

# Cheers: Multi-Phase Resiliency Dredging Planning Lessons from the Great Lakes

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*Senior Coastal & Dredging Engineer*



# 01 Beneficial use of Dredged Material (BUDM)



Fort Pierce Marina & Breakwater

# BUDM Program Vision

*“The previous mindset was that the material was a nuisance and something that we needed to dispose of... We’ve realized that sediment is a resource — it has a value... if we can return it to the system and find ways to place the material such that it gives us some sort of benefit.”*

**Katie Brutsché**

**USACE National Regional Sediment  
Management (RSM) Program**

**Ongoing R&D is Discovering New Ways to put**

**Dredged Sediment to Use**

**October 14, 2022**



Fort Pierce Marina

# BUDM Program Vision (Continue)

*“USACE historically uses 30-40% of the sediments derived from the Navigation mission for beneficial purposes. I have established a goal for USACE to advance the practice of BUDM to 70% by the year 2030 (70/30 Goal).”*

**LTG Scott A. Spellman, Chief of  
Engineers & Commanding  
General, USACE  
January 25, 2023**



Fort Pierce Marina

# BUDM Program Vision (Continue)



Fort Pierce Marina

- Collaboration is key to the success of the 70/30 Goal:
  - *Innovative pursuit, both internally & externally, with partners & stakeholders, will:*
    - **Maximize available solutions, strategies, & tools**
    - **Develop & apply new approaches & technologies**

# 02 Dike 14 ↔ Cleveland Lakefront Nature Preserve





Federal Breakwater

Lake Erie

Edgewater Park

Gordon Park

Dike 14

Cleveland Lakefront  
Nature Preserve

I-90

FirstEnergy Power Plant

# Dike 14: From **Blue** to Brown to Green

- *Private Estate turned into a Public Park in 1892*
- *Cleveland's premier turn-of-the-century destination*
- *Famous for fishing, boating, bathing, & picnicking*
- *Noted migratory bird corridor:*
  - *Doan Brook*
  - *Shaker Lakes*



Gordon Park, circa 1900

# Dike 14: From Blue to **Brown** to Green

- *Culverted Doan Brook*
- *An 8-acre solid waste landfill - “Cleveland Lakefront Dump”*
- *Operated by the City from about 1930 to 1970*
- *In 1962, two ships from the U.S. Steel Fleet sunk to create a reef*
- *Landfill operations continued around & over the boats through 1970*



Cleveland Lakefront Dump, circa 1957

# Dike 14: From Blue to **Brown** to Green



US Steel Fleet Reef, 1962



Dredging the Cuyahoga, 1964

# Dike 14: From Blue to **Brown** to Green

- *Culverted Doan Brook*
- *Creation of Dike 14 DMMA*
- *In 1979, the USACE began dredged material placement at Dike 14*
- *Sediments from both the Cuyahoga River & Cleveland Harbor shipping channel*
- *In 1999, the USACE placed the final load of dredged material*



Gordon Park Landfill, circa 1968

# Dike 14: From Blue to Brown to Green



Dike 14 Masterplan, 2005

Dike 14, 2021

# Dike 14: From Blue to Brown to Green

- *Left undisturbed for ~15 years, most of the 88-acre site didn't require cleanup*
- *Mitigated ~5-acre area associated with the former landfill*
  - *Low levels of PCBs, PAHs, & lead*
  - *Ongoing seasonal monitoring*



# Dike 14: From Blue to Brown to **Green**

- *Only significant natural area along the Cleveland Lakefront*
- *Only accessible natural area between Huron to the west & Mentor Marsh to the east*
- *Important bird migration stopover site before crossing Lake Erie*
- *280+ species of birds*
- *29+ species of butterflies*
- *26 native plant species*
- *16 mammals*
- *2 reptiles*
- *9 native trees & shrubs*



