

JACKSONVILLE DISTRICT REGIONAL SEDIMENT MANAGEMENT

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**US Army Corps
of Engineers®**

TOPICS

- eCoastal Implementation
- Netherlands Technology Transfer
- FL Demonstration Project
- SW Florida Sediment Budget
- NW Florida Sediment Budget
- Sediment Management
- FY05 Milestones and Funding

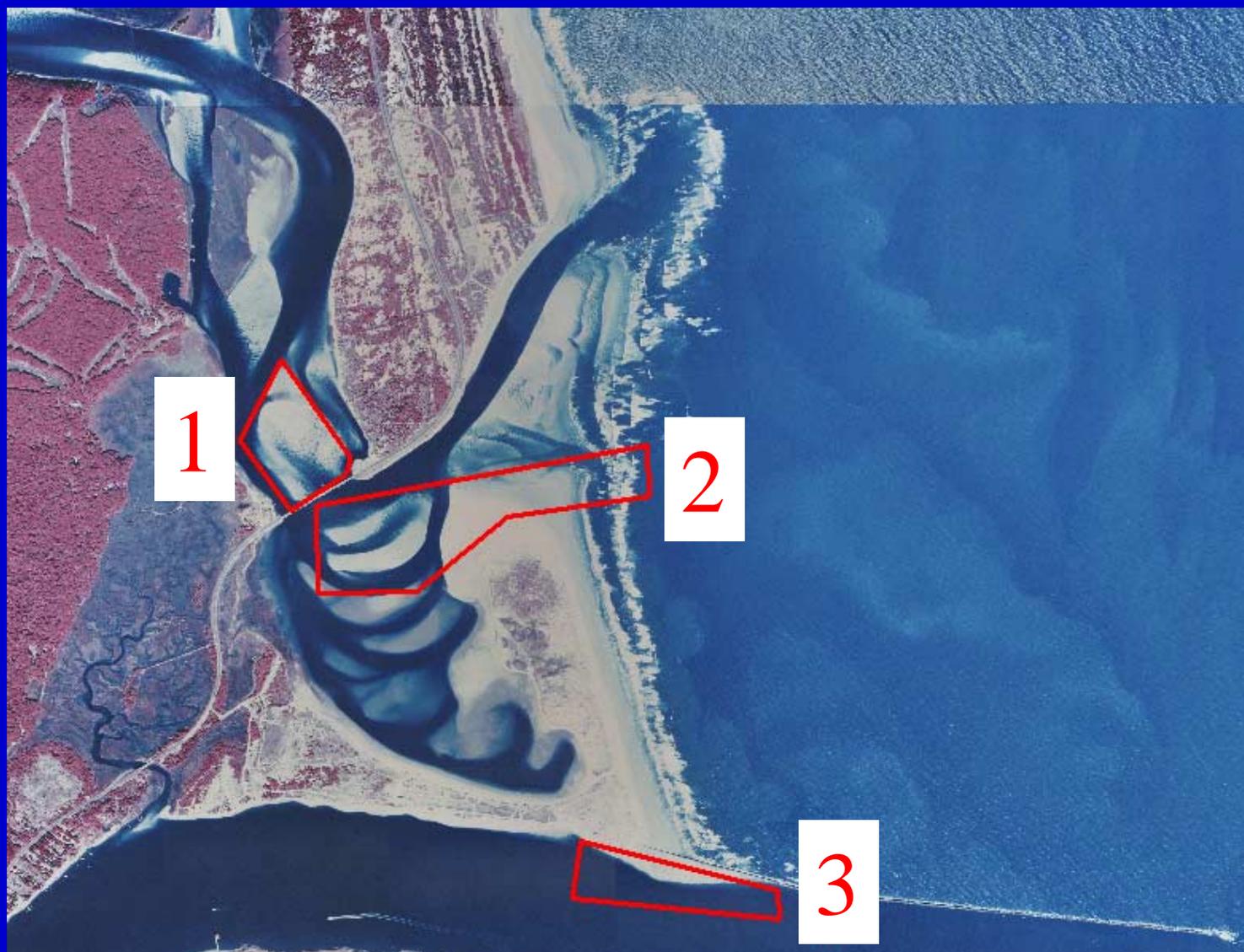
eCoastal Implementation - \$55K

- Delivered in December of 2003 through MIPR to Mobile and Contract through Taylor Engineering.
- Challenge to get the system to work on CITRIX.
- Initial SAJ work involved creating TINs, Grids, and Shape files to speed up access.
- Currently adding additional historical materials to the database to create interest in District use.
- Developing SOP for addition of material from other District Elements.
- Refining SOW language for future survey and environmental contracts.

Netherlands Technology Transfer - \$2K

- Team made up of 3-SAJ, 3-MVN, 1-NAD and 1-HQ.
- Witnessed signing of MOA between the two governments allowing transfer of technology.
- Introduced to RWS missions:
 - Flood Control, Flood Mgt; Water Mgt; Coastal Defense; Navigational Dredging; Shipping & Transport
- Developed preliminary report for ASA to share with Deputy-General of RWS.

