Getting Back on Track

Assuring Necessary Maintenance Dredging in Channels and Harbors Impacted by Contaminated Sediments

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Recontamination of Sediments - Can you afford it ?

- Continuation of high unit cost of dredging and disposal
- Slower project permitting, development, and execution
- Possible natural resource damage claims
- Possible operational concerns

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What is a Source?

- Upstream
- Industrial discharges
- Stormwater outfalls
- Groundwater discharges
- Direct runoff and bank erosion
- Contaminated sediment
- Atmospheric deposition
- Existing and future structures
  - Operations
  - Material handling
  - Spills
  - Vessels

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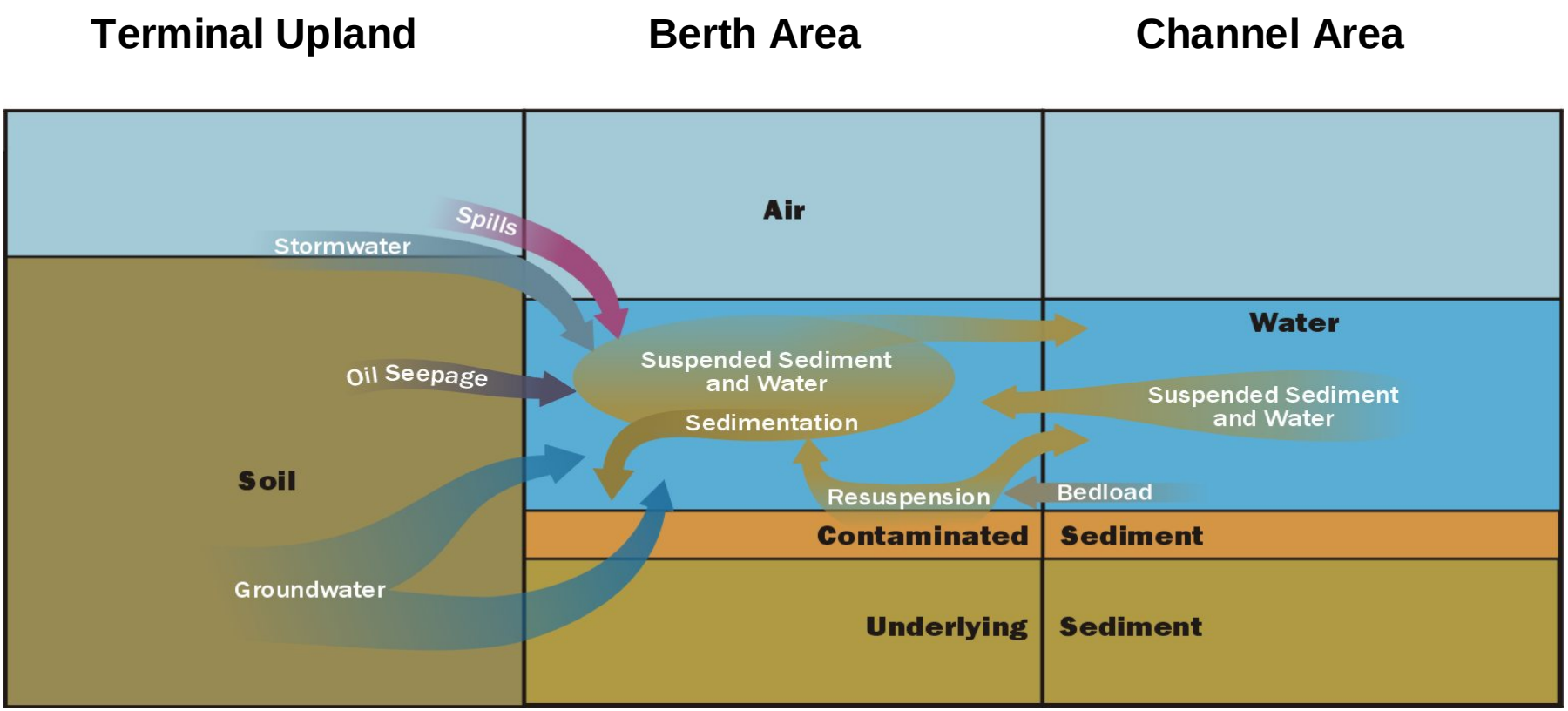
Geochemical Model of Sources



