



Sediment Strategies and Liability

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Agenda

- ❖ Safety Minute
- ❖ Introduction to Contaminated Sediments
- ❖ Record of Decision (ROD) Remedies versus Optimized Remedies (ORs)
- ❖ Implication to Responsible Parties
- ❖ Strategies in Working with Agencies
- ❖ Case Study: Legal/Technical Team
- ❖ Lessons Learned
- ❖ Q&A



Definition of Contaminated Sediments

Section 503 of WRDA 1992 defines contaminated sediment as: *“aquatic sediment which contains chemical substances in excess of appropriate geochemical, toxicological, or sediment quality criteria or measures; or is otherwise considered by the Administrator [of EPA] to pose a threat to human health or the environment....”*

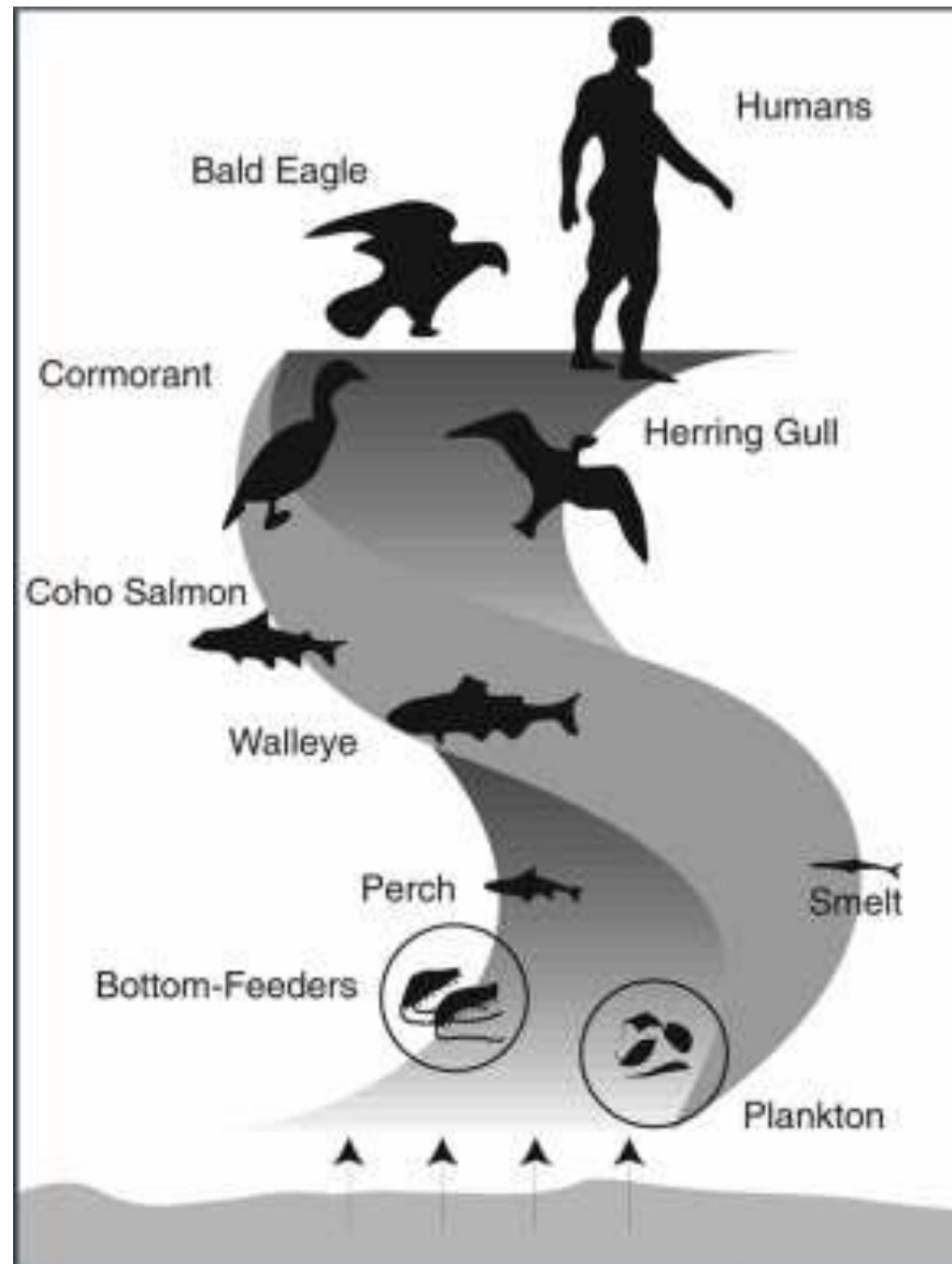




Easy to Understand How our Rivers were Impacted

Regulatory Drivers: risk to benthic (i.e., bottom-dwelling) organisms exposed directly to contaminated sediments and the risk to human consumers of organisms exposed to sediment contaminants.





Extent of Contaminated Sediments

Contaminated sediment sites exist in all regions of the U.S. ...apparent only a fraction of contaminated sediment sites in the U.S. have been remediated or are presently being addressed through remedial investigations or actions (U.S. Army Corps of Engineers)



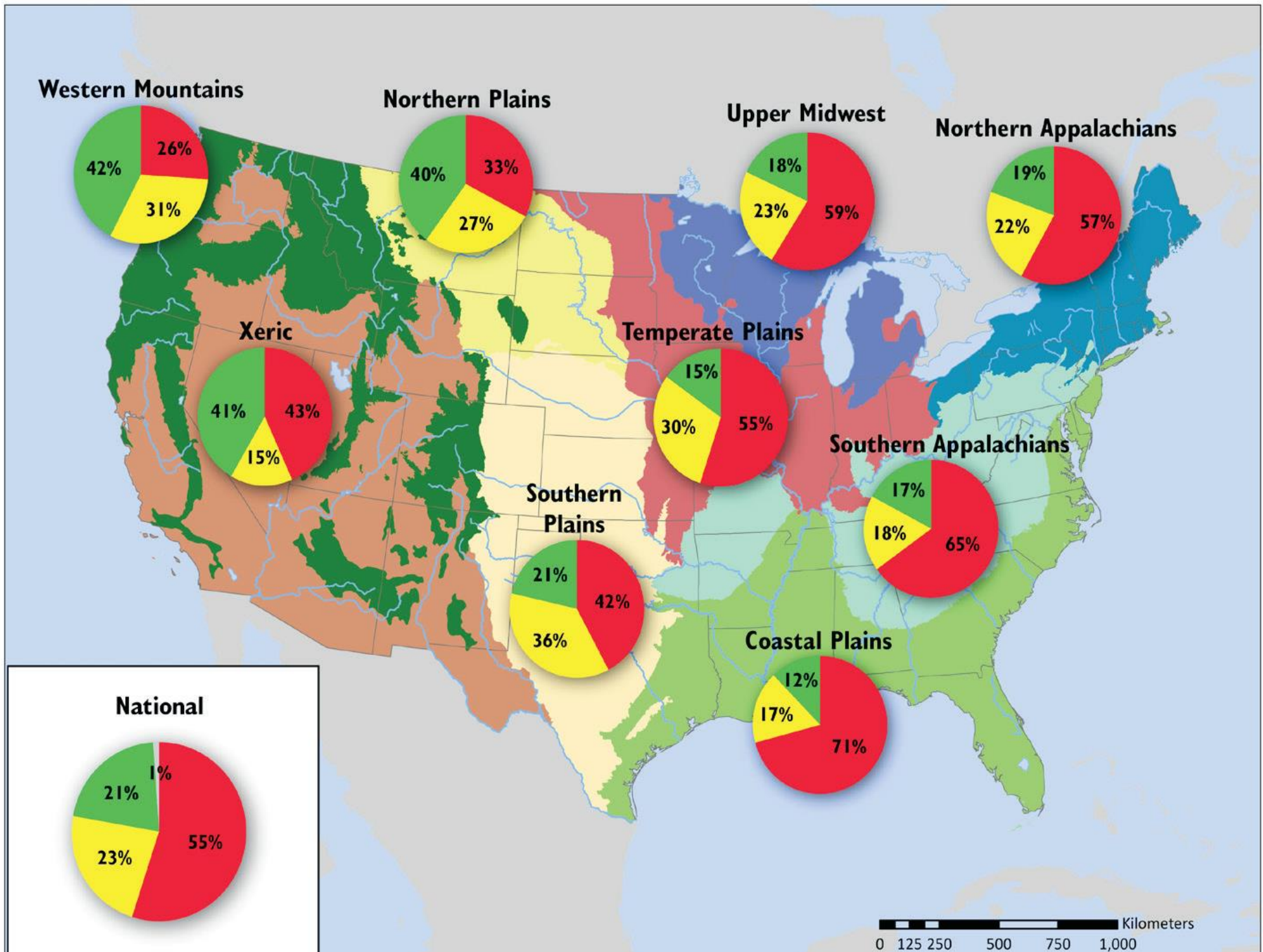
U.S. EPA The National Rivers and Streams Assessment 2008-2009: A Collaborative Survey

