Oklahoma Instream Flow Pilot Study - Approach for a Scenic River System

Presented to
Oklahoma Instream Flow Advisory Group

Presented by
Forrest Olson, CH2M HILL

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US Army Corps of Engineers

WRB

CH2MHILL

Primary Goal of Pilot Study:

“Gain a better understanding of the implications of a process to deal with instream flow issues consistent with the overall goal of managing water resources in Oklahoma for multiple uses.” The study would help define a conceptual framework and study process that could be used statewide.

The pilot study would focus on policy and technical questions on a single stream/watershed so as to:

1. Better understand implications of a possible instream flow program
2. Identify additional questions and concerns
3. Identify specific technical components and metrics that can be applied to instream flow assessments in other watersheds
4. Help determine costs associated with various ISF study components

Study Area:

Illinois River upstream of Tenkiller Reservoir to Arkansas border including Baron Fork and Flint creeks

Why study a scenic river:

1. Stream flows are less altered
2. Unique state law emphasizing protection of flows
3. Already have a precedent for regulation of flows
4. Significant flow-based recreation and ecological value
5. Extensive data and modeling already exist
6. Recommended by the Instream Flow Advisory Group

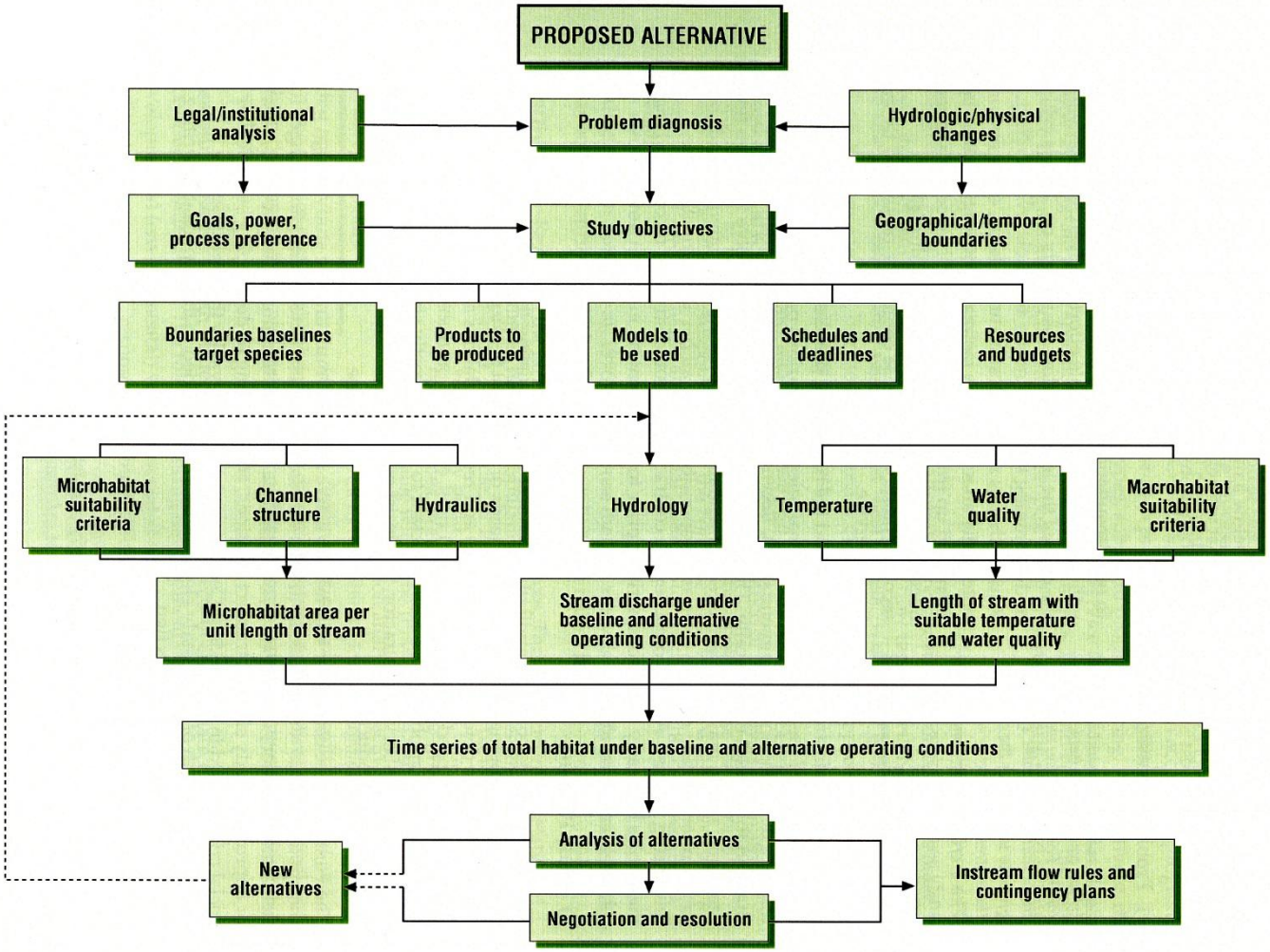
Proposed Study Approach:

Study approach modeled after the USGS Instream Flow Incremental Methodology (IFIM)

Five sequential phases:

1. Problem Identification
2. Study Planning
3. Study Implementation
4. Alternatives Analysis/Impacts
5. Problem Resolution

IFIM Activities and Information Flow



Source: Bovee et al., 1988

Activities and Information Flow Involved in an IFIM Study

Phase 1. Problem Identification (2 parts):

Phase 1, Part 1 – Institutional Analysis

- Identify stakeholders and affected parties.
- Conduct outreach to affected parties (stakeholder meetings).
- Identify and document concerns and issues of affected parties and provide responses to those issues.
- Outline a preliminary decision process to be used to recommend instream flow criteria.

Previously Identified Institutional Issues

- Legal considerations
- Potential effect on current and future water right holders
- Process for implementing flow recommendations
- Need for statutory changes
- Need for a formal instream flow program

Phase 1, Part 2 – Existing Information Summary

- Summarize existing information on fish and other aquatic resources of concern
- Determine the aquatic resource management goals for the streams or watershed
- Summarize hydrologic information, including existing conditions and simulated natural flows
- Summarize water quality information for the study streams
- Describe landscape features and land use activities that affect hydrology, water quality, and stream sediment dynamics

Phase 2. Study Planning

- The temporal and spatial scale of the evaluations
- Important variables for which information is needed
- How information will be obtained if it is not available
- A schedule of when data must be collected in the field
- Coordination of data collection needed for model input, calibration, and testing
- Estimates of labor, equipment, travel, and other costs required to complete the studies by the agreed study deadline

Phase 3. Study Implementation

1. Data collection/supplementation
2. Model calibration
3. Predictive simulation
4. Synthesis and integration of results

Specific Technical Tasks

- Reanalysis of the hydrological data summarized in Phase 1, to potentially include use of Indicators of Hydrologic Alteration (IHA) or similar software
- Collection of fish and potentially other aquatic organisms if existing data are not sufficient to describe existing conditions
- Characterization of stream channels, including sediment and habitat typing
- Modeling of water temperature and perhaps other chemical constituents
- Development of physical habitat simulation models (PHABSIM) for representative stream reaches
- Development of habitat suitability criteria for key fish species and habitat guilds for inclusion in the physical habitat simulation models

