



Palm Beach County's Beach Program

The Importance of Being Flexible in an Ever-Changing Environment





Palm Beach County's Beach Program

The Importance of Being Flexible

Environment

Balancing the needs of :

- 1.3 million residents and
- 5.5 million tourists

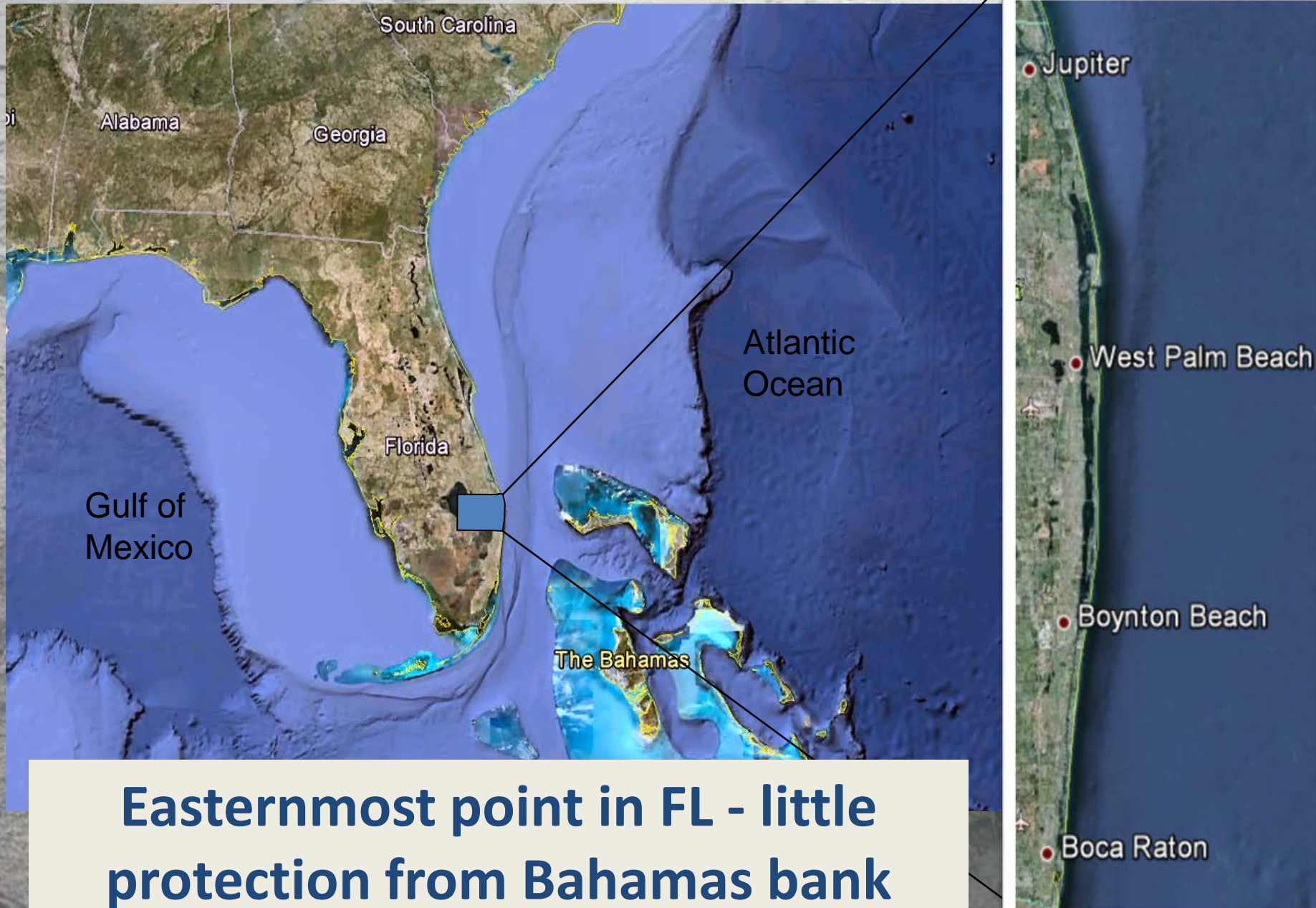
While protecting:

- 46 miles of coastline
- 1.3 million sea turtle hatchlings
- \$6 billion in beachfront real estate and
- hundreds of acres of nearshore hardbottom

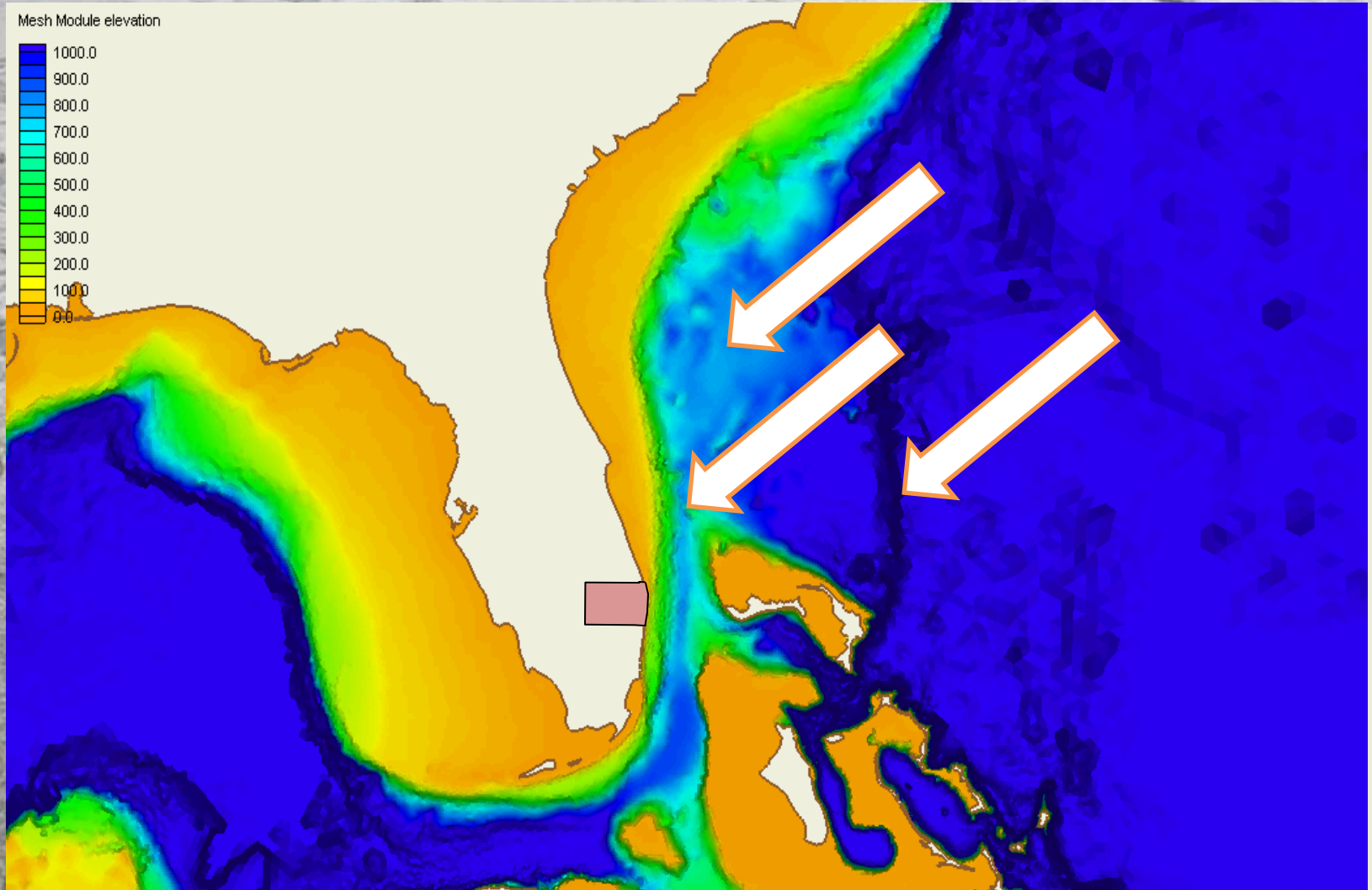
In a four month construction window

(with limited funding, and decreasing sand sources)

PBC Coastline – What makes us different?



