

# Technical Work Group Chair Report

Adaptive Management Work Group Meeting

February 15, 2018

Seth Shanahan

TWG Chairperson

# Meetings

- Past

- October 12, 2017 webinar
- January 25, 2018 webinar “marathon”

- Future

- April 23-24, 2018 in Phoenix, Arizona
- June 21-22 or 25-26, 2018 in Phoenix, Arizona



# Items Reported Elsewhere on AMWG Agenda

- Brown trout workshop
- Hydrology and operations
- Rainbow trout stocking in Lees Ferry
- Expanded non-native aquatic species management plan EA
- Science Advisors Program update
- Possible LTEMP experiments

**GLEN CANYON DAM ADAPTIVE MANAGEMENT PROGRAM**  
**ADAPTIVE MANAGEMENT WORK GROUP MEETING, FEBRUARY 14-15, 2018**  
 Crowne Plaza Phoenix Airport Hotel, 4300 E. Washington Street, Phoenix, AZ 85034  
 602-273-7778, 855-729-6011  
 Meeting Room: Wren 1, 2, 3

Teleconference and Webinar Information: 877-913-4721, passcode 3330168

Thursday Webinar Link: <https://ucbor-events.webex.com/ucbor-events/onstage/g.php?MTID=e761d39d5de4c23c6b41a97a8c5656274>

## DRAFT AGENDA

START TIME <sup>1</sup> (Duration)	Thursday, February 15, 2018 Topic, Presenter, and Purpose <sup>2</sup>
8:30 (:15)	<b>Welcome and Administrative:</b> Brent Rhees, Secretary's Designee Alternate <ul style="list-style-type: none"> <li>▪ Introductions and Determination of Quorum (15 members)</li> </ul>
8:45 (1:00)	<b>DOI Invasive Species Initiative:</b> Hilary Smith, Senior Advisor for Invasive Species, Department of the Interior; Jolene Trujillo, Invasive Species/Integrated Pest Management Coordinator, Bureau of Reclamation; John Wullschlegler, Fish Program Lead, National Park Service; Diane Waller, Research Fisheries Biologist, US Geological Survey; and Sherri Pucherelli, Biologist, Bureau of Reclamation <ul style="list-style-type: none"> <li>▪ Presentation (45 minutes)</li> <li>▪ Q&amp;A, discussion (15 minutes)</li> </ul> <p><u>Agenda item type:</u> Information item</p> <p><u>Purpose:</u> To provide an overview of the report, <a href="#">Safeguarding the West from Invasive Species: Actions to Strengthen Federal, State, and Tribal Coordination to Address Invasive Mussels</a>, and describe progress on implementation since the report was announced in June 2017. The presentation also will include information about watercraft inspection and decontamination programs and current research on detection and control techniques. Please see the <a href="#">June 2017 press release</a> for additional context.</p>
9:45 (:15)	<b>B R E A K</b>
10:00 (:35)	<b>Report and status update on NPS' EA: "Expanded Non-native Aquatic Species Management Plan in Glen Canyon National Recreation Area and Grand Canyon National Park below Glen Canyon Dam":</b> Rob Billerbeck, Colorado River Coordinator, National Park Service <ul style="list-style-type: none"> <li>▪ Presentation (25 minutes)</li> <li>▪ Q&amp;A, discussion (10 minutes)</li> </ul> <p><u>Agenda item type:</u> Information item</p> <p><u>Purpose:</u> To provide an update on the status of this Environmental Assessment.</p>

# Development of Monitoring Metrics

- LTEMP ROD § 6.1.c
  - “The DOI, in consultation with the AMWG, will develop monitoring metrics for the goals and objectives using those in Appendix C of the FEIS as a starting point.”
- TWG Operating Procedures
  - “Standing responsibilities of the TWG...is to consult with GCMRC in developing criteria and standards for monitoring and research programs...”

# Development of Monitoring Metrics

**Table 1.** Summary of the 18 performance metrics used in the decision analysis. From LTEMP Appendix C

[The range for each performance metric captures the amount of variability in the metric because of the effects of the different alternatives, the hydrological and sediment traces, and structural and parametric uncertainty. The range shown was used in the swing-weighting elicitation. HBC, humpback chub; RBT, rainbow trout; #, number; >, greater than]