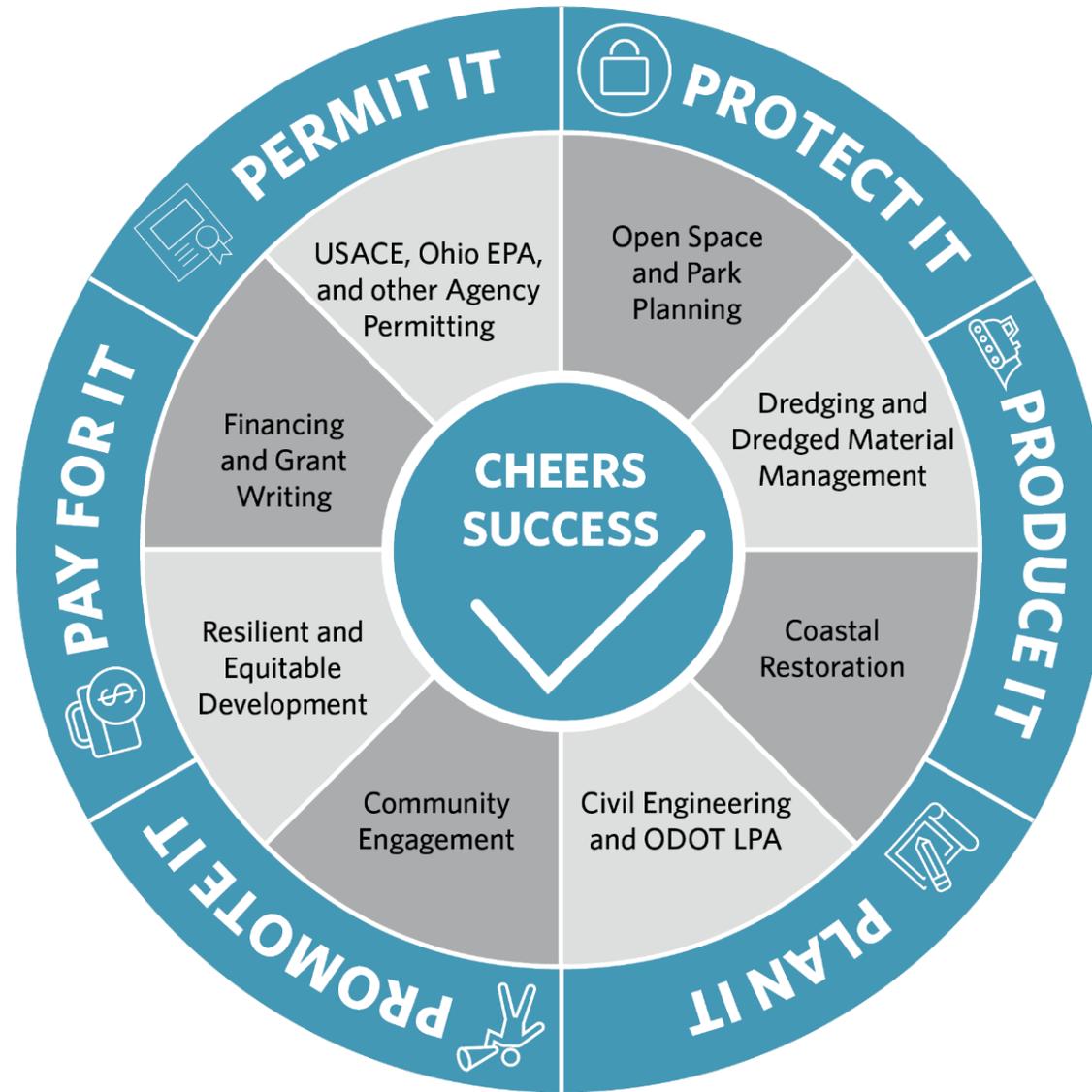
# 03 CHEERS!



