

U.S. Department of the Interior  
Bureau of Reclamation  
Upper Colorado Basin Region



# Glen Canyon Dam Adaptive Management Program

## Glen Canyon Dam Adaptive Management Work Group Meeting

**Wednesday, February 28, 2024**  
**9:30 a.m. – 5:30 p.m. MST**

**Thursday, February 29, 2024**  
**8:30 a.m. – 4:00 p.m. MST**

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Administrative Items

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## Meeting Packet Order

<b>Tabs</b>	<b>Documents</b>
	Packet Cover/Meeting Information
<b>Administrative Items</b>	<ul style="list-style-type: none"> <li>• Meeting Packet Order</li> <li>• Federal Register Notice</li> <li>• WebEx Participant Information</li> <li>• AMWG Ground Rules</li> </ul>
<b>AMWG Supporting Documents</b>	<ul style="list-style-type: none"> <li>• AMWG &amp; TWG Committee Membership List</li> <li>• AMWG Charter 2023</li> </ul>
<b>Draft Agenda</b>	<ul style="list-style-type: none"> <li>• Agenda for February 28-29 Meeting</li> </ul>
<b>Draft Minutes &amp; Action Items</b>	<ul style="list-style-type: none"> <li>• Minutes link from August Meeting</li> <li>• Action Item Tracking Report</li> </ul>
<b>Supplemental Materials</b>	<ul style="list-style-type: none"> <li>• Potential GCDAMP &amp; Other Meetings in 2024</li> <li>• GCDAMP Workplan Process Direction - Pullan</li> <li>• Work Plan Recommendations</li> <li>• TWP Process Document</li> <li>• LTEMP ROD Table 4 – Experimental Treatments</li> </ul>

Federal Register Notice:

<https://www.federalregister.gov/documents/2024/01/25/2024-01384/public-meeting-of-the-glen-canyon-dam-adaptive-management-work-group>

For more information, please see <https://www.usbr.gov/uc/progact/amp/amwg.html>

## Participant WebEx Information

Topic: AMWG – Day 1

Date/Time: **Wednesday, February 28, 2024 – 9:30 am, Mountain Standard Time**

Event Number: 2764 950 7827

Event Password: AMP28

Event Address:

<https://rec.webex.com/rec/j.php?MTID=ma0fe40fdac47cd7320a08ec42e37fce1>

Phone #: 415-527-5035



Topic: AMWG – Day 2

Date/Time: **Thursday, February 29, 2024 – 8:30 am, Mountain Standard Time**

Event Number: 2763 074 1381

Event Password: AMP29

Event Address:

<https://rec.webex.com/rec/j.php?MTID=m3269f42e176cf9a4fa9fe53881e3a0ee>

Phone #: 415-527-5035

# Glen Canyon Dam Adaptive Management Work Group

## Ground Rules

- ✚ Arrive on time OR 10-15 minutes early to confirm WebEx connectivity and check your mic and audio settings.
- ✚ Remain MUTED when not actively speaking. Turn down cell phone ringers and other background sounds.
- ✚ Commit to FULL participation.
- ✚ Do homework before meeting begins.
- ✚ Take private and/or sidebar conversations outside/offline.
- ✚ Wait to be recognized before speaking. Always state your name and affiliation before making a comment.
- ✚ Show respect for others.
- ✚ Be concise. Stick to the topic.
- ✚ Save new business for the appointed time
- ✚ Help keep the meeting on schedule





— BUREAU OF —  
RECLAMATION

# Glen Canyon Dam Adaptive Management Work Group Meeting

February 28-29, 2024

The meeting will begin at 9:30 am MST.

*Feel free to test your sound prior to the start of the meeting.*

*Then, please ensure your microphone is muted.*

## Reminders for member questions & comments:

- Questions and comments are welcome after each presentation.
  - Use the WebEx “raise hand” function (or \*3 on the phone) to get in the queue.
  - State your name and affiliation prior to comment.
  - We will also read aloud member questions entered into the chat.
- Comments in the chat window are considered informal discussion and will NOT be included as part of the formal meeting record unless you request the facilitator to read them aloud.



Reminder for members of the public: you are welcome to observe but are asked to defer any comments until the public comment period at the end of each meeting day.

## Tips for audio and connectivity:

- If you are joined via phone for audio, dial \*6 to unmute.
- If you are connected via phone and webinar, you may have to unmute on both devices to be heard.
- If you have mic/audio challenges, please chat @Reclamation Host via the WebEx.
- If you have an unstable internet connection, we recommend using your phone for audio and keeping your camera off.

\*Note\* This meeting is being recorded to support our note-taking.

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# AMWG Supporting Documents

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**Glen Canyon Dam Adaptive Management Work Group  
Committee Membership List**

(Updated: 2/21/24)

SECRETARY'S DESIGNEE	ALTERNATE SECRETARY'S DESIGNEE	Designated Federal Officer
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## Recreational Industry:

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## Glen Canyon Dam Technical Work Group

### Membership List

(Updated: 2/11/24)

TWG Chairperson	TWG Vice Chairs
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<b>18-WYOMING</b>	
Mel Fegler (member, 8/29/22) State Engineer's Office 122 W 25 <sup>th</sup> Street – Herschler Building 2W Cheyenne, WY 82002 T: (307) 777-7803 EM: <a href="mailto:mel.fegler@wyo.gov">mel.fegler@wyo.gov</a>	Charlie Ferrantelli (alternate, 10/25/18) State Engineer's Office 122 W. 25 <sup>th</sup> Street – Herschler Building 2W Cheyenne, WY 82002 T: (307) 777-6151 EM: <a href="mailto:charlie.ferrantelli@wyo.gov">charlie.ferrantelli@wyo.gov</a>
2 <sup>nd</sup> Alternate For Wyoming	Sara Larsen (alternate, 3/23/2023) Upper Colorado River Commission 50 S. 600 E., Suite 100 Salt Lake City, UT 84102 T: (801) 531-1150 EM: <a href="mailto:slarsen@ucrcommission.com">slarsen@ucrcommission.com</a>

