Mound Prediction for Petersburg Harbor Dredged Material Placement at Frederick Sound Disposal Site

Response Summary:

Ran STFATE model runs for three sediments under a range of tidal conditions to estimate the size and shape of a dredged material mound formation from one hundred twenty 500-cy barge dumps (55 kcy) at the 500-ft deep Frederick Sound Disposal Site. Examined the effects of both point discharge and areal discharge. Examined the effects of clumping on mound formation. Analyzed the deposition pattern for clumps, coarse sand, fine sand and fluidized fines. Summarized the deposition thickness for each solids fraction and integrated the individual fractions to estimate the overall size and shape of the dredged material mound. Prepared a memorandum to document the modeling and mound estimates.

Period of Performance:

Start date: 13 July 2021 Completion Date: 26 July 2021

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

The modeling and analysis provided expectations and understanding of mound dimensions to aid in developing a monitoring program for a deepwater site with high tidal velocities. The modeling also showed great sensitivity to operations and sediment properties and the impact that clumping would have on the mound height.

Deliverable:

The technical response to the Alaska District was a technical memorandum of the modeling and mound estimates.

Paul R. Schroeder, PhD, PE
Environmental Laboratory • Paul.R.Schroeder@usace.army.mil

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