# PORT EVERGLADES SAND BYPASS PROJECT

## AN IMPORTANT FUTURE SAND SOURCE FOR SOUTHEAST FLORIDA BEACHES

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- **Sand Requirements in Southeast Florida**
- **Known, Available Sand Sources**
- **Port Everglades Sand Bypass Project**
- **Physical and Economic Benefits of Port Everglades Sand Bypass Project**

# Presentation Overview

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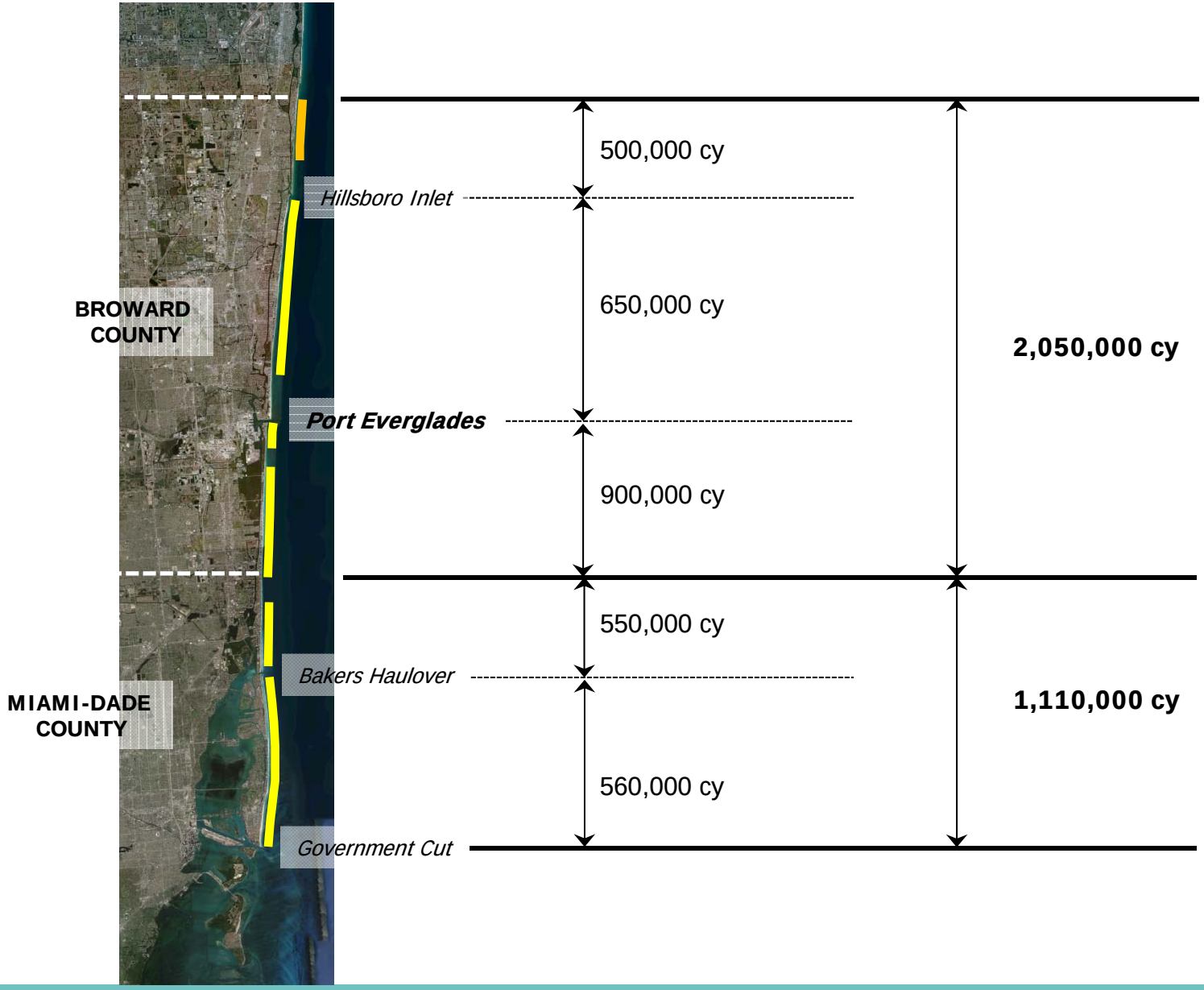


