

MEETING NOTES  
UPPER RIO GRANDE WATER OPERATIONS MODEL  
ADVISORY COMMITTEE MEETING

NM Interstate Stream Commission Office  
5550 San Antonio Dr., NE  
Albuquerque, NM

September 9, 2014

Amy Louise called the meeting to order at 10:00 am. Those in attendance and those participating in the meeting via telephone conference call introduced themselves. The meeting agenda and an attendance list are attached.

Kyle Shour updated the Committee on the review and update of the URGWOM loss rate coefficients. Kyle has prepared and circulated a draft memorandum describing methods used to compute loss coefficients, including extending the period of record used in the analysis to include more recent hydrologic data, which is a drier hydrologic period of record. The memorandum recommended that new loss rate coefficients be adopted for all of the reaches in the Colorado model, as well as the two reaches on the Rio Chama and the Otowi to Cochiti reach. The Technical Team acted to adopt the loss rates recommended in Kyle's memorandum only for the Colorado portion of the model. After the new loss rates are incorporated into the model, the model will be run to determine local inflow values. Local inflow could also be input to URGWOM utilizing a rainfall/runoff watershed model.

Kyle updated the Committee on his work to update the URGWOM database. He reported that all database files have been updated for the December 31, 1974 to December 31, 2010 period. He will update the database through 2012 to the extent those data are available. After local inflows are computed, they will also be added to the database. The database will also be updated for records with data that extend back to 1950 (temperature, precipitation, stream flow, etc.).

Kyle also reported that he is updating the Colorado model based on Craig Borough's and CADWES's previous recommendations. The accounting model layout has been updated and related changes to rules have also been made. Kyle is currently reviewing the model's Rio Grande Compact calculations and the model's simulation of the operation of Platoro Reservoir. The final task will be to combine the Colorado model with URGWOM, either by direct link or through the transfer of file data.

Nabil Shafike described layout changes to the middle valley portion of the model that has been incorporated into the calibration. He reported that the model is now applying the CIR computation method in a consistent manner. The Albuquerque Basin MODFLOW groundwater

model was run so that the deep aquifer heads could be updated. The first draft of the calibration documentation will be completed by September 30, 2014. Nabil and Jesse discussed methods for applying MODFLOW model runs to the URGWOM model and how the deep aquifer heads are used in DSS file and to calibrate the model. This topic will be discussed in more detail at the next Technical Team meeting.

Jesse Roach described his recently completed study of gains and losses on Rio Chama between La Puente gage and El Vado Reservoir. The study indicates that after 1975, the reach has become a consistent gaining reach. A concrete control structure (weir) was installed at the La Puente gage in 1965. Further analysis indicates that the deposition of sediment in the channel above the control structure has interfered with the gage rating, and therefore, the record of flow is overestimated since 1979 especially at high flows. Jesse recommended factors to be applied to high flows in the monthly model to correct for this error.

Jesse also reported to the Committee on his investigation into the gains and losses in the San Marcial to Elephant Butte Dam reach. He extended the hydrologic record back to 1916, and gains and losses were again analyzed. Jesse proposed implementing a method that would incorporate historic sediment surveys into the analysis, as well as a routine to implement accounting of bank storage in the gain loss analysis. These will be included in future URGWOM model runs. Another factor to consider including in the reach analysis is ungaged inflow (groundwater and/or surface water). The accounting of ungaged groundwater contributions to the reach will require enhanced groundwater object seepage functionality. Additional future work that might help improve the loss rates in this reach include a review of the San Marcial gage data and a study of the impact of historic dredging in the reservoir delta area.

Steve Setzer provided to the Committee background on Hydros' Lower Rio Grande work assignments completed and those that are ongoing. Work assignments under the basic contract have been completed and he is ready to proceed with model calibration, and ultimately to connect the Lower Rio Grande model with URGWOM.

Steve described development of integer day travel times, which were reviewed by the Committee and then revised. This will require the addition of lag times on some canals. Additional groundwater objects were added to Hudspeth County area and lower valley in Mexico to better simulate groundwater flux in this area using constant head boundaries. The USGS MODFLOW model of the area could be used to set head elevations in the objects. A moving average CIR has been adopted in order to synchronize crop demand with historical diversions. General improvements to the rule set were also made including the date of first release based on project allocation amounts. The new D3 operating rules for the Rio Grande Project are now included in model. Steve is working with the Bureau of Reclamation to verify modeling assumptions. The next step will be model calibration.