### Environmental Groups:

<b>19-ENVIRONMENTAL GROUPS</b>	
Larry Stevens (member, 11/3/10) Grand Canyon Wildlands Council PO Box 1315 Flagstaff, AZ 86002 Tel: (928) 380-7724 EM: <a href="mailto:larry@springstewardship.org">larry@springstewardship.org</a>	Kelly Burke (alternate, 8/25/17) Grand Canyon Wildlands Council PO Box 1315 Flagstaff, AZ 86002 Tel: (928) 606-7870 EM: <a href="mailto:gcwildlands@icloud.com">gcwildlands@icloud.com</a>

<b>20-ENVIRONMENTAL GROUPS</b>	
C. Sinjin Eberle (member, 1/26/22) American Rivers P.O. Box 1828 Durango, CO 81302 T: (720) 373-0864 EM: <a href="mailto:seberle@americanrivers.org">seberle@americanrivers.org</a>	<b>VACANT</b> (alternate, )

### Recreational Industry:

<b>21-RECREATIONAL INDUSTRY</b>	
Ben Reeder (member, 2/16/16) Grand Canyon River Guides 4507 South Russell Street Salt Lake City, UT 84117 T: (801) 860-1070 EM: <a href="mailto:benreeder33@gmail.com">benreeder33@gmail.com</a>	David Brown (alternate, 7/14/16) Grand Canyon River Guides P.O. Box 1934 Flagstaff, AZ 86002 T: (801) 694-1228 EM: <a href="mailto:bravedown@yahoo.com">bravedown@yahoo.com</a>

<b>22- RECREATIONAL INDUSTRY</b>	
Bill Persons (member, 1/26/22) Trout Unlimited 14621 North 22 <sup>nd</sup> Lane Phoenix, AZ 85023 T: (602) 826-1465 EM: <a href="mailto:bpersons51@gmail.com">bpersons51@gmail.com</a>	William E. Davis (alternate, 6/4/23) Trout Unlimited 181 W. Monument Trail Payson, AZ 85541 T: (480) 510-6391 EM: <a href="mailto:wedavis09@yahoo.com">wedavis09@yahoo.com</a>

**Federal Power Purchase Contractors:**

<b>23-COLORADO RIVER ENERGY DISTRIBUTORS ASSOCIATION (CREDA)</b>	
Ted Rampton (member, 6/4/23) CREDA 2918 N 250 W Lehi, UT 84043 T: (801) 550-7876 EM: <a href="mailto:tedrampton00@gmail.com">tedrampton00@gmail.com</a>	Leslie James (alternate, 11/3/10) CREDA 10429 S. 51 <sup>st</sup> Street, Suite 230 Phoenix, AZ 85044 T: (480) 477-8646 EM: <a href="mailto:creda@creda.cc">creda@creda.cc</a>

<b>24-UTAH MUNICIPAL POWER AGENCY (UMPA)</b>	
Clifford Barrett (member, 11/3/10) 845 Lakeview Stansbury Park, UT 84074-1912 T: (435) 882-0164 EM: <a href="mailto:cibarre@q.com">cibarre@q.com</a>	<b>VACANT</b> (alternate, )

**Other Stakeholders:**

<b>25-ARIZONA GAME AND FISH DEPARTMENT</b>	
Ryan Mann (member, 11/21/16) Arizona Game and Fish Department 5000 W. Carefree Highway Phoenix, AZ 85086 T: (623) 236-7538 EM: <a href="mailto:rmann@azgfd.gov">rmann@azgfd.gov</a>	Dave Rogowski, PhD (alternate, 7/7/15) Arizona Game and Fish Department 506 N. Grant Street, Suite L Flagstaff, AZ 86004 T: (928) 226-7677 EM: <a href="mailto:drogowski@azgfd.gov">drogowski@azgfd.gov</a>

<b>26-DEPARTMENT OF ENERGY (DOE) – WESTERN AREA POWER ADMINISTRATION (WAPA)</b>	
Shane Capron (member, 6/4/12) 1800 S Rio Grande Ave. Montrose, CO 81401 T: (720) 799-3441 EM: <a href="mailto:capron@wapa.gov">capron@wapa.gov</a>	Craig Ellsworth (alternate, 6/4/12) 1800 S Rio Grande Ave. Montrose, CO 81401 T: (385) 228-3994 EM: <a href="mailto:ellsworth@wapa.gov">ellsworth@wapa.gov</a>

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# Draft Agenda

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**Glen Canyon Dam Adaptive Management Program  
Adaptive Management Work Group Meeting, February 28-29, 2024**

Hilton Garden Inn  
7290 Price Road  
Tempe, AZ 85283

**Wednesday, February 28, 2024**

Wednesday WebEx: [Webex Link Day 1](#)

Meeting number: 2764 950 7827 | Password: AMP28

Call in: (415) 527-5035 | Access code: 2764 950 7827

FINAL AGENDA

START TIME <sup>1</sup> (Duration)	Wednesday, February 28, 2024 Topic, Presenter, and Purpose <sup>2</sup>
9:30 MST (:60)	<p><b>Welcome and Administrative:</b> Wayne Pullan, Acting Secretary’s Designee to the Adaptive Management Work Group</p> <ul style="list-style-type: none"> <li>▪ Opening Remarks</li> <li>▪ Introductions and Determination of Quorum (13 members) <ul style="list-style-type: none"> <li>○ Facilitator: Terra Alpaugh, Kearns &amp; West</li> </ul> </li> <li>▪ Review August Meeting Evaluation</li> <li>▪ Administrative Updates <ul style="list-style-type: none"> <li>○ <a href="#">AMWG Charter</a></li> <li>○ AMWG Membership Status</li> <li>○ Action Item Tracking Report</li> <li>○ Meeting Minutes Discussion (<a href="#">August Meeting Minutes</a>)</li> <li>○ August AMWG Logistics</li> </ul> </li> </ul> <p>Additional Information: <a href="#">AMWG Website</a></p>
10:30 MST (:15)	<p><b>Tribal Perspective:</b> Jakob Maase, Hopi</p> <ul style="list-style-type: none"> <li>▪ Presentations (10 minutes)</li> <li>▪ Q&amp;A and discussion (5 minutes)</li> </ul>
10:45 MST (:45)	<p><b>Basin Hydrology and Operations:</b> Heather Patno, Bureau of Reclamation; Alex Walker, Bureau of Reclamation</p> <ul style="list-style-type: none"> <li>▪ Presentation (30 minutes)</li> <li>▪ Q&amp;A and discussion (15 minutes)</li> </ul> <p><u>Additional Information:</u> 1) <a href="#">Current GCD operations</a> 2) <a href="#">24-Month Study</a> 3) <a href="#">CRMMS 2-Year Projections</a> 4) <a href="#">5-Year Projections</a> 5) <a href="#">Drought Contingency Plans</a></p> <p><u>Purpose:</u> To increase understanding of water supply, forecasted hydrologic conditions, and projected reservoir conditions and operations for the current and upcoming water years.</p>
11:30 MST (1:30)	<p><b>LUNCH</b></p> <p style="text-align: center;">Tribal Luncheon with Secretary’s Designee, Location: At the Hotel.</p>

