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# Sediment Character Modification During Dredging, Pump-out, and Placement Operations

## Information Need:

Improve understanding of sediment sorting and character changes that occur during dredging, pump-out, and placement operations as it is suspected (but not validated) that the relatively small, fine-grained sediment fraction from borrow area sediments is sorted out in this process. In coastal states where there are strict requirements for sediment matching, other borrow areas and environmental tradeoffs could be considered.

## Date Information is Required:

Ongoing

**Tentative Ranking: 9**

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**Background:**

- Some states require fill not contain > 5-10% fines and/or the grain size distribution be within certain tolerance of mean and sorting coefficient of native beach.
- Sand sources are often excluded from potential use (in initial planning) if source/ native materials do not match within accepted criteria. This approach may be overly precautionary if the sediment characteristics will match at beach post construction (alternative is not risk free).
- Given limited sand sources and strict fill requirements, project sponsors are moving towards potentially more environmentally sensitive areas (i.e., sand ridges, shoals, capes) to find "beach compatible" sand with limited fine-grained content.

**Tentative Ranking: 9**

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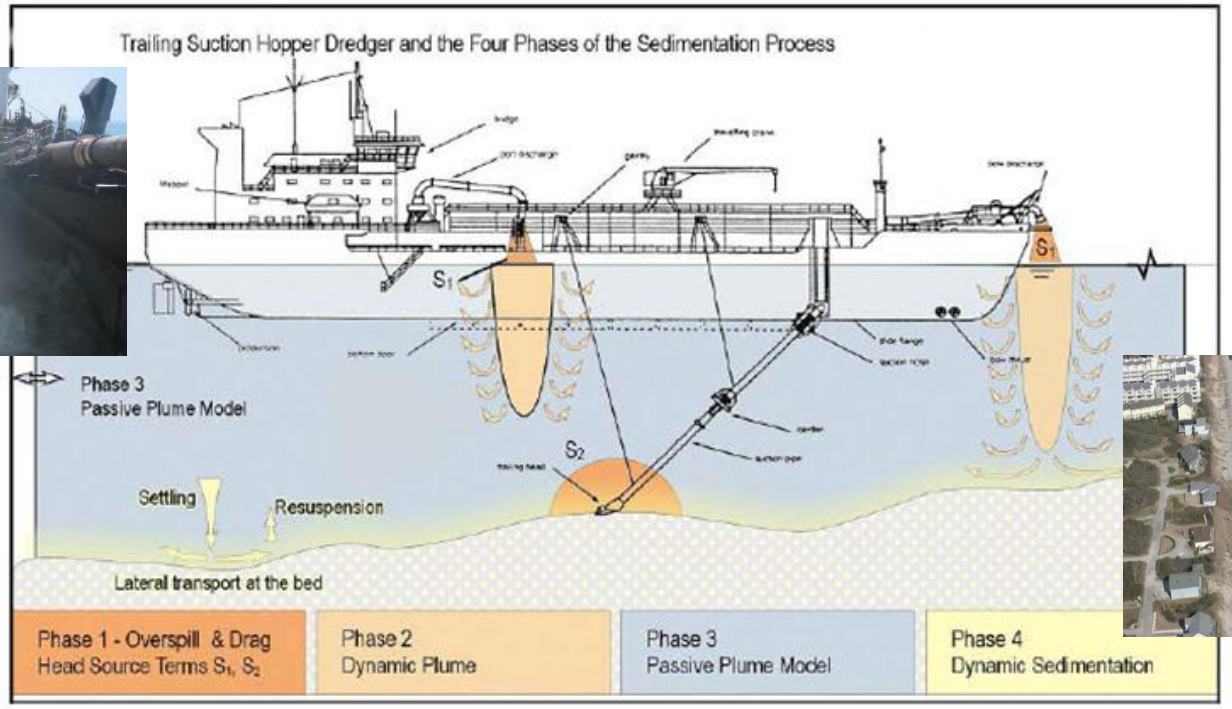
## Background:

Sediment is entrained, dewatered, and re-slurried several times in process. During each phase, sorting and other character changes are likely to occur. Overflow suspected to screen material below 0.07 mm (fine sand).

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## Study's Objectives:

Determine the degree, phasing, and variability in sediment sorting and character changes that occur during dredging, pump-out and placement operations.

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## Methods:

Possible field methods may include repeat geotechnical sampling, concurrent oceanographic and particle size/turbidity measurements, and sediment tracer studies. During operations, the borrow area, hopper, pipeline discharge, and beach must be regularly sampled. Integrate with dredge plan operational/production data.

Laboratory analysis of sediment grain size, color, shape, sorting, and settling velocity.

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## Additional Pertinent Information:

- Existing pre-construction study and post-construction monitoring efforts will be identified and leveraged.
- Explore partnerships with the U.S. Army Corps of Engineers' Engineer Research and Development Center and other vested stakeholders to leverage funds and maximize collaboration.
- Technical and cost ramifications for specific projects require close coordination and partnership with dredging contractors to minimize non-productive time.

**Tentative Ranking: 9**