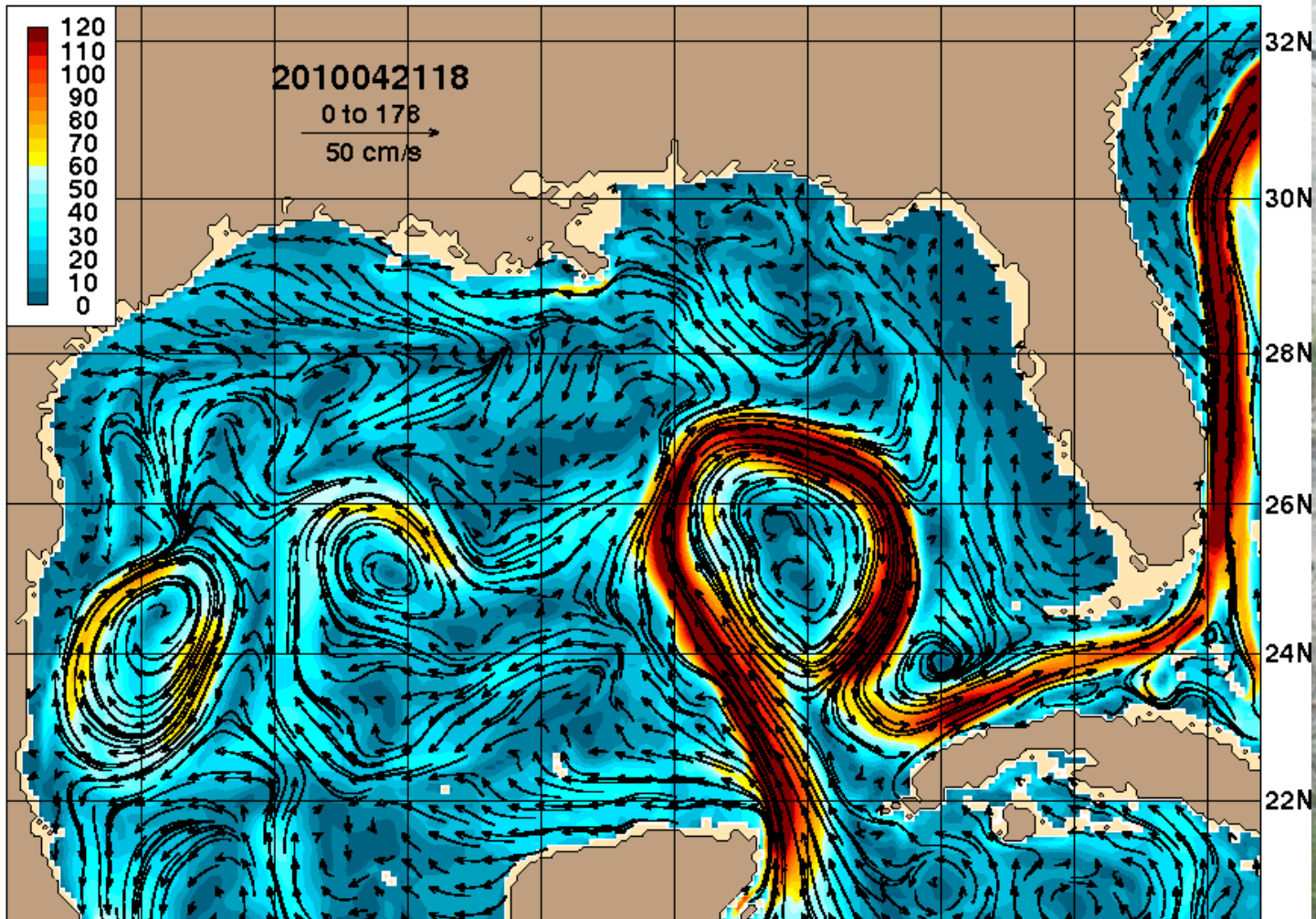
PBC Coastline – What makes us different?



Very narrow Continental shelf – little protection from wind and waves out of the Northeast

PBC Coastline – What makes us different?

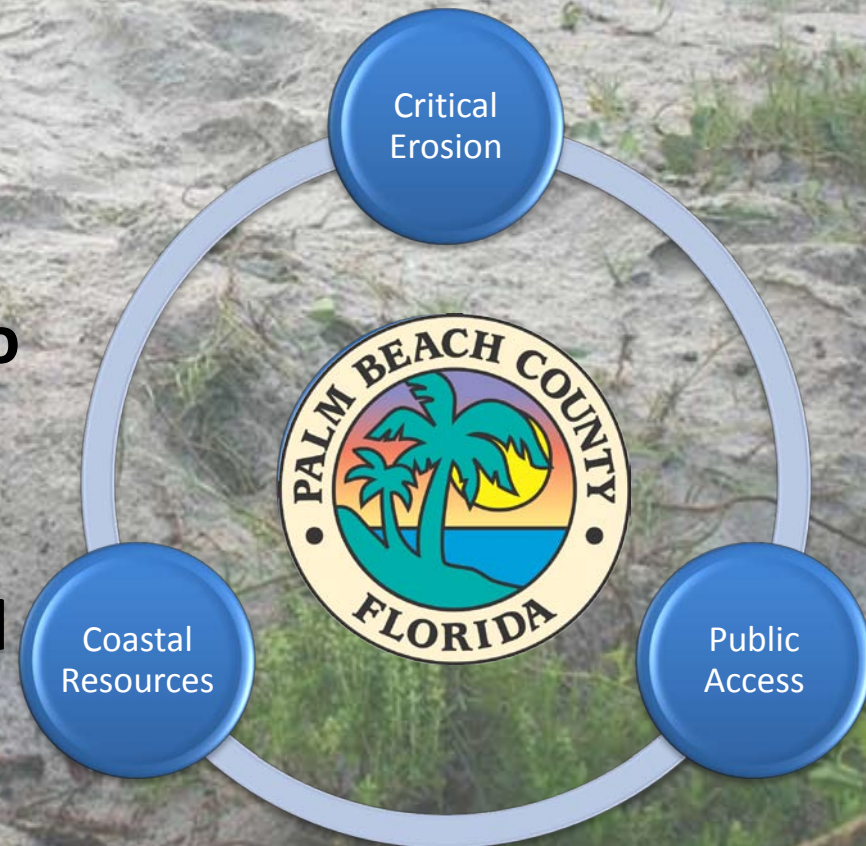
Speed/currents layer 1 date: Apr 17, 2010 00Z 90.8



Easternmost point in FL – Gulf Stream current practically “kisses” the shoreline

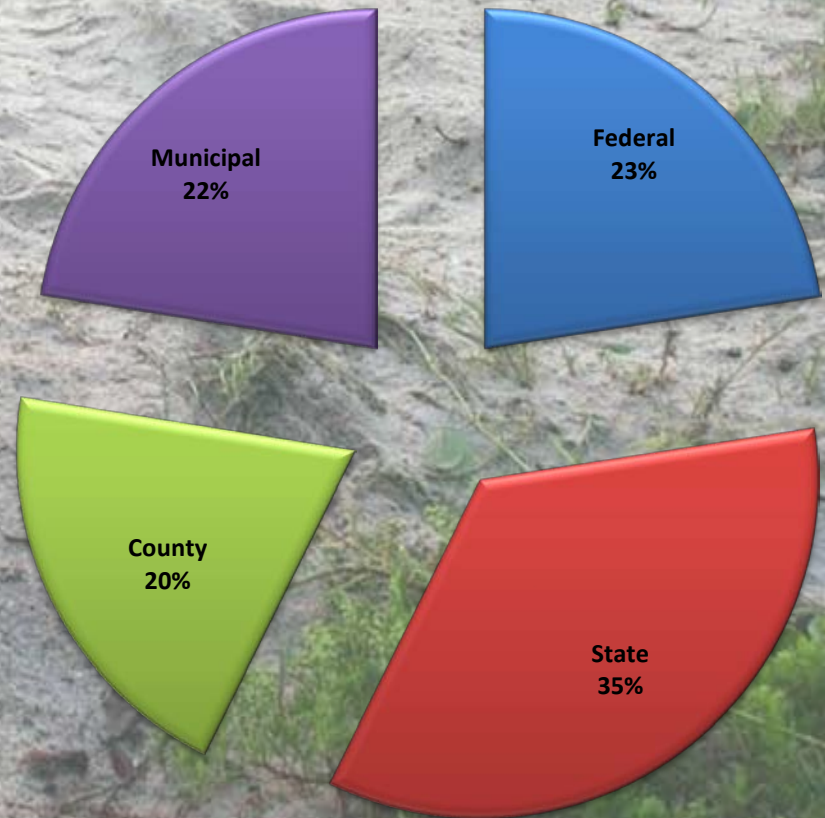
Palm Beach County's Shore Protection Program

- 46 miles of coastline
- 31 miles critically eroded
- 26 miles publicly accessible
- How do we decide where to use limited funding and resources?
- A project is eligible for local funding only if it can pass the “three question exam”



Palm Beach County's Shore Protection Program

- County-wide cost of maintaining the beaches averages \$10 million per year
- Funding sources include
 - County (TDC)
 - State (DEP)
 - Federal (USACE, FEMA)
 - Local municipalities



Countywide Beach Projects



Coastal Management Strategies

Inlet Sand Bypass

400,000 c.y. of sand is mechanically bypassed at inlets annually



Jupiter Inlet Sand Trap Dredging



South Lake Worth Inlet
Sand Transfer Plant

**4 Inlets in Palm Beach County
(Jupiter, Lake Worth, South Lake Worth, Boca)
All covered by State approved Inlet
Management Plans**



Coastal Management Strategies

Dune Restoration



Coral Cove Dune Restoration –January 2013

15 miles of shoreline have been restored with dune fill

Coral Cove, Jupiter, Singer Island, Palm Beach, Lake Worth, South Palm Beach, Gulfstream, Delray Beach, Boca Raton



