

GCMRC MONITORING AND RESEARCH PLAN

TO SUPPORT THE
GLEN CANYON DAM ADAPTIVE MANAGEMENT
PROGRAM

Technical Work Group
November 8, 2006



Purpose and Scope

- Background
- Overview of the MRP
- Discuss Comments and Responses
- Recommend Approval/Next Steps



OVERVIEW

- Purpose of the MRP
- Science Planning Process
- Elements of the MRP
- Integrated Interdisciplinary Science Initiatives
- Critical Research And Monitoring Needs Outside the AMP

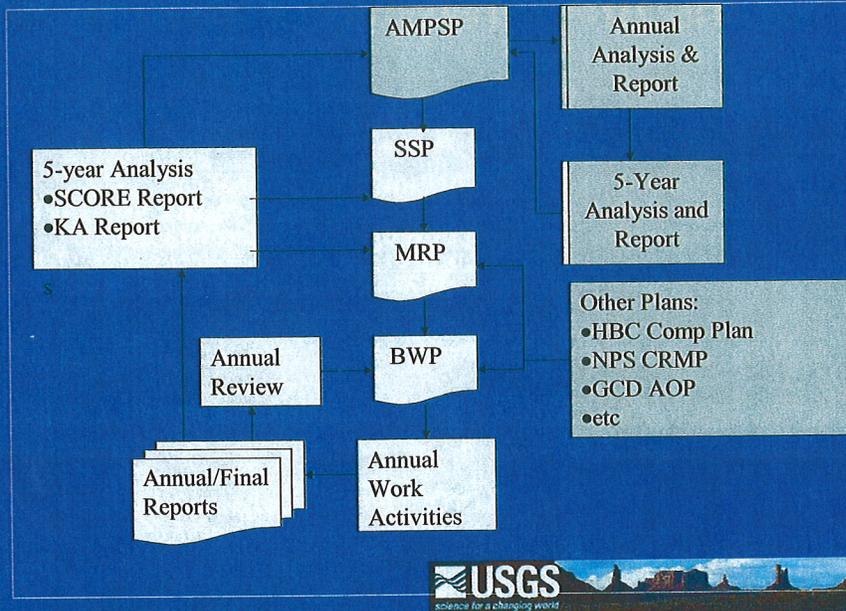


Purpose of MRP

- **Purpose:** describe the scope and objective of a 5-year research and monitoring program to address priority goals, questions, and information needs specified by the AMP.
- Consistent with and implement the GCMRC SSP.
 - Interdisciplinary integrated river science
 - Bridging science and management
 - Addressing priority AMWG goals/questions and associated strategic science questions
 - Addressing critical research and monitoring needs not being addressed by the AMP



Collaborative Science Planning Process



ELEMENTS OF THE MRP

1. Long Term Experimental Element
2. Core Monitoring Element
3. Research and Development

Focus on AMWG Goals/Priorities

1. Why are HBC not thriving, and what can we do about it? How many humpback chub are there and how are they doing?
2. Which cultural resources, including Traditional Cultural Properties (TCPs), are within the Area of Potential Effect (APE), which should we treat, and how do we best protect them? What are the status and trends of cultural resources and what are the agents of deterioration?
3. What is the best flow regime?
4. What is the impact of sediment loss and what should we do about it?
5. What will happen when a TCD is tested or implemented? How should it be operated? Are safeguards needed for management?



Experimental Research Element

- **Experimental Research:** Flow and non-flow experimental treatments and/or management actions designed to improve conditions of target resources and, through monitoring and research, promote an understanding of the relationship between treatments/management actions and target resources.
- Based on hybrid design
 - Experiments
 - Management actions e.g., trout removal
- Still a work in progress
- Experimental Research Fund: \$500k/year up to \$2.5M



Core Monitoring Element

- **Core Monitoring:** Scientifically validated protocols or methods to assess to condition and trend of priority AMP resources
- Based on Provisional Core Monitoring Plan
- Initial focus on “green” projects
- Tribal monitoring to be addressed once needs are better defined
- CM projects will receive first consideration for funding
- Comprehensive review in FY 07 to identify priorities and funding level