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Recontamination Analysis

Objective is to assess the potential for post-dredging recontamination of sediment

This is done by:

- Determining potential sources
- Collecting data from sources
- Evaluating recontamination potential

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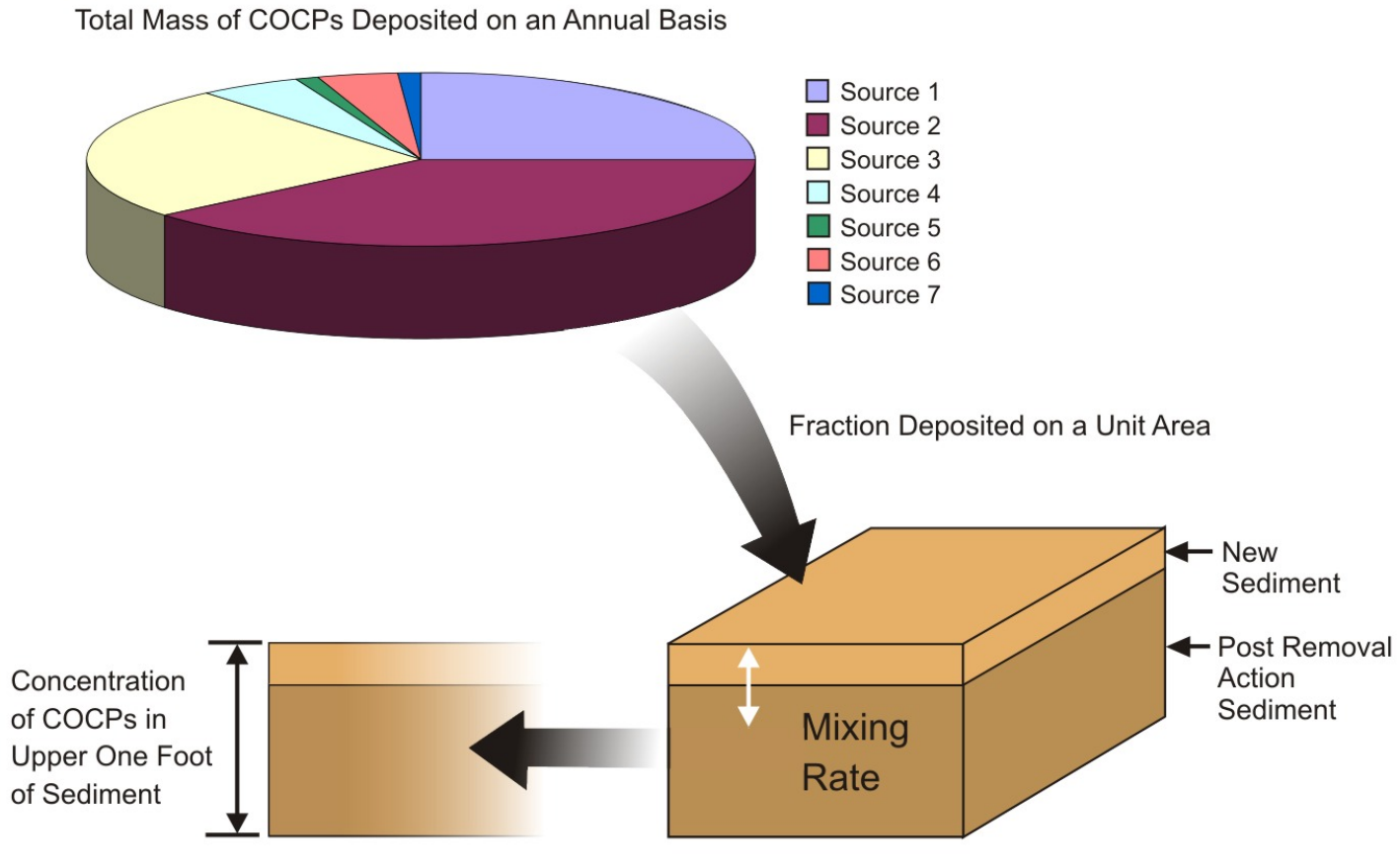
Conceptual Model of Recontamination