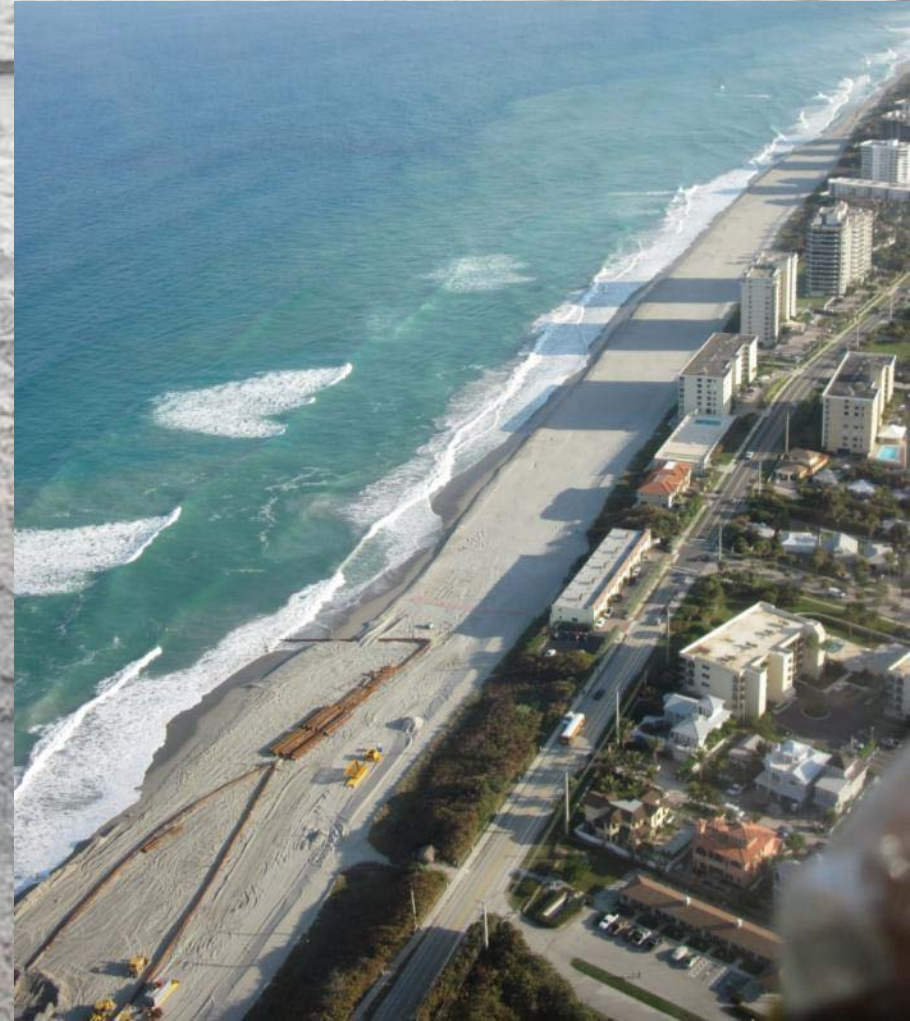
Coastal Management Strategies

Beach Nourishment



18 miles of shoreline managed with beach fill

Jupiter/Carlin, Juno, Palm Beach Midtown and Phipps, Ocean Ridge, Delray Beach, Boca Raton North, Central, and South



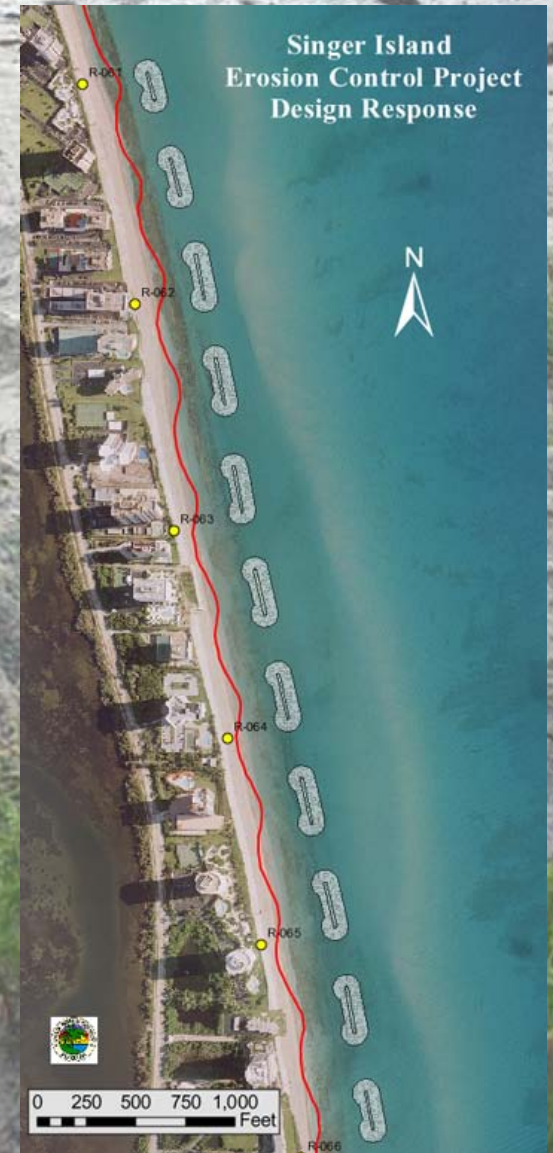
Coastal Management Strategies

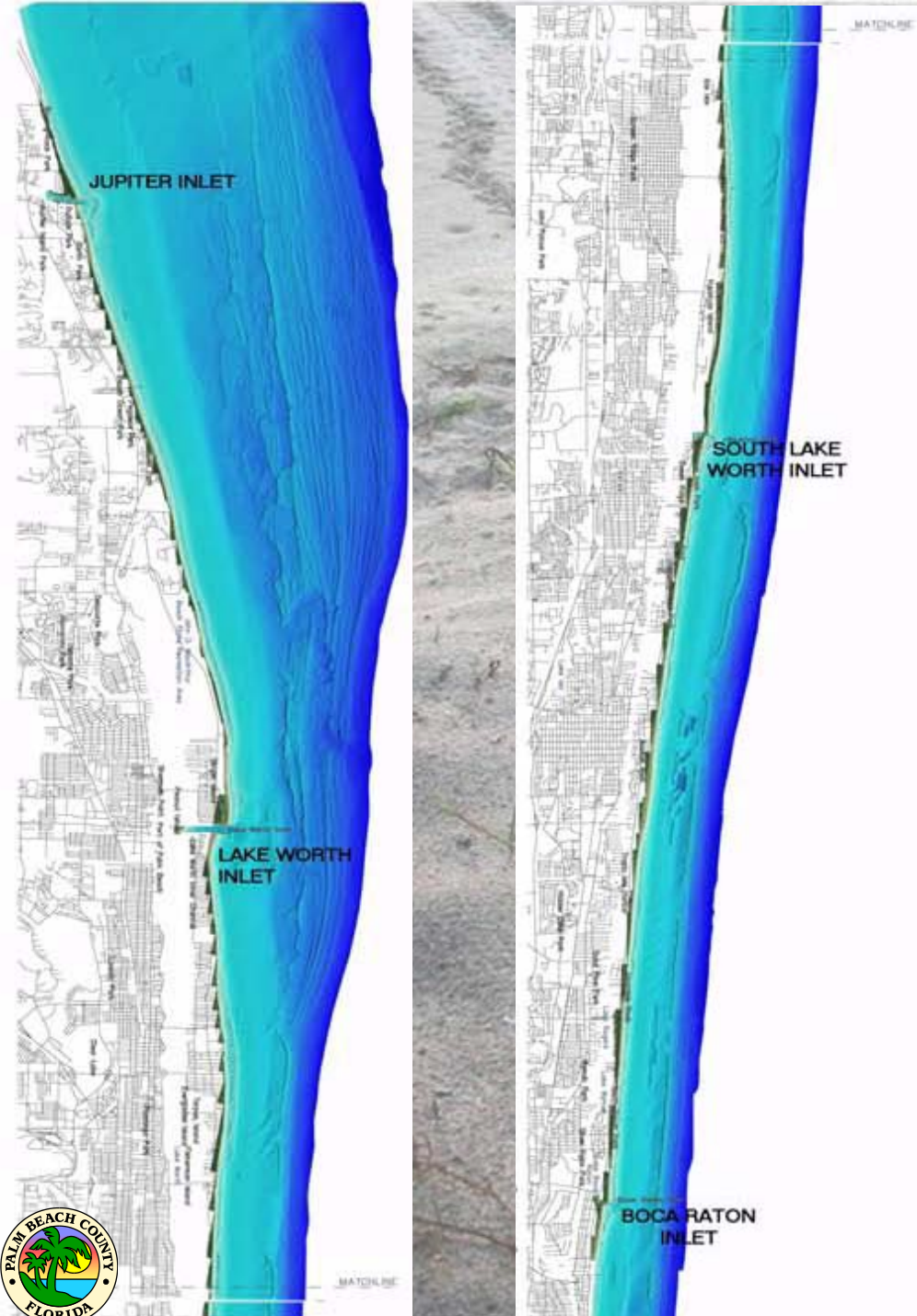
Erosion Control Structures



T-head and straight groins used sporadically throughout County

Shore parallel breakwaters designed for Singer Island and South Palm Beach but not permitted





