



ERDC Dredging Operations Technical Support Program (DOTS)

U.S. ARMY CORPS OF ENGINEERS

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Response Summary:

The U.S. Army Corps of Engineers (USACE) traditionally uses two metrics to evaluate maintenance of coastal navigation projects: tonnage at the associated port (representing relative importance) and the controlling depth in the channel (representing operating condition). These are incorporated into a risk-based decision framework directing funds where channel conditions have deteriorated and disrupted tonnage potential is highest. However, these metrics fail to capture shipper demand for the maintained depth service provided by the USACE through dredging. Using Automatic Identification System (AIS) data, the USACE is pioneering new metrics describing vessel demand for the channel depth, represented by vessel encroachment volume (VEV).

VEV describes the volume of the hull intruding into a specified clearance margin above the bed and captures how much vessels use the deepest portions of USACE-dredged channels. This study compares VEV among 13 South Atlantic Division ports over four years by combining AIS, tidal elevations, channel surveys, and sailing draft. The ports are ranked based on the services demanded by their user base to inform the decision framework driving dredge funding allocations. This capability was briefed to SAJ and SAD personnel as a part of this request.



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Period of Performance:

1-3 March 2023

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

VEV represents new data-driven methodology to quantify channel maintenance requirements based on measured usage by transiting vessels, allowing waterway managers to consider dredge funding and active dredge redeployment decisions through the lens of supply (of available depth) and demand (for that depth by users). This considerably improves upon USACE's current prioritization scheme, whereby maintenance funding allocations are based on the criticality of a port to nationwide commerce (as estimated by tonnage) and by channel condition (as estimated by channel depth relative to authorized depth). USACE's current approach does not link the supply of the service provided by USACE (i.e., channel depth and width) to the users' demand for that service (i.e., how much of the available depth navigating vessels use).

Deliverable:

This project is a pilot for a new ERDC-developed tool to measure the demand of vessels in USACE-maintained navigation channels for the deepest parts of the channels. In addition to further development of this tool, this DOTS request resulted in two ERDC reports as well as a briefing to SAJ and SAD personnel to the results of the pilot study.



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