

Regular Workshop – January 21, 2014
Agenda Item 6

Agenda Item: Update on the Town's Beach Program

Presenter: Town Manager and Olsen Associates, Inc.
Kevin R. Bodge, PhD, PE
Albert E. Browder, PhD, PE

Summary: The Town Manager and representatives of Olsen Associates, Inc. (OAI) will update the Town Commission on the Town's beach program. A PowerPoint presentation will be used to illustrate to coastal engineers' findings and recommendations for Commission consideration.

Attachments: 1-14-14 Memo, Public Works Director to Manager;
OAI Draft PowerPoint Presentation.

Recommended Action: Pending discussion, provide direction to Town Manager.

M E M O R A N D U M

Date: January 14, 2014

TO: Dave Bullock, Town Manager
FROM: Juan Florensa, Public Works Director
SUBJECT: Update on the Town's Beach Program

In May 2013 the Town received bids for an interim nourishment project scheduled for construction in the Summer of 2013. One bid was received that exceeded the estimated construction cost by 35%.

Discussion with the sole bidder (Great Lakes Dredge & Dock Company) revealed that the high bid was due to the current and projected beach nourishment projects along the Atlantic Seaboard. The availability of equipment by the dredging industry is very limited because of all the ongoing work generated by Hurricane Sandy.

Based on staff recommendations the Town Commission directed staff to reject this bid. The Commission also directed staff to engage the services of Olsen Associates, Inc. (OAI) to among other things:

- Evaluate in detail the near-term beach management plans/beach nourishment options for the Town, including both the previously proposed and advertised "interim" renourishment project and the subsequent broader-scale renourishment(s); and
- Provide detailed recommendations to the Town for near- and long-term project strategies for renourishments of the island's beaches, using offshore, inlet and/or upland sand sources; provide planning level cost estimates.

OAI will present their findings at the January 21, 2014 Regular Workshop Meeting. The attached PowerPoint presentation is in draft form. OAI will finalize the presentation prior to the Regular Workshop Meeting and be prepared to discuss it in detail.

Based on the comments and direction received from the Commission, additional work will be required before a plan is finalized and presented to the Commission at a future meeting.

Please let me know if you have any additional questions regarding this agenda item.

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Town of Longboat Key, FL

Beach Project Update

Summary of Findings

Town Commission Meeting
21 January 2014 - Longboat Key, FL



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Discussion Items

- Current Beach Conditions - July 2013
 - Shoreline and beach volume conditions
 - Status of beach relative to design condition
 - Explanation of design beach application
 - Sand Volume Needs

- Future Project Considerations
 - Project elements
 - Sand Sources
 - Construction Scenarios

- Next Steps



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Current Beach Conditions

- Surveyed July 2013
 - 1 year after post Debby



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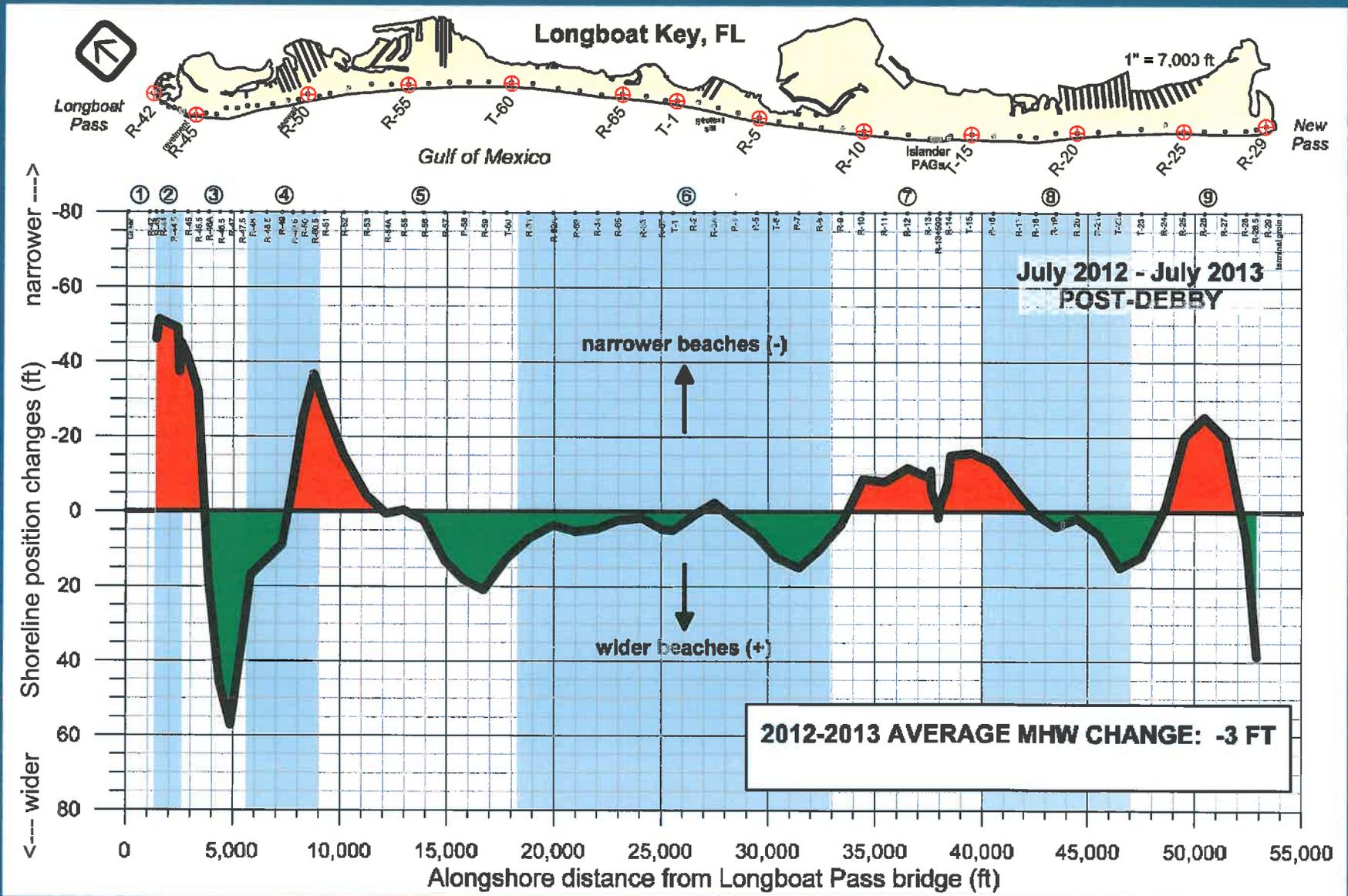
Shoreline Changes in Hurricane Debby

- [TO BE PROVIDED]
 - What happened in Debby wrt shoreline changes
 - Pre-cursor slide to transition to slide 5