Inlets Overview

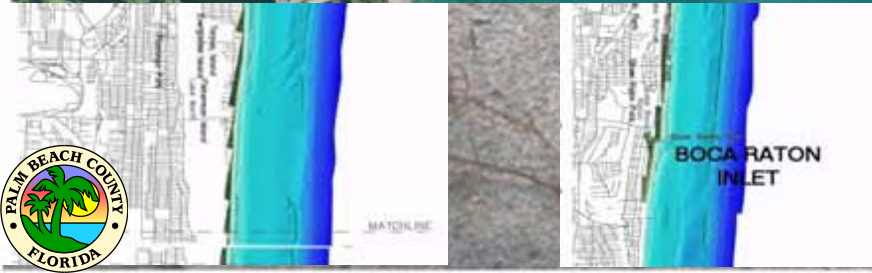
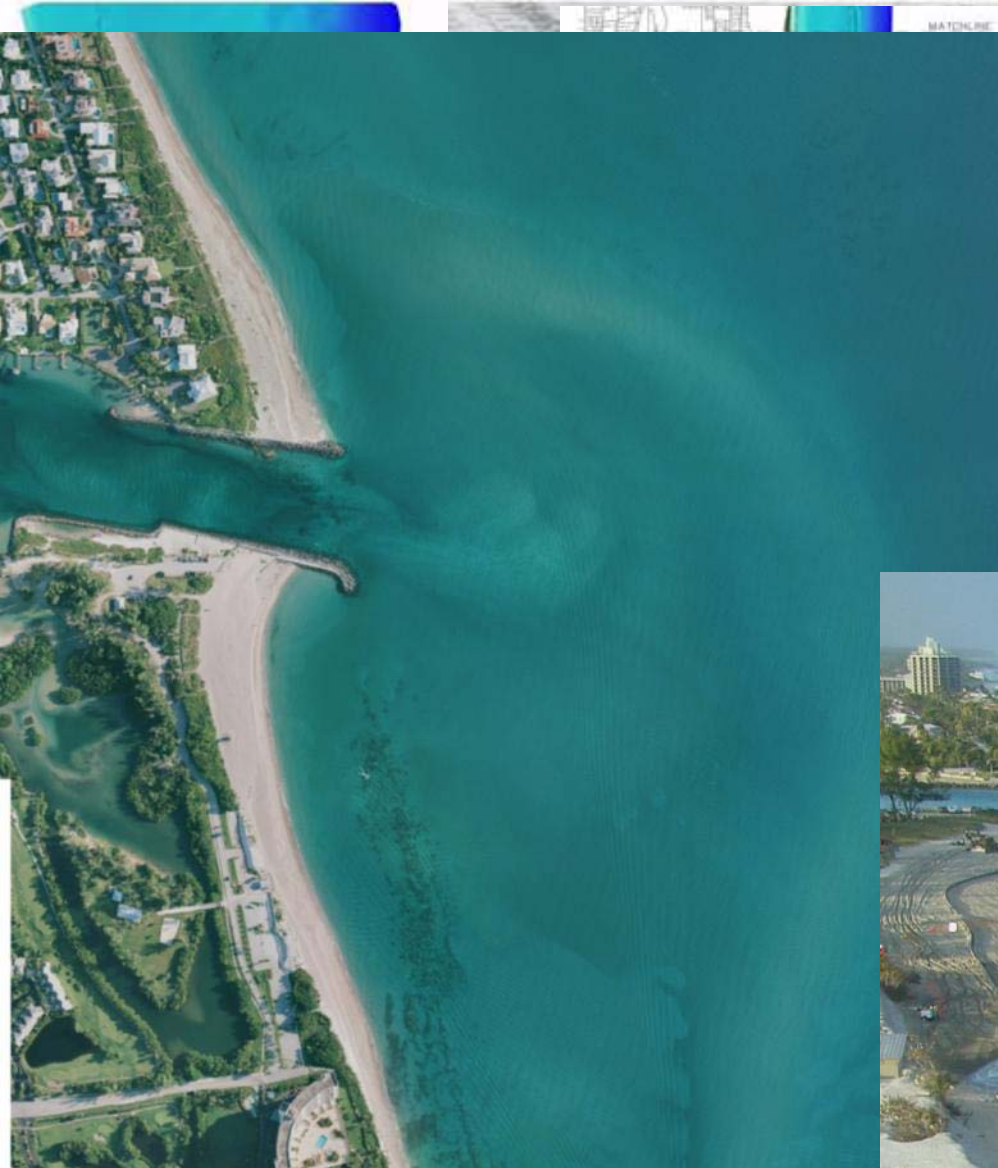
- Four Inlets
- Two Natural
 - Jupiter
 - Boca Raton
- Two Man made
 - Lake Worth (Palm Beach)
 - South LW (Boynton)
- All are stabilized and managed



Inlets Overview

•Jupiter Inlet

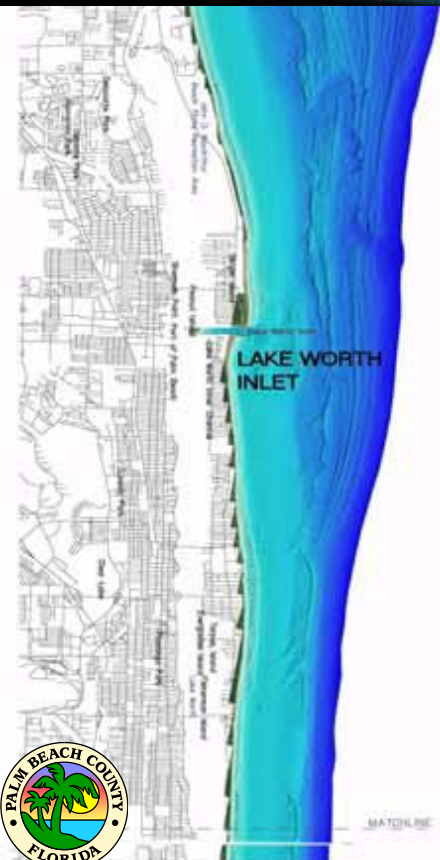
- Natural Inlet – stabilized in 1922
- Managed by Jupiter Inlet District
- Average bypassing 88,000cy/yr
- includes sand trap and ICW maintenance





Inlets Overview

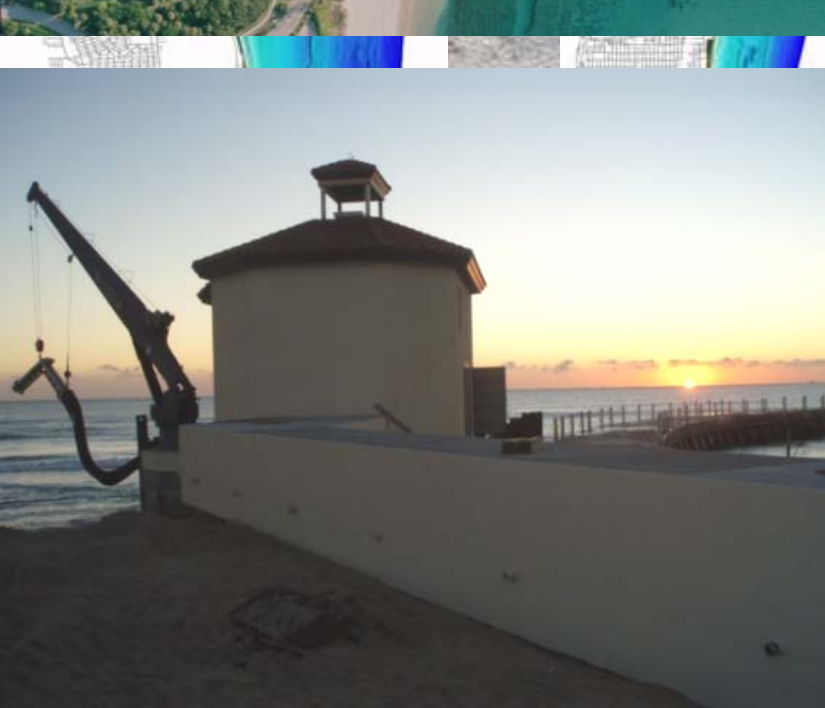
- Lake Worth Inlet
 - Managed by ACOE
 - Stabilized in 1918
 - Average bypassing 170,000cy/yr
 - includes STP, settling basin, and harbor maintenance

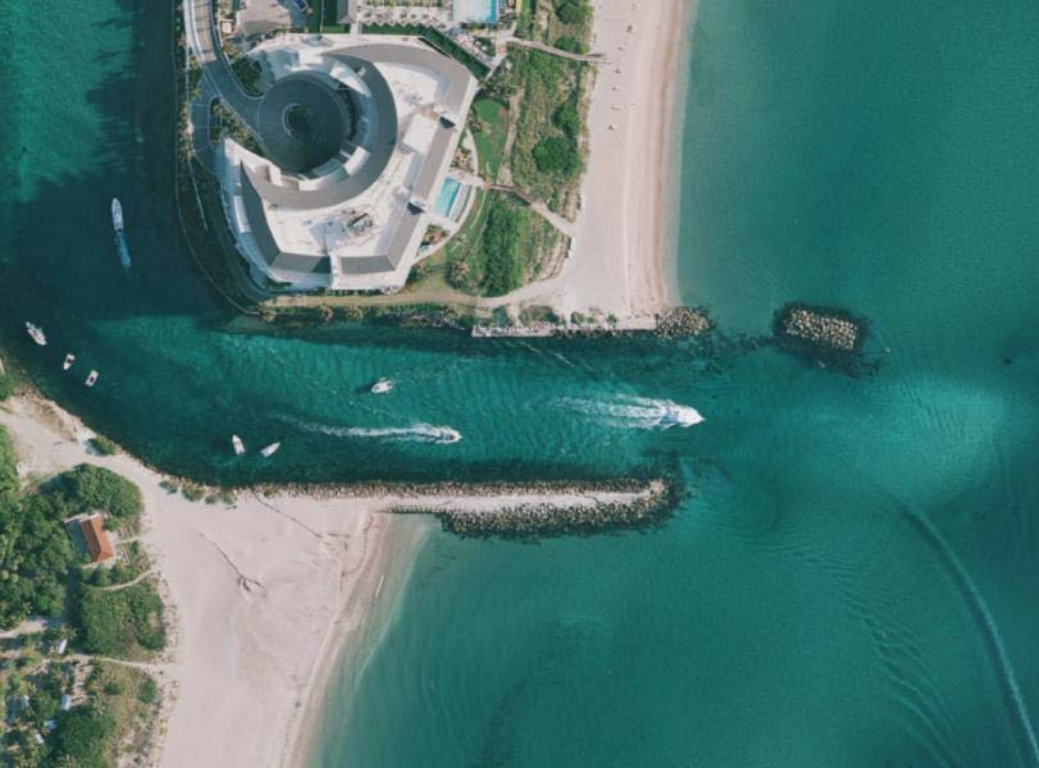




Inlets Overview

- **South Lake Worth Inlet**
 - Managed by Palm Beach County
 - Cut in 1927
 - First fixed sand transfer plant built in 1937
 - Sand trap cut in 2001
 - Average bypassing 90,000 cy/yr





Inlets Overview

•Boca Inlet

- Managed by City of Boca Raton
- Natural Inlet
- Continuous maintenance since 1972
- Ebb Shoal dredged every 5-6 yrs
- Average bypassing 100,000 cy/yr
- Includes inlet and ebb shoal



Shoreline Protection Projects in Palm Beach County

- Coral Cove
- Jupiter/Carlin
- Juno Beach
- Singer Island
- Palm Beach
- South Palm Beach
- Ocean Ridge
- Delray Beach
- Boca Raton



