

# Peer Review Report

3/6/2023

## Water Operations Study for Heart Butte Dam

Comment Disposition Table		
Reviewer	Question and Comment	Resolution
Chris Murray, Hydrologist, MB-ART Region	<p>Question 1: <i>Does the methodology used for estimation of the monthly water balance appear reasonable for a feasibility level analysis?</i></p> <p>Response: Yes. Of course, more detailed modeling is always a question, however, at the feasibility level, that type of approach would likely be overkill. Additionally, the lack of certainty with regard to future hydrologic conditions limits the usefulness of such modeling to conducting a risk analysis, which does not inform effectively on construction conditions during the years of interest. It also appears that significant details have not been worked out regarding the drawdown procedure. This is crucial information to know to perform such detailed modeling.</p>	<p>No specific changes were requested based on this question.</p> <p>Minor additional detail was added to the report to comment on the expected drawdown procedure and uncertainty.</p>
	<p>Question 2: <i>Does the comparison of USGS gage data and Hydromet inflow data add value to the study?</i></p> <p>Response: This discussion appears to be highly valuable for two reasons. First, a logical question if one dataset had been selected without explaining why would be, “Why didn’t you use the other dataset?” These kinds of questions can really bog down public outreach opportunities. Secondly, the discussion provided excellent detail about the vagaries of data use in modeling. There is a tendency for people to assume that data from a trusted source is “correct” and easily applicable to a given data need. However, datasets have their limitations, as we know, and it is good to be upfront about those limitations. This potentially makes public communications much easier down the road.</p>	<p>No specific changes were requested based on this question.</p>
	<p>Question 3: <i>Are the assumptions clear and valid for each scenario?</i></p> <p>Response: It would be helpful to provide assumptions as to how</p>	<p>Additional detail was added to the scenario descriptions where possible.</p> <p>The required maximum reservoir</p>

	<p>long the work would take and what elevation the reservoir needs to remain below for the work to continue. This could be an addition to the assumptions as well as indicated on Figures 4-7 (Figure 6 seems to be missing) to show that the construction period fits within the modeled time window created by the drawdown.</p>	<p>elevations have not yet been specified for dewatering system performance.</p> <p>Scenario B was reconsidered with input from recent project discussions and drawdown was shifted from 2025 to 2026.</p> <p>New Figure 6 was created to resolve incorrect figure numbering.</p>
	<p>Question 4: <i>Do the project benefit timeline tables adequately summarize the estimated timing of benefit loss for economic impact evaluation?</i></p> <p>Response: Yes. However, not knowing how the system works, it is suggested to expand on the following statement a bit: “but there would be problems with field accessibility during periods of high summer discharge” (Page 13, Paragraph 1). Maybe this is obvious to the locals, and that is what matters, but the reviewer is not at all clear on what, “field accessibility” problems are, and whether/how they could be mitigated. This discussion just feels thin in comparison to the potential seriousness of the loss of irrigation water for the ag folks.</p>	<p>“Timing of Economic Impact” section was revised to clarify and expand on the expected irrigation impact.</p>
	<p>Question 5: <i>Are there any concerns about the content or scope of the draft study document?</i></p> <p>Response: This appears to be the proper scope and content for a feasibility study of this scale. One content issue that was identified has to do with the high flows. There are two reference high flows that are identified as the monthly averaged five high flow years, and a series of the highest flow months. These are provided to show the variability and magnitude of flows that could be encountered during the project. Then there is this 2014 year that was used in the modeling to represent a high flow scenario, whose relationship to the previous two high flow reference cases is not well-documented. It might be helpful to show a graph with the 2014 monthly flows along with the high and max flows to give the reader a feel for that comparison. A short description of the graph and points of interest would add value as well.</p>	<p>New Figure 6 and additional explanation was included to show how calendar year 2014 inflow compares to the average and high inflow projections that were presented.</p>