

Middle Valley Rework

Review of “Why the rework?”

- Low flow of critical reaches not simulated well
- Return flows ????
- Riverside drain flow ????
- Evapotranspiration calculation burdensome and too much data in the model.

Review of “Why the rework?”

- Previous model had all river evaporation taken from the river even when there was no water.
 - Now have separated the evaporation and where the water is taken; from the river (river) or from wetted sands (groundwater).
- Previous model had estimates of return flow to the river because there was no data.
 - Now have return flow as part of the calibration of the model.

Review of “Why the rework?”

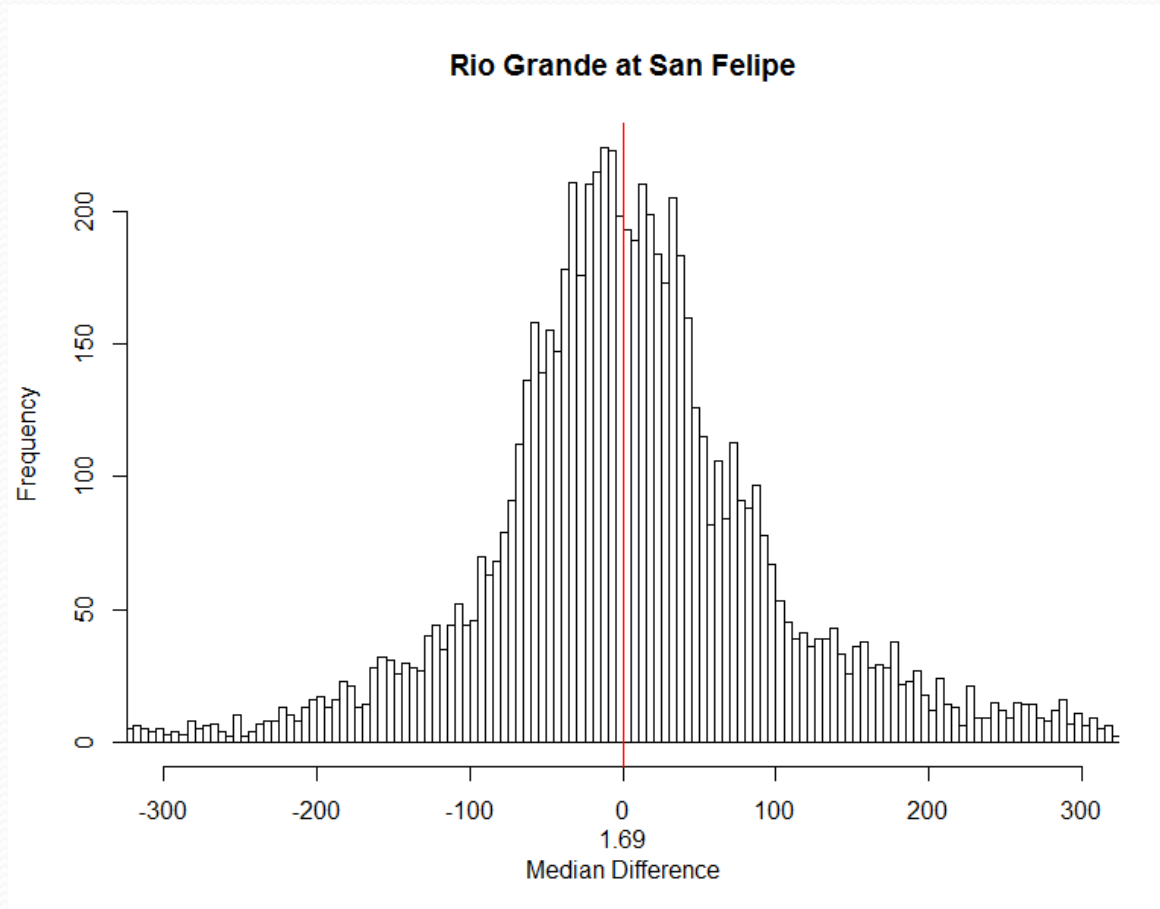
- Previous model had crop evapotranspiration by crop was too much data in the model.
 - Now have calculated single crop ET for use in the model.
- Previous model had estimates for river side drain gains
 - Now model calibrated to measured drain gains.
- Previous model calibrated for all flows.
 - Now model calibrated for low and all flows