Shoreline Protection Projects in Palm Beach County

•Coral Cove



**Dune restoration completed in
1993, 2005, 2013**

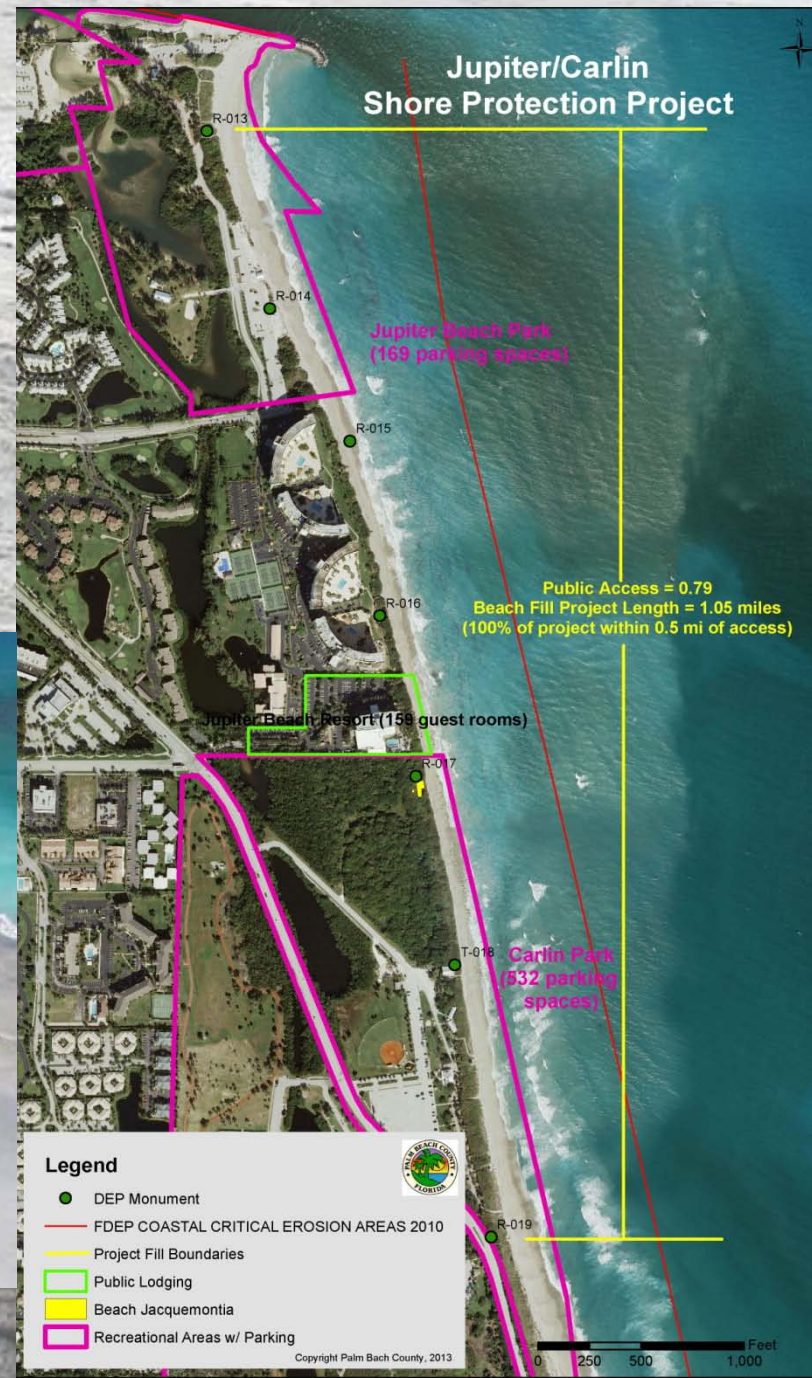


Shoreline Protection Projects in Palm Beach County

- Jupiter Carlin
- Federal Project
first built in 1995



Post construction 2002



Shoreline Protection Project in Palm Beach County

•Jupiter Carlin



Post construction 2002



Storm damage to Jupiter Beach
Park following TS Andrea (2007)



Shoreline Protection Projects in Palm Beach County

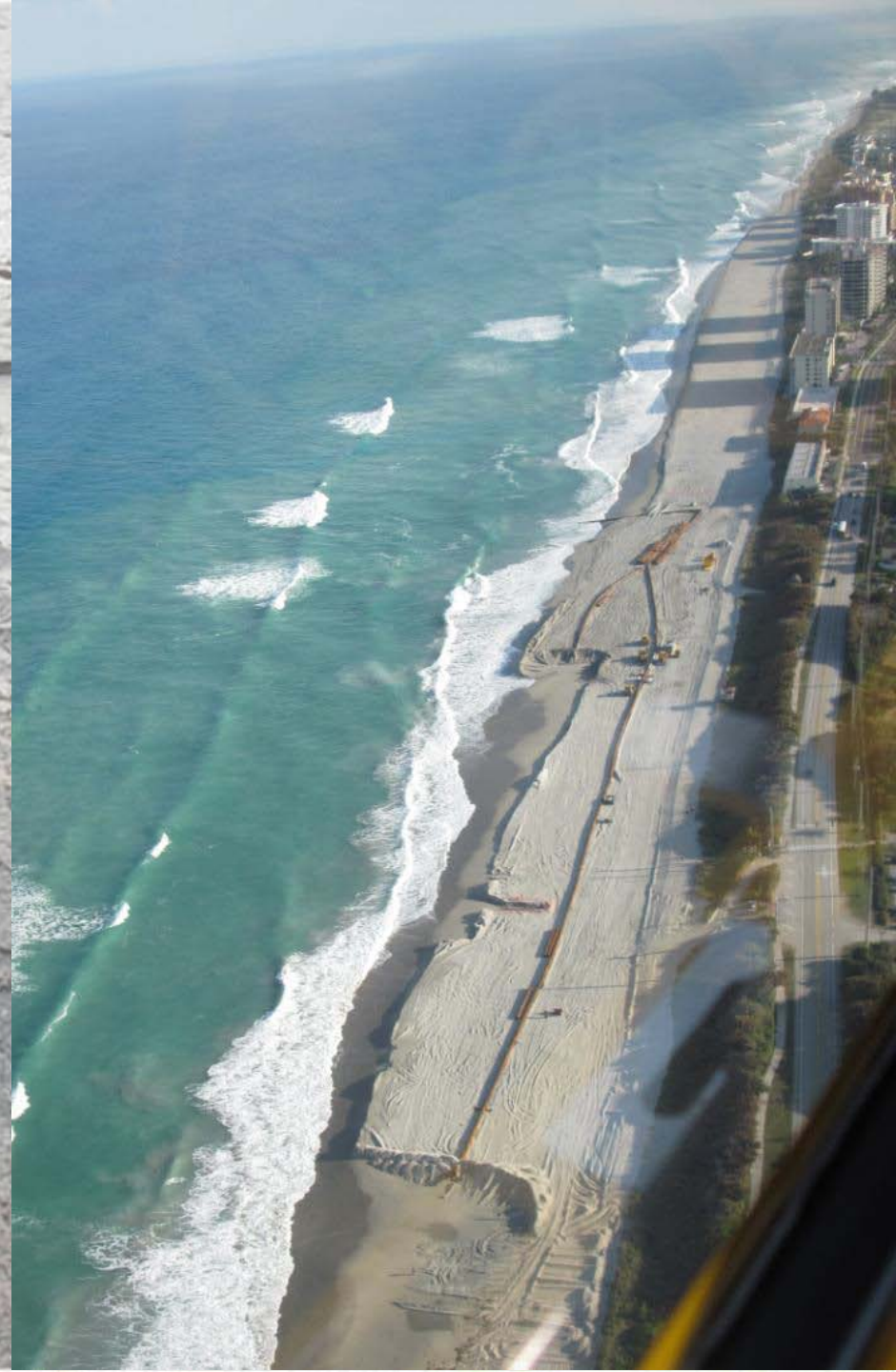
•Juno Beach

- County-sponsored project built in 2000 and 2010



Shoreline Protection Projects in Palm Beach County

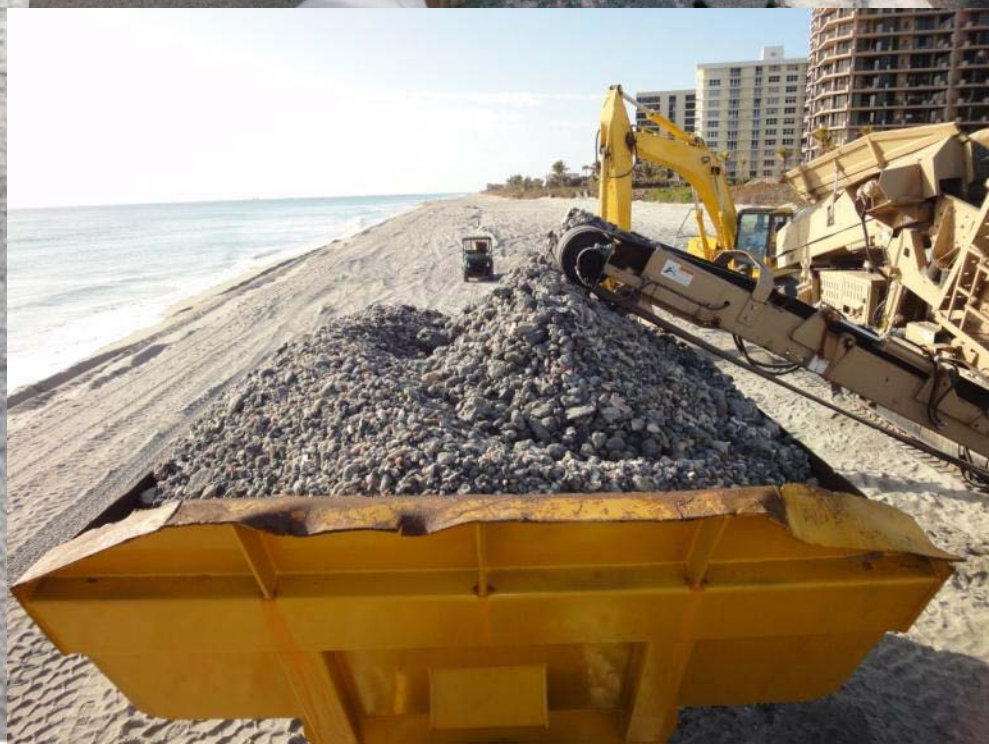
- Juno Beach
 - County-sponsored project built in 2000 and 2010



