

FY20 RSM IPR

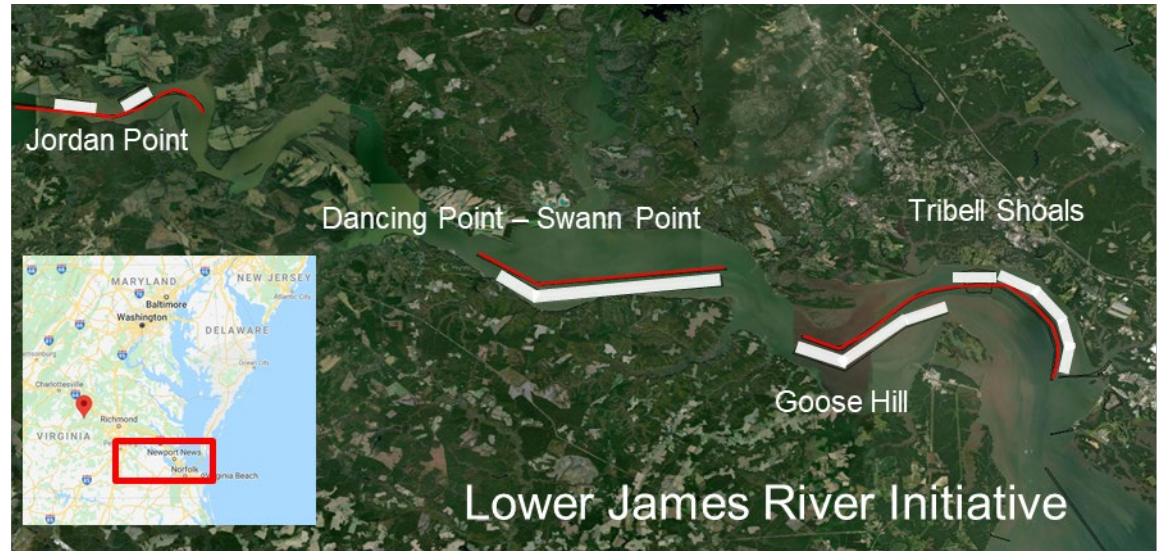


Norfolk District, Lower James River Sediment Transport Study, Victor Roberts (NAO) and Tahirih Lackey (ERDC)

BLUF: NAO requested ERDC develop a regional operational model for sediment transport to improve sediment management in the entire lower James River initiative.

Challenge/Objectives

- Reduce O&M costs
- Reduce exposure/risk of critical environmental receptors
- Determine migration of sediment from placement sites back into channels
- Optimize lifecycle management of placement sites
- Understand influence of aggregate transport on sediment management.



Approach

- Field Data collection effort (sediment characterization)
- Pipeline placement (CDFATE)
- Farfield Fate (PTM)
- Bed Morphology, mound migration, regional transport (GSMB)

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District/Other USACE PDT Members

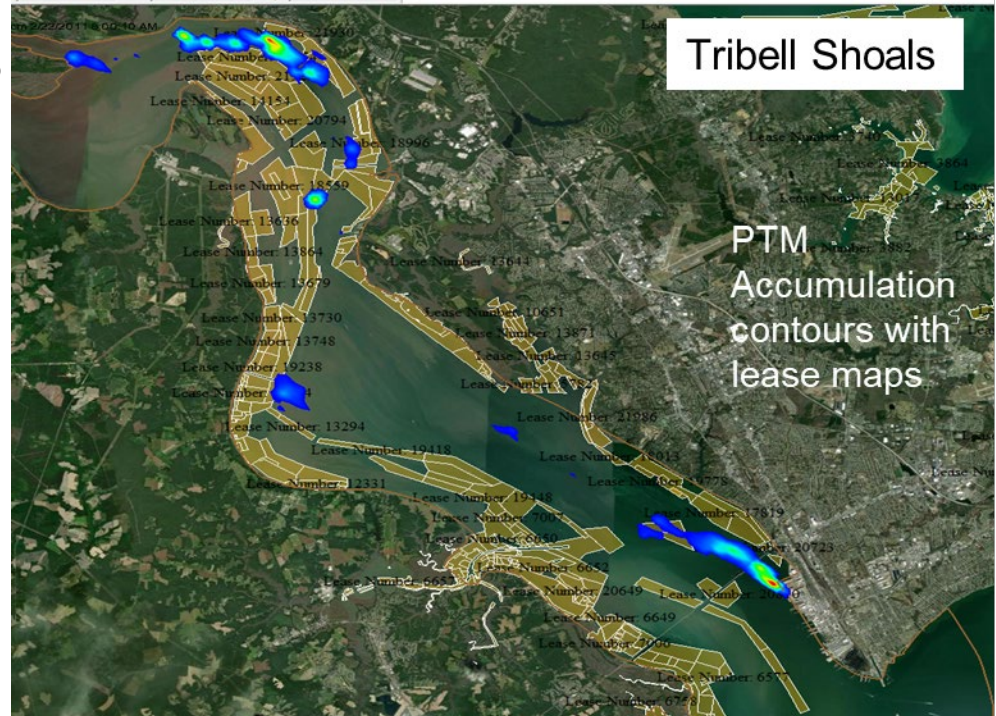
- Victor Roberts, NAO
- Chris Turner, NAO
- Robert Pruhs, NAO
- Tahirih Lackey, ERDC - CHL
- Joseph Gailani, ERDC - CHL
- Sung-Chan Kim, ERDC - CHL
- Earl Hayter, ERDC - EL
- Susan Bailey, ERDC – EL
- Jarrell Smith , ERDC - CHL
- Dave Perkey, ERDC – CHL
- Nathan Mays, ERDC - CHL