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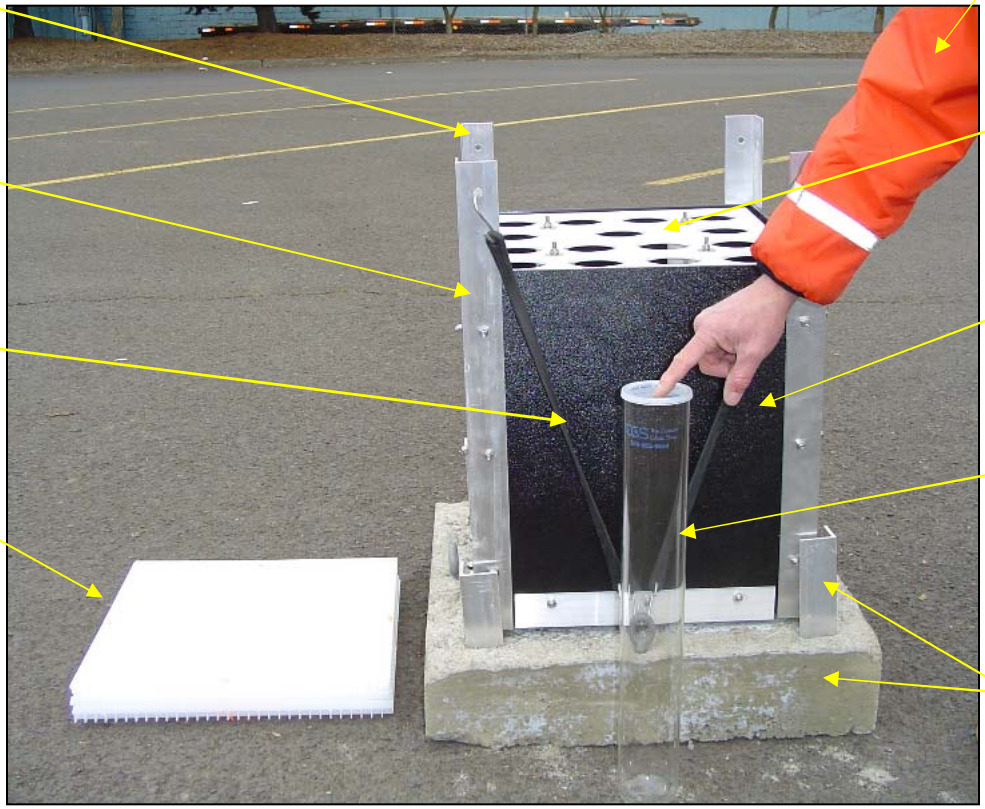
Sediment Traps

Holes for lifting harness

Aluminum and stainless frame construction

Rubber bungee tying trap to base

Plastic turbulence flow baffle to cover top of trap tubes (3 layers of ½" grid)



Professional diver for installation

Plastic 15-tube magazine (1/4" Delran®)

Plastic trap case

Pyrex sample tubes 3-inch diameter, 21-inch long "test tube" bottom plastic cap

Concrete base with positioning brackets and lifting rings

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Sediment Traps

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Resuspension from vessel movements

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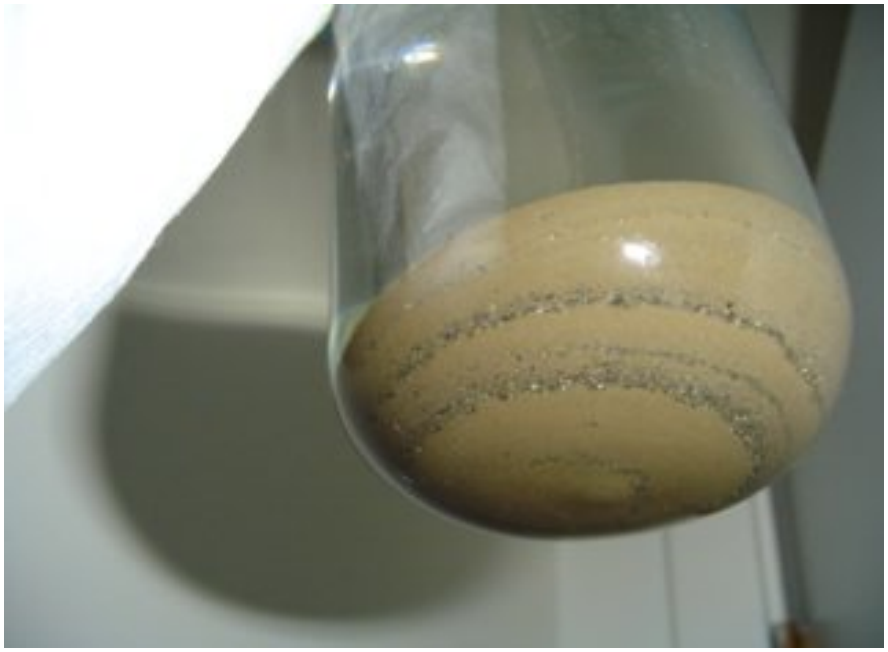
Sediment Trap Recovery



