

Dredge Material Dewatering and Disposal: Amendments for Sediment Dewatering of PCB-Impacted Sediments in the Manistique River

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Background/Objectives. Manistique River AOC: OU1 (Zones 3 and 4) Project involved the dredging of both TSCA and non-TSCA regulated PCB-containing sediments and debris from the Manistique River. Based on past site investigations and treatability studies, it was anticipated that up to 10% (wt./wt.) of drying agent would be adequate to amend the sediment to “pass” the paint filter test, required for waste acceptance at both the TSCA and non-TSCA landfill disposal facilities. The material initially dredged from the river contained a significant amount of wood chips and smaller woody particles and required a considerably larger quantity of amendment than anticipated to solidify the sediment to “pass” the paint filter test. In response, additional bench scale solidification tests were conducted in the field to determine the most cost effective drying agent.

Approach/Activities. A representative sample of the dredge spoils was collected directly from the dredge material barge and mixed to produce a homogenous sample that was used for all of the solidification tests. Bench scale solidification tests were then conducted using locally available drying agents, which included: cement kiln dust, lime kiln dust, type IA portland cement, biodegradable sorbent, and super absorbent polymer. The addition rate of the drying agents varied from 0.3 to 40% (wt./wt.) and the resulting mixtures were allowed to cure for a minimum of four hours prior to paint filter testing.

Results/Lessons Learned. Results of the bench scale testing indicated that biodegradable sorbent was the most cost effective locally sourced drying reagent for the non-TSCA dredge material. However, due to a TSCA disposal regulation restricting the use of biodegradable sorbent material, cement kiln dust proved to be the most cost effective drying agent for the dredge material requiring disposal at a TSCA landfill disposal facility.