

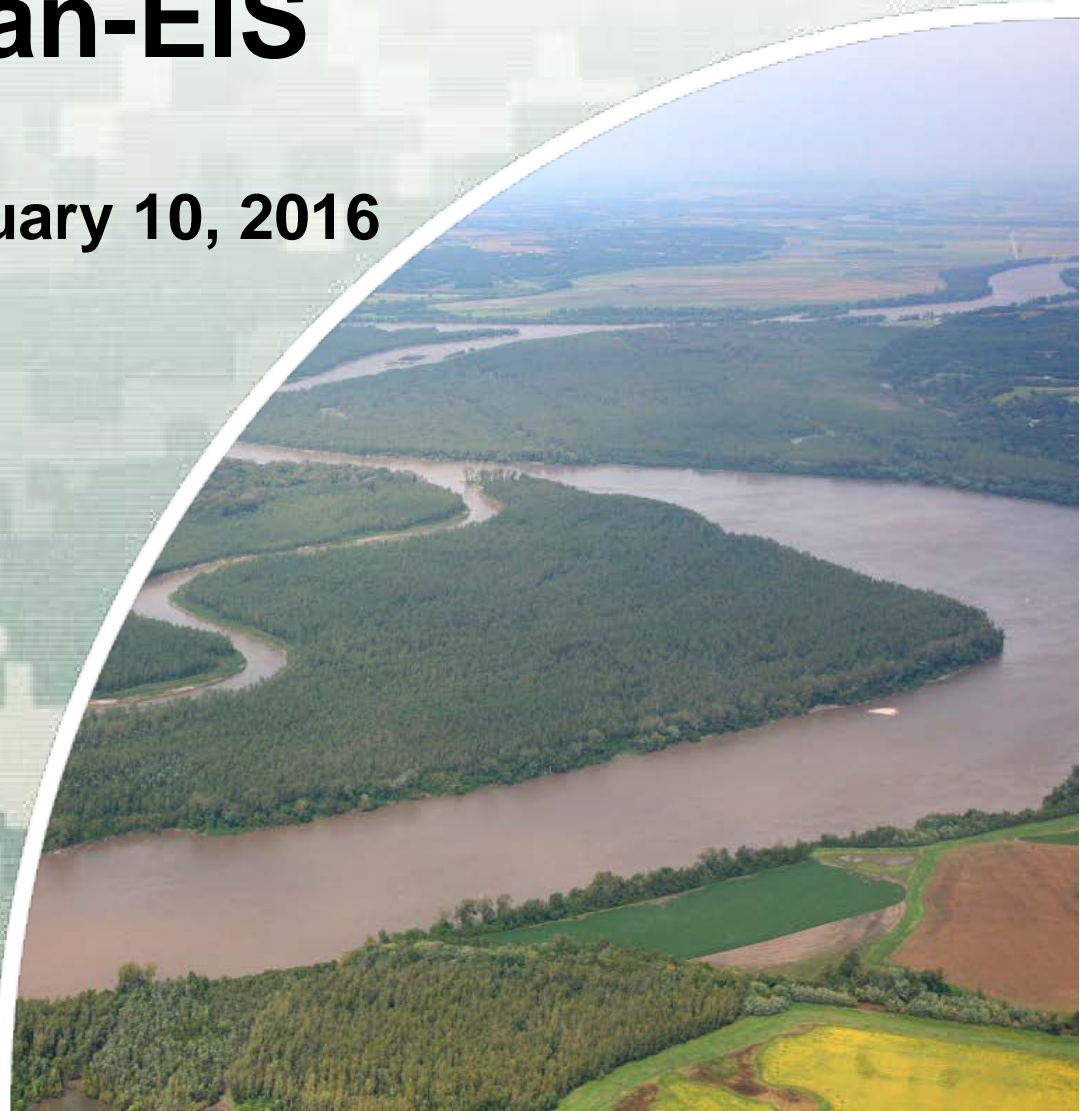
Missouri River Recovery Management Plan-EIS