# Current Sand Requirement

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Hillsboro Inlet

40,000 cy/yr

40,000 cy/yr

210,000 cy/yr

Port Everglades

130,000 cy/yr

50,000 cy/yr

Bakers Haulover

255,000 cy/yr

205,000 cy/yr

Government Cut

**Ref: Southeast Florida Sediment Assessment and Needs Determination (SAND) Study (FDEP and USACE, 2012)**

# Future Sand Requirement

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40,000 cy/yr

40,000 cy/yr

**210,000 cy/yr**

53,000 cy/yr

130,000 cy/yr

77,000 cy/yr

50,000 cy/yr

**255,000 cy/yr**

205,000 cy/yr

**Ref: Southeast Florida Sediment Assessment and Needs Determination (SAND) Study (FDEP and USACE, 2012)**

# Future Sand Demand

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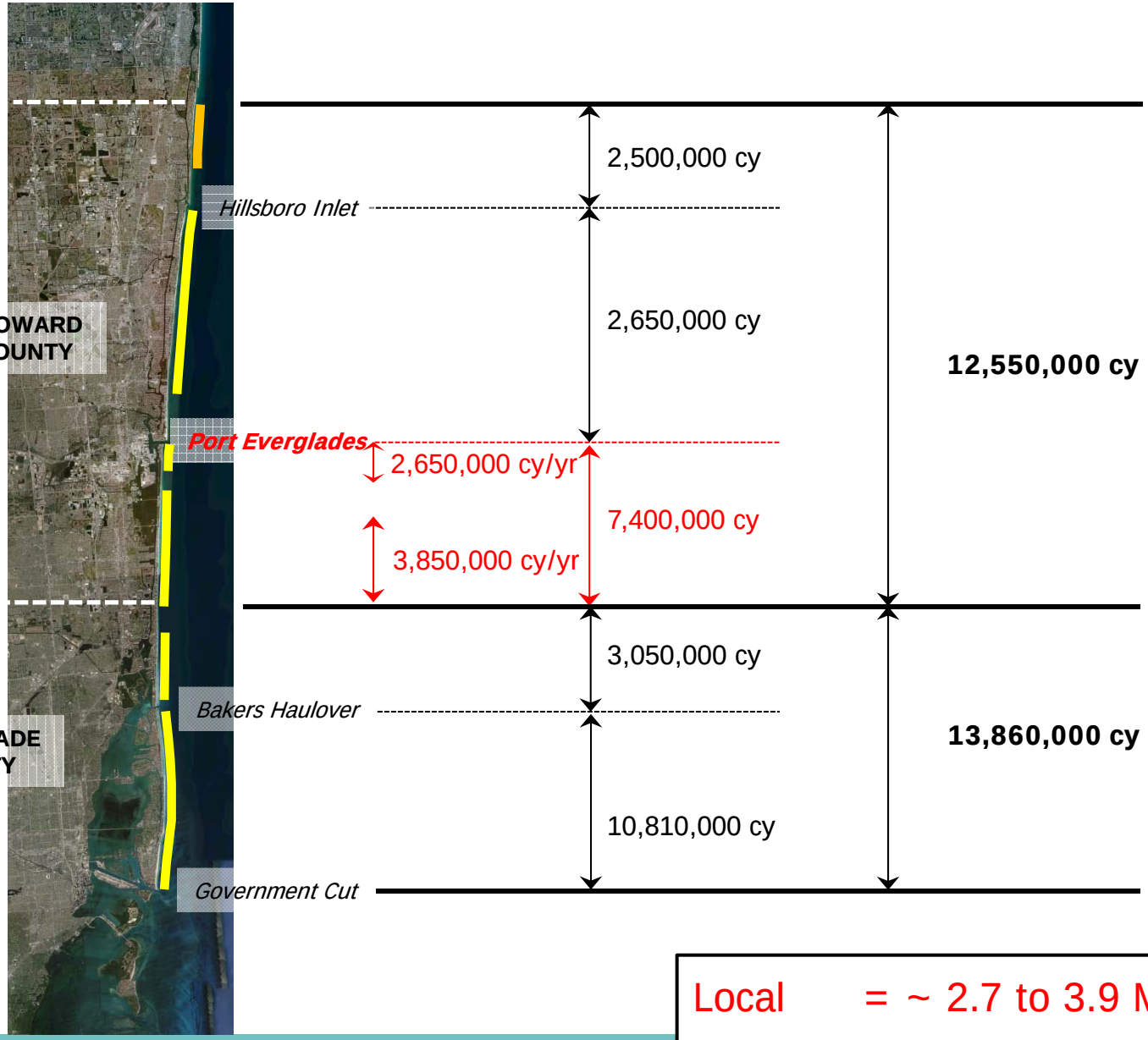


Local = ~ 2.7 to 3.9 Mcy

Regional = ~ 26.4 Mcy

# 50-yr Requirement

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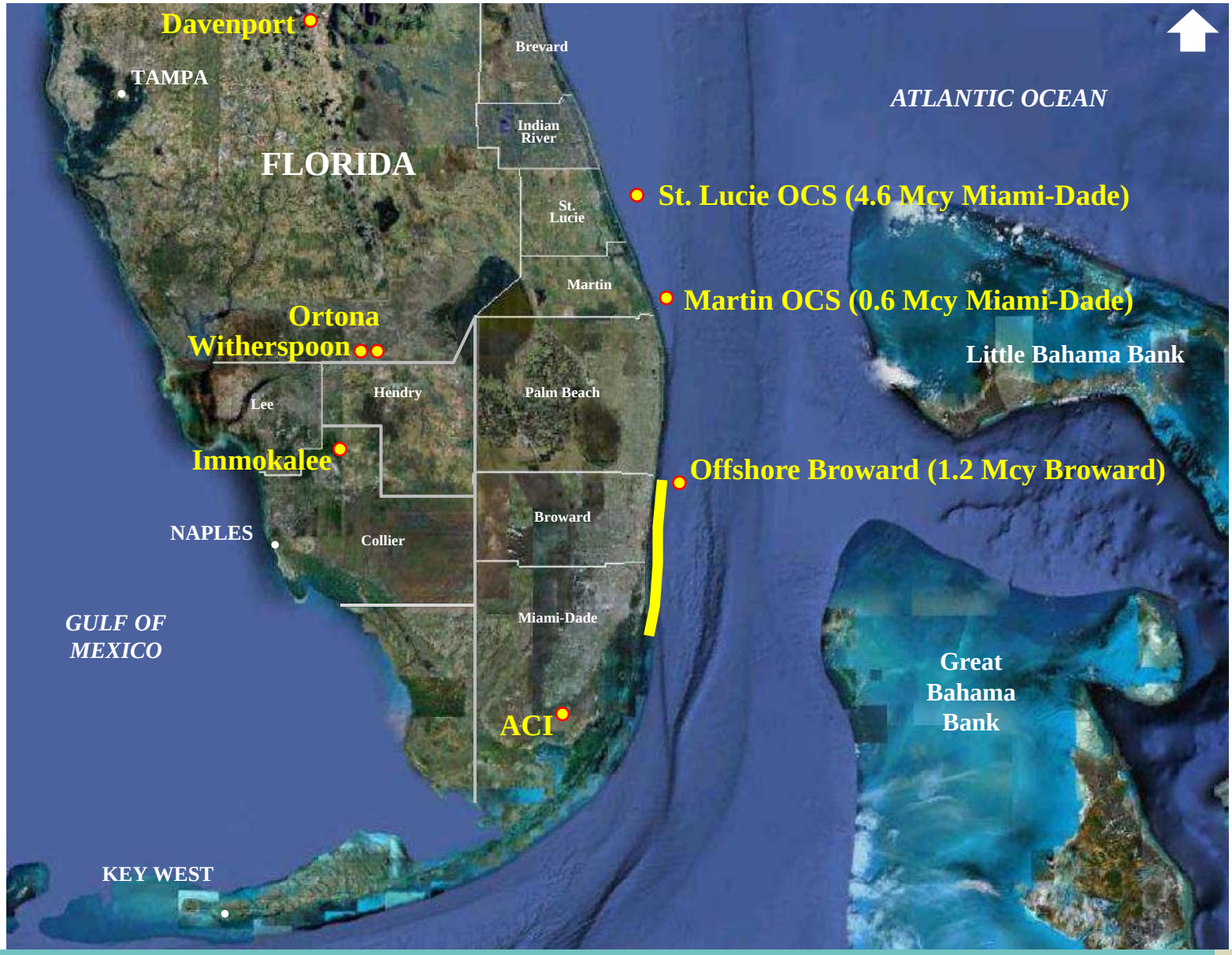


