

Extending URGWOM: Modeling the Rio Grande Project in the Lower Rio Grande Valley

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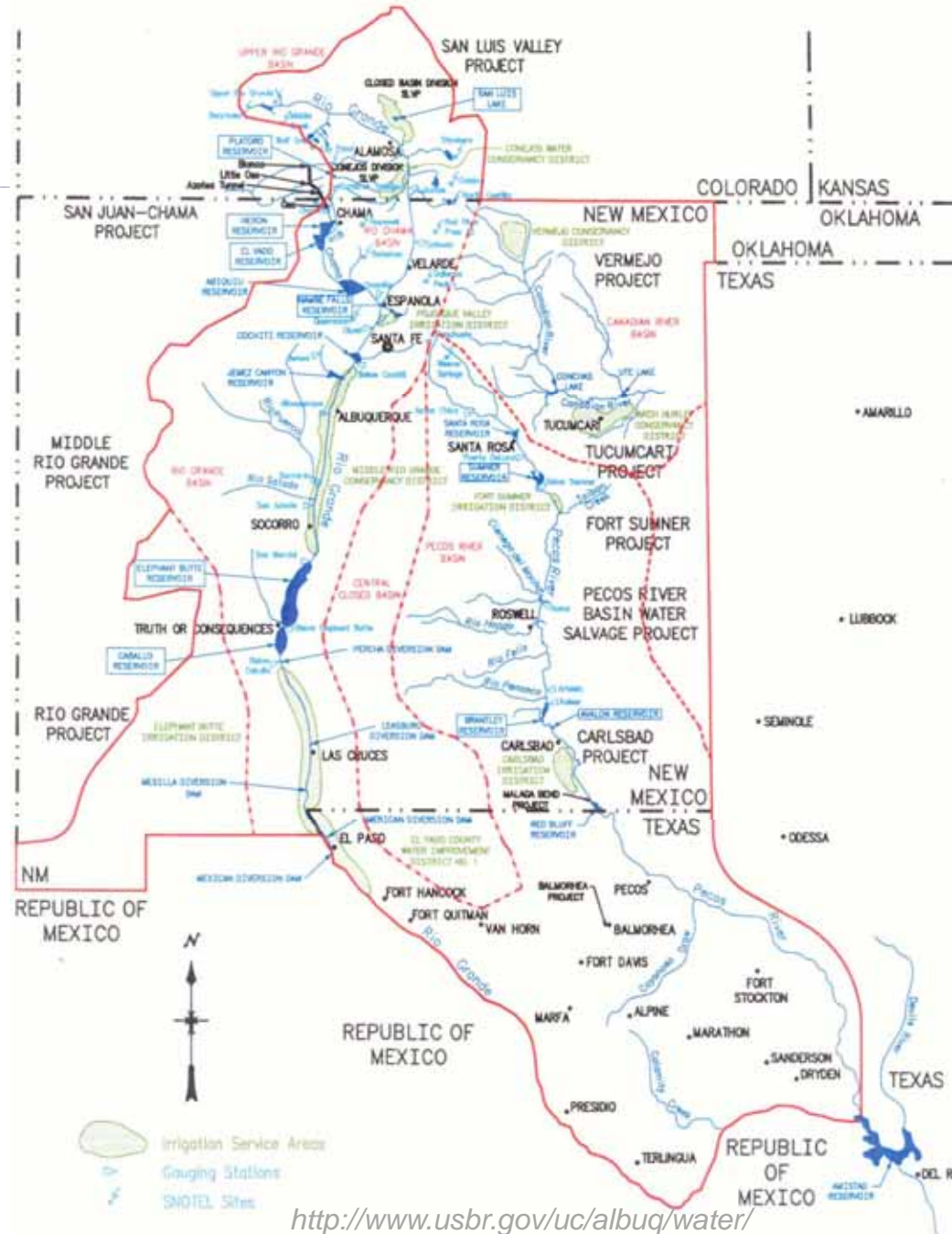
**US Army Corps
of Engineers®**

