

Ebb and Flow of Dredging An Overview



**Addressing Uncertainty and
Managing Risk at Contaminated
Sediment Sites**

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Discussion's Purpose

- Provide overview
- Identify factors in success or failure of dredging projects
- Discuss how we maximize chances for success



Outline of our Presentation

- Definition of issues
- Risk reduction
- Residuals concentrations
- Resuspension
- Keys to a successful dredging project

Issues That Make or Break a Project

- Risk reduction – end up better than before
 - Residuals
 - Resuspension
- Time or cost (time is money)

Factors for Success or Failure

- Geotechnical/chemical properties
- Disposal type/location
- Site characteristics
- Cleanup constraints
- Equipment
- Contractor
- Project management

Focus of
discussion



Risk Reduction

How do we Measure?

- Long-term
 - Sediment concentrations (residuals) ★
 - Biota concentrations & effects
 - Water concentrations
- Short-term
 - Sediments (residuals) ★
 - Water (resuspension) ★
 - Air



Residual Concentrations

Key Factors

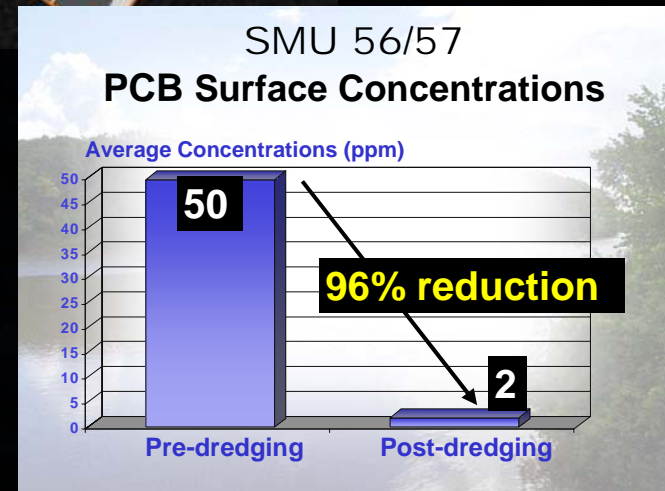
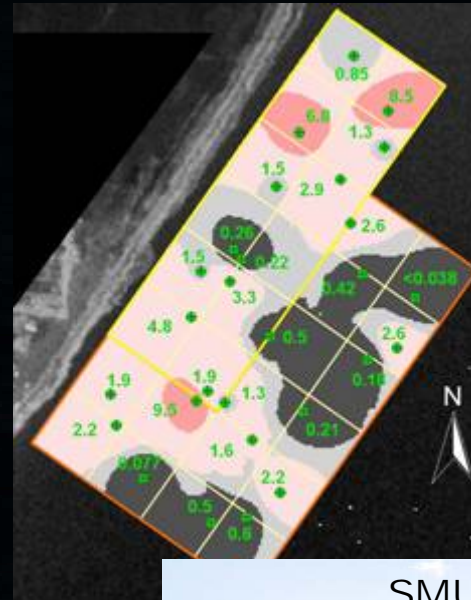
- Bedrock
- Debris
- Operator experience
- Equipment
- Design
- Other variables



Residual Concentrations

Methods to Predict

- No good way
- Average concentration of material removed
- Comparison to results on similar sites

