

**Notes from URGWOM Steering Committee Meeting; September 14, 2000;  
10:00 AM; Corps of Engineers Conference Room, Albuquerque**

*In attendance:*

Ellen Dietrich, SAIC

Nabil Shafike, NMISC

Rhea Graham, NMISC

Marc Sidlow, Corps

Walter Hines, CH2M Hill

Gail Stockton, Corps

Conrad Keyes, Jr., EWRI

Carole Thomas, USGS

Charles Lujan, Pueblo of San Juan

Leann Towne, BOR

Art Martinez, BIA-AAO

Jack Veenhuis, USGS

Danielle Migneco, USGS

Brad Vickers, Wave Engineering

Bill Miller, WJM Engineering, Inc.

Dave Wilkins, USGS

Ed Polasko, NWS-ABQ

Mark Yuska, BOR

Dennis Romero, BOR

- ❖ Mark Yuska, Brad Vickers, and Marc Sidlow presented slides and a live demonstration of URGWOM running with the newly developed rules, showing the power of combining the logical code (rules) with the physical modeling.
  - First, Mark reviewed how the models that make up URGWOM work. He explained that the rule sets may vary for the planning and water operations models.
  - The purpose of the rules is to solve when there are not enough knowns for the physical model to solve. For example, if the reservoir elevation is not above the spillway crest, a decision is needed to determine how much is released. Rules figure this out, based upon actual logic used by dam tenders.
    - Rules are used to set contractor and water accounting priorities and limits. Rule-based simulation makes decisions in the model when mass balance accounting has unknowns.
    - The rules are repeated for every timestep of each run, and sometimes repeatedly within each timestep.
    - The rules take into account who is asking for water downstream. The user can identify the entities making the requests and the amount and timing of each request.
  - Overview of how the rules work.
    - The rules and the model execute from upstream to downstream.
    - The rules set the total reservoir outflows and the amount of water delivered to whom.
    - There are four types of priorities for the accounting rules:
      - Water type,
      - Account,
      - Release type,
      - Destination.

- Flood control is usually the top priority.
- A demonstration of modeling a delivery request was run.
  - The quantity of the total release (outflow) is determined before any other releases are made. Contractor requirements are met next.
  - Priorities iterate until the highest ones are satisfied and the lower ones are either allowed or disallowed.
  - It is not difficult for the user to change priorities in order to try different operations options.
- Mark was asked what the computer memory requirements are to run URGWOM. They are using 1 GB of RAM now to model one year of data.
- Will the rules be tested through both wet and dry years to ensure functionality? Yes. URGWOM is just now to the point where everything is working together, so this has not been done yet. The initial storage set is generated from the database through the data management interface (DMI) but it can also be set by the user.
- RiverWare is now carrying the negative outflow values downstream. This needs to be fixed by CADSWES by setting negative values to zero.
- How would operators use URGWOM in everyday operations?
  - URGWOM can be customized for the user's needs to generate needed reports, as a standard procedure.
  - The operators can add information and change some parameters.
  - Eventually a more user-friendly interface will be created.
  - Data from URGWOM can populate a database from which reports could be generated, or the results can be obtained directly from specific screens (SCT) in the model.
  - Running the model can help operators learn about the river system without trying it out in the real world.
- Can URGWOM be used by and customized for the users of small ditch associations? Specific reports can be set up to provide information that they can use, eventually through the web site.
- What would be the effect of the adjudication of the Rio Grande basin? The model is flexible and the rules can be changed to reflect new requirements. Water rights are not included in this version of the model, but they could be added and calculated by expanding water accounting.
- URGWOM does not yet have the ability to keep the river wet, i.e., iterate automatically until downstream flows meet the target. Reservoir releases can be changed until the desired flows are achieved through a manual iterative process. In addition, confidence can be developed in the flows predicted by the model by running a range of options.
- Other demonstrations of how URGWOM uses rules that were shown:
  - Brad demonstrated how the model handles waiver balances for each contractor. The water was reassigned by relabeling in Heron reservoir, not actually released into the system.
  - Demonstration of the channel capacity below a reservoir— inflows to a reservoir downstream were changed to show that the flows from the upper reservoir are limited by the channel capacity in the reach between the two facilities.