Leveraging/Collaborative Opportunities

DOER and VIMS

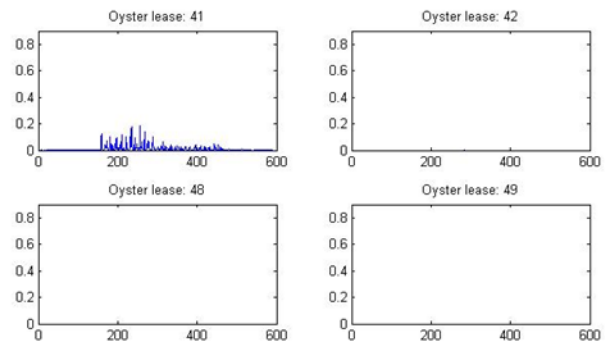
Stakeholders/Partners

James River Partnership



Tribell Shoals

PTM Accumulation contours with lease maps



SSC time series at leases

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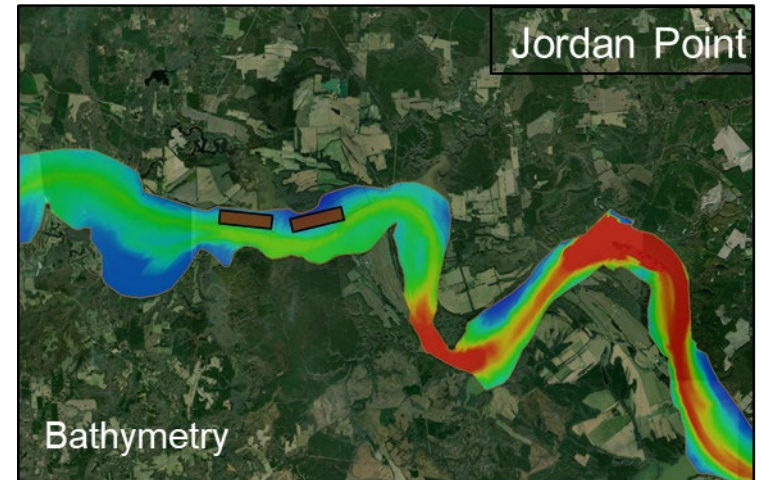
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Presentations:

- James River Partnership meeting Presentation - Sept, 2019 (Newport News)
- Ocean Sciences in Feb, 2020 (San Diego, CA)
- VIMS physical sciences seminar - April 2020

Publications:

- TR – James River : Sediment transport Study - Dancing Point to Swann Point Channel
- JA - Impacts of Muddy Bed Aggregates on Sediment Transport and Management in the tidal James River, VA
- TR - James River: Field Data Analysis
- TR - Physical Factors that Influence Muddy Bed Aggregate Production, Size, and Durability
- LR – James River: Sediment transport Study - Goose Hill
- LR – James River: Lifecycle of Placement sites
- LR – James River: Sediment Transport Study – Tribell Shoals



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How is this project benefiting the USACE and Nation?

Increased dredging costs over recent years along with Operations and Maintenance budget cuts have decreased the amount of dredging that can be accomplished to meet navigation needs and the goal of unrestricted navigation on the James River.

- Modeling of the fate of sediments dredged from the channel and overall regional sediment analysis will assist in understanding this complex sediment system.
- This project provides essential data for dredged material management, potentially helping to optimize the placement of the dredged material and evaluate sources of shoaling.
- The field data collection effort is perhaps the most extensive and detailed sediment characterization data collection for this area, providing knowledge for future projects and efforts.
- Cost increases introduced by environmental windows can be mitigated through information obtained by predictive sediment transport modeling.