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Stormwater as a Source

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Storm Drain Traps

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Future Sediment Concentrations

Three steps to modeling exercise:

- Measure the annual mass from each source
- Estimate the mass flux from each source to sediment
- Calculate the predicted future surface sediment concentration

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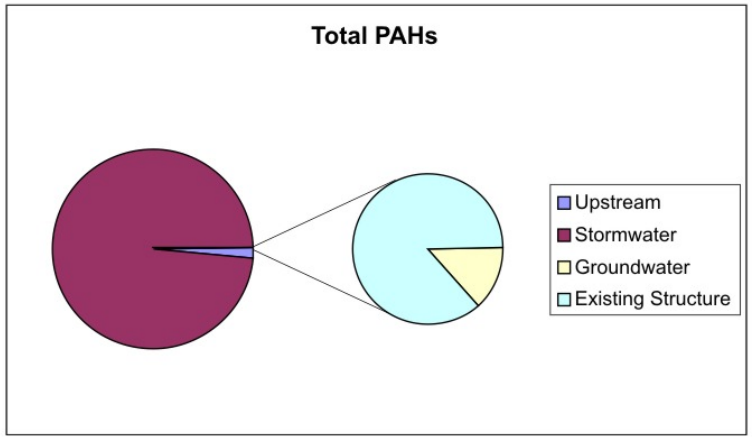
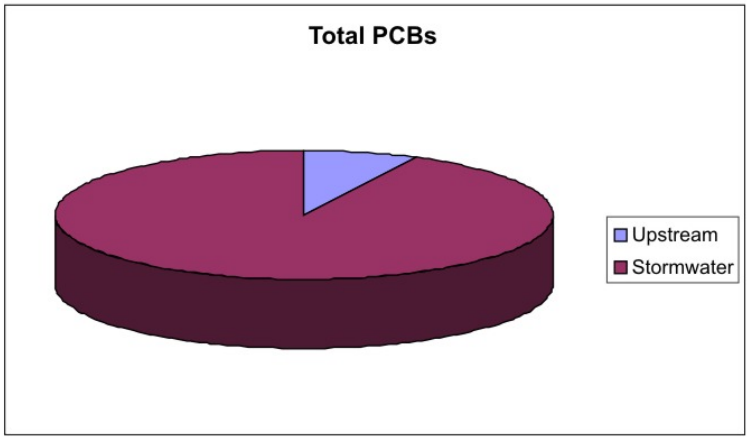
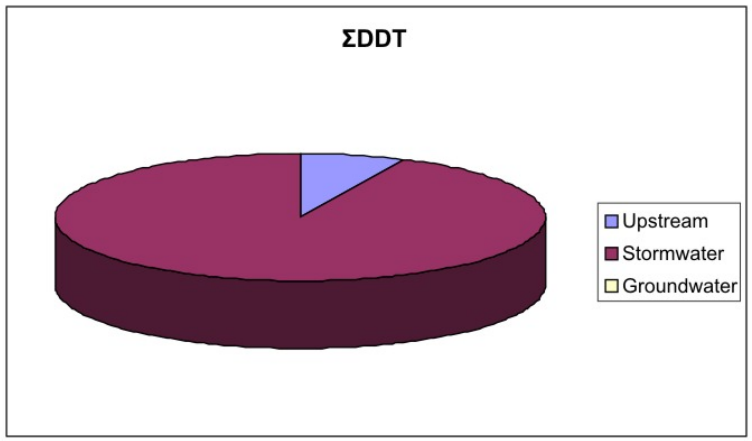
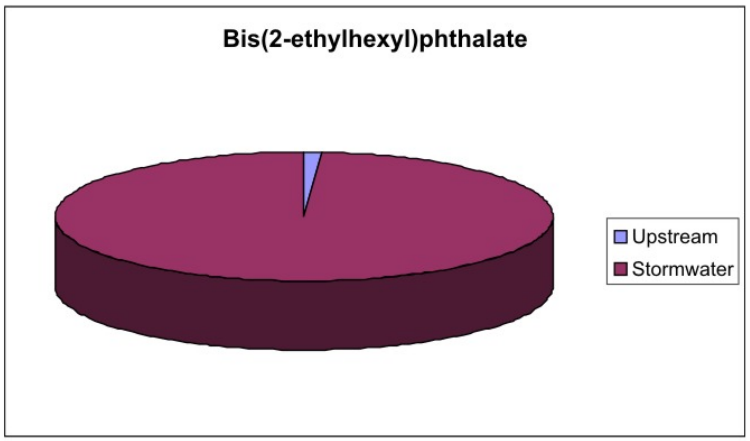
Relative Annual Mass Loading









