Florida Department of Environmental Protection

Division of Water Resource Management

Development and Adoption of Updated Inlet Management Plans

Ralph Clark, P.E. – FDEP, Div. of Water Resource Mgmt.

Kevin Bodge, Ph.D., P.E. – Olsen Associates, Inc.





Florida Statutes

- Section 161.161, F.S.
  -- Calls for the Department to adopt a state-wide beach management plan with inlet management plans to mitigate the beach erosion impact of *improved*, *modified*, or *altered* inlets.

- Section 161.041(1)(b), F.S.
  – Requires mitigation with inlet project authorization, which is the adopted inlet management plan.

Florida Statutes

- Section 161.142, F.S.
  - Legislature's Declaration of Public Policy relating to Improved Navigation Inlets

- Section 161.143, F.S.
  - Inlet Management: Planning, Funding & Implementing Projects to mitigate inlet impacts

Florida Statutes

Section 161.142, F.S. –

- "It is in the public interest to … ensure that beach quality sand is placed on adjacent eroding beaches."
- "Such activities cannot make up for the historical sand deficits caused by inlets, but shall be designed to balance the sediment budget of the inlet and adjacent beaches and extend the life of proximate beach restoration projects so that periodic nourishment is needed less frequently."

The Department shall ensure that…

- 161.142(1), F.S.
  - Beach placement of maintenance dredge material
- 161.142(2), F.S.
  - Inlet bypassing objective to replace sand
- 161.142(5), F.S.
  - Sand from federal navigation projects to be placed on adjacent eroding beaches, or in the nearshore area
- 161.142(6), F.S.
  - Responsible Entities

Inlet Management Plan

- Identifies the adjacent eroding beaches for sand bypassing activities
- Identifies the past history of shoreline changes, dredging and disposal activities
- Adopts a recent sediment budget
- Establishes inlet sand bypassing objectives to effectively balance the sediment budget
- Identifies a hydrographic monitoring protocol

New vs Update IMP

- Currently 17 IMP's statewide (15-20 years old)
- 3 of 17 are update IMP's
  - St. Augustine Inlet
  - East Pass
  - Port Canaveral Inlet
- Still many inlets being managed without an IMP
- Both new and update IMP's need a recent or update sediment budget


Pensacola Pass
East Pass
St Andrews Inlet
Mexico Beach Inlet
Bob Sikes Cut
St Mary's River Entrance
St John's River Entrance
St Augustine Inlet
Ponce De Leon Inlet
Port Canaveral Inlet
Sebastian Inlet
Fort Pierce Inlet
St Lucie Inlet
Jupiter Inlet
Lake Worth Inlet
South Lake Worth Inlet
Boca Raton Inlet
Hillsboro Inlet
Port Everglades Entrance
Bakers Haulover Inlet
Government Cut
Hurricane Pass
Clearwater Pass
Johns Pass
Blind Pass
Egmont Channel
Longboat Pass
New Pass
Venice Inlet
Stump Pass
Blind Pass
Matanzas Pass
Wiggins Pass
Clam Pass
Doctors Pass
Gordon Pass
Gulf of Mexico
Atlantic Ocean
N
W
E
S
SANTA ROSA
ESCAMBIA
OKALOOSA
WALTON
HOLMES
WASHINGTON
JACKSON
BAY
CALHOUN
GULF
GADSDEN
LIBERTY
WAKULLA
LEON
JEFFERSON
TAYLOR
MADISON
HAMILTON
SUWANNEE
COLUMBIA
LAFAYETTE
FRANKLIN
NASSAU
DUVAL
BAKER
ST JOHNS
CLAY
UNION
BRADFORD
PUTNAM
ALACHUA
GILCHRIST
DIXIE
LEVY
FLAGLER
MARION
VOLUSIA
CITRUS
SUMTER
LAKE
SEMINOLE
HERNANDO
ORANGE
PASCO
PINELLAS
POLK
OSCEOLA
BREVARD
HILLSBOROUG
INDIAN RIVER
MANATEE
HARDEE
OKEECHOBEE
ST. LUCIE
SARASOTA
HIGHLANDS
DE SOTO
MARTIN
GLADES
CHARLOTTE
PALM BEACH
LEE
HENDRY
COLLIER
BROWARD
DADE
MONROE
Managed Coastal Inlets
Inlet Management Plan
Yes
No
Counties

Inlet Sediment Budget

- Average annual *net* and *gross* longshore sediment transport
- Describes the adjacent beach erosion conditions
- Describes the transfer of sand into the inlet and its shoals off adjacent beaches
- Dredging activities – quantities and locations, including disposal sites

