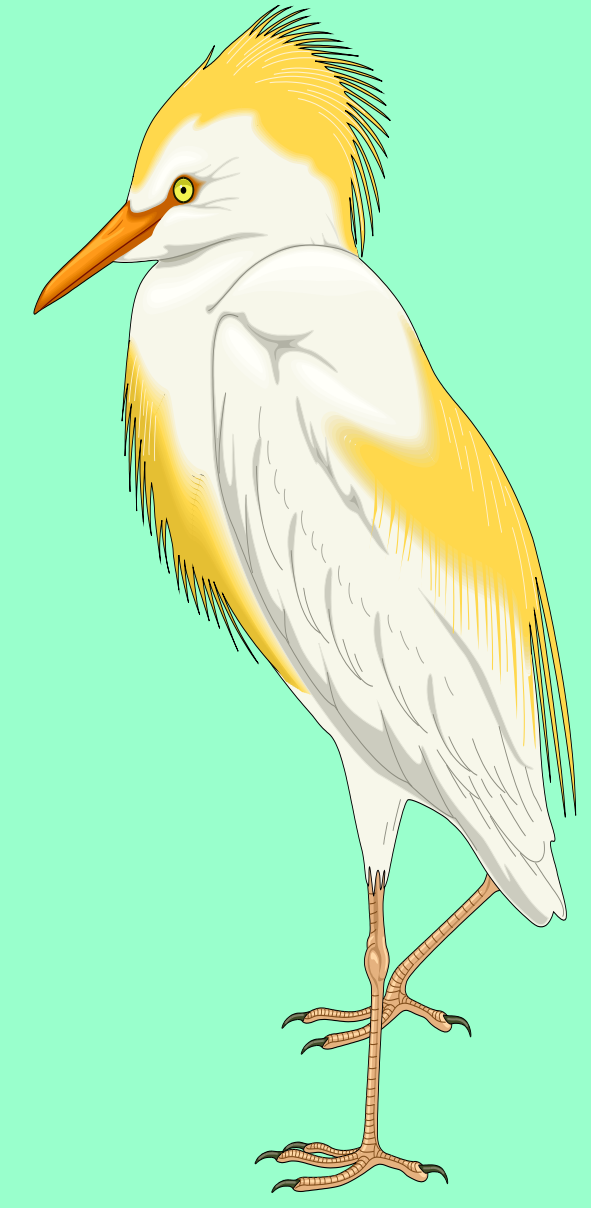


The Nexus Between Ecological Risk Assessment and Natural Resource Damage Assessment Under CERCLA: Understanding and Improving Common Scientific Underpinnings Results of a SETAC Technical Workshop, August 18-22, 2008

Steering Committee: David Charters (US EPA), Will Clements (Colorado State U), Will Gala (Chevron Energy Technology Co.), Ron Gougnet (Windward Environmental) Robert Haddad (NOAA), Roger Helm (US FWS), Wayne Landis (Western Washington U), Al Maki (ExxonMobil), Wayne Munns (US EPA), Ralph Stahl (DuPont Co.), Dale Young (State of MA)