## Where will this sand come from…?

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Hillsboro Inlet

2,500,000 cy

2,650,000 cy

Port Everglades

7,400,000 cy

Bakers Haulover

3,050,000 cy

10,810,000 cy

Government Cut

**12,550,000 cy (Need)**

**1,200,000 cy (Offshore)**

**700,000 cy (Upland) ****

**-10,700,000 cy (Deficit)**

** listed because volume is currently permitted

**13,860,000 cy (Need)**

**5,200,000 cy (Offshore)**

**-8,660,000 cy (Deficit)**

**Only about *27%* of the 50-yr regional need identified**

# Balance…?

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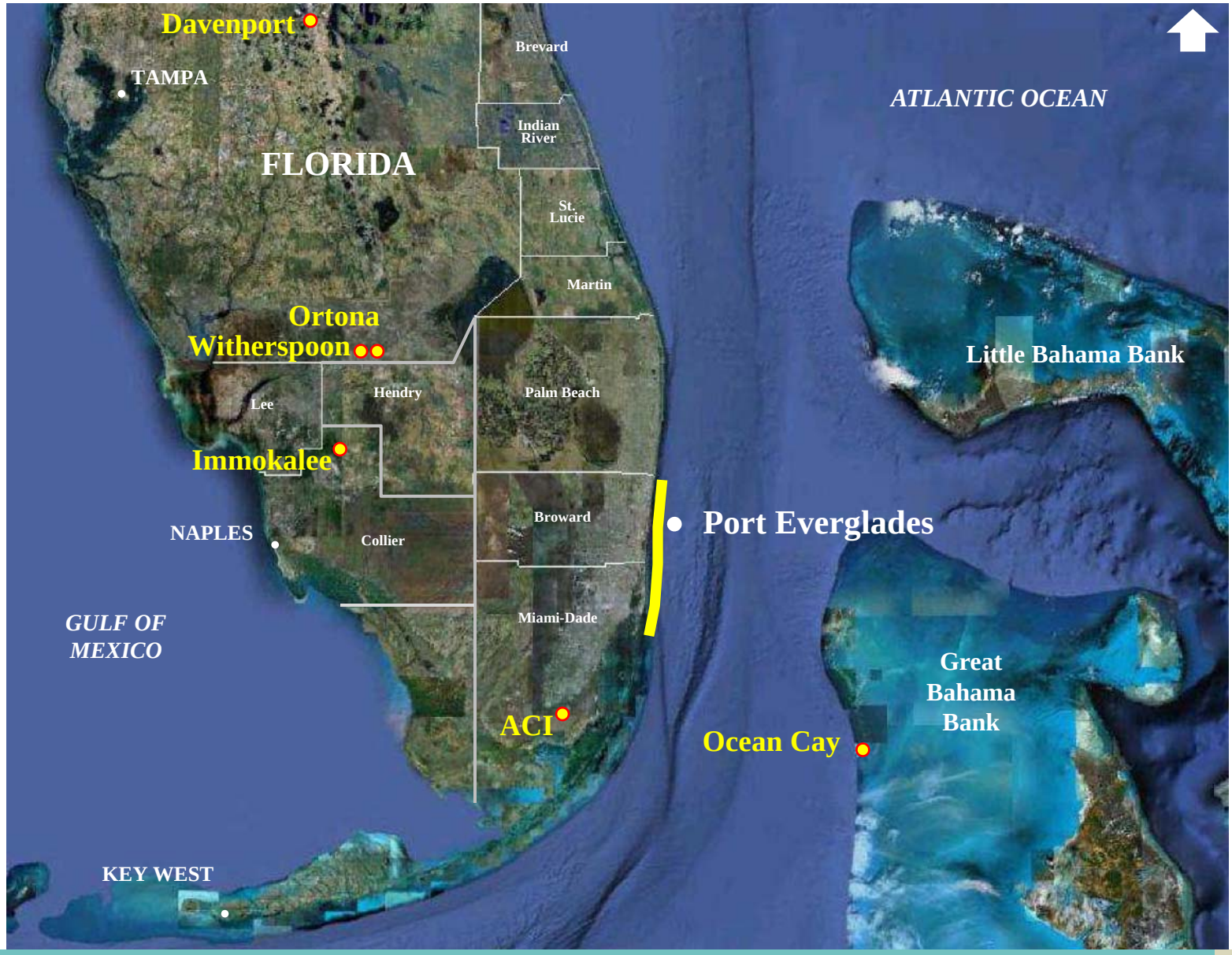


