South River Remedial Options Program
Bank Restoration / Stabilization Pilot

South River Science Team Expert Panel Meeting

October 22, 2008

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South River Remedial Options Program (ROP)

Purpose: Review, evaluate and test promising remediation strategies for the South River

Site Characterization is ongoing

- Continuing characterization of sources and loadings
- Developing an understanding of system methylation potential and other processes

Remedial Options and Technologies

- Allows optimization of current investigations
- Identifies additional studies or investigations to refine the range of feasible alternatives.

South River Remedial Action Objectives

Reduce fish tissue Hg levels to concentrations that would allow consumption by humans

Ensure protection of aquatic and terrestrial ecology with respect to Hg exposure

Remediation Challenge

Based on multiple possible sources and pathways of mercury, the following initial questions were posed by the team:

- What can be done to reduce introduction of Hg-bearing solids into the aquatic system?
- What can be done to reduce dissolved mercury in water?
- What can be done to inhibit production of methyl mercury?
- What can be done to reduce overall the effect of Hg on the biological system and food web?

Categories of Remedies / Technologies Considered

Baseline Condition

- Monitored Natural Recovery

Engineering and Treatment

- Physical
  - Hydraulic Modification
  - Physical Isolation from receptors
  - Removal
- Treatment of water or solids
- Biological

Administrative Controls

- Fish exchange program
- BMPs for cattle / erosion control
- Floodplain conservation easement
- Providing alternate food supply for fish

Criteria for Evaluation of Actions*

The remedial action:

- Achieves the remediation objectives
- Complies with laws and regulation
- Is effective in the long-term in protecting human health and the environment
- Reduces toxicity (bioavailability), mobility or volume
- Is technically feasible and can be implemented
- Protects workers, the community and environment during and after implementation
- Has associated costs that are commensurate with risk reduction
- Is accepted by the Public and by Regulators

*Based on USEPA National Oil and Hazardous Substances Pollution Contingency Plan (NCP) Remedy Selection Threshold Criteria

Initial Activities – SR ROP

Paper Studies / Literature Review

Laboratory Testing / University Studies

Field Pilots

- Bank Restoration

Next Steps

Meet with ROP Team

- Prepare and share status report on range of technologies
- Review current program and explore potential for additional tasks

Bank Stabilization – Restoration Pilot

Primary Objectives:

Assess the efficacy and feasibility of bank stabilization

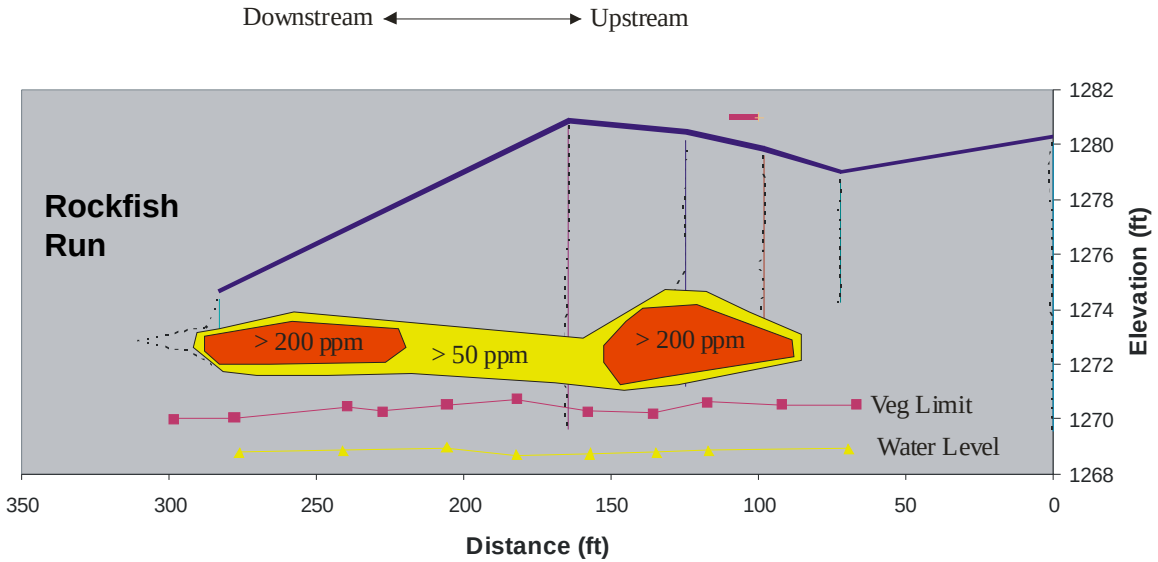
- For improving habitat
- To prevent mercury-containing bank soils from eroding into the South River