Shoreline Protection Projects in Palm Beach County

•Juno Beach

- County-sponsored project built in 2000 and 2010
- Approximately 3% of the material dredged in 2010 was not beach compatible
- Rocks were screened from beach post project



Shoreline Protection Projects in Palm Beach County

- Singer Island
- Easternmost point in County
- 8 dune restorations in 10 years



Shoreline Protection Projects in Palm Beach County

- **Singer Island**
 - **Easternmost point in County**
 - **8 dune restorations in 10 years**
 - **Some don't last more than a few months**



Eastpointe II
3/28/07

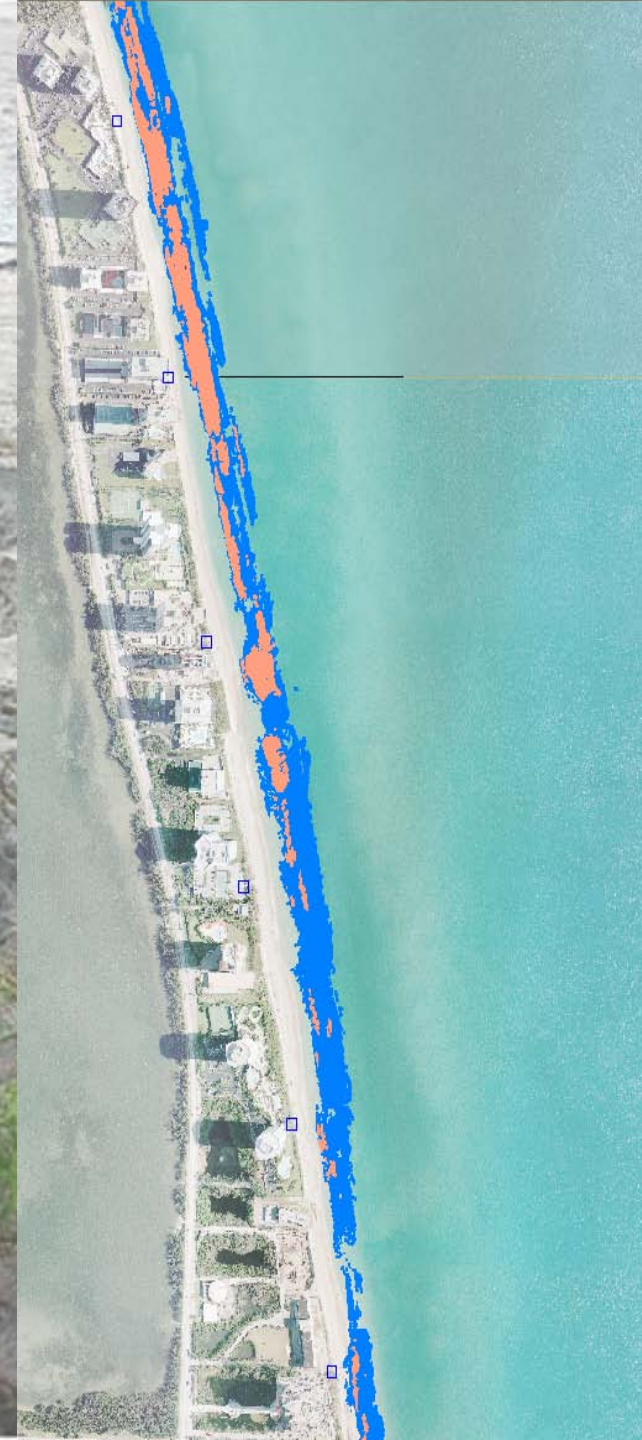


Eastpointe II
5/8/07



Shoreline Protection Projects in Palm Beach County

- **Singer Island**
 - Easternmost point in County
 - 8 dune restorations in 10 years
 - Some don't last more than a few months
 - Extensive nearshore hardbottom means beach nourishment is not a viable option



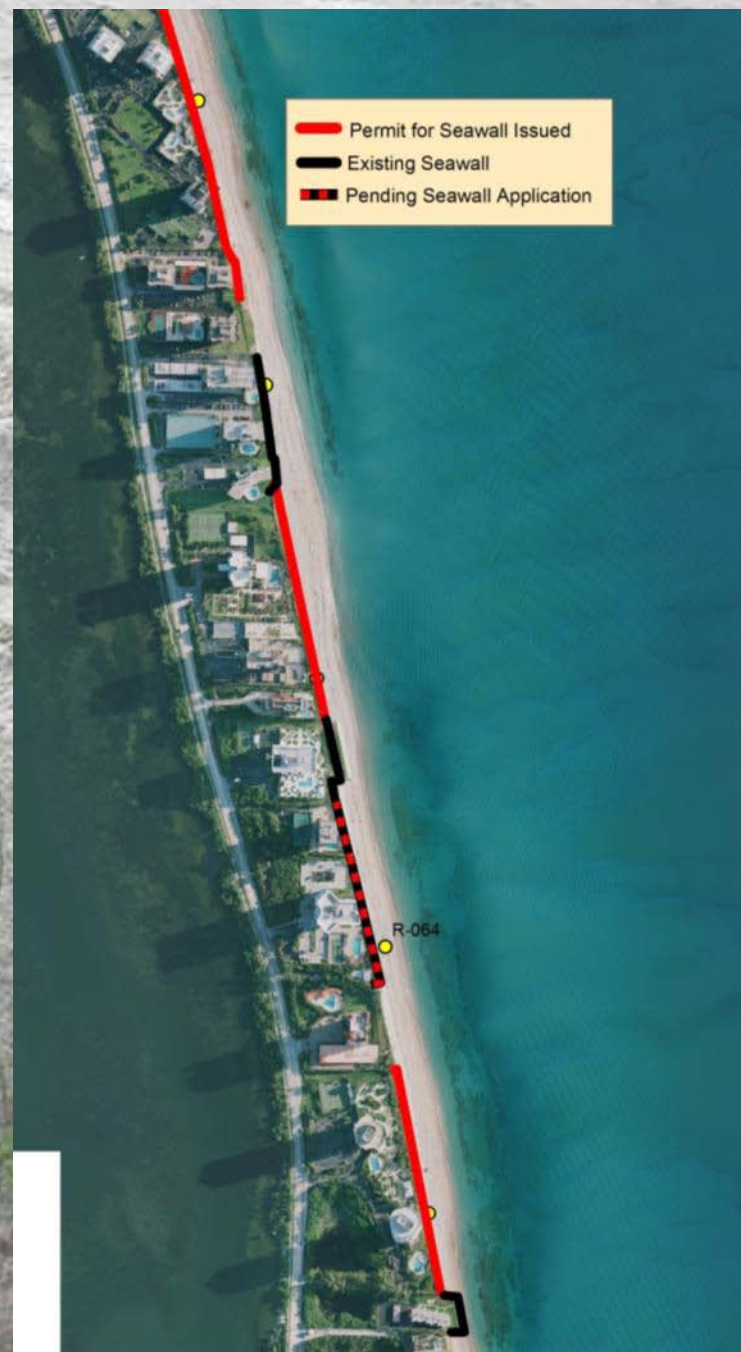
Shoreline Protection Projects in Palm Beach County

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 - Designed a breakwater project to control erosion, but could not overcome permitting obstacles



Shoreline Protection Projects in Palm Beach County

- **Singer Island**
 - Easternmost point in County
 - 8 dune restorations in 10 years
 - Designed a breakwater project to control erosion, but could not overcome permitting obstacles
 - Result will be a mile-long seawall throughout project area



Shoreline Protection Projects in Palm Beach County

- Palm Beach

- The Town manages their own beach program, but has interlocal agreements and municipal partnerships with the County
- Town is divided into eight segments or “reaches”