Progress of Calibration

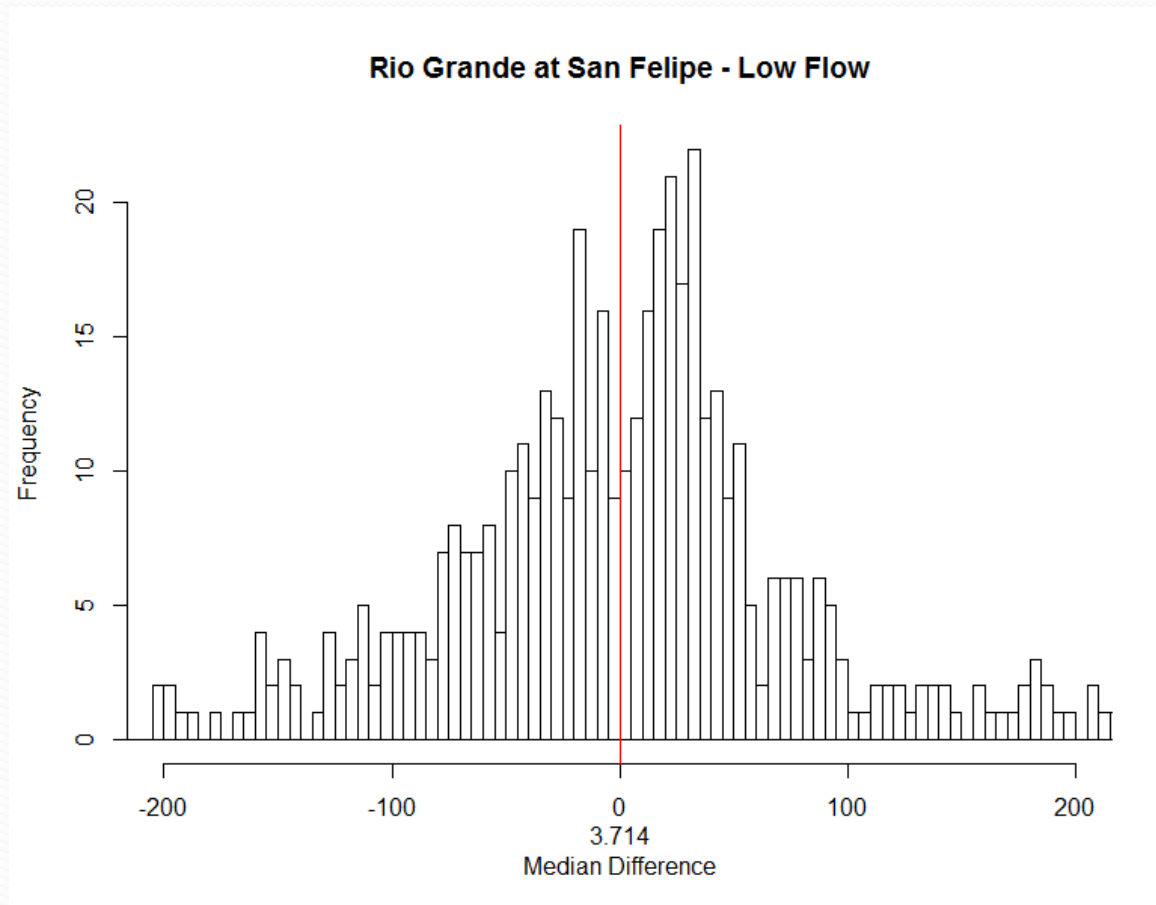
Progress of Calibration

- Completed individual Reach calibration
- Linked all reaches together for overall calibration
- Central to Bernardo reach is a black hole because of discontinuous record with stations with which to calibrate.
- Need to complete total model calibration.
- Results so far.....