Number	Resource goal	Performance metric	Units	Desired direction	Range
1	Humpback chub	Minimum number of adult HBC	# adults	Increase	3,000–8,500
2		HBC temperature suitability	Index (0–1)	Increase	0.0–0.2
3	RBT fishery	RBT catch rate	Fish/angler-hour	Increase	1.0–5.0
4		RBT emigration rate	Trout/year	Decrease	15,000–125,000
5		Abundance of high-quality RBT	# fish > 16 inches	Increase	400–1,200
6	Archaeological and cultural resources	Wind transport of sediment index	Index (0–1)	Increase	0.0–0.5
7		Glen Canyon flow index	Days/year	Decrease	0–75
8		Time-off-river index	Index (0–1)	Increase	0.60–0.95
9	Hydropower and energy	Hydropower generation	Million \$/year	Increase	120–200
10		Hydropower capacity	Million \$/year	Increase	10–50
11	Recreation	Camping area index	Index (0–1)	Increase	0.0–0.5
12		Fluctuation index	Index (0–1)	Increase	0.0–1.0
13		Rafting use index	Visitor-days/year	Decrease	0–1,300
14	Riparian vegetation	Riparian vegetation index	Sum of ratios	Increase	2.0–6.0
15	Sediment	Sand load index	Proportion (0–1)	Increase	0.0–0.6
16	Tribal resources	Marsh vegetation ratio	Ratio	Increase	0.0–1.5
17		Mechanical removal	Years (out of 20)	Decrease	0–5
18		Trout management flows	Years (out of 20)	Decrease	0–20

# Development of Monitoring Metrics

- Next steps
  - TWG members to outreach to their AMWG rep.
  - Reclamation to develop process to complete

# Cultural Resources

- Programmatic Agreement summary provided
- Disbanded the Cultural Resources Ad Hoc Group
- Reclamation (Bill Chada) to be responsible for providing information to TWG

# GCMRC's Water Quality Science Review Panel

- The purpose is
  - “...to evaluate past studies of reservoir physical limnology and ecology<sup>1</sup>...”
  - and “...make recommendations...on how reservoir limnology and ecology ought to be monitored in the future and...how existing and new modelling tools could be used to predict future conditions in Lake Powell.<sup>1</sup>”

<sup>1</sup> p. 56 of GCDAMP Triennial Budget and Work Plan - Fiscal Years 2015-2017



# GCMRC's Water Quality Science Review Panel

## GCMRC Water-Quality Review Agenda

October 24 - October 26 2017

Page Community Center

Page City Police Department

808 Coppermine Rd., Page, AZ 86046

Audio Bridge: dial 855-647-8255 inside DOI and 703-648-4848 outside DOI, code: 33156

\*Web-Ex: <https://usqs.webex.com/usqs/j.php?MTID=mdecdeba85e717793910462f3cea7732>

### Tuesday, October 24

\*8:00 – 8:15 AM – Welcome and introductions

\*8:15 – 8:30 AM – Outline of GCMRC water-quality program (Moran)

\*8:30 – 9:00 AM – BOR water-quality work on Lake Powell (Radtke)

\*9:00 – 9:15 AM – Utah DEQ monitoring, assessment & TMDL programs (Allred)

\*9:15 – 9:30 AM – Questions and Discussion

9:30 AM – 12:00 PM – Field trip to Lake Powell Wahweap station - demonstration

12:00 – 1:30 PM – Lunch on your own

\*1:30 – 2:00 PM – Lake Powell water-quality modeling (Williams/Radtke)

\*2:00 – 2:30 PM – Potential ecological effects on water-quality in Lake Powell (Anderson)

\*2:30 – 3:00 PM – Lake Mead water quality effects from Glen Canyon Dam releases (Tietjen)

3:00 – 3:15 PM – Break

\*3:15 – 3:45 PM – Linkages between Lake Powell and Ecosystem Ecology in the Colorado River (Yackulic)

\*3:45 – 4:15 PM – Phosphorus budget in Lake Powell and the Colorado River (Deemer)

\*4:15 – 5:00 PM – Questions and discussion

### Wednesday, October 25

\*8:30 – 9:00 AM – Presentation on Glen Canyon Dam Operations & Eco-Flows (Kennedy)

\*9:00 – 9:30 AM – Questions and Discussion

9:30 – 10:00 AM – Travel to Glen Canyon Dam visitor center

10:00 AM – 12:00 PM – Glen Canyon Dam tour

12:00 – 4:00 PM – Blue boat tour from Glen Canyon Dam to Lees Ferry (includes lunch)