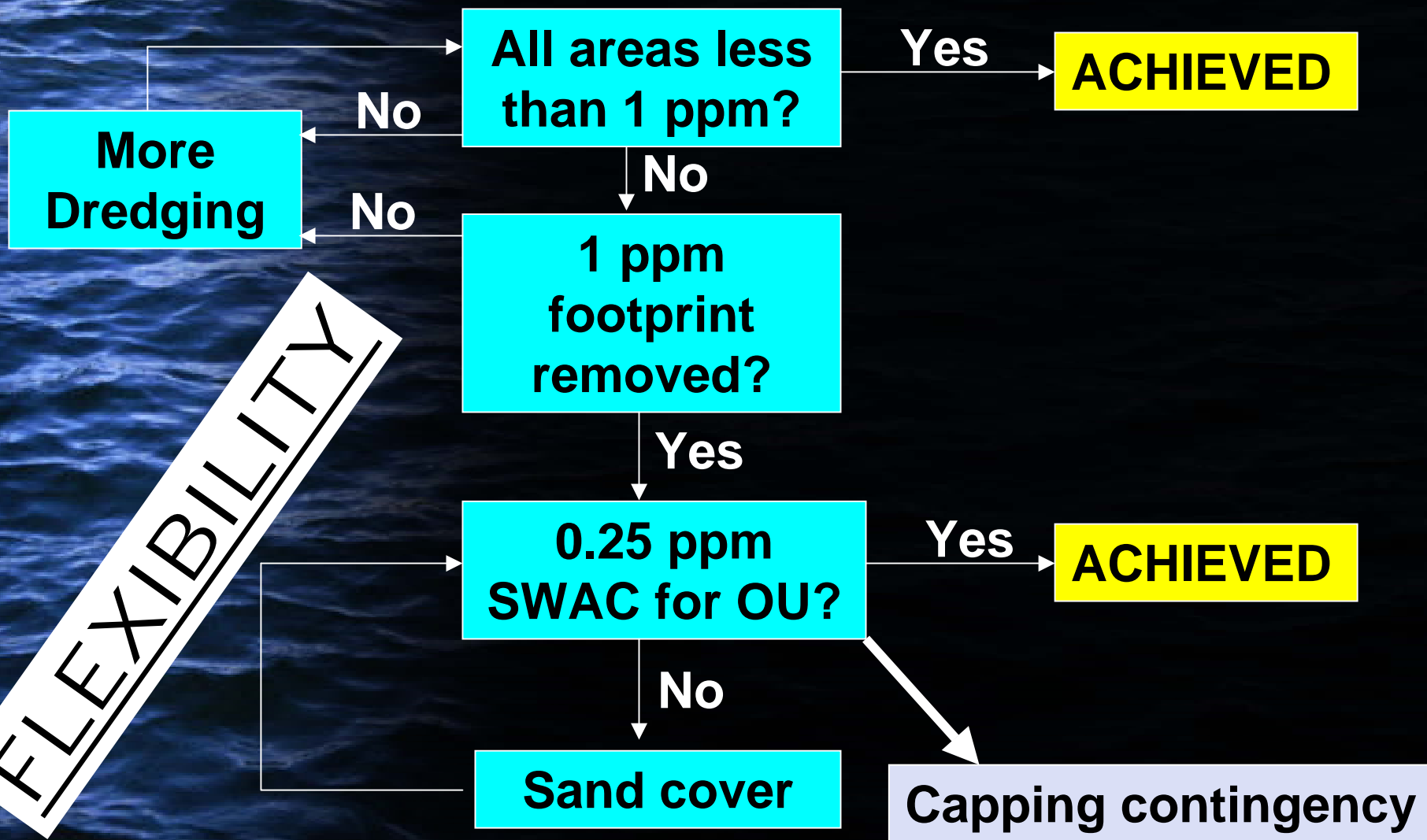


Residual Concentrations

Ways to Mitigate

- Know when to avoid
- Pre-plan to address if residuals occur
 - Monitoring before further decision
 - Post-dredge cap
 - Engineered cap
 - Additional dredge passes
- Flexibility in achieving cleanup standards

Meeting Cleanup Standard (one approach)



FLEXIBILITY

Residual Concentrations

Implications if Not Properly Addressed

- Continued exposure & risk
- Excessive costs (redredging)
 - Low production rates
 - High water content



Resuspension

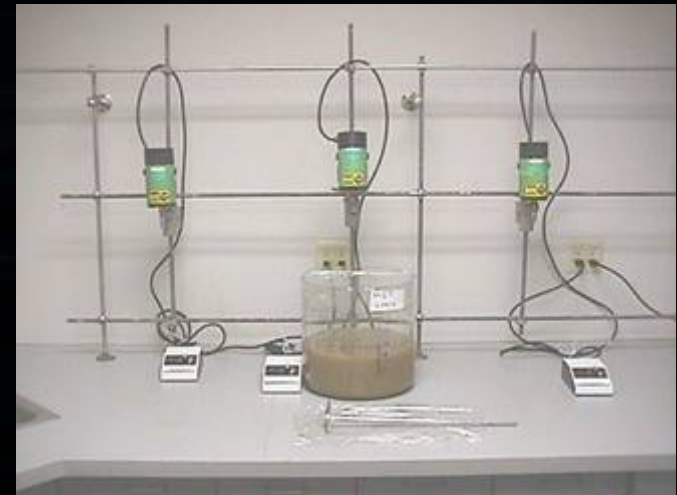
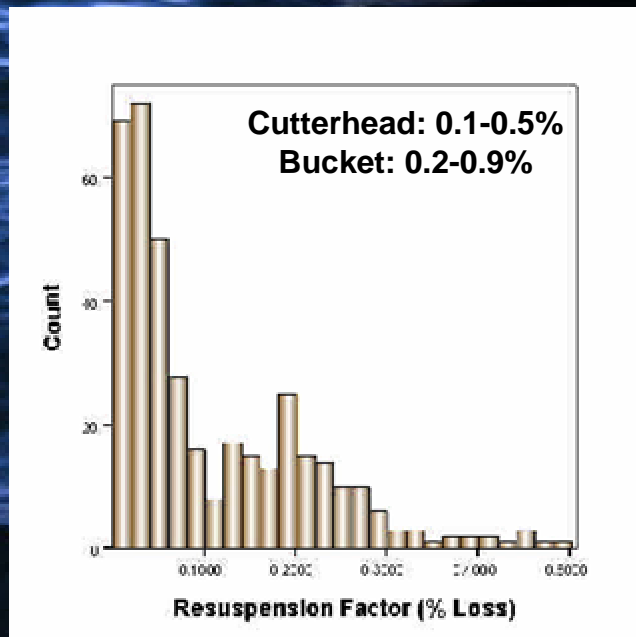
Key Factors

- Operator experience
- Equipment
- Design
- Other variables



Resuspension Methods to Predict

- Laboratory tests/modeling
- Comparison to similar sites



Resuspension

Ways to Mitigate

- Monitoring
 - Real time difficult
- Smart designs
- Experienced operators
- Best Management Practices (BMPs)

Resuspension

Implications if Not Properly Addressed

- Exposure & risk
- Excessive costs



Tying it All Together

Conclusions