Jessica Driscoll reported to the Committee a test of the conceptual design of RiverWare that uses two layers to model water quality (salinity) in groundwater objects. The purpose of this test was to determine the effect of large differences in upper layer thickness in adjacent groundwater objects on salt and water fluxes and salt concentrations. For this test, the river ground water object upper layer thickness was changed from 19.69 feet (base case) to 8 feet (thin case), while the east and west groundwater objects upper layer thicknesses were held consistently at 19.69 feet. Changes in salt flux and salt concentration due to the upper layer thickness change was analyzed by comparing base case and thin case results in the test reach (Bernardo to San Acacia) for the entire model run (January 1, 1990 to December 31, 2000). It was determined that the upper layer salt concentration variability is higher in the thin case than the base case, and the lower layer salt concentration variability is minimal in both thin and base cases. Fluxes are not scaled to thickness of layers, so when large differences in adjacent layer thicknesses exist, fluxes may be unreasonable. Also, order of dispatch affects calculated salt concentrations and fluxes. There will be further testing of two-layer groundwater objects to define extent/sensitivity of thicknesses of adjacent groundwater layers.

Jesse Roach presented a report on the status of the URGWOM monthly RiverWare model. Based on previous work completed by CADSWES, Jesse has been able to run a monthly model in rule based mode without middle valley ESA target flows. Marc has updated the initialization ruleset to incorporate work by CADSWES to make initialization general to a daily or monthly timestep. There will be either one or two operations rulesets; ideally, just one. Initial indications are promising that a single rule set may be achievable. New groundwater (shallow alluvial aquifer) parameters will also have to be developed. Jesse described some additional suggested revisions to model that would simplify the transition between monthly and daily time step model runs.

William Miller reviewed with the Committee the April, 2014 URGWOM Five-Year Plan, as well as some additional tasks that could be included in the plan. The tasks include development of physically-based loss rates for the Embudo to Otowi, Otowi to Cochiti, below Abiquiu to Chamita and the near Jemez to Jemez Canyon Dam reaches; implementation of root zone modeling to determine crop diversion demands for the Lower Rio Grande and Middle Rio Grande; computation of crop CIR based on actual historic dates of growing season for Middle Rio Grande; and a study of impacts of channel dredging in Elephant Butte Reservoir delta on gain/loss relationship and a review of San Marcial gage records. The CADSWES root zone modeling method will be completed in October. RiverWare currently has temperature algorithms for reservoirs and two layer groundwater objects and CADSWES is making water quality more accessible. Miller will modify the Five-Year Plan to incorporate these additions and report back to the Technical Team at their next meeting.

Under other business, Conrad Keyes reported on the following meetings scheduled to take place in the Lower Rio Grande area:

- Paso del Norte Watershed Council will meet September 2, 2014;
- South Central New Mexico Stormwater Inundation Coalition will meet on Sept 18, 2014;
- Paso del Norte Watershed Council will meet October 23, 2014 at the Las Cruces City Hall in the afternoon;
- The International Boundary and Water Commission Citizens Forum will meet October 23 in the evening to discuss dredging of the Rio Grande channel at the Las Cruces City Hall.

The next meeting of the Advisory Committee will be in six months. Amy will send out proposed meeting dates to Committee members.

The meeting adjourned at about 12:30 pm.

ATTENDANCE LIST  
URGWOM ADVISORY COUNCIL MEETING  
Sept 09, 2014

NAME	REPRESENTING
Amy Louise	USACE
Marc Sidlow	USACE
Jessica Driscoll	USGS
Kyle Shour	Tetra Tech USACE Contractor
Jesse Roach	Tetra Tech USACE Contractor
William Miller	WJM Engineers/USACE Contractor
Nabil Shafike	NMISC
Aburpa Borah	Bureau of Reclamation

Those participating via telephone conference:

Steve Setzer	Hydros, Inc.
David Neuman	CADSWES
Conrad Keyes, Jr.	USACE Contractor



Advisory Committee Meeting

September 9, 2014 – 10:00 am

Conference Room – New Mexico Interstate Stream Commission

5550 San Antonio Drive NE, Albuquerque, NM 87109

Call-in line: 1-855-547-8255 (US Gov 703-648-4848), Pass code: 95514#

#### Agenda

1. Introductions
2. Technical Team Updates
  - a. Database
  - b. Loss Coefficients
  - c. Middle Valley Calibration
  - d. San Marcial to Elephant Butte Reach gains/losses
3. Lower Rio Grande Model
4. Colorado Model
5. Water Quality Modeling
6. Monthly Model
7. Five-Year Plan
8. Other Business
9. Next Meeting Date