EXHIBIT ARWA-400

REBUTTAL TESTIMONY OF JEFFREY WEAVER, P.E.

1. I am a registered civil engineer in the State of California and am employed by the firm of HDR Engineering, Inc. (HDR). A copy of my resume, which accurately describes my education and experience, has been submitted as **Exhibit ARWA-101.**

2. I have been the lead hydrologic engineer in the development and modeling for the Water Forum's development of a proposed American River modified flow management standard (Modified FMS or MFMS). Tom Gohring's testimony, **Exhibit ARWA-300**, describes the development and contents of the Modified FMS in more detail. The proposed water-right terms and conditions that would be applied to the Bureau of Reclamation's (Reclamation) Permits Nos. 11315 and 11316 to implement the Modified FMS (Proposed Terms) are **Exhibit ARWA-308** to Mr. Gohring's testimony.

3. In conducting the modeling of the Modified FMS, I used Reclamation's January 2015 Benchmark CalSim II model (Benchmark Model). I obtained this model by contacting Nancy Parker from Reclamation's Water Resources Planning and Operations Support office in the Denver Technical Services Center. That model is available by request from Reclamation.

4. In conducting the modeling of the Modified FMS, I made certain modifications to the Benchmark Model to support a comparison of hydrologic conditions with and without the Modified FMS in operation. **Exhibit ARWA-401** explains the key assumptions in the Benchmark Model, in the base modeling for my analysis and in the modeling with the Modified FMS in operation.

5. I have reviewed the Proposed Terms contained in **Exhibit ARWA-308**. They are consistent with the assumptions about the Modified FMS that I used in modeling its comparative effects.

6. One modification that I made to the Benchmark Model for my analysis of the Modified FMS was to replace modeled inflows to Folsom Reservoir. I used data provided to me by Placer County Water Agency (PCWA) concerning, primarily, the inflows from the upstream storage projects operated by PCWA and the Sacramento Municipal Utility District (SMUD). To the best of my knowledge, while the information provided by PCWA does not incorporate climate change, it is the best available data about how the PCWA and SMUD projects expect to operate in the future. That data is the best available data because it accounts for modifications to the operations of the PCWA and SMUD projects in light of their relicensing by the Federal Energy Regulatory Commission. The Water Forum Technical Team made a conscious decision to

use these inflows rather than DWR's representation of climate change for two reasons: (a) the technical team was concerned about the way climate change was reflected as affecting Folsom Reservoir inflows due to the lack of recognition of upstream storage and reregulation of flow above Folsom Reservoir in DWR's model; and (b) DWR's modeling did not reflect the effect of relicensing on the PCWA and SMUD projects and their respective minimum flow requirements below their projects. To the best of my knowledge, the representation of climate change in the DWR modeling that the Water Forum Technical Team considered is the same as that contained in DWR's modeling submitted for this hearing. Relying on data files reflecting projected hydrologic conditions, such as those that PCWA provided to me to reflect inflows to Folsom Reservoir, is a common practice in conducting hydrologic modeling.

7. **Exhibit ARWA-402** consists of results from my modeling of the Modified FMS that show the comparative results with and without the Modified FMS for the following parameters in the American River basin:

- End-of-May Folsom Reservoir storage;
- End-of-September Folsom Reservoir storage;
- End-of-November Folsom Reservoir storage;
- End-of-December Folsom Reservoir storage;
- American River flows below Nimbus Dam in January;
- American River flows below Nimbus Dam in February;
- American River flows below Nimbus Dam in March;
- American River flows below Nimbus Dam in April; and
- American River flows below Nimbus Dam in May

8. I have maintained the electronic files for the modeling that I performed that is described in this testimony. I have made them available on the SWRCB's FTP site for this hearing. Those files include the data concerning inflows to Folsom Reservoir provided by PCWA.

9. The summary of my testimony is contained in Mr. Gohring's PowerPoint presentation that is **Exhibit ARWA-309.**