URGWOM Executive Committee Meeting

October 1, 2015

US Army Corps of Engineers
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Outline

- Merged Model Update
- Summary

Merging

Colorado Portion

Lower Rio Grande Portion

Middle Valley Portion
(Original URGWOM)

Merging Lower Rio Grande and Colorado portions with URGWOM

- Purposes and Advantages of Merging
  - ► To have an all encompassing model that looks at the entire system
    - Article VII Restrictions affects all post compact reservoirs including Platoro in CO
    - Lower RG operations better defined
  - ► Easier to maintain one model and:
    - not require processes for exporting and importing data from one model to the next
    - Eliminates iterating between model(s)

Merging Lower Rio Grande and Colorado Portions with URGWOM

- Time Range of Model
  - ► Real-time to Long-term Planning
- Time Interval of Model
  - ► Daily to Monthly

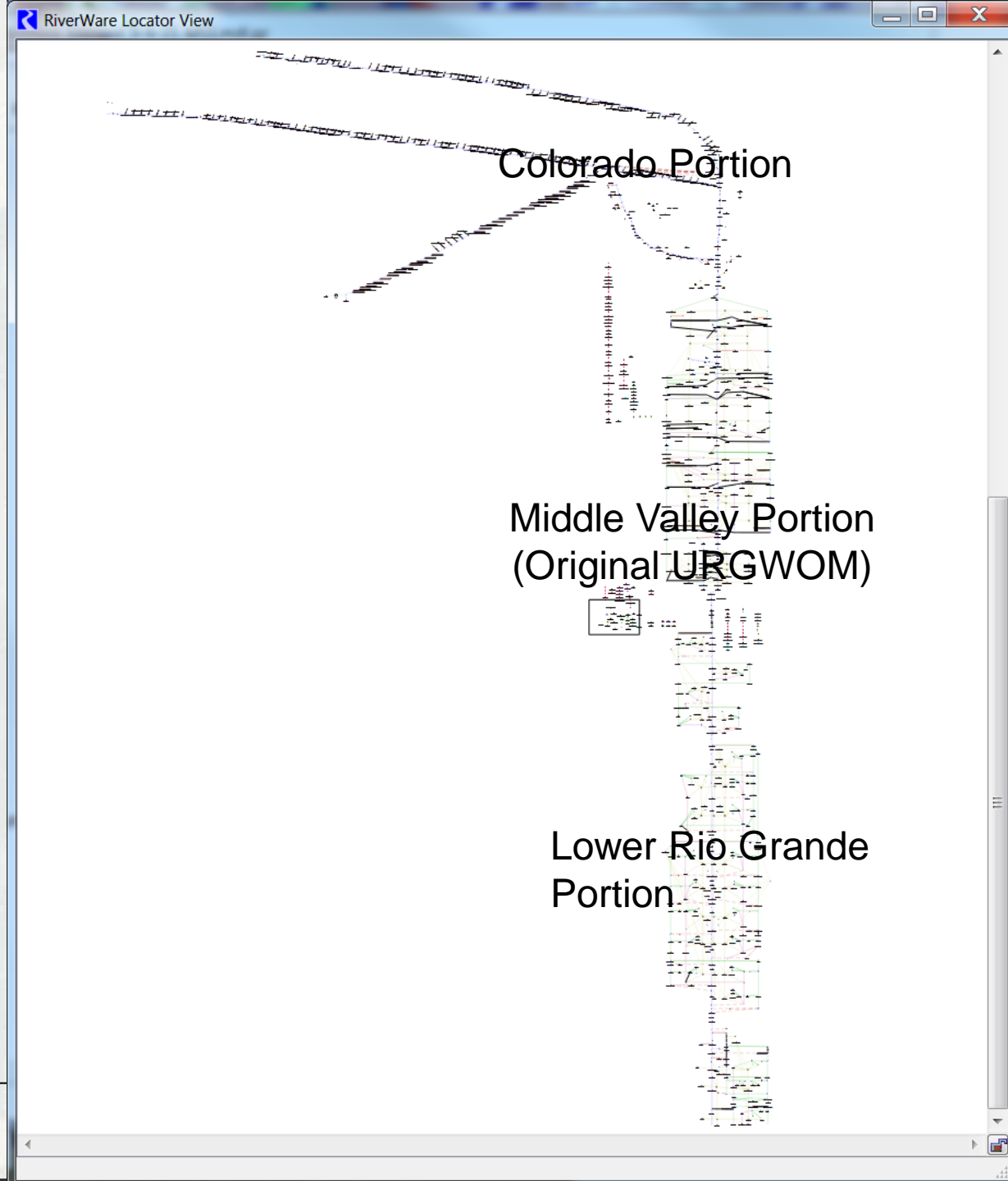# Merging Lower Rio Grande and Colorado portions with URGWOM