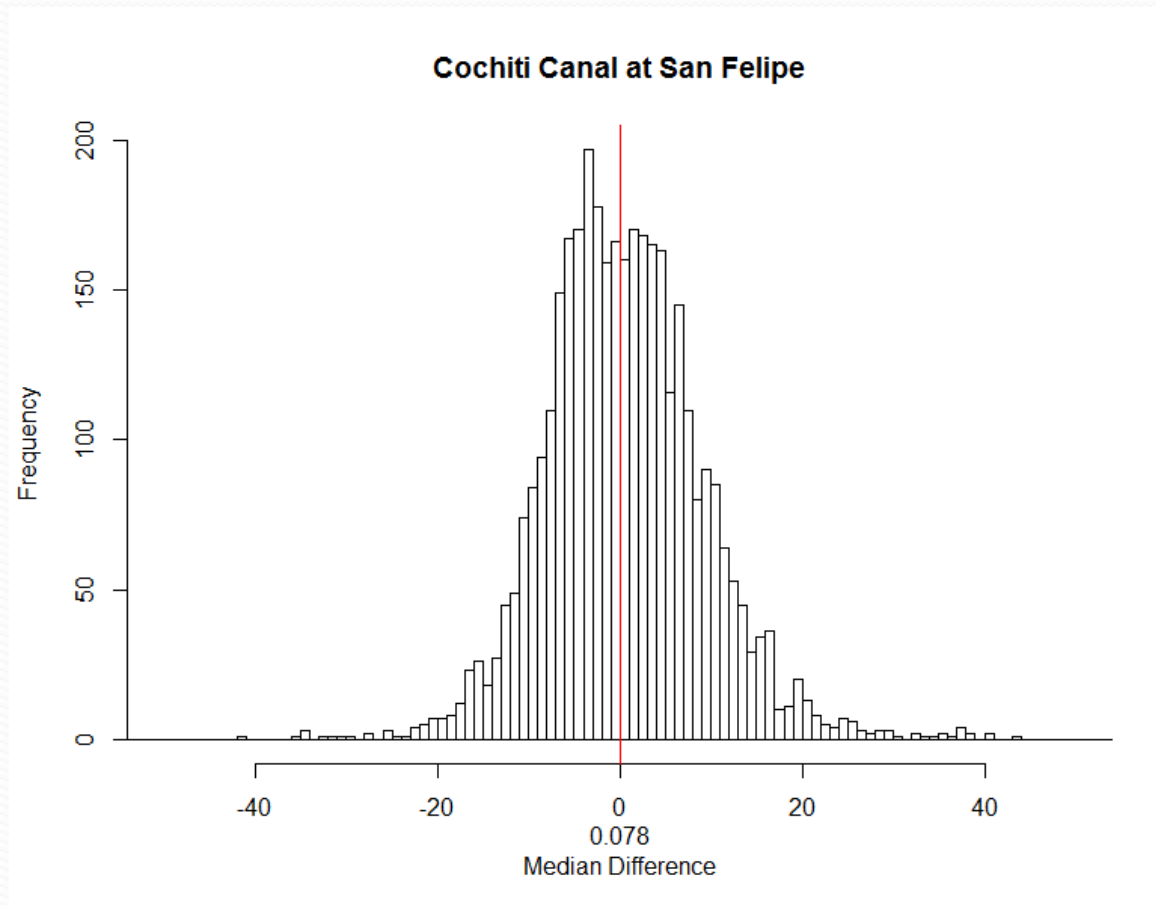
Rio Grande at San Felipe



Rio Grande at San Felipe



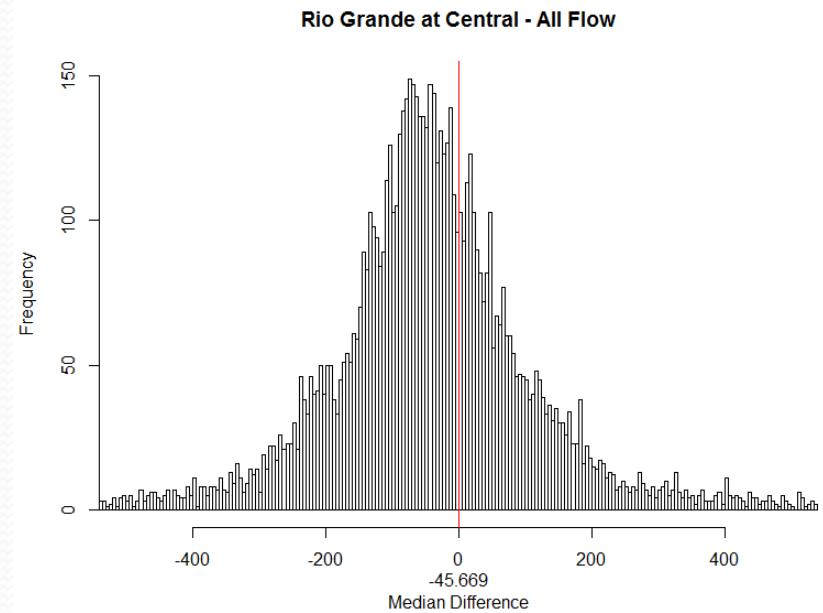
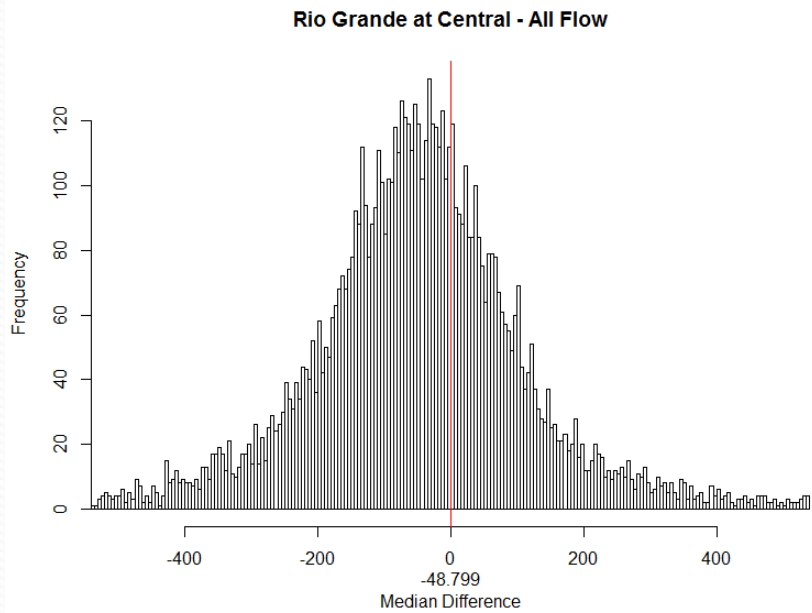
Rio Grande at San Felipe