New Update IMP's

East Pass (Destin) - *July 29, 2013*

St. Augustine Inlet - *January 17, 2014*

Port Canaveral Inlet - *August 7, 2014*

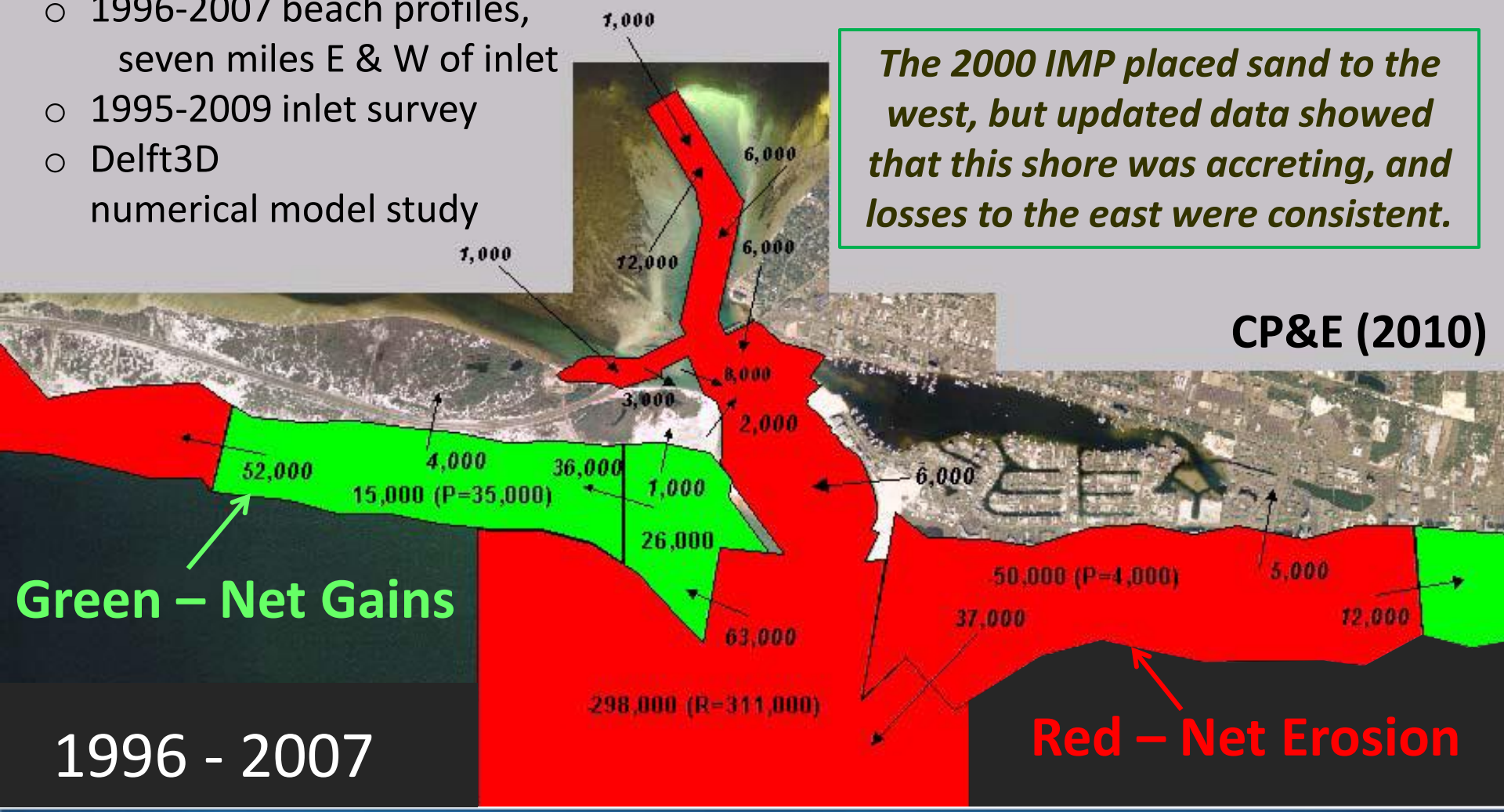
East Pass (Destin)

- **Original IMP -- 2000.**
  Based on a 1990-97 study (w/o data west of the inlet or north of bridge, or sed. transport).
- **All maintenance dredged sand to be placed to the West** (~82,000 cy/yr)**.**
- **Holiday Isles (east of inlet) experienced severe erosion after 2000.**

East Pass Sediment Budget

- **Updated sediment budget study (CP&E 2010) considered:**
  - 1996-2007 beach profiles, seven miles E & W of inlet
  - 1995-2009 inlet survey
  - Delft3D numerical model study

The 2000 IMP placed sand to the west, but updated data showed that this shore was accreting, and losses to the east were consistent.



East Pass IMP (2013) Strategy 1

Update East Pass IMP – July 2013

- **Implement a comprehensive beach and inlet hydrographic monitoring program**
  - Beach profile monitoring data shall be used to determine erosion quantities from the gulf beaches east and west of the inlet along the area of inlet influence (V611-V620 and R17-R26).
  - Recent erosion of adjacent beaches observed over a minimum of five years shall define the placement need in terms of location and volume.

East Pass IMP (2013) Strategy 2

- **Permit the placement of inlet dredge material along the gulf beaches both to the west and to the east of the inlet**