Core Monitoring Element (continued)

Schedule for CM Review:

- Downstream surface water discharge and stage (FY 07)
- Downstream quality of water (temp, conductivity, and suspended sediment) (FY 07)
- Status of Lees Ferry rainbow trout (FY 07)
- Status of humpback chub in the Colorado River (FY 08)
- Sand storage monitoring (FY 07)
- Camping beaches monitoring (FY 09)
- Terrestrial Ecosystem Monitoring (FY 07)
- Lake Powell quality of water (FY 09)
- Kanab ambersnail habitat and population monitoring (FY 09)
- Cultural site monitoring (archeological and TCPs) (FY 10)
- Aquatic food base (FY 10-11)



Core Monitoring Evaluation Process

- 1. General Core Monitoring Proposal:**
 - Based on existing planning documents
 - Specify by resource area goals, objectives, scope, schedule, funding level
 - Review/approval by TWG
- 2. Annual TWG Information Needs Workshop:**
 - Scope: monitoring projects that will be evaluated for core monitoring status in a given FY
 - Refine/formulate specific management goals, information needs and project scope
- 3. PEP Review**
 - Expert Panel that defines monitoring protocols and technical specifications consistent with 1 and 2 above
- 4. Core Monitoring Evaluation Report to TWG**
 - Purpose: Provide sufficient info for TWG to evaluate proposed projects for core monitoring status



Core Monitoring Evaluation Report

Report Content

- AMWG Goal
- Project Title
- Principal Investigator (if known)
- Geographic scope
- Justification for monitoring effort
- Project tasks and schedule by task
- Key science questions and manager information needs
- Linkage to other projects/models
- Monitoring protocols including sampling design, data resolution, accuracy, etc
- Products (reports, models, etc)
- Cost by fiscal year

Annual review to incorporate new information, findings or monitoring techniques.

Comprehensive review each 5 years.



Research and Development Element

- **Research and Development:** Research projects aimed at (a) addressing specific hypotheses or information need related to a priority AMP resources and/or (b) developing/ testing new technologies or monitoring procedures
- **Examples:**
 - Food base research
 - PIT tag reading technology
 - Develop downstream temperature model
 - Evaluate NPS archaeological database
- **Driven by SSQ's, CMIN's and RIN's**



INTEGRATED INTERDISCIPLINARY SCIENCE

- Align GCMRC staffing/organization to facilitate integrated interdisciplinary science
- Collaboration with Science Advisors
- Link flow-sediment dynamics to priority AMP resources.
- Enhance the conceptual ecosystem model to identify critical ecosystem interactions and data gaps.
- Recruit a part-time/visiting ecosystem scientist/ ecologist
 - Focused development/application of conceptual and predictive models and DSS



Interdisciplinary TCD Initiative

1. Develop and test water temperature model
2. Synthesize water quality data for Lake Powell and link Lake Powell to the Colorado River quality of water models (funding dependent).
3. Synthesize currently available water temperature data
4. Develop and test a non-native fish management plan.
5. Continue to gather and evaluate baseline fisheries data on the effects of natural warming of river temperatures on the distribution, abundance, and reproductive success of native and non-native fishes
6. Complete genetic management plan and establish a refuge for HBC (FWS lead)
7. Conduct a workshop to develop a comprehensive science plan to address the operation of a TCD



RESEACH AND MONITORING NEEDS NOT BEING ADDRESSED BY THE AMP

- USGS will seek an increase base funding in FY 08/09 to address three critical needs:
 - Little Colorado River Threats
 - Lake Powell Water Quality
 - Effects of Climate Change and Drought on the AMP



Anticipated Annual Funding

- Power Revenues (\$8.1M)
- USGS (\$1M increasing to \$2M in FY 09)
- BOR—Lake Powell (.23M)
- BOR – TCD (unknown)



Goal 12—Quality Program

- GCMRC Staffing and AMP support
- Reporting
- Independent Science Advise and Peer Review
- Bridging Science and Management
 - AMP Effectiveness Action Plan
 - Decision Support System Feasibility Study
- Logistics
- DASA