Proposed Borrow Sites



Study Objectives

- Update previous model with 2002 bathymetry in Ft. George Inlet
- Model existing conditions for tidal currents and waves
- Evaluate effects of combined flood shoal and Ward's Bank alternative from previous study



Summary

- Flood Shoal mining produces 1.3 mcy
- Ward's Bank mining produces 3.3 mcy
- Little Talbot Shoreline reconstruction to approximately its 1970s location
- 2.4 mcy available for sediment by-pass



Conclusions

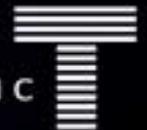
■ Tidal Circulation Results

◆ Advantages

- ◆ Reduces flow velocities through the inlet and along Little Talbot Island shoreline
- ◆ Flow path is centralized in the channel

◆ Disadvantages

- ◆ Increases flow velocities at bridge on ebb (Potential scour)
- ◆ Increases flow velocities north of flood shoal cut - east side of channel on flood and west side of channel on ebb



SECTION 227

■ MIAMI BEACH:

- ◆ Authorized as a Section 227 Demonstration Project
- ◆ 63rd Street Erosional Hot Spot Identified as Demo Site

■ PRIOR INVESTIGATIONS:

- ◆ Dade County Shore Protection Project Reports
- ◆ 2001 Jacksonville District Project Evaluation Report
- ◆ 2001 CSI Coastal Processes Report

■ ONGOING ACTIVITIES:

- ◆ Review of 100% submittal of Plans and Specifications
- ◆ Environmental Coordination Process initiated

Regional Sediment Budgets

- Purpose: Provide a detailed accounting of sediment movement as a basis for present and future RSM activities.

Sediment Budget Methodology

- Define region and period of interest.
- Mine existing reports and studies for data.
- Subdivide region into sediment 'cells'.
- Conduct new analysis where existing coverage is limited.
- Apply SBAS tool to map sediment pathways, sources and sinks.

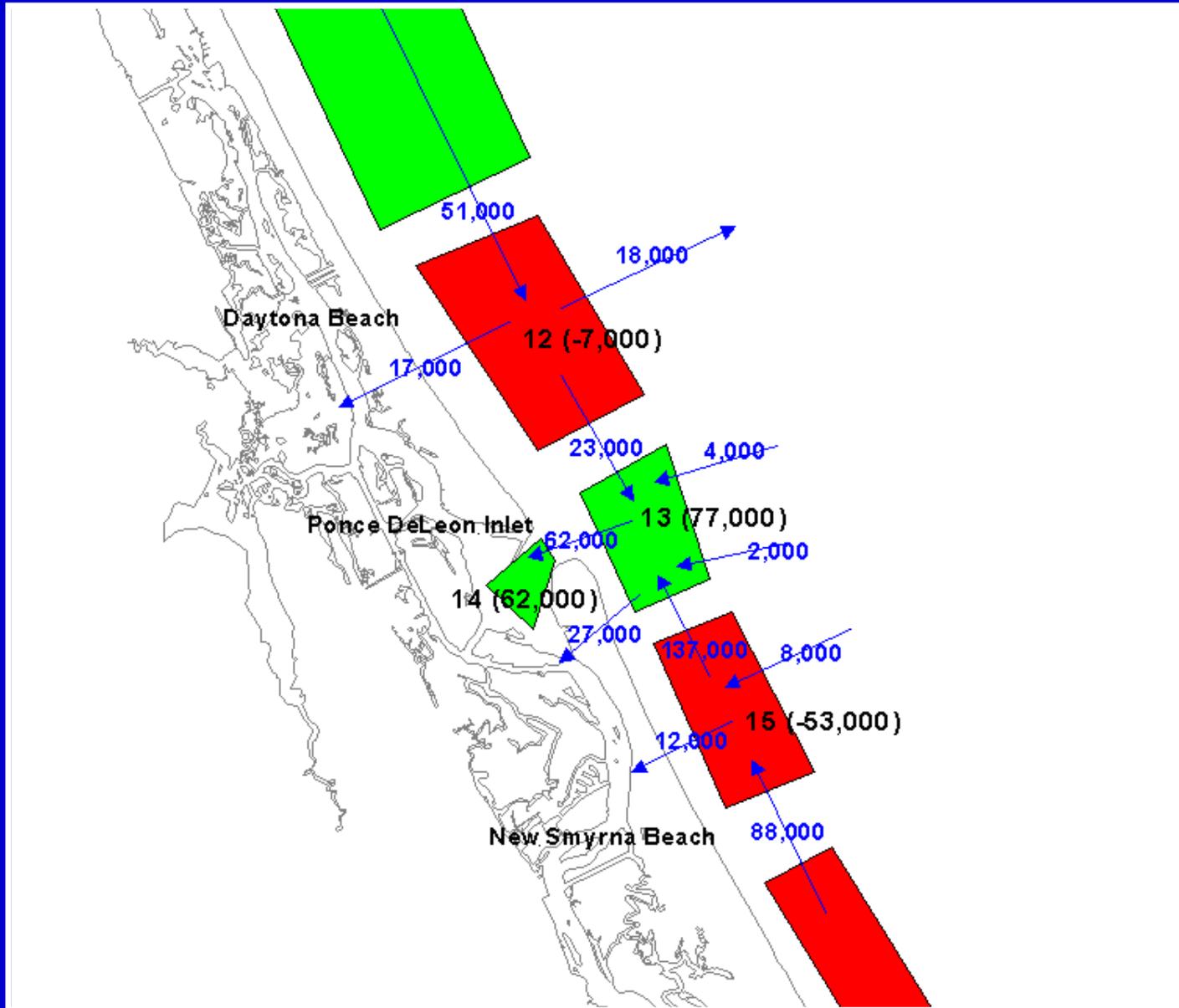
Florida Regional Sediment Budgets



NE FL Regional Sediment Budget

- 150 miles of the Atlantic Coast from the GA/FL border south through Volusia County.
- Data sources: District, State and local documents; FDEP beach surveys, 1970 - 2003.
- Collaboration between Taylor Engineering and Jacksonville District.

