CHARACTERIZATION OF MARINE SEDIMENTS AND ITS POTENTIAL FOR RESOURCE RECOVERY- CASE OF MALMFJÄRDEN BAY, SWEDEN

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Abstract

Millions of tons of dredged sediments are produced every year. Sediments must be extracted to guarantee the navigation levels and to retain minimum ecological water volumes. Dredged sediments are, in general, contaminated by nutrients and heavy metals. The successful recovery of valuables can represent new resources of metals and nutrients. Nevertheless, the recovery varies on a case-by-case basis and depends on the composition of the sediments. Malmfjärden is a semi-enclosed bay located in Kalmar, Sweden. Currently, the water body is becoming extremely shallow, and therefore extraction of sediments is required. The retrieved sediments will be recycled for beneficial uses. Before sending to end-use, the project aims to recover heavy metals or nutrients from the sediments. This study focuses on characterizing the dredged sediments from the bay. The results showed that the sediments are mainly constituted by silt and clay and having high levels of nitrogen and phosphorous, which present a potential for extraction. Additionally, the sediments have none or little presence of organic pollutants (PAH, PCB and aliphatic components) and low-medium concentration of heavy metals.

Keywords: sediments, nutrients, heavy metals, organic pollutants, recovery

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