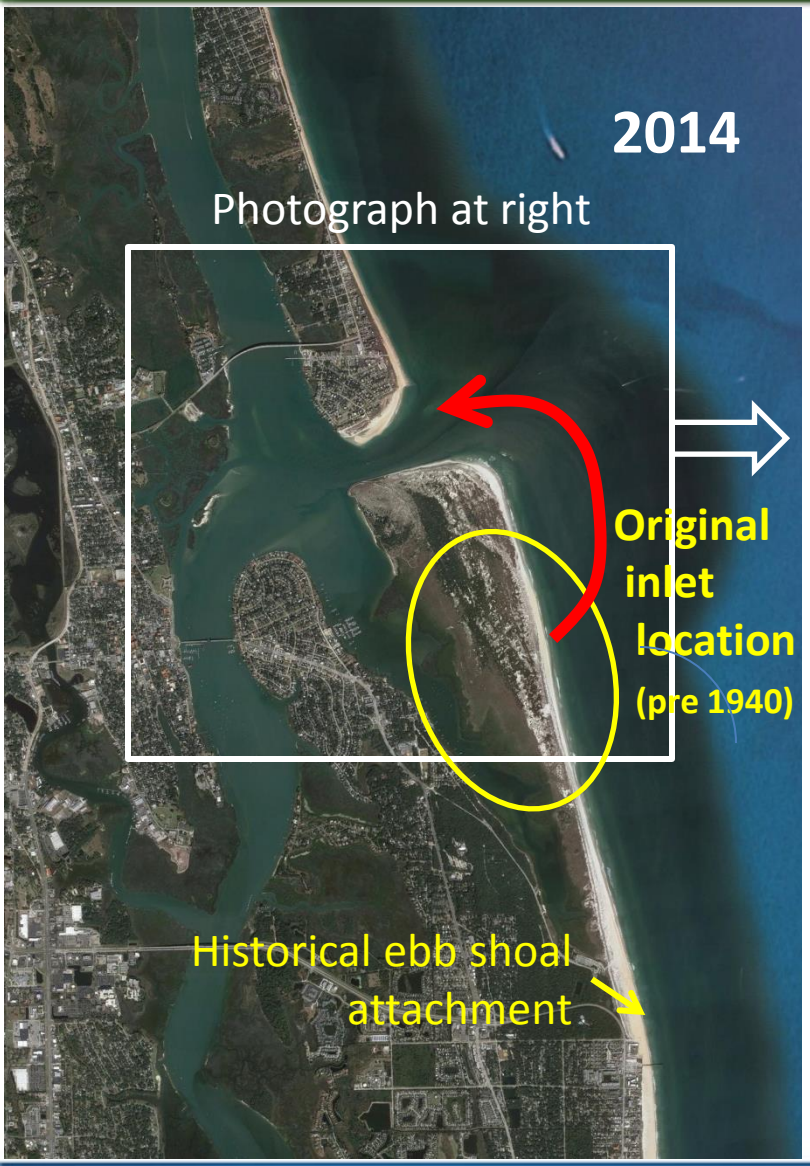
  - Based upon observed erosion patterns and beach erosion quantities documented through the monitoring protocol
  - Fill placement shall not exceed the design template of any proximate beach restoration projects
  - Fill placement shall be strategically sited to minimize the potential for any re-entry or re-entrainment back into the inlet or the federal navigation channel

East Pass IMP (2013) Strategy 3 & 4

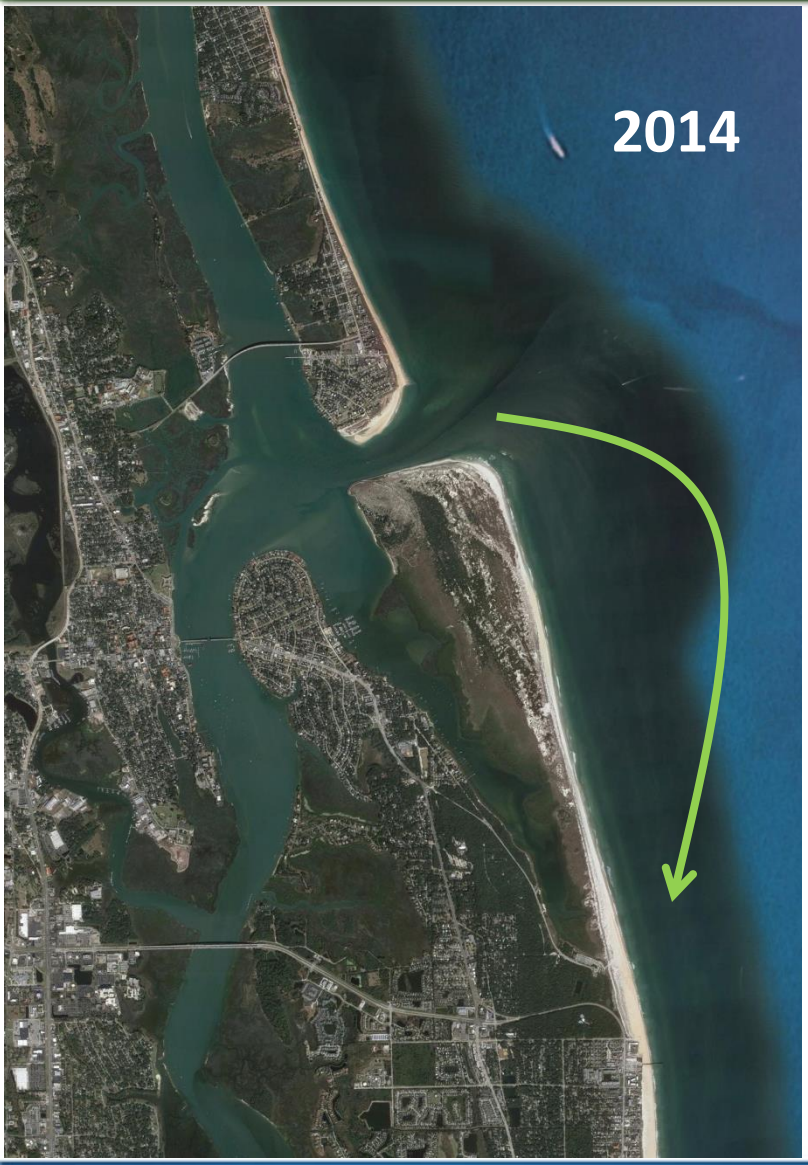
- **Complete the stabilization of Norriego Point**
  - Past erosion has been mitigated by dredge material placement from the federal navigation project; stabilizing Norriego Point with structures will make that dredge material available for placement on the eroding gulf beaches

- **Supplemental Sand Sources from Inlet**
  - Additional inlet sediment outside the navigation channels may be obtained to address observed Gulf shore erosion.

