Beneficial Use of Contaminated Sediments: The Promise and the Challenge

Moderators
Steven Nadeau (Sediment Management Work Group)
Philip Spadaro (TIG Environmental)

Panelists

- David Moore (USACE - Environmental Research and Development Center [ERDC])
- Claire Detering (Windward Environmental LLC)
- Steven Brown (The Dow Chemical Company)
- Victor Magar (Ramboll Group)
- Eric Hedblom (Barr Engineering Co.)
- Larry Rosenthal (Goldman School of Public Policy, University of California, Berkeley)

Some Considerations

What does contaminated mean? Is it a regulatory threshold? A risk-based effect concentration? Perception?

Sediments are a resource that should ideally be managed within the system of origin. Exporting sediment (even contaminated sediment) represents a loss to the system.

Beneficial use of contaminated sediments requires a “whole of government” approach with dedicated / coordinated RDTE to support

Maximizing the Peer-Reviewed Literature

- Recent and rapid advancement for beneficial use in both decision-making frameworks and technology

- Decision-making frameworks (LCAs, GSR) improve the assessment of long-term costs and benefits of remediation options (social, economic, and environmental)
  - Most integrate stakeholder values into the frameworks themselves
  - Many to choose from to tailor to project and stakeholder needs

- Techniques and technology focus on removing contaminant exposure pathways without diminishing function of sediment use:
  - Cement stabilization
  - Physical separation
  - Addition of amendments (e.g. activated carbon, biochar, etc.)

Opportunities or Imperatives?

Is beneficial use simply nice if we can do it or a compelling need?

Are contaminated sediments hazardous waste or a valuable resource?

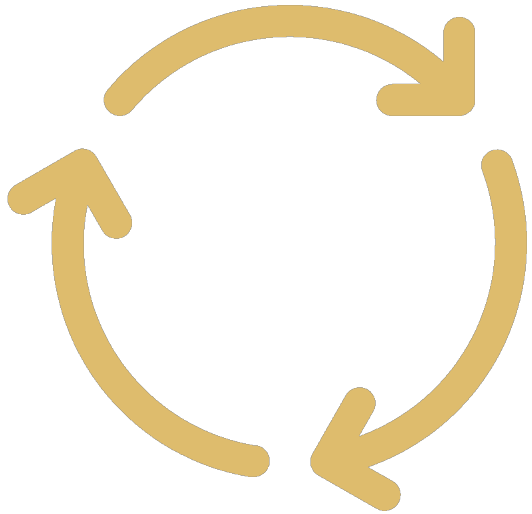
So, how are we doing?