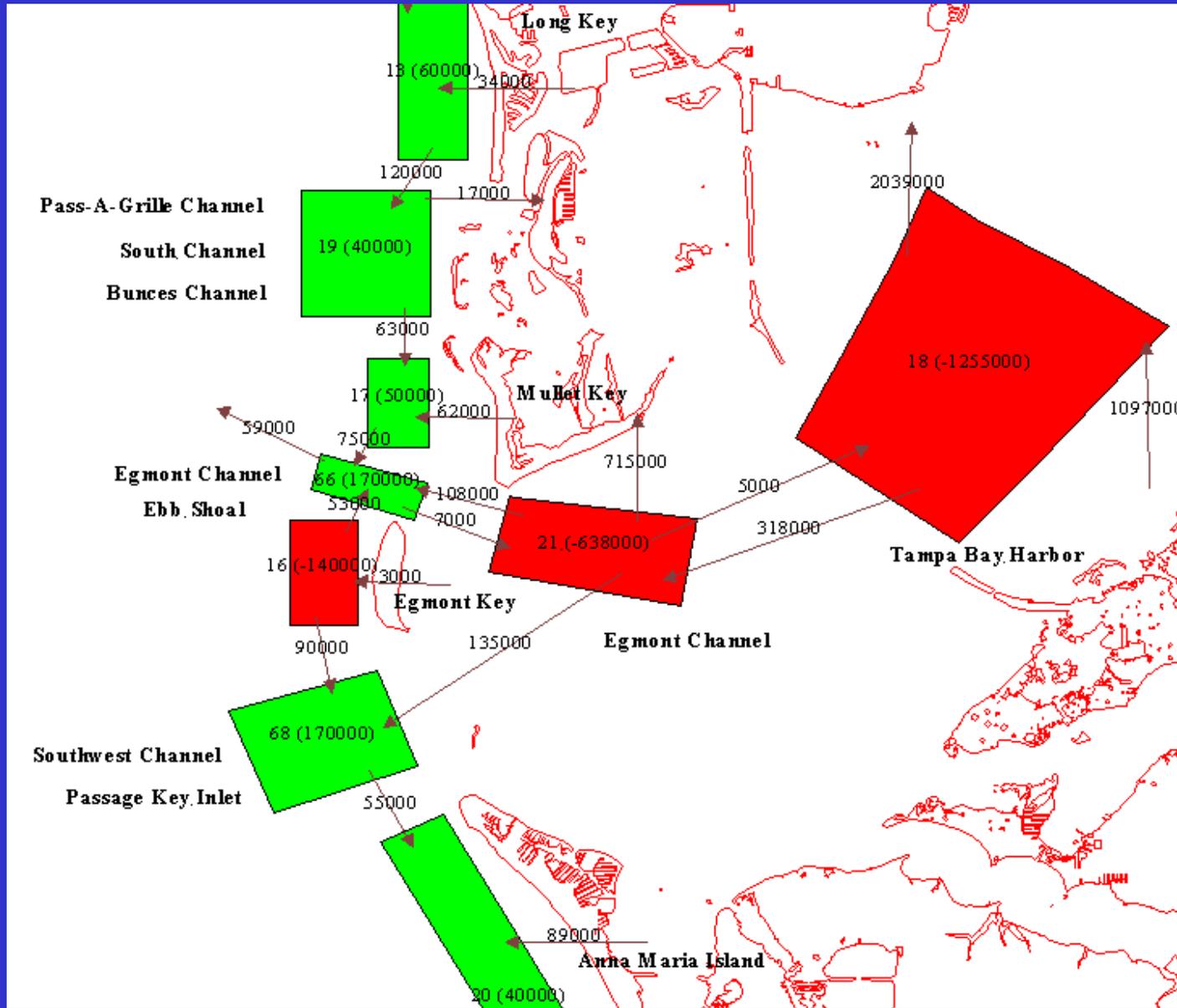
Ponce DeLeon Inlet Sediment Budget



SW FL Regional Sediment Budget

- Covers the Gulf Coast of Florida from the top of Pinellas County down through Southern Collier County; 1970 - 2000.
- Used to initiate a portion of the Gulf of Mexico RSM Initiative Regional Sediment Budget.
- Performed by Taylor Engineering, task completed in October 2002.