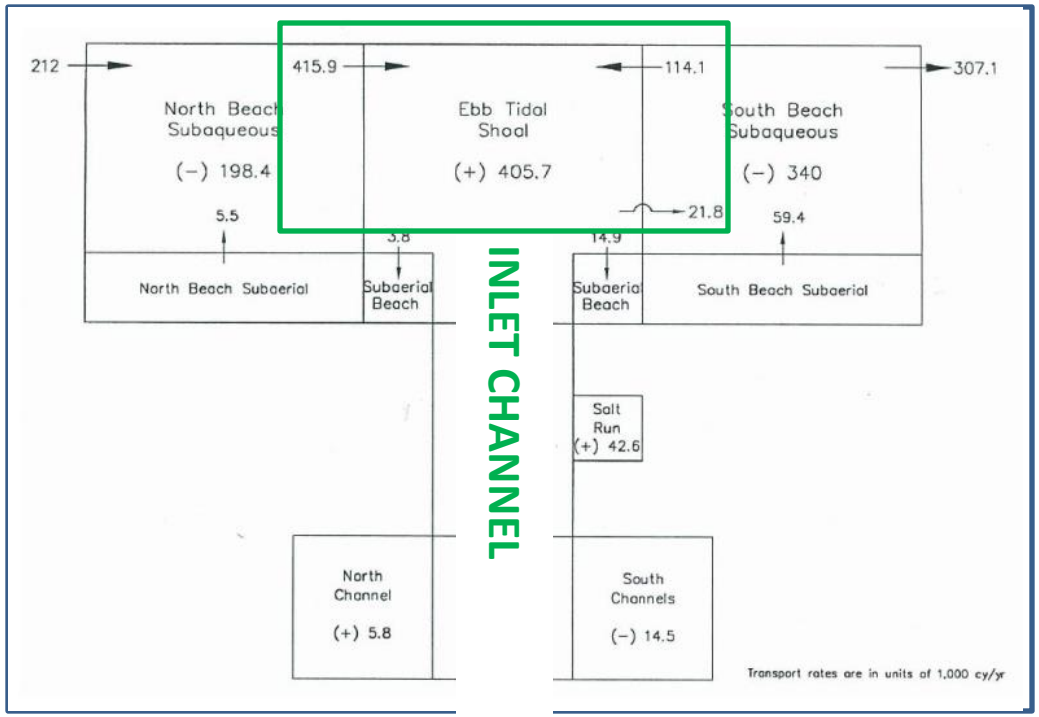
St. Augustine Inlet



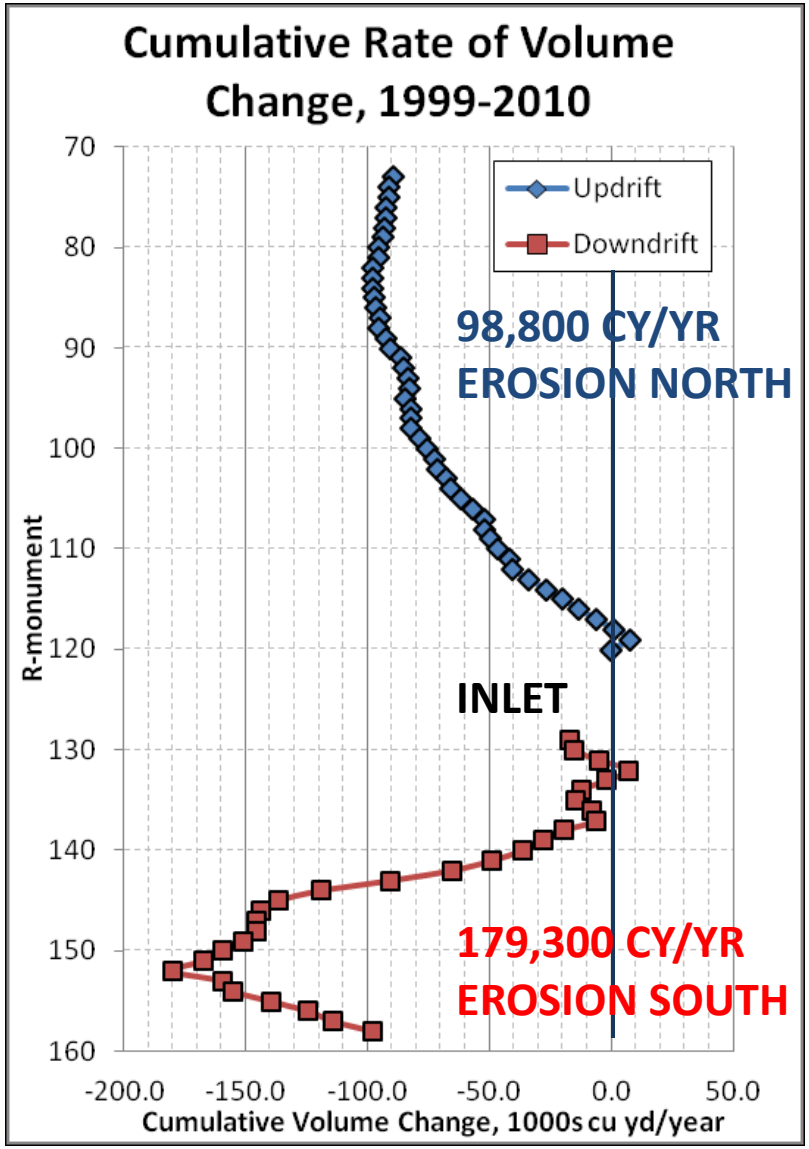
St. Augustine Inlet



- **Original IMP** -- August 1998
- Based upon a 1997 study & sediment budget
- Place 510,000 cy/yr from inlet to the south