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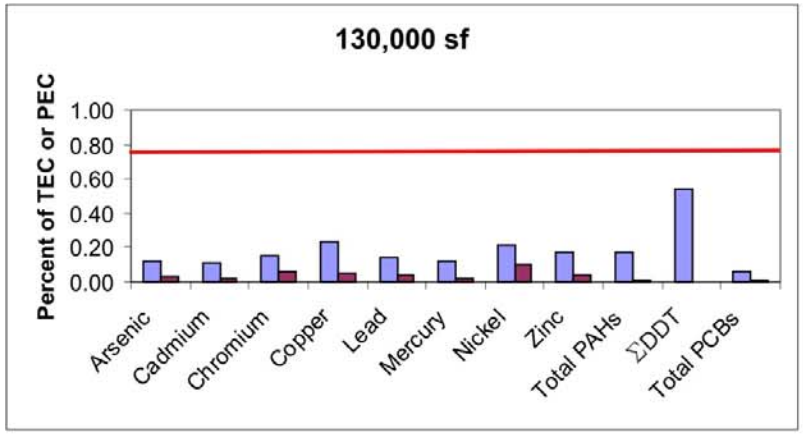
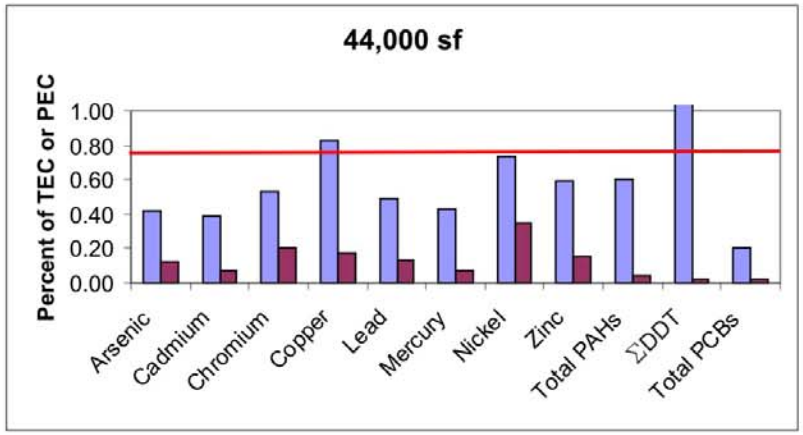
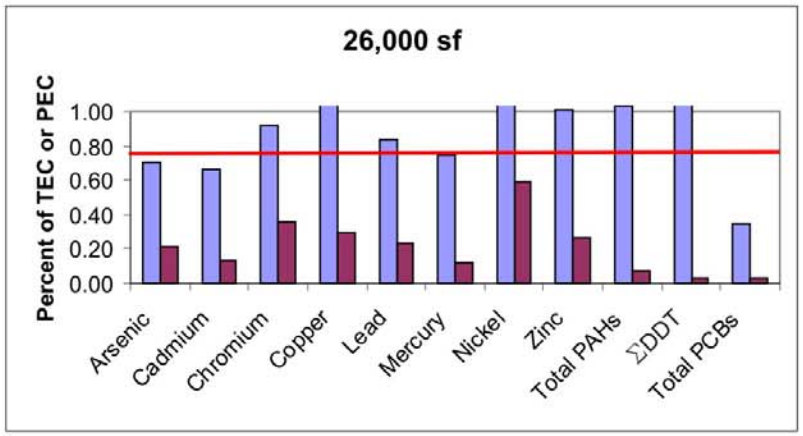
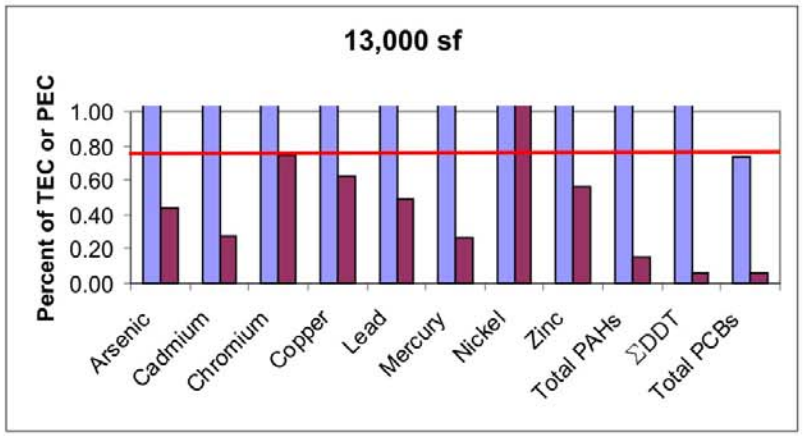
Estimated Post-Dredging Concentrations









