

Transporting Dredged River Sand for Port Milwaukee Area of Concern Sediment Capping

Impact Statement: ERDC researchers, Chuck Theiling (Environmental Laboratory [EL]) and Ben Emery (Coastal and Hydraulics Laboratory [CHL]) met with USACE St. Paul District (MVP), the US Environmental Protection Agency (EPA) and their contractors managing sediment capping for the Port Milwaukee Area of Concern (AOC) to begin planning to transport river sand by rail to cap contaminated sediment. The project was shown to be much more cost effective than accessing quarry sand and is a savings to two Federal agencies. The project will improve environmental health in the Great Lakes and sustain shipping on the Upper Mississippi River System. The project is in Project Engineering and Design (PED) phase with MVP budgeting to pay the cost of transport to Milwaukee and EPA paying for offloading and capping. The project is expected to start moving sediment by rail in FY27.

Beneficial use of river sand for Great Lakes shoreline management was first investigated in 2020 because of a USACE Chicago District (LRC) Dredge Operations Technical Support (DOTS) Program request to beneficially use a small stockpile of dredged sediment near Calumet Harbor, Chicago, IL. The project exposed many opportunities for beneficial use of riverine sediment to support shoreline management in the sand-starved southern Lake Michigan. The DOTS project led to a jointly funded (USACE Rock Island District (MVR), St. Paul District (MVP), and the DOER Program) effort with the Illinois Department of Natural Resources (DNR) to move Illinois River sand by barge to Illinois Beach State Park near Waukegan, IL (Emery et al. 2024). Coordination began with back-of-the-envelope sand transport cost analysis and Illinois Geological Survey sediment characterization. They found the Illinois River sand was a very good physical match to beach sand and preferable over quarry sand for beach nourishment.

Wisconsin DNR, ERDC, and MVP collaborated to consider Mississippi River sand for Lakes Michigan and Superior shoreline management. The DNR contracted university researchers to evaluate the potential for aquatic invasive species in the Wabasha, MN, sand stockpiles (Figure 1). The tests indicated low risk for introducing invasive species from the river to the lakes using sand that had overwintered at least one season. The findings support several potential projects with the Port Milwaukee AOC as the most likely first project.

The U.S. Environmental Protection Agency (EPA) and its partners, City of Milwaukee, Milwaukee County, Milwaukee Metropolitan Sewerage District, and Wisconsin Department of Natural Resources are advancing restoration of the Milwaukee Estuary Area of Concern (AOC) to address different types of environmental degradation. Coordination to use river sand on the project began in 2020 and first evaluated Illinois River sand to use as structural fill for a 2-panel wall system creating a confined disposal area for the most contaminated harbor sediment. The sand failed structural crush tests because of mollusk shells in the river sediment. The Mississippi River sand was determined suitable for sediment capping and planning for sediment transport was evaluated under DOER RT 23-04, Utilization of Upper Mississippi River Dredged Sands for Beach Nourishment – Feasibility Study (Emery et al. in press).



Figure 1. Mississippi River dredged sand stockpile at Wabasha, MN, is the result of dredging Chippewa River sand at a sand trap and along the navigation channel. A rail switching yard is adjacent to the 5 million cubic yard stockpile.

The EPA feasibility study is complete, and the contractor is working on pre-design investigation. The project engineering and design will be 2 years with sand needed in FY2027 starting with a late 2026 test run. The EPA estimates over 400,000 cubic yards of clean river sediment will be used to cap sites throughout Port Milwaukee. Toxic sediment management is important to the

Milwaukee economy and the communities that surround the estuary. Cleanup and restoration are vital to enhance recreational use of the estuary, thereby boosting tourism and community engagement. The action will support river navigation by restoring placement site capacity and avoiding cost, time, and impacts of establishing a new site. The project will reduce costs for 2 federal projects.

This project was scoped under DOTS, researched under DOER/MVR/MVP funding, and will be made operational using MVP direct funding.

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Emery, B. E., C. H. Theiling, S. Conover, B. K. Popkin, and M. I. Asborn. 2024. Opportunities for Upper Mississippi River System Sand to Support Coastal Beach Nourishment. Engineer Research and Development Center Technical Note ERDC TN-24-7. US Army Corps of Engineers, Engineer Research and Development Center, Vicksburg, MS. 11 pp.

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