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Recent Shoreline Changes: '12 - '13



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R-44 to R-29

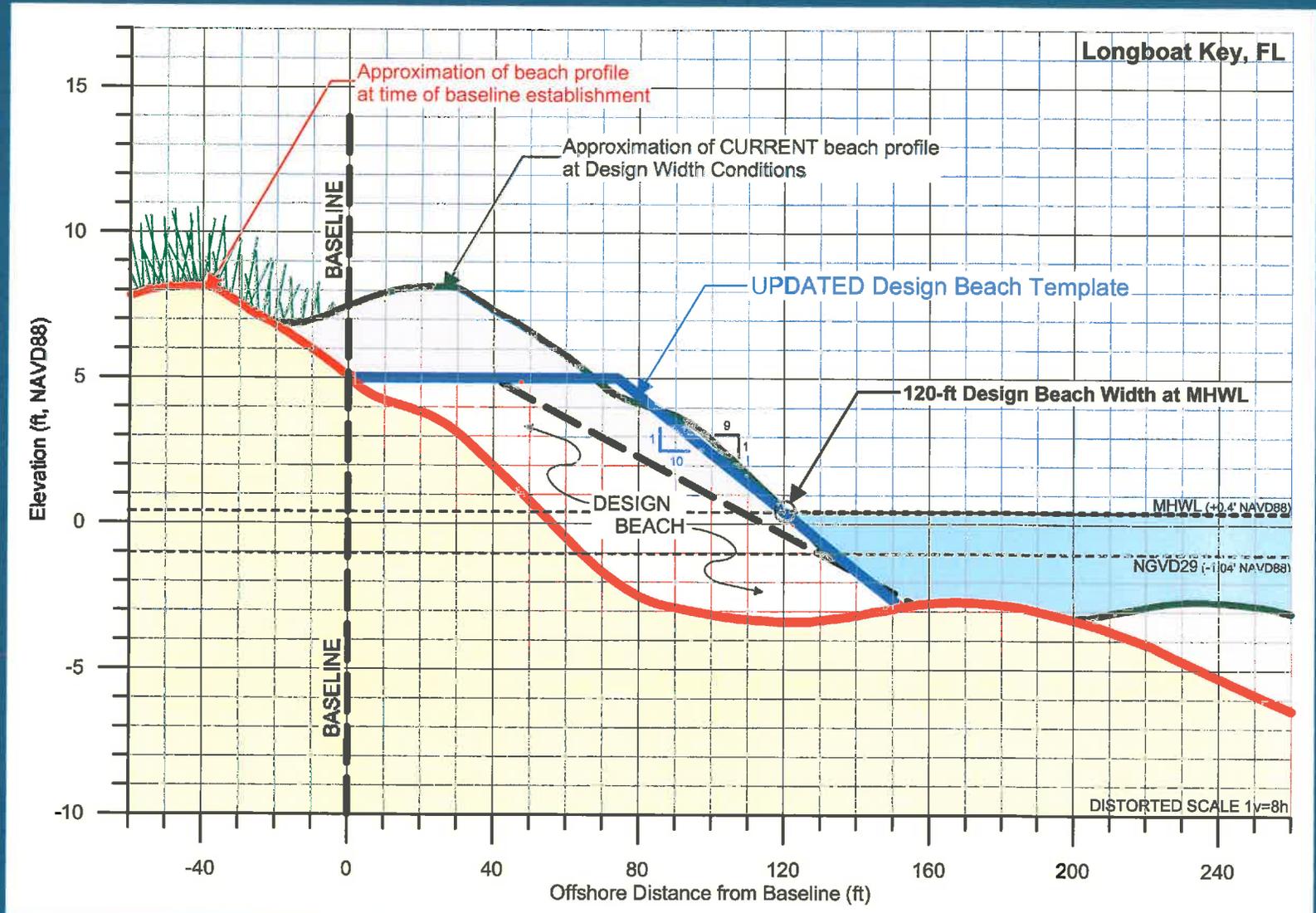
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Design Beach / Design Width

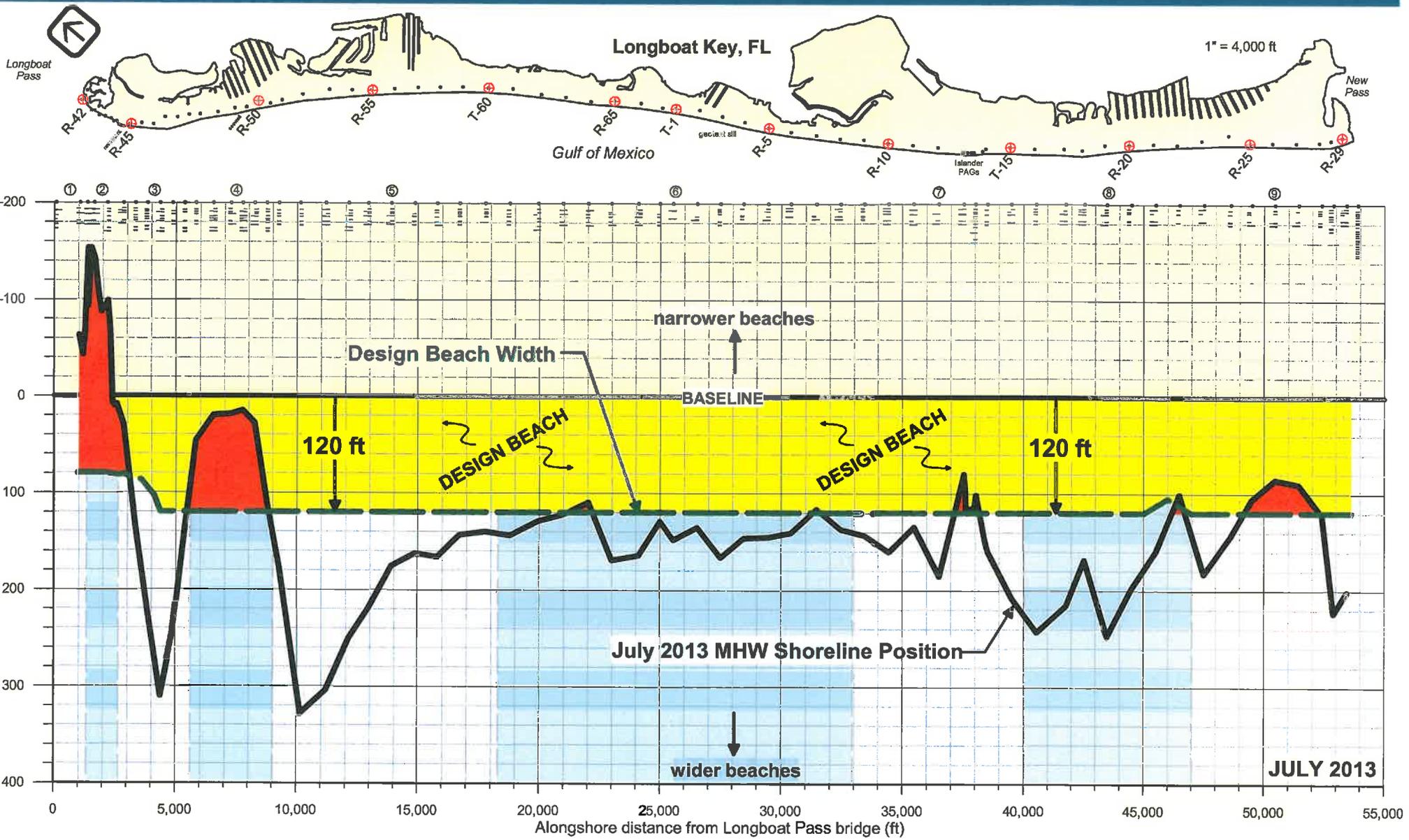
- Update to Mean High Water datum (wrt NAVD88)