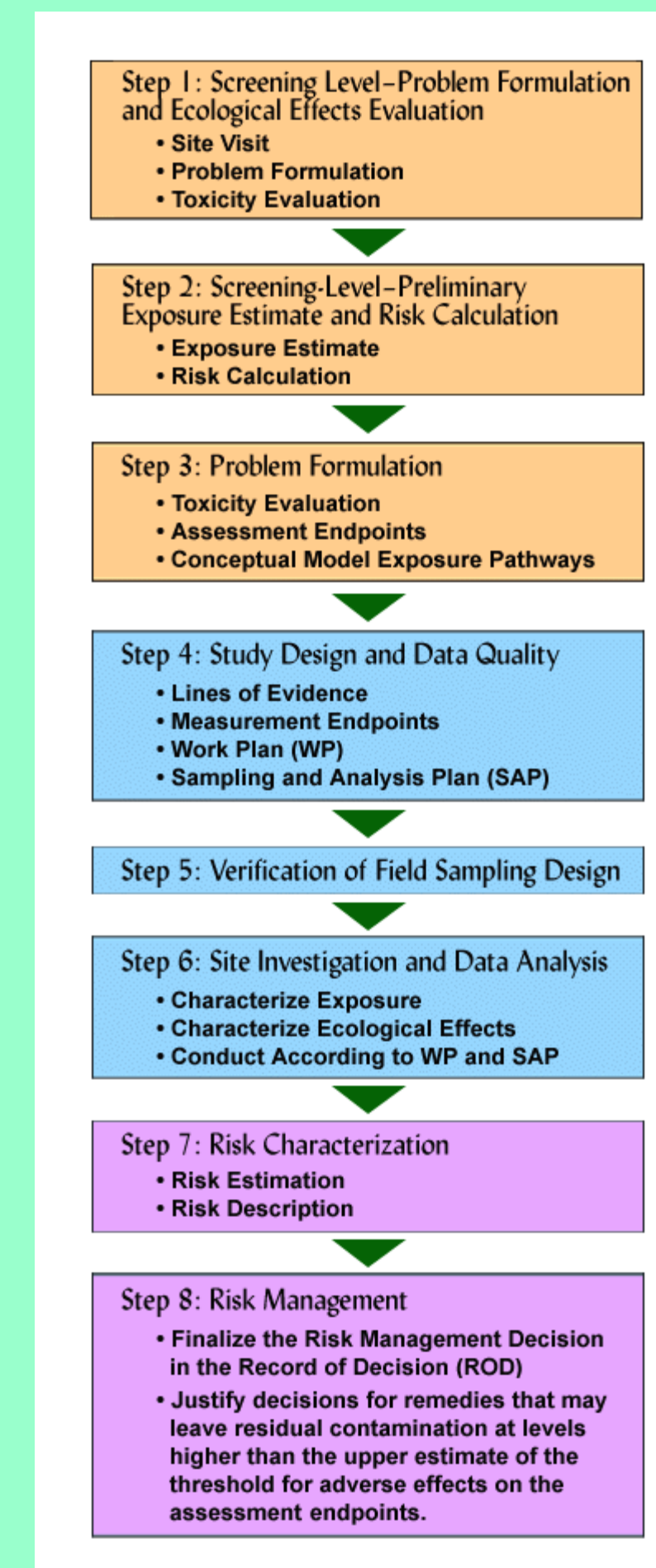
Workshop Objective

To evaluate critically the scientific underpinnings, overlaps and boundaries between ERA and NRDA under CERCLA and related federal statutes, as they relate to the collection, interpretation and utilization of environmental data, and the subsequent management actions that are developed using this and other information. This workshop evaluated the legal and technical underpinnings of ecological risk assessment and natural resource damage assessment to determine how these two processes might become better coordinated.