Rio Grande at Central

Reach Only

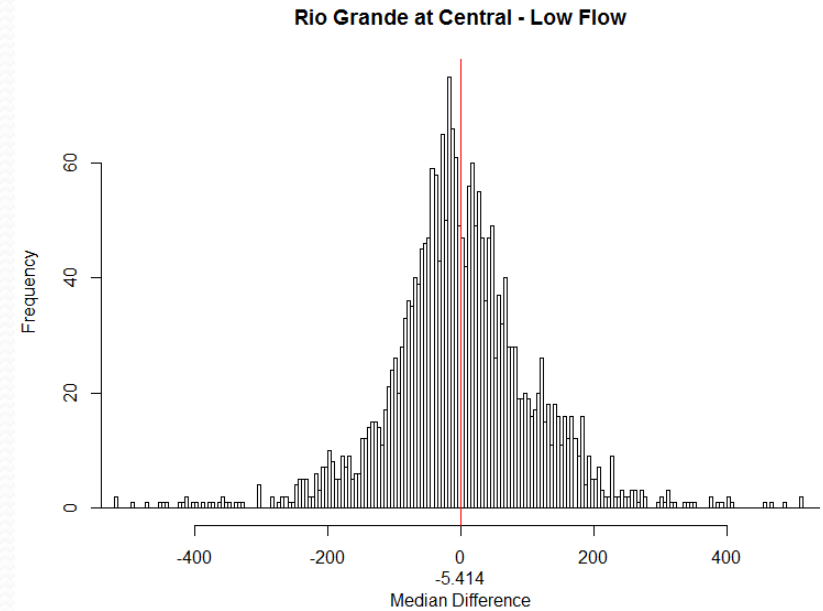
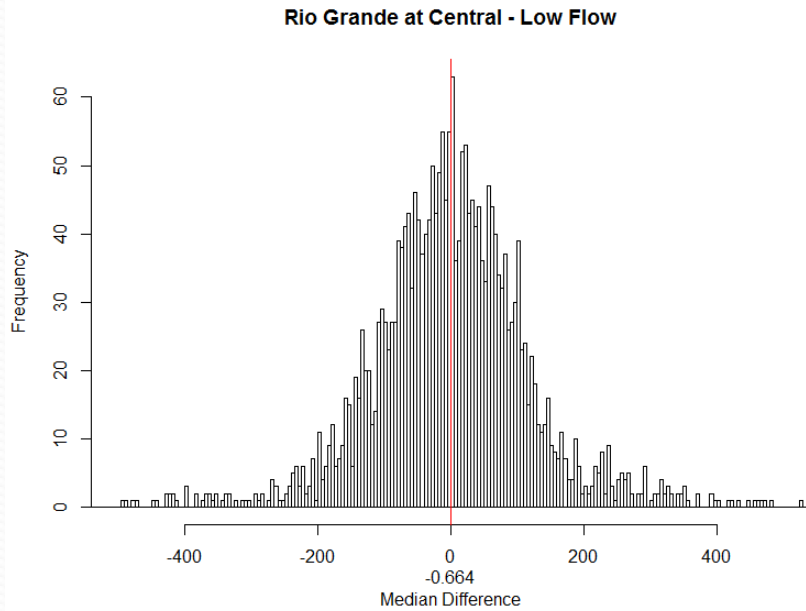
Full Model



Rio Grande at Central

Reach Only

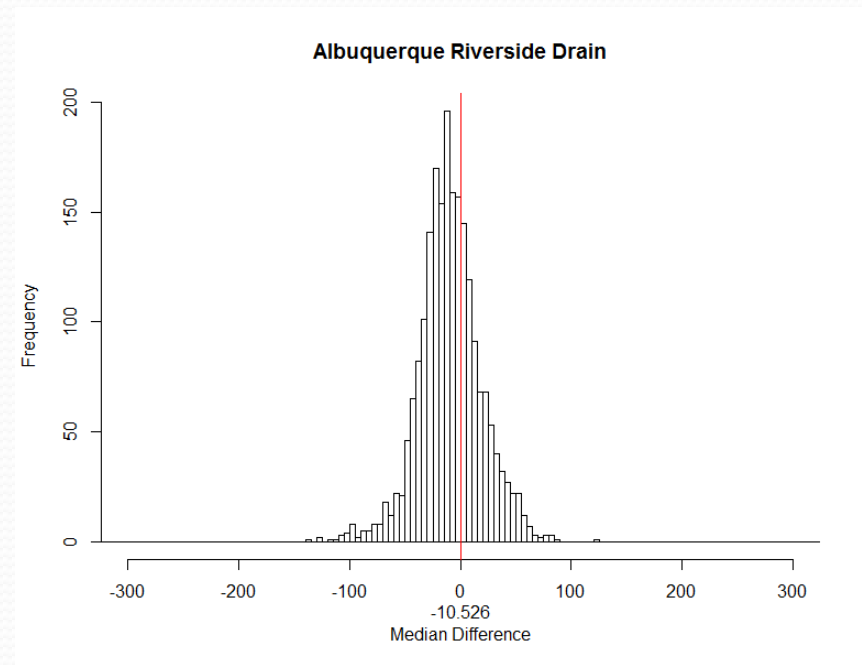
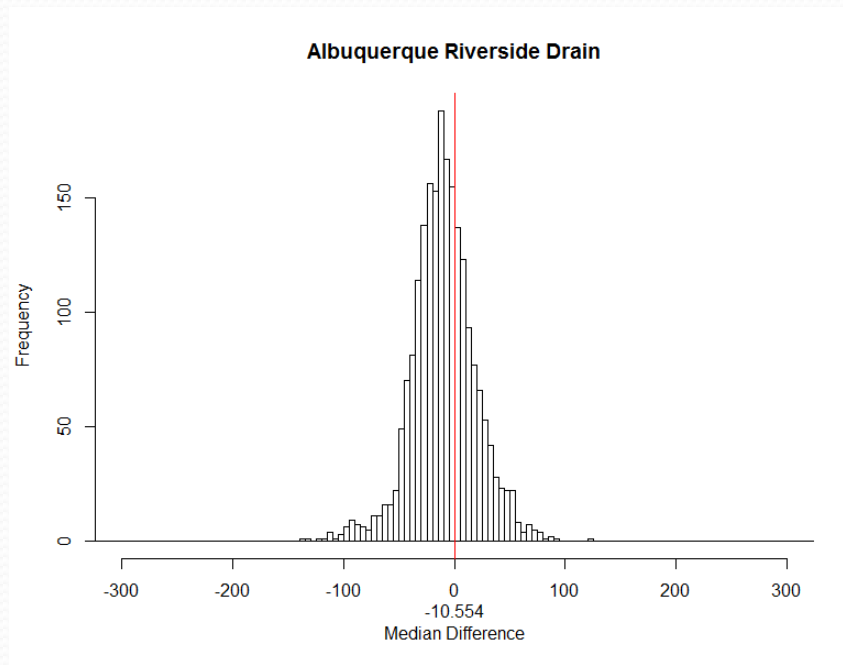
Full Model