- Demonstration of storage rights of the pueblos that use Rio Grande water from El Vado—the rule computes the storage requirement based on the 1981 agreement.
- Demonstration of minimum flows—rules set the minimum releases from the reservoirs.
- Demonstration of rules for rafting releases that occur in July and August.
- Jemez Canyon Dam— water exchanges in the system are accounted for through the exchange of Rio Grande water for San Juan-Chama water by holding back water in Jemez, and allowing San Juan-Chama water to pass Jemez in the Rio Grande.
- Issues for URGWOM to address:
  - Releases for setting channel capacity or minimum flows at control points cannot be adjusted for more than one timestep downstream in one URGWOM run, using the current version of RiverWare.
    - The model can predict flows at gages downstream, but it has a problem if minimum flows are not met or if channel capacity is exceeded. It cannot automatically adjust gains and losses a few days ahead by routing. The only way to do this is to rerun with different parameters until the desired conditions are met.
  - The model is slow. It takes 8 to 10 seconds per timestep. This may be a bigger problem for the Planning Model which may necessitate lumping accounts.
  - San Juan-Chama loss calculations below Cochiti have not been added to RiverWare yet, but CADSWES is working on it, and should be available soon.
  - How San Juan-Chama water is distributed to the diversions below Cochiti needs to be developed.
  - The rule sets reflect the operation of the current system, but new rules will be needed to address future planning for the Water Operations Review, such as allowing for storage of Rio Grande water in Abiquiu in San Juan-Chama storage space.
- Mark summarized by saying that the separate pieces of URGWOM now run as an integrated model, and is ready for testing by operations. The issues listed above must be addressed, and the Steering Committee should recognize that the Planning Model will require changes.
- ❖ Mark distributed a handout on URGWOM Technical Team activities that is attached to the end of these notes. The information in the handout was not discussed.
- ❖ Fiscal Year 2001 funding—The Senate and House versions of the Energy and Water Bill are under discussion.
- ❖ Jack Veenhuis provided a brief update on progress in developing MMS.
  - All DEMs for northern New Mexico and Colorado have been acquired and divided into hydrologic units.
  - They are starting to run the model.
- Jack also mentioned that the next WARSMP meeting will be held on October 12 and 13. He would like someone to attend.
- ❖ The next URGWOM Steering Committee meeting will be held on **October 12** at 10:00 a.m. at the Corps conference room.



September 14, 2000 - STATUS OF URGWOM TECH TEAM ACTIVITIES

**People:**

- Brad Vickers is here to demonstrate the model running with rules along with Marc Sidlow.

**Activities:**

- The rules can begin being tested now.
- The model through Elephant Butte is physically built at an acceptable stage for first use and testing.
- URGWOPS sub-committees provided some intended uses providing guidance on how the model can support the Planning Model.
- Caballo flood control outflow rules are going to be simplified based upon recommendations from IBWC. The new rules will work reasonably within a daily timestep.
- The Accounting Model for 1995 and 1996 is proving to work well now. There's a couple of RiverWare glitches CADSWES is working through now that will complete our acceptance.
- Below San Acacia to Elephant Butte is physically modeled consistent with other reaches below Cochiti now, and is improved with smaller magnitude computed local inflows.
- The Forecast Model is being tested, and so far, properly conserves 1995 and 1996 volumes.
- We have been adding to data 1975-1984 and 1997-1999.
- ET data is complete from 1985 through 1999.
- Crop areas are complete from 1975 through 1997.
- We have received MRGCD Diversion data on CD for 1998 and 1999.
- We're finishing up physical modeling reaches below Elephant Butte, modeling and documentation.

**Meetings:**

- The Team met with Bill and Nabil 8/11 on assessing the state of middle valley physical modeling. We agreed to stop enhancements for this version and use/test it. Enhancements can and will continue, but for upcoming versions.

**Issues requiring Steering Committee Considerations:**

- Budget for FY01 - We believe continuation is in the works. Please keep it going.
- We must begin planning to put the accounting model into service beginning Jan 1, 2001.