Case Study Series

Toledo Harbor Revisited: Changing Open Water Placement Policy for Western Lake Erie

Background

Aerial view of Toledo Harbor courtesy of the US Army Corp of Engineers

Toledo Harbor plays an important role in the local economy and is critical to the movement of cargo across the Great Lakes, The port handles approximately 11,000,000 tons of cargo annually such as coal and iron ore, pumping $500 million a year into the economy and supporting 5,000 jobs. Dredging to maintain adequate depths for commercial navigation is therefore critical in sustaining its service to the Toledo area and the Great Lakes region.

Need for Dredging

Because the waters of Toledo Outer Harbor in the western basin of Lake Erie are shallow, this reach of the harbor, termed the Lake Approach Channel, is heavily dredged in order to accommodate deep-draft commercial navigation at an average of 28 feet. For nearly 20 years, the U.S. Army Corps of Engineers (USACE) has had trouble finding feasible alternatives to place most of the sediments that are dredged annually from this reach of the harbor. Based on historical quantities, an average of 850,000 cubic yards (yd^3) of sediment needs to be dredged each year from Toledo Harbor to maintain its navigational capabilities. However, due to budgetary constraints over the last five years, the USACE's annual dredging of Toledo Harbor has been reduced to about 720,000 yd^3. This translates to an annual dredging backlog of greater than 100,000 yd^3, which would annually cost about $400,000 to remove.

Less than one percent of the sediments dredged from Toledo Harbor are recycled for beneficial use. The "cleanest" (least-contaminated) sediments dredged from most of the Lake Approach Channel meet federal guidelines for open-lake placement and are placed at an authorized open lake area located three and half miles northwest of the Toledo

Harbor lighthouse. The remaining sediments (about one third of the total), most of which are dredged from the Maumee River Channel in Maumee River, do not meet federal open water disposal guidelines and are placed in one of three CDFs: Toledo Harbor Cell 1 Facility 3, Grassy Island (Island 18) and Toledo Harbor Cell 2 Facility 3. If current disposal practices continue, the existing CDFs will be filled to capacity by the end of 2025. There are significant concerns by all parties about the creation of additional in-water CDFs. Expansion of these CDFs to accommodate sediment beyond their current capacity requires additional funding from non-federal project partners. A new CDF for Toledo Harbor would cost over $10 million and take a number of years to build. Non-federal partners would have to contribute 25 percent of the construction costs, with the remainder being funded by the federal government.

Dredging Management

Dredging management for Toledo Harbor is driven by the state 401 Certification and the USACE 404/Federal Standard determination process. Both processes aim to comply with the federal Clean Water Action provisions using two different sets of protocols. Throughout the years, state and federal cooperation in dredging management has been challenged in meeting these two different protocols while providing timely dredging maintenance to Toledo Harbor.

In 1987, Ohio EPA with the support of U.S. EPA, determined that open lake placement of sediment from Toledo harbor was an unacceptable practice. Through several 401 Certifications during the last 18 years, Ohio EPA has provided temporary approval of open lake placement while alternatives were to be developed.

In 1991, the Buffalo District of the USACE determined that the contaminant levels in sediments dredged from the Lake Approach Channel lake-ward of Lake Mile 2 were comparable to those in Lake Erie. In accordance with federal guidelines, these sediments were suitable for open lake placement, and thus, this management option was identified as the Federal Standard[1] for this material. The Ohio EPA contended that the Federal Standard determination was incorrect and unacceptable since open lake placement of the material did not satisfy applicable environmental regulations. Instead, Ohio EPA, the City of Toledo and the Toledo-Lucas County Port Authority wanted USACE to phase out open water placement. The Assistant Secretary of Army (Civil Works) interceded, initiated a Long Term Management Strategy (LTMS), and negotiated a plan with the state of Ohio that involved placing additional dredged material into the existing CDF despite the Federal Standard while long-term solutions were developed. The LTMS identified a number of voluntary goals for local, state and federal participants to reduce sediment loadings, sources of sediment contamination, and to develop marketable beneficial uses for the dredged material by the Port Authority. At the time, the Toledo Harbor LTMS was applauded as a roadmap to solve complex dredged material management problems for the largest dredging project on the Great lakes. Expansion at one CDF was approved

[1] The Federal Standard is a USACE policy designed to identify the dredged material disposal alternative that represents the least costly disposal alternative, consistent with sound engineering practices and meeting the environmental standards established by the Section 404(b)(1) Evaluation process (pursuant to the Clean Water Act).

and is being filled and significant effort has been expended to reduce sediment loadings and find beneficial use of the material. Despite these achievements, few of the commitments made by LTMS participants were fulfilled, and progress was too slow on all fronts to avoid continuing problems.