Rio Grande at Central

Reach Only

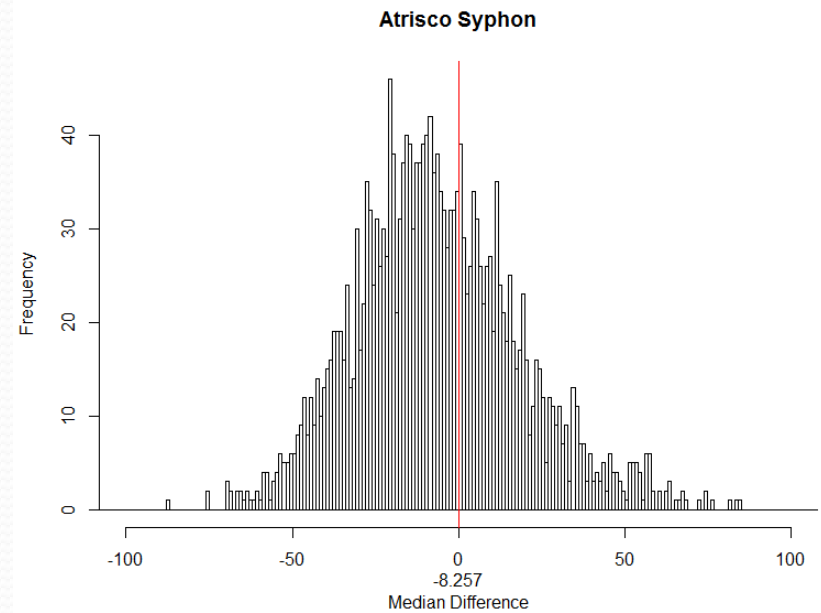
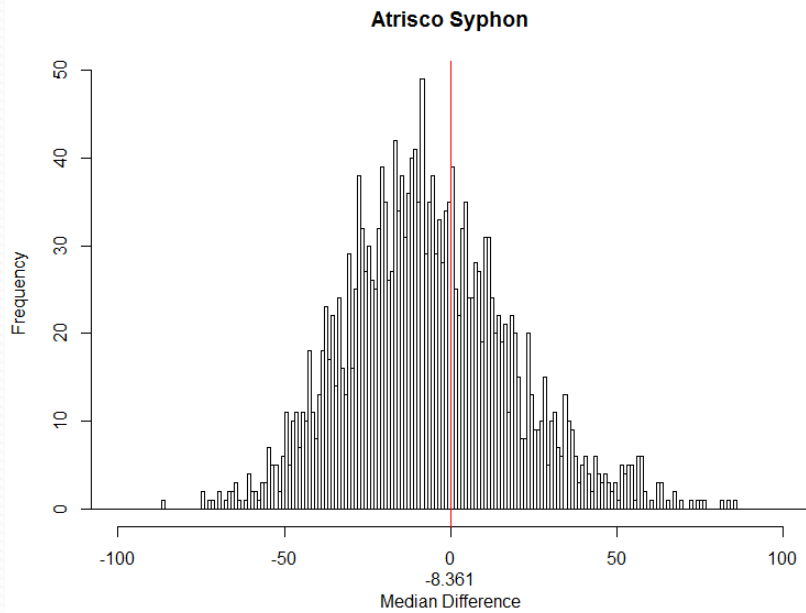
Full Model