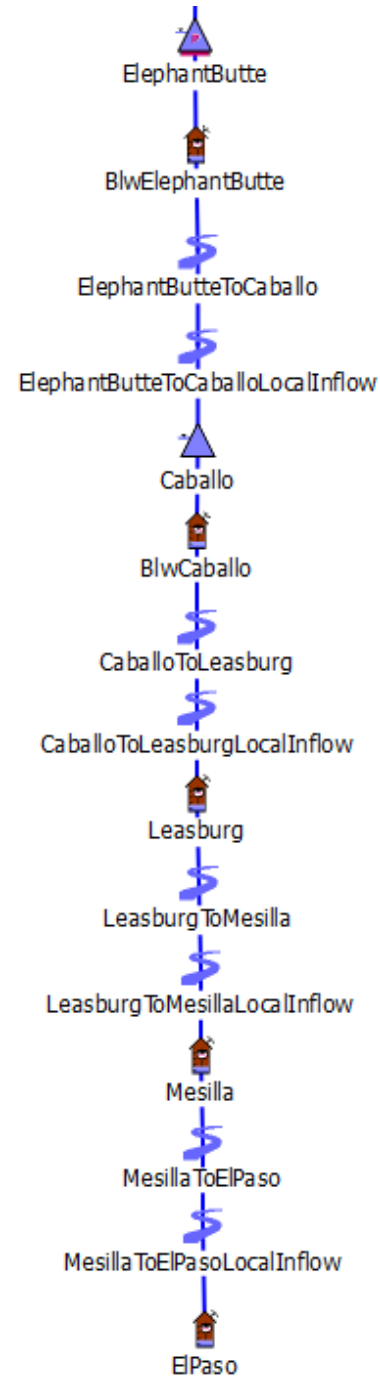
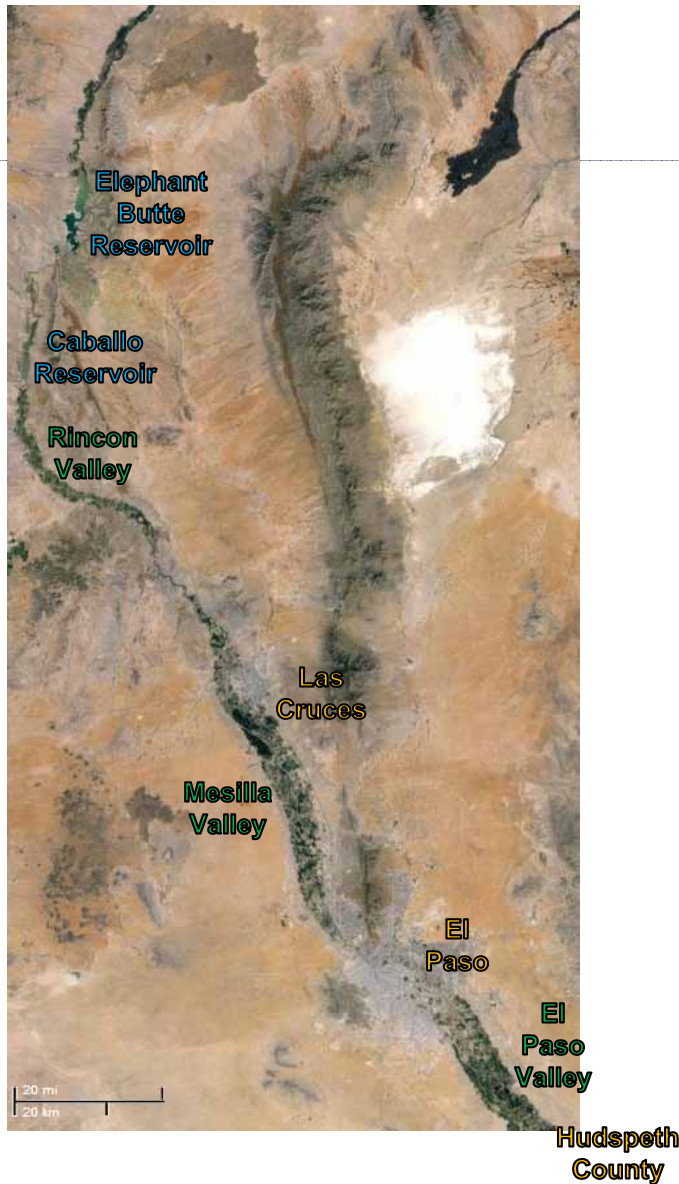


