

SEVEN MILE ISLAND INNOVATION LAB (SMIL): ADVANCING BENEFICIAL USE PRACTICES TO SUPPORT COASTAL RESILIENCE

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Additional Info and Fact Sheets:

<https://www.nap.usace.army.mil/Missions/Civil-Works/Coastal-Dredging-Beneficial-Use/>

<https://wetlandsinstitute.org/smiil/>



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“A Partnership for our Planet”



- Persist, Innovate, Challenge, Advance, Evolve
- R&D Collaboration: *Engineering with Nature, Regional Sediment Management and other programs*
- Illustrated Success: *Innovative Dredging and Placement Projects in New Jersey*
- Building Momentum: *Evolving the Practice for Natural Infrastructure*



USACE Philadelphia District Navigation Mission

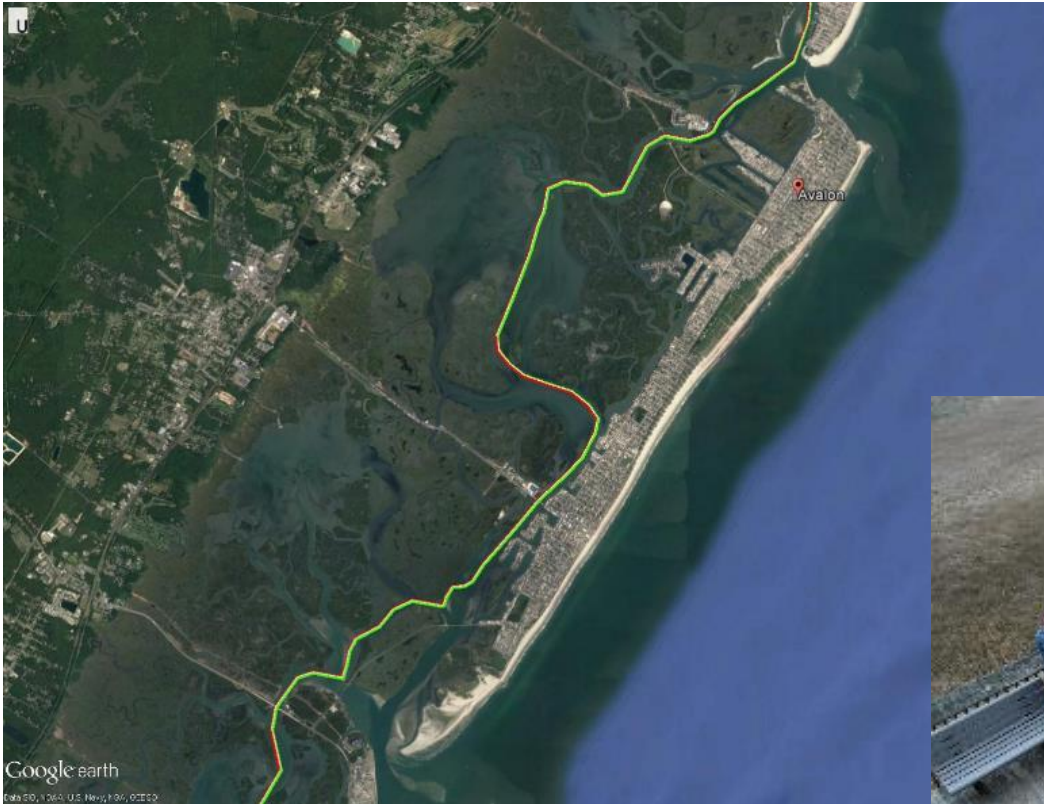


- USACE maintains federal channels, including the Delaware River & Bay, 4 coastal inlets and the 117-mile New Jersey Intracoastal Waterway
- We contract for dredging and placement or use Government Plant
- When dredged sediment is CLEAN, District strives to find opportunities to use 100% of it beneficially; **General Spellmon, Chief of Engineers, set bar at 70% for nation**
- Moving toward this goal has been an evolution over many years





Seven Mile Island Innovation Laboratory



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Coastal Navigation in the Philadelphia District: Evolving Practice in the Seven Mile Island Innovation Lab