Rio Grande at Central

Reach Only

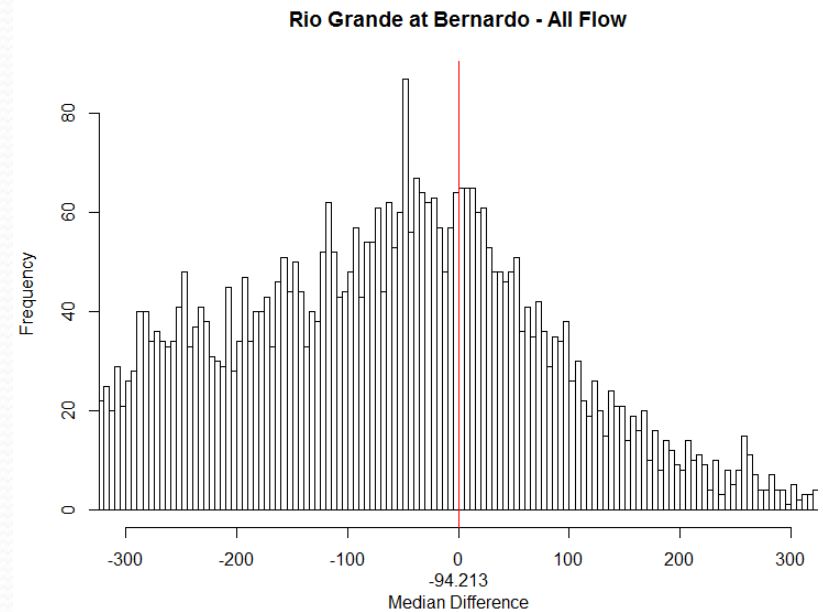
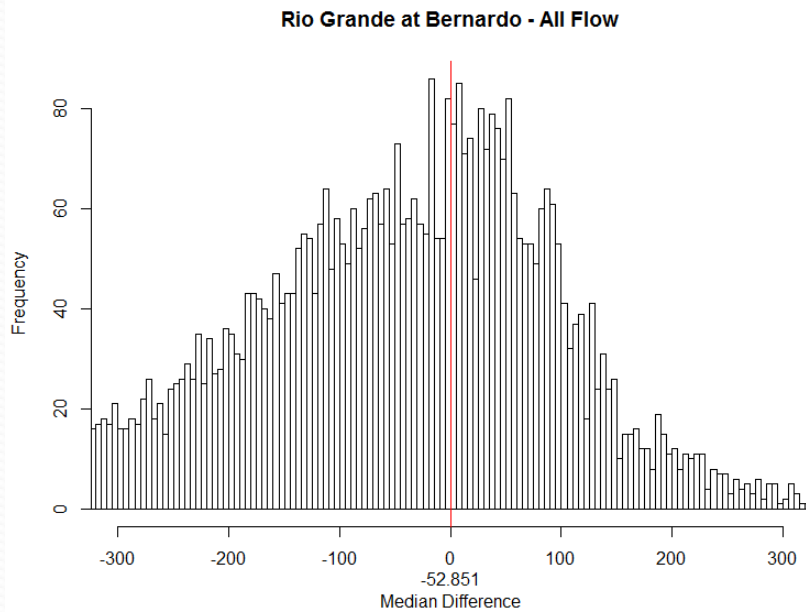
Full Model



Rio Grande at Bernardo

Reach Only

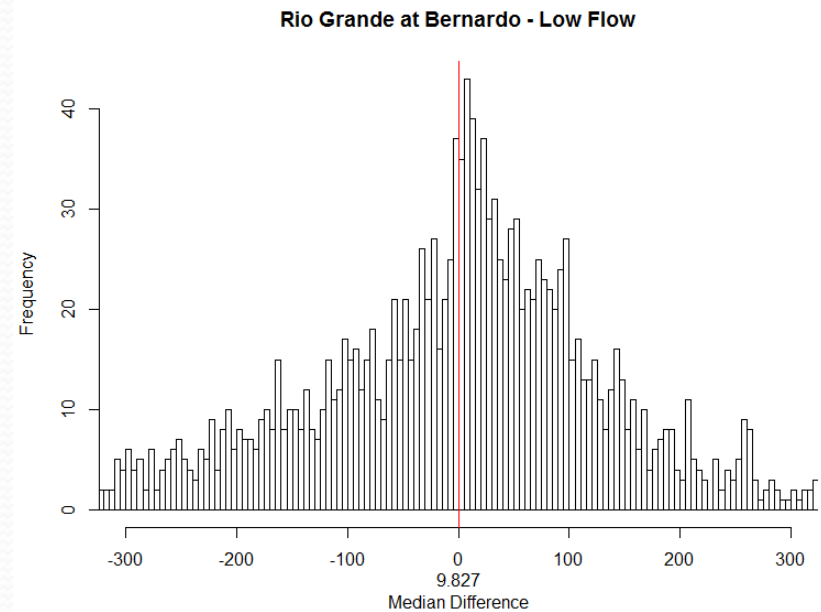
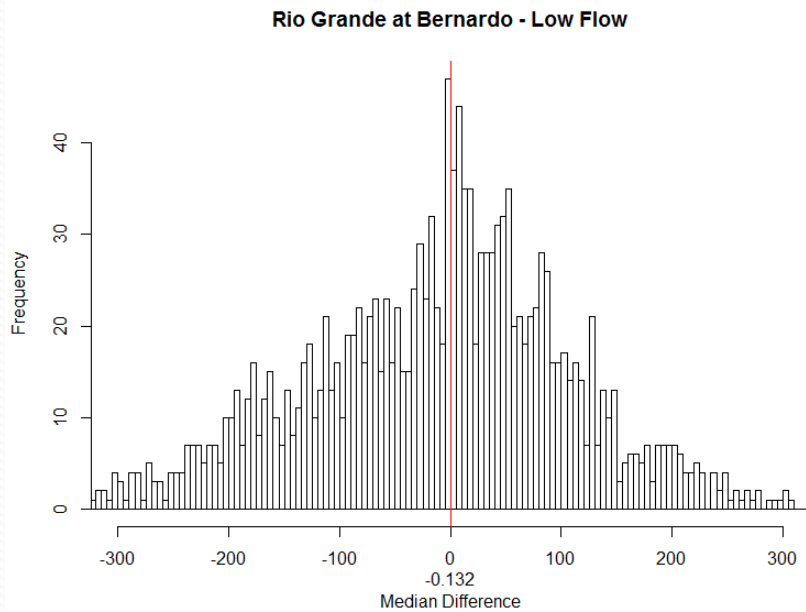
Full Model