# Cleveland's Comeback



# Project Approach



Federal Breakwater

Lake Erie

Edgewater Park

Dike 14

Gordon Park

Cleveland Lakefront Nature Preserve

I-90

FirstEnergy Power Plant



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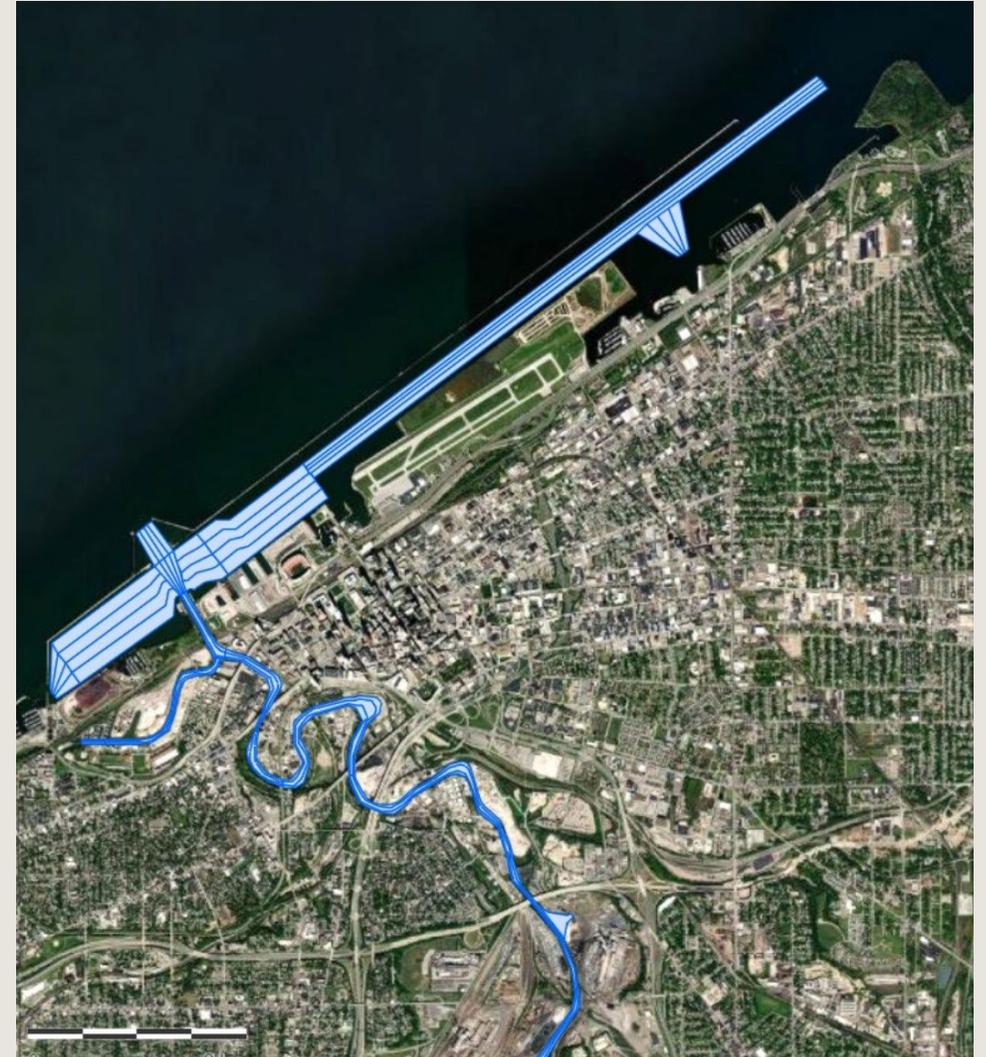
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# 04 Lessons Learned - Cleveland



