

Memorandum

To: URGWOM Technical Team Members
Date: March 16, 2020
Subject: Notes of March 10, 2020 URGWOM Technical Team Meeting

These notes summarize the important matters discussed during the March 10, 2020 Upper Rio Grande Water Operations Model (URGWOM) Technical Team meeting. The meeting began at 9:00 am in the NM Interstate Stream Commission office in Albuquerque, NM. An attendance list is included on the last page of these meeting notes. The internet service at the NMISC office was not available during this meeting and those participating in the meeting by telephone were unable to view the slides presented during the meeting.

The principal meeting agenda topics include reports on the basin snowpack to date, summary report on January 27, 2020 Tech Team field trip, updates and reports from the Bureau of Reclamation on optimization of Elephant Butte power generation and NWS forecast in URGWOM, report by the NM Interstate Stream Commission on 2020 AOP model results and the WaterSMART Grant, a report from the BIA Designated Engineer on Prior and Paramount water accounting and report on URGWOM related activities from the Corps of Engineers and the US Geological Survey.

Dave presented current (March 4, 2020) snowpack conditions in the basin based on SNOTEL readings. These include 93% at Beartown, 84% at Wolf Creek Pass, 98% at Santa Fe and 80% at Quemazon, all based on the 1981-2010 average.

William Miller presented a summary report on the URGWOM Tech Team 2020 winter field trip. The Team was interested in learning more about how the snowpack data used to prepare the NRCS runoff forecasts are measured. The original plan was to rendezvous with the NRCS snow survey crew at Palo Flechado Pass in Taos County, however the NRCS crew was unable to meet at the appointed time and the Team instead traveled to a site near the Santa Fe Ski Basin for a demonstration of snow survey techniques and equipment presented by Dave Moeser. Each member of the Team had an opportunity to use the equipment to obtain measurements that were then converted to snow water equivalent (SWE). The Team also learned how factors such as vegetation type and density, slope aspect and wind speed and direction affect snowpack. The Team would be interested in another trip during the winter of 2021 in order to visit a SNOTEL site and to become familiar with the measurement and telemetry equipment used at a SNOTEL site.

Lucas reported on the results of his work on the Elephant Butte power plant optimization study that is now ready for implementation into the official URGWOM model. Lucas summarized the criteria he used to condition the optimization, including maximum/minimum generator capacity, rounding of power output values to the nearest megawatt, maintaining 14-day

constant power generation, and no changes to power output would be made during the weekend except during emergency situations.

The reservoir restrictions adopted during the study include controlling releases from Elephant Butte to maintain target storage levels in Caballo Reservoir and adoption of a 10-day pre-load transition and a 45-day drawdown period. Changes to the Elephant Butte methodology include the use of a plant efficiency curve instead of an efficiency factor, input information on the number of generating units on line, the addition of an irrigation /non irrigation season determination and the transition between the seasons in the initialization rules. In addition changes to the following rules/functions were made:

- No release from Elephant Butte Reservoir during the non-irrigation season;
- Calculation of the ideal reservoir release given current river and reservoir conditions;
- Include release based on generator pre-load and Caballo Reservoir draw-down at the start or end of the irrigation season;
- Ensure optimum release is based on a whole number of generators to be simulated, and
- Establish a minimum head at Elephant Butte (~90 ft.) below which is difficult to perform the optimization and release is held constant.

Lucas reported on the results of a test run of the power generation optimization using the February, 2020 50% probability forecast AOP model. He presented plots of storage and release, generator capacity and operating head and the number of units in operation and the amount of power generated that showed that the optimization feature is working. The Team discussed the need for both pattern based and demand based releases from Elephant Butte and whether it would be possible to adopt one or the other to control releases from Caballo Reservoir, not Elephant Butte Reservoir. The reservoir operation would be based on the most efficient combination of release rate, reservoir head and generator capacity.

Lucas also reported that the National Weather Service forecast data for use in the AOP model has been made available for download in .csv format from a new web page. All forecast ESP traces can now be downloaded and stored in Reclamation's Hydrologic database (HDB) for use by Reclamation in URGWOM.

Cindy reported that the NMISC has completed initial 2020 AOP URGWOM runs based on the March 1st forecast. The March 1 forecast is for below normal runoff (64% of average at Otowi). Cindy presented hydrographs of 50% exceedance probability inflow, release and storage at Heron, El Vado, Abiquiu, Elephant Butte and Caballo Reservoirs and Cochiti Lake. Hydrographs of stream flow at major gages were also presented. These initial model runs are subject to change pending release of the final 2020 operating plan for the Rio Grande Project. No flood control operations are anticipated.

Shalamu reported that he has been advised that the WaterSMART grant application that NMISC has submitted to Reclamation has been approved and will be funded. The Project intends to improve the ability to accurately forecast water supply at the New Mexico Rio Grande Compact Index gaging stations and the impacts of future climate change variability on flows at those stations. Shalamu summarized the research objectives, the main tasks, costs and schedule. The project is expected to be completed within two years of the date of grant award funding.

Viola reported to the Team on the BIA computations of Prior and Paramount storage and release. She presented a plot of the May to July percent of average flow at Otowi versus Prior and Paramount El Vado Reservoir storage requirements (not including reservoir evaporation). Viola suggested that this relationship could be applied in URGWOM for use in accounting of Prior and Paramount operations. Viola also presented a plot showing the relationship between the natural flow at Otowi versus Prior and Paramount storage which could be applied in URGWOM if the natural flow of the Rio Grande were computed, not just the total Rio Grande flow. Total Rio Grande flow may be influenced by the operation of upstream reservoirs. The Team briefly discussed several alternatives for developing natural Rio Grande flow including computations based on the Otowi Index Supply or NRCS natural flow forecasts.

Phillip reported on 1) the Corps of Engineers presentations at the Rio Grande Compact 2020 Engineers Advisors meeting, 2) the LRG portion of URGWOM is undergoing technical review at CADSWES, 3) the URGWOM official model has been updated as of the end of February, and that the next update will be made to incorporate the optimization of Elephant Butte power generation, 4) Intera will be assisting with the calibration of the groundwater objects in the Middle Rio Grande and the Lower Rio Grande and personnel from Intera will be participating in the Technical Team meetings beginning in April, 2020, and 5) the Albuquerque District will send three team members to the April, 2020 RiverWare rule based simulation training.

Dave reported that the USGS PRMS model has been archived (completed) and that the database will be finalized in a few weeks. Dave also reported that he will continue to serve as the Tech Team chairperson.

The next regular meeting of the Tech Team is scheduled for April 7, 2020, at 9:00 am at the NMISC office in Albuquerque.

The meeting adjourned at about 10:45 am.

ATTENDANCE LIST
URGWOM TECHNICAL TEAM MEETING
March 10, 2020

<u>NAME</u>	<u>REPRESENTING</u>
Dave Moeser	USGS
Marc Sidlow	USACE
Phillip Carrillo	USACE
William Miller	WJM Engineers/USACE Contractor
Walt Kuhn	Tetra Tech/USACE Contractor
Carolyn Donnelly	USBR
Andrew Gelderloos	USBR
Lucas Barrett	USBR
Cindy Stokes	NMISC
Shalamu Abudu	NMISC
Viola Sanchez	BIA
Scott Anderholm	Hydrologist/USACE Contractor
Chris Stageman	NMISC

Those participating via telephone conference included:

Nick Mander	Hydros Consulting
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