START TIME <sup>1</sup> (Duration)	Wednesday, February 28, 2024 Topic, Presenter, and Purpose <sup>2</sup>
1:00 MST (:30)	<p><b>LTEMP Goals and Update on Performance Metrics:</b> Helen Fairley, GCMRC</p> <ul style="list-style-type: none"> <li>▪ Presentation(s) (20 min)</li> <li>▪ Q&amp;A and discussion (10 min)</li> </ul> <p><u>Purpose:</u> Present the LTEMP Performance Metrics. Ask AMWG to use goals and metrics as a key framing for subsequent discussion of Annual Reporting results and Triennial Workplan content.</p>
1:30 MST (:60)	<p><b>2024 GCDAMP Annual Reporting Meeting Update – Part 1:</b> Grand Canyon Monitoring and Research Center (GCMRC)</p> <ul style="list-style-type: none"> <li>▪ Presentation(s)</li> <li>▪ Hold questions until the end</li> <li>▪ <a href="#">Proceedings of the Fiscal Year 2023 Annual Reporting Meeting to the Glen Canyon Dam Adaptive Management Program</a></li> </ul> <p>Purpose: To provide project summaries for FY23.</p>
2:30 MST (:15)	<b>BREAK</b>
2:45 MST (:60)	<p><b>2024 GCDAMP Annual Reporting Meeting Update – Part 2:</b> Grand Canyon Monitoring and Research Center (GCMRC)</p> <ul style="list-style-type: none"> <li>▪ Presentation(s)</li> <li>▪ Hold questions until the end</li> </ul> <p>Purpose: To provide project summaries for FY23.</p>
3:45 MST (:60)	<p><b>FY25-27 Triennial Work Plan Priorities and Progress:</b> Erik Skeie, BAHG Chair</p> <ul style="list-style-type: none"> <li>▪ Presentation(s) (15 min)</li> <li>▪ Q&amp;A and discussion (45 minutes): What monitoring and research is needed in the TWP to assess if progress is being made on the LTEMP goals?</li> </ul> <p><u>Purpose:</u> To provide an update on the BAHG process (<a href="#">TWP</a>) and an opportunity for AMWG members to provide feedback.</p>
4:45 MST (:15)	<b>PUBLIC COMMENT</b>
5:00 MST	<p><b>ADJOURN FOR THE DAY</b> Please fill out evaluation form if you will not join tomorrow.</p>

**Glen Canyon Dam Adaptive Management Program  
Adaptive Management Work Group Meeting, February 28-29, 2024**

Hilton Garden Inn  
7290 Price Road  
Tempe, AZ 85283

**Thursday, February 29, 2024**

Thursday WebEx: [Webex Link Day 2](#)

Meeting number: 2763 074 1381 | Password: AMP29

Call in: (415) 527-5035 | Access code: 2763 074 1381

**FINAL AGENDA**

START TIME <sup>1</sup> (Duration)	Thursday, February 29, 2024 Topic, Presenter, and Purpose <sup>2</sup>
8:30 MST (:15)	<p><b>Welcome and Administrative:</b> Wayne Pullan, Acting Secretary’s Designee to the Adaptive Management Work Group</p> <ul style="list-style-type: none"> <li>▪ Introductions and Determination of Quorum (13 members)               <ul style="list-style-type: none"> <li>○ Facilitator: Terra Alpaugh, Kearns &amp; West</li> </ul> </li> </ul>
8:45 MST (:30)	<p><b>Triennial Workplan Day 1 Reflections:</b> Terra Alpaugh, Kearns &amp; West</p> <ul style="list-style-type: none"> <li>▪ Discussion (30 minutes)</li> </ul> <p><u>Purpose:</u> Discuss any topics that were not discussed during the previous Triennial Workplan Update.</p>
9:15 MST (:30)	<p><b>GCDAMP Tribal Liaison Update:</b> Jamescita Peshlakai, GCDAMP Tribal Liaison</p> <ul style="list-style-type: none"> <li>• Presentation (20 minutes)</li> <li>• Q&amp;A and discussion (10 minutes)</li> </ul> <p><u>Purpose:</u> To report on the GCDAMP Partner Tribes’ activities and meetings as well as each Tribe’s concerns, challenges, and accomplishments.</p>
9:45 MST (:15)	<b>BREAK</b>
10:00 MST (:45)	<p><b>Operation Planning Updates – NEPA (Interim Guidelines SEIS, Post 2026, LTEMP SEIS),</b> Kathleen Callister, Bureau of Reclamation</p> <ul style="list-style-type: none"> <li>▪ Presentations and Q&amp;A (45 minutes)</li> </ul> <p>Additional Information: 1) <a href="#">Post-2026 Operations</a> 2) <a href="#">Interim SEIS</a> 3) <a href="#">LTEMP SEIS</a></p> <p><u>Purpose:</u> To clarify the scopes and timelines of the three current NEPA compliance processes underway and provide most recent updates.</p>