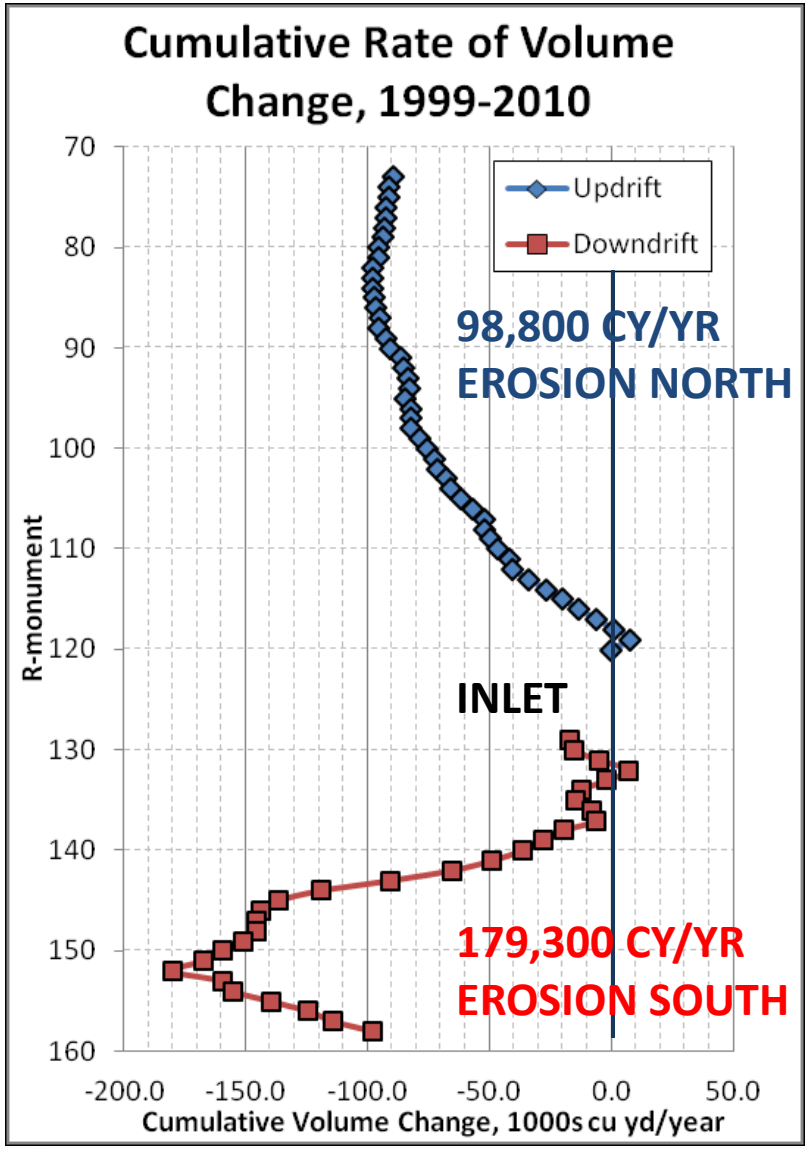
St. Augustine Inlet

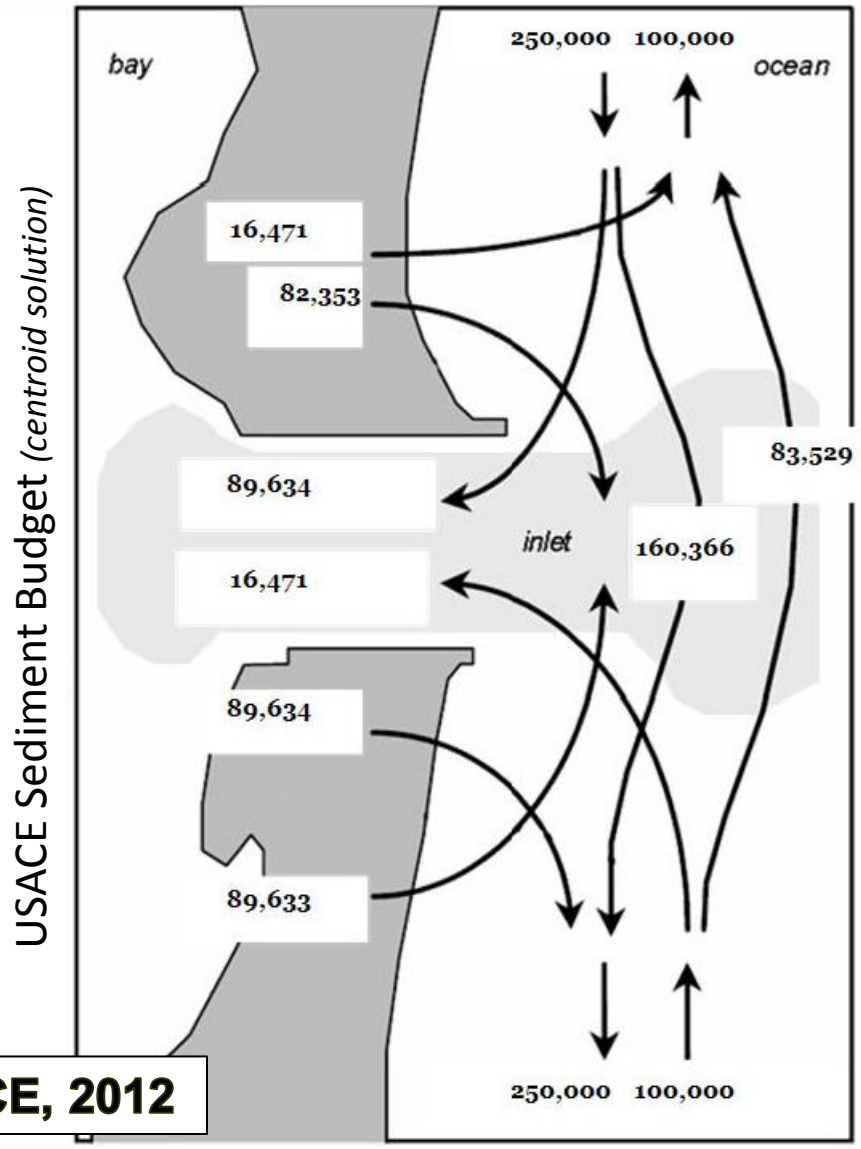


- 2003-10: Concerns raised regarding effect of inlet ebb shoal dredging upon north shoreline.
- 2009-12: Jacksonville District, COE (among others) conducts modeling studies and develops sediment budget
- Adjacent shorelines eroded by 278,100 cy/yr from 1999-2010:
  35% north / 65% south

