Research Programs Support Beneficial Use of Dredged Material

WRDA 2024 Section 117(c)(2)(B) directs USACE to beneficially use 70% of navigational dredging materials. Despite recent progress, additional efforts are needed to ensure that beneficial use is maximized across USACE. Two research programs are supporting innovative beneficial use ideas, as evidenced in two articles published in a recent international dredging journal.

The most recent Journal of Dredging published by the Western Dredging Association (WEDA) highlights efforts to expand the beneficial use of sediment by USACE. The two articles are the result of USACE Engineering Research and Development Center (ERDC) research programs: the Regional Sediment Management (RSM) program and the Dredging Operations and Environmental Research (DOER) program. These two programs support USACE innovation in operations and support the nationwide navigation program that is critical to supporting the U.S. economy and security.

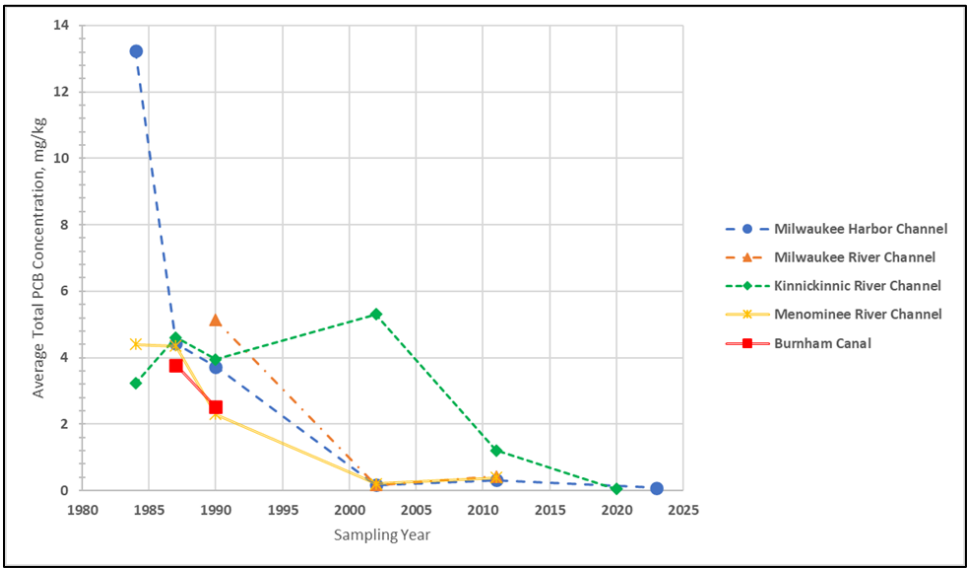

Figure 1. Example of reduction in polychlorinated biphenyls (PCBs) over time in portions of the federally maintained Milwaukee Harbor and River channels. The RSM program supported the data analysis which shows the drastic improvement in sediment quality.

The RSM supported research article titled “Environmental Improvements in Sediment Quality Due to Navigational Maintenance Dredging at Great Lakes Industrial Harbors” examines regional trends in sediment quality and the connection to routine navigational maintenance (dredging activities). A common belief among the public is that sediment is a “waste” – polluted and unfit for any purpose. Led by ERDC researcher Jennifer Miller, the authors use decades of sediment quality data, collected by USACE in support of routine dredging activities, to show that in fact pollution levels in the large commercial harbors have decreased substantially from the pre-Clean Water Act days. Concentrations of pollutants are now sufficiently low that the sediment in these harbors should be suitable for beneficial use, instead of being expensively confined.

J. Miller, S. Pickard, K. Keil, R. Saichek, R. Hopp, J. Tomczak, J. Miller, and M. Kneer. 2025. Environmental Improvements in Sediment Quality Due to Navigational Maintenance

Dredging at Great Lakes Industrial Harbors. WEDA Journal of Dredging. 22(2):1-18. http://westerndredging.org/phocadownload/WEDA-Journal-of-Dredging-Volume-22-No-2-Nov-2025.pdf