SW FL Regional Sediment Budget



Future Work: Sediment Budgets are Living Documents

- Periodic updates to include new data sources; SHOALS, etc.
- Model longshore and cross-shore transport in more locations
- Continue adding analyses as new studies are completed
- Integrate regional sediment budgets into RSM GIS database

A large, multi-decked dredging vessel is shown on a body of water. The vessel has a prominent mast with a flag and various pieces of equipment on its deck. The background shows a hazy sky and a distant shoreline with trees.

**INTRACOASTAL WATERWAY
MAINTENANCE DREDGING**

and the

**PLACEMENT OF DREDGE MATERIAL
ON FLORIDA BEACHES**

Quick facts:

- **Between 1997 and 2004, the USACE, Jacksonville District completed 15 dredging projects on Florida's Intracoastal Waterway.**
- **Of those 15 projects, 7 included direct beach placement and 5 were nearshore placement.**
- **In the next 5 years, another 20 dredging projects are planned w/ 10 having some beach or nearshore placement.**
- **Anticipate spending \$12 M per year over the next five years performing maintenance dredging of the Intracoastal Waterway.**

Since 1997:

<u>Where Placed?</u>	<u>How many?</u>	<u>How much?</u>
Beach placement	7	3,300,000 cy
Nearshore placement	5	129,000 cy

Next 5 years:

