



— BUREAU OF —  
RECLAMATION

# **Peer Review Plan for the Technical Memorandum on Lake Mead and Lake Mohave Evaporation Study**

**Nevada and Arizona  
Lower Colorado Basin Region**

## Subject and Purpose

The Boulder Canyon Operations Office, in the Lower Colorado Basin Region, funded a study, to be run by the United States Geological Survey (USGS) in Henderson, Nevada, to accurately measure evaporation at Lake Mead and Lake Mohave. Data collection at Lake Mead began in 2010 while data collection at Lake Mohave began in 2013. The objective of the study was to produce new monthly evaporation coefficients which would replace the existing coefficients in the Region's reservoir operations models. The existing coefficients in the operations models were determined from a 1958 USGS evaporation pan study (Harbeck et al., 1958). The new USGS study implemented an Eddy Covariance station at each reservoir which would use the best available technology to accurately measure sub-daily and monthly evaporation at Lake Mead and Lake Mohave.

The implementation of the coefficients would be performed by the Boulder Canyon Operations Office for daily/mid-term operations and long-term planning models based on the RiverWare platform. One of the mid-term operations models, known as the 24-Month Study (24MS), is used to determine annual operating conditions and tiers at Lake Powell (in the Upper Colorado Basin Region) and Lake Mead in accordance with the 2007 Interim Guidelines (Guidelines) for the Coordinated Operations of Lake Powell and Lake Mead. The use of new coefficients has the potential to shift operating decisions at the two largest reservoirs in the Colorado River Basin when projected elevations are close to the thresholds shown in the Guidelines. Due to the potential impact to decision making, the River Operations Group wanted to study the impact to deterministic and probabilistic models to better inform Reclamation leadership and stakeholders on what changes (if any) could happen.

The Principal Investigators (PI) for the study published a Scientific Investigation Report, through the USGS, documenting the methods and analysis for data collected between 2010 and 2012 at Lake Mead (Moreo & Swancar, 2013). A follow-up Open File Report was also published covering Lake Mead and Lake Mohave between 2013 and 2019 (Earp & Moreo, 2021). After consulting with R&D staff on Reclamation's peer-review policies, it was determined that a Reclamation Technical Report, peer-reviewed by Reclamation staff, would be sufficient to justify the implementation of new evaporation coefficients.

## Project Team

The technical memorandum was prepared by the Lower Colorado Basin Region's Boulder Canyon Operations Office – River Operations Group in Boulder City, Nevada.

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Director or Delegated Manager: Jaci Gould, Regional Director, Lower Colorado Basin Region, Bureau of Reclamation

# Impact of Dissemination

Based on the definition of scientific information in CMP-P14, the category that best describes the batch work/studies being reviewed is marked below.

HISA: \_\_\_\_\_ ISI:  X  Discretionary: \_\_\_\_\_

This PRP is being submitted for the review of **individual** scientific information.

Under Reclamation policy CMP P14, Peer Review of Scientific Information and Assessments, in fulfillment of the Final Information Quality Bulletin for Peer Review (70 FR 2664-2677) and implementation of the Information Quality Act (Pub. L. 106-554) the science informing the Technical Memorandum on Lake Mead and Lake Mohave Evaporation Study is determined to be an influential scientific information. This status was determined since updating model coefficients can have an impact on 24MS determinations as stated in the Guidelines, as well as operational decisions under the Upper and Lower Basin Drought Contingency Plan Agreements. A full sensitivity analysis of the new coefficients resulted in a finding of negligible impact to model results.

## Peer Review Scope

Reviewers will consider the implementation of monthly evaporation coefficients in operations models. Reviewers will also consider the sensitivity analysis results and whether any further analysis needs to be performed. The following questions should be considered by reviewers:

1. Was the sensitivity analysis performed by Reclamation a thorough investigation to understand the impact to model projections and 24MS annual determinations?
2. Are the conclusions of the sensitivity analysis reasonable and valid, given the analysis and results provided in the report?

Reviewers are to provide comment solely on the scientific information being reviewed, and not on any agency decision or policy.

## Peer Review Schedule

The review period is expected to run for three weeks during Fall 2021. The study leads will proceed with the peer review of the technical memo once the Lower Colorado Basin Region's Regional Director's office has been fully briefed on the findings of the study.

