



Review of Bubble Screens for Turbidity Control Associated with Dredging Projects

ERDC Dredging Operations Technical Support Program (DOTS)

U.S. ARMY CORPS OF ENGINEERS

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Response Summary:

USACE Jacksonville District (CESAJ) has requested Investigation on the viability of using pneumatic curtains (Air Bubble Screens) for controlling turbidity at ports, etc. associated with dredging projects. CESAJ is planning for the Port Everglades project where these screen have the potential for saving millions of dollars by protecting coral resources. An example of where they may have saved resources: The recently completed Miami Harbor Deepening project involved dredging several million cubic yards of sediments, including over 2 million cubic yards of mostly limestone bedrock. During the dredging work, much of the limestone disintegrated into silt, clay and colloidal sized particles, which then settled on corals, impacting approximately 252 acres of this resource. As a result of these unintended dredging related impacts, additional millions of dollars of coral mitigation will need to be conducted. If ABS had been deployed, particularly in dredging areas with lower current velocities, these resource impacts may have been greatly alleviated or possibly eliminated. CESAJ has encountered similar challenges on other projects as well, such as beach nourishment projects, which have the potential for inadvertently covering resources.



Period of Performance:

6/1/18 – 10/12/18

Benefits of the Response to the USACE Dredging/Navigation Program:

Briefly summarize the benefits of the technical response to the Dredging /Navigation program(s). Bubble curtains have been proposed as a technique to control sediment transport associated with dredging operations, and could potentially present some benefits over traditional silt curtains by allowing ship passage and lower maintenance. However, few case studies exist to show their effectiveness, and in-depth research is needed to fully evaluate whether bubble curtains can be effective as a sediment transport barrier. USACE needs to understand where bubble curtains can be effective as well as limitations of the technology. This effort will not likely provide a definitive answer as to whether they will work for CESAJ's purpose, but may provide sufficient information and basis to pursue further investigation. The review will pull together literature related to bubble curtains and potential effectiveness to control sediment transport. The information will be valuable to determine whether bubble curtains have potential for dredging applications such that further research is warranted.

Deliverable:

This effort will result in a memorandum with a review of recent literature regarding air bubble screens with respect to sediment transport. Based on the literature findings, an opinion will be generated as to the potential application to SAJ dredging at Port Everglades.



Providing environmental and engineering technical support to the U.S. Army Corps of Engineers Operations and Maintenance navigation and dredging missions

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