Beach placement	8	2,500,000 cy
Nearshore placement	2	500,000 cy

*** This translates into over 8 miles of direct downdrift beach renourishment over the 13 year period.**

4,500,000

4,000,000

3,500,000

3,000,000

2,500,000

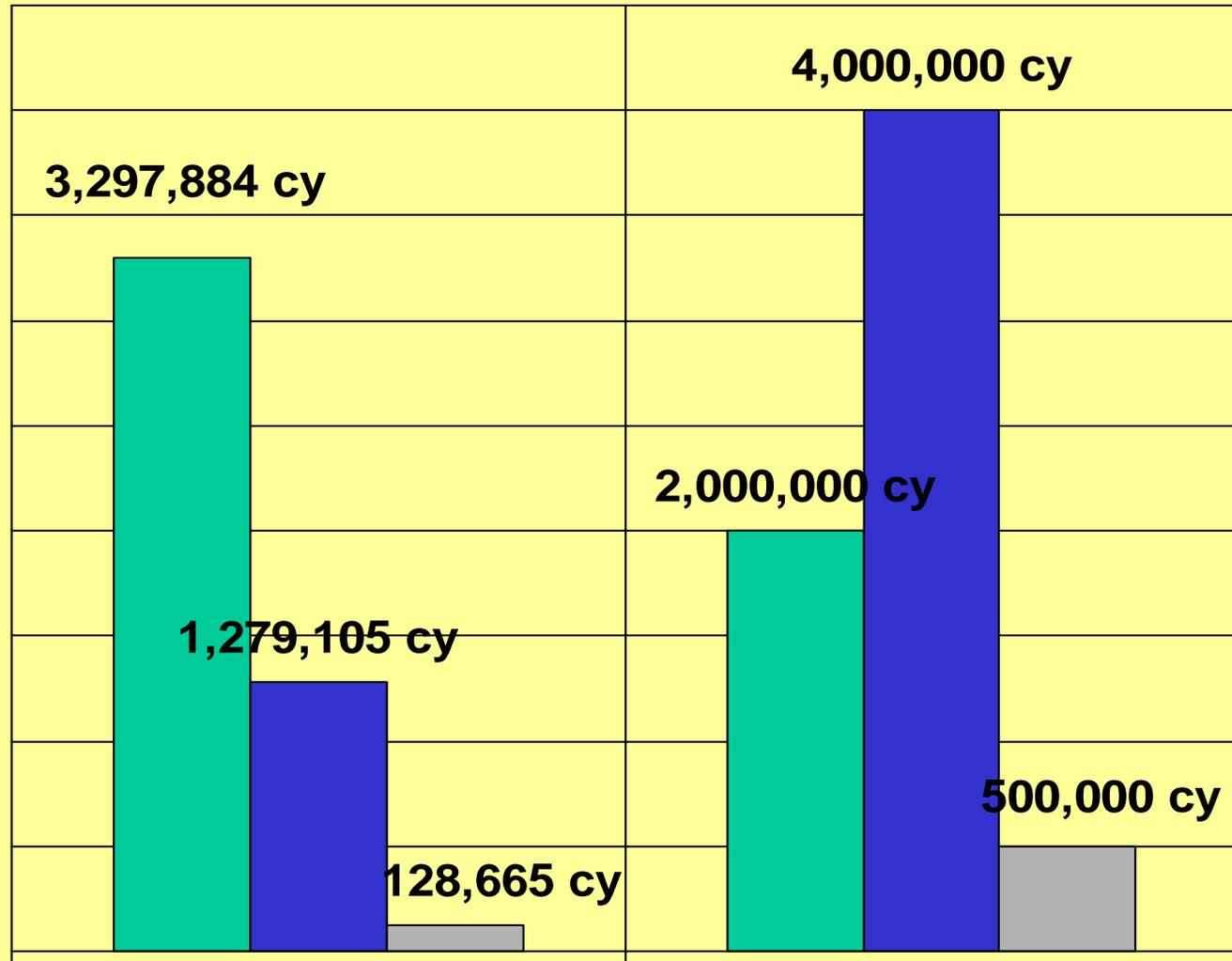
2,000,000

1,500,000

1,000,000

500,000

0



3,297,884 cy

4,000,000 cy

2,000,000 cy

1,279,105 cy

500,000 cy

128,665 cy

Since 1997

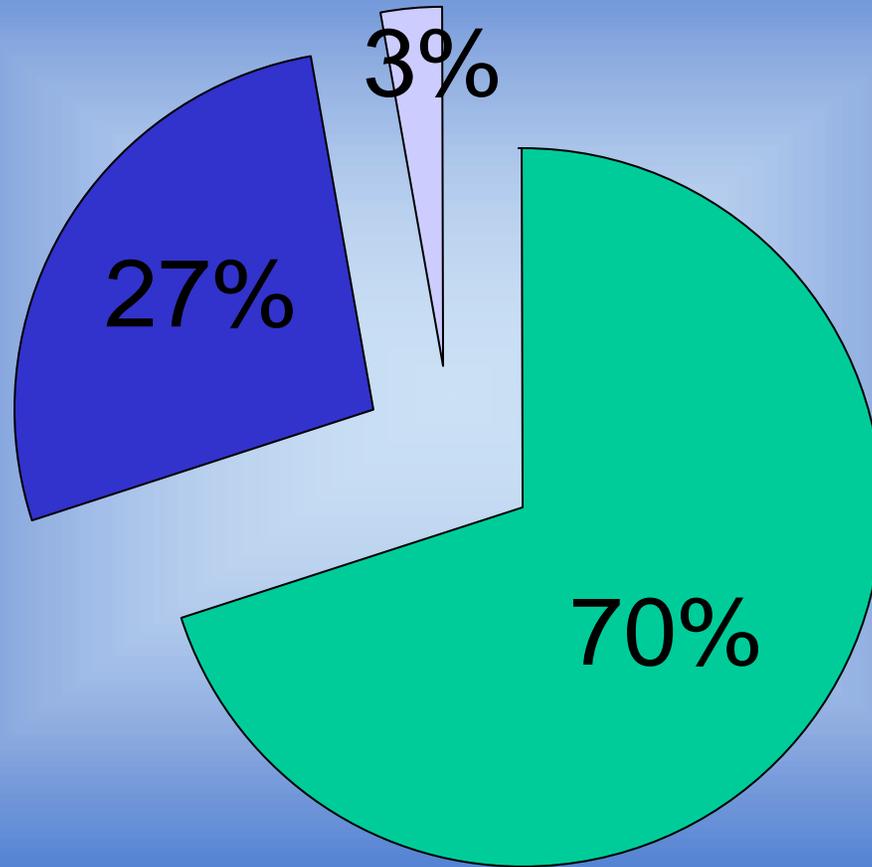
Next 5 Years

Beach

Upland

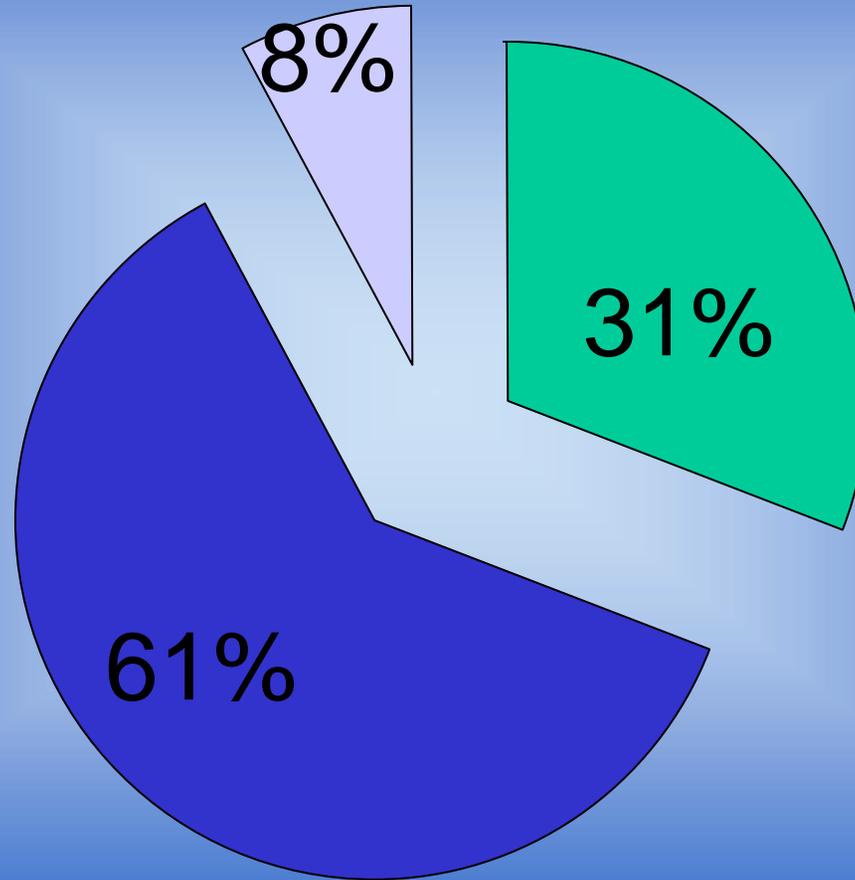
Nearshore

Since 1997
Percentage of Each Type of Placement



■ Beach ■ Upland ■ Nearshore

Next 5 Years Percentage of Each Type of Placement



■ Beach ■ Upland ■ Nearshore

Recent projects that involved beach placement during maintenance dredging (MD) or offloading of upland containment areas (OL):

