84 cont'd | future flows. It should be noted that they do not represent best or worst case futures, only that they are the past brought forward for use.

Page 3.3-12, 3.3.3.6

85 | paragraph 3: It should be noted here that the end of year elevations do not represent the lowest point for water levels over the year. As stated in various places in the DEIS, reservoir elevations vary monthly by 15-20 feet or more up to 75 feet over the course of a year. Especially for the 10th percentile figures, lake levels may go below critical levels over the course of normal operations. Lake elevations in Mead reach their lowest point in July, and are declining over the six months previous.

Page 3.3-13, 3.3.4

86 | Transit time through the reservoirs, especially at low reservoir elevations, is likely to increase. How this affects productivity is an issue that should be mentioned when this analysis is discussed.

Page 3.3-14, 3.3.4.1

87 | paragraph 2: More information on the "equalization" rules is needed somewhere in this document.

88 | paragraph 3: Why was the Shortage Protection alternative analyzed differently? Will the revised analysis in the FEIS be more liberal or more conservative in showing a surplus? If it is more conservative, as one assumes it would be since the existing did not protect at 80%, does this reduce the effects of this alternative? Since this is often the alternative with the highest effect, this is an important consideration.

89 | Page 3.3-15, 3.3.4.2.2
paragraph 1: When are Lake Powell water levels lowest?

Page 3.3-17, 3.3.4.2.3

90 | paragraph 1: This paragraph is very important to understanding the modeling. We suggest that the concepts of the traces as shown in Figure 3.3-5 be incorporated into the modeling discussion earlier in this chapter. It is important for the reader to understand that each trace has the same 85 values as the other traces, but each one starts with a different year and wraps through all other years.

91 cont'd below | paragraph 2: It might be useful to explain why the 90th percentile does not change over time while the 50th and 10th do. As with paragraph 1, above, it may be appropriate to have a section describing more fully what is happening in these graphs. An attachment might be the best place to put such an explanation, with example graphs.

85: The referenced statements are appropriately located in the second paragraph of Section 3.3.4.2.3 (for Lake Powell) and the second paragraph of Section 3.3.4.4.3 (for Lake Mead).

86: As noted in Section 3.3.3.3, lakes Mohave and Havasu will continue to be operated in accordance with their existing rule curves. As such, the operating range of the water surface elevations and transit times of these two lakes are not expected to be affected. Additionally, the potential increase in transit time of lakes Mead and Powell are unlikely to affect productivity.

87: This information has been added in Attachment J.

88: The Shortage Protection Alternative was not analyzed differently. The referenced paragraph provides an explanation of the derivation of the shortage protection lines, used in all of the alternatives and baseline to determine when shortages occur.

89: The first paragraph of DEIS Section 3.3.4.2.3 states that the elevation at the end of the calendar year is near the seasonal low. Typically, the lowest end-of-month elevation for a year occurs between December and March.

90: The referenced discussion on the 85 traces is also addressed earlier in the chapter in Section 3.3.3.5, third paragraph. "Trace" refers to the output of a particular simulation, where the assumed inflows were derived using the indexed sequential method.

91: The fourth paragraph of Section 3.3.4.2.3 (for Lake Powell) and the third paragraph of Section 3.3.4.4.3 (for Lake Mead) have been expanded to provide additional explanation on the trending tendency of the 90th, 50th and 10th percentile lines. Specifically, the 90th percentile Lake Powell elevation does not change over time, indicating that Lake Powell is essentially full for 10% of the traces in all years.

91 cont'd As far as the results shown in this paragraph, and the figure, the important point is that the lake level declines over time, and the range of potential levels increases significantly on the lower ends, but not on the upper end. All water levels, high, low or moderate are temporary, and of course these do not reflect the within-year fluctuations.

92 Page 3.3-18, 3.3.4.2.3
paragraph 2: All modeling for levels is done at the end of the year as shown in Figure 3.3-6. The 90th percentile is at approximately 3685 feet. This paragraph brings in a new figure (Figure 3.3-7) with a modeling point of July, when the water level is highest in Lake Powell. These two figures are not comparable and serve to confuse the reader. One modeling point should be chosen for these analyses. This applies to page 3.3-21, Table 3.3-5 and its explanation also.

92: The analysis of elevation 3695 ft msl is included to address the probability of Lake Powell filling each year. This would typically occur during June or July. For the FEIS, all analyses of Lake Powell elevations were changed to a common point (end-of-July).

93 Page 3.3-19, 3.3.4.2.3
paragraph 2: What is the significance of elevation 3590 for Lake Powell. The minimum power generation level is 3490 feet, is that what you intended to look at? This applies to page 3.3-19, Figure 3.3-8 and page 3.3-21, Table 3.3-6 also.

93: For the DEIS, the Lake Powell water levels observed for the baseline and surplus alternatives did not fall below 3550 feet. An analysis of the frequency of Lake Powell water levels falling below 3590 feet was included in the DEIS to provide a bottom range for the observed water levels. For the FEIS, this analysis was replaced with an analysis of elevation 3612 feet, below threshold elevation for marina and boat ramps.

94 Page 3.3-19, 3.3.4.2.4
paragraph 1: Water levels fluctuate between 100% of possible elevations, not between 80%. All water levels are temporary, not just those in the upper and lower 10%. Please revise this paragraph to express this.

94: This comment appears to be directed toward 3.3.4.2, 4th paragraph. 80% of the simulated end-of-July Lake Powell elevations lie between the 90th and 10th percentile lines.

95 Page 3.3-23, 3.3.4.4.1
paragraph 3: Please note in this paragraph when Lake Mead reaches its minimum levels.

95: Section 3.3.4.4.3, paragraph 1, states that Lake Mead water level generally reaches its annual low in July.

96 Page 3.3-25, Figure 3.3-12
The level for the 90th percentile appears to be close to the lower level for the 1.5 maf flood pool (1219.61 feet). What is the actual level for this percentile? Again, an explanation of why this percentile does not change would assist in understanding the modeling.

96: For the FEIS, the 90th percentile of the modeled Lake Mead water surface elevation monthly values ranged between 1215.19 feet msl in 2002 to 1210.67 feet msl in 2050.

97 Page 3.3-26, 3.3.4.4.3
paragraph 1: The difference between the modeling effects and seasonal changes in elevation are well mentioned in this paragraph. This bringing together of more than just the raw results of the models should be used more throughout the document to assist the reader in understanding the implications of this. For example, because the lake levels are lower in July than when the modeling was done, there is a greater chance of breaching one or more of the target trigger elevations than may be accounted for in the analysis. The tiers discussed in the section on the alternatives could be violated over the course of the year by the fluctuation of the reservoir. Power generation is very important during the hot summer months, and that is an area that could be more affected than perhaps the models suggest.

97: Much of the analysis in the FEIS uses end of December elevations for Lake Mead and end of July elevations for Lake Powell. Reclamation agrees that probabilities of remaining above various water surface elevations would be different during times of the year other than discussed in the FEIS. However, differences between alternatives and baseline conditions would be similar.

98 paragraph 3: Water levels fluctuate between 100% of possible elevations, not between 80%. All water levels are temporary, not just those in the upper and lower 10%. Please revise this paragraph to express this.

98: 80% of the modeled end-of-December Lake Mead elevations lie between the 90th and 10th percentile lines.