# Lessons Learned

-  **PLAN IT**
-  **PROMOTE IT**
-  **PAY FOR IT**
-  **PERMIT IT**
-  **PROTECT IT**
-  **PRODUCE IT**

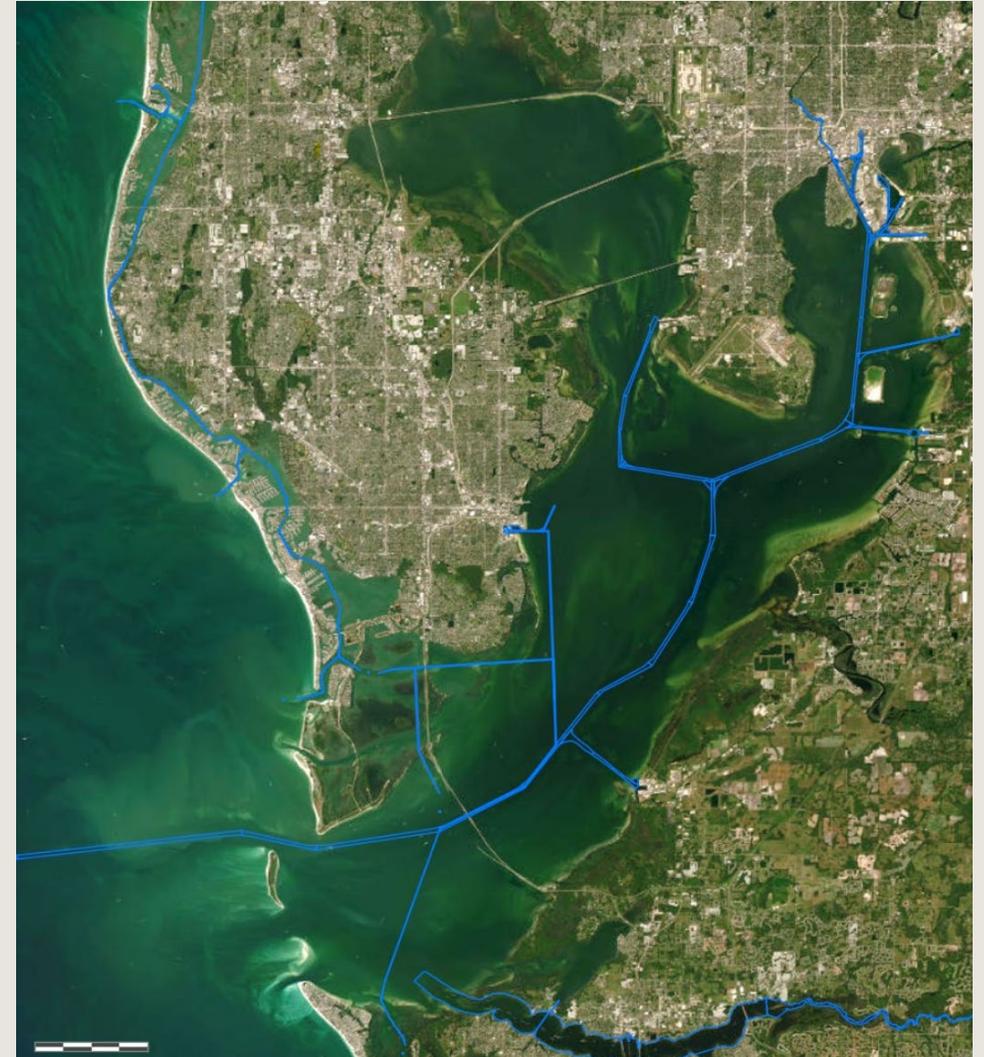


# 05 Lessons Learned – Port Tampa Bay



# Lessons Learned

-  **PLAN IT**
-  **PROMOTE IT**
-  **PAY FOR IT**
-  **PERMIT IT**
-  **PROTECT IT**
-  **PRODUCE IT**



 **PLAN IT**

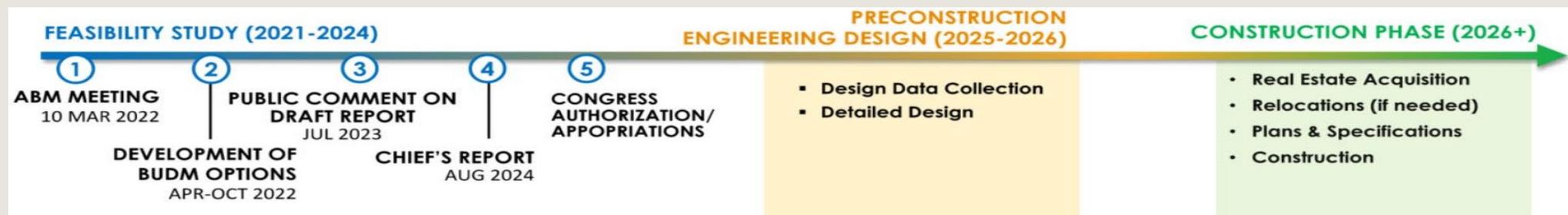
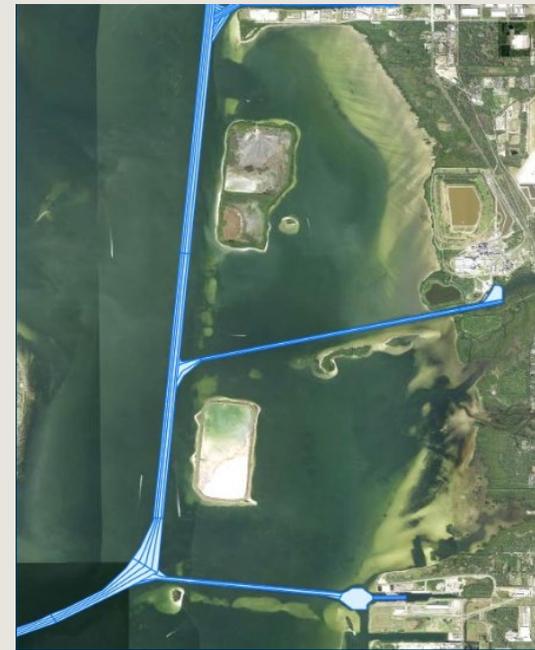
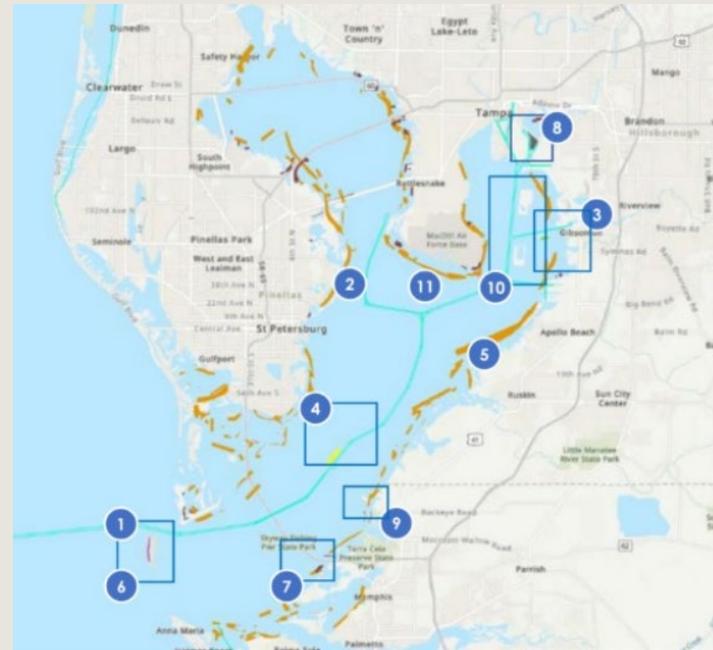
- *Emphasize Existing Resources*
- *Determine Desired Outcomes*
- *Project Conditions Data*

**LEGEND**

— Tampa Harbor Channels

*Beneficial Use Opportunities*

- 1 Egmont Key Beach Placement (1 MCY)
- 2 Dredged Holes (1.5 MCY) (not all suitable for restoration)
- 3 Alafia Bank Sanctuary Islands (~500 KCY) (Island Creation/Restoration)
- 4 Hardbottom Creation Site (1.7 MCY) (previously permitted)
- 5 Nearshore Breakwaters (~100 KCY) (potential restoration sites)
- 6 Egmont Key Island Restoration (5 MCY)
- 7 Manatee County Boat Ramp (1-2 MCY)
- 8 East Bay Port Expansion (3-4 MCY)
- 9 Manbird Key Island Restoration
- 10 Shoreline Restoration at DMMAs
- 11 Reddish Egret Habitat (bay-wide, location TBD)



 **PROMOTE IT**



**TBRPC's Mission**  
To serve our citizens and member governments by providing a forum to foster communication, coordination, and collaboration in identifying and addressing needs regionally.

