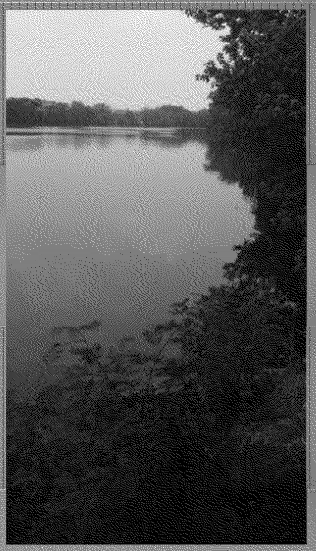
CH2MHILL®

RM 10.9 Time Critical Removal Action Cap Design and Supporting Activities



October 11, 2012

Agenda

- Cap Design Overview
- Active Cap Materials Under Consideration
- Design Support Activities
  - Laboratory Treatability Studies
    - Pore Water Collection
    - Batch Studies
  - Numerical Modeling
- Schedule
- Questions

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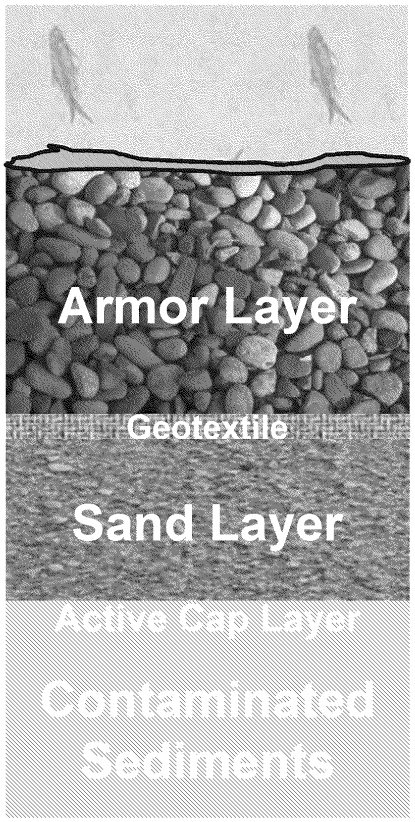
Cap Design Overview



Cap Section below -3ft (NGVD29)	Cap Section above -3ft (NGVD29)
Type A Armor Layer (D50 = 7 inches)	Type B Armor Layer (D50 = 4 inches)
Geotextile	
Sand Layer	
Active Cap Layer	

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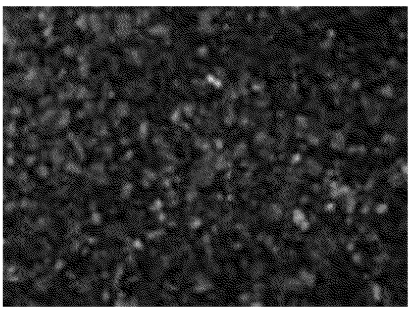
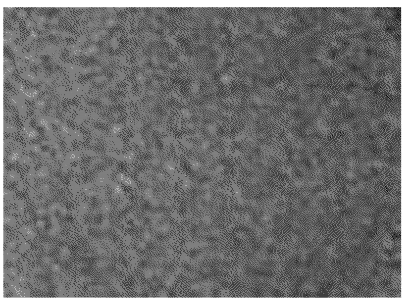
Active Cap Materials

- Activated Carbon (AC)
  - Facilitates adsorption of soluble organic contaminants
  - Sequestration of contaminants and reaction intermediates
  - Granular AC relatively easy to apply



- Organoclay (OC)
  - Organically modified bentonite clay in which inorganic cations are replaced by organic cations to increase hydrophobicity of the material
  - Facilitates adsorption of low solubility organic compounds and a modified version adsorption of metals such as mercury
  - Granular OC relatively easy to apply



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Design Support Activities – Laboratory Treatability Pore Water

- Collection of Sediment Cores
- Laboratory Extraction of Pore Water for:
  - Treatability Studies
  - Analytical Testing

Design Support Activities – Laboratory Treatability Batch Experiments

- Evaluate the performance of activated carbon and organoclay for site contaminants (PCBs, dioxins, PAHs, and mercury compounds) using site pore water as follows:
  - Kinetic experiments to estimate the equilibrium time required for adsorption of contaminants of concern (COCs) on activated carbon and organoclay
  - Isotherm experiments to obtain partition coefficients for COCs for activated carbon and organoclay

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Design Support Activities – Numerical Modeling

- Perform numerical cap modeling using site specific conditions (pore water concentration, DOC, Darcy velocity, etc.) and partition coefficients obtained from isotherm experiments

- Results will be used to select a reactive cap material and thickness for site specific contaminants and conditions

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Schedule

- Submit Pre-Final Design to EPA – November 16, 2012
- Data Collection & Analysis November to January 2013
- Preliminary Cap Design Results– January 2013
- Submit Final Design to EPA– February 15, 2013
- Mobilize Job –February 25, 2013
- Final Cap Design – May 2013
- Dredging – End of May through mid July 2013
- Cap Installation/Completion – August/September 2013

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Questions?

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