- Concerns of Merging
  - ► Size of all encompassing model
  - ► Run-time of all encompassing model
  - ► Extra overhead to run Accounting Application

Merging

- Successful
  merge of all
  three
  portions!

Current Status of Merge

- Based on One Year Run Time Models (includes output):

Model	# of Objects	File Size	Time to Run
Colorado	≈ 450	≈ 2 mb	60-90 sec
URGWOM - Accounting	≈ 650	≈ 15 mb	45-60 sec
URGWOM - AOP	≈ 650	≈ 17 mb	90-120 sec
LRG	≈ 550	≈ 8 mb	30-45 sec
URGWOM & LRG - Accounting	≈1200	≈ 18 mb	60-90 sec
URGWOM & LRG - AOP	≈1200	≈ 21 mb	150-180 sec
URGWOM, LRG & CO - Accounting	≈1650	≈ 18 mb	60-90 sec
URGWOM, LRG & CO - AOP	≈1650	≈ 23 mb	210-240 sec

Existing Separate model(s)

Completed

Completed

Status of Merging Models for use in 2016

- Account Application
- AOP Application
- Real-Time Application
- Historical Simulation for Calibration
- Planning Application

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Account Application

- Tested with Account Model through September 7, 2015
  - ▶ Disable Colorado and LRG portions
  - ▶ >2 Mb larger file (15.0 vs 17.2)
  - ▶ 17 seconds longer to run (34 vs 51 seconds)
  - ▶ Duplicates results
  - ▶ Would like to add some data that is input with DMI (Platoro Elevation and Outflow, Colorado streamgages) – For AOP runs

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Enabled/ Disabled Objects

Scripts

- Use Scripts for setting up and running other Applications

RiverWare Locator View

Script Manager

File   Edit

Open Dashboard...   Edit...

Accounting Application Run Setup for New Year
Accounting Application Run Setup
Prepare for Annual Operating Plan (AOP) Run
Prepare for Planning Application Run with Initial Conditions from Spreadsheet and DSS Database DMI to import data
Prepare for Planning Application Run with Initial Conditions from Spreadsheet and using Model Historical Data Objects
TEST - NOT WORKING (Not all Initial data available in DSS Database) - Prepare for Planning Application Run with Initial Conditions and Input Data from DSS Database DMI
Prepare for Planning Application Run from Accounting Application using Model Historical Data Objects
TEST - NOT WORKING - Prepare for Planning Application Run from Accounting Application using DSS Database to import data
Prepare for Historical Simulation Run For Calibration with Initial Conditions and Time Series Imported from DSS Database DMI
Prepare for RealTime Application Run from Accounting Application