### Thursday, October 26

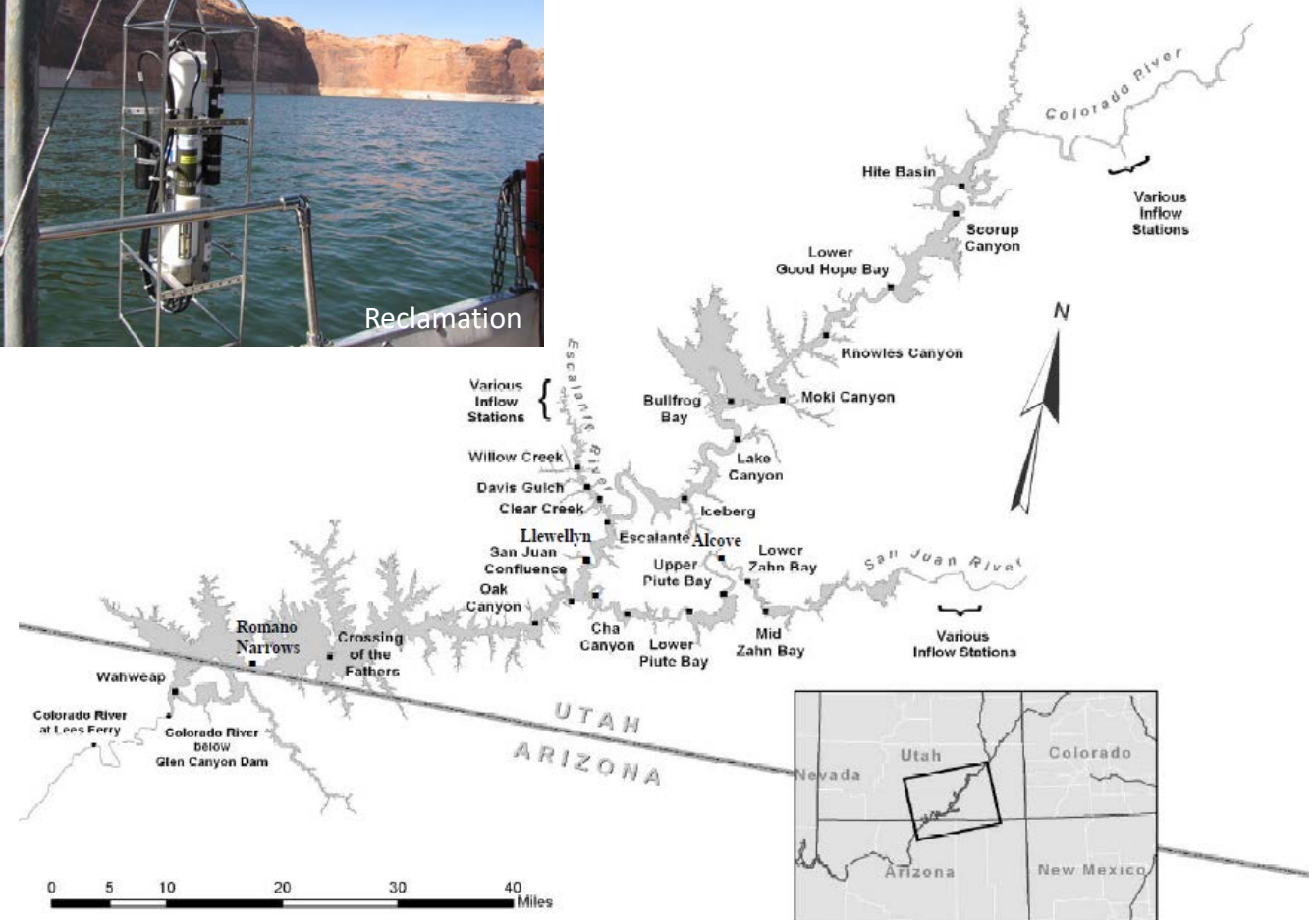
\*8:30 – 9:15 AM – Summary of key questions to be addressed in this review (Moran)

\*9:15 – 11:30 AM – Discussion of questions and potential solutions

11:30 AM – 1:00 PM – Lunch on your own

1:00 – 4:00 PM – Panel discussion (panel members Hamilton, Stets, Tietjen, Strook, and Holdren only)

4:00 PM – Adjourn



Reclamation

# FY17 Budget Reporting

- Reclamation and GCMRC will provide fiscal year reporting of expenditures and carry over to TWG and AMWG
  - § 3.5 of the AMWG-approved budget process (dated May 6, 2010)
  - § 2.4 of the budget process pending AMWG approval (dated October 19, 2016)

## GCDAMP Budget FY 15-17

### GCDAMP Budget - Power Revenues

FY 15 = \$10,755,000 (1.7% CPI)

Reclamation = \$2,083,000

GCMRC = \$8,672,000

FY 16 = \$10,755,000 (0% CPI)