Navigators Meeting- February 10, 2016

Mark Harberg
Project Manager



US Army Corps of Engineers
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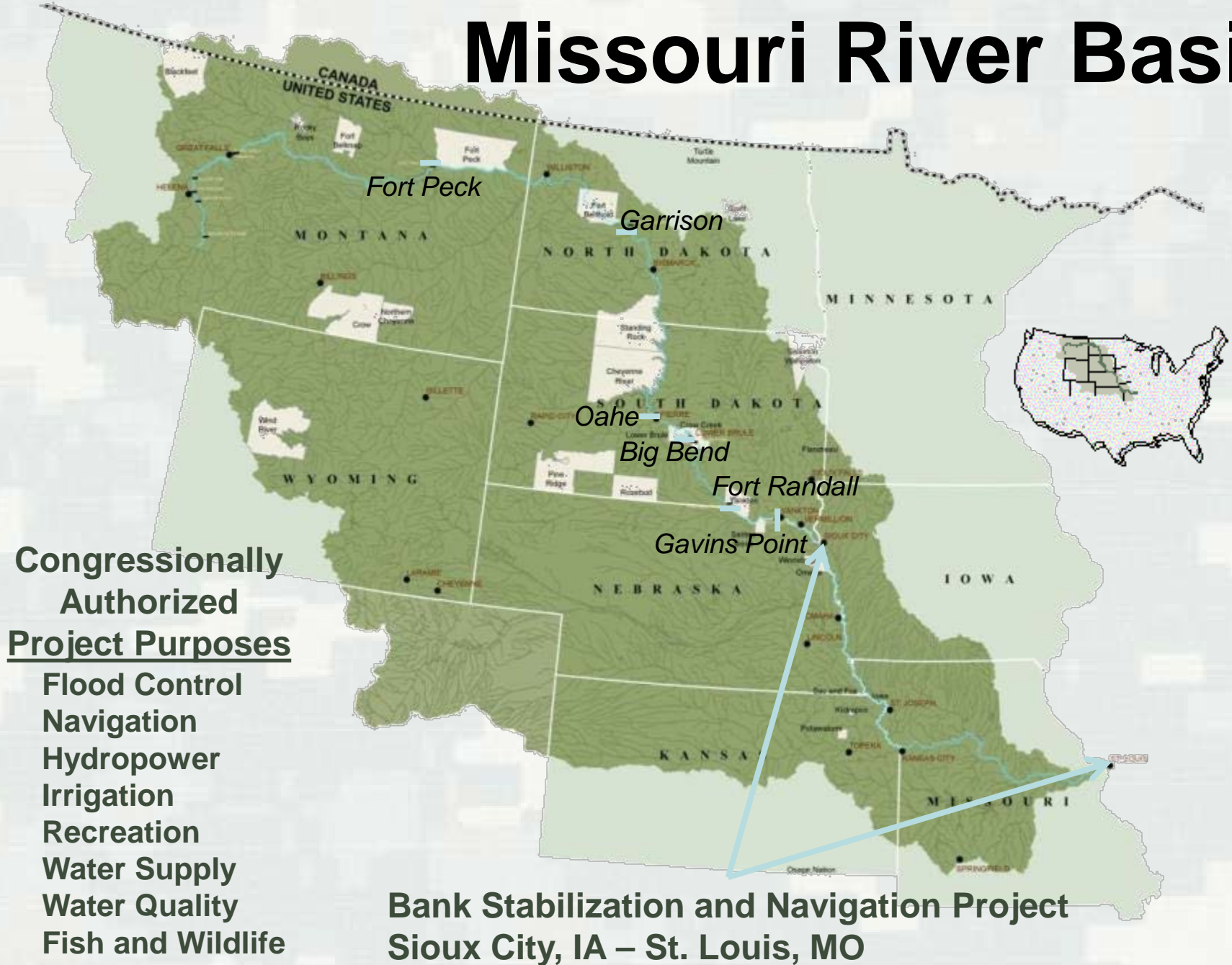


Missouri River Recovery Management Plan-EIS Process



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Missouri River Basin



Threatened & Endangered Species



Interior Least Tern



Piping Plover



Pallid Sturgeon



Missouri River Recovery Program (MRRP) Elements

- Habitat Construction
 - ❖ Shallow Water Habitat
 - ❖ Emergent Sandbar Habitat
- Propagation / Hatchery Support
- Research, Monitoring & Evaluation
- Flow Modifications
- Public Involvement



Missouri River Recovery Implementation Committee (MRRIC)