Scripts

- Example Script for setting up and running AOP Application

AOP Application

- AOP script (January Forecast)
- Model runs (need more testing, checking results, especially for Colorado and LRG)
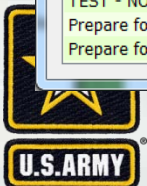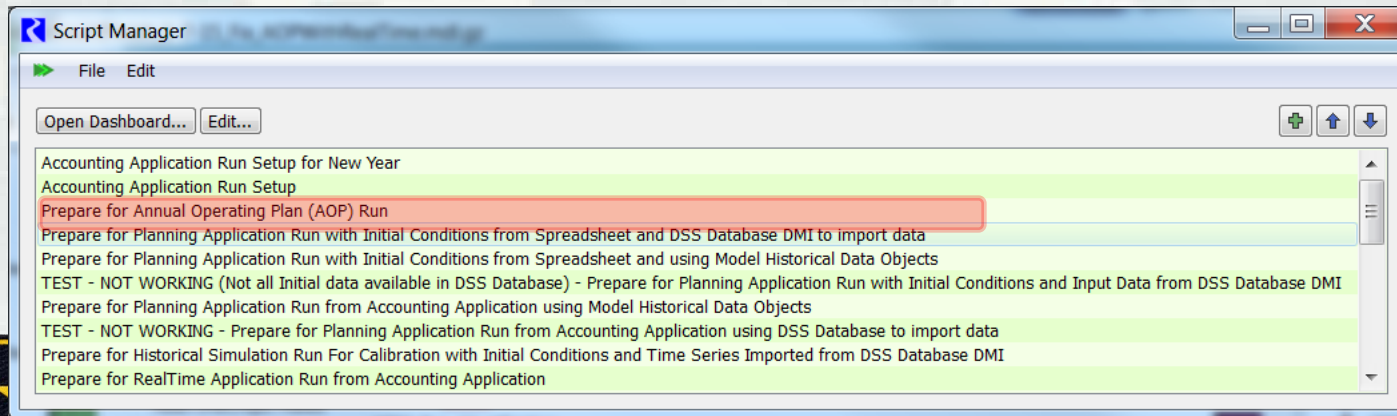
Real-Time Application

- ■ Real-Time Script
  - ► No actual data from NWS yet,
  - ► but runs with manually input data, and with rules projecting data

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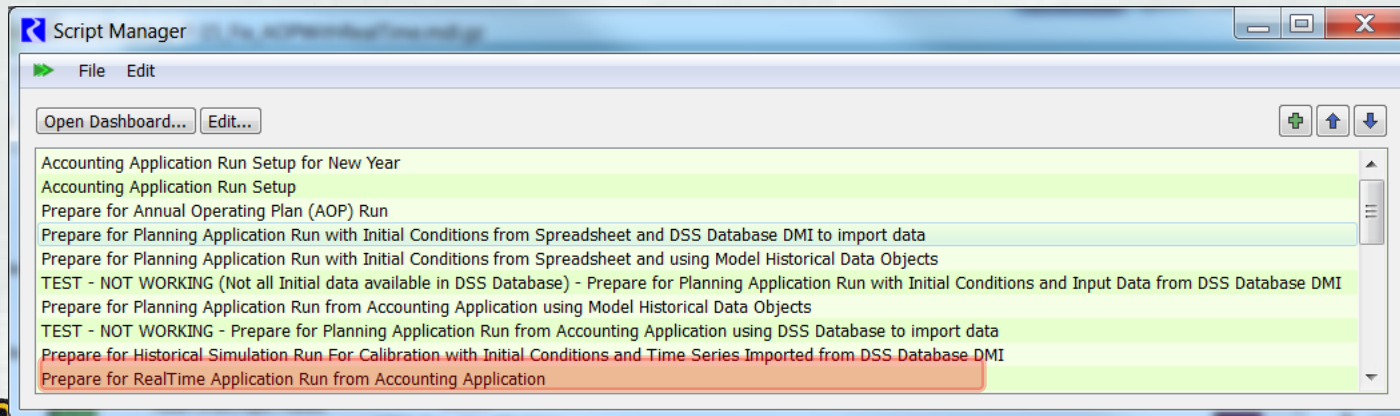
Historical Simulation for Calibration

