

## TOWN OF WELLFLEET

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Request for Quotes Dredging Alternative

Study of Feasibility and Costs for Dispersing Wellfleet Harbor Dredge Spoils onto Adjacent Marshes.

A. Background

Wellfleet's inner harbor was mostly developed in the 1950s. An unexpected consequence of that harbor design is a need for regular dredging.

This dredging is a major expense to the Town, with direct costs of millions of dollars. Much of that cost is the expense of depositing dredged spoils in the center of Cape Cod Bay.

A failure to dredge at least every ten years also creates a loss of Marina business as docking slips and anchorages become inaccessible.

The trapping of the dredge spoils inside the harbor robs local marshes of needed nourishment that in the long term would enable them to at least partially stay ahead of climate change driven sea level rise.

We propose developing a method to put the dredge spoils to use to nourish the local marshes, especially at Duck Creek. This is equivalent to "Thin Layer Deposition" but by a different method.

The Wellfleet Harbor dredging spoils have been the subject of a recent study by the Center for Coastal Studies (see <u>Black Custard</u>). The dredge spoils had a bad local reputation, due to the normal sulfide odors and black color. However, the study made clear that the dredge spoils are not harmful.

The new name given to the spoils is "black custard".

B. Proposed project

The primary goal of the dredging project is to allow the black custard material to be deposited onto local marshes, such as Duck Creek immediately upstream of the dredging site. This process is similar in concept to thin layer deposition. However, the process we propose would mimic natural, local tidal processes.

Three steps are suggested:

1. A process – such as hydraulic dredging – for recovery of dredge spoils, initially from the north access channel (see map attached). Initially, spoil samples would be used for process development as in step 2. In the long term,

hydraulic dredging or a similar continuous alternative could be the method for practical implementation.

2. Dispersion of the spoils. The dispersion should be sufficient to allow tidal transport of the dispersed agglomerates. It is likely that the necessary agglomerate size would be similar to the natural material incoming from down harbor on a flood tide.

This is a key process step.

3. Pumping the dispersed spoils so that they are carried upstream on a flood tide. The pumping should reach the tidal channel at the east end of the harbor pier: this locates the greatest tidal velocities. It is critical that the dispersion is sufficient that the spoils do not settle before reaching the marshes. This avoids burial of some productive shell fishing bottoms. Modeling will be required for verification.

Modelling should also include consideration of the best use of tidal cycles in removal of spoils; some transport back out into the open harbor is inevitable and acceptable to the larger dredging need.

A successful project would allow regular, locally controlled, low cost "dredging" for years into the future.

C. Deliverables

The deliverable will be a substantiated plan outlining the steps that would be needed for future process implementation:

- > engineering plans, technology and equipment needed
- > permitting requirements
- > a rough cost both for engineering and implementation

It is intended that the project be ready for implementation within one to two years after the north channel conventional dredging this winter.

We recognize that reaching these goals requires a variety of technical skills; partnerships are encouraged. Co-operation with the Wellfleet Harbormaster and Marina Advisory Committee are essential.

This project has been approved by the Wellfleet Selectboard and at the 2021 Annual Town Meeting. An appropriation of \$25,000 was included in these approvals.