

**Glen Canyon Dam Adaptive Management Work Group**  
**Agenda Item Information**  
**December 5-6, 2006**

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Agenda Item

Science Advisors' Annual Report

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Action Requested

- √ Motion requested: motion language as follows:  
The Science Advisors request approval of their FY 2007-08 Review and Advisory Services Program as follows. TWG did not have time to act on this proposed motion.

Requested Budget Level

The GCMRC proposed budget for the SA programs in FY 2007 is \$185,000. (This is consistent with the budget recommendation made by AMWG in September 2006.)

FY2007 Formal Reviews:

- HBC Comprehensive Plan
- HBC Genetics Plan
- GCMRC/GCD AMP Core Monitoring Procedures and Program
- FY 2008/2009 GCD AMP Biannual Work Plans and Budgets
- Risk Assessment of MRP (Experimental Options)
- GCMRC Conceptual Ecosystem Model

FY2007 Advisory Services:

- SA Assessment of overall GCD AMP Effectiveness
- SA Executive Secretary facilitation, coordination, advisory service to GCMRC, AMWG or TWG as defined
- SA Executive Secretary and SAs advisory services to GCMRC, TWG, GCD AMP Ad Hoc on science program implementation, i.e., PEP panels, management/science guidelines etc.
- SAs and Executive Secretary facilitation and development activities on new GCMRC Ecosystem Science Program development, biometrics, and risk assessments reviews, etc.

FY2008 Formal Reviews

- GCD AMP RBT Control Project Evaluation
- GCMRC/GCD AMP Revised Core Monitoring Program Review; FY 2008
- GCD AMP Management Guidelines Review
- GCMRC/GCD AMP Biannual Work Plan and Budget; FY 2009-2010

FY2007 Advisory Services

- Executive Secretary and SA Advisory Service to AMWG, GCMRC, TWG, and GCD AMP Ad Hoc Groups on Science and Management Program Implementation

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Presenter

Dave Garrett, Executive Director, Science Advisors

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Previous Action Taken

√ By AMWG:

AMWG approved the following motion by consensus at its August 2004 meeting:

MOTION: Adopt the amendment to the Science Advisors' Operating Protocol as presented.

This amendment reads, in part, "Annually the AMWG will, in its budget meeting, review, update and assign a set of 24-month review tasks and advisory activities for the Science Advisors. . . . The Science Advisors or Executive Secretary are to present to the Secretary's Designee, AMWG Chair, GCMRC Chief and TWG Chair 30 days prior to the AMWG budget meeting a verbal and written annual report of accomplishments including specific documentation of all formal activities of the Advisors, including meetings, GCD AMP recommendations, draft and final reports, and GCD AMP related presentations."

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Relevant Science

√ N/A

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Background Information

The following pages contain the final version of the Science Advisors' Annual Report, including accomplishments and planned activities for the next 24-month period, as recommended by the TWG. Also attached is the PowerPoint presentation that Dave Garrett will make at the AMWG meeting.

**M3 RESEARCH**

L. David & Pamela Garrett, Principals  
53716 Falcon Rd  
Olathe, CO 81425  
970-323-9511 (Ph)  
970-323-9512 (Fax)  
E-Mail: m3research@aol.com

TO: Dr. Kurt Dongoske, TWG Chair  
FROM: L.D. Garrett, SA Executive Secretary  
DATE: October 24, 2006  
SUBJECT: Annual Report: FY 2006 Science Advisor Accomplishments and Proposed FY 2007/2008 GCD AMP Science Advisor Review and Advisory Service Program

**ANNUAL REPORT:  
FY 2006 SCIENCE ADVISOR  
ACCOMPLISHMENTS and  
PROPOSED FY 2007/2008  
SCIENCE ADVISOR REVIEW and  
ADVISORY SERVICE PROGRAM**

A Fy 2004 amendment to Science Advisor protocol requires an annual report to AMWG of current year accomplishments of SA review and advisory services programs and proposed review and advisory service program for the SAs for the next two years. Fy 2007 is the third year in which the GCD AMP SAs have had their two year program of reviews and advisory services approved by AMWG. Services for the 2007-2008 period may include annual adjustments due to current dynamics in the programs.

**FY 2006 SCIENCE ADVISOR ACCOMPLISHMENTS****Science Advisor Replacements**

Two Science Advisors positions were open from 2005, and three SAs resigned in 2006 at the end of their appointment period. A proposal by GCMRC to AMWG to reduce the Science Advisor group from 10 to 8 was accepted, and three of the five open positions were refilled. Dr. Harold Tyus, fish/aquatic ecologist from UC Boulder; Dr. Don Fowler, anthropologist from UN Reno, and Dr. Ellen Wohl, geomorphologist from CSU were appointed by the GCMRC Chief as Science Advisor replacements. All three specialists are currently working with existing SAs on review projects.