Elephant Butte Dam and Reservoir usbr.gov

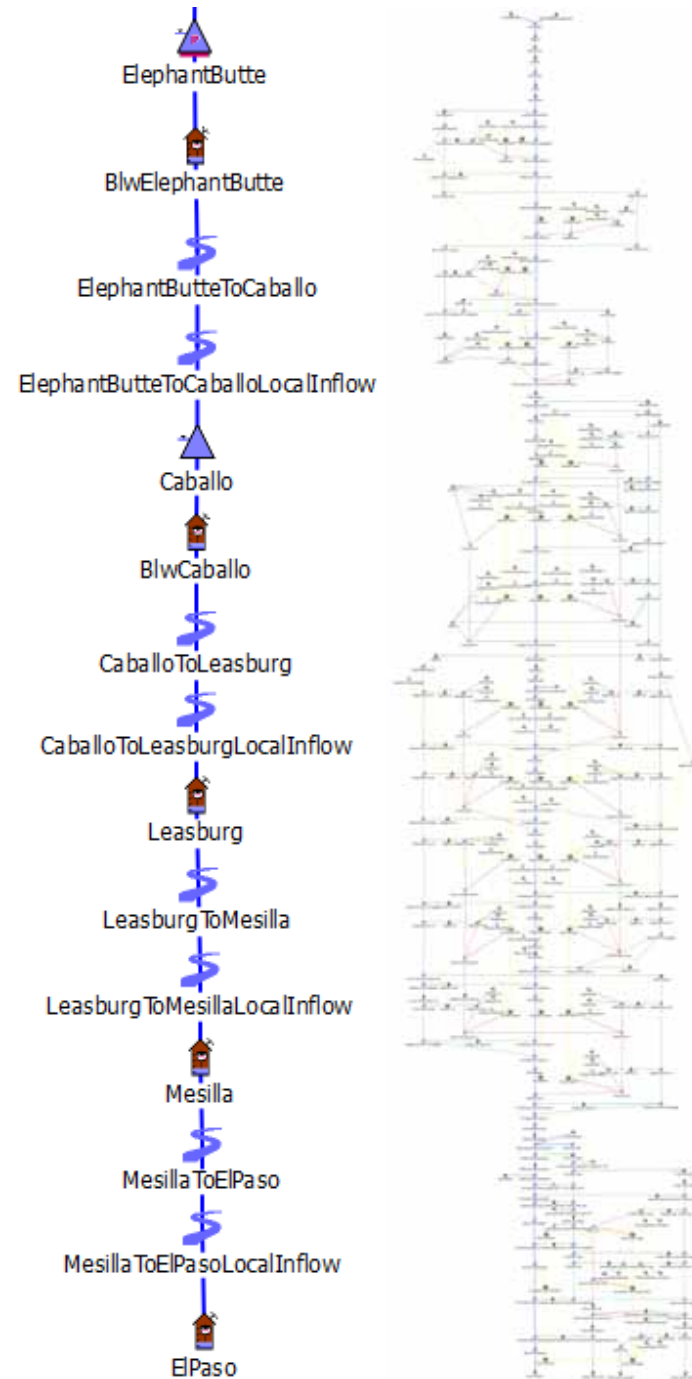


Elephant Butte city-data.com





- Elephant Butte operations impact water management in the Middle Valley (Section 7 of the Rio Grande Compact)
- URGWOM model extension to incorporate Rio Grande Project operations
- Daily water allocation model of the Rio Grande Project, (Elephant Butte Reservoir to Hudspeth County, Texas)



Background

- Rio Grande Project 1906, Elephant Butte Dam (1916),
- Provide water to Elephant Butte Irrigation District (EBID; up to 509,863 AF/year) and El Paso County Water Improvement District No. 1 (EP#1; up to 388,192 AF/year)
- Delivery of up to 60,000 AF to Mexico (1906 Convention and 1944 Treaty)



uh.edu



Model objectives

- River and reservoir operation under the 2008 Operating Agreement.
- Diversions to and return flows from agricultural and municipal water users in the region.
- Impacts of ground water pumping and seepage on aquifer levels, water supplies, and river flows.
- Accounting for Rio Grande Compact deliveries and cumulative credits and debits.
- Accounting for Project operations including EBID and EP#1 allocations and carryover, Mexico allotments

