IS YOUR REMEDY BASED ON INCOMPLETE DATA?
Tenth International Conference on Remediation and Management of Contaminated Sediments
February 2019
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
CERCLA remediation timeline

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

**Preliminary Assessment & Site Inspection:**
Site assessments including desktop review of historical activities and site inspections to characterize potential environmental risk(s).

**Remedial Investigation & Feasibility Study:**
Delineate nature and extent if impacts, assess risks, and evaluate remedial alternatives.

**Decision Document:**
The Remedy is selected and documented in a Record of Decision.

**Remedial Design:**
Design of the Remedy

**Remedial Action:**
Construction of the Remedy

**Operation, Monitoring, Maintenance:**
Long-Term Monitoring and Five Year Reviews
CERCLA remediation timeline

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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. 2000. A Guide to Developing and Documenting Cost Estimates During the Feasibility Study
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Change the Selected Remedy
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.
Remedy Change Strategies

“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”

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Change the Selected Remedy
Case Study

Former wood treatment facility in northern Idaho
Site overview

- 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
Remedial design/remedial action timeline

2007: Record of Decision executed based on FS and required additional site characterization

2009: Consent Decree executed

2010 – 2012: Pre-Design/Site Characterization Sampling


2014: Execution of Explanation of Significant Differences

2015: Final Design

2014 – 2017: Remedial Construction

2017 – Ongoing: Long-Term Monitoring

2009: Consent Decree executed
ROD description of remedy

<table>
<thead>
<tr>
<th>Project Phase</th>
<th>Footprint</th>
<th>Distance from Source</th>
<th>Estimated Removal Volume</th>
</tr>
</thead>
<tbody>
<tr>
<td>Record of Decision</td>
<td>~3.1 acres</td>
<td>~1,040 feet</td>
<td>~29,015 cubic yards</td>
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ROD sediment delineation after pre-design characterization

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Alternative empirically-based remedy delineation

<table>
<thead>
<tr>
<th>NAPL</th>
<th>Chemistry</th>
<th>Toxicity</th>
<th>Proximity to Source Area</th>
<th>Potential Future Exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Observations indicative of NAPL during field screening</td>
<td>Sediment with Total PAH concentrations &gt;100 mg/kg</td>
<td>PAH-associated toxicity cannot be conservatively ruled out</td>
<td>Sediment located near upland source area</td>
<td>Sediment with unacceptable risk of future exposure during scour event (i.e., depth)</td>
</tr>
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Empirically-based alternative remedy

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

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<tr>
<td>ESD</td>
<td>~1.9 acres</td>
<td>~1,200 feet</td>
<td>~25,000 cubic yards</td>
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Conclusions
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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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