START TIME <sup>1</sup> (Duration)	Thursday, February 29, 2024 Topic, Presenter, and Purpose <sup>2</sup>
10:45 MST (:45)	<p><b>Nonnative Strategic Plan Action updates:</b> Emily Young, SBAHG Chair; Melissa Trammel and Ed Keable, NPS; Bill Stewart, Reclamation</p> <ul style="list-style-type: none"> <li>▪ Presentations and Q&amp;A (45 mins) <ul style="list-style-type: none"> <li>• Strategic Plan Review</li> <li>• Short Term – Rapid Response Efforts</li> <li>• Slough modification update</li> <li>• Mid/Long Term Actions</li> </ul> </li> </ul> <p>Additional Information: <a href="#">GCDAMP Nonnative Fish Strategic Plan</a></p> <p><u>Purpose:</u> This is a synthesis of the actions taking place in and outside of the program related to the GCDAMP Nonnative Fish Strategic Plan.</p>
11:30 MST (1:30)	<b>LUNCH</b>
1:00 MST (:30)	<p><b>Technical Work Group Chair Report:</b> Seth Shanahan, Technical Work Group Chair</p> <ul style="list-style-type: none"> <li>▪ Presentation (20 minutes)</li> <li>▪ Q&amp;A and discussion (10 minutes)</li> </ul> <p><u>Purpose:</u> To update AMWG members on the <a href="#">TWG Meetings</a> held November 2023 and January 2024.</p>
1:30 MST (:15)	<p><b>Potential Water Year 2024 Experiments:</b> Jeremy Hammen, Bureau of Reclamation</p> <ul style="list-style-type: none"> <li>▪ Presentation (10 minutes)</li> <li>▪ Q&amp;A and discussion (5 minutes)</li> </ul> <p><u>Purpose:</u> To discuss recent findings and possible LTEMP experiments that may be conducted in 2024.</p>
1:45 MST (:45)	<p><b>Stakeholder Updates (2-3 minutes each):</b></p> <ul style="list-style-type: none"> <li>▪ States: ADWR, AZGFD, CA, CO, NM, NV, UT, WY</li> <li>▪ Tribes: Hopi, Hualapai, Navajo Nation, Pueblo of Zuni, Southern Paiute</li> <li>▪ NGOs: Environmental (x2), Federal Power Purchasers (x2), Recreation (x2)</li> </ul> <p><u>Purpose:</u> To share general updates regarding current stakeholder activities on the Colorado River that are pertinent to the GCDAMP.</p>
2:30 MST (:15)	<b>BREAK</b>

<p><b>2:45 MST</b> (:45)</p>	<p><b>Federal Agency Updates (2-3 minutes each):</b></p> <ul style="list-style-type: none"> <li>▪ USGS</li> <li>▪ USFWS</li> <li>▪ USBR</li> <li>▪ NPS</li> <li>▪ BIA</li> <li>▪ WAPA</li> <li>▪ DOI Solicitors Office</li> </ul> <p><u>Purpose:</u> To share general updates regarding current activities on the Colorado River that are pertinent to the GCDAMP.</p>
<p><b>3:30 MST</b> (:15)</p>	<p><b>PUBLIC COMMENT</b></p>
<p><b>3:45 MST</b> (:15)</p>	<p><b>WRAP-UP:</b> Wayne Pullan, Acting Secretary’s Designee to the Adaptive Management Work Group</p> <ul style="list-style-type: none"> <li>▪ Next AMWG <a href="#">Meeting Dates</a>: <ul style="list-style-type: none"> <li>○ May 15, 2024 (Virtual)</li> <li>○ August 21-22, 2024</li> </ul> </li> </ul>
<p><b>4:00 MST</b></p>	<p><b>ADJOURN</b></p> <p><b>Please fill out the meeting evaluation before you leave for the day!</b></p>

<sup>1</sup> Every effort will be made to adhere to the schedule and agenda, but on occasion, for unforeseen reasons, some modifications may occur.

<sup>2</sup> Action may be by consensus or a vote; and either may be a recommendation to the Secretary of the Interior or feedback to presenter(s) or to subordinate groups.

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# Final Minutes & Action Items

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Link to the Final Meeting Minutes for the August 2023 meeting

<https://www.usbr.gov/uc/progact/amp/amwg/2023-08-17-amwg-meeting/20230817-AMWGMeeting-FinalMinutes-508-UCRO.pdf>

**GLEN CANYON DAM ADAPTIVE MANAGEMENT WORK GROUP  
Action Item Tracking Report**

Note: Items marked “Closed” will be removed from the next iteration of the report.

ITEM No. / DATE	ACTION ITEM	ASSIGNED TO/DUE DATE	STATUS
Item 2017.Sep.01	<p>At its next meeting, AMWG will consider a process for planning for the next 20 years of LTEMP.</p> <p><u>February 2018 update:</u> This will be addressed through the development of monitoring metrics and by the streamlining of GCDAMP guiding documents as described in the LTEMP ROD.</p> <p><u>August 2019 Update:</u> This action item will move forward as directed and informed by the Guidance Memo issued by the Secretary’s Designee in August 2019.</p> <p><u>May 2020 Update:</u> The draft FY21-23 budget and workplan includes funding support to develop and track monitoring metrics and and to streamline guidance documents. Beginning Oct 20, Reclamation and GCMRC will initiate review of the LTEMP FEIS metrics. This work will be a focus for FY21, but will likely be ongoing through the FY21-23 TWP.</p> <p>...</p> <p><u>May 2021 Update:</u> GCMRC and Reclamation are working to define the scope of the metrics development effort, propose a list of existing and new metrics for consideration, and develop criteria to evaluate the metrics. Will seek Secretary’s Designee input and TWG feedback on proposed plan later in 2021.</p> <p><u>August 2021 Update:</u> A <a href="#">draft project plan</a>, including objectives and timeline, was distributed in early June 2021 for review and input. GCMRC is addressing TWG comments. A status update will be presented during the August AMWG meeting and member feedback requested.</p> <p><u>February 2022 Update:</u> The GCMRC developed several draft metrics and pilot presentations concurrently with the 2021 Annual Report. The draft metrics are currently in review with DOI bureaus and leadership, prior to further review and discussion by the Technical Work Group.</p> <p><u>May 2022 Update:</u> The GCMRC developed several draft metrics and pilot presentations concurrently with the 2022 Annual Report. The draft metrics are currently in review with</p>	Reclamation / ongoing	Open