USACE, 2012

St. Augustine Inlet

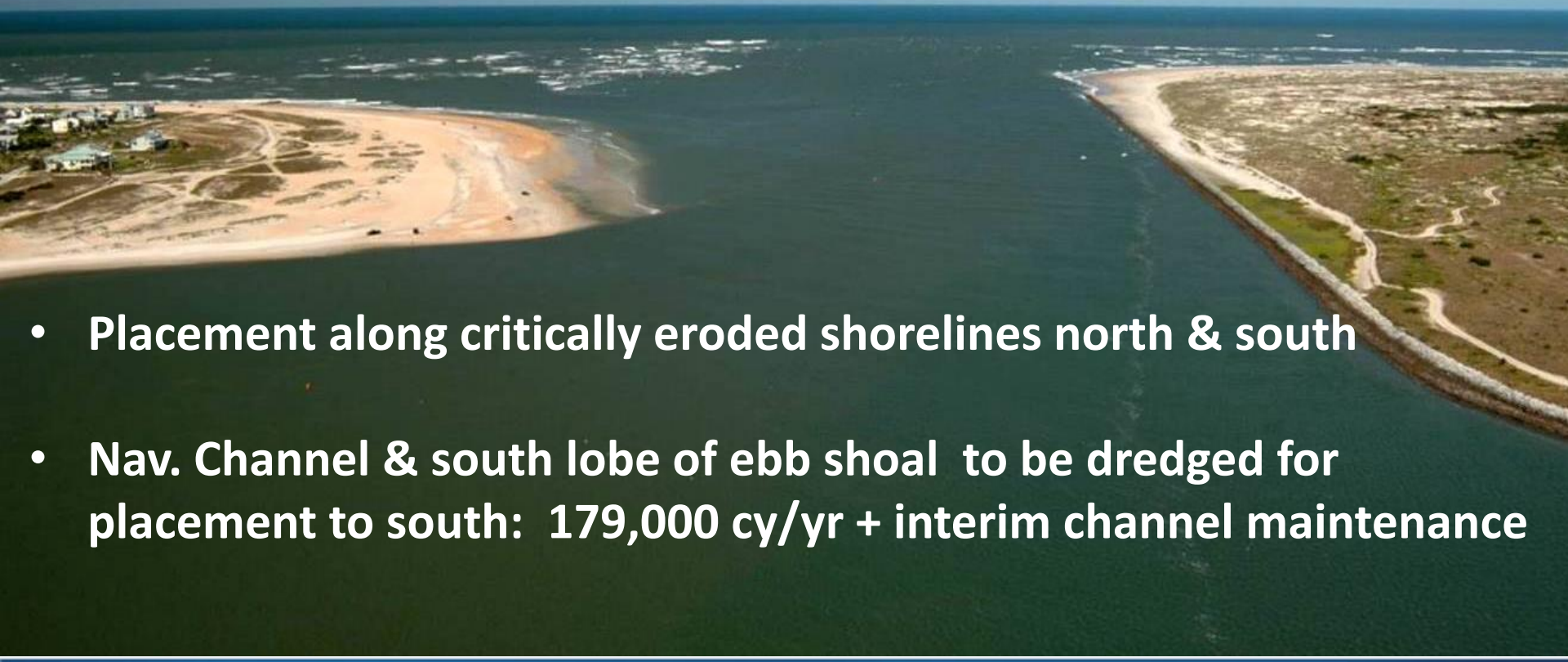




USACE, 2012

St. Augustine IMP (2014)

- **Inlet Bypassing Objective: 278,000 cy/yr**
  - **One-third to North Shoreline: 92,000 cy/yr**
  - **Two-third to South Shoreline: 187,000 cy/yr**