Key Findings: Overall Biological Condition

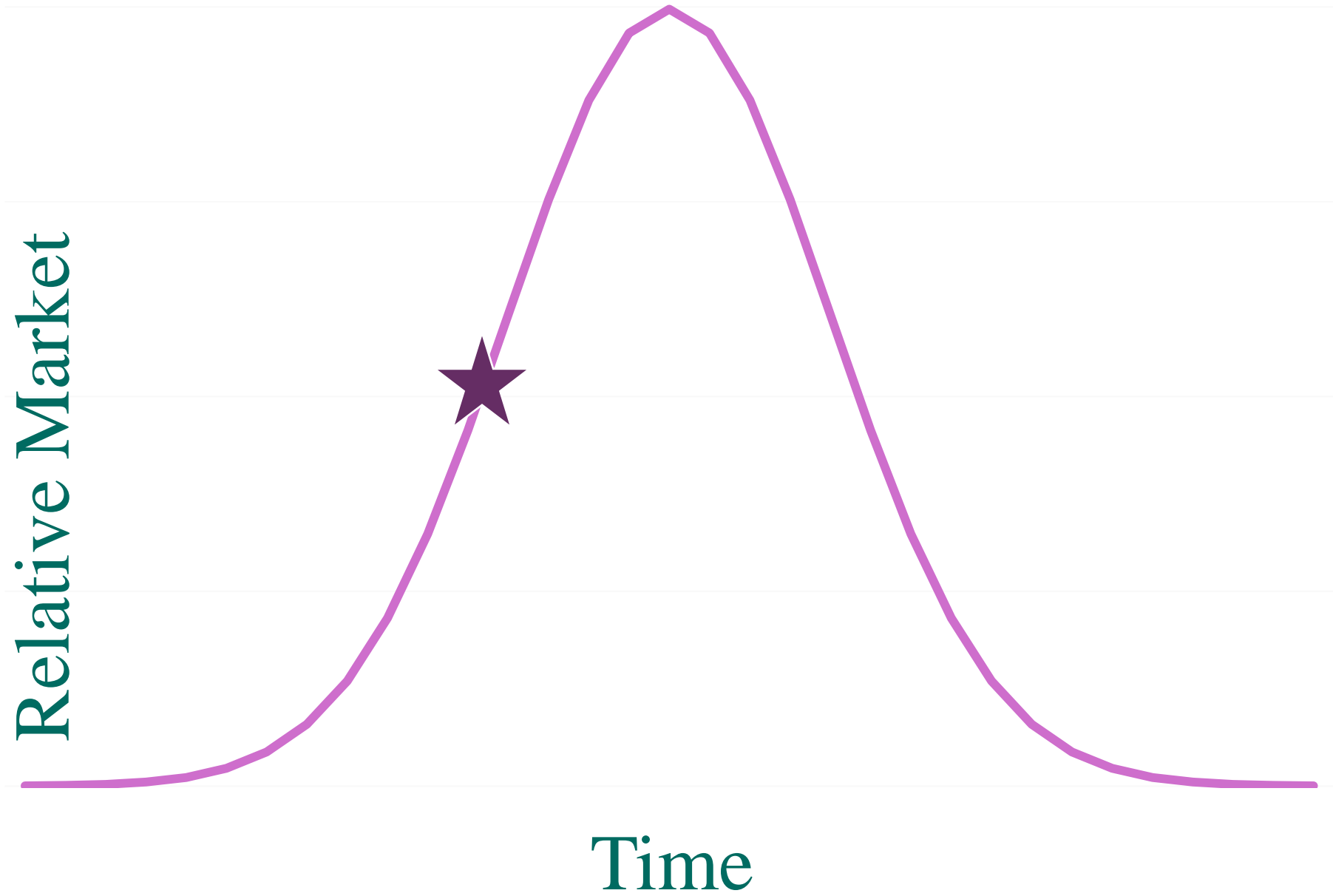
- ❖ **55% of the nation's river and stream miles do not support healthy populations of aquatic life**
- ❖ **23% of river and stream miles are in fair condition.**
- ❖ **21% are in good condition and support healthy biological communities**