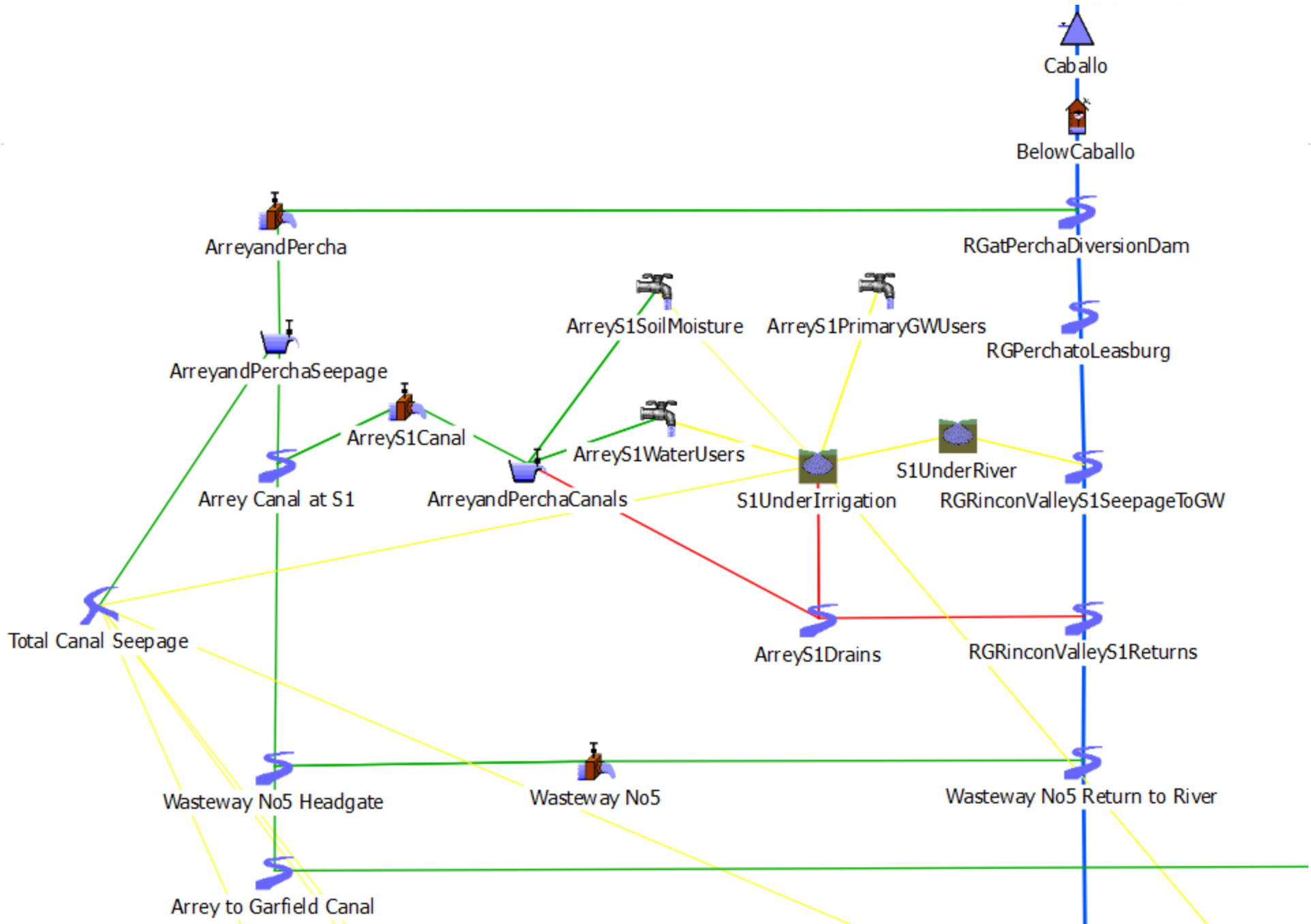
5 Diversion Dams in Lower Valley

- Percha (Rincon Valley)
- Leasburg (Upper Mesilla Valley)
- Mesilla (Lower Mesilla Valley)
- American (El Paso Valley)
- International (to Mexico)



Each valley Divided into subareas





- 2 different accounting systems on EB and Caballo
 - Rio Grande Compact / San Juan Chama Accounting
 - Colorado and New Mexico credits and debits
 - San Juan Chama credits

- Rio Grande Project Accounting
 - EBID and EP#1 allocation and carryover, including sharing of surplus
 - Mexico Allotment
 - Debits/credits based on diversions, return flows, M&I use

