

Dredging: Long-Term Benefits Outweigh Short-Term Impacts

By Susan Pastor, U.S. Environmental Protection Agency

When the topic of dredging comes up in the Fox Valley, U.S. Environmental Protection Agency (EPA) representatives are often asked to "show me the data." Fortunately, there is a lot of data to show, including a list of successful dredging projects in Wisconsin and other EPA Region 5 states. Although officials have not yet selected a cleanup method for the Fox River, dredging is a technology getting serious consideration because of its positive results.

Results from recent environmental dredging projects demonstrate that minor short-term impacts are outweighed by long-term environmental benefits. According to EPA Remedial Project Manager Jim Hahnenberg, the benefits include the potential to remove a great deal of contaminated sediment and to see significant reductions in contaminant concentrations in the remaining sediment, as well as in surface water and fish.

Hahnenberg says there are three types of dredging: mechanical, hydraulic and pneumatic. "For environmental evaluation, a better distinction is 'dry' versus 'wet' dredging," he explained. "Dry dredging involves removing most water from the area, followed by mechanical dredging which is an excavation operation similar to conventional earth moving. Wet dredging projects [which include hydraulic and/or pneumatic processes] are done under water."

Results often differ between the two. Both approaches remove sediment, but dry dredging commonly results in a more complete removal. This is because sediment excavated in a dry process is easier to see, sample and move. Also, water is not flowing through and over the removal area during the dredging process, as is the case with wet dredging.

Hahnenberg acknowledged that wet dredging brings with it some potential for short-term release of contaminants, because sediment may "resuspend" (move back into the water column) during dredging. However, these types of releases yield only a fraction of the ongoing exposures to contaminants caused by natural erosion where contaminated sediment is not dredged. Hahnenberg, who has a geology background, said this is a common topic for debate. "Some parties place undue emphasis on short-term and minor environmental exposures rather than on the long-term contaminant concentration reductions consistently achieved in sediments, surface water and living organisms after dredging," he said.

In 10 dry-dredging EPA projects, virtually all polychlorinated biphenyls (PCB's) and polycyclic aromatic hydrocarbons (PAHs) were successfully removed from the sediment, according to Hahnenberg. Wet-dredging projects achieved slightly lower results, but environmental outcomes were still "excellent," he said. "The data available from these projects show average contaminant concentrations 66 times lower in sediment and two to eight times lower in surface water and fish," he continued. "Based on trends observed after dredging,

monitoring over longer periods of time will likely show even greater reductions."

As with any environmental cleanup, cost is a consideration. According to Hahnenberg, there is no set cost for dredging. Costs are influenced by such factors as types of contaminants to be removed, wet versus dry dredging, and sediment treatment and disposal techniques. The volume of sediment to be removed is also important. Hahnenberg concluded, "Although removing greater volumes increases total costs, economies of scale on larger projects also give you lower unit costs. In other words, as projects increase in size, the cost of removal and treatment and/or disposal per cubic yard of contaminated sediment goes down."

Dredging projects in Region 5 states:

1. Sheboygan River and Harbor, WI
2. Ruck Pond, WI
3. Bryant Mill Pond, MI
4. Willow Run, MI
5. Ford Monroe, MI
6. Black River, MI
7. Shiawassee River, MI
8. Manistique Harbor, MI
9. Waukegan Harbor, IL
10. Fraleigh Creek (formerly the Unnamed Tributary), OH

For further information on these dredging projects, contact Jim Hahnenberg at (312) 353-4213; 1-800-621-8431; or hahnenberg.james@epa.gov.

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