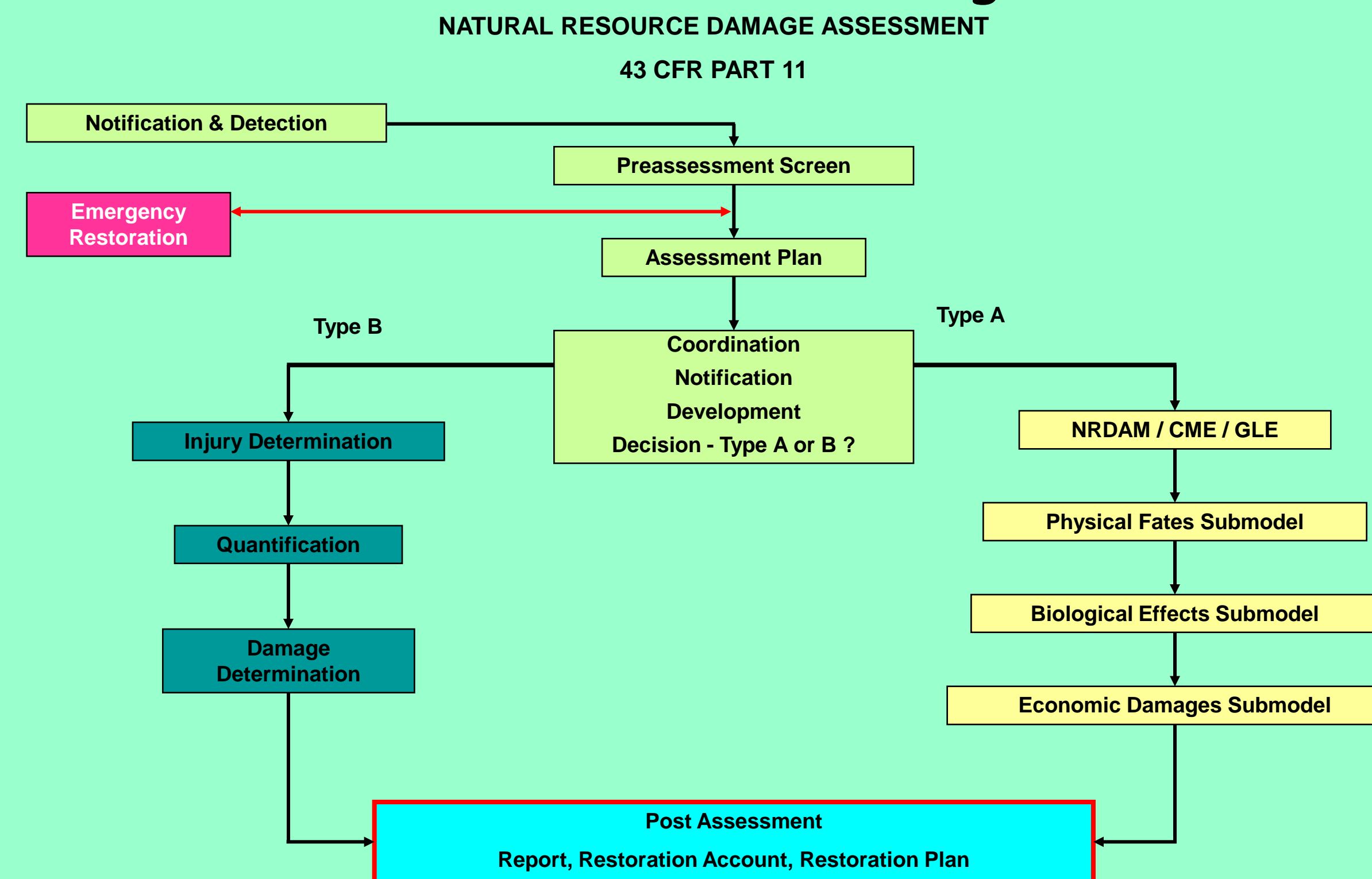
Questions Explored

1. What are the technical, statutory and regulatory drivers that hinder or foster the common use of environmental data for ERA and NRDA under CERCLA and related federal statutes?
2. What commonalities, and differences, exist in the technical information required by decision-makers that currently are provided separately by ERAs, NRDA and assessments of natural resource injuries and ultimately, nature resource service losses?
3. What are the decisions to be made under ERA and NRDA? What are their data quality objectives? It is feasible or even constructive to find a common currency recognizing that the outputs from an ERA and an NRDA are fundamentally different?
4. What are the scientific underpinnings of data collection, interpretation and utilization that are shared between ERAs and NRDA's?
5. What are the uncertainties associated with the scientific underpinnings, and how might they be addressed?
6. What are the technical areas where additional research or tools are needed?
7. Is there the potential for a common assessment approach that can be applied for contaminated media that is responsive to the needs of decision-makers and provides the required estimates of risk and injury?
8. Is there a way to synthesize the approaches into a single methodology that will satisfy the technical requirements of both ERA and NRDA?
9. What are the technical issues related to translating, or not, estimates of ecological risks and natural resource injuries into natural resource service losses?
10. Is there a common currency among ecological risk, natural resource injury and natural resource service loss that could be useful to assessment practitioners and decision-makers?

