

IS YOUR REMEDY BASED ON INCOMPLETE DATA?

Tenth International Conference on Remediation and Management of Contaminated Sediments





Presentation outline

CERCLA Remediation Timeline

Feasibility Study Cost Role & Expectations

Change Mechanisms to Records of Decisions

Remedy Change Strategies

Case Study: Former Wood Treatment Facility

Conclusions

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CERCLA remediation timeline

Discovery:



Identification of potential environmental impact. Removal Action taken, if required.



Remedial Investigation & Feasibility Study:

Delineate nature and extent if impacts, assess risks, and evaluate remedial alternatives





Operation, Monitoring, Maintenance:

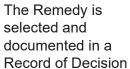
Long-Term Monitoring and Five Year Reviews



Preliminary Assessment & Site Inspection:



Decision Document:





Remedial Action:

Construction of the Remedy

Site assessments including desktop review of historical activities and site inspections to characterize potential environmental risk(s).

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Remedial Design:
Design of the Remedy

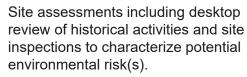


Operation, Monitoring, Maintenance:

Long-Term Monitoring and Five Year Reviews



Preliminary Assessment & Site Inspection:





Decision Document:

The Remedy is selected and documented in a Record of Decision



Remedial Action:

Construction of the Remedy

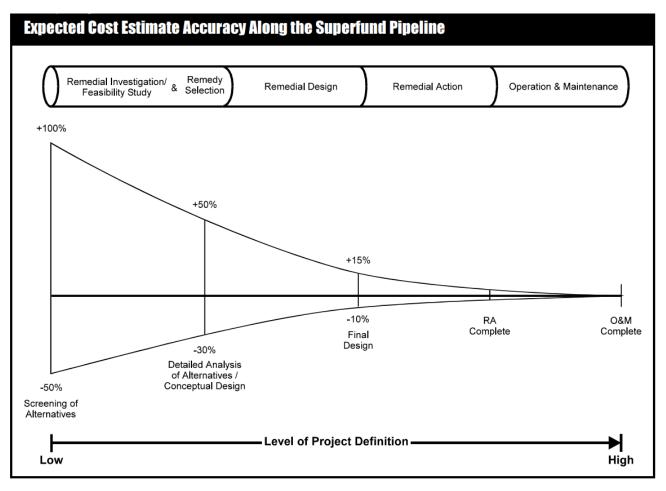
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Feasibility study cost role and expectations

"Cost is a critical factor in the process of identifying a preferred remedy. In fact CERCLA and the NCP require that every remedy selected must be cost effective."

USEPA. 1996. The Role of Cost in the Superfund Remedy Selection Process.



USEPA. 2000. A Guide to Developing and Documenting Cost Estimates During the Feasibility Study

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Remedial Action:

Construction of the Remedy

Change the Selected Remedy

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Change mechanisms to Records of Decision

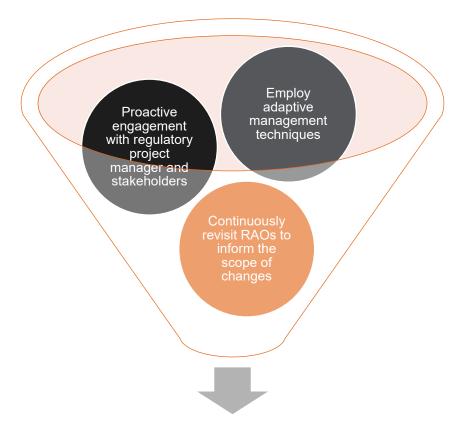
ROD Modification: Minor or "insignificant" changes. Does not require public comment prior to finalization.

Explanation of Significant Differences: "Significant" changes to scope, performance, and/or cost. Requires public comment prior to finalization.

ROD Amendments: Fundamental changes to or reconsideration of the selected remedy. Requires public comment prior to finalization.