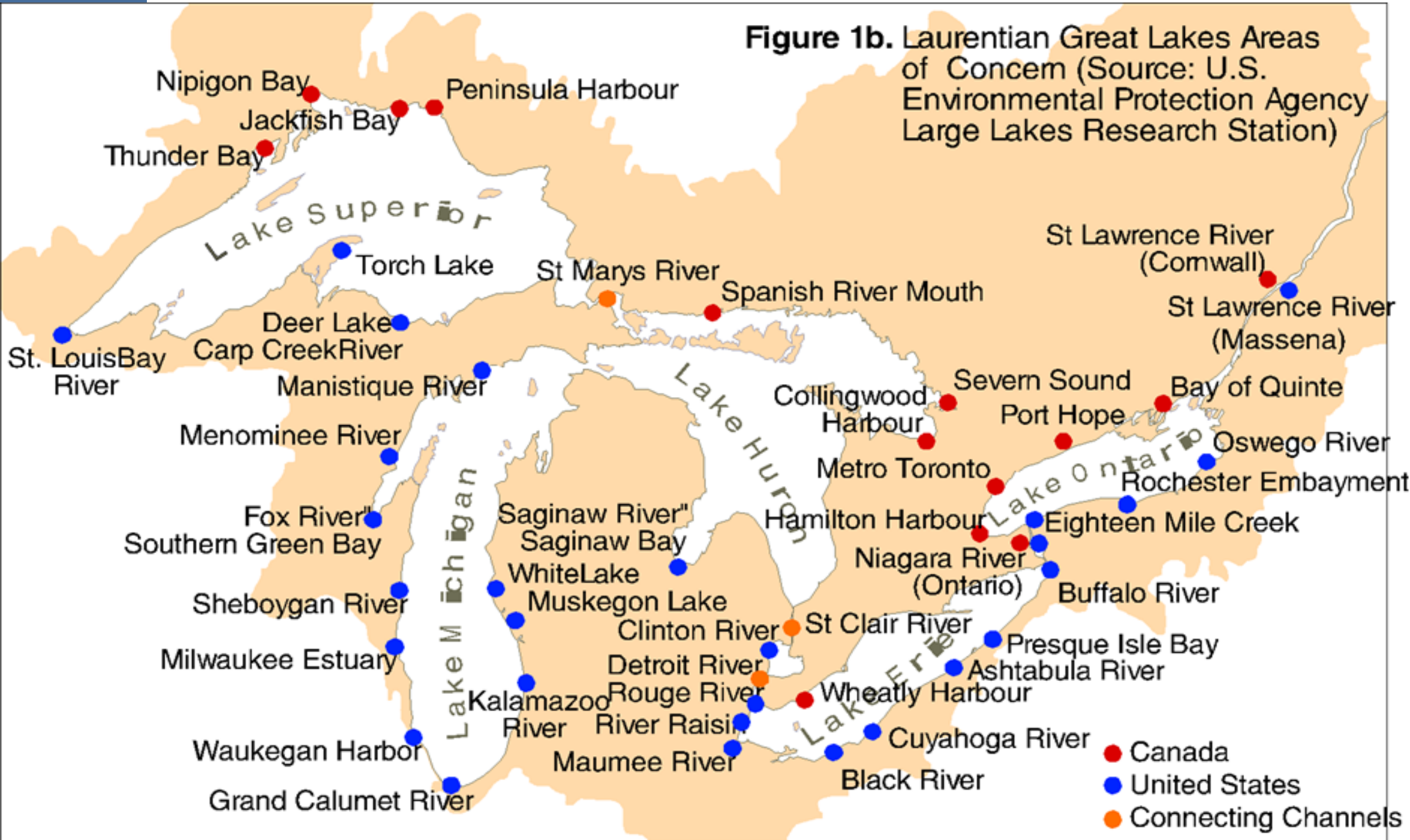
Biological Condition — Macroinvertebrate MMI