Shoreline Protection Projects in Palm Beach County

- South Palm Beach
 - Six dune restorations completed since 2003



Shoreline Protection Projects in Palm Beach County

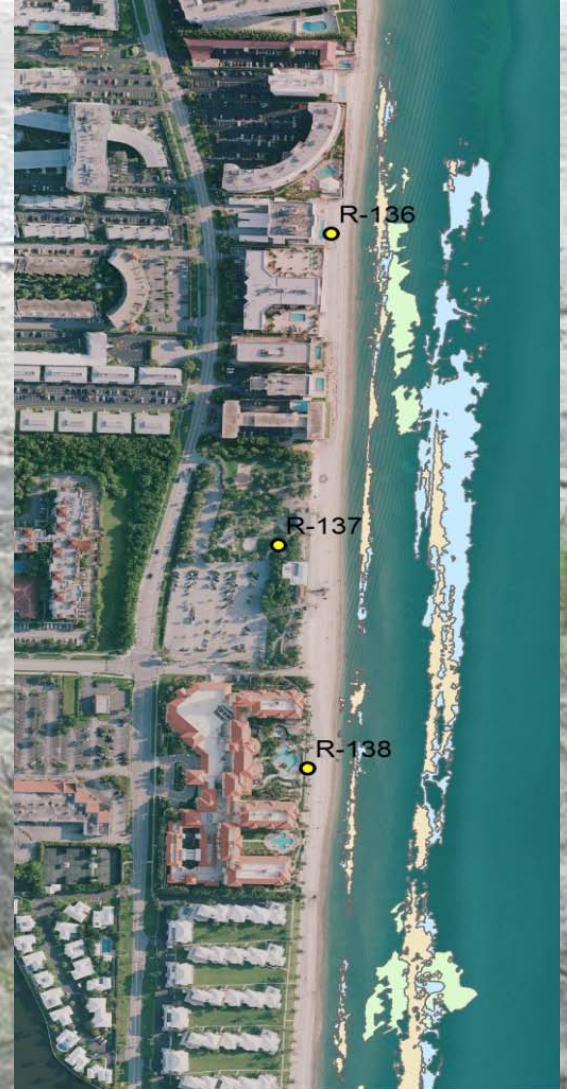
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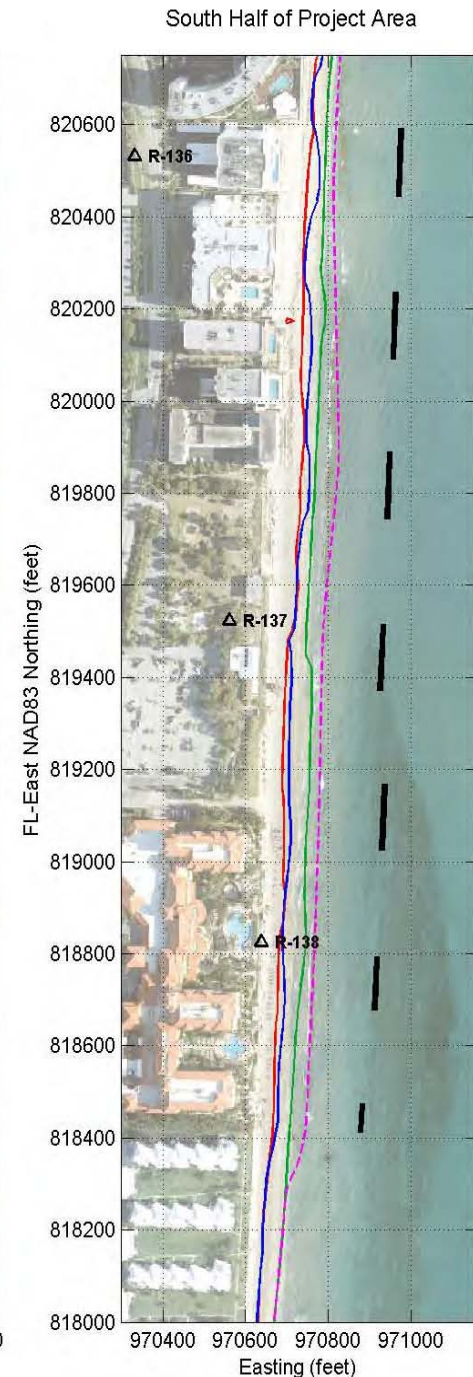
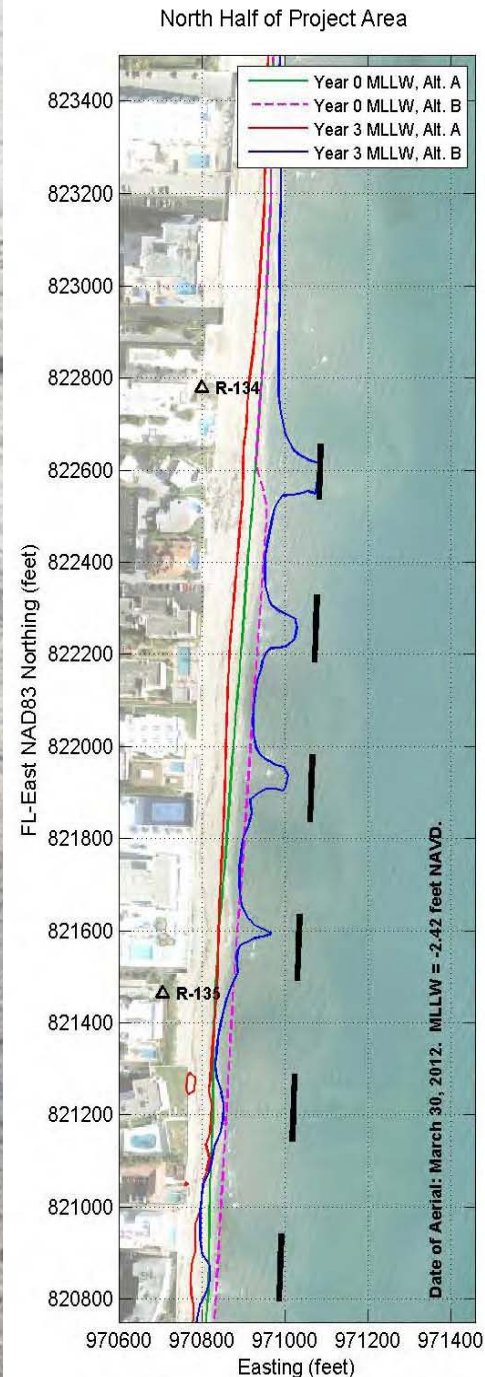
Shoreline Protection Projects in Palm Beach County

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 - Six dune restorations completed since 2003
 - Like Singer Island, area has extensive nearshore hardbottom



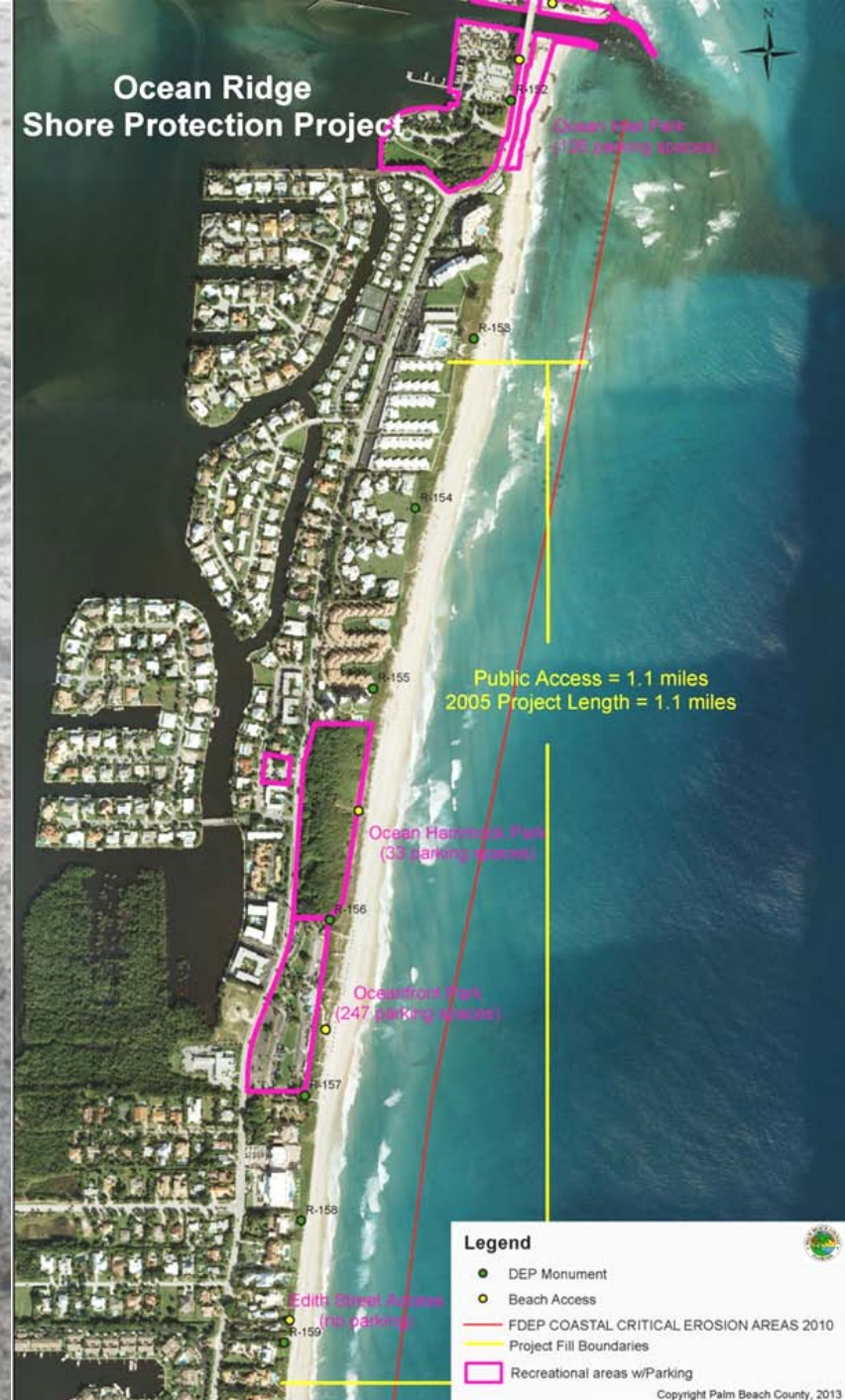
Shoreline Protection Projects in Palm Beach County

- **South Palm Beach**
 - Six dune restorations completed since 2003
 - Like Singer Island, area has extensive nearshore hardbottom
 - Breakwater project designed but not permitted
 - EIS in process to determine erosion control solution



Shoreline Protection Projects in Palm Beach County

- Ocean Ridge
- Federal Project, restored in 1998, 2005, and planned for 2013



Shoreline Protection Projects in Palm Beach County

- Ocean Ridge

- Federal Project, restored in 1998, 2005, and planned for 2013

- Groin field south of inlet holds sand in place



Shoreline Protection Projects in Palm Beach County

- **Ocean Ridge**
 - **Scheduled for next nourishment in November, 2013**



Shoreline Protection Projects in Palm Beach County

- Delray Beach
 - Federal project
 - First nourishment project in Palm Beach County
 - Managed by the City