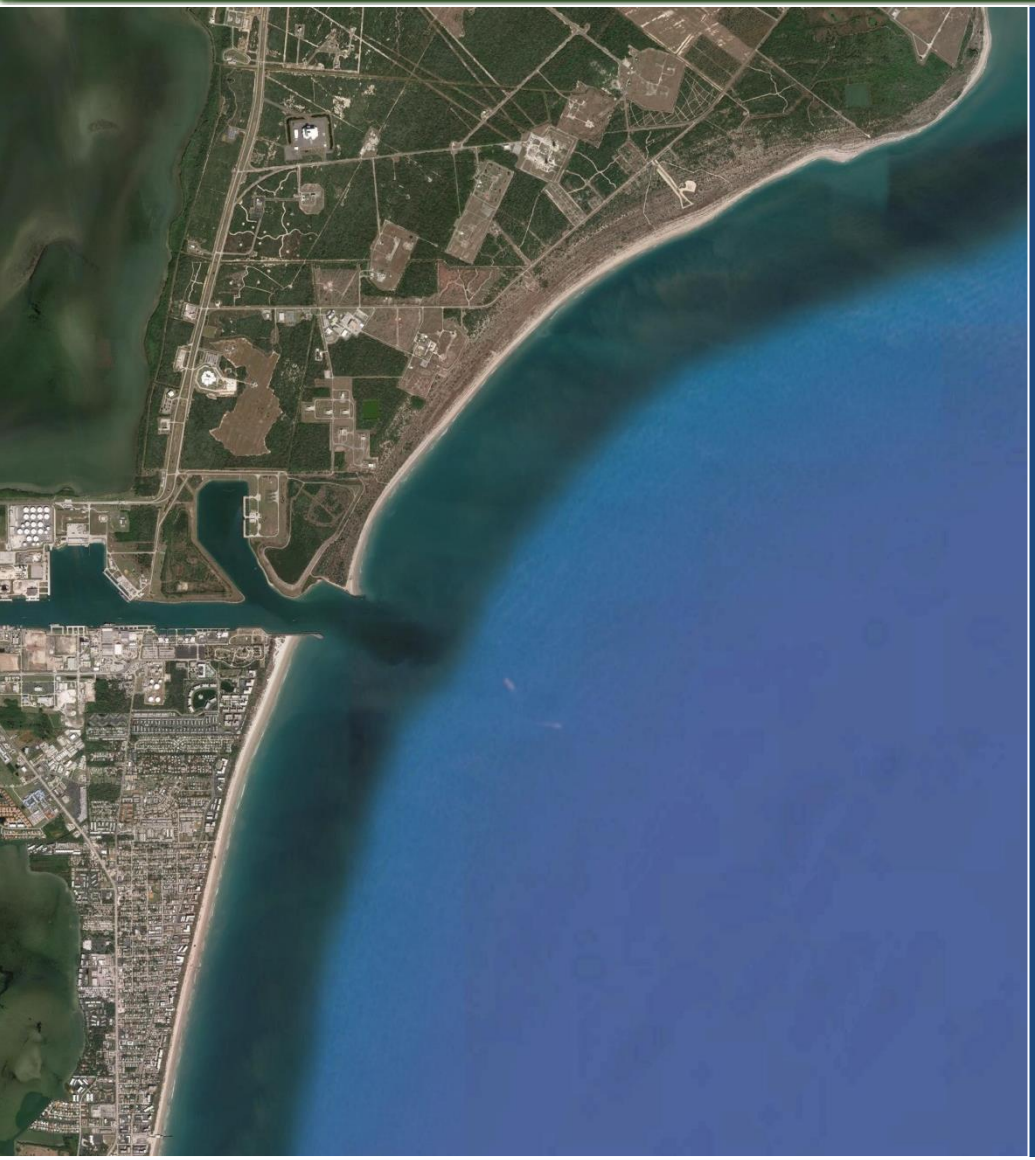
- **Placement along critically eroded shorelines north & south**
- **Nav. Channel & south lobe of ebb shoal to be dredged for placement to south: 179,000 cy/yr + interim channel maintenance**

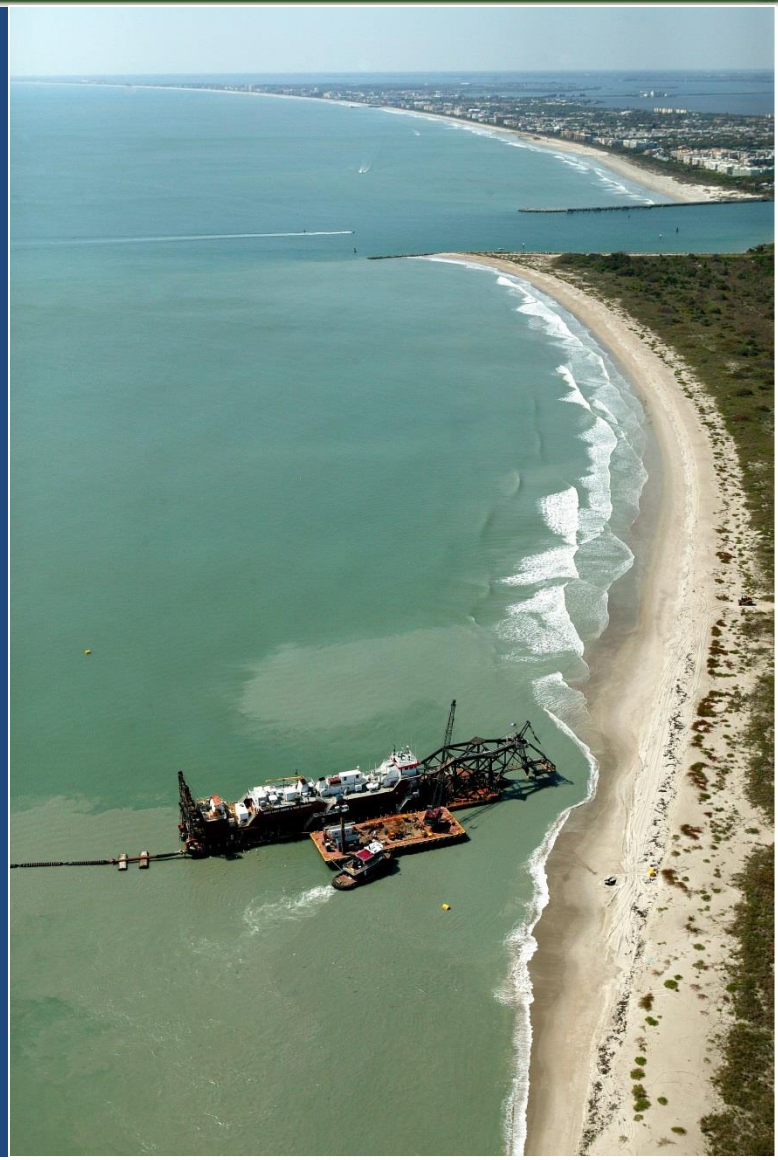
St. Augustine IMP Strategy 5-8

- Investigate additional borrow areas to meet bypass objective
- Investigate improvements to north jetty