Model Calibration

■ Calibration Inputs

- Historical river headgate diversion requests
- Historical irrigated acreage and estimated CIR
- Historical wasteway diversions
- Historical municipal diversion/returns

■ Calibration Parameters

- Drain and river reach stage/discharge tables and conductances
- Groundwater parameters

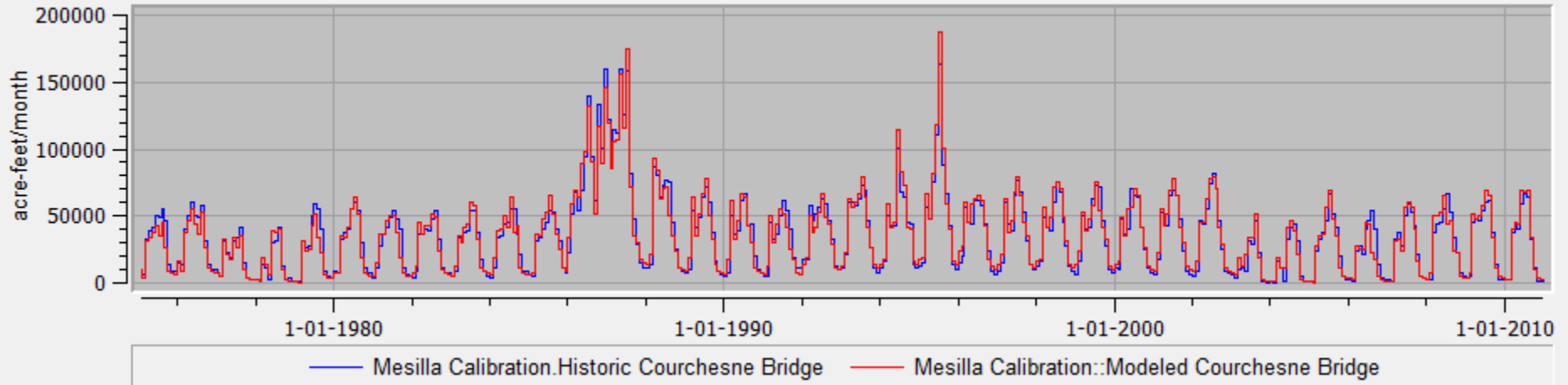
■ Calibration Targets

- River and drain gage data
- Well observations

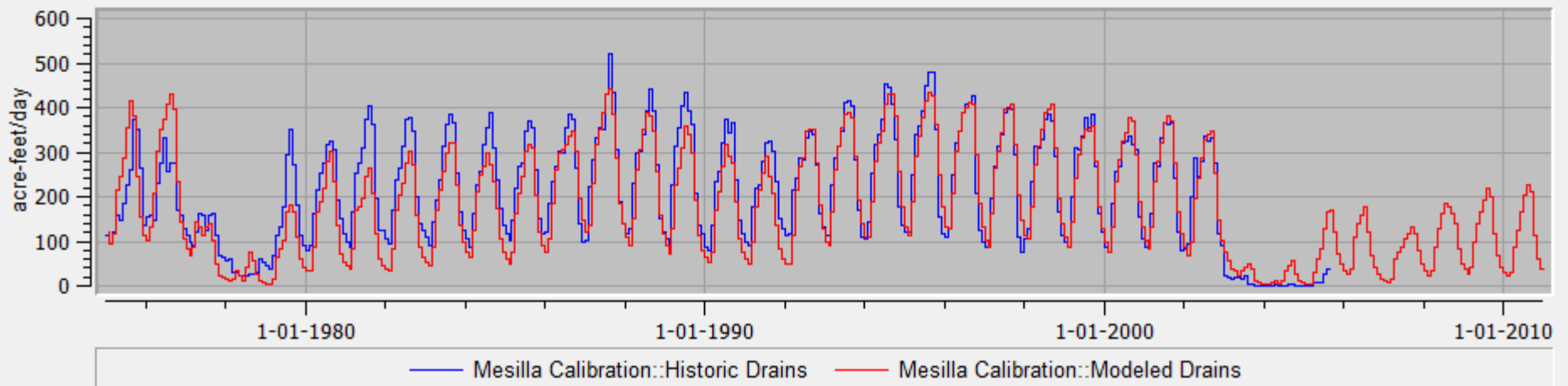