The final Peer Reviewed Report is expected to be available on the U.S. Bureau of Reclamation Peer Review public website by January 2022. No deferrals are involved.

## Review Methodology

The Peer Review methodology for this Peer Review Plan will be performed as indicated below with an “X”.

The peer review will be conducted by:	Individuals: <b>X</b>	Panel:	Combo:
The identities of the reviewers will be disclosed in accordance with the Privacy Act:	Yes: <b>X</b>	No:	
Individual comments will be attributed to individual reviewers:	Yes: <b>X</b>	No:	
Comments from reviewers will be summarized together:	Yes: <b>X</b>	No:	
Significant/relevant public comments will be provided to the reviewers prior to the review:	Yes:	No: <b>X</b>	
There will be opportunities for the public to participate in the Peer Review process as applicable.	Yes:	No: <b>X</b>	

The public will not be involved with the review of the technical memorandum; therefore, there will be no public comments to provide the peer reviewers. The results from the technical memorandum will be rolled out to Colorado River Basin stakeholders following the completion of the peer review process.

## Peer Reviewer Selection

The selections below apply for the selection of reviewers for this Peer Review Plan. Additional information is provided in the space provided as applicable.

Will Peer Reviewers be selected by Reclamation?	Yes: <b>X</b>	No:
Will Peer Reviewers be selected by an outside organization?	Yes:	No: <b>X</b>
Will the Public be asked to nominate reviewers?	Yes:	No: <b>X</b>
How many reviewers will be used?	<b>3 Reviewers</b>	

The reviewers should possess the following disciplines or expertise:

Peer reviewers will have had at least 3-years of experience with expertise in hydrology, natural sciences, engineering, or water/reservoir management. The reviewers will be selected by Reclamation from outside of the Lower Colorado Basin Region. Reviewers should have a general knowledge regarding Colorado River Basin operations guidelines. The public will not be asked to participate in the reviewer selection process.

## Delivery of Findings

Each peer reviewer will submit a report of their findings to the Peer Review Lead by the end of the review period. The review report will include a brief description of their comments, findings, and recommendations in a comment matrix. The peer review lead will provide a review template to be used by each reviewer. The final review template will be returned digitally to the Peer Review Lead by individual reviewers.

## Peer Review Response

At the conclusion of receiving peer review comments, the Peer Review Lead will submit a final Peer Review Report to Reclamation's peer [review website](#). The Peer Review Report will summarize the findings of the peer review and list the comments provided by the reviewers, as well as Reclamation's response to the comments, actions the agency will undertake regarding the comments, and reasons the agency believes those actions will satisfy any key concerns or recommendations. The final technical report will also be posted to the peer review website once it has been finalized.

## Additional Information

### Federal Register Notice

The selected statement below applies to this study. Additional information is provided below as applicable.

	Federal Register notices <b>will</b> be provided announcing the formation of a peer review team and completion of the final report.
X	Federal Register notices <b>will not</b> be provided announcing the formation of a peer review team and completion of the final report.

### Applicability of the Federal Advisory Committee Act

The selected statement below applies to this study. Additional information is provided below as applicable.

X	This peer review <b>is not</b> subject to the Federal Advisory Committee Act (FACA) because the review does <b>not</b> involve open meetings or committee chartering and reviewers are being asked to provide individual reviews on the subject matter. Reclamation is <b>not</b> seeking consensus advice from the reviewers as a group.
	This peer review <b>is</b> subject to the Federal Advisory Committee Act (FACA) because the review involves open meetings or committee chartering and reviewers are being asked to provide individual reviews on the subject matter. Reclamation is seeking consensus advice from the reviewers as a group.

## References

- Earp, K.J. & Moreo, M.T. "Evaporation from Lake Mead and Lake Mohave, Nevada and Arizona, 2010-2019." *Scientific Investigation Report*, 2021-1022, 2021. Available online at <https://doi.org/10.3133/ofr20211022>.
- Harbeck, G.E., Kohler, M.A., & Koberg, G.E. "Water-Loss Investigations: Lake Mead Studies." Geological Survey Professional Paper, 298, 1958. Available online at <https://doi.org/10.3133/pp298>.
- Moreo, M.T. & Swancar, A. "Evaporation from Lake Mead, Nevada and Arizona, March 2010 through February 2012." *Scientific Investigation Report*, 2013-5229, 2013. Available online at <https://doi.org/10.3133/sir20135229>.