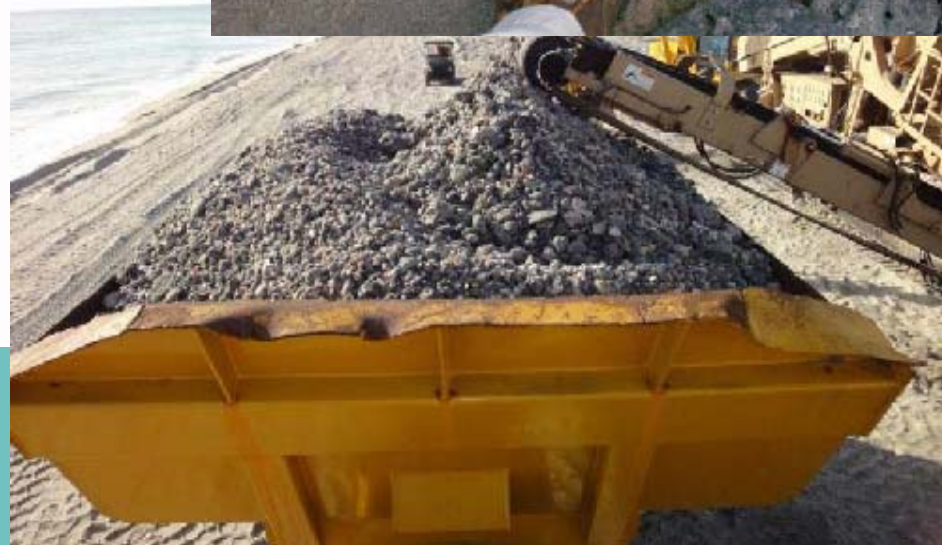




Photo: shellhorizons.com

THANK YOU