AMWG Action Item Tracking Report

Updated 1 May

2022 Questions or Updates? Contact Reclamation at [bor-sha-ucr-gcdamp@usbr.gov](mailto:bor-sha-ucr-gcdamp@usbr.gov)

ITEM NO. / DATE	ACTION ITEM	ASSIGNED TO/DUE DATE	STATUS
	<p>DOI bureaus and leadership, prior to further review and discussion by the Technical Work Group.</p> <p><u>Aug 2022 update:</u> The GCMRC developed several draft metrics and distributed for AMP review. Stakeholders revisited the GCDAMP guiding principles on the 2022 Stakeholder River Trip.</p> <p><u>Feb 2023 update:</u> The GCMRC developed several draft metrics and presented at the 2023 Annual Reporting Meeting. Rollout to the GCDAMP website is planned for 2023 after DOI meetings.</p> <p><u>May 2023 update:</u> The GCMRC developed several draft metrics and presented at the 2023 Annual Reporting Meeting. Rollout to the GCDAMP website is planned for 2023 after DOI meetings.</p> <p><u>August 2023 update:</u> The GCMRC is finalizing monitoring metrics report. Developed several draft metrics and presented at the 2023 Annual Reporting Meeting. Rollout of individual metrics to the GCDAMP website will begin in late 2023/early 2024.</p> <p><u>Feb 2024 update:</u> The GCMRC is presenting metrics and this Feb AMWG meeting. Will be used to guide the 2025-2027 TWP process. Rollout of individual metrics to the GCDAMP website will begin in 2024.</p>		
Item 2020.Dec.22	<p>In accordance with the 2021-2023 Triennial Budget and Work Plan <a href="#">approved</a> by the Secretary of the Interior on December 22, 2020:</p> <p>“Due to uncertainties in future funding levels, prioritization of projects outlined in the FY2021-2023 TWP is necessary and will be undertaken by the GCDAMP during FY2021. Project priorities may change over time based on hydrology, resource conditions, evolving scientific understanding and uncertainties, administration objectives and other factors.”</p> <p><u>February 2022 update:</u> DOI Bureaus have identified high priority activities that support compliance with GCPA, NHPA, ESA, and NEPA. Following review by DOI leadership, Feb/Mar 2022 is targeted for sharing with the Budget Ad Hoc Group.</p> <p><u>May 2022 update:</u> DOI Bureaus have identified high priority activities that support compliance with GCPA, NHPA, ESA, and NEPA. Following review by DOI leadership, distribution is</p>	All / ongoing	Open



ITEM NO. / DATE	ACTION ITEM	ASSIGNED TO / DUE DATE	STATUS
	<p>targeted for sharing with the Budget Ad Hoc Group by development of the next TWP.</p> <p><u>August 2022 and February 2023 updates:</u> DOI Bureaus have identified high priority activities that support compliance with GCPA, NHPA, ESA, and NEPA. Prioritization information will be shared with the Budget Ad Hoc Group in table form during BAHG discussions in 2023.</p> <p><u>May 2023 updates:</u> DOI Bureaus have identified high priority activities that support compliance with GCPA, NHPA, ESA, and NEPA. Prioritization information will be shared with the Budget Ad Hoc Group as we prepare for the next triennial workplan FY25-27.</p> <p><u>August 2023 updates:</u> DOI Bureaus have identified high priority activities that support compliance with GCPA, NHPA, ESA, and NEPA. Prioritization information will be shared with the Budget Ad Hoc Group in winter 2023/2024 as we prepare for the next triennial workplan FY25-27.</p> <p><u>Feb 2024 updates:</u> DOI Bureaus have identified high priority activities that support compliance with GCPA, NHPA, ESA, and NEPA. Prioritization information will be used to help screen projects as we prepare for the next triennial workplan FY25-27.</p>		
Item 2022.May.18	<p>The Secretary's Designee directs Reclamation and GCMRC to work with the TWG regarding the following:</p> <ul style="list-style-type: none"> <li>• Develop a draft strategic plan to prevent, detect, and respond to cool- and warmwater invasive fish establishment below Glen Canyon Dam. The plan should include proposed monitoring, specific activities to be considered for prevention and response, along with their relative effectiveness, detection thresholds ("triggers") for action, and conditions for discontinuing response activities (e.g. due to success, futility, resource limitations, etc.).</li> <li>• Develop 2-4 operational alternatives that could help prevent cool- and warmwater invasive fish establishment, while minimizing potential adverse effects to other resources. Operational alternatives that are not within the scope of the LTEMP ROD may be proposed, but would require additional NEPA, ESA, and NHPA compliance.</li> </ul>	GCMRC, Reclamation, TWG / August 2022	Closed



2023 Questions or Updates? Contact Reclamation at [bor-sha-ucr-gcdamp@usbr.gov](mailto:bor-sha-ucr-gcdamp@usbr.gov)

ITEM NO. / DATE	ACTION ITEM	ASSIGNED TO/DUE DATE	STATUS
	<p>Reclamation, GCMRC and the TWG will report out at the August AMWG meeting on the draft strategic plan and operational alternatives, and the AMWG may recommend further action or study.</p> <p>As a starting point, GCMRC will leverage information and products from existing research and monitoring efforts within the GCDAMP, as well as from the Smallmouth Bass Task Force. Unspent FY 2022 funds from Reclamation Project C.5, <i>Experimental Management Fund</i>, may be utilized to support GCMRC staff time for this effort.</p> <p><u>May 2022 update:</u> Reclamation, GCMRC and TWG leadership acknowledged and accepted the directive.</p> <p><u>August 2022 update:</u> GCMRC presented <a href="#">operational alternatives</a> at the August AMWG meeting.</p> <p><u>February 2023 update:</u> The draft Non-native Fish Strategic Plan was developed by the Smallmouth Bass Ad Hoc Group and provided to the AMWG at the January 2023 TWG meeting. Operational alternatives were incorporated into a SMB Flows EA by Reclamation.</p>		
Item 2022.Aug.18	<p>The Secretary's Designee proposed for the GCDAMP to undertake activities to address the following <a href="#">five action</a> areas:</p> <ol style="list-style-type: none"> <li>1) Evaluation of High-flow Experiments under Low- elevations/Low-flows.</li> <li>2) Evaluation of Downstream Resource Impacts under Low-Elevations/Low-flows.</li> <li>3) Continue drafting Nonnative Fish Strategic Plan.</li> <li>4) NEPA Compliance for Operational Flexibilities to Address Nonnative Fish</li> <li>5) Planning to Evaluate Exclusion Projects.</li> </ol> <p><u>February 2023 update:</u>  1) GCMRC provided analysis to the GCDAMP via email and at the 2023 ARM, 2) Evaluation is being completed through SEIS analysis/modeling, 3) A draft was provided to AMWG by TWG for consideration, 4) a draft EA prepared by Reclamation, and 5) an engineering team assembled a subject matter expert panel and is pursuing design of a forebay net barrier.</p>	GCMRC, Reclamation, TWG / February 2023	Open