<u>IWW Project</u>	<u>County</u>	<u>Type</u>	<u>Freq. (yrs)</u>
Vic. Nassau Sound	Nassau	MD	3
Vic. St. Augustine Inlet	St. Johns	MD	5
Vic. Matanzas Inlet	St. Johns	MD	4
SJ-1	St. Johns	OL	12
Vic. Marineland	Flagler	MD	8
Vic. Jupiter Inlet	Palm Beach	MD	3
Vic. Bakers Haulover	Dade	MD	2

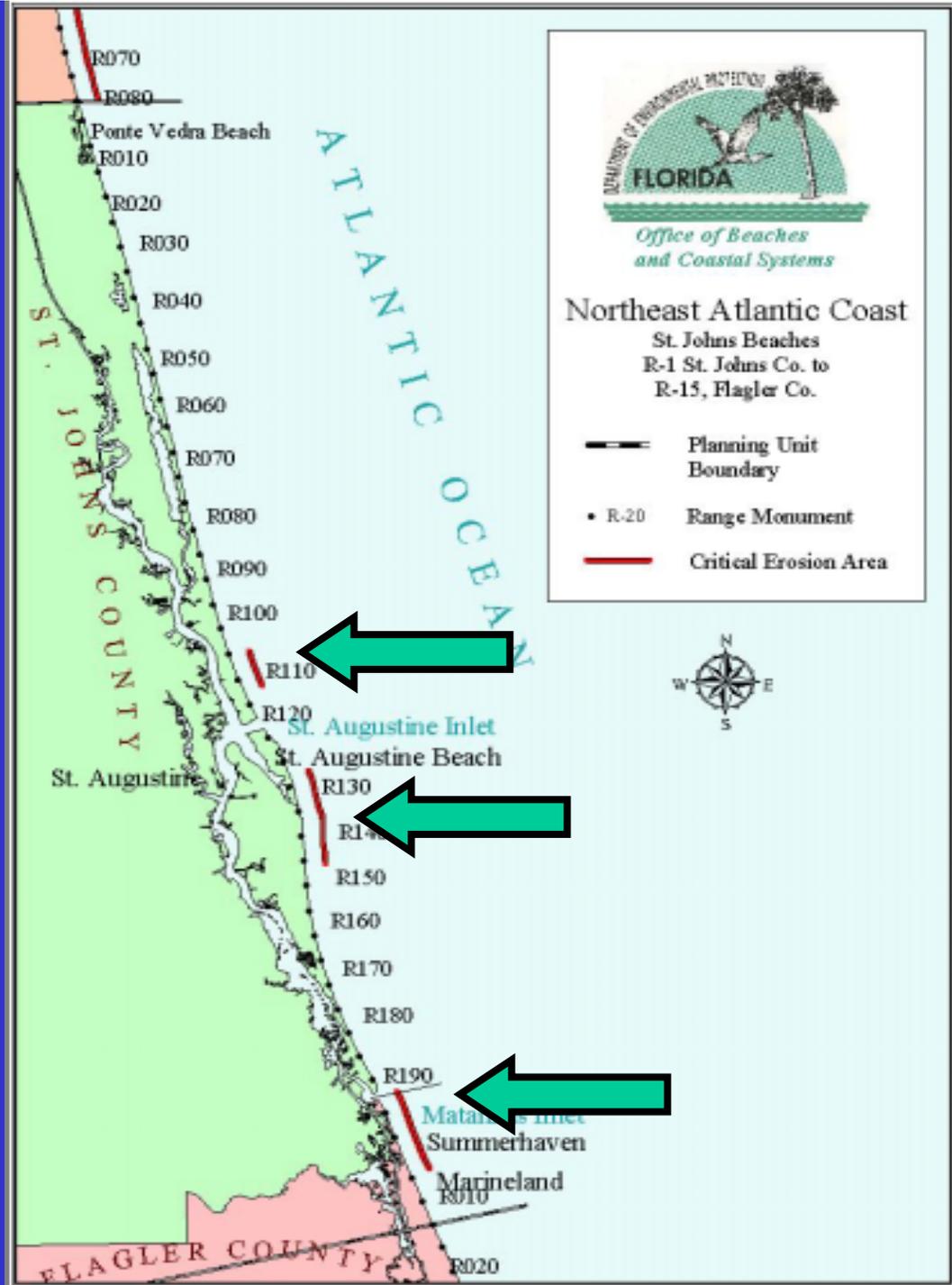
Recent projects that involved nearshore placement during maintenance dredging (MD):

<u>IWW Project</u>	<u>County</u>	<u>Type</u>	<u>Freq. (yrs)</u>
Vic. St. Augustine	St. Johns	MD	5
Vic. Ponce deLeon	Volusia	MD	3
Vic. Cross-roads	Martin	MD	4
Vic. Bakers Haulover	Dade	MD	2

❖ The State of Florida has designated critically eroded beaches along Florida's coastline.