ERA Under CERCLA



NRDA Under DOI Regs



Summary of Key Findings (Workshop "Nuggets")

1. The different programmatic objectives, legal requirements, education and training can create barriers to coordination between ERA and NRDA; however, these distinctions do not prevent or prohibit coordination.
2. Significant opportunities for coordination between ERA and NRDA exist in scoping, data collection and analysis especially in areas of selection of response measures (measurement endpoints) and receptors.
3. Ecosystem services (the outputs of ecological processes that contribute to ecological and social welfare) can be the common currency linking CERCLA ERA and NRDA.
4. Building upon the concept of EPA's generic ecological assessment endpoints, a focus on "generic ecosystem services" could enhance the efficiency and effectiveness of hazardous waste site assessment and decisions regarding remediation and restoration.
5. In those ERAs at contaminated sites with a sole reliance on toxicity thresholds (i.e., TRVs, HQs) to delineate unacceptable risk and Areas of Concern, the use of toxicity thresholds and binary measures of risk (acceptable/unacceptable risk) will be an obstacle for coordination with NRDA.
6. There are alternatives to the use of hazard quotients in ERAs that can better inform and promote the coordination with NRDA as well as contribute lines of evidence in ERA.
7. ERA data are unlikely to fully meet the spatial and temporal needs of NRDA.
8. Coordination of CERCLA ERA and NRDA can be facilitated using a modified version of the DQO process to determine the appropriate assessment and measurement endpoints required to address ERA needs and inform the NRDA process.
9. Updated NRDA guidance would better define the process and promote efficiency, cooperation, and coordination.
10. Involvement of trustees and NRDA practitioners early in the planning and design of the ERA is the primary means for enhancing the probability of producing data useful to both processes.
11. Early involvement could occur through a modification of the Biological Technical Assistance Group (BTAG) process.

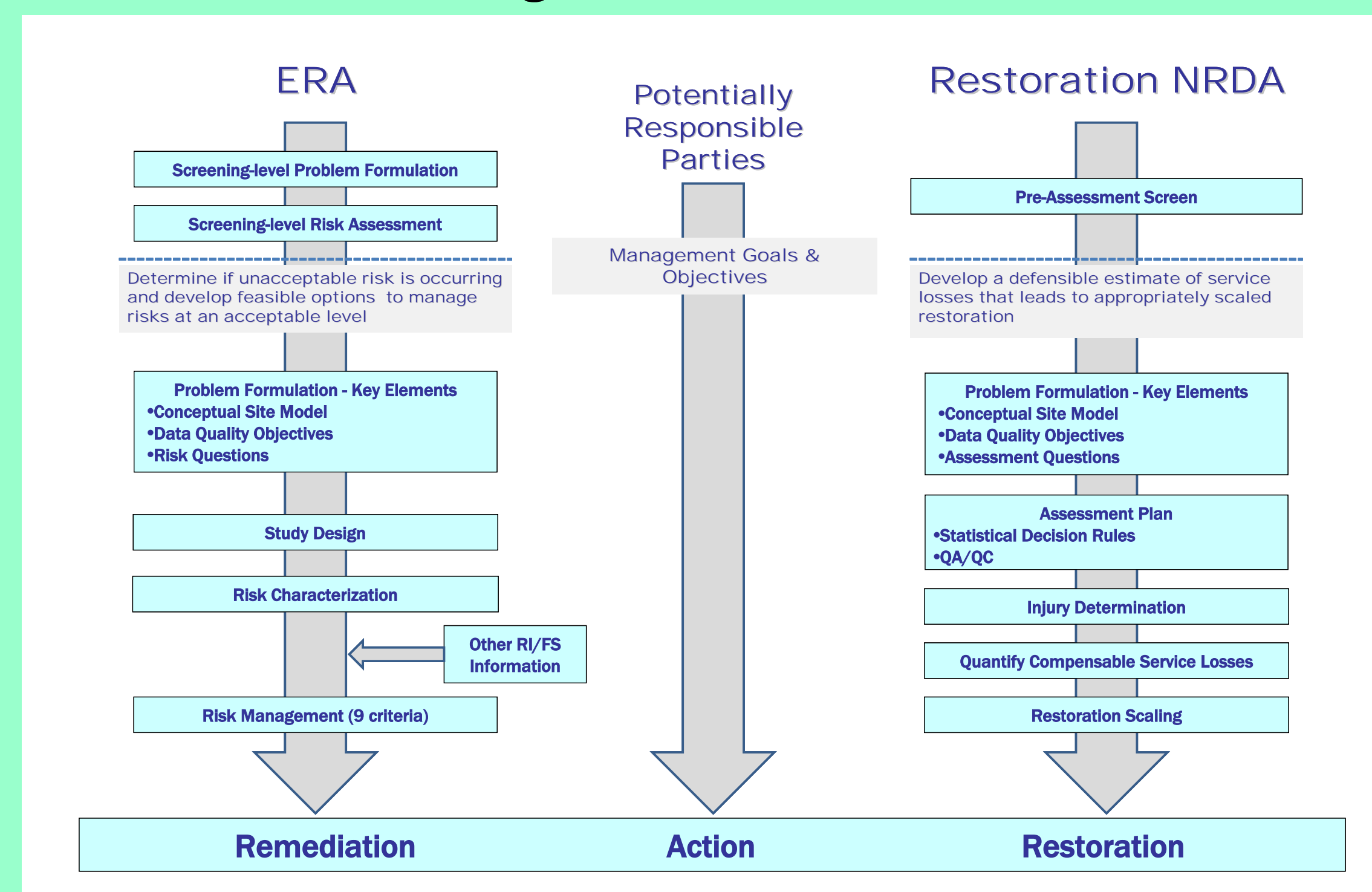
Results from this workshop are expected to be published by SETAC in a series of peer-reviewed papers in 2009.