**Continuing SA Appointments are:**

Jill Baron, Plant Ecologist, USGS/CSU

Virginia Dale, Systems Specialist, TVA

Lance Gunderson, Adaptive Management Specialist, Emory College

Jim Kitchell, Fish Ecologist, Univ of Wisconsin



Dale Robertson. Limnologist, USGS

### **AMP Document Reviews**

The SAs produced the following reviews of documents in 2006:

- Knowledge Assessment Report (KAR)
- Section of SCORE Report
- Draft HBCC
- Strategic Science Plan (2)
- Monitoring and Research Plan (2)
- FY 2007 Annual Work Plan and Budget
- Hydropower Economic Statement of Work Review
- Biophysical/Socio-Cultural Statement of Work Review

### **Selected general and specific recommendations of the Science Advisors from various reviews are as follows:**

- Incorporate ecosystem paradigm into more elements of research and monitoring program
- Focus on most critical management resource concerns
- Implement aggressive HBC program of research, monitoring and management actions
- Redirect aquatic food base program
- Focus new food base program toward key higher trophic resources
- Direct science program with strategic and operational science questions
- Determine how to integrate management actions into ongoing science/monitoring programs

### **Science Advisory Services of SAs**

The SAs and specifically the SA Executive Secretary agreed to significantly increased contributions of advisory services to the AMP in 2006-2008 to insure support to planning process needs in science and management. This has involved contributions in the following areas.

- A Science Planning Group to develop AMP science plans; i.e., SSP, MRP, AWP and Budget
- SPG to develop experimental options
- Review and advisory service to TWG and GCMRC
- Advisory service to Task Team for Experimental Options Assessment

### **Resource Requirements**

The annual budget requirements of the Science Advisor program, including THE

Executive Secretary is normally between \$170,000 and \$190,000. In 2006 the Science Advisors program required an additional \$109,000 to conduct the Science Planning Group (SPG) programs for completion of the SSP, MRP, FY 2007 AWP and Budget and the Long Term Experimental Options. The special SPG program was requested by the Secretary Designee and the prospectus and budget for the program was proposed to AMWG and approved in August 2005.

The FY 2007 and FY 2008 budget for the Science Advisor program has been reduced to previous levels of between \$170,000 and \$190,000.

### **PROPOSED FY 2007/2008 SA PROGRAM**

The GCD AMP Science Advisor program will change significantly from Fy 2006 to Fy 2008 in several ways. Even though the SA program was established to provide both review and advisory services, up to Fy 2006 it focused primarily on review of planning documents. The SAs and Executive Secretary presented only at AMWG meetings and provided only minor advisory services. For the period Fy 2006-2007, the SA program was requested by AMWG, GCMRC and TWG to provide increased formal reviews and much broader advisory service support as follows:

- The Executive Secretary is to engage, be involved with, and support GCMRC, TWG and GCD AMP Ad Hoc groups more through meetings, conference calls, calls and e-mail advisory service.
- The SAs and Executive Secretary agreed to facilitate and coordinate development of all GCD AMP science planning documents through the period 2006, and beyond as revision is needed. The assignment includes facilitation, coordination and development work by the Executive Secretary with GCMRC, TWG, and AMWG, and multiple reviews of draft plans by the SAs. Only work on experimental options remains of this advisory service.
- The SAs and Executive Secretary are to complete a review of GCD AMP over the period ending 12/06.
- The SAs primary role in 2007 will be to provide leadership with GCMRC in development of a new ecosystem science direction for GCD AMP, including workshops, document drafting, reviews, etc.
- The SAs agree to continue complete formal reviews of GCD AMP science and technical planning documents, which normally average 4-8 documents per year.

### **FY 2007 SA Review and Advisory Services Program**

#### **Formal Reviews**

- HBC Comprehensive Plan
- HBC Genetics Plan
- GCMRC/GCD AMP Core Monitoring Procedures and Program
- FY 2008/2009 GCD AMP Biannual Work Plans and Budgets
- Risk Assessment of MRP (Experimental Options)
- GCMRC Conceptual Ecosystem Model

#### **Advisory Services**

- SA Assessment of overall GCD AMP Effectiveness
- SA Executive Secretary facilitation, coordination, advisory service to GCMRC, AMWG or TWG as defined
- SA Executive Secretary and SAs advisory services to GCMRC, TWG, GCD AMP Ad Hoc on science program implementation, i.e., PEP panels, management/science guidelines etc.
- SAs and Executive Secretary facilitation and development activities on new GCMRC Ecosystem Science Program development, biometrics, and risk assessments reviews, etc.