Delray Beach Nourishment History

1973 Initial Nourishment
1,635,000 CY **2.65 Miles**

1978 First Renourishment
701,000 CY **1.32 Miles**

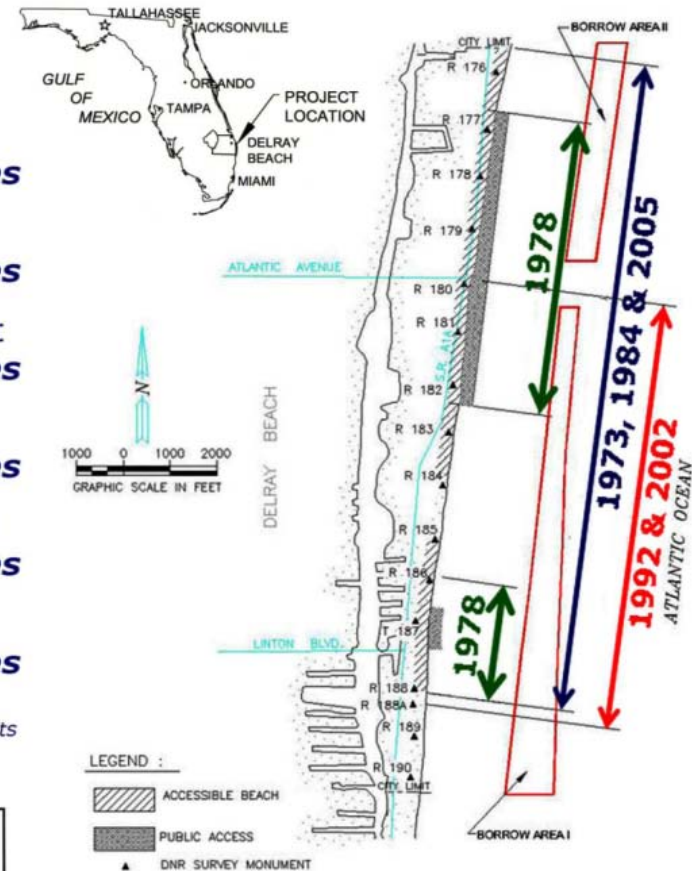
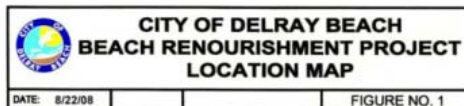
1984 Second Renourishment
1,300,000 CY **2.65 Miles**

1992 Third Renourishment
1,196,500 CY **1.7 Miles**

2002 Fourth Renourishment
1,230,000 CY **1.7 Miles**

2005 Fifth Renourishment
411,600 CY **2.65 Miles**

*Location of Beach Renourishment Project Limits
Relative to Previous Beach Project Limits*



Shoreline Protection Projects in Palm Beach County

- Boca Raton

- Managed by the City
- North Boca Raton is a Federal project, others are State/County/City partnerships



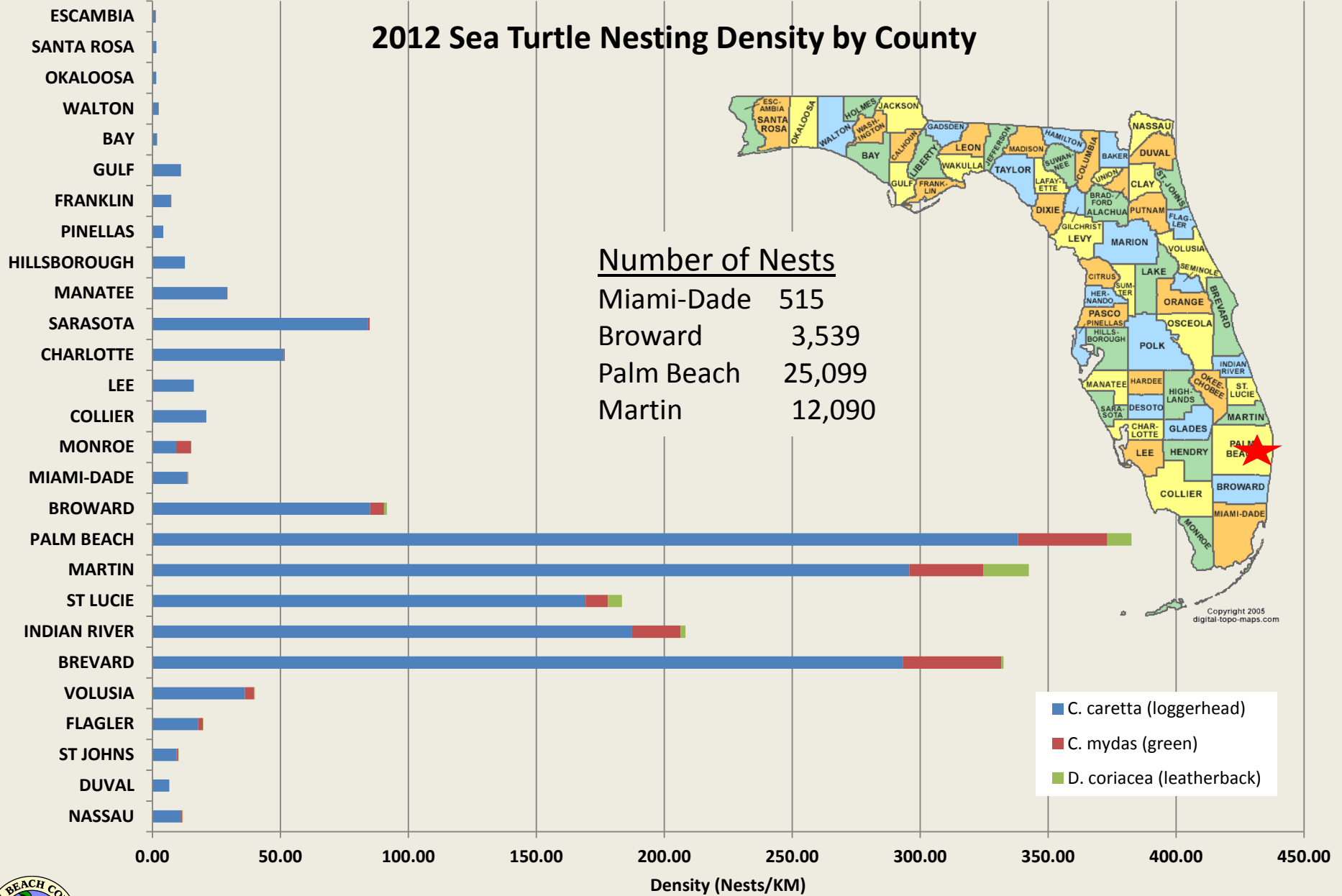
Special Permitting Considerations for Beach Projects in Palm Beach County

- **SEA TURTLES!!!!**

- Reefs
 - Nearshore Harbottom
 - Offshore Reef
 - *Acropora spp.*
- Seagrass
 - *Halophila johnsonii*
- Others
 - Manatees
 - Shorebirds
 - Smalltooth Sawfish
 - Right Whales

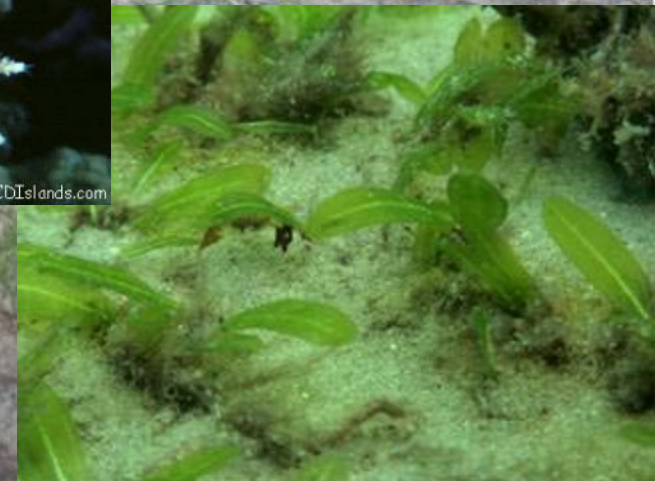


2012 Sea Turtle Nesting Density by County



Special Permitting Considerations for Beach Projects in Palm Beach County

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- **Reefs**
 - Nearshore Harbottom
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 - *Acropora spp.*
- **Seagrass**
 - *Halophila johnsonii*
- **Others**
 - Manatees
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Special Permit Conditions

- **Extensive sea turtle monitoring**
 - Nesting and reproductive success
- **Shorebirds**
- **Sand compaction testing and tilling**
- **Scarp monitoring and leveling**
- **Coastal lighting inspections and corrective action**
- **Night time sea turtle monitoring beginning March 1**
 - NO work between May 1 and October 31
- **Nearshore reef monitoring and mitigation**
- **Turbidity monitoring**
 - Resource-based (reefs and sea grass)



Issues of Concern

- **Dwindling Sand Resources**
 - **SAND Study**
 - Sand quality questions
- **Shrinking Budgets**
 - **Uncertainty of funding**
 - FEMA denials, loss of earmarks, dedicated state funding
- **Permitting “Prejudices”**
 - **Monitoring Data – what is it used for?**
- **Public Perception**
 - **Beaches are critical infrastructure**
 - Not just for “rich people”
- **Climate Change, Sea Level Rise**



Summary

With 46 miles of beaches to manage, flexibility is crucial for a successful program

- **No “One Size Fits All” solution**
 - Four inlets
 - Fifteen miles of dune restoration
 - Nine beach renourishment projects
 - Structural alternatives (where appropriate)
- **Partnerships with Feds, State, Municipalities**
- **Preparation is key**



Thank you!



For more information, and to check on our live beach cameras... www.pbcgov.org/erm