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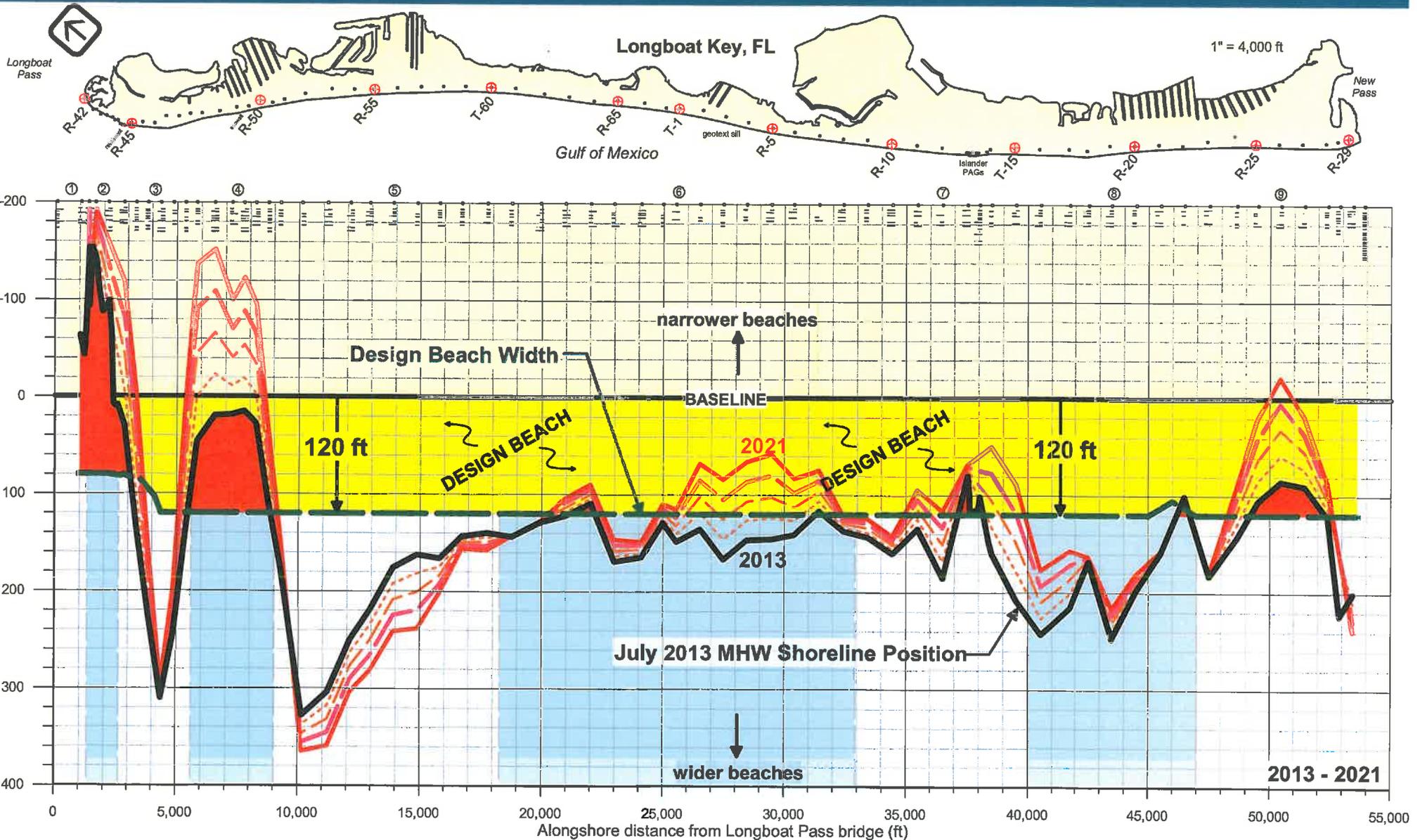
Current Shoreline Position



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Future Shoreline Position

(assuming current trends continue)