#### **FY 2008 SA Review and Advisory Services Program**

##### **Formal Reviews**

- GCD AMP RBT Control Project Evaluation
- GCMRC/GCD AMP Revised Core Monitoring Program Review; Fy 2008
- GCD AMP Management Guidelines Review
- GCMRC/GCD AMP Biannual Work Plan and Budget; Fy 2009-2010

##### **Advisory Services**

- Executive Secretary and SA Advisory Service to AMWG, GCMRC, TWG, and GCD AMP Ad Hoc Groups on Science and Management Program Implementation

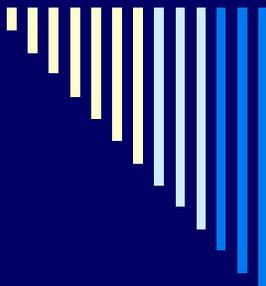
##### **Requested Budget Level**

The GCMRC proposed budget for the SA programs in FY 2007 is \$185,000.00.

SCIENCE ADVISORS REPORT ON  
ACCOMPLISHMENTS AND PROPOSED FY 2007  
AND FY 2008 PROGRAM

L. DAVID GARRETT  
EXECUTIVE SECRETARY,  
SCIENCE ADVISORS

PHOENIX, AZ  
TWG FALL MEETING  
NOVEMBER 8-9, 2006



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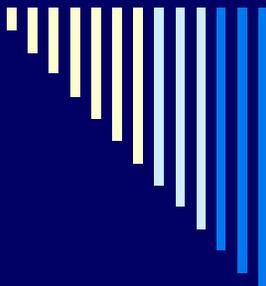
# GENERAL NEEDS FOR SA SERVICE TO GCD AMP

- ❑ PAST CONCERN THAT COMPREHENSIVE INDEPENDENT REVIEWS (I.E. NRC), ALTHOUGH GOOD, DID NOT PROVIDE MORE RAPID WORKABLE RECOMMENDATIONS TO INVOKE CHANGE
- ❑ GCD AMP WANTED RIGEROUS INDEPENDENT REVIEW, WORKABLE RECOMMENDATIONS, AND ADVISORY SERVICE IN REAL TIME

# GCD AMP SCIENCE ADVISORS

## GENERAL CHARGE: REVIEW

- MONITORING AND RESEARCH ASSESSMENTS; SYNTHESIS; PLANS
- RFP PROCESS
- PROTOCOLS
- STRATEGIC, OPERATIONAL AND ANNUAL PLANS
- PROPOSED NEW SCIENCE PROGRAMS
- BUDGET PROPOSALS
- SCIENTIFIC AND TECHNICAL REVIEWS OR ADVISORY SERVICE REQUESTED BY GCD AMP
  
- **WILL NOT EVALUATE PUBLIC POLICY DECISIONS OR LEGAL COMPLIANCE OF GCD AMP**



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# FY 2005/2006 GENERAL ANNUAL OPERATION REQUIREMENTS

## **SCIENCE ADVISORS**

- ❑ 15-20 DAYS OF EACH SAs TIME
- ❑ 3-4 REVIEW MEETINGS; CONFERENCE CALLS
- ❑ 4-8 PLANS REVIEWED
- ❑ ADVISORY SERVICE

## **EXECUTIVE SECRETARY**

- ❑ 60-80 DAYS OF EXECUTIVE SECRETARY'S TIME
- ❑ 3-4 SAs REVIEW MEETINGS, CONFERENCE CALLS
- ❑ 8-12 GCMRC/AMWG/TWG OR AD HOC MEETINGS
- ❑ DOES NOT INCLUDE 2006 SPG

# SCIENCE ADVISOR GROUP

## 2006-2009

- FISH ECOLOGIST – Dr. JIM KITCHELL, UW
- AQUATIC ECOLOGIST – Dr. HAROLD TYUS, UC
- LIMNOLOGIST – Dr. DALE ROBERTSON – USGS/UW
- ANTHROPOLOGIST – Dr. DON FOWLER, UNR
- ADAPTIVE MANAGEMENT SPECIALIST – Dr. LANCE GUNDERSON, EMORY
- SYSTEM SPECIALIST – Dr. VIRGINIA DALE,
- TERRESTRIAL ECOLOGIST – Dr. JILL BARON, USGS
- GEOMORPHOLOGIST – Dr. ELLEN WOHL, CSU
- ECONOMIST – Dr. L.D. GARRETT, EXECUTIVE SECRETARY, NAU/M3 RESEARCH

# SCIENCE ADVISORS OPERATING PROTOCOL

- ANNUALLY REPORT ACCOMPLISHMENTS TO AMWG ON PAST REVIEWS
- PRESENT TO AMWG FOR APPROVAL FUTURE REVIEW PROPOSALS

# FY 2006 REVIEWS

- STRATEGIC SCIENCE PLAN DEVELOPMENT AND REVIEW
- MONITORING AND RESEARCH PLAN DEVELOPMENT AND REVIEW
- 2007 WORK PLAN AND BUDGET
- LONG-TERM EXPERIMENTAL PLAN DEVELOPMENT AND REVIEW
- KNOWLEDGE ASSESSMENT REPORT (KAR)
- HBCCP
- HYDROPOWER ECONOMIC ASSESSMENT STATEMENT OF WORK
- BIOPHYSICAL SOCIO-CULTURAL ASSESSMENT STATEMENT OF WORK