Stakeholder engagement is key to acceptance of beneficial use alternatives

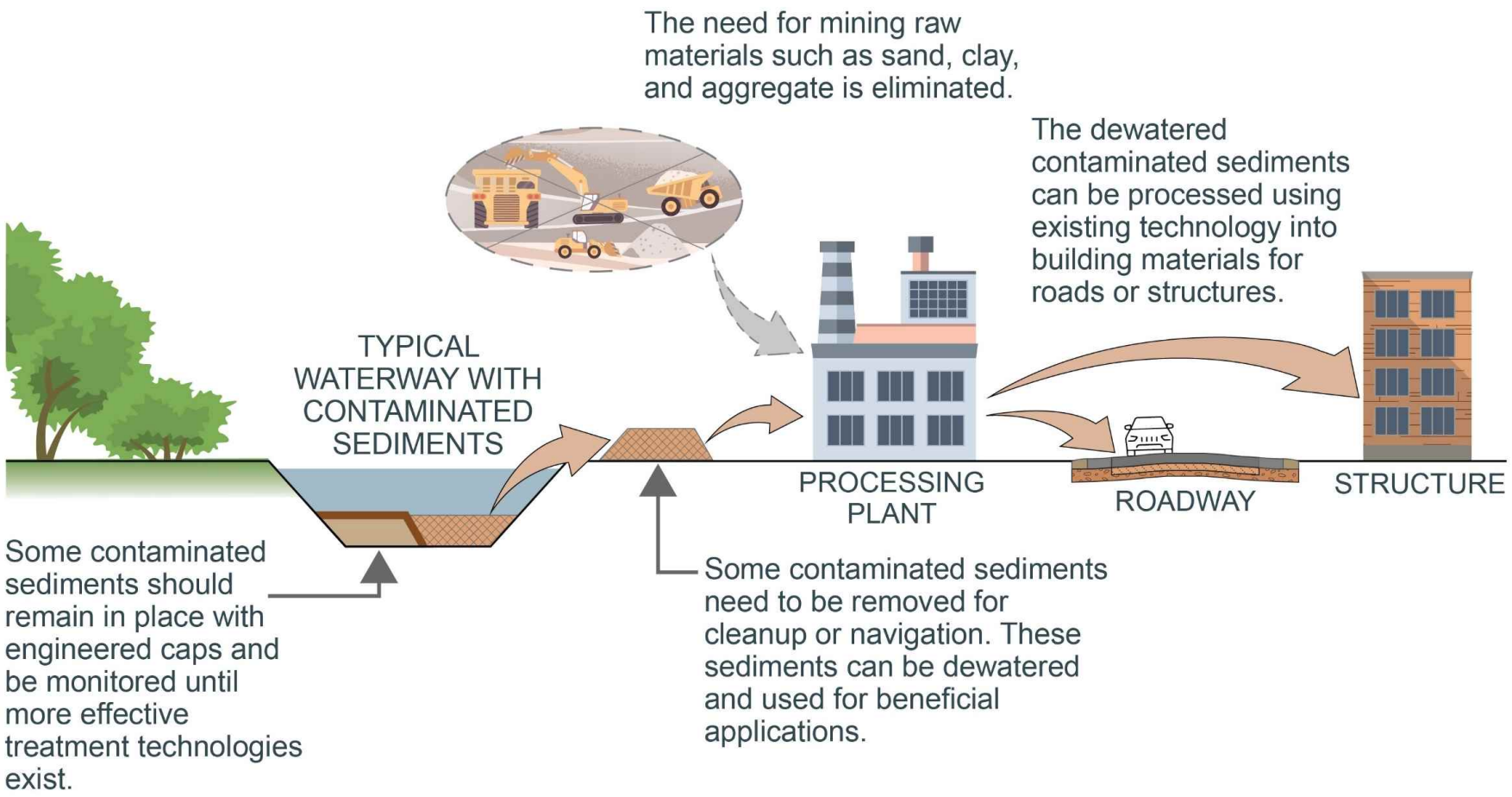
- Broad spectrum of stakeholders; each with unique perspectives
- Beneficial use options may be valued differently by stakeholders
- Early active stakeholder engagement helps decision-makers understand and address perspectives/goals
- Pilot projects and adaptive management principles help develop stakeholder trust
- Decision frameworks such as Life-Cycle Assessments and Stakeholder Value Assessments support valuing sediment as a resource by accounting for environmental, social, and economic factors