# How will *deficit* be made up…?

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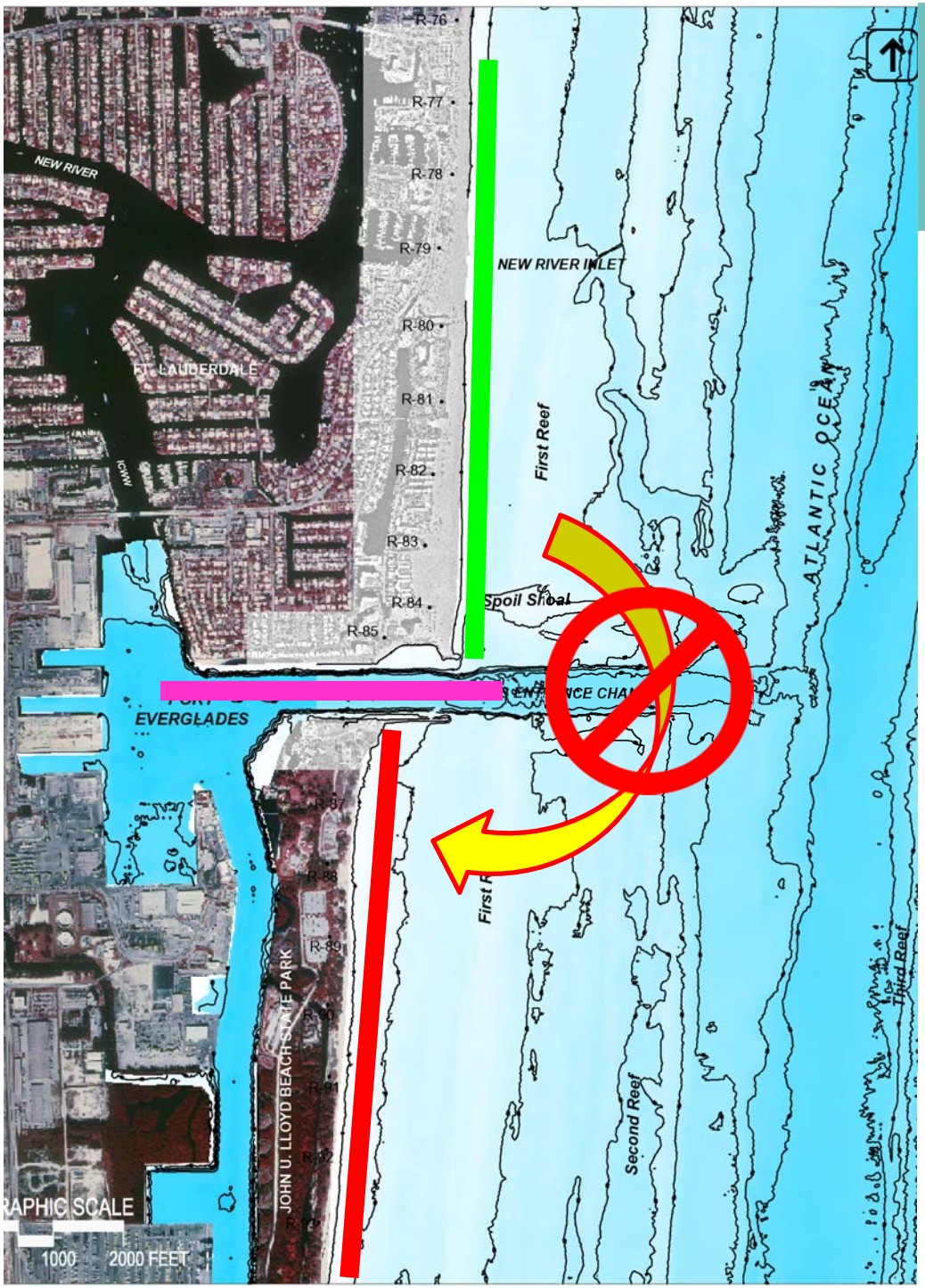
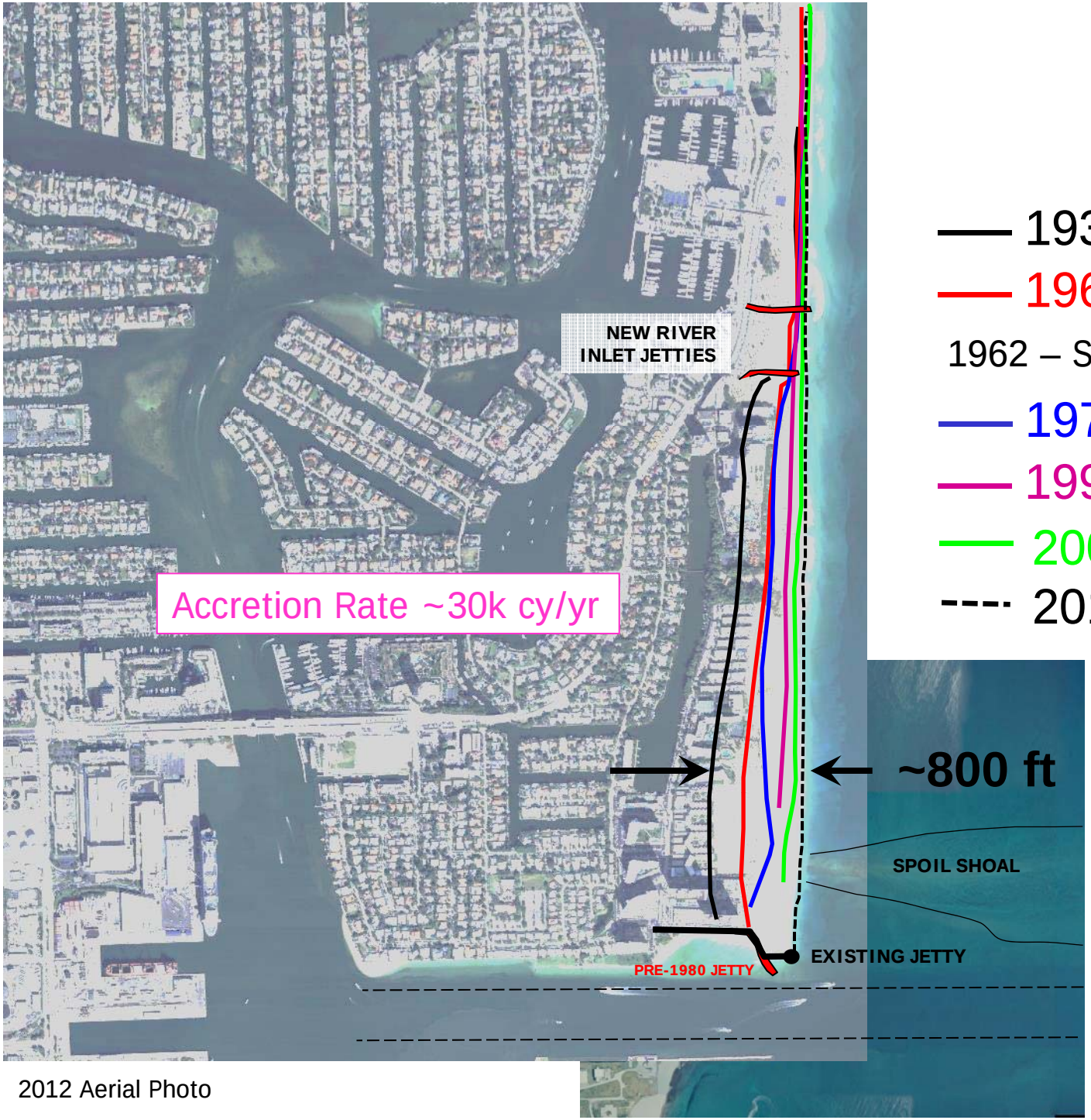