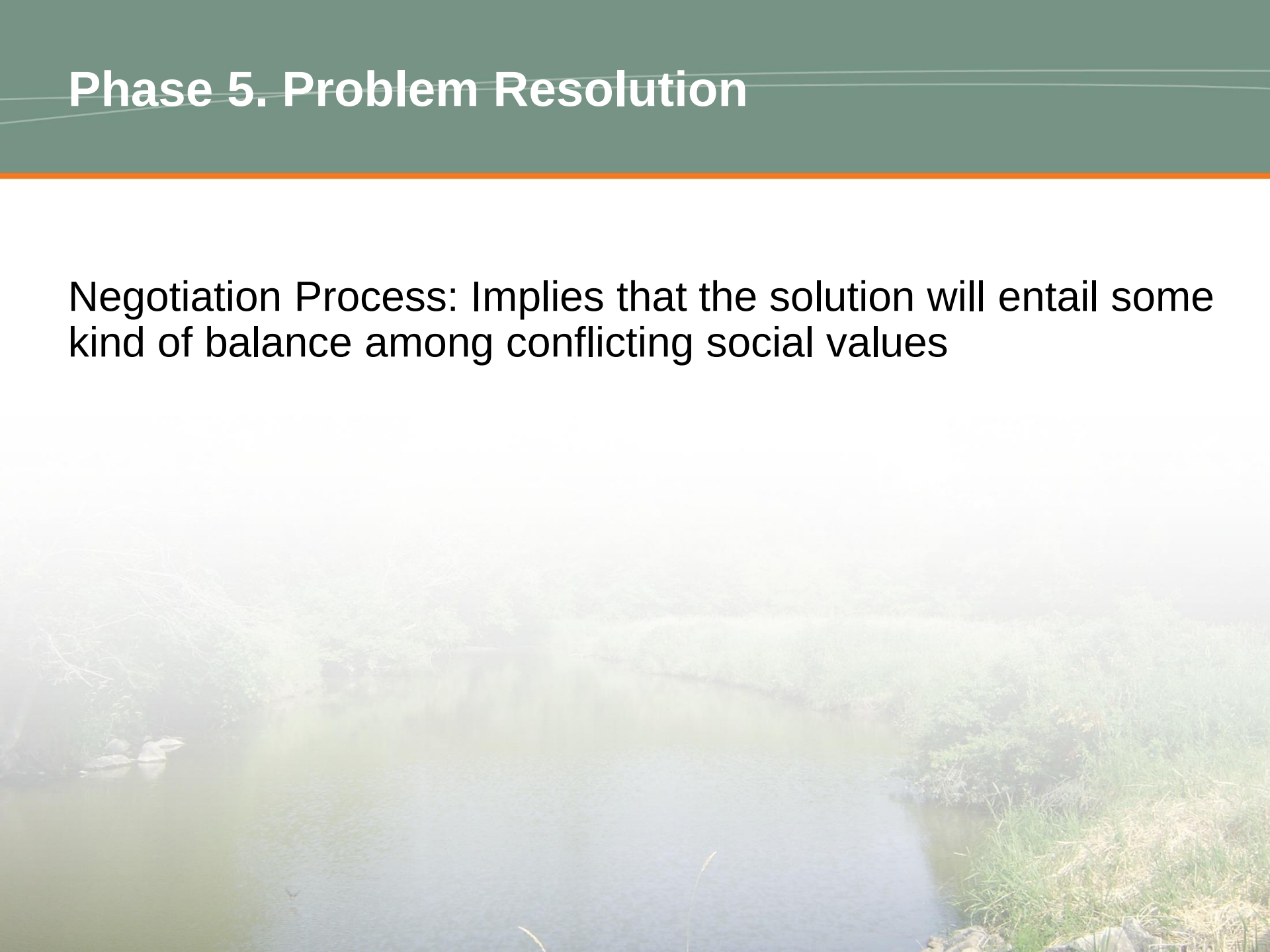
Phase 4. Alternatives Analysis

Each alternative will be evaluated by the following criteria and questions:

- Effectiveness—Are the objectives of each party sustainable? Is no-net-loss of habitat or biological function possible on a sustainable basis? What are the habitat costs and benefits of each alternative?
- Physical Feasibility—Are prior water rights and existing water uses maintained? Are reservoir purposes maintained? Is enough water available?
- Risk—How often does an alternative lead to a failure of the biological system? Is the failure reversible? Can contingency plans be developed?
- Economics—What are the costs and benefits of each alternative?

Phase 5. Problem Resolution

Negotiation Process: Implies that the solution will entail some kind of balance among conflicting social values



Questions