**Member Governments**

- 6 Counties
- 21 Municipalities
- 13 Gubernatorial Appointees
- 3 Ex-Officios



**Resilient Ready**  
Tampa Bay  
Summary Report | July 2022

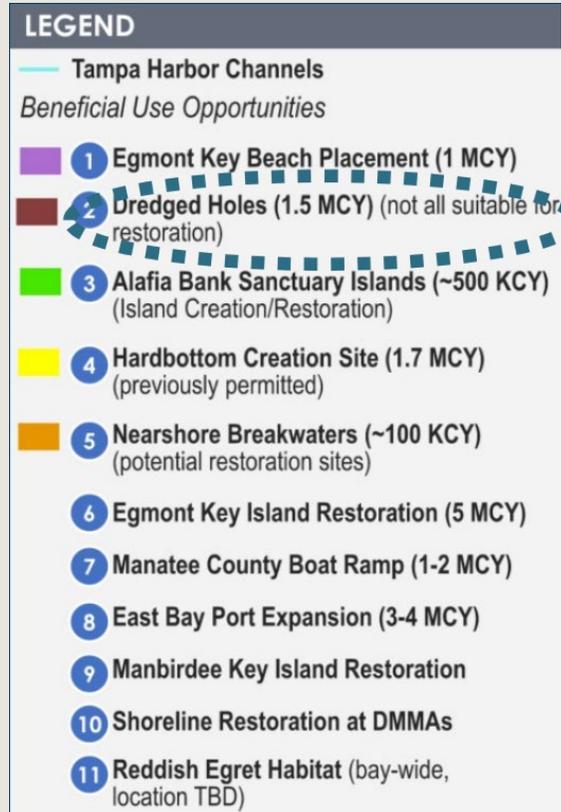


- **Stakeholder engagement in developing & selecting alternatives**
  - **Evaluating alternative**
  - **Refining the concepts**
- **Build coalitions & partnerships**
- **Understand what resonates**

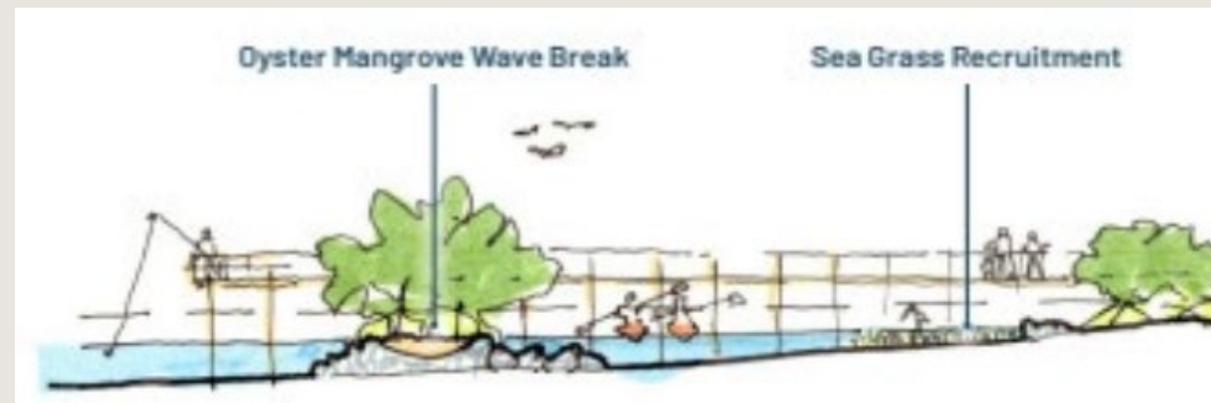




## PAY FOR IT



- **Planning & construction cannot be implemented without funding**
- **Can the project itself generate funds**
  - **Federal funds, grants, tolls, usage fees?**
  - **Public-private partnerships?**
  - **Mitigation credits, etc.?**
- **Unique climate for long-term funding**