Leasburg Diversion Dam, 1908 nps.gov

Calibration Model Results: Mesilla

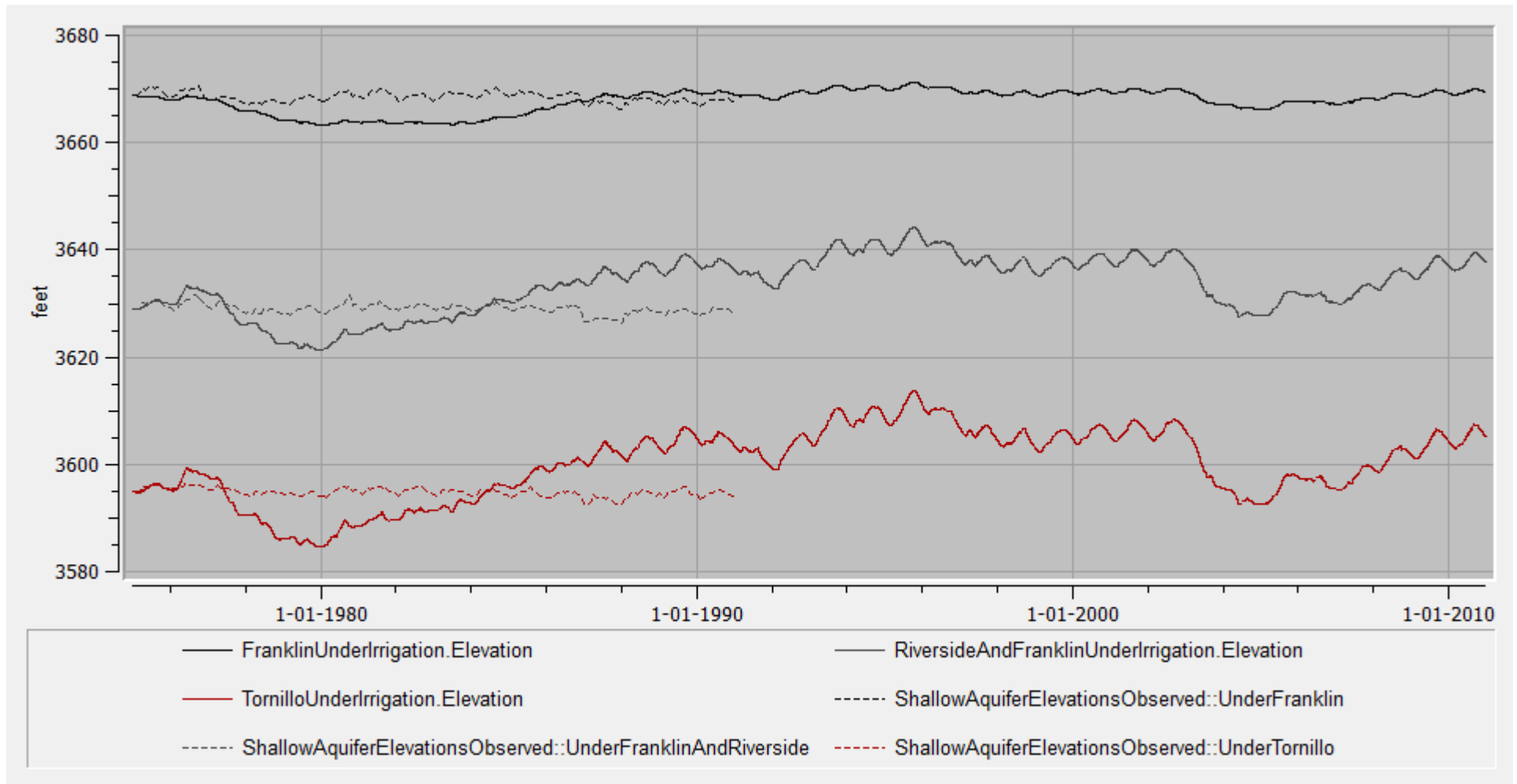
Mesilla Calibration.Historic Courchesne Bridge



Mesilla Calibration.Historic Drains



Calibration Model Results: El Paso



- Improve calibration
 - Issue of Mexico GW impacts below El Paso
 - Lack of good data, esp. south of El Paso
- Coupling with existing URGWOM
 - Via DMI/DSS?
 - Integration into single network?
 - Feedback loop questions

Questions?