ITEM NO. / DATE	ACTION ITEM	ASSIGNED TO/DUE DATE	STATUS
	<p><u>May 2023 update:</u> 1) GCMRC provided analysis to the GCDAMP via email and at the 2023 ARM, 2) Evaluation is being completed through SEIS analysis/modeling, 3) Strategic plan was recommended to the Secretary of the Interior for Adoption, 4) a draft EA prepared by Reclamation, and 5) an engineering team assembled a subject matter expert panel and is pursuing design of a forebay net barrier.</p> <p><u>August 2023 update:</u> 1) GCMRC provided analysis to the GCDAMP via email and at the 2023 ARM. The TWG through the FLAHDG is developing a proposal to address sediment accounting and implementation. 2) Evaluation is being completed through SEIS analysis/modeling, 3) Completed 4) draft EA was prepared and is now being transitioned into a supplemental EIS to LTEMP, and 5) an engineering team assembled a subject matter expert panel and is investigating design option for a forebay net barrier.</p> <p><u>Feb 2024 update:</u> 1) Completed. 2) Evaluation is being completed through SEIS analysis/modeling, 3) Strategic plan was recommended to the Secretary of the Interior for Adoption. This task is complete and implementation updates are being provided at TWG and AMWG meetings, 4) draft LTEMP SEIS is out for public review, and 5) the TSC is expected to have a final appraisal level report on a fish exclusion net and thermal curtain. Reclamation intends to hold a value planning study to further design considerations.</p>		

# Supplemental Materials

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## GCDAMP & Other Meetings in 2024

Days	Dates	Meeting	Comments
<b>JANUARY</b>			
W-Th	Jan 3-4	CRAB meeting	
W	Jan	UCLT all day	
M	Jan 15	Martin Luther King Holiday	
T-W	Jan 23-24	Annual Reporting Meeting – BLM Training Center	
Th	Jan 25	TWG Meeting – BLM Training Center	
Tu-Th	Jan 30-Feb 1	CRTR Meeting	
<b>FEBRUARY</b>			
Th	Feb 15	MSCP Financial WG mtg	
M	Feb 19	President's Day Holiday	
Tu	Feb 27	DOI Federal Family Meeting – HGI - Tempe	
W-Th	Feb 28-29	AMWG Meeting - Hilton Garden Inn - Tempe	
<b>MARCH</b>			
Sun	Mar 10	Daylight Savings (begins)	
M-F	Mar 11-15	School Spring Recess in Flagstaff	
Th	Mar	Flaming Gorge WG	
<b>APRIL</b>			
W-Th	Apr 10-11	TWG Meeting – Embassy Suites Tempe	
W	Apr	UCLT all day	
W	Apr	MSCP Steering Committee meeting	
<b>MAY</b>			
W-Th	May	MSCP work group	
W	May 15	AMWG Webinar - Virtual	
M	May 27	Memorial Day Holiday	
<b>JUNE</b>			
M-F	Jun 3-7	Salinity Forum and Advisory Council	
W-Th	Jun 12-13	TWG Meeting – TBD	Potential for July change
W	Jun 14	Flag Day	
W	Jun 19	Juneteenth Holiday	
W	June	MSCP Steering Committee meeting	
<b>JULY</b>			
Tu	Jul 4	Independence Day Holiday	
W	Jul	UCLT all day	
<b>AUGUST</b>			
	Aug 7-9	NWRA meeting	
M-F	Aug 12-16	First week of school - Utah	
Tu	Aug 20	DOI Federal Family Meeting – GC South Rim	Shrine of the Ages
W-Th	Aug 21-22	AMWG Meeting – Grand Canyon South Rim	
M-F	Aug	Fall semester starts at NAU – Flagstaff, AZ	

Days	Dates	Meeting	Comments
		SEPTEMBER	
M	Sep 4	Labor Day Holiday	
		OCTOBER	
W-Th	Oct 9-10	TWG Meeting – TBD	Potential move to Nov
W	Oct 9	UCLT all day	
M	Oct 14	Columbus Day	
M-F	Oct 21-25	Salinity Forum & Advisory Council Mtgs	
W	Oct 25	MSCP Steering Committee meeting	
		NOVEMBER	
Su	Nov 3	Daylight Savings (ends)	
Sa	Nov 11	Veteran's Day Holiday	
Th	Nov 23	Thanksgiving Holiday	
		DECEMBER	
M	Dec 25	Christmas Day Holiday	

**Approximate Timelines for the Development and Implementation of the TWP (Table 1) and  
Criteria for Review and Revisions (Section 2.7)**

**Table 1.** Approximate timelines for the development and implementation of the TWP. Dates shown are estimated targets. Dates are shown which implement the 2025-27 TWP for reference.\*