- Authorized by Congress in WRDA 2007
- Provide guidance/make recommendations on MRRP implementation
- Composed of:
 - ▶ 29 Stakeholder members
 - ▶ 8 States
 - ▶ 21 Tribes
 - ▶ 12 Federal agencies



Background

Independent Science
Advisory Panel (ISAP)

Effects Analysis

Human Considerations

Alternative Development

Next Steps



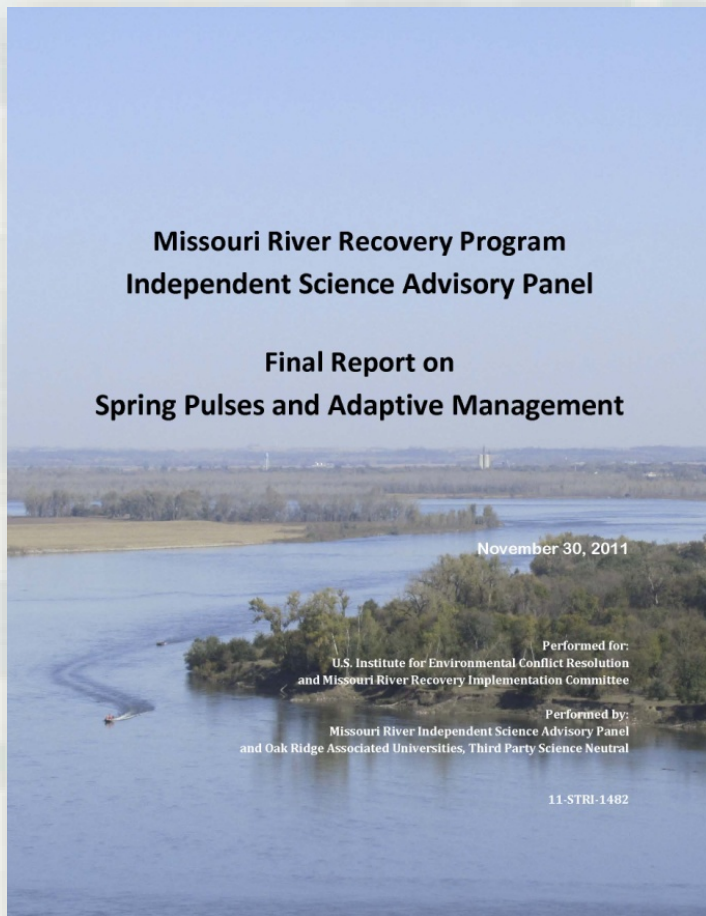
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ISAP

- 2009 MRRIC Consensus Selection of “third party science neutral” organization
- Selection of 6 national experts in:
 - ▶ Geomorphology
 - ▶ Shorebird Biology
 - ▶ Pallid Sturgeon Biology
 - ▶ Ecology/Statistics
 - ▶ Conservation Biology
 - ▶ Riverine Ecology



ISAP Report



- Jan 2011 – MRRIC Finalized Initial Charge to Independent Science Advisory Panel (ISAP)
- Nov 2011 – ISAP’s *“Final Report on Spring Pulses and Adaptive Management”*



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MRRIC Recommendation: 7 Proposed Actions

August 2012

PROPOSED ACTIONS

1. **AN EFFECTS ANALYSIS SHOULD BE DEVELOPED** that incorporates new knowledge that has accrued since the 2003 Amended Biological Opinion. As part of this analysis:
 - The effects of the Missouri and Kansas River Operations on the listed species should be reviewed and analyzed in the context of other stressors on the listed species;
 - The quantitative effects of potential management actions on the listed species should be document to the extent possible; and
 - These potential management actions should be incorporated into the CEMs.
2. **CONCEPTUAL ECOLOGICAL MODELS (CEMS) SHOULD BE DEVELOPED** for each of the three listed species and these models should articulate the effects of stressors and mitigative actions (including but not limited to flow management, habitat restoration actions, and artificial propagation) on species performance.
3. **OTHER MANAGED FLOW PROGRAMS AND ADAPTIVE MANAGEMENT PLANS SHOULD BE EVALUATED** as guidance in development of the CEMs and AM strategy for the Missouri River Recovery Program.
4. **AN OVERARCHING ADAPTIVE MANAGEMENT STRATEGY SHOULD BE DEVELOPED** that anticipates implementation of combined flow management actions and mechanical habitat construction, and this strategy should be used to guide future management actions, monitoring, research, and assessment activities within the context of regulatory and legal constraints.
5. **MONITORING PROGRAM ALONG THE MISSOURI RIVER SHOULD BE DESIGNED** so as to determine if hypothesized outcomes are occurring and the extent to which they are attributable to specific management actions.
6. The agencies should **IDENTIFY DECISION CRITERIA** (trigger points) that will lead to continuing a management action or selecting a different management action. A formal process should be designed and implemented to regularly compare incoming monitoring results with the decision criteria.
7. Aspects of **HOW THE ENTIRE HYDROGRAPH INFLUENCES THE THREE LISTED SPECIES SHOULD BE EVALUATED** when assessing the range of potential management actions.