Contaminated Sediment Market



Great Lakes Areas of Concern



Record of Decision vs. Optimized Remedies

ROD Remedy –
typically favors all-dredge
cleanup solutions at a Site

Optimized Remedy -
highly tailored remedy for
a Site with a high level of
design detail

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**Record of Decision
Operable Unit 1 and Operable Unit 2
Lower Fox River and Green Bay, Wisconsin**



**Record of Decision
Responsiveness Summary**

December 2002

Implication to Responsible Parties (RP) – Record of Decision vs. Optimized Remedies

- ❖ RODs typically based upon relatively limited site information
- ❖ RODs lack site specific remedial action implementation data
- ❖ ROD's require full public disclosure

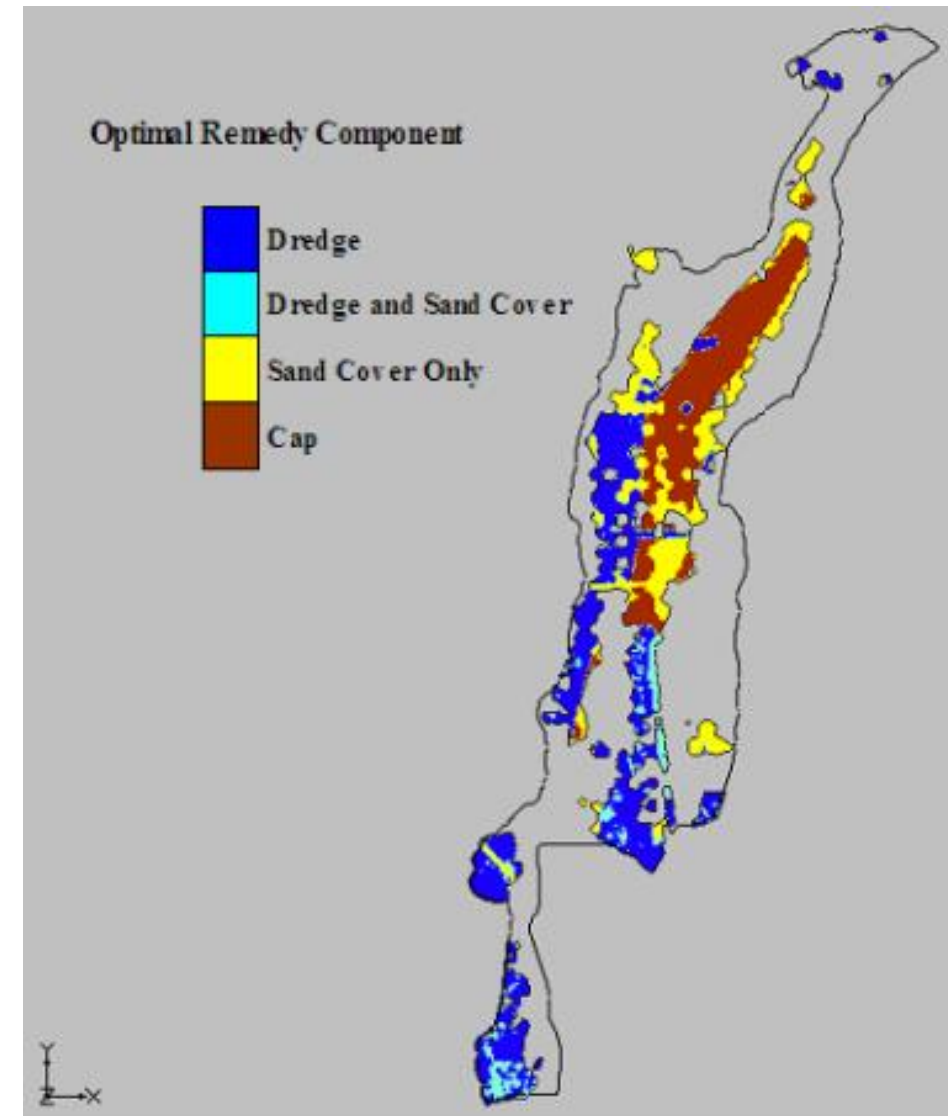


Implication to Responsible Parties (RP) – Record of Decision vs. Optimized Remedies *(continued)*

- ❖ ORs provide potential strategic flexibility to an RP for clean-up
- ❖ ORs based upon site specific RA implementation data - lessons learned
- ❖ ORs may or may not require full public disclosure prior to implementation.

Strategies for Working with Agencies to Achieve an Optimized Remedy

- ❖ Fully Use the Site Data
- ❖ Develop Data Visualization
- ❖ Develop Work Groups
- ❖ Strive for Collaboration



Case Study: Lower Fox River Superfund Site



Agencies state: “...consumption of fish from the Lower Fox River created an unacceptable human health risk.”



Fox River Record of Decision – 2002

- ❖ WDNR/EPA ROD evaluated nine CERCLA criteria to determine best clean-up method
- ❖ ROD - all dredge remedy



Fox River Record of Decision – 2002

- ❖ WDNR/EPA ROD allowed three ways for major changes:
 - Memorandum in Admin. Record
 - Explanation of Significant Change
 - ROD Amendment

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Record of Decision
Responsiveness Summary

Fox River Record of Decision – 2002

- ❖ Legal/Tech Team built flexibility into the ROD
 - If PCB RAL not achieved, then use SWAC
 - If SWAC not achieved, then use sand cover on dredged areas



Fox River Record of Decision – 2002

- ❖ Contingent Remedies Built into the ROD.
 - Must meet same Health, Cost, Legal & Time Goals
 - Capping has restricted geographies



Fox River Record of Decision – 2002

- ❖ Implementing a Contingent Remedy meant proving:
 - Dredging would not achieve SWAC, and
 - Capping is less expensive than dredging

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Record of Decision
Responsiveness Summary