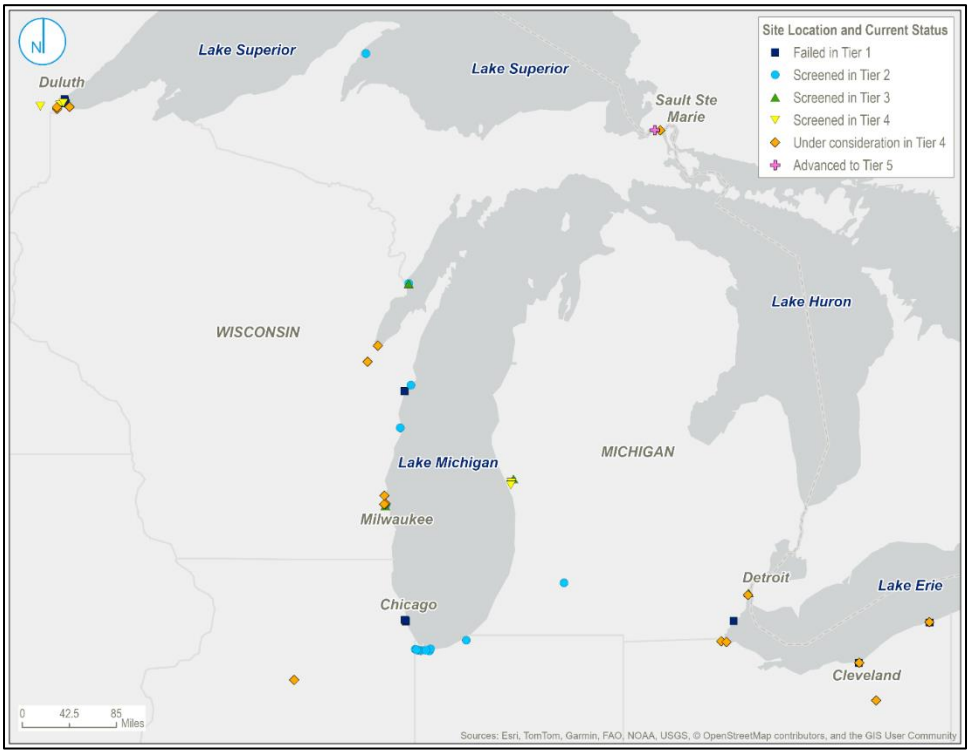

Figure 2. Great Lakes remediation sites screened for potential habitat uplift with beneficial use of USACE navigational dredging sediment, part of the DOER supported research on innovative sediment beneficial use.

The DOER supported research article titled “Identification of Beneficial Use of Sediment and Habitat Restoration Needs at Contaminated Great Lakes Coastal Areas” proposes a broad approach to identifying opportunities for sediment beneficial use at remediation sites. The U.S. has many legacy polluted sites; great progress has been made remediating these but the act of remediating the pollution (usually through excavating the contaminated material or containing it under a hardened cover) typically results in an area that does not support plants and animals. Dredged materials can be used to improve the area – a process known as habitat uplift – to result in restored wetlands and coastal environments that support fisheries, migratory birds, recreation and other benefits. This on-going project will result in a proposed design for habitat restoration adjacent to a USACE navigation project.

J. Miller, T. Cardona, S. Copp Franz, V. Magar, B. Suedel. 2025. Identification of Beneficial Use of Sediment and Habitat Restoration Needs at Contaminated Great Lakes Coastal Areas. WEDA Journal of Dredging. 22(2):19-35. http://westerndredging.org/phocadownload/WEDA-Journal-of-Dredging-Volume-22-No-2-Nov-2025.pdf

These two research articles highlight the valuable support that USACE research programs provide for the nation as a whole: innovations in dredging and beneficial use lead to cost savings,

more effective navigation and environmental and resilience improvements. Beneficial use of dredged material is a win for everyone.

Figure 3. Aerial view of Tannery Bay, a remediated superfund site selected to demonstrate habitat restoration design concepts using USACE navigational dredging material. The DOER supported design work is on-going.

WEDA Journal of Dredging: https://www.westerndredging.org/journal
USACE Regional Sediment Management website: https://www.sam.usace.army.mil/Missions/Civil-Works/Navigation/Regional-Sediment-Management/
USACE Dredging Operations Environmental Research website: https://doer.el.erdc.dren.mil/

Funding: The cited research was funded by the USACE Regional Sediment Management program under the direction of Dr. David Perkey, and the USACE Dredging Operations Environmental Research program under the direction of Dr. Alan Kennedy.

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