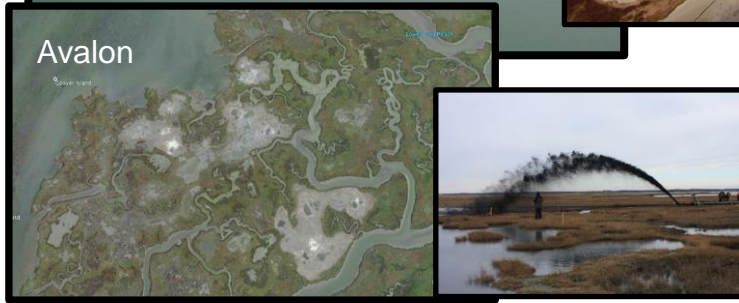
- **Persistent, Collaborative Approach Across USACE & Others:** *Based on working together through the Regional Sediment Management and Engineering with Nature Programs*
- **Illustrated Success:** *Innovative Dredging and Placement Projects Enhancing Coastal Resilience*
- **Why Seven Mile Island?** *NJIWW fed channel & TWI bisect region; WMA, ongoing & previous projects (beach & nav)*
- **SMIIL Timeline:**
 - 2013: “New” collaboration with State of NJ and others starts post-Irene & Sandy w/ pilots (Mordecai, Ring, Avalon)
 - Spring 2019: Created Seven Mile Island Living Lab with primary partners (USACE NAP & ERDC, NJDEP, TWI)
 - Dec 2019: Rebranded to “Innovation” Lab
- **SMIIL Purpose:** *Advance and improve dredging and marsh restoration techniques in coastal New Jersey through innovative research, collaboration, knowledge sharing and practical application*
- **SMIIL Goals:** *Maintaining safe navigation channels while retaining dredged sediment in the system to benefit natural ecosystems and coastal communities*
- **Building Momentum:** *Evolving Practice through SMIIL; Started w/ Seven Mile Island but now expanding in regions, scale & concepts*



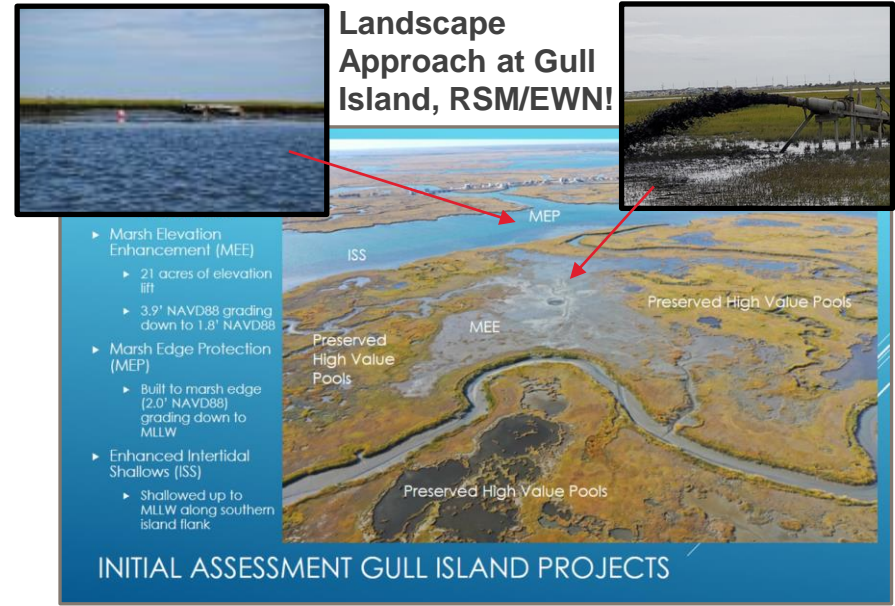
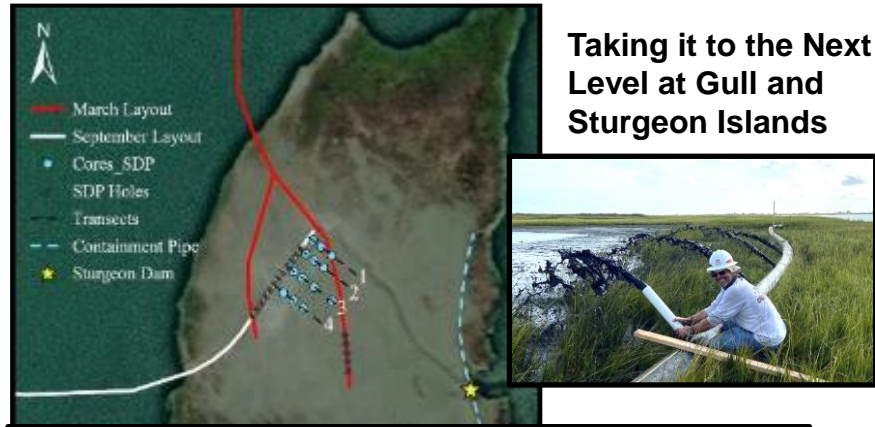
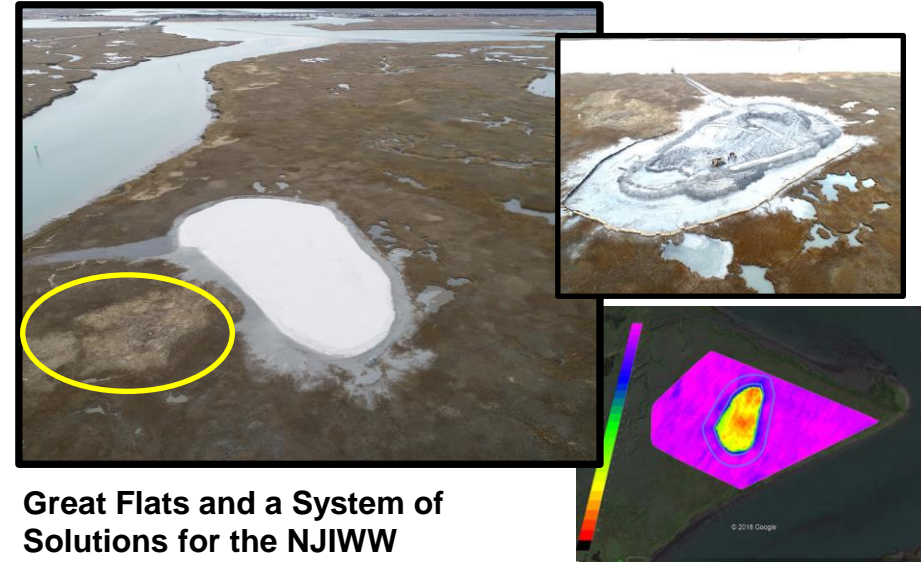