December 2002

Legal & Technical Team Arrived at Multiple Value-Added Options



Record of Decision Amendment

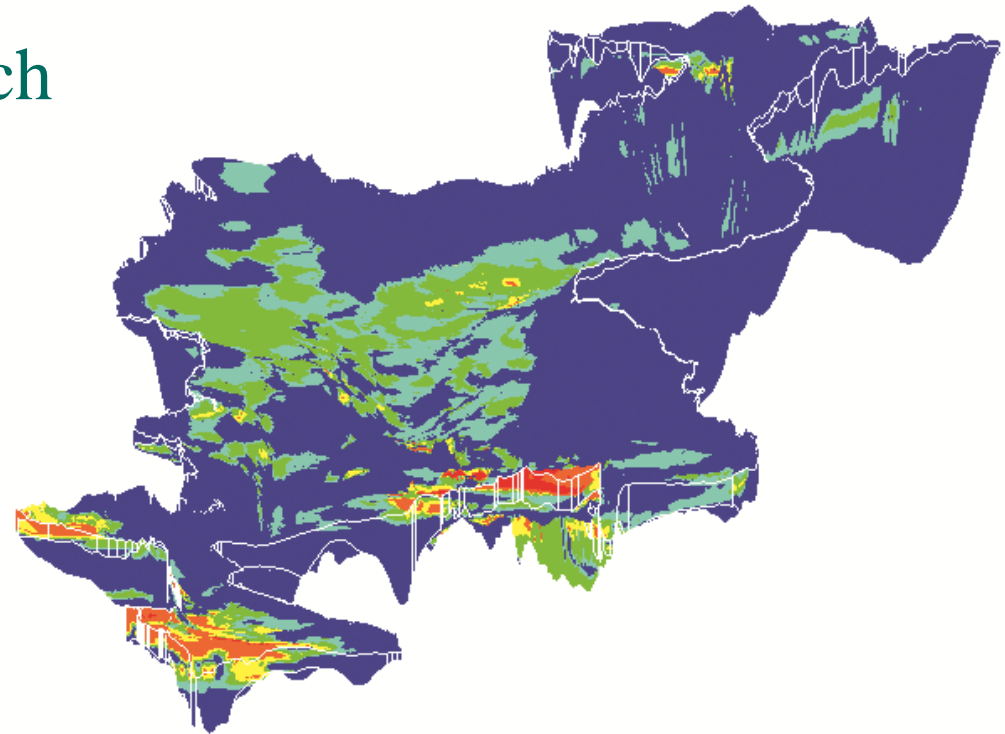
Operable Unit 1

Lower Fox River and Green Bay Superfund Site

June 2008

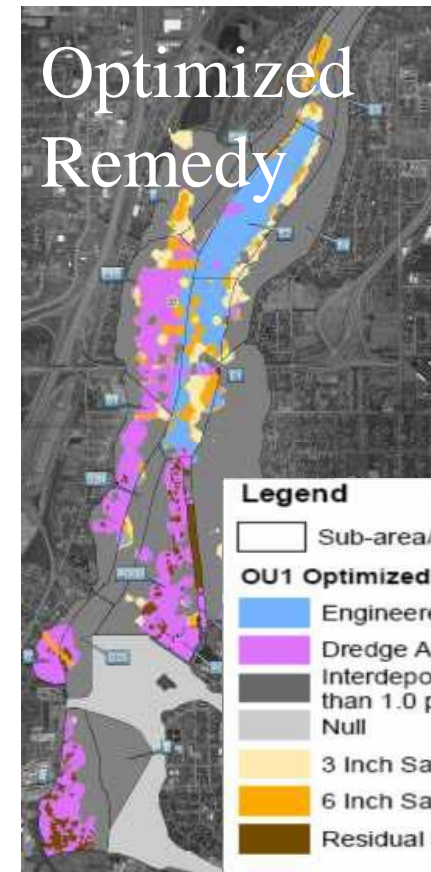
Legal & Technical Team Strategy Implementation

- ❖ Numerous Work Group Meetings
- ❖ Hundreds of Data Visualization Figures
- ❖ Highly Collaborative Approach