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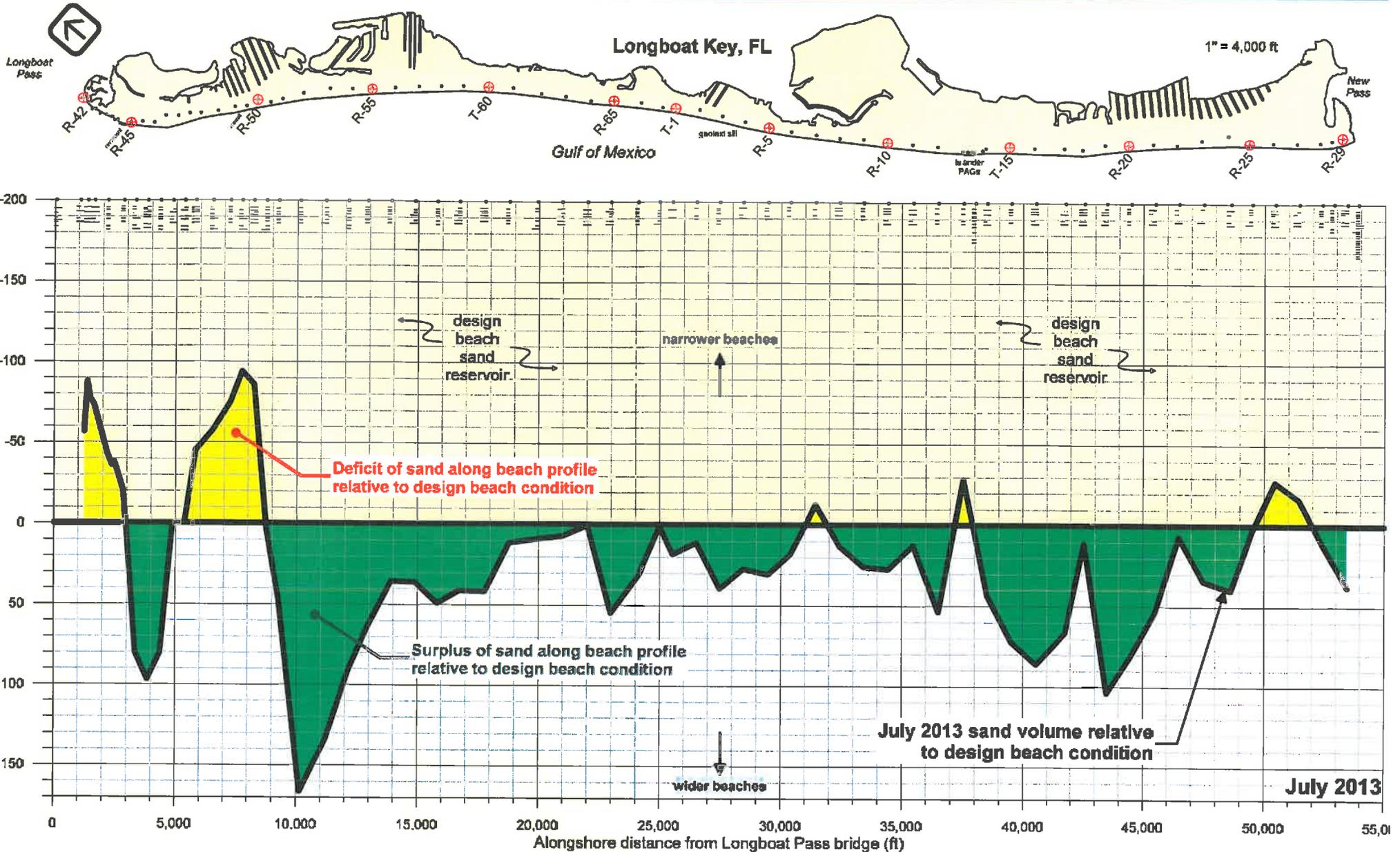
Design Beach Volume

- [TO BE PROVIDED]
 - Beach profile explanatory graphic
 - To transition from shoreline width to volume]



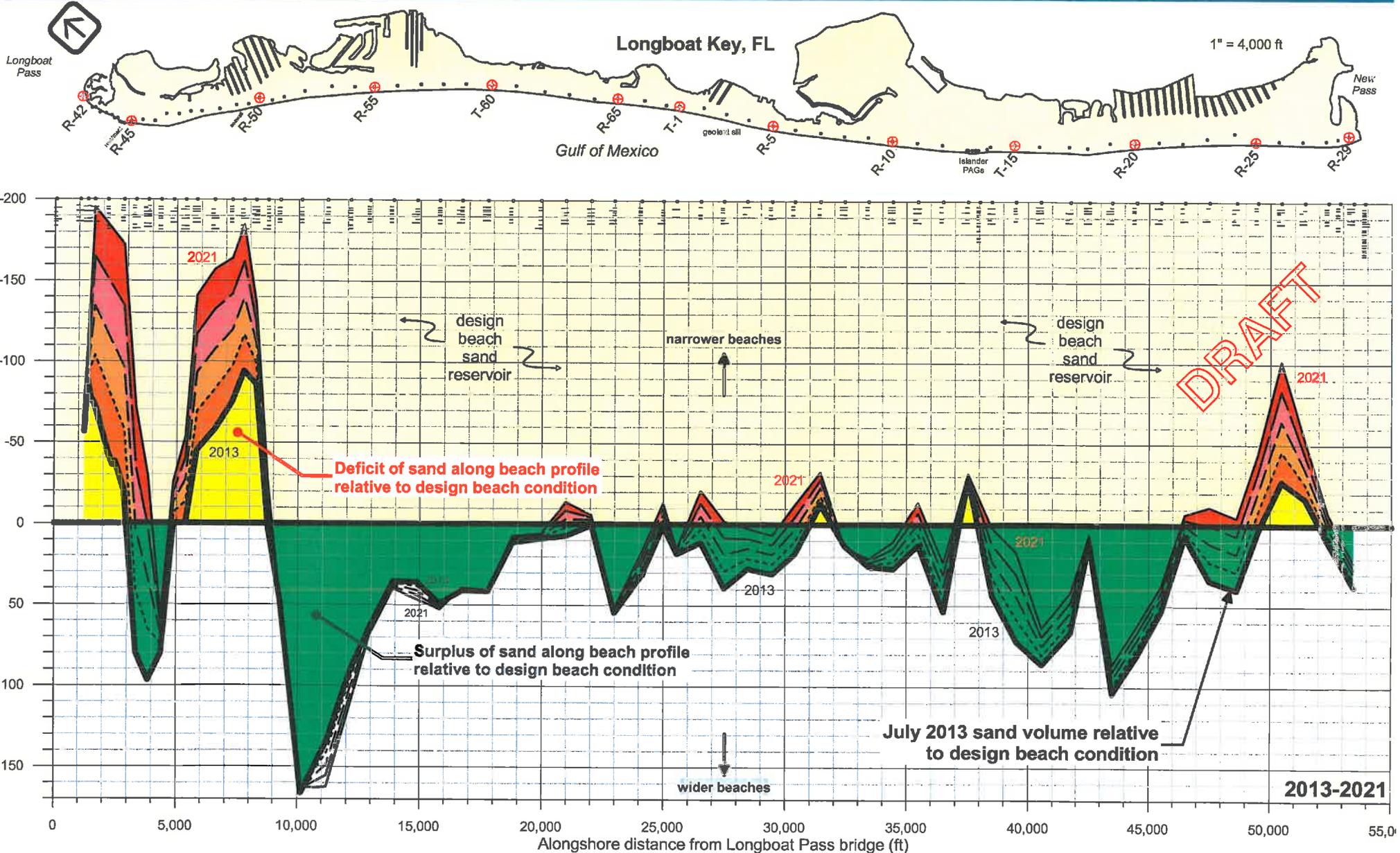
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Current Beach Volume Density (relative to design condition)



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Future Beach Volume Conditions (assuming current trends continue)



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Sand Volume Requirements



- North end (#1):
~~440,000 cy~~
125,000 cy
- 6633 GMD seawall/Gulfside Rd. (#2): ~~599,000 cy~~
350,000 cy
- Central island (#3): 205,000 cy
- South end @ New Pass (#4): ~~1,544,000 cy*~~
300,000 cy
980,000 cy

*To restore design and provide 8 years of advance nourishment



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Sand Volume Requirements



- North end (#1): 125,000 cy
 - 6633 GMD seawall/Gulfside Rd. (#2): 350,000 cy
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- 980,000 cy***

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Beach Construction Methods

- *Based upon needs and sand source(s)*



- Traditional hopper dredge
 - 'regional' offshore sand sources
- Cutterhead/pipeline dredge
 - Local inlet sand sources
- On-road and off-road dump trucks
 - Upland sand sources
- Cutter/scows/offloader
 - 'Distance offshore sand sources



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Hopper Dredges



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Cutterhead / pipeline dredge



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Truck Haul Beach Construction



PAFB Feb 2011



Kelly - Palm Beach Daily News



PAFB Feb 2011



PAFB Feb 2011



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Offshore scows/offloader

- Cutterhead dredge at borrow site fills scows
- Tugs tow scows to offload site off beach
- Unloader excavates scows and pumps sand to shore
- Proposed herein for 'distant' sand sources



Photos courtesy of R. Smith - Woods Bagot, Inc.



