

# Missouri River Recovery Management Plan

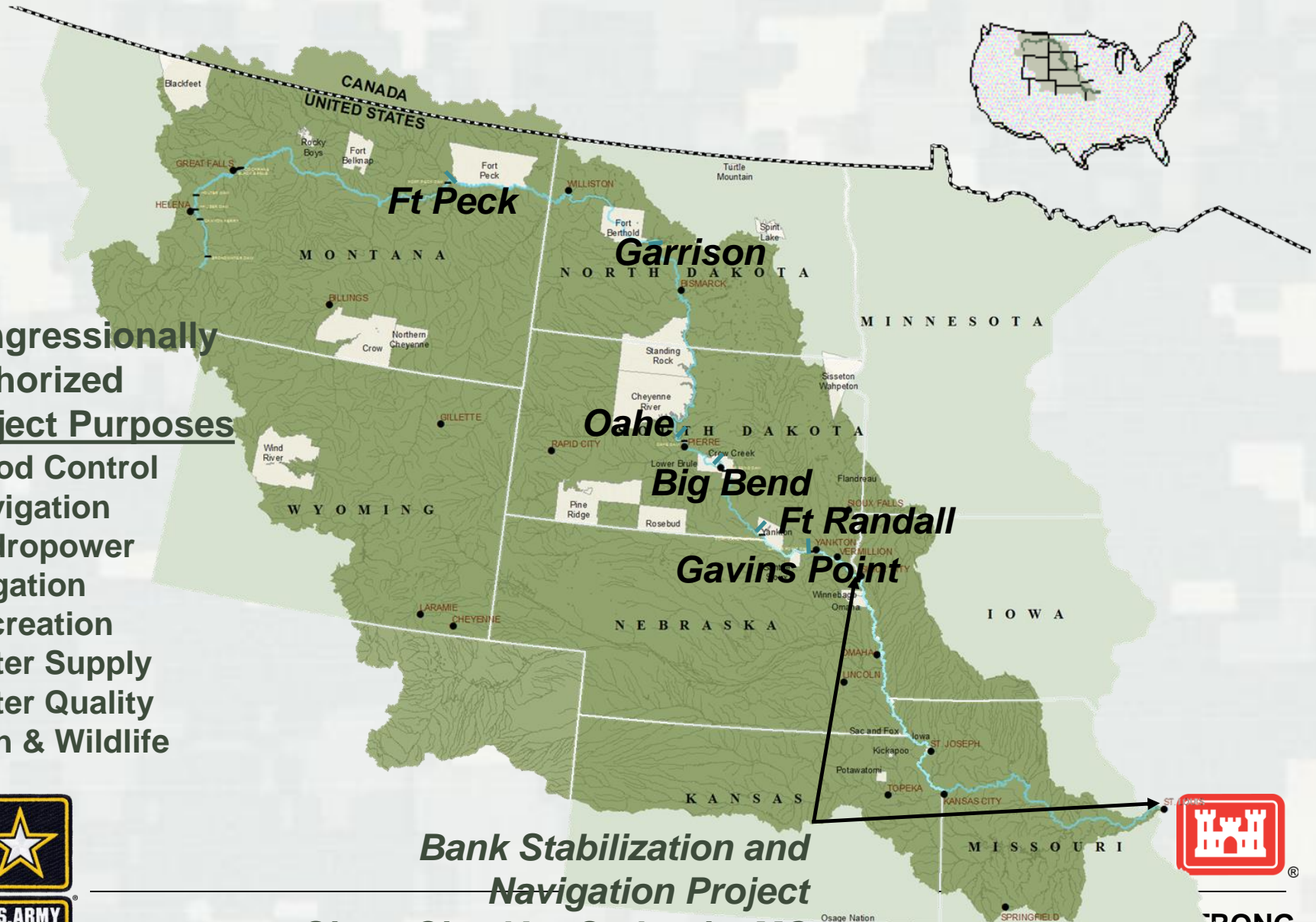
Update for MRBIR  
19 August 2015



# Missouri River Basin

## Congressionally Authorized Project Purposes

- Flood Control
- Navigation
- Hydropower
- Irrigation
- Recreation
- Water Supply
- Water Quality
- Fish & Wildlife