# SA SCIENCE RECOMMENDATIONS

- INCORPORATE ECOSYSTEM PARADIGM INTO MORE ELEMENTS OF RESEARCH AND MONITORING PROGRAM
- FOCUS ON MOST CRITICAL MANAGEMENT RESOURCE CONCERNS
- IMPLEMENT AGGRESSIVE HBC PROGRAM OF RESEARCH, MONITORING AND MANAGEMENT ACTIONS

# SA SCIENCE RECOMMENDATIONS

- FOCUS NEW FOOD BASE PROGRAM TOWARD KEY HIGHER TROPHIC RESOURCES
- DIRECT SCIENCE PROGRAM WITH STRATEGIC AND OPERATION SCIENCE QUESTIONS
- DETERMINE HOW TO INTEGRATE MANAGEMENT ACTIONS INTO ONGOING SCIENCE/MONITORING PROGRAMS

# SELECTED SA SCIENCE RECOMMENDATIONS

- ENHANCE PAST CONCEPTUAL MODELING EFFORT WITH NEW DATA TO IMPROVE RESEARCH PLANNING
- UTILIZE INDEPTH KNOWLEDGE ASSESSMENTS AND MODELING TO EVALUATE ALTERNATIVES TO SOME MONITORING
- AGGRESSIVELY PURSUE RESEARCH AND EXPERIMENTATION ON EFFECTS OF ELEVATED TEMPERATURES I.E.NATURAL WARMING/TCD

# CHANGING THE SA PROGRAM FOR FY 2005-2010

- SAs INCREASED CONTRIBUTIONS IN ADVISORY CAPACITY (SPG/ECOSYSTEMS/AM)
- REALIGNMENT SCIENCE ADVISORS (10-8 AND CHANGE DISCIPLINE)
- MORE FOCUSED REVIEW STRATEGY
- PURSUE METHODOLOGY TO INCREASE SCIENCE/MANAGEMENT EFFECTIVENESS (AM)

# FY 2007 SA REVIEW AND ADVISORY SERVICES PROGRAM

## FORMAL REVIEWS

- HBC COMPREHENSIVE PLAN
- HBC GENETICS PLAN
- GCMRC/GCD AMP CORE MONITORING PROCEDURES AND PROGRAM
- FY 2008/2009 GCD AMP BIENNIAL WORK PLAN AND BUDGETS
- RISK ASSESSMENT OF GCMRC MRP (with experimental options)
- GCMRC CONCEPTUAL ECOSYSTEM MODEL

# FY 2007 SA REVIEW AND ADVISORY SERVICES PROGRAM

## ADVISORY SERVICES

- SA ASSESSMENTS OF OVERALL GCD AMP. EFFECTIVENESS EVALUATIONS OF GCMRC, TWG, AD HOC, AMWG, ETC.
- SA EXECUTIVE SECRETARY FACILITATION, COORDINATION, DEVELOPMENT ACTIVITIES ON ADVISORY SERVICE TO GCMRC, AMWG OR TWG AS DEFINED
- SA EXECUTIVE SECRETARY AND SAs ADVISORY SERVICES TO GCMRC, TWG, GCD AMP AD HOC ON SCIENCE PROGRAM IMPLEMENTATION, I.E., PEP PANELS, MANAGEMENT/SCIENCE GUIDELINES
- SAs AND EXECUTIVE SECRETARY FACILITATION AND DEVELOPMENT ACTIVITIES ON NEW GCMRC ECOSYSTEM SCIENCE PROGRAM DEVELOPMENT, BIOMETRICS, AND RISK ASSESSMENTS

# FY 2008 SA REVIEW AND ADVISORY SERVICES PROGRAM

## FORMAL REVIEWS

- GCD AMP RBT REMOVAL PROJECT EVALUATION
- GCMRC/GCD AMP REVISED CORE MONITORING PROGRAM; FY 2008
- GCD AMP MANAGEMENT GUIDELINES
- GCMRC/GCD AMP BIENNIAL WORK PLAN AND BUDGET; FY 2009-2010

# FY 2008 SA REVIEW AND ADVISORY SERVICES PROGRAM

## ADVISORY SERVICES

- EXECUTIVE SECRETARY AND SA  
ADVISORY SERVICE TO AMWG, GCMRC,  
TWG AND GCD AMP AD HOC GROUPS  
ON SCIENCE AND MANAGEMENT  
PROGRAM IMPLEMENTATION