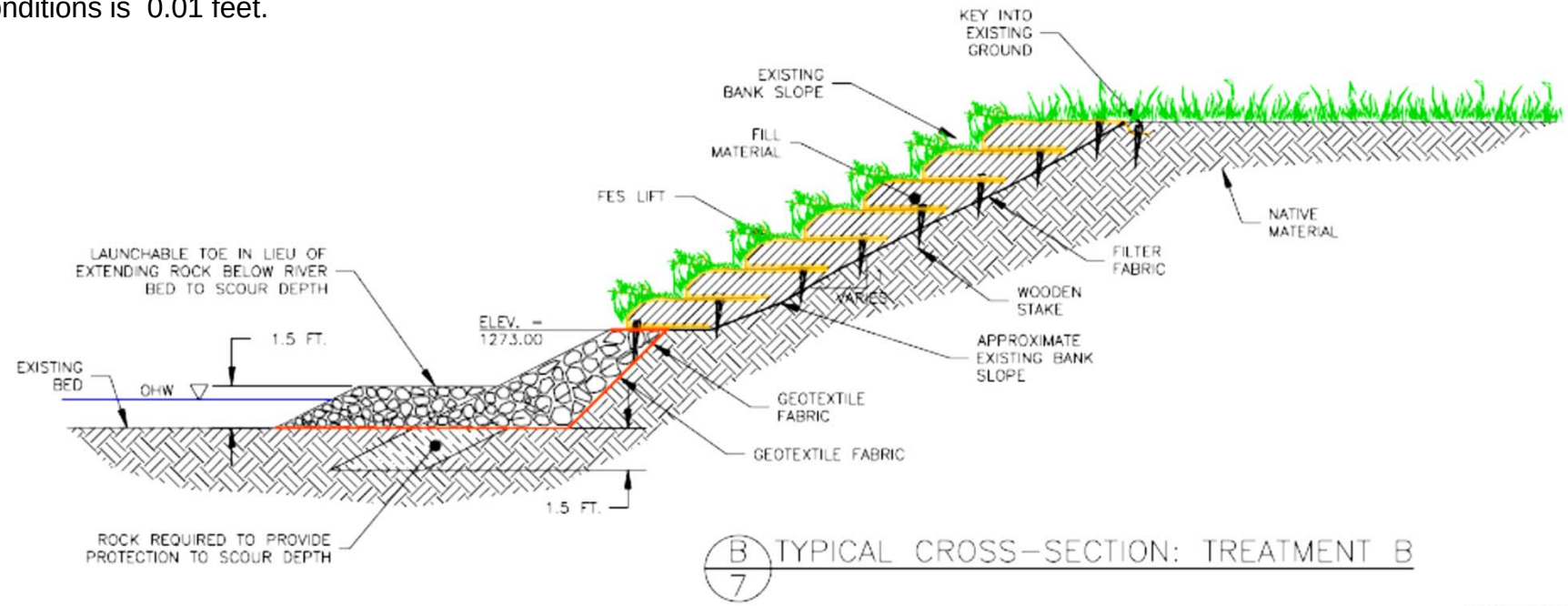
Secondary Objectives:

- Isolate bank soils from effects of river flood wave
- Assess nature and extent of unintended consequences
  - Is there a net increase in methylation potential?
  - Has bank erosion been exacerbated elsewhere?

Design Plan

Note that difference at the 100-year flood for water surface elevations at existing conditions and proposed conditions is 0.01 feet.





Status

Pre-design data collected

- GW underway, methylmercury in soil ongoing

Conceptual Design (30%)

- Draft complete – under review

4Q08 – 2Q08

- Measures of Success, 100% Design, Construction Plans, Specs, Permitting, Contracting

3Q08

- Target for construction

Teams

SR ROP

DuPont

VADEQ

USEPA

URS

SR ST Experts:

- Turner, Jensen, Newman

SR Bank Restoration Pilot

DuPont

VADEQ

VADGIF

University of Delaware

URS

Interfluve

Also

INVSTA

City of Waynesboro

Trout Unlimited