# PORT EVERGLADES INLET

- Inlet established in 1926
- Federal Navigation Project 1930
- Major Expansions in 1962 and 1980
- No Natural or Artificial Sand Bypassing
- ***Complete*** Barrier to Littoral Drift
- Highly Accretional North Shoreline
- Chronically Erosional  South Shoreline
- Low, Porous North Jetty
- Persistent Shoaling in Federal Channel

# NORTH SHORELINE HISTORY




2012 Aerial Photo

— 1935
— 1961

1962 – Spoil Shoal Placement

— 1970
— 1993
— 2002
---- 2012

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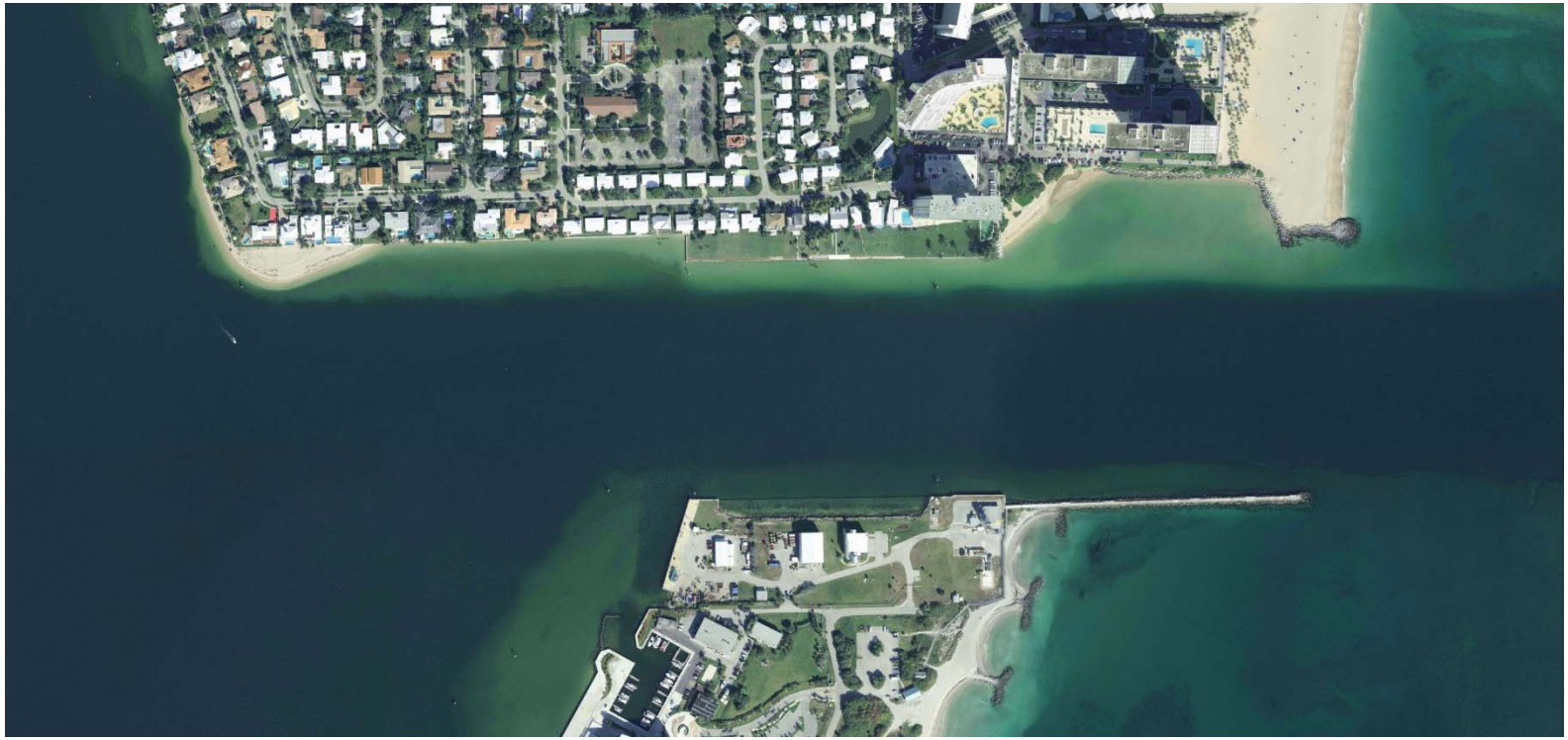
# INLET SHOALING

