RECLAMATION
Managing Water in the West

RIVERWARE USER GROUP MTG

UPPER RIO GRANDE WATER OPERATIONS MODEL (URGWOM)

Cooperator Acceptance (Testing)

U.S. Department of the Interior
Bureau of Reclamation

Who Is Involved

- USBR – AAO
  - Garret Ross, In-house Modeler & Tech Team Member
  - Ed Kandl, Water Accounting Model
  - Valda Terauds, Planner, URGWOPS
  - Steven Bowser, Planner, URGWOM Steering Committee Co-Chair, HDB development & Tech Team Member
- USACE
  - Marc Sidlow, In-house Modeler
  - April Sanders, URGWOM Steering Committee Co-Chair, URGWOPS
  - Roberta Ball, Database & IT Support
- USGS
  - Mike Roark, Team Lead
  - Dave Wilkins, Retired, Contract Modeler
- Consultant to the USACE
  - Bill Miller, William J Miller Engineers, Inc.
- Consultant to USBR
  - Brad Vickers, WAVE Engineering, Inc.

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Cooperators

- U.S. Fish and Wildlife Service
- U.S. Bureau of Indian Affairs
- Desert Research Institute
- Sandia National Laboratories
- U.S. Bureau of Reclamation
- U.S. Army Corps of Engineers
- U.S. Section, International Boundary and Water Commission
- Rio Grande Restoration
- U.S. Geological Survey
- Texas A&M Agricultural Experiment Station
- University of New Mexico
- City of Albuquerque
- City of Santa Fe
- Los Alamos National Laboratory
- Public Service Board (El Paso)
- Office of the State Engineer (New Mexico)
- Middle Rio Grande Conservancy District
- Colorado Division of Water Resources
- Texas Commission on Environmental Quality

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http://www.spa.usace.army.mil/urgwom/default.htm

URGWOM

Upper Rio Grande Water Operations Model

Contents:

- What is URGWOM
- About the Basin
- Purpose and Need for the Model
- Model Data
- Model Documentation
- Quality Control Plan
- URGWOM News
- Meetings and Activities
- Other Web Sites
- Example Model

What is URGWOM?

In 1996, six federal agencies - the Bureau of Reclamation, U.S. Fish and Wildlife Service, U.S. Geological Survey, Bureau of Indian Affairs, the International Boundary and Water Commission (U.S. Section), and the U.S. Army Corps of Engineers - recognized the need for a unified water op model for the Upper Rio Grande Basin and entered into a Memorandum of Understanding (MOU) to develop such a tool to assist water managers interest of this cooperative effort is to develop a numerical computer model capable of simulating water storage and delivery operations in the Rio from its headwaters in Colorado to below Caballo Dam in New Mexico and for flood control modeling from Caballo Dam to Fort Quitman, Texas. model will be used in flood control operations, water accounting, and evaluating water operations alternatives. To aid in modeling the Upper Rio (data base will also be developed to store the vast amount of data necessary to develop and maintain the model. Additional entities signing the M 1997 were the cities of Albuquerque and Santa Fe, Rio Grande Restoration, Sandia and Los Alamos National Laboratories. Many other entities although not yet signatories, are involved in the effort through technical review and outreach support.

Eleven reservoir and river simulation models were evaluated based on general criteria for their use as the URGWOM simulation model. Based on results of the technical evaluation and the goals and needs defined in the MOU, the Steering Committee unanimously agreed that RiverWare had greatest likelihood of successfully being developed for the Upper Rio Grande Water Operation Model.

What is RiverWare?

The RiverWare modeling software (RiverWare) has been developed by the Center for Advanced Decision Support for Water and Environmental S (CADSWES) at the University of Colorado in Boulder. The software's development has been sponsored and supported by the Tennessee Valley Authority, and the Bureau of Reclamation. RiverWare is a generalized river basin modeling environment that can integrate the analysis of power s economics with other purposes of reservoir systems such as flood control, water supply, recreation, water quality, and navigation. RiverWare is de to provide river basin managers with a tool for scheduling, forecasting, and planning reservoir operations.

The RiverWare model is operated through a graphical user interface or "GUI". A user constructs a RiverWare model by selecting river reaches, re confluences, diversions, and other objects and linking them to define the basin topology. Data associated with each object is entered or it can be from other data sources. Operating parameters are added via constraint or rulebase editors.

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http://www.spa.usace.army.mil/urgwom/qualityCP.htm

URGWOM

Upper Rio Grande Water Operations Model

Contents:

Quality Control Plan

What is URGWOM

About the Basin

Quality Control Plan (pdf)

Purpose and Need for the Model

Database and Model Testing Quality Assurance/Quality Control (QA/QC) Plan (pdf)

Model Data

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TESTING?

- Testing really means familiarization and acceptance in this context

- Steering Committee desire for modeling and process transparency

- Buy-in by the State and local political and environmental community

- Trust in the EIS document developed with the Planning Model

- Trust in the Water Operations Model

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TESTING?

- Phase I – Complete
  - Method – RW Viewer, base case model created by Tech Team
  - Results (Next Slide)

- Phase II (May?/June/July 2005)
  - Method – Full RW Version/License, Scenario Manager, same base case from Phase I + additional model runs
  - Part I - Water operations model use and familiarization
  - Part II - Water operations model testing and evaluation
  - Part III - Under development – modeling outside existing authority?
  - As of 2/25/2005 Draft of the phase II testing plan (changes weekly)

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TESTING?

- ## Phase I – Complete
  - ### Method – RW Viewer
    - Letter and CD mailed to cooperators
    - Explicit instructions included – Bill Miller
      - Testing Guide, Phase I Model Assumptions, Excel SS to record results
      - Base model and three alternative models runs explored
    - Primary purpose was to provide an opportunity to explore the 'guts' of a basic URGWOM model and gain a basic understanding of the Riverware structure and the model contents – no rules provided

  - ### Results
    - Six of 19 cooperators responded
    - Primary difficulties were having the wrong version of the viewer and having the testing package sent to the wrong person
    - Instructions were easy to follow

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TESTING?

- Phase II – (June/July 2005)
  - Method – Full RW Version/License, Scenario Manager, rules file to be included
  - Expected Results
    - Part I –
    - Part II -
    - Part III – Reviewers free to create and run scenarios – feedback to Tech Team on negative outcomes
    - Few participants due to the complex nature of the model – the distribution letter for Phase II will note, without apologies, the complexity of utilizing the model

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ACCEPTANCE

- The Technical Team and the Steering Committee hope to minimize challenges to the EIS and subsequent water operations based on the models

- We hope to leave the testing and debugging to the Technical Team and CADSWES

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