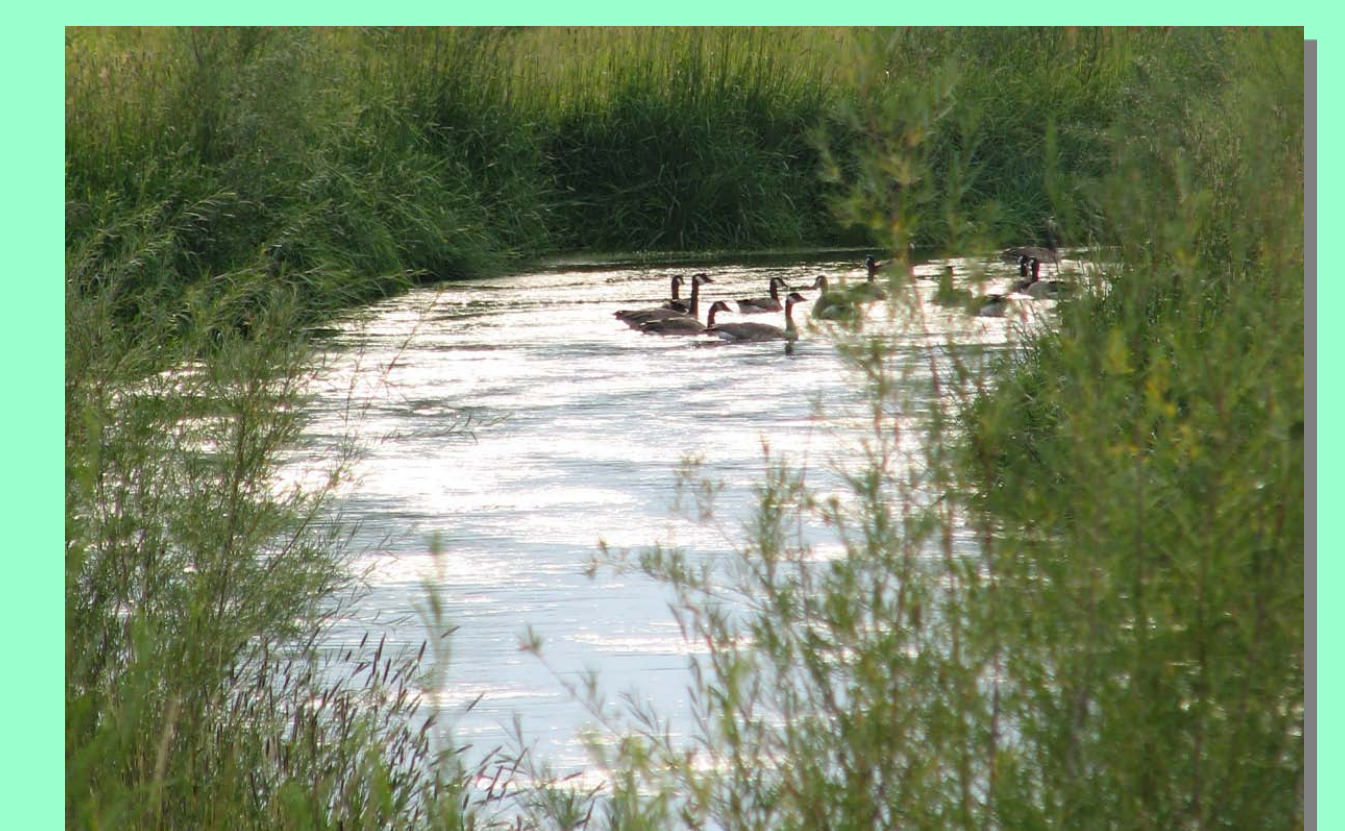
Workshop Participants

Bill Adams, Phil Cenera, Larry Champagne, Marty Cramer, Mark Curry, Mark Davis, Bill Desvousges, Lisa DiPinto, Judi Durda, Tom Ginn, Miranda Henning, Bill Hyatt, Rachael Jacobson, Kathryn Jahn, Russell Jim, Mike Johns, Larry Kaputska, Josh Lipton, Rose Longoria, Gene Mancini, Jim Nichol, Vicky Peters, Jennifer Peterson, Richard Seiler, Lisa Williams

Perceived Analogies Between ERA and NRDA



Silver Bow Creek Restoration



Silver Bow Creek Restored

Sponsors

Alcoa Corporate Center, American Petroleum Institute, Chevron Energy Technology, Co., Conoco Phillips, E.I. du Pont de Nemours & Co., Entrix, ExxonMobil, Honeywell International, Industrial Economics, Inc., Integral Consulting, Inc., K&L Gates, MacDonald Environmental Science, National Oceanic and Atmospheric Administration, Rio Tinto, Shell Health, Teck Cominco American, Inc., U.S. Environmental Protection Agency, U.S. Fish & Wildlife Service, URS Consultants, Windward Environmental

ERA & NRDA

- **Determine if & how legal & technical aspects of ERA & NRDA can be better coordinated**
- **~40 folks: EPA, FWS, NOAA, States, Tribes, Industry, Consultants, Academia, NGOs, USGS**
- **Task Master: Ralph Stahl, DuPont**