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Remedy Change Strategies



Remedy that more sustainably and cost-effectively achieves RAOs

"Evolving life cycle CSMs improve the efficiency of site characterization and cleanup and, ultimately, result in better, more defensible site decisions and improved remedy performance"

USEPA. 2018. Strategic Sampling Approaches Technical Guidance. November

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Case Study

Former wood treatment facility in northern Idaho

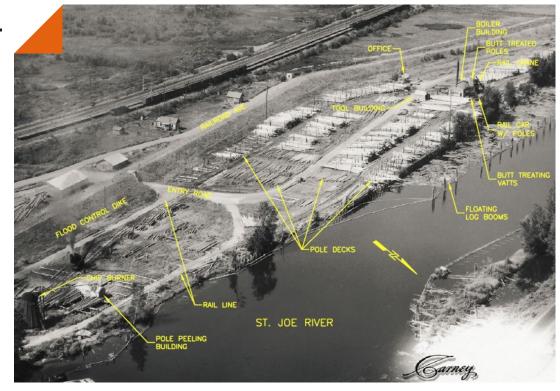


Site overview

- Former wood treatment facility (1930s 1960) in northern Idaho.
- EPA-led remediation under CERCLA (Region 10).

In-water remedy

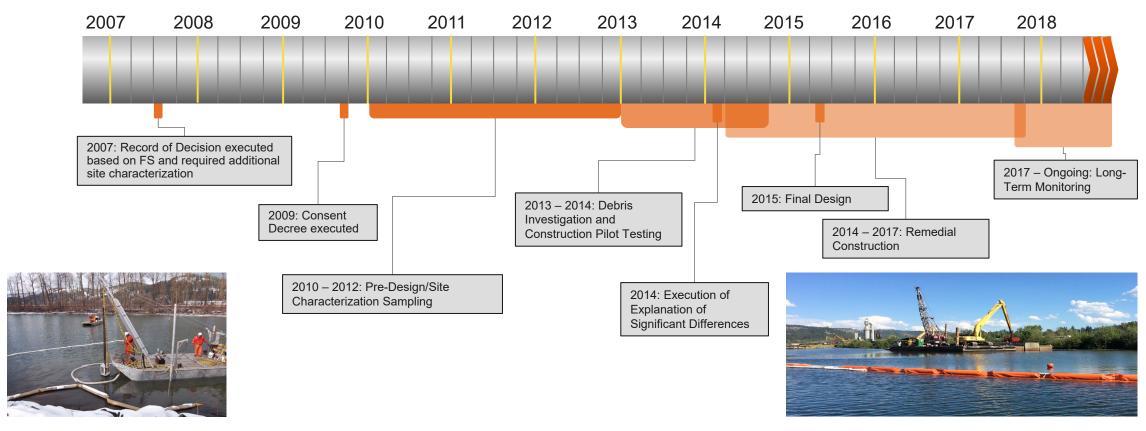
- Removal and backfill of "source area" sediment to 12 ft bss behind a watertight steel enclosure
- Removal and backfill of downriver sediment to 4 ft bss
- Thermal desorption of sediment