Rio Grande at Bernardo

Reach Only

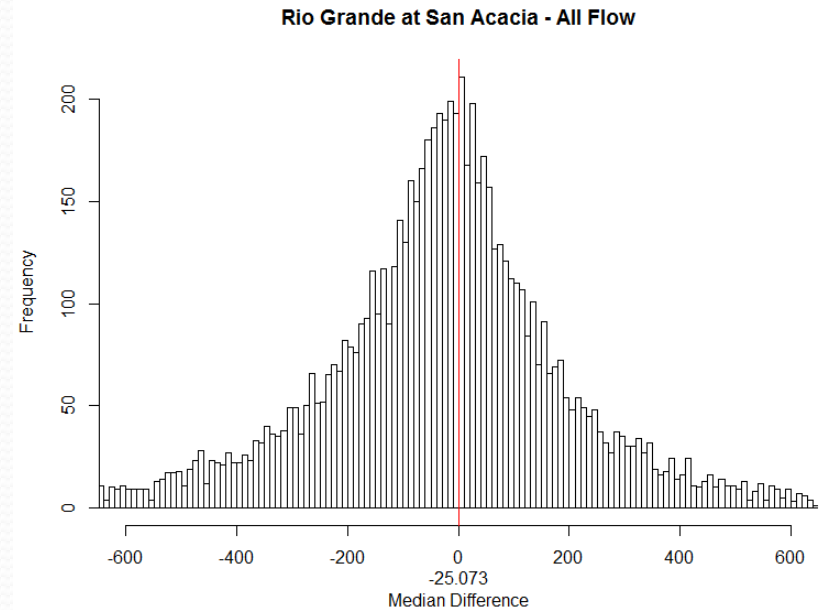
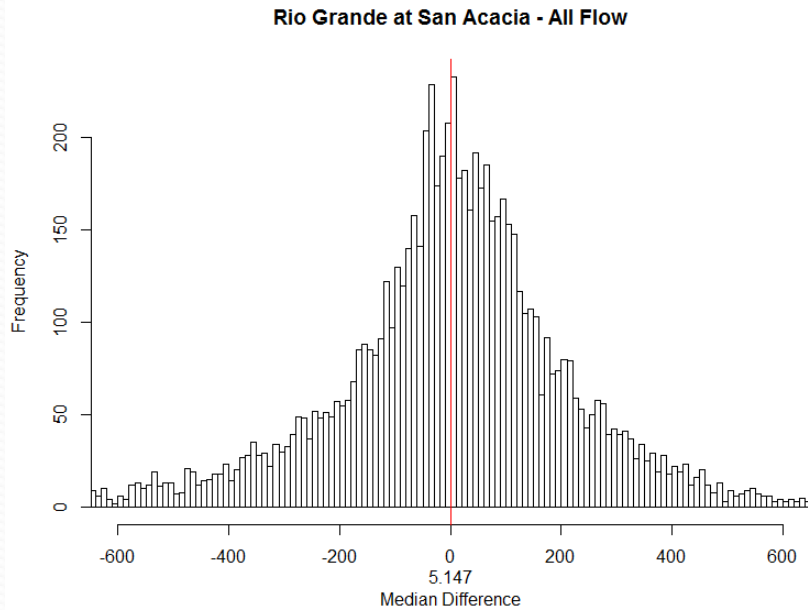
Full Model



Rio Grande at San Acacia

Reach Only

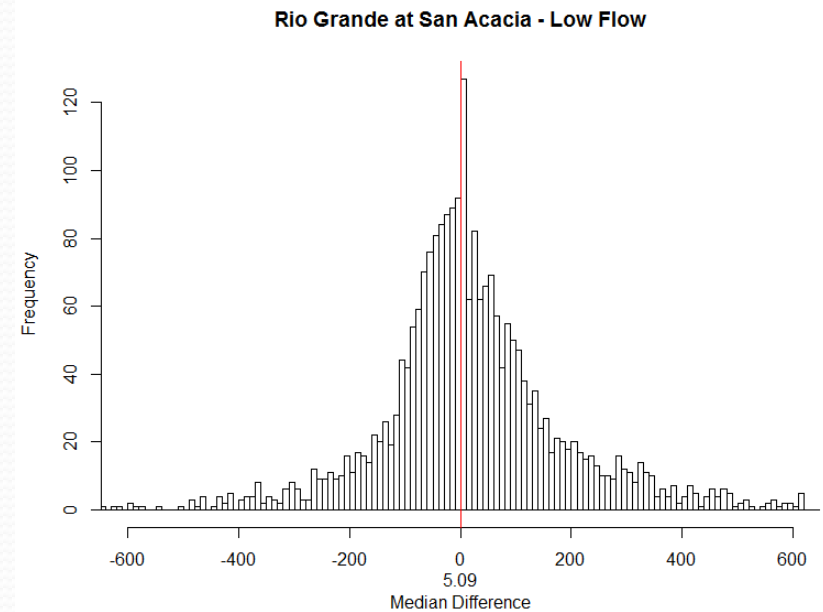
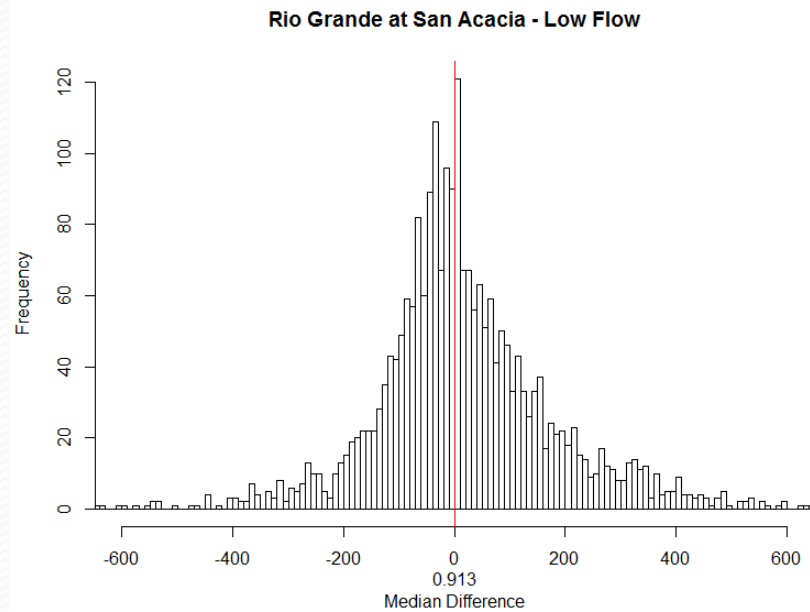
Full Model



