



Sustainability Improvements for the USACE Navigation Mission

Dredging Operations Environmental Research (DOER) Program

U.S. ARMY CORPS OF ENGINEERS

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Problem

A few past efforts within USACE have qualitatively attempted to enumerate known potential improvements related to dredging and the USACE navigation mission. These inefficiencies relate to multiple aspects of sustainability, including cost, social factors, and environmental outcomes. Changing policy or practice to remove these inefficiencies or implement these potential improvements represent potential “low hanging fruit” to increase the broad sustainability of the USACE navigation mission with modest effort.

Study Description

The first task will be to explore and define sustainability in the context of the USACE navigation system. This will include literature review, thoughtful summarization of current guidance and policy with respect to potential application to dredging and navigation, and dialog with appropriate representatives throughout USACE. The results of Task 1 will be used to identify policies or scenarios of greatest interest or greatest uncertainty and that therefore warrant investigation. For here a few topics and regions will be selected for case studies that can concretely demonstrate the expected improvements in sustainability – cost, environment, social, although perhaps not all three at once – from specific changes in practice or policy. These will be selected with consideration of the findings in Task 1 and in consultation with the program manager. The intent is that these quantitative case studies can demonstrate potential improvements to decision makers and practitioners provide them with a rational for improving practice or policy. Example measures could include case studies quantifying potential sustainability improvements from: encouraging advance maintenance dredging, relaxing the annual funding cycle to allow districts to carryover excess or receive advance funds to accomplish larger efforts within a single time step, combining projects for efficiency, combining nearby projects across district political boundaries, implementing strategies within the community to reduce sedimentation, implementing alternative dredging techniques (agitation dredging, water injection dredging, dragging, knockdown, hopper overflow) to improve draft with less effort, or others. In the third year the intent is to generalize the case studies for national applicability.



Products

The initial product of this study is a journal article exploring sustainability concepts and principles in the context of the USACE Navigation mission and will be completed in December 2017. The product for the third year of the project will be a series of case studies, also documented in a peer-reviewed journal article. Currently identified case study sites include Duluth Harbor and Ohio/Lake Erie in LRB and Galveston Bay in SWG.

Summary

This project will undertake a specific exploration of the many formulations and conceptualizations and develop an understanding of how sustainability can be applied to the USACE Navigation mission. The study will be enhanced through a series of case studies that will demonstrate potential sustainability improvements from removing specific inefficiencies or implementing specific improvements. These case studies will include a base case scenario implementing “business as usual” approaches, and also an improved sustainability scenario implementing targeted measures under alternative policies or practice. This will allow side-by-side quantitative comparison of the base case and alternative scenarios in order to inform policy development and decision making.



Balancing operational and environmental initiatives and meeting complex challenges of dredging and dredged material placement in support of the navigation mission.

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