<b>Month</b>	<b>Year-1 (2024) (development of TWP)</b>	<b>Year-2 (2025)</b>
December (year prior)	GCMRC and Reclamation produces annual project reports document for GCDAMP review.	
January	Annual reporting meeting and information synthesis (2 days) followed by 1-day TWG meeting to review budget and provide initial guidance to GCMRC and Reclamation. TWG reviews progress in addressing Information Needs and research accomplishments.	Annual reporting meeting (1-2 days) followed by 1-day TWG meeting with a primary emphasis on reporting results/findings/scientific advances on previous work plan.
February	GCMRC meets with tribes and DOI agencies. GCMRC follow-up with BAHG on priorities and areas of emphasis on TWP. GCMRC meets with cooperators to develop projects. AMWG meeting to discuss initial priorities. DOI and Federal family input.	
March	GCMRC and Reclamation will develop an initial TWP based on DOI priorities and input from scientists, the TWG, and DOI/DOE family. Initial TWP presented to DOI and Secretary's Designee.	
April	GCMRC meets with tribes and DOI agencies. April TWG meeting to consider draft TWP, including anticipated funding sources. Unresolved issues or conflicting priorities will be resolved by DOI in consultation with the DOI Family. GCMRC begins development of second draft TWP.	BAHG and TWG considers potential changes to the Fiscal Year 2 TWP based on criteria in section 2.7.
May	GCMRC and Reclamation provide a second draft TWP to the BAHG, Science Advisors, DOI agencies, and tribes for their review and comment. GCMRC meets with tribes, BAHG, to get input on TWP. GCMRC develops third draft of TWP.	
June	GCMRC and Reclamation finish third draft for review. TWG meets to provide input on the draft GCMRC and Reclamation TWP and provide a recommendation to the AMWG.	TWG recommends Fiscal Year 2 (2026) budget of TWP to AMWG.
July	GCMRC and Reclamation provide a final draft TWP to the AMWG for their review.	
August	AMWG meets to provide input on the GCMRC and Reclamation draft TWP and provide a recommendation to the SOI.	AMWG recommends Fiscal Year 2 (2026) budget of TWP to SOI.
September	SOI reviews the budget and work plan recommendation from AMWG.	
October 1	Fiscal Year 1 begins under the TWP guidance.	Fiscal Year 2 begins under the TWP guidance.
November 1	Consumer Price Index becomes available.	
Late November	Science and management meeting with DOI and cooperators.	Science and management meeting with DOI and cooperators.
December	Budget is finalized. USGS produces GCMRC annual project reports document for prior year work.	GCMRC produces annual project reports document.



**Table 1 (continued).** Approximate timelines for the development and implementation of the TWP. Dates shown are estimated targets. Dates in parentheses are shown which implement the 2025-27 TWP cycle for reference.

Month	Year-3 (2026)	Year-4 (2027)
January	Annual reporting meeting and information synthesis (2 days) followed by 1-day TWG meeting to review initial results and findings of TWP. Potential TWP changes may be identified.	Process starts again under year 1.
February	BAHG/agencies/tribes meetings to consider mid-work plan adjustments to TWP, February through March.	
March		
April	Consider mid-work plan adjustments at TWG meeting. BAHG and TWG considers potential changes to the Fiscal Year 3 TWP based on criteria in section 2.7.	
May		
June	TWG considers and recommends mid-work plan adjustments to TWP and a recommendation for Fiscal Year 3 (2027) budget.	
July		
August	AMWG meets and considers mid-work plan adjustments to TWP recommended by TWG and recommends Fiscal Year 3 (2027) budget to the SOI.	
September		
October 1	Fiscal Year 3 begins under the TWP guidance.	
November 1	Consumer Price Index becomes available.	
Late November	Science and management meeting with DOI and cooperators. New TWP development meeting within DOI.	
December	USGS produces GCMRC annual project reports document for prior year work.	

\* Table 1 calendar years have been updated to reflect development of the 2025-2027 Triennial Work Plan.

## 2.7 Criteria for Review and Revisions of the Budget and Work Plan

In order for the TWP process to be successful in reducing the administrative burden on the GCMRC, Reclamation, and the GCDAMP, it must have clear criteria for making changes to the budget and work plan. Revisions of the year two budget are intended to be limited to unexpected changes due to a scientific requirement or merit, or administrative needs. Year three changes may be more substantive according to the guidelines below. The individual steps of the process, including roughly when meetings should occur and their objectives, are provided in Table 1. The burden of an appropriate rationale for proposing a change falls upon the proposer to make a persuasive argument to the TWG and AMWG. The following criteria will be used by GCMRC, Reclamation, and TWG in making recommendations to AMWG on changes to the budget and work plan:

- **Scientific requirement or merit:** New information gained during the implementation of monitoring and research projects may result in a need to alter methods, scope, or timelines in the work plan or substantially alter or eliminate a project. This is a science need based on the experience of implementing an already approved project. This does not represent a shifting priority (e.g., policy change), but a scientific learning process which results in needed modifications to carry out the goals of the Program.
- **Administrative needs:** Administrative, policy, or programmatic changes may occur within the time-frame of an approved TWP. Examples might include the mitigation of an impact resulting from ESA, NHPA, or tribal consultation, a change in the “overhead” charges of a federal or state agency, a significant reduction of the balance of available funds, or a failure to secure permits.. As soon as an administrative event occurs that affects the TWP, GCMRC (or relevant agency – such as DOI) will notify the TWG.
- **New initiatives:** New initiatives may be brought up for discussion by members during BAHG or TWG budget discussions (see Table 1) for consideration by Reclamation and GCMRC. These new initiatives may need to be considered by the GCDAMP Program Manager prior to requesting either GCMRC or Reclamation to develop a proposal for mid-work plan consideration. If DOI determines it is beyond the scope of a mid-work plan change, then the initiative could be considered during the development of the next work plan. Given that the budget will likely be fully accounted for, direction on funding source within the current budget will be required for discussion with the GCDAMP Program Manager. Revisions must comply with the Budget Principles (see Section 2.1).

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# United States Department of the Interior

OFFICE OF THE SECRETARY  
Washington, DC 20240

AUG 14 2019

## MEMORANDUM

To: Brent Esplin, Designated Federal Officer, Bureau of Reclamation  
Regional Director, Upper Colorado Region  
Kathleen Callister, Resources Management Division Manager, Bureau of Reclamation  
Upper Colorado Region  
Scott VanderKooi, Chief, Grand Canyon Monitoring and Research Center (GCMRC)  
U.S. Geological Survey (USGS)

From: Timothy R. Petty, Ph.D.  
Secretary's Designee  
Assistant Secretary for Water a - lence •

Subject: Glen Canyon Dam Adaptive Management Program Guidance

The Colorado River faces many challenges in the coming years, especially with an ongoing drought now in its 19th year. As such, it is important that the Glen Canyon Dam Adaptive Management Program (GCDAMP) is managed in such a way as to ensure consistency with the Grand Canyon Protection Act (GCPA) and the priorities of the Secretary of the Interior, and in accordance with the Law of the Colorado River and the Glen Canyon Dam Long Term Experimental and Management Plan (LTEMP) Record of Decision (ROD) and Final Environmental Impact Statement (FEIS).