- **Historical Simulation for Calibration Script**
  - ► Model runs for Middle Valley portion only
    - Colorado and LRG objects disabled
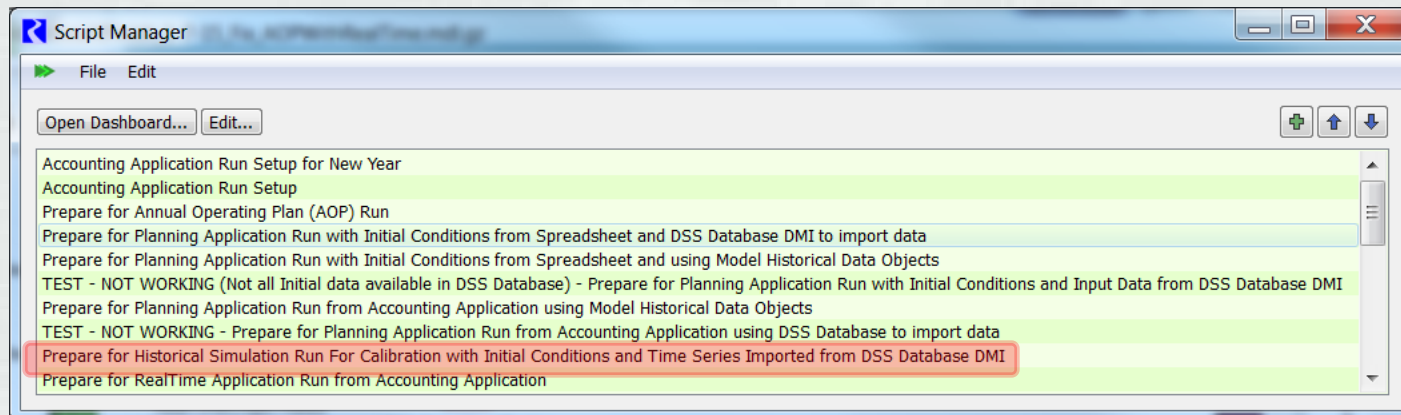
Planning Application

- Prepare for Planning Application with Initial Conditions from Spreadsheet and DSS Database DMI to import data Script
    - ► Tested 1975-2009 (corresponding historical years)
    - ► Tested 2016-2020 (assorted historical years)
    - ► Model(s) run
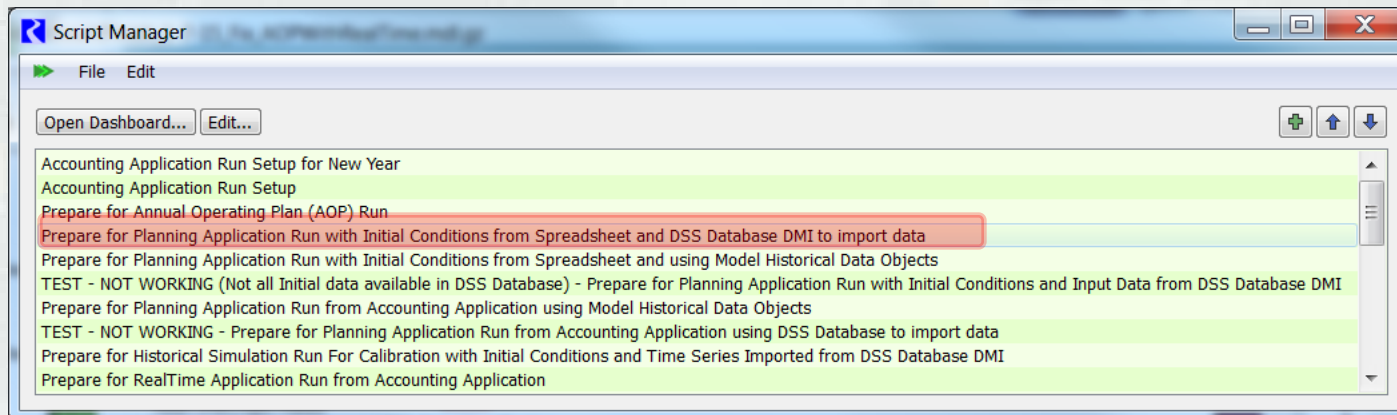
The URGWOM Grail?

