

Publication of Research Article “Turbidity Associated with the Beneficial Placement of Dredged Sediment in the Dynamic Littoral Zone at Fairport Harbor, Ohio”

A team of researchers from the ERDC Coastal and Hydraulics Laboratory (CHL), the ERDC Environmental Laboratory (EL), and the USACE Detroit District (LRE) presented findings of their USACE Dredging Operations and Environmental Research (DOER) Program funded research in the recent Coastal Processes special issue of the Journal of Great Lakes Research. These data indicate that sediment dredged from Fairport Harbor, OH, was placed in shallow enough water to disperse and contribute to onshore accretion without increasing turbidity at the monitoring locations.

The nearshore placement of sediments dredged via maintenance of navigation channels is a cost-effective management solution which offers a myriad of benefits that can include shoreline protection and habitat restoration. Benefits can be offset by concerns due to potential effects of turbidity generated during placement on the ecosystem. To address these concerns, a team from ERDC Coastal and Hydraulics Laboratory (CHL), ERDC Environmental Laboratory (EL), the USACE Detroit District (LRE), and the USACE Buffalo District (LRB) collaborated to collect and analyze bathymetry and turbidity data before and after sediment was placed. In June 2023, approximately 51,400 cubic yards of sediment were dredged from the outer section of the Fairport Harbor, OH, navigation channel and placed at a depth of approximately 15 ft in the nearshore (Figure 1). The dredged area is predominantly fine sand, but the nearest sediment sample also contained a moderate amount of silt. Bathymetry data that the USACE Buffalo District (LRB) survey team (lead by Kevin Lesika) collected over 11 months showed that the placement contributed sediment to the littoral transport system and may have also caused accretion onshore of the placement area. Several months of turbidity data that a team of USACE Detroit District (LRE) personnel (led by Jonathan Waddell) collected at nine stationary sensors indicated that turbidity from dredged sediment placement did not exceed naturally occurring events at any of the monitoring locations.

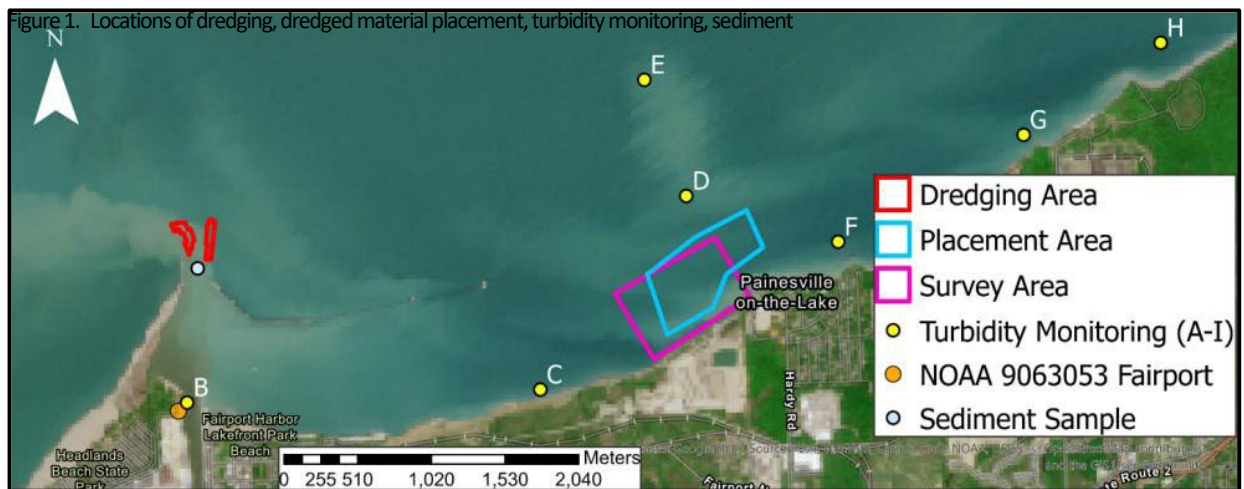


Figure 1. Locations of dredging, dredged material placement, turbidity monitoring, sediment sampling, bathymetry surveys, and sources of wind, water level, and wave data at Fairport Harbor, OH. Background imagery uses data that SENTINEL-2 L2A collected on 26 May 2023.

Data, analysis techniques, and findings (Figure 2) were described in a recent publication in the Coastal Processes special section of the *Journal of Great Lakes Research*. The article “Turbidity Associated with

the Beneficial Placement of Dredged Sediment in the Dynamic Littoral Zone at Fairport Harbor, Ohio” was published on 7 February 2025 and can be found at <https://doi.org/10.1016/j.jglr.2025.102533>.