1. Develop Effects Analysis
2. Develop CEMs
3. Evaluate other programs
4. Overarching adaptive management strategy
5. Design Monitoring program
6. Identify decision criteria
7. Evaluate entire hydrograph



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Background

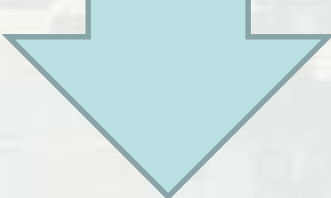
Independent Science
Advisory Panel (ISAP)

Effects Analysis

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Alternative Development

Next Steps



Effects Analysis Teams

Hydrologic/Geomorphic

Dr. Craig Fischenich
USACE Engineering Research
Development Center

Pallid Sturgeon

Dr. Robb Jacobson
U.S. Geological Survey

Piping Plover/Least Tern

Dr. Kate Buenau
Pacific Northwest National Lab



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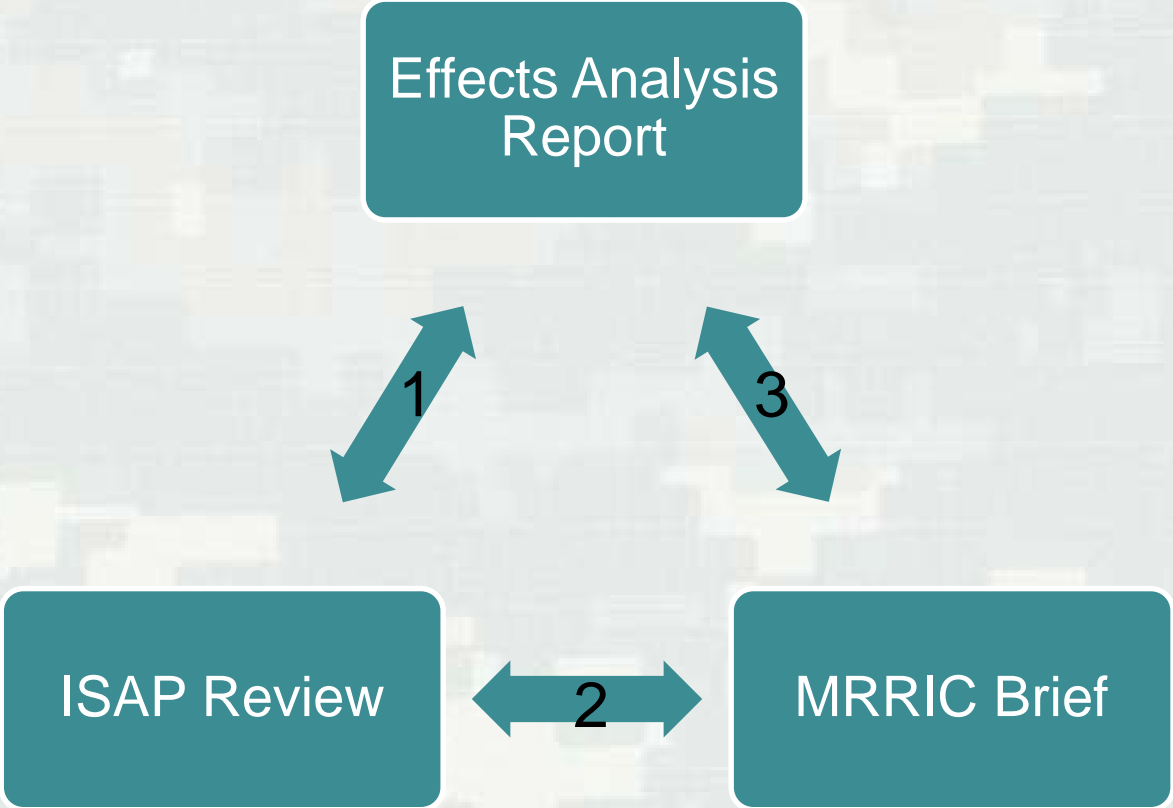
Effects Analysis Reports