❖ St. Johns County beaches routinely receive sand from the IWW dredging projects.

❖ In 1999, the COE placed over 2 million cubic yards of sand on **Summerhaven Beach** in north St. Johns County.



A typical critically eroded beach which has low dunes and over-wash can occur frequently.



Inside the SJ-1 confined containment area during the offloading operation.

Offloading point

Weirs



Offloading operation at the SJ-1 Intermodal Facility

Intracoastal Waterway

Pipeline to
the beach

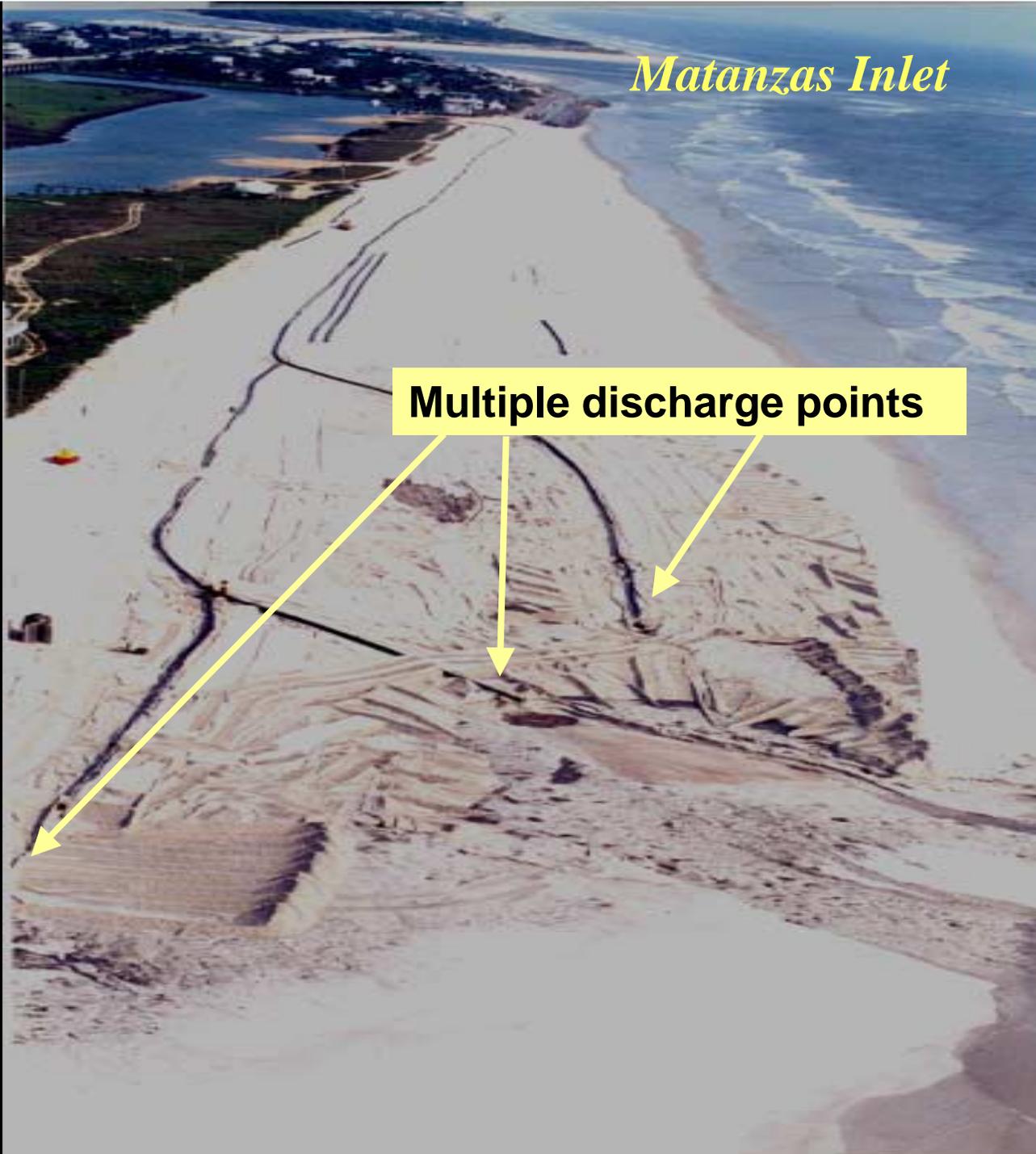
The dredge

Sheet pile
containment



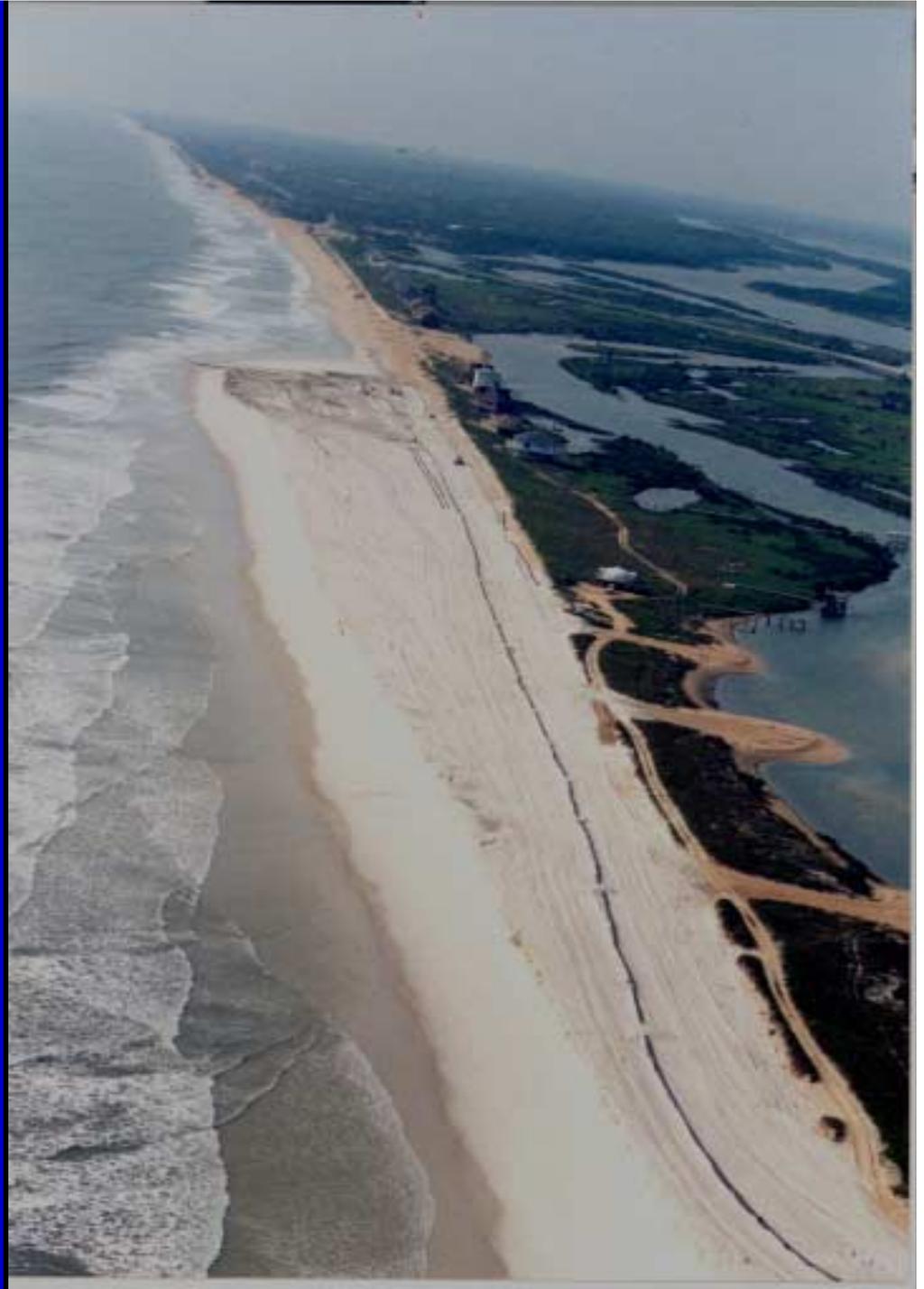
Matanzas Inlet

Multiple discharge points



Project facts:

- ❖ Berm width = 250 ft
- ❖ Berm elevation = 7 ft (N.G.V.D)
- ❖ Beach length = 14,200 ft
- ❖ Total volume of sand placed = 2,100,000 cy
- ❖ Project cost = \$10.8 M
- ❖ Project duration = 2 yrs
- ❖ The **Florida Inland Navigation District** is the local sponsor for the Atlantic Intracoastal Waterway.



Challenges:

Funding:

- A reduction in budget for the IWW has placed limits on the amount of work that can be accomplished.
- Cost of beach placement can be more expensive than other alternatives.

Environmental