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Sand Sources

- Offshore 'regional' sources
 - Developed borrow areas at BA IX, X, B-3, and F-2
- Local inlet sources
 - Longboat Pass and New Pass
- Truck haul sources
 - Lake Wales Ridge ~100 miles from Longboat Key
- Distance offshore sources
 - Higher quality sands ~80 to ~100 miles away (or more)

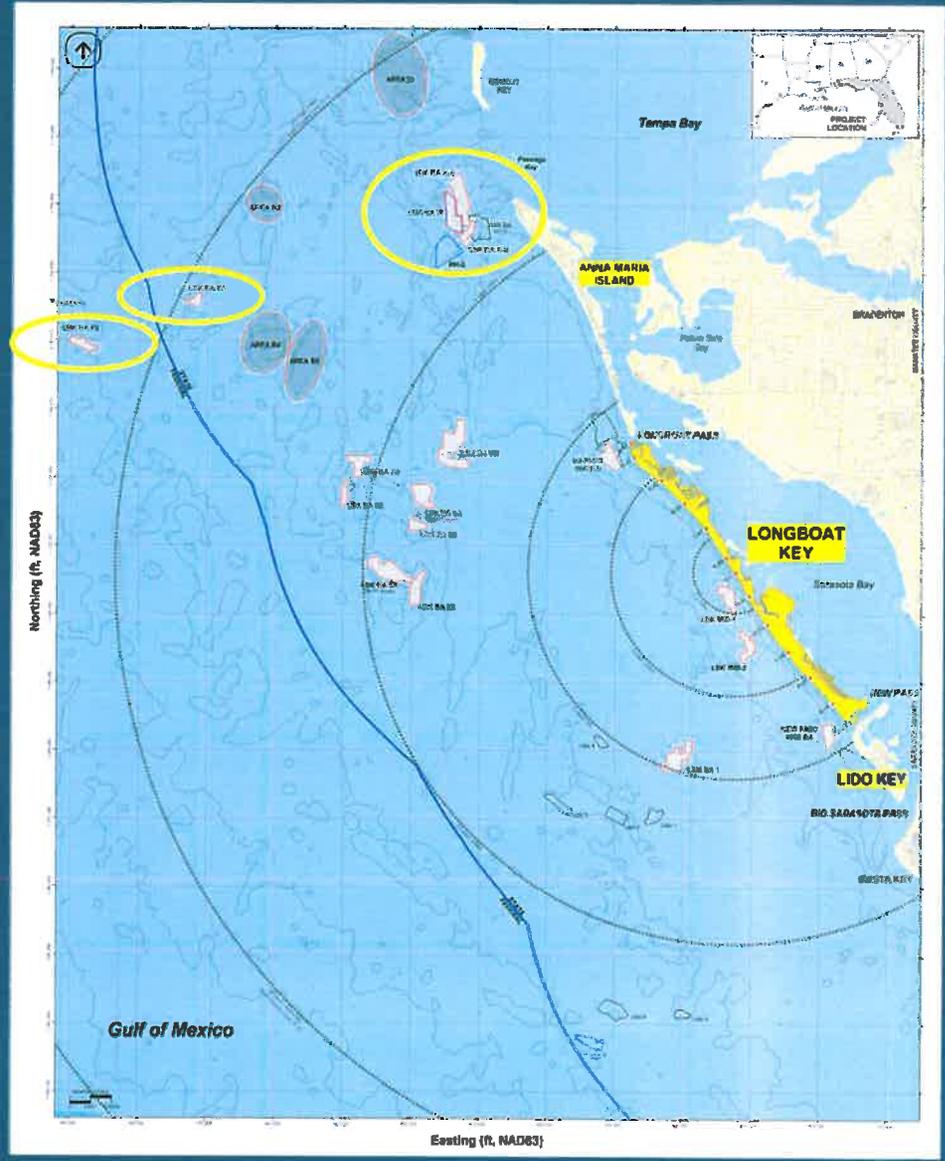
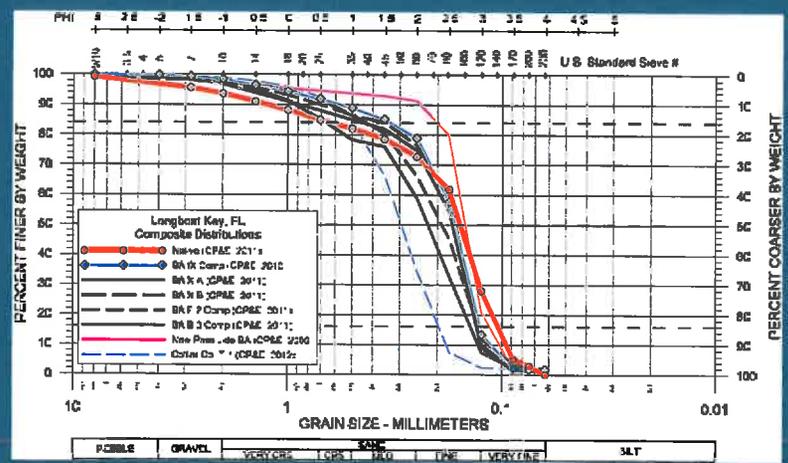




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Existing 'Regional' Offshore Borrow Areas

- Sand quality concerns
 - Grain size/compatibility
 - Shell content
 - Variability within sites
 - Color