## (Sand Transport Over, Through, and Around North Jetty)



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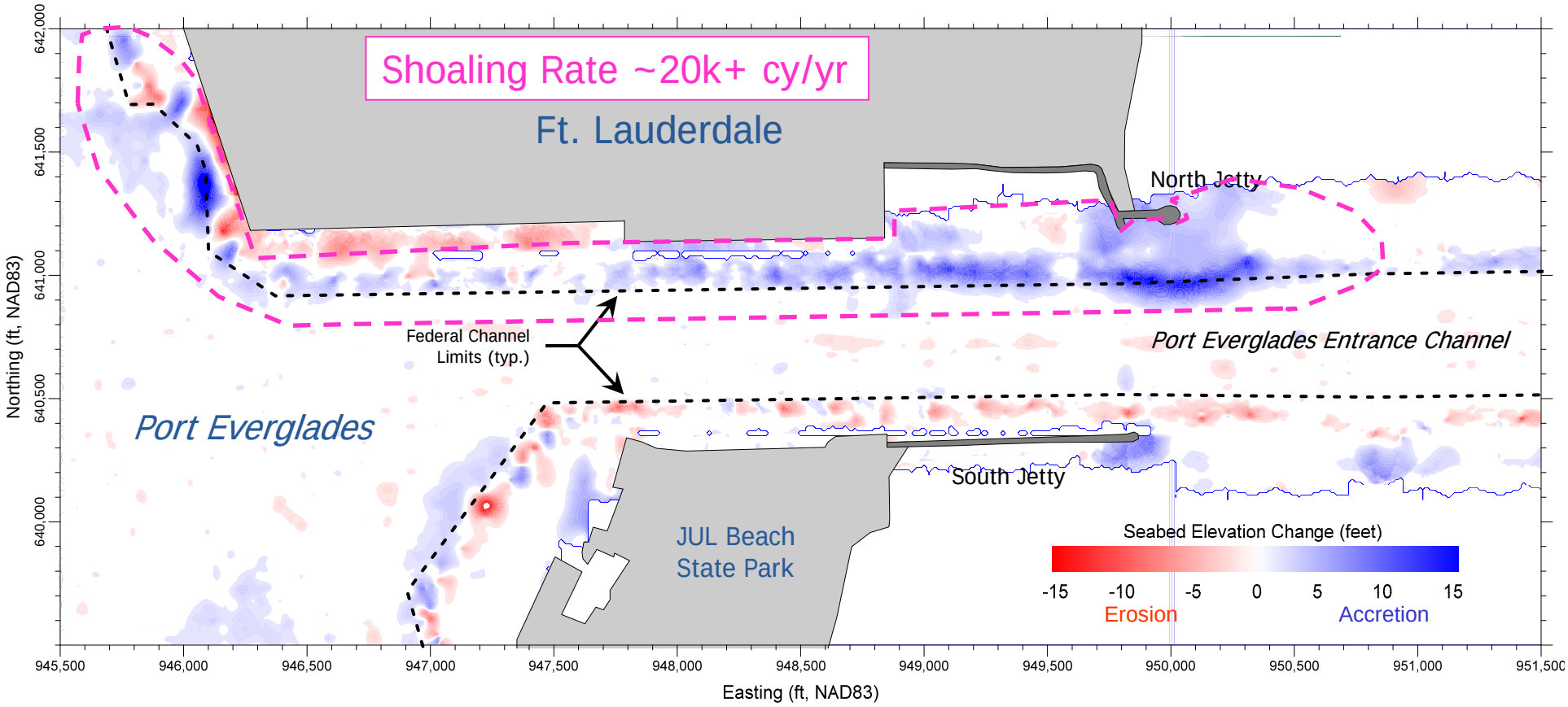


