



## Identification of Dredged Material Beneficial Uses from Geophysical Analysis of Sediment Borings

### Description

This research aims to identify appropriate beneficial uses of dredged sediment along the Atlantic Intracoastal Waterway (AIWW). Approximately 34 vibracore sub-surface borings of sediment within the AIWW extending from Beaufort County, SC to Camden County, GA will be collected and analyzed to characterize the physical properties of sediment. Factors such as grain size, plasticity, color, and erodibility will be evaluated to determine what beneficial use applications are best suited for the sediments along this section of the AIWW. Of particular interest is the presence and formation of mud aggregates following placement, which is viewed as positive feature in the building of bird islands. The SAS would like to create a “Shoal on the Shelf” initiative to classify potential beneficial use placement options for high shoaling rate reaches of the 161-mile area of responsibility for maintenance dredging in the AIWW. The collection of this data can be used by managers and stakeholders to make more informed decisions on best practices for managing sediment and beneficial use placement opportunities.



Figure 1. Location of RSM region, Atlantic Intracoastal Waterway (AIWW)

### Issue/Challenge To Address

The AIWW is a 739-mile inland waterway system between Norfolk, Virginia, and St. John's River, Florida, that the US Army Corps of Engineers maintains by navigational dredging (Figure 1). The AIWW is a vital marine highway along the Atlantic coast, providing safe navigation for commercial and recreational vessels. Savannah District's portion of the waterway constitutes approximately 22 percent of the AIWW. Historically, the primary method of dredged material disposal was undiked discharge into disposal tracts adjacent to the waterway. SAS is exploring different placement options for the dredged material, especially since >35% of operational reaches within their portion of the AIWW lack 20-year disposal area capacity. Further, coastal regions around the country share the need to remove sediments from navigation channels and use that sediment to provide environmental restoration opportunities. State and Federal agencies are eager to have more beneficial use projects with dredged material and recognize the benefits of keeping sediment within the system. The proposed initiative aims to better inform the



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sediment compatibility assessment by factoring the make-up of the sediment content associated with the placement processes.

**Successes  
Lessons Learned**

This is the first year of this research, but lessons learned will be compiled and reported throughout the duration of the study.

**Projected Benefits  
Cost Savings  
Value Added**

Building bird islands, marsh restoration/development, restoring shoreline erosion, thin layer, deep hole, and near shore placement are all potential beneficial use options when conducting navigation dredging. Designated upland disposal sites can be costly to transport dredged material to, especially in intracoastal waterways where the distance of those disposal sites can make or break the ability to dredge the shoal. Having the ability to place material beneficially near the source will have a clear economic benefit by cutting costs, whilst benefiting the ecosystem as well. Also, expanding the data set of borrow site material analysis will aid in the development of guidance for detecting sediments that produce durable mud aggregates, which are useful in the building of bird islands and other geomorphic features.

**Expected Products**

- Field collection and geophysical testing of vibracore borings from AIWW
- Mud Aggregate and erodibility testing of selected subset of core borings
- Attendance and presentation at RSM IPR and Webinar
- ERDC Technical Report of findings

**Stakeholders/Users**

Resource agencies, Georgia Department of Natural Resources Coastal Resources Division, and ERDC will be engaged to the greatest extent possible to increase awareness of the sediment resources available.

**Leveraging  
Opportunities**

This research is being leveraged with SAS O&M funding for collection and testing of the AIWW borings. Additionally, prior research conducted by ERDC have developed techniques that allow for cost effective means of evaluating physical properties of sediments along with their erodibility following placement and likelihood of producing mud aggregates (Fall et al. 2020, Perkey et al. 2019, Perkey et al. 2020a,b). Data collected from this research will be used to inform State and Federal agencies of the potential to do beneficial use of dredged material along the AIWW, thus increasing environmental restoration projects and enabling dredging in areas where placement options were once limited.

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## National Regional Sediment Management Program Savannah District (SAS):



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#### Participating Partners

There are no other participating partners in this work.

#### References

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