ROD Amendment – June 2008

- ❖ New Data to Change the Preferred Remedy
- ❖ Initial Site Dredging Data was Critical
- ❖ ROD Amendment included Dredging, Capping and Covering



ROD Amendment – June 2008

- ❖ ROD Amendment determined an “all-dredge” remedy would not achieve SWAC
- ❖ ROD Amendment calculated costs for an “all-dredge” remedy at \$150M



Record of Decision Amendment

Operable Unit 1

Lower Fox River and Green Bay Superfund Site

June 2008

ROD Amendment – June 2008

- ❖ ROD Amendment required because preferred remedy was fundamentally changed from ROD
- ❖ ROD Amendment required a public review period



Record of Decision Amendment

Operable Unit 1

Lower Fox River and Green Bay Superfund Site

June 2008

ROD Amendment – June 2008

- ❖ ROD Amendment allows:
 - ❖ Engineered Capping as primary remedy
 - ❖ Sand Covers as a primary remedy in low PCB areas (EMNR)



**Fox River
Engineered Cap Design**



ROD Amendment vs. ROD

❖ ROD Amendment advantages:

❖ Achieve SWAC

❖ Completion in 2009 vs. 2014

- better fish sooner

❖ Total Costs of \$100MM vs. \$150MM



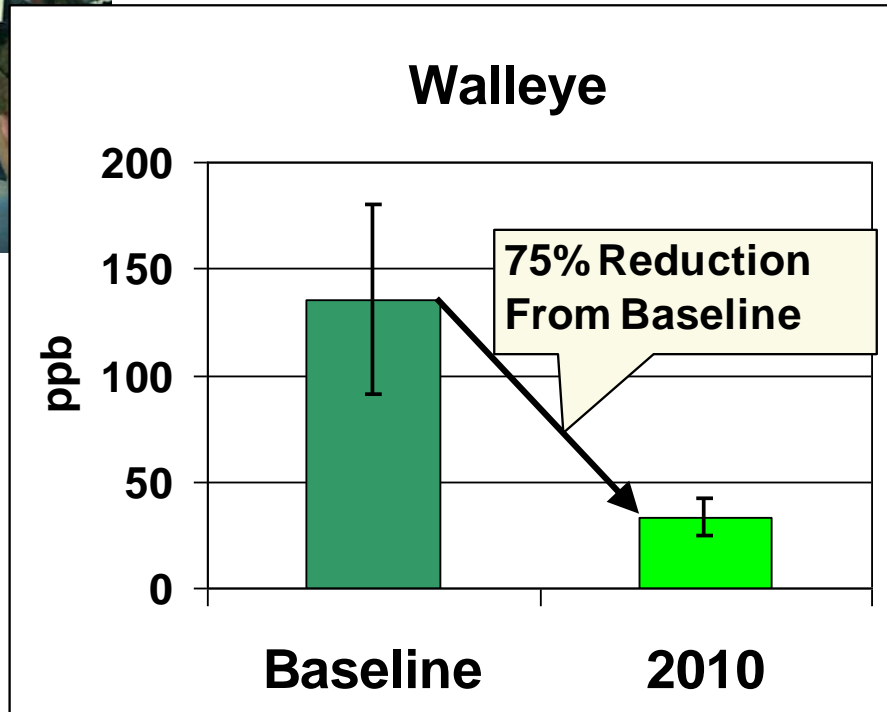
Record of Decision Amendment

Operable Unit 1

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June 2008

Project Success:



Summary of Learnings

- ❖ Contaminated Sediment Market
- ❖ Record of Decision (ROD) Remedies versus Optimized Remedies
- ❖ Implication to Responsible Parties - ROD vs. Optimized Remedies
- ❖ Strategies in Working with Agencies
- ❖ Case Study: Fox River Superfund



Thanks MSBA for the Invitation!



Questions and Answers