Advancing Dredging & Placement Techniques in SMILL

Learning from the Past, Innovating Now and Evolving to the Future



The Original Pilots & Beyond





Importance of Monitoring & Research in SMILL USACE, State of NJ, TWI, UPENN, BC and Others





Ongoing Monitoring & Research in the Seven Mile Island Innovation Lab



- Marsh Vegetation Surveys (*ERDC: Piercy/Russ*)
- Shark Island Embayment (*ERDC: Perkey/Fall*)
- Gull-Sturgeon Turbidity (*ERDC: Perkey/Fall*)
- Sediment Distribution Pipe: Sturgeon-Gull (*ERDC: McFall/Tyler/Harris*)
- Sturgeon/Gull Sediments/Consolidation (*ERDC: Tyler/Harris*)
- GCM Observations & Model Development (*ERDC: Perkey/Fall*)
- Sediment/Vegetation Interactions (*ERDC: J. Smith/Ramirez*)
- Vessel Wake Impacts on Marshes (*ERDC: Priestas/Styles/Bain*)
- Macroalgae/Benthic Surveys (*ERDC: Altman/Balazik/Reine*)
- Water Quality and Hydrodynamic Modeling (*ERDC: Kim/Ding*)
- Remote Sensing & EWN LA (*Univ Penn, Burkholder & Van Der Sys*)
- Monitoring and Adaptive Management of Elevated Nesting Habitats (*The Wetlands Institute, Kashi Davis, NJDFW*)
- Monitoring and Adaptive Management of Gull and Sturgeon Islands (*The Wetlands Institute, Kashi Davis, NJDFW*)
- Bathy/Topo/Currents/Sediments/Remote Sensing (*Philadelphia District*)
- Varied University Research: *Univ of Penn, Boston College, Texas State, LSU, Stevens, Univ of Washington, Stockton (Work Group)*
- ***The Wetlands Institute/NAP support all research efforts as possible***



Upcoming SMIL Presentations & References



- American Shore and Beach Preservation Association National Conference, Sept 2022, Long Beach, Presentation, “Advancing Navigation Dredging and Innovative Placements to Support Coastal System Resilience in USACE's Philadelphia District”
- 37th International Conference on Coastal Engineering, December 2022, Sydney, Australia, Paper and Presentation, “Advancing Sediment Solutions in the Seven Mile Island Innovation Lab”
- Coastal Sediments 2023, March 2023, New Orleans, Paper and Presentation, “Seven Mile Island Innovation Laboratory: Advancing Beneficial Use Practices to Support Coastal System Resilience”

- *Additional Info and Fact Sheets:*

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