Rio Grande at San Acacia

Reach Only

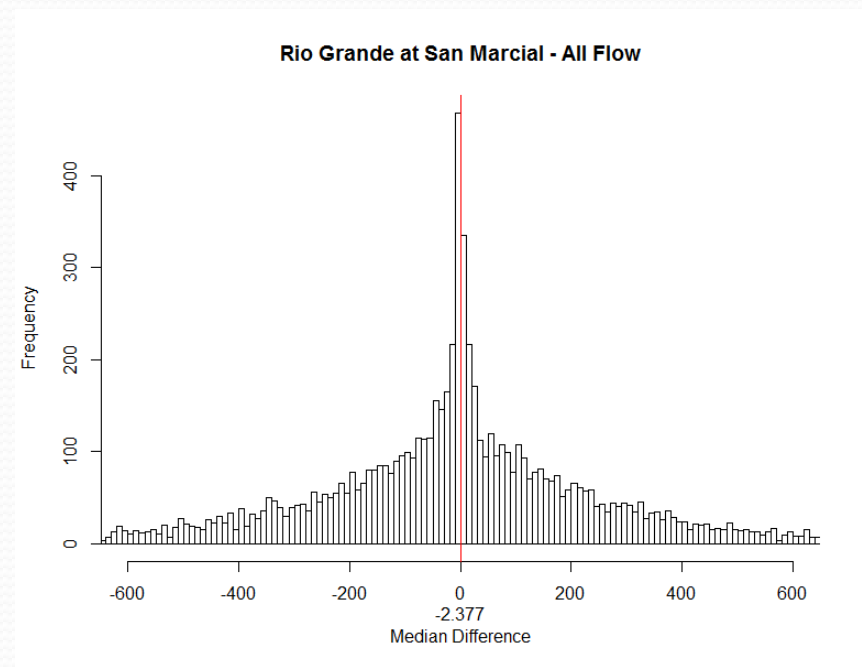
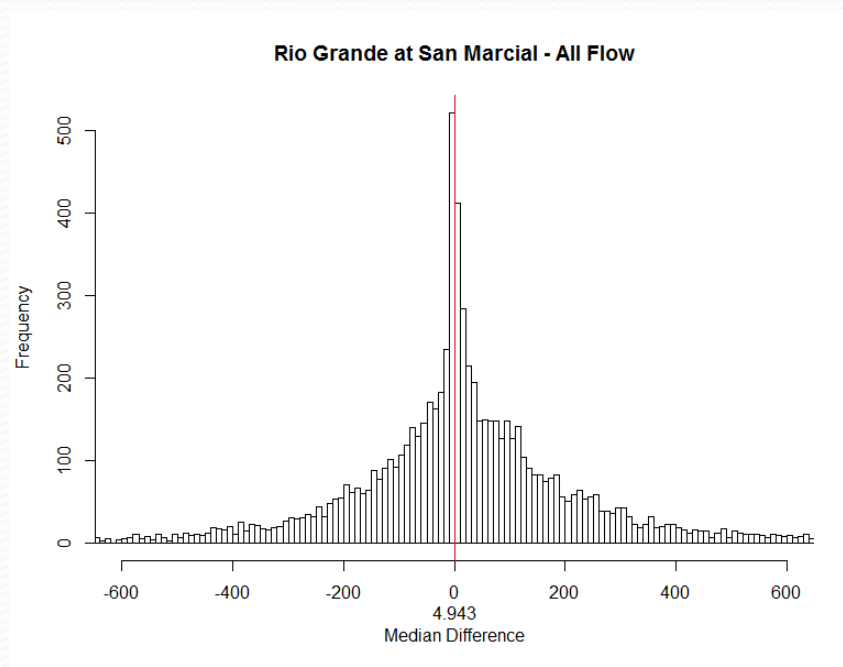
Full Model



Rio Grande at San Marcial

Reach Only