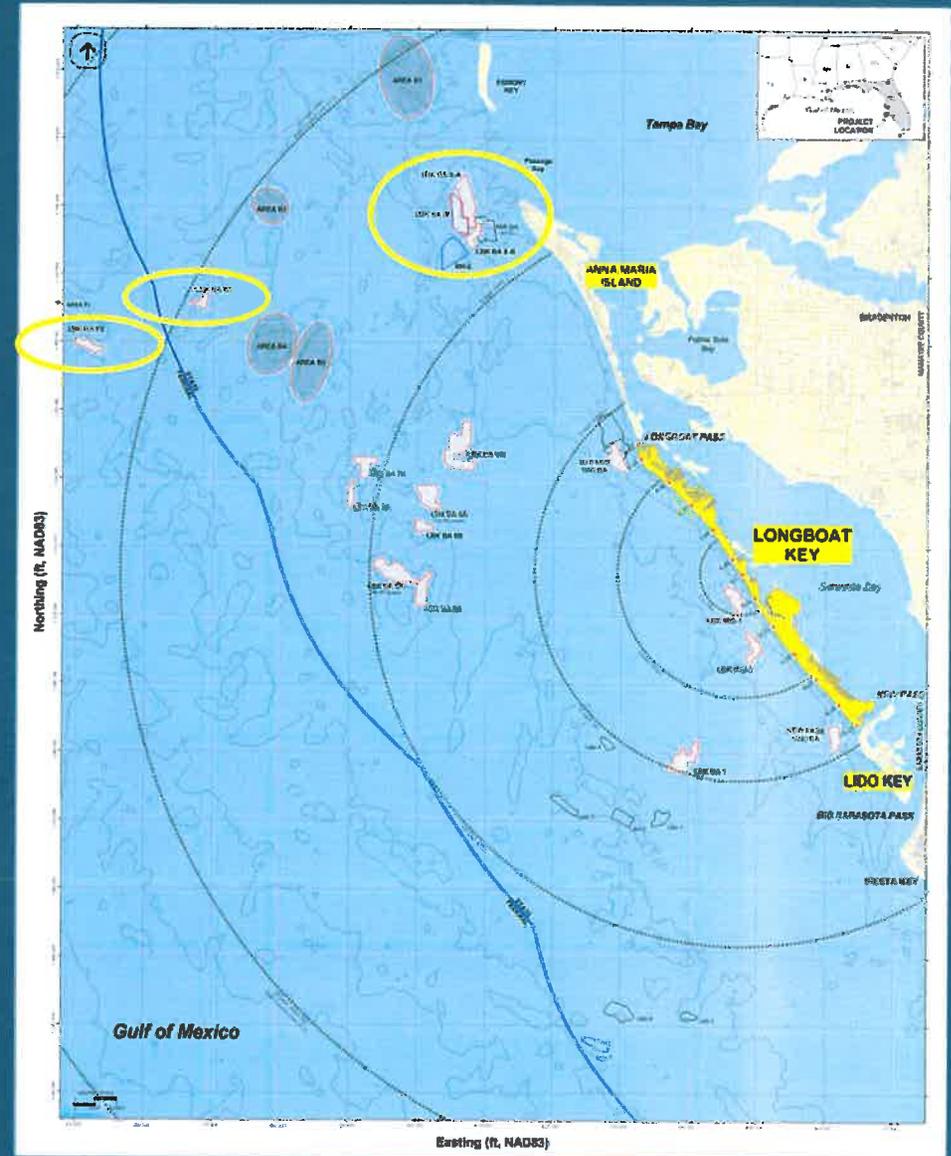


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Existing 'Regional' Offshore Borrow Areas

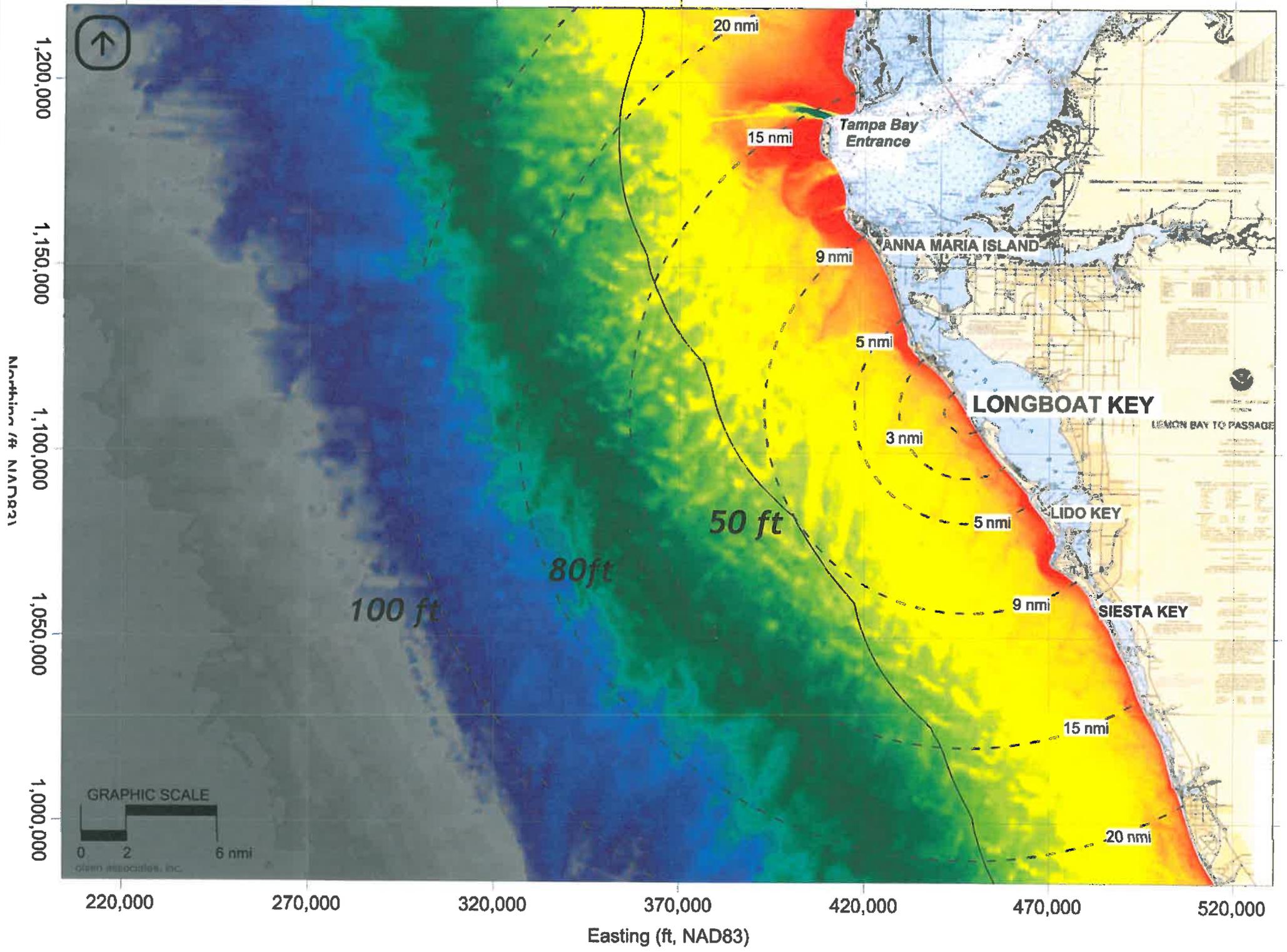
- Dredging Limitations
- [TO BE PROVIDED]