- Conduct comprehensive inlet & beach monitoring program
- Update objectives through 5-year monitoring periods, at least 2 years prior to inlet dredging for beach nourishment

Port Canaveral

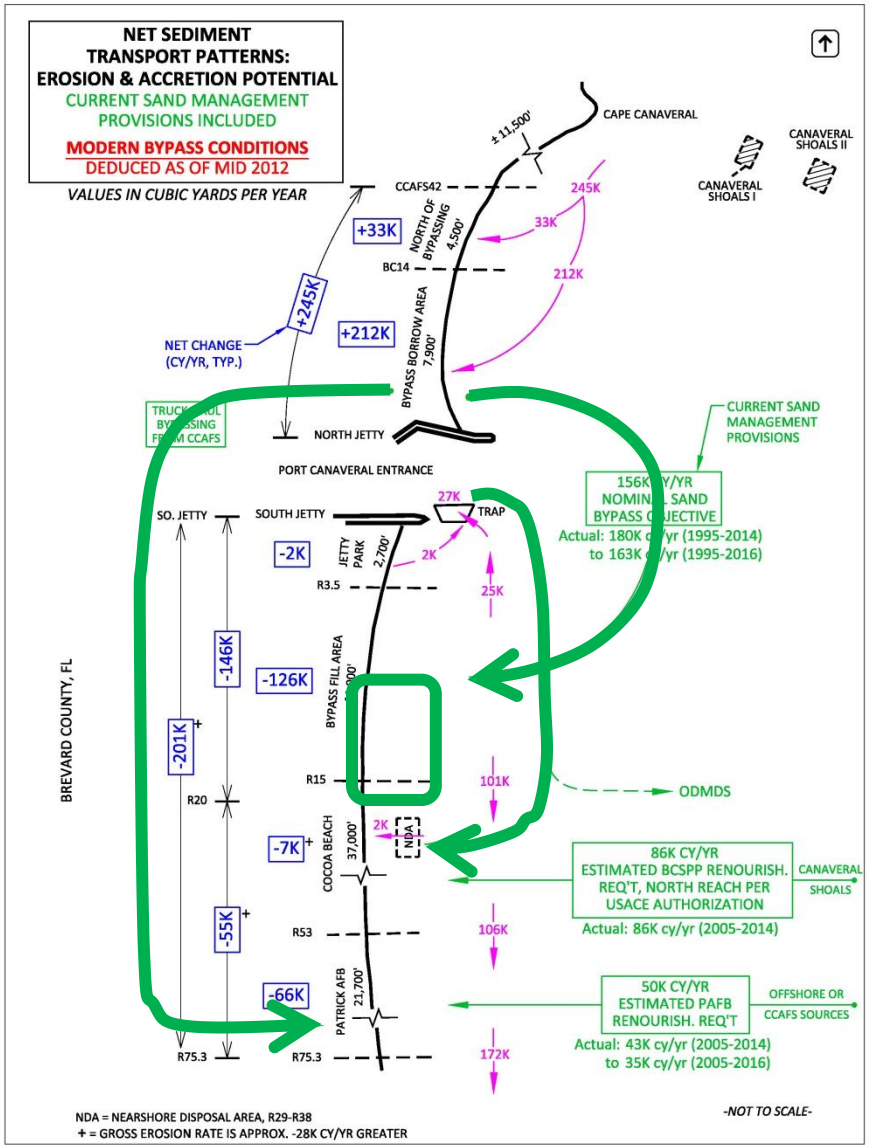




Port Canaveral

- **Original IMP** – April 1996
- Based upon a 1994 study & sed. budget (~350,000 cy/yr inlet impact)
- Bypass all beach-compatible dredged material to south per sediment budget
- Contingent nearshore disposal of maintenance dredging
- Restore downdrift beaches per Brevard County Shore Protection Plan
- Improve north & south jetties
- Comprehensive monitoring

Port Canaveral IMP



- **Independent Coastal Expert Study** – September 2002 (affirmed prior findings)
- **Updated Sediment Budget** – March 2014
- **Updated IMP** – August 2014
- Bypassing objective = 156,000 cy/yr to the south (within 3.5 miles of inlet)
- Preference to southward placement
- Place an additional 54,000 cy/yr to the south (8 to 14 miles south) from north of inlet or other sources
- Nearshore disposal from south jetty trap
- Continue comprehensive monitoring

Developing & Updating IMP's

- The Department is in various stages of adopting or updating numerous IMP's :
  - St. Lucie Inlet
  - Stump Pass
  - Wiggins Pass
  - Blind Pass
  - Johns Pass
  - others
- The process may require about 6 to 12 months after receipt of a recent or update sediment budget (varies).

Developing & Updating IMP

General administrative steps in the process :

- Preparation of sediment budget and supporting information
- Workshop with affected parties to discuss sediment budget and other relevant IMP issues
- FDEP prepares, circulates for comments, and revises draft(s) IMP
- FDEP attaches final IMP to a Certificate of Adoption
- The agency action is sent to all interested parties and posted on the Department's web site
- Final agency action is published in the Florida Administrative Reader (FAR) providing Chapter 120 rights to petition
- Unless a Chapter 120 petition is accepted, the IMP is adopted

Developing & Updating IMP

For additional information or to initiate the process contact:

Florida Dept. of Environmental Protection

Attn: Ralph Clark or Guy Weeks

Email: ralph.clark@dep.state.fl.us

william.weeks@dep.state.fl.us