**Bank Stabilization and  
Navigation Project  
Sioux City, IA – St. Louis, MO**



# Threatened & Endangered Species



*Interior Least Tern*



*Piping Plover*



*Pallid Sturgeon*



# Missouri River Recovery Program

## Elements

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



# Management Plan

## What is it?

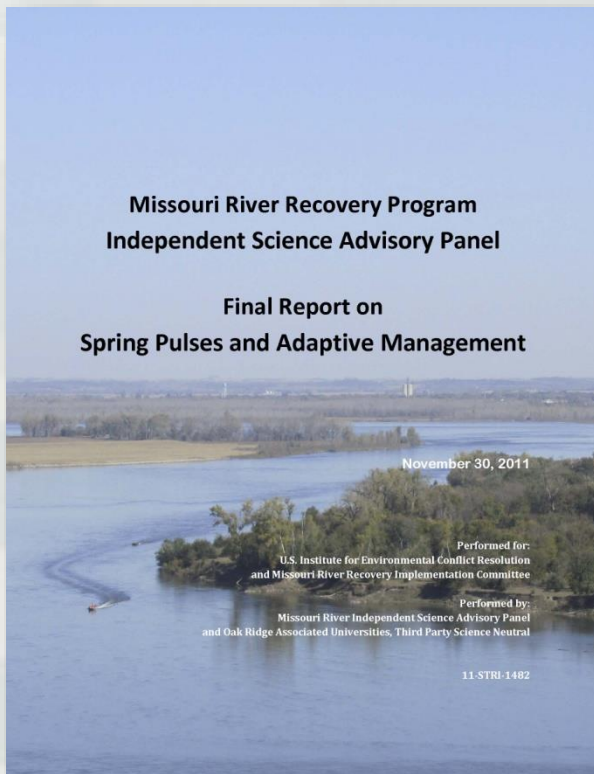
### Problem Definition

- Develop a management plan that includes a suite of actions that ***removes or precludes jeopardy status*** for the piping plover, the interior least tern, and the pallid sturgeon.
- Do so ***within authorization requirements*** from section 601(a) of Water Resources Development Act (WRDA) of 1986, as modified by section 334(a) of WRDA 99, and further modified by section 3176 of WRDA 2007.
- Do so while ***continuing to serve the Missouri River authorized purposes*** and accounting for human considerations.
- The plan will ***include an environmental impact statement*** and ***establish an adaptive management process*** for implementing the preferred alternative.



# Why?

- Independent Science Advisory Panel's (ISAP) *"Final Report on Spring Pulses and Adaptive Management"* 30 Nov 2011
- MRRIC's Proposed Actions
- BiOp Requirement for Programmatic Adaptive Management Plan
- NEPA Compliance to Assess Programmatic Effects



BUILDING STRONG®

# August 2012

## MRRIC Recommendation: 7 Proposed Actions

### 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 documented 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.



**ILDING STRONG®**

# Human Consideration Objectives

- Approximately 32 Objectives
- Described as monetary or non-monetary values
- MRRIC reached final consensus at Aug meeting
- Proxies- necessary step in calculating objectives
- Proxies used in initial Trade-off discussions



---

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

June 2014



# Bird Management Actions

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



# Lower River Pallid Management Actions

- Hatchery Production and Stocking
- Creation of Spawning Habitat
- Spawning Cues w/ reservoir releases
- Creation of Rearing Habitat:
  - ▶ Interception habitat
  - ▶ Food production habitat
  - ▶ Foraging habitat

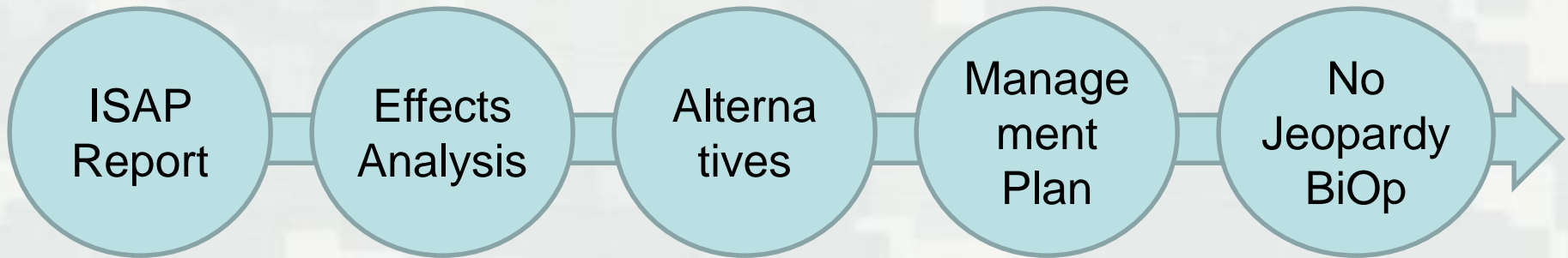


# Upper River Pallid Management Actions

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



# Connecting the Dots



- Recommendations
- MRRIC Proposed Actions

- CEMs
- Compile Existing Data & Resources
- Set of Hypotheses
- Predictive Models
- Evidence Based Assessment of Hypotheses
- Potential Management Actions

1. No Action
2. 2003 BiOp
3. Active AM

- Preferred Alternative
- Record of Decision
- Biological Assessment

- Revised
- New
- No Change