Circularity Fundamentals

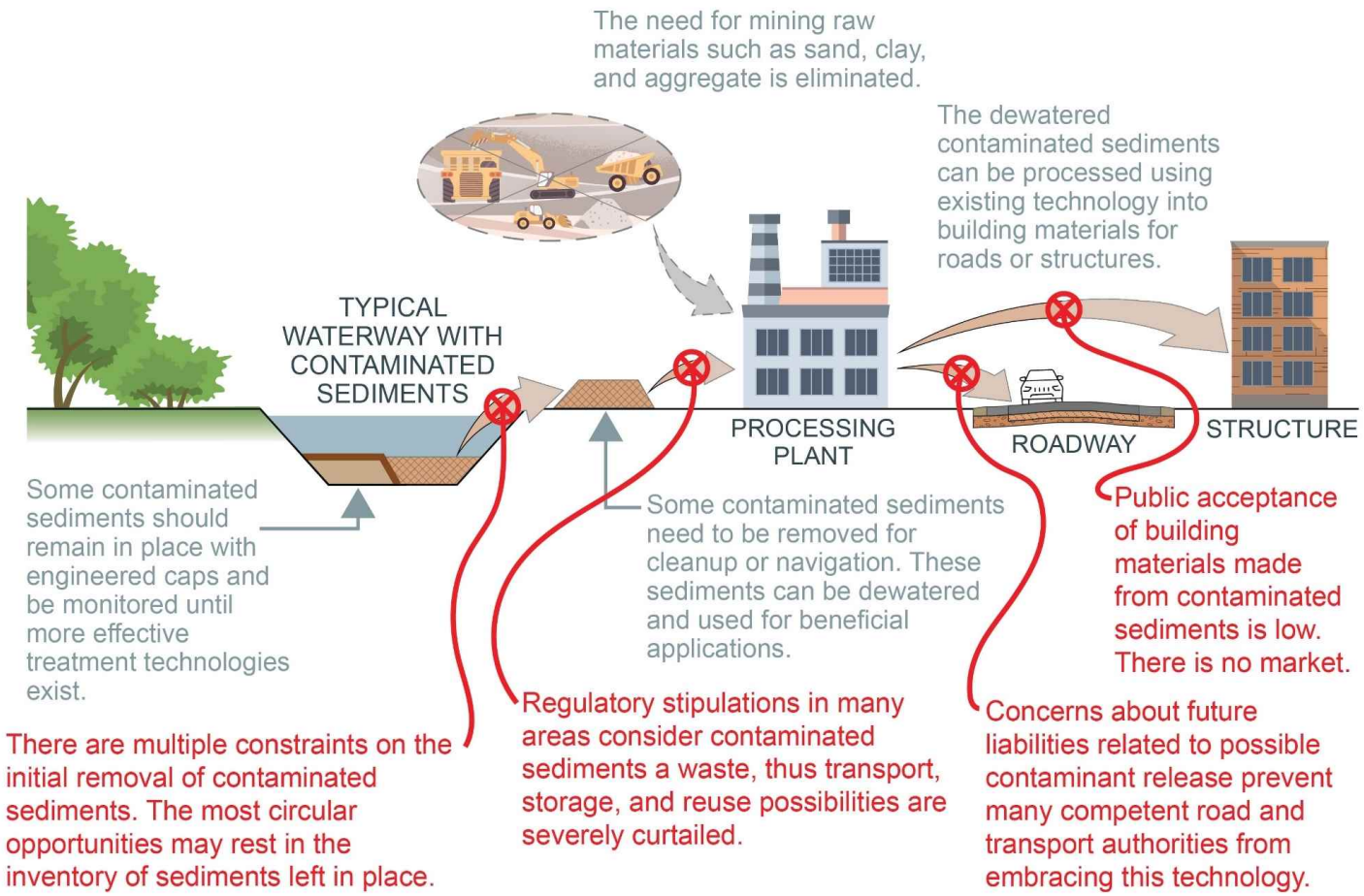
- Elimination of waste throughout supply chains and disposal
- Continual reuse of resources
- Resulting reemergence of original ecologies
- *The question is how these principles ought to inform realistic and responsible remediation of contaminated sediments*



What Circularity's Proponents Envision



Where Circularity Meets Reality



A Technically and Economically Feasible Approach to Beneficial Reuse of Contaminated Sediments Remains Elusive

- Circularity for contaminated sediments must confront financial, technical, legal, regulatory, and social constraints
- The costs are much higher than more typical technologies such as landfill disposal
- Regulatory frameworks, absent substantial subsidy, may not succeed via "mandate" alone
- There is no available market for the resulting materials as there is low public acceptance of products manufactured from contaminated materials

Conclusion: Circularity's Barriers Loom Alongside Its Promise

- Contaminated sediment reuse – technically feasible, but fraught financially
- Social, environmental, regulatory, and constrained-markets factors create barriers
- Remediation projects continue to require realism, practicality and professional responsibility
- To date circularity poses more questions than it does answers ….

Thank you