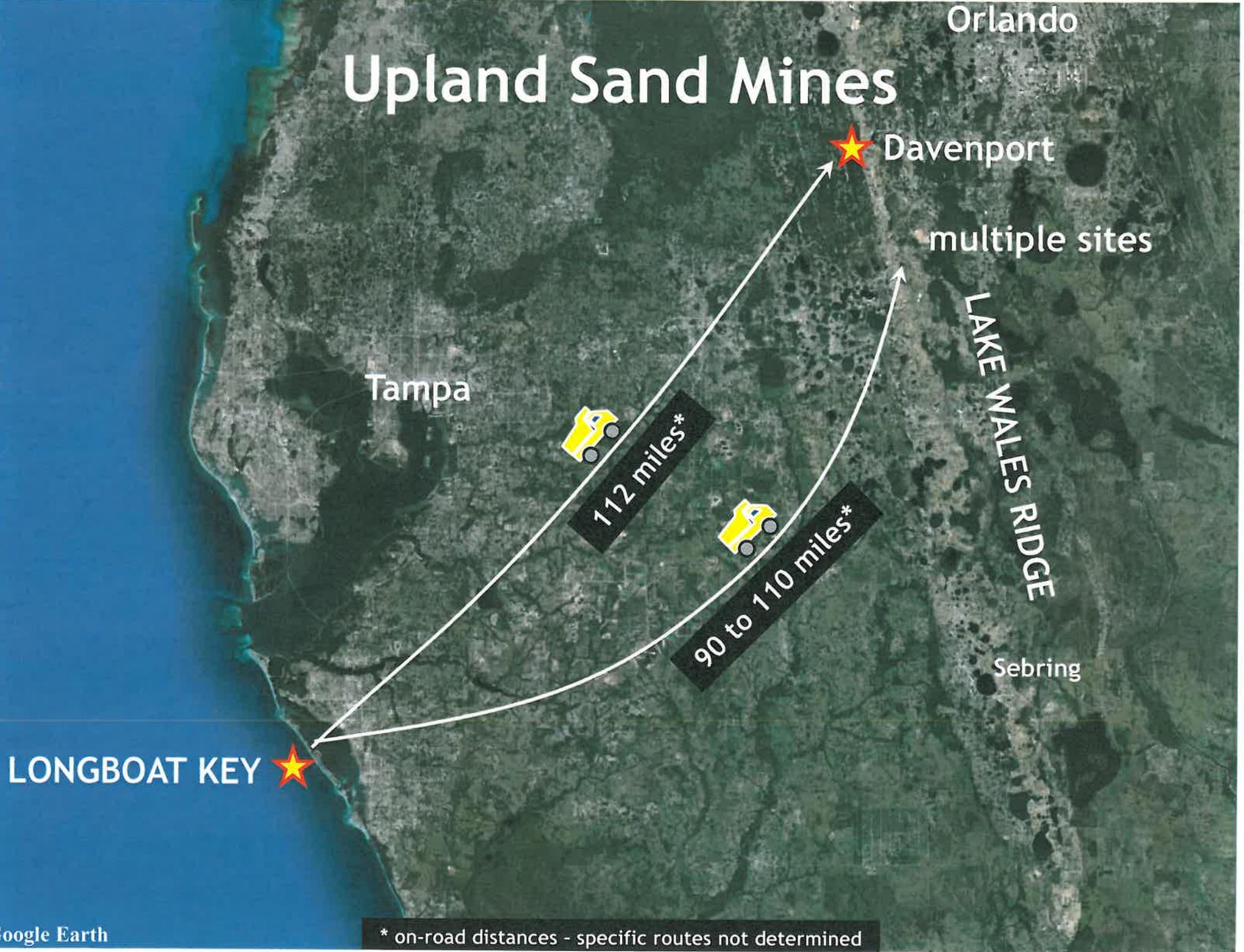
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Upland Sand Mines



* on-road distances - specific routes not determined

'Distant' Sand Sources

- SW Florida Coast
 - Egmont Key
 - Tampa Bay Entrance
 - Federal Waters sources in SW FL
- Foreign Sources
- Nothing currently permitted for LBK



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Sand Volume Requirements



- North end (#1): 125,000 cy
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- 980,000 cy***

*To restore design and provide 8 years of advance nourishment



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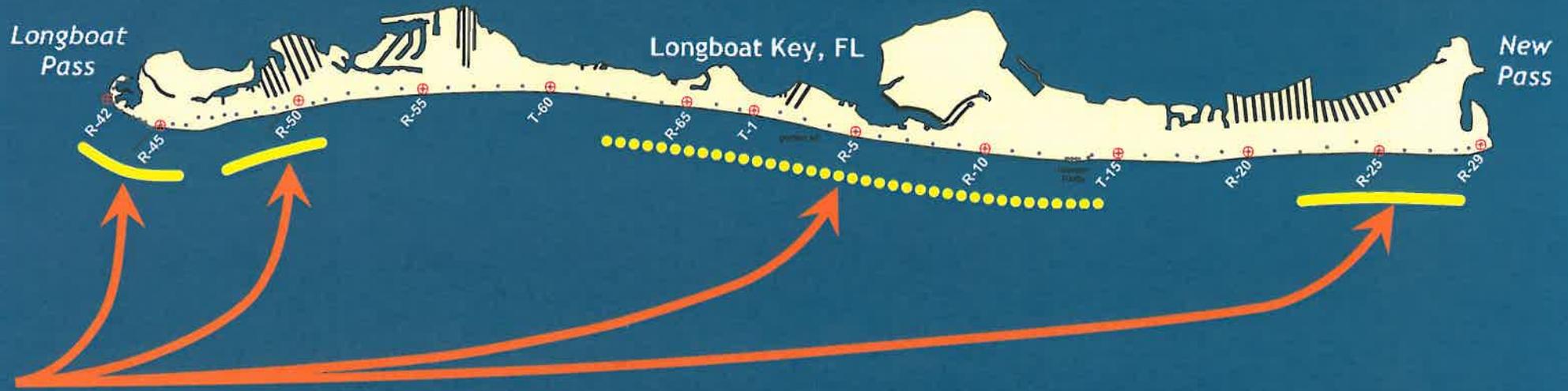
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Construction Scenario A

Hopper Dredge from offshore sites (BAs IX, X, F-2, and/or B-3)