- Hydro geomorphic Team Habitat Analyses
- Pallid Sturgeon and Piping Plover/Least Tern:
 - ▶ Conceptual Species Ecological Models (CEMs)
 - ▶ Compilation and Assessment of best available information
 - ▶ Management Hypotheses/Actions
 - ▶ Population Modeling



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Effects Analysis Report Review Process



Background

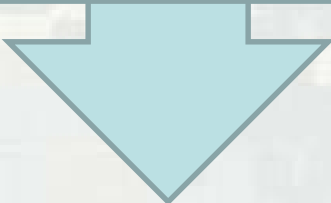
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Advisory Panel (ISAP)

Effects Analysis

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Next Steps



Human Considerations (HC)

- Purpose is to assess effects of potential management actions on human uses
 - ▶ Identified and developed with MRRIC stakeholders- 2013-2014
 - ▶ MRRIC Consensus Recommendation- August 2014

Draft Framework for Human Considerations Objectives and Performance Metrics and Associated Modeling/Methodology

June 2014

DRAFT

Draft Framework for Human Considerations Objectives and Performance Metrics



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HC Categories

Agriculture

Commercial
Sand Dredging

Cultural
Resources

Environmental
Conservation

Fish and Wildlife

Flood Risk
Reduction

Hydropower

Implementation
Costs

Irrigation

Navigation

Recreation

Thermal Power

Water Supply

Wastewater



Independent Socio-Economic Review Panel (ISETR)

- Third Party Science Neutral selection of 3 national experts in:
 - ▶ Resource Economics
 - ▶ Social Science
 - ▶ Mathematics and Quantitative Modeling
- Evaluated USACE HC Methods/Models document- Sept 2014
- Reviewed USACE Alternative Development process with MRRIC



Background

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Bird Management Actions

- Reservoir Releases to create river Emergent Sandbar Habitat
- Lower Summer releases to expose river Emergent Sandbar Habitat for nesting
- Reservoir Unbalancing to expose habitat
- Mechanical creation of river Emergent Sandbar Habitat





Lower River Pallid Management Actions

- Spawning Cues w/ reservoir releases
- Creation of Interception/Rearing Complexes (IRC)
- Creation of Spawning Habitat
- Hatchery Production and Stocking