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Inlet system captures between 40k and 60k cy/yr
(~90% of the net southerly sand transport)

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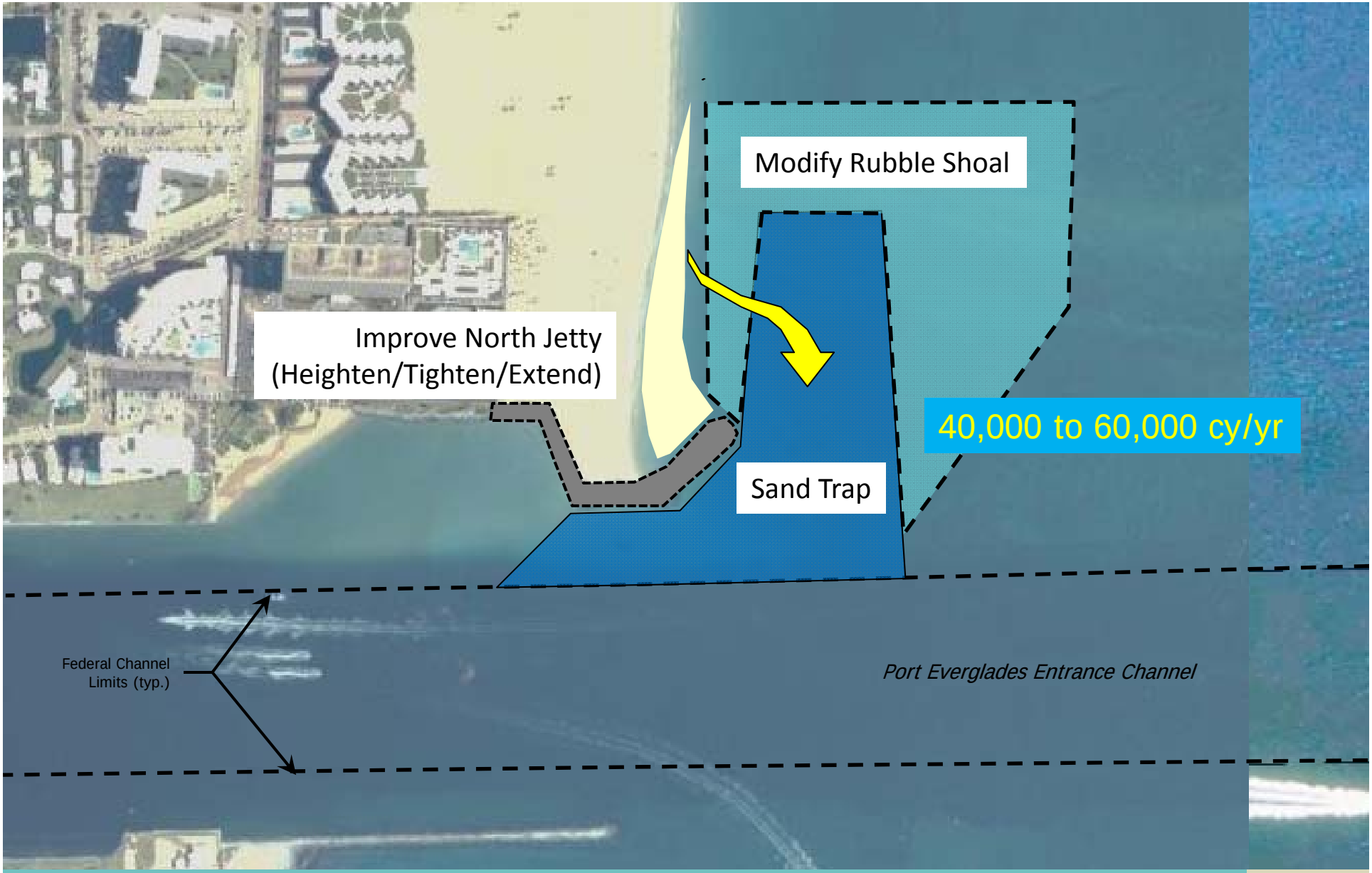
# PORT EVERGLADES SAND BYPASSING TIMELINE

| | |
|---|---|
| 1963: | USACE County-wide Beach Erosion Study |
| 1985: | Alternative Sand Source Study |
| 1988: | Reconnaissance-Level Study |
| 1994: | State-sponsored Inlet Management Plan |
| 1997: | Economic Update to Inlet Management Plan |
| 1999: | State adopts Inlet Management Plan |
| 2004: | Detailed Feasibility Study |
| 2007: | Feasibility Study Addendum/Concurrence from State Regarding Recommended Plan |
| 2008-12: | Initial Permit Application/State and Federal Coordination (Const. approach that included blasting met significant local opposition) |
| 2014: | Develop project redesign without blasting and resubmit application/reinitiate State and Federal coordination |
| 2016: | Construction (planned) |
| 2019: | First bypass event (planned) |

# PROJECT NEED AND PURPOSE

- **Reestablish a significant portion of the sand-sharing system across Port Everglades Inlet**
- **Reduce the need for sand from remote sources**
- **Reduce the long-term beach management costs**
- **Reduce/eliminate shoaling of the Federal channel**




# PRINCIPAL INITIAL PROJECT ELEMENTS

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Sand Trap
Port Everglades Entrance Channel
Direct Transfer
Dredge sand trap and bypass every 2 to 4 yrs and place sand along JUL Beach State Park Shoreline
JUL Beach State Park
Sand Placement Area
Indirect Transfer
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# PHYSICAL BENEFITS