The GCDAMP plays a central role in ensuring compliance with multiple laws associated with the operation of Glen Canyon Dam. It provides a process for cooperative integration of dam operations, downstream resource protection and management, and monitoring and research. Under the GCPA, Reclamation and GCMRC conduct research and monitoring and consult with specific stakeholders on that research and monitoring. The Adaptive Management Working Group (AMWG), a Federal Advisory Committee, is the vehicle through which Reclamation accomplishes this consultation. The AMWG also makes recommendations to the Secretary per the LTEMP ROD.

### **LTEMP Implementation**

The primary guiding documents for the GCDAMP will continue to be the LTEMP FEIS and ROD, which provide the framework for adaptively managing Glen Canyon Dam operations and management actions associated with downstream resources through 2037. This program guidance document will help ensure continuity and continued successes within the GCDAMP under the current administration and in the years to come. The priorities identified in the LTEMP ROD for the GCDAMP are as follows:

- Management and Experimental Actions
- Mitigation and Environmental Commitments
- Research and Monitoring

In addition, the Department of the Interior (Interior) has recently prioritized the responsible development and production of renewable energy on federal lands. To this end, I encourage the GCDAMP to work within the LTEMP framework to seek ways to improve the value of the hydropower resource. This work may include continued engagement with Project N of the GCDAMP Fiscal Years (FY) 2018-20 Triennial Workplan (TWP) and with interested AMWG stakeholders regarding the current science and policy regarding dam operations.

### **Updating Guidance Documents**

I direct Reclamation, USGS, and other Interior agencies to work with the AMWG to update the GCDAMP guiding documents to reflect and be fully consistent with the priorities outlined in the LTEMP FEIS Section 1.4 and emphasized in Section 6.l(c) of the LTEMP ROD. These guiding documents include the GCDAMP strategic plan, vision, mission, and charter.

With the challenges faced in FY 2018 regarding funding for the GCDAMP and the need to ensure appropriations are requested through the federal budget process, Interior supports continuing with the three-year workplan and budget process. The current FY 2018-20 GCDAMP TWP and budget process demonstrated that it can improve program efficiency by reducing the time and effort spent on annually developing a workplan and budget. The GCDAMP should continue to review the TWP annually to ensure it meets the priorities and goals of the GCPA and GCDAMP.

The development of the TWP and budget for FY 2021-23 will commence in late FY 2019 and continue through FY 2020. Its development should include consultation with members of AMWG, who will recommend to the Secretary whether they support the planned projects and funding. Reclamation and GCMRC will take the lead in drafting the FY 2021-23 TWP. The TWP and budget should focus on compliance priorities including:

- Maintaining dam releases consistent with applicable laws;
- Activities associated with the Endangered Species Act;
- Actions necessary for compliance with the National Historic Preservation Act; and
- Research and monitoring as required by the Grand Canyon Protection Act.

Activities that concern annual release volumes from Glen Canyon Dam-including discussion of Drought Contingency Planning and new negotiations of the Colorado River Interim Guidelines for Lower Basin Shortages and the Coordinated Operations for Lake Powell and Lake Mead-will be underway in FY 2019 or in the coming years. The GCDAMP and AMWG guidance documents discussed here should consider any implications of these ongoing discussions.

The LTEMP Scientific Monitoring Plan will continue to provide a framework for the scientific support needed to complete the monitoring and experimentation specified in the LTEMP FEIS

and ROD. This plan will help ensure that long-term monitoring and research activities are aligned with the LTEMP FEIS and ROD and the GCDAMP decision making process. In accordance with the LTEMP ROD, the Science Plan will be reviewed every five years and may be updated as needed. The next review will occur in conjunction with the start of the next TWP development process in early FY 2020. Also, in accordance with the LTEMP ROD, specific details concerning the means to collect, analyze, and report information required to support development of recommendations by the AMWG and decision making by Interior will be included in the TWP.

It is also important that the GCDAMP develops and implements monitoring metrics for the resource goals and objectives defined in the LTEMP ROD. Interior directs the AMWG to develop recommendations for these monitoring metrics to assist Interior in their development. The recommended metrics should build on existing LTEMP conservation measures, environmental and recreational goals, and other easily identifiable goals. As the process continues, additional goals can be developed.

Future research proposed and undertaken by the GCDAMP should be tied directly to LTEMP resource goals and objectives and continue to be focused on providing the best available science such that decision making is science-based and continues to work towards ensuring benefits to as many resources downstream of the dam as possible. This should be done in a collaborative process involving AMWG and TWG members, the Science Advisors Program, and ad hoc groups as needed. Several areas to consider as identified by the GCDAMP partners include:

- Evaluation of the threat posed by invasive non-native species.
- Exploring vegetation management to benefit high value recreational beaches and protect vulnerable archaeological sites.
- Considering impacts to hydropower as part of the development of a LTEMP experiments and study plans.

### **Operating Criteria and Operational Flexibility**

The LTEMP ROD provides guidance for hourly, daily, and monthly releases (see, for example, Table 3, p. B-4). In accordance with the LTEMP ROD Attachment B Section 1.2 (Page B-7), I encourage Reclamation to continue to utilize operational flexibility at Glen Canyon Dam in response to varying hydrological and other resource-related conditions. As warranted, Reclamation, in consultation with Western Area Power Administration (WAPA), should continue to make adjustments to hourly, daily, and monthly release volumes within the water year in response to operational, resource-related, and hydropower-related issues.

In response to stakeholder input at recent AMWG meetings, the feasibility of conducting Spring High Flow Experiments (HFE), along with modeling for improvements and efficiencies that benefit resources including natural, cultural, recreational, and hydropower should be explored. As a potential starting point, I encourage you to consider opportunities to conduct higher spring releases within power plant capacity, along with spring HFEs that may be triggered under the current LTEMP Protocol.

## **Conclusion**

This guidance is not meant to be all encompassing or to preclude additional scientific investigations that can improve the resources downstream of Glen Canyon Dam that are consistent with the LTEMP. The GCDAMP should seek ways to continuously improve the program, including searching for efficiencies and improvements and listening to the States, Tribes, and other program stakeholders.

The GCDAMP and AMWG are vital to ensuring Interior's responsibilities under the GCPA and the LTEMP ROD, and I greatly appreciate Reclamation, USGS, other Interior bureaus, and our external partners' dedication to ensuring Glen Canyon Dam is operated in a manner that protects, mitigates impacts to, and improves downstream resources.

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