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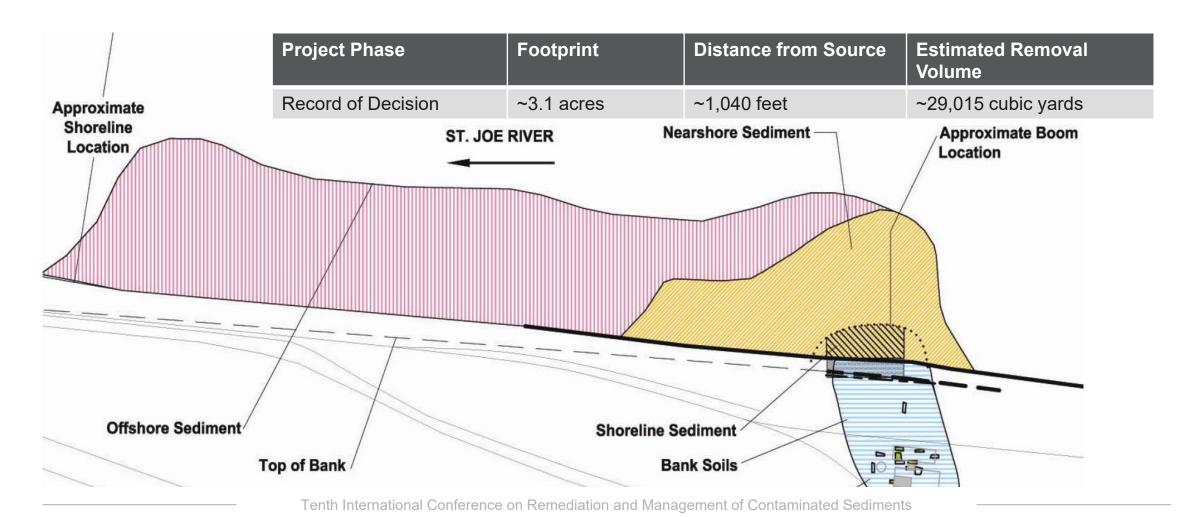
Remedial design/remedial action timeline



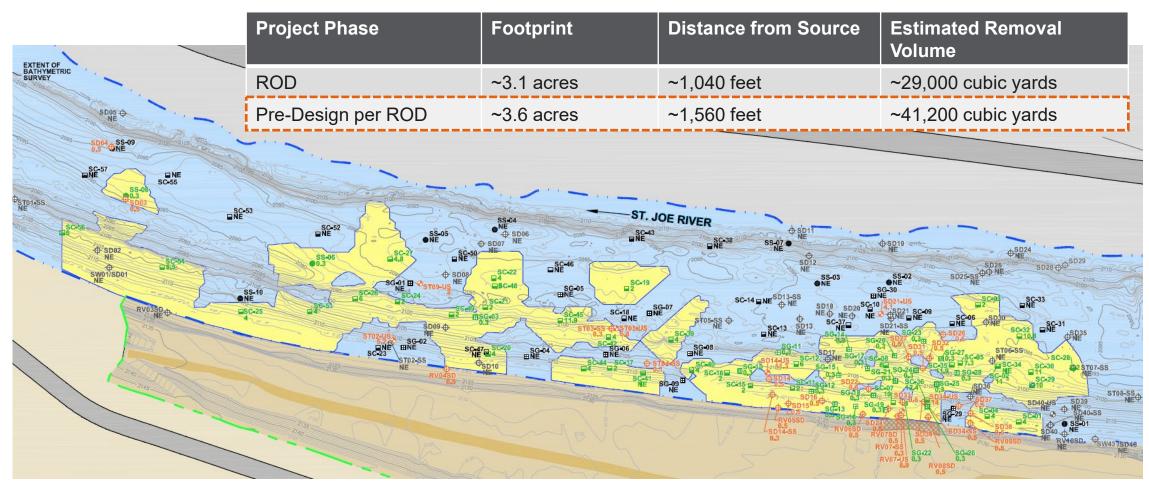
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ROD description of remedy