- Pro's
 - -
 - -

- Con's
 - -
 - -



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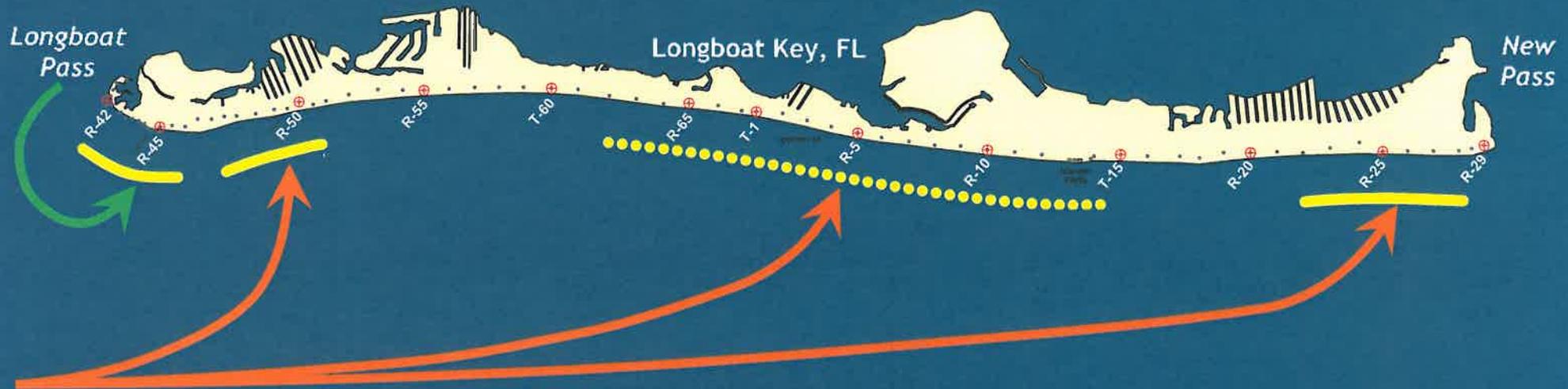
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Construction Scenario B

Longboat Pass for North End, hopper dredge for sites #2 - #4



- Pro's

- -
- -

- Con's

- -
- -



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Construction Scenario C

Longboat Pass, New Pass, and Truck Haul



- Pro's

- -
- -

- Con's

- -
- -



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Construction Scenario D

Longboat Pass and Truck Haul



- Pro's

- -
- -

- Con's

- -
- -



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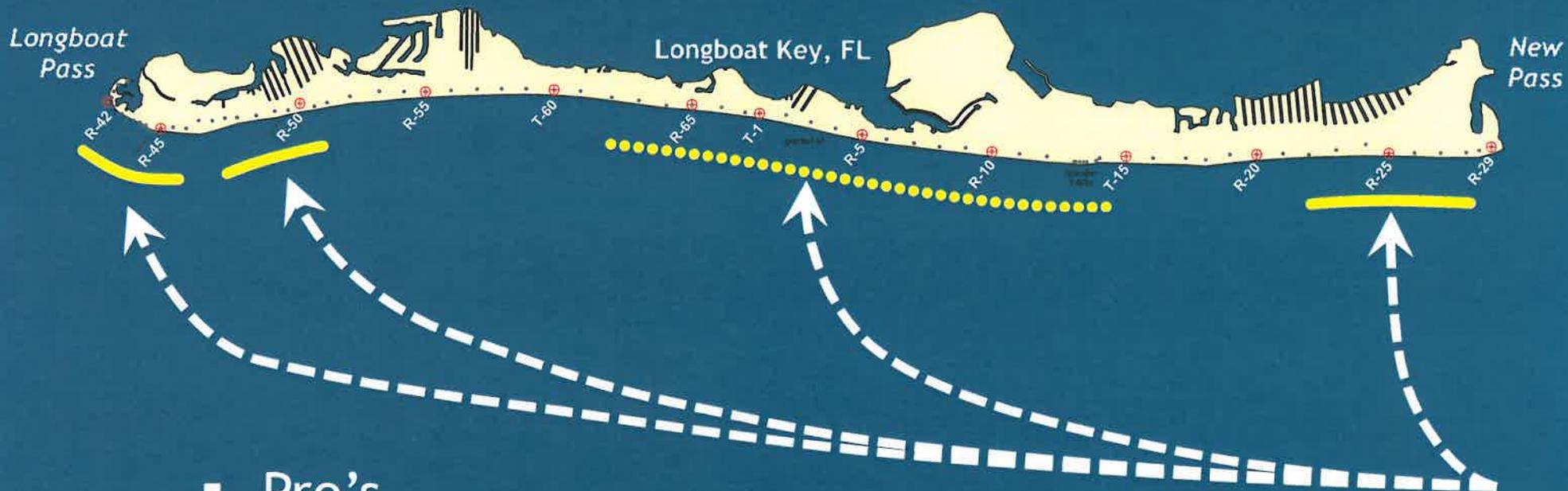
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Construction Scenario E

Scows/offloader from from DISTANT offshore sites



- Pro's

- -
- -

- Con's

- -
- -



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Preliminary Opinion of Project Cost



■ Scenario A: \$26M - \$32M



■ Scenario B: \$25M - \$31M



■ Scenario C: \$16M - \$21M



■ Scenario D: \$25M - \$30M



■ Scenario E: \$33M - \$39M



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Potential Funding Sources

- Existing Town Beach Funds
- FDEP Erosion Control Program Grant(s)
- FEMA Reimbursement
- Town Beach Districts
- WCIND
- U.S. Army Corps of Engineers



How to Proceed?

- Much of the shoreline is 'OK'
 - Much of shoreline still Gulfward of design condition
- Localized erosion most severe at North End
 - Partial solution via structural stabilization
- Hurricane Sandy has impacted the bidding market 
 - Winter 13/14 - Sandy-intensive plant usage
 - More Sandy projects in the pipeline for '14 and early '15
- Bidding may return to normal for mid-2015
 - Mobilization/demobilization prices have skyrocketed
 - High mob/demob reduces risk to Contractor

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Next Steps (1 of 3)

- North end
 - Implement North end structural stabilization project
 - Observe & support Longboat Pass maintenance permitting
 - Seek to excavate both channel and sand traps jointly
 - Develop plan for sand placement

- 6633 seawall / Gulfside Rd.
 - Observe & support Longboat Pass maintenance permitting
 - Seek to excavate both channel and sand traps jointly
 - Develop plan for sand placement



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Next Steps (2 of 3)

- Central island
 - Consider renourishment via truck haul from Central FL
 - Develop plan for sand placement
 - 4795 Gulf of Mexico Dr. to Islander Club/Villa de Lancia
 - Targeted sand placement (R-62 to R-14, approx.)
 - Currently permitted for this activity

- South end
 - Execute a revised New Pass sand sharing agreement
 - Modify Town's existing beach nourishment permit to include New Pass as additional sand source
 - Develop plan for sand placement



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Next Steps (3 of 3)

- Update Beach Management Plan
 - Last updated in 2008
 - Codify revised beach segments
 - Incorporate recent shoreline conditions
 - North end erosion
 - Coastal structures implementation
 - Evaluate design condition relative to storm vulnerability
 - Set future expectations and objectives

- Seek additional offshore sand sources
 - Conduct geotechnical sand search for new sources
 - Refine (reduce) existing sites to address constructability
 - Evaluate long-term viability of inlet/truck haul sources





Thank You



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End of Agenda Item