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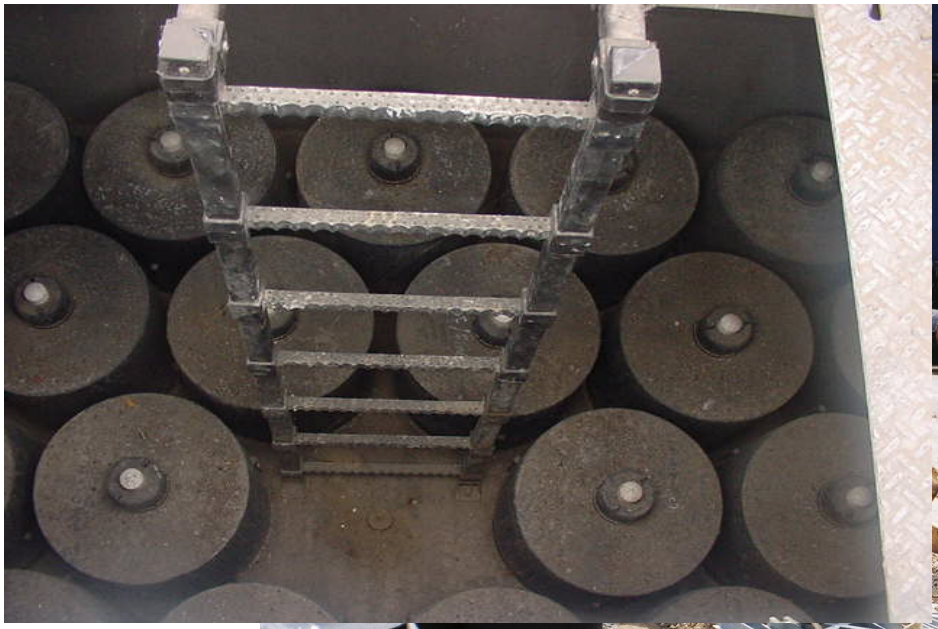
Stormwater Source Control Measures



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Recontamination of Sediments – Can it be Avoided?

- To begin, lead by example - control your own sources
- Question funding priorities that do not address source control
- Set a goal for cleaner sediment – don't accept contamination as the new norm
- Take an active role in basin-wide source control
- Demand a "clean upstream" for your port
- Take an active role in evaluating private cleanups in or near your port
- Consider delay of cleanups without sufficient demonstration of source control

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Happy Dredging!

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