- Regulatory agencies overburden the permit requirements and severely delay critical projects and increase cost of work.
- Endangered species windows and requirements may prevent direct beach placement.

Political

- Local municipalities or businesses not in support of beach placement.



RSM PROGRAM NOTES

■ LESSONS LEARNED:

- ◆ Section 22 Funds Not Always Available
- ◆ GIS Implementation/Compatibility improving with Communication
- ◆ Inlet Re-configuration extremely difficult even with stakeholder involvement

■ PROBLEMS ENCOUNTERED:

- ◆ Physical Size of Southwest Florida Region
- ◆ Identifying Suitable Demonstration Projects

■ RECOMMENDATIONS:

- ◆ Continue to Workshop
- ◆ Involve Port Authorities and Navigation Districts

■ PLAN FOR FY05:

- ◆ Central Atlantic Workshops
- ◆ Develop Demonstration Projects

FY05 MILESTONES AND FUNDING NEEDS

✓ Tech Note for IWW successes	\$10,000
✓ Northeast Florida (Sed Budget)	
➤ Cross Shore Portion	\$40,000
➤ Coordination w/ FIND	\$20,000
✓ Southwest Florida:	
➤ eCoastal Input	\$40,000
➤ Outreach	\$20,000
✓ Central Florida:	
➤ Kick Off Workshops	<u>\$50,000</u>
TOTAL	\$180,000

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<https://rsm.saj.usace.army.mil> - **\$7k**



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