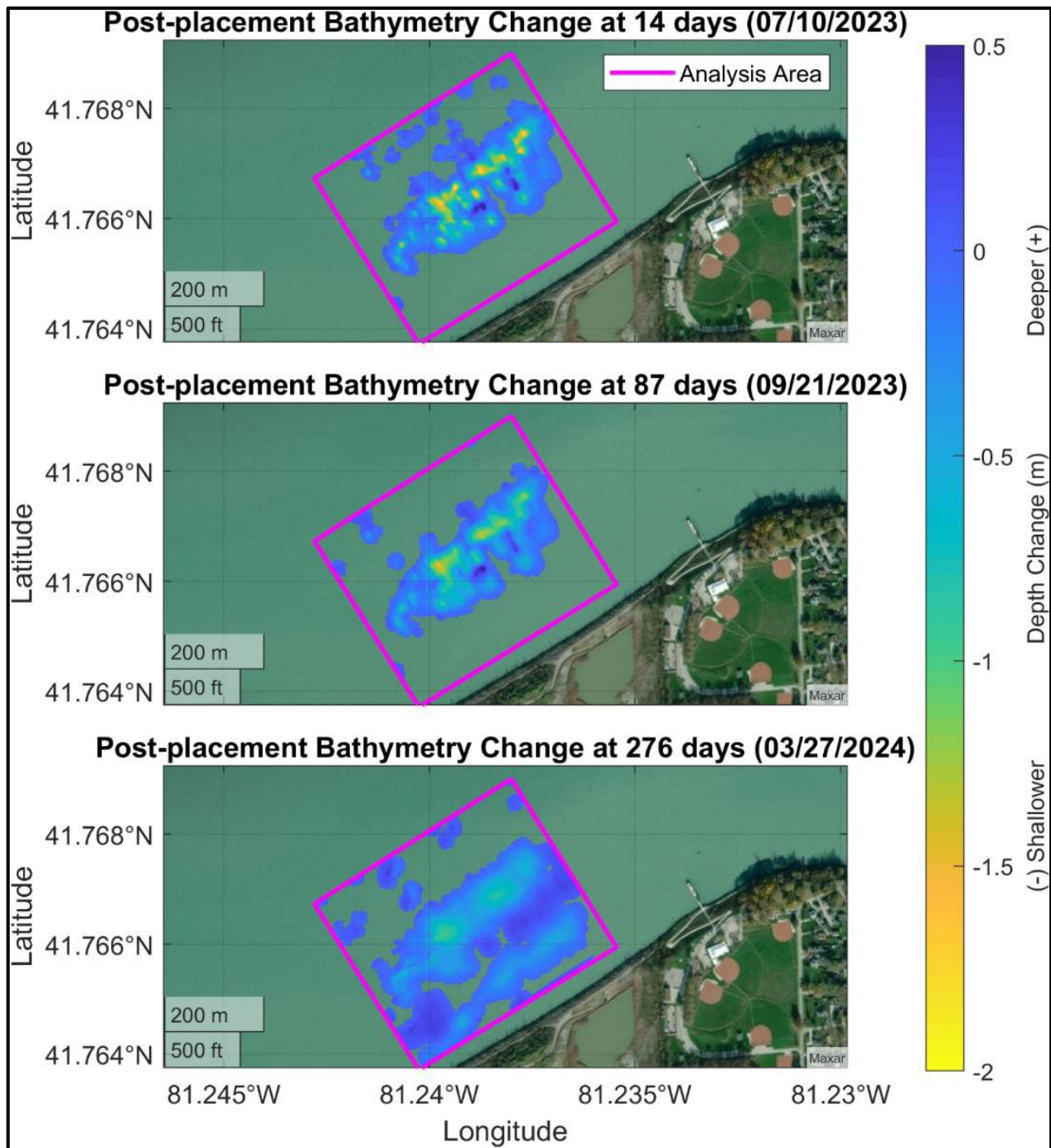


Figure 2. Placed sediment feature depth change from pre-placement bathymetry at 14, 87, and 276 days after the last placement.

Funding for this study was provided by the USACE Dredging Operations and Environmental Research (DOER) Program through the Sediment and Dredging Processes Focus Area.

This research addressed several aspects of USACE Statement of Need (SoN) 1726 “Nearshore Nourishment Best Management Practices”.

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