Reclamation = \$2,083,000

GCMRC = \$8,672,000

**FY 17 = \$10,916,000 (1.5% CPI)**

**Reclamation = \$2,110,000**

**GCMRC = \$8,806,000**

\* Values rounded to nearest \$1,000

# Reclamation's FY17 Budget Reporting

## Totals

### Reclamation - Adaptive Management Program Budget Summary FY2017

*Includes labor and contract data through end of Sep 2017*

**Total Reclamation Budget FY17: \$2,110,000**

	Category	FY17 Budget (1.5% CPI)	FY17 Expenditures	Difference
A	Adaptive Management Work Group	\$ 377,620	\$ 331,154	\$ 46,466
B	Technical Working Group	\$ 171,833	\$ 126,419	\$ 45,414
C	Reclamation Administration	\$ 794,791	\$ 361,636	\$ 433,155
D	Cultural Resources	\$ 764,487	\$ 568,182	\$ 196,305
	<b>Total (Reclamation Only)</b>	<b>\$ 2,108,731</b>	<b>\$ 1,387,391</b>	<b>\$ 721,340</b>

## GCDAMP Budget FY 15-17

### Native Fish Conservation Contingency Fund

“The goal of this budget item is to ensure that funds are available for nonnative fish control in the event this conservation action is needed for endangered humpback chub.”

FY 15 = \$ 698,000 → \$ 808,000

FY 16 = \$ 808,000 → \$1,095,000

FY 17 = \$1,095,000 → ~ \$1,600,000\*

\* needs confirmation from power office, totals on BT workshop expenditures, etc

# GCMRC's FY17 Budget Reporting

## Budget Summary—AMP Total (without Lake Powell Agreement)

AMP Total (without Lake Powell Agreement)							
Total	Salaries	Travel & Training	Operating Expenses	Cooperative Agreements	To other USGS Centers	Burden 12.074%	Total
Budgeted Amount	\$4,415,700	\$124,900	\$1,310,000	\$1,796,800	\$632,800	\$760,305	\$9,040,505
Actual Spent	\$4,347,956	\$130,098	\$1,766,336	\$2,014,725	\$535,413	\$814,389	\$9,608,917
(Over)/Under Budget	\$67,744	(\$5,198)	(\$456,336)	(\$217,925)	\$97,387	(\$54,084)	(\$568,412)
FY16 Carryover	\$1,103,755		CPI Adjust	(\$61,480)		FY17 Carryover	\$483,114
<b>COMMENTS</b> <i>(Discuss anomalies in the budget; expected changes; anticipated carryover; etc.)</i>							
- FY17 Carryover will be used to meet the shortfall identified in the FY18 budget as well as unanticipated costs including salary, equipment replacement and to support completion of outstanding tasks from the FY15-17 work plan.							

- Not presented at TWG but presented here for informational purposes only
- Found on p. 122 of GCMRC's Fiscal Year 2017 Annual Project Report (emailed to TWG and AMWG on December 20, 2017)

# BO Conservation Measures

## Incidental Take Parameters and Action Triggers: TIER 1 – Early Intervention

	TRIGGER	2015	2016	2017
1A. Combined adult Humpback Chub (HBC) mainstem Little Colorado River (LCR) aggregation and juvenile HBC in LCR	$\leq 9000$	$> 9,000^1$	$> 9,000^1$	ND*
OR				
1B. Recruitment of sub-adult HBC does not equal or exceed estimated adult mortality				
Sub-adult in spring estimates	$\leq 1,250$ for 3 years	921 <sup>2</sup>	749 <sup>2</sup>	3,146 <sup>2</sup>
OR				
Sub-adult in mainstem in Juvenile Chub Monitoring (JCM) Reach	$\leq 810$ for 3 years	ND*	ND*	ND*



<sup>1</sup> USGS, preliminary data, do not cite

<sup>2</sup> USFWS, preliminary data, do not cite

\* Not determined, results forthcoming



## Incidental Take Parameters and Action Triggers: TIER 2 – Mechanical Removal

	TRIGGER	2015	2016	2017
	HBC decline to $< 7,000$	N/A	N/A	N/A
Terminate mechanical removal	Predator index is 60 rainbow trout (RBT)/km	-	-	-
	Immigration rate	-	-	-
OR				
HBC population estimates	Exceeds 7,500	-	-	-
Survival rates of sub-adult chub	Exceeds adult mortality for at least 2 years	-	-	-



# Topics for Future Meetings

- Consideration of potential changes to the Triennial Work Plan – Year 2
- Potential 2018 experiments
- Spring HFE planning
- Proposed rainbow trout stocking
- Life taken in the Canyons
- TCD feasibility study update
- Climate change effects on flow
- Non-market value studies (University of Oklahoma)