- **Steering Committee: Young, Charters, Clements, Gala, Gouguet, Helm, Landis, Munns, & Ricker**

Workshop Participants

Work Group 1	Work Group 2	Work Group 3
David W Charters	William R. Gala	Roger C. Helm
Ronald G. Gouguet	Robert I. Haddad	Wayne R. Munns
Alan W. Maki	Wayne G. Landis	Dale Young
Larry F. Champagne	Phil Cernera	William H. Clements
Mark Davis	Tom Ginn	William J. Adams
Judi L. Durda	Miranda Henning	Marty Cramer
David Godlewski	Kathryn Jahn	Lisa M. DiPinto
William H. Hyatt Jr.	Josh Lipton	Mike Johns
Rachel Jacobson	Gene Mancini	Richard Seiler
Rose Longoria	John Sacco	Mark Curry
Jim Nicoll		Lisa L. Williams

“Harmonizing”* ERA & NRDA

- Legal or regulatory constraints on the use of common data
- Scientific constraints on data collection and utilization
- “Common Currency” to translate risk measurements into service losses

*NOT- ‘Integrating’, ‘Blending’, ‘Melding’,
‘Overlapping’, Linking

Translation Workgroup

- Case specific: meet & discuss early in ERA
- Incorporate ecosystem service based assessment & measurement endpoints into ERA
 - enhances translation to service losses for NRDA
 - mechanism: Data Quality Objective process
- Biodiversity: good indicator of ecosystem services, but data intensive – case specific solutions
- Aggregate service losses – Multi-contaminants or multi-resources: discuss examples & ideas