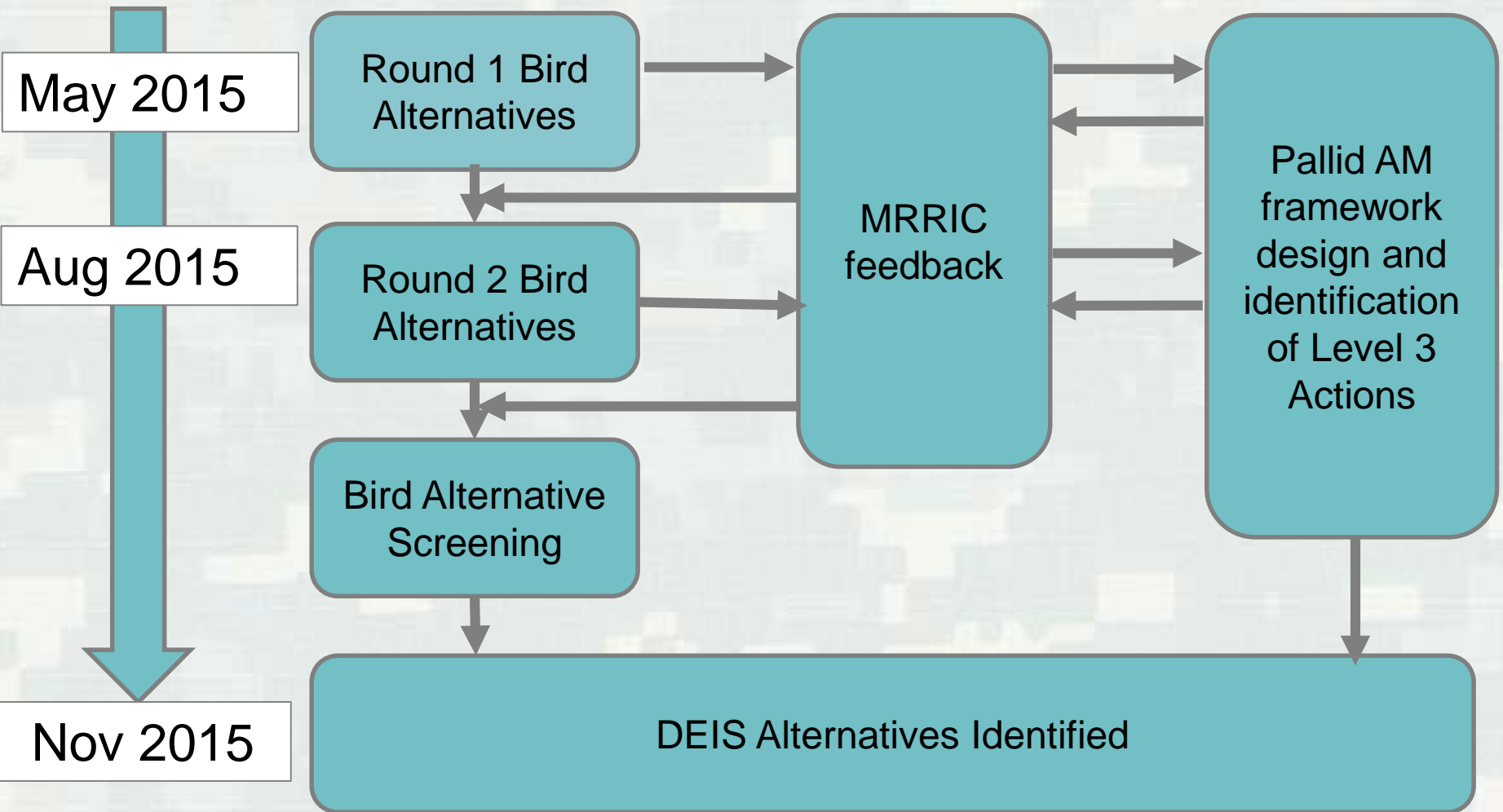
Upper River Pallid Management Actions

- Continue sturgeon passage construction at Yellowstone Intake Diversion Dam
- Hatchery Production and Stocking
- Monitoring and research on larval drift and survival



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Alternative Development



Purpose of Bird/Pallid Alternatives for Draft EIS

- NEPA requires rigorous analysis of a robust range of alternatives
- Comprehensive review and comment from stakeholders, agencies, Tribes, and public
- Evaluation and comments on a range of alternatives helps agencies make an informed decision
- No Alternative has been proposed at this time



Bird/Pallid Alternatives for Draft EIS

	Alternative 1- No Action	Alternative 2 – USFWS 2003 BiOp Projected Actions	Alternative 3- Pallid Habitat Construction Mechanical ESH	Alternative 4- Pallid Habitat Construction ESH Spring Release	Alternative 5– Pallid Habitat Construction ESH Fall Release	Alternative 6- Pallid Habitat Construction w/ Spawning Cue Mechanical ESH
Primary Actions						
Mechanical ESH Creation	X	X	X	X	X	X
Spring Release ESH Creation				X		
Fall Release ESH Creation					X	
Low Nesting Season Release		X				
Pallid Early Life History Habitat Construction (Level 3)	X (SWH)	X (SWH)	X (IRC)	X (IRC)	X (IRC)	X (IRC)
Pallid Spawning Habitat Construction (Level 3)			X	X	X	X
Pallid Propagation and Stocking (Level 3)	X	X	X	X	X	X
Pallid Spawning Cue Release	X	X				X

Background

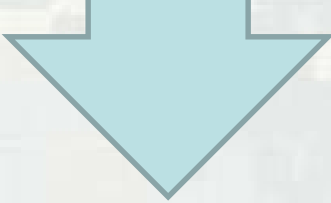
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Next Steps

- Conduct detailed evaluation of Draft EIS alternatives' effects on human considerations
- Develop implementation costs of Draft EIS alternatives
- Continue to develop Adaptive Management Plan with MRRIC
- Release Draft EIS in December 2016