- **Reduce and/or eliminate persistent updrift shoreline accretion and channel shoaling**
- **Long-term, sustainable, cost-effective sand source**
- **Sand volume equivalent to:**
  - 90-100% of the demand along immediate downdrift shoreline
  - 30-50% of demand along south Broward beaches (Segment III)
  - 13% of deficit demand in Broward and Miami-Dade Counties
- **Reduce impacts to offshore resources and nearshore hardbottom areas**

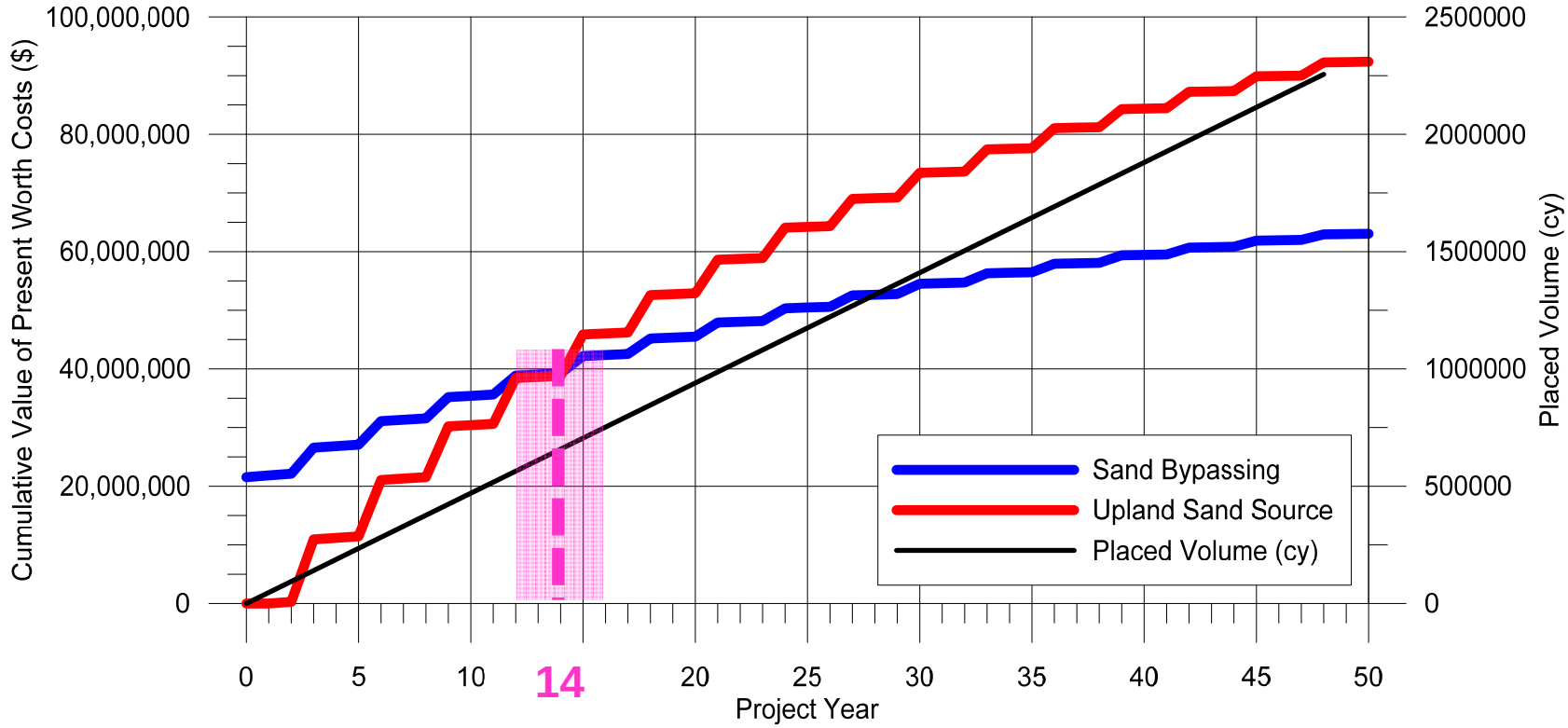
# ECONOMIC BENEFIT

- **Economic benefit is realized through a long-term cost savings for sand (i.e., cost of construction and operation of sand bypass relative to other options)**
  - Remaining offshore sources will be used to address
    - Current deficits in Broward
    - Miami-Dade County requirement through ~2030
  - Only other known option at this time is *upland* sand

- **Sand Bypass at Port Everglades**
  - Initial Investment = $20M
  - Future Event = 150,000 cy every 3 yrs (2.5 Mcy over 50 yrs)
  - Future Cost = $4M per event (~$25/cy)
  - Immediate local benefit, long-term regional benefit

- **Upland Sand**
  - Initial Investment = $0
  - Future Event = 150,000 cy every 3 yrs (2.5 Mcy over 50 yrs)
  - Future Cost = $10M per event (~$65/cy)

# ECONOMIC BENEFIT




**Relative to upland sand, the bypass project is expected to save ~1.3M annually, or about $30M over a 50-year period.**

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# SUMMARY

- **Future sand need in Broward and Miami-Dade County is expected to be roughly 26 Mcy over the next 50 years**
- **Of this, only about 7.6 Mcy, or 27%, has been identified as reliably available and acceptable**
- **Current expectations are that upland mines will meet a portion of the deficit**
  - *However…the long-term sustainability and acceptability of upland sand use has not been tested*
- **Sand bypassing at Port Everglades will be a sustainable and cost-effective long-term sand source**
  - *13% of regional deficit / up to 100% of local deficit*
  - *Initial investment is expected to be recovered within ~14 yrs*
  - *Roughly $30M cost savings over a 50-year period*