

# Report of the Physical Resources Monitoring Peer Review Panel

October 6, 2006

Presentation to GCDAMP Technical Workgroup  
November 9, 2006



# I. Overview

## Design of the Monitoring Program

- panel generally impressed with direction of *GCMRC* physical resources monitoring program
- panel commends individual scientists & program administrators on the degree of communication & collaboration among research teams
- further efforts are necessary, however, to more fully integrate core core monitoring & research efforts
- specifically, fine sediment modeling needs to be better integrated with coarse sediment work & with collection and analysis of field data
- clear articulation of a guiding framework would strengthen collaboration within physical resources program, and coordination among three *GCMRC* programs, & facilitate task of outside reviewers



## Design of the Monitoring Program (cont.)

- encourage bottom-up collaborations among research scientists in three core GCMRC program
- current adaptive management process, with AMWG and TWG prioritizing core monitoring information needs based on group consensus, is cumbersome and likely inhibits setting prioritized goals and making decisions
- need more clearly articulated rationale for prioritizing core monitoring information needs



## II. Specific Charges to the Panel

### Draft statements of work

#### *1) Integrated quality-of-water core monitoring (Topping)*

- statement of work is reasonable
- specific suggestions include greater attention to prioritization; need to distinguish extended baseline monitoring activities from relatively short-term measurements; more focus on bed sediment grain size (bed sediment camera) & Paria inputs (further sensors installed to measure discharge, stage, suspended sediment flux, bed sediment grain size, and bedload sediment flux)

#### *2) Modeling support linked to monitoring (Wright)*

- goals of modeling effort appropriate & reasonable
- need to ensure that modeling program is properly integrated with work of Topping



## II. Specific Charges to the Panel (cont.)

### Draft statements of work

#### *3) Additional specific comments*

- emphasize need for long-term sediment transport model that can be used to demonstrate the potential results of various operational scenarios
- panel recommends that the current 1d Colorado River model be critically reviewed by a small group tasked with recommending further development or re-development of the model



## II. Specific Charges to the Panel (cont.)

Effectiveness of current or proposed sediment core monitoring in meeting identified core information needs & answering strategic science questions

- Need for a comprehensive structured approach: approach can be used to prioritize information needs, define the flow of information that will lead to a desired endpoint of understanding, & to specify the level of detail needed to address driving questions
- e.g. panel uncertain how efforts to model fine sediment dynamics (Wiele) integrate with efforts to model coarse sediment dynamics (Webb)



## II. Specific Charges to the Panel (cont.)

### Effectiveness of current or proposed sediment core monitoring in meeting identified core information needs & answering strategic science questions (cont.)

- Fine sediment modeling: need more effective communication between modelers and field scientists; need prioritization of questions to be addressed in simulations; need to improve treatment of hydraulics within eddies; model must be calibrated; fundamentally, the model needs to provide first-order estimates of the effects of different management scenarios
- Assessing thresholds: scientists need to ask how well they must know the parameters & trends being studied
- Core monitoring & analysis: panel suggests that monitoring, applied studies, & modeling all be referred to as core monitoring and analysis



## II. Specific Charges to the Panel (cont.)

### Effectiveness of current or proposed sediment core monitoring in meeting identified core information needs & answering strategic science questions (cont.)

- Experimental flows: experimental flow releases remain critical to the core monitoring & analysis program
- Sediment monitoring strategies: 3 complementary but potentially redundant approaches possible for sediment monitoring - panel recommends combination of approaches that continues annual & event-based ground monitoring of sand bars, & continuing development of the sediment mass balance for the river ecosystem; also essential to continue funding existing research efforts for sufficient period of time to allow scientists to analyze their data



## II. Specific Charges to the Panel (cont.)

### Potential for integration of sediment core monitoring protocols with other related program activities

Degree of integration among 3 core GCMRC programs has improved since 1999, but more effective integration requires

- establish common frames of reference that facilitate discussion of effects of changing flow & sediment regimes (e.g. stage/discharge)
- evaluate trade-offs among different resources as a function of differing flow regimes
- scientists in other programs identify physical parameters that are central to their understanding of the river ecosystem
- joint annual research symposia & river trips



# III. Summary

- panel commends physical resources program director & contributing scientists for progress made with respect to core monitoring and analysis since 1999 program review
- panel stresses need for more experimental flow releases in order to assess the adequacy of models
- panel emphasizes need for (i) clear articulation of structured approach that guides core monitoring & analysis efforts, (ii) closer integration within physical resources program between modeling & applied studies, (iii) integration of frequent experimental releases into core monitoring & analysis, and (iv) development of a common frame of reference & discussion of trade-offs among differing resources