PERMIT IT

LEGEND	
	Tampa Harbor Channels
<i>Beneficial Use Opportunities</i>	
	1 Egmont Key Beach Placement (1 MCY)
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	7 Manatee County Boat Ramp (1-2 MCY)
	8 East Bay Port Expansion (3-4 MCY)
	9 Manbirdee Key Island Restoration
	10 Shoreline Restoration at DMMAs
	11 Reddish Egret Habitat (bay-wide, location TBD)

- **Connecting regulatory reviewers to the potential environmental renewal**
- **Connecting the public to its possible ecological splendor**
- **Connecting Port Tampa Bay, FDEP, USACE, counties, & municipalities to the long-term adaptive planning benefits & challenges**

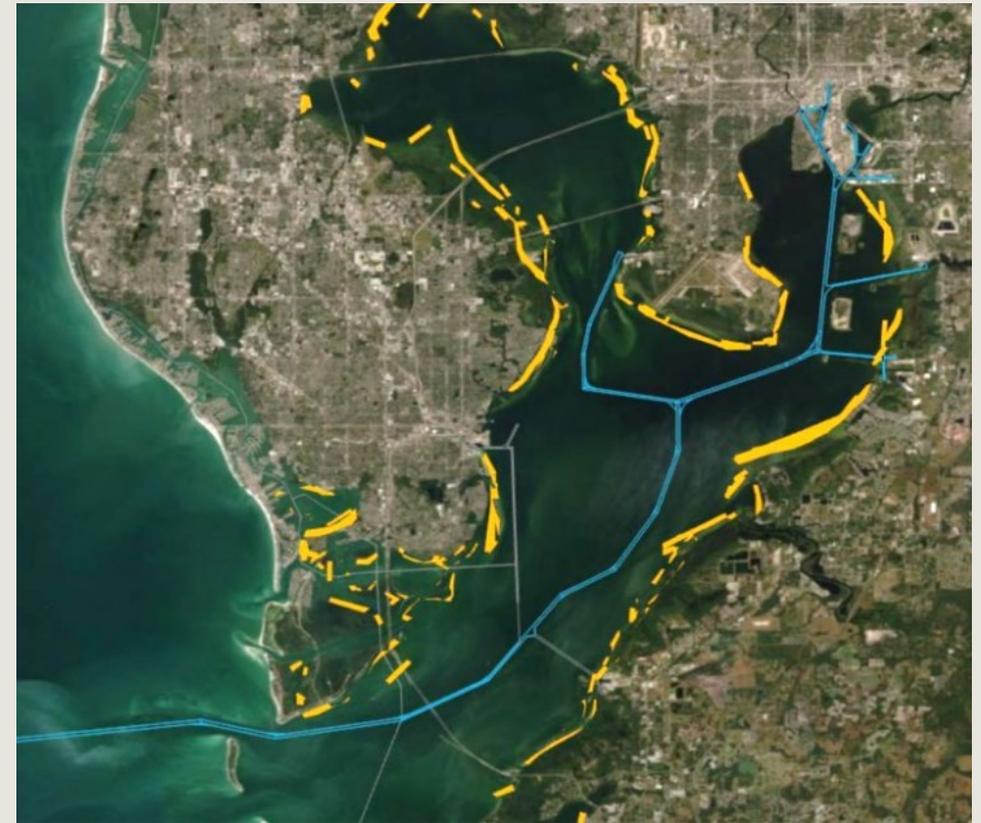




PROTECT IT

- **Land reclamation generally fails, because of the extremely energetic environmental conditions**
  - **Adaptive management, fail & rebuild, & other strategies should be reviewed**
  - **Plan & budget for inevitable impacts**

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## PRODUCE IT

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	Tampa Harbor Channels
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- **Actively managing deliverable quality is essential to minimizing cost & eliminating schedule overruns**
- **Advance schedule & reduce cost while maintaining quality**
- **Set industry benchmarks for excellence**
- **With *CHEERS!* – focused on providing environmental equity elements first**
- **With *PTB* – focus on economics?**



# 06 Lessons Learned - JAXPORT



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# Discussion