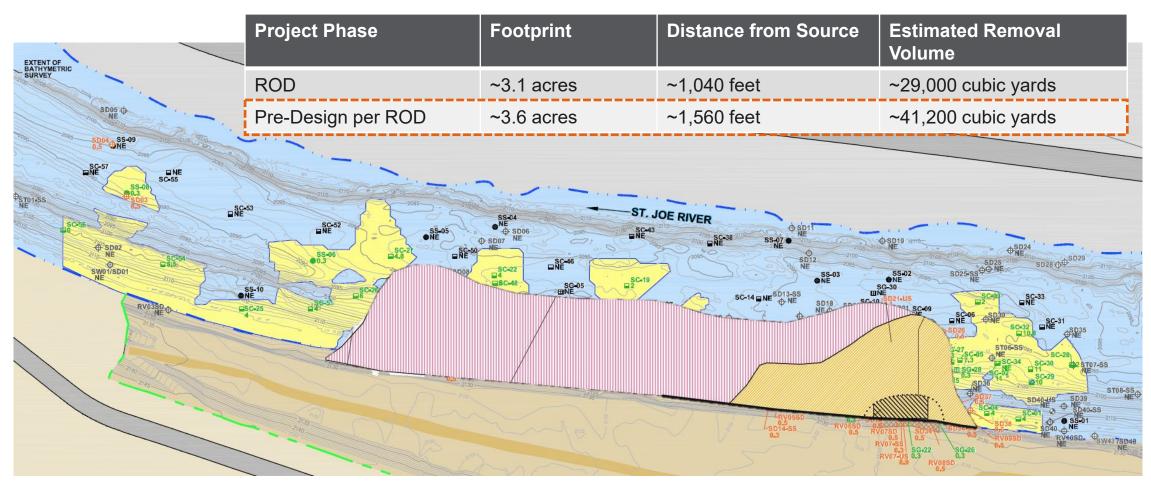


ROD sediment delineation after pre-design characterization



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ROD sediment delineation after pre-design characterization





Alternative empirically-based remedy delineation

NAPL

Observations indicative of NAPL during field screening

Chemistry

Sediment with Total PAH concentrations >100 mg/kg **Toxicity**

PAH-associated toxicity cannot be conservatively ruled out

Proximity to Source Area

Sediment located near upland source area

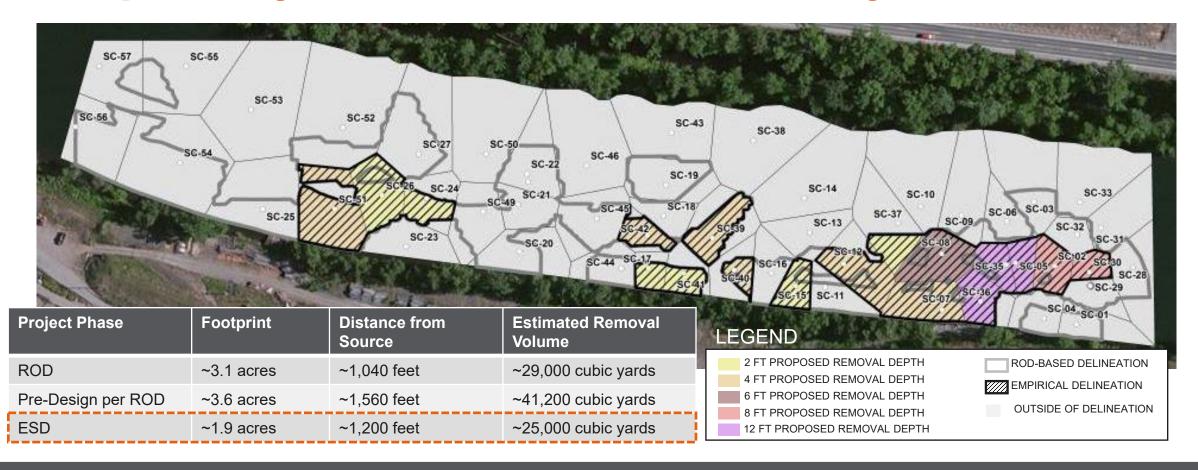
Potential Future Exposure

Sediment with unacceptable risk of future exposure during scour event (i.e., depth)

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Empirically-based alternative remedy



Changes resulted in 50% dredge volume reduction and major cost savings and achieves protectiveness



Conclusions



Conclusions

Challenges:

- Reliance on pre-design to complete site characterization
- RODs informed by incomplete data lead to less sustainable and more costly remedies and longer implementation timelines.

Successful strategies:

- Incorporate adaptive management and EPA streamlined cleanup guidance early
- Relate data and remedy scope/delineation to RAOs
- Proactive engagement with regulatory project manager and stakeholders allow for more timely and successful changes

Better Data = More Sustainable and Cost Effective Remedy



Presenter



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