The Ohio EPA maintains that the sheer volume of sediments placed into open waters impacts lake ecology by reducing water clarity for an extended time. In response to these concerns, the agency sent numerous letters to USACE, Buffalo District urging open water placement of dredged materials to be phased out. At the executive level, Ohio Gov. Bob Taft raised these concerns to Michigan Gov. Jennifer Granholm in a February 2004 letter. He stated that the legal definition of contamination "is very much at the heart of this contentious issue." He stated further that placing dredged material in such a shallow part of Lake Erie "where it can spread by wind and current action is counterproductive to our efforts to restore this Great Lake."

Year	Dredged material reused or placement at an upland site		Dredged material disposed in the open lake	
2004	20%	80,000 yd^3	80%	320,000 yd^3
2005	40%	160,000 yd^3	60%	240,000 yd^3
2006	60%	240,000 yd^3	40%	160,000 yd^3
2007	80%	320,000 yd^3	20%	80,000 yd^3
2008	100%	400,000 yd^3	0%	0

In March 2004, the Ohio EPA issued a five-year (2004-2008) water quality certification to USACE for the annual dredging of the Toledo Harbor federal navigation channel. The certification, as required under Section 401 of the Clean Water Act, approved approximately 950,000 yd^3 of sediment to be dredged annually; of that, 350,000 yd^3 was to be disposed in an existing CDF; 200,000 yd^3 of sediment was to be placed in the open lake; and 400,000 yd^3 (dredged from Lake Mile 2 through Lake Mile 5) placed in an upland location or used beneficially. Twenty percent (80,000 yd^3) of the sediment dredged from Lake Mile 2 through Lake Mile 5 required upland disposal or beneficial reuse in 2004; the remaining 80 percent (320,000 yd^3) was to be placed in the open waters of Lake Erie. Each year, the beneficial use or upland disposal requirement increased 20 percent, reaching 100 percent by 2008.

In April 2004, the Buffalo District appealed the five-year water quality certification to the state's Environmental Review Appeals Commission. The Environmental Review Appeals Commission (ERAC) hears appeals to determine the lawfulness and reasonableness of certain actions of the director of the Ohio EPA, the State Fire Marshal, the State Emergency Response Commission, and local boards of health. The appeal challenged provisions to restrict and eliminate open water placement based on USACE's claim to the lack of scientific evidence showing that open water placement violated any promulgated State Water Quality Standard. Further, argued that the requirements for beneficial use of dredged material were outside the purview of Section 401 of the Clean Water Act.

Recently, using dredged sediments for habitat creation has been favored by state agencies. In May 2004, the Ohio Department of Natural Resources (ODNR) indicated an interest to the USACE to utilize suitable Toledo Harbor Lake Approach Channel material for the creation of habitat restoration units (HRUs). HRUs are basically islands constructed of dredged material that would provide broad benefits to fish and wildlife. They would provide a significant capacity for beneficial use of the Lake Approach Channel dredged material, while preventing it from being placed in the open-lake. The

creation of HRUs would require non-Federal cost-sharing. Other beneficial use disposal options under review include mixing with fly ash for construction materials, mixing with sewage sludge for soil amendments, creation of a landscape mound in a local municipality and mineland reclamation.

Outcome

The USACE, Ohio EPA and the Ohio Attorney General negotiated a settlement on the Section 401 Certification appeal in July 2005. The primary points of the settlement include:

- A Memorandum of Agreement (MOA) dated July 7, 2005 between the USACE, Ohio EPA and ODNR that focused on the development and implementation of HRUs in the western basin of Lake Erie, using suitable Toledo Harbor dredged material as an alternative to open lake placement;
- The open lake placement of approximately 600,000 cubic yards of sediment per year for 2005 and 2007;
- Within the limits of its authorities and contingent upon available funding, USACE's participation and cooperation with various agencies to conduct investigations to determine and assess the water quality-related impacts of dredging activities on fishes in the western basin of Lake Erie; and
- Restricting the environmental window for dredging.

Regional Lessons Learned

Despite the contentious nature of these circumstances, the Toledo Harbor certification issue offers a few lessons for the Great Lakes region.

Traditional management of dredged material (i.e., disposal) is no longer as politically feasible as it once was, but beneficial uses are not yet politically or economically feasible. Future sediment management in the Great Lakes region will require federal, state and local agencies to explore more seriously beneficial uses and remove regulatory barriers to and provide incentives for those uses. Opportunities and commercial markets need to be identified and inventoried, which will require an enhanced state and local role. The removal of federal and state regulatory barriers will allow such projects to be more timely and cost-effective.

The current regulatory framework sets up an adversarial federal/state relationship when a federal standard determination does not meet state water quality criteria and needs mending. A process is needed to help state and federal agencies synchronize their protocols and data used to make determinations about compliance with the same Clean Water Act provisions. This process should prevent relevant parties from opting out of dredging if there are conflicts regarding water quality compliance determinations. A process (and possibly a mandate) is also needed that requires the parties involved to develop and implement alternative management options when the least costly alternative is not feasible from environmental or engineering standpoints. More work is needed to

secure funding streams for beneficial use options, particularly where costs exceed the federal standard.

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