Headwaters to Hudspeth Daily or Monthly
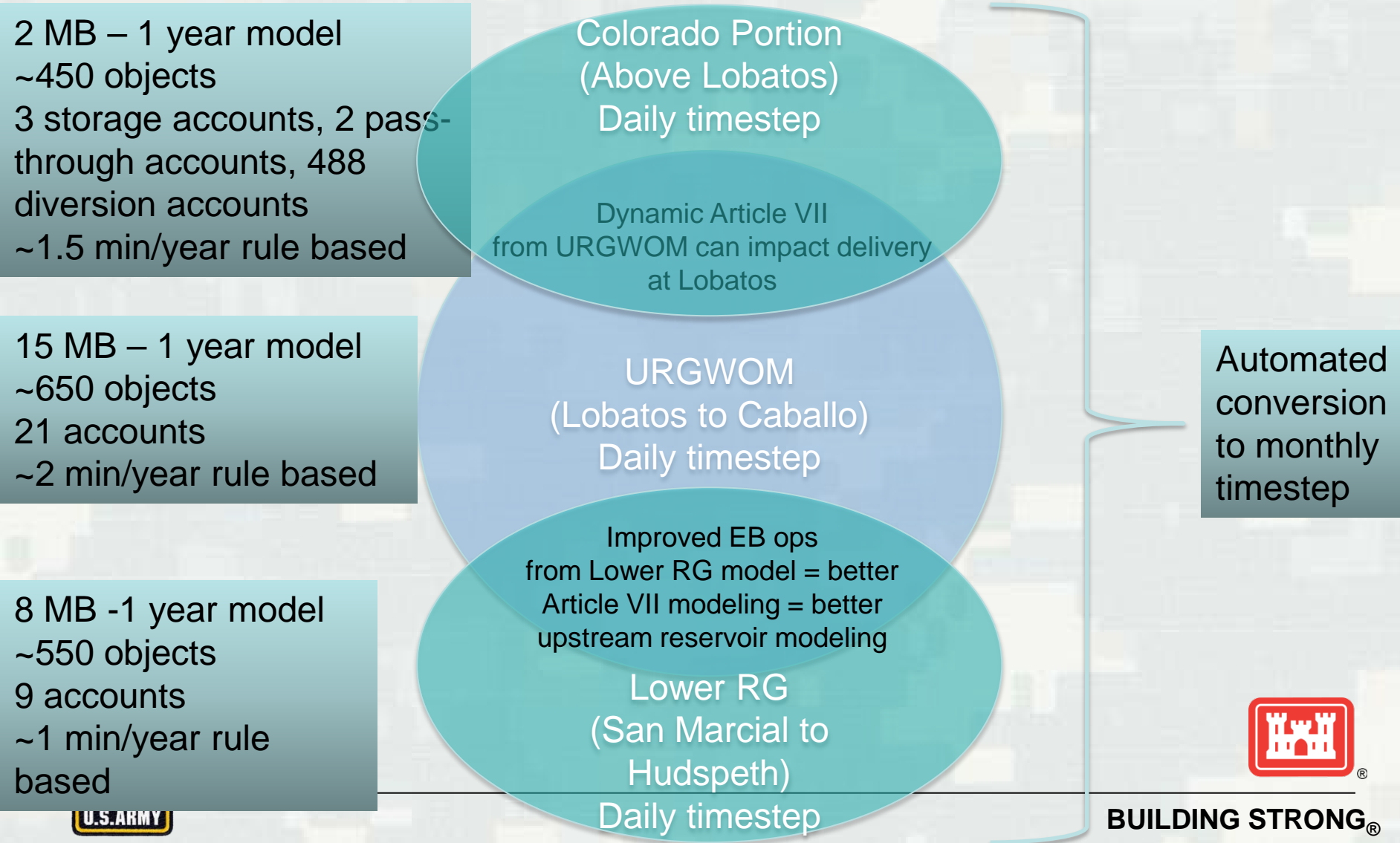
2 MB – 1 year model
~450 objects
3 storage accounts, 2 pass-through accounts, 488 diversion accounts
~1.5 min/year rule based

Colorado Portion (Above Lobatos) Daily timestep

Dynamic Article VII from URGWOM can impact delivery at Lobatos

15 MB – 1 year model
~650 objects
21 accounts
~2 min/year rule based

URGWOM (Lobatos to Caballo) Daily timestep

Improved EB ops from Lower RG model = better
Article VII modeling = better upstream reservoir modeling

8 MB -1 year model
~550 objects
9 accounts
~1 min/year rule based

Lower RG (San Marcial to Hudspeth) Daily timestep

Automated conversion to monthly timestep

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Summary

- Corps' opinion
  - ► Merging Lower Rio Grande and Colorado portions with URGWOM was successful
  - ► Slightly larger file size and extra runtime should not be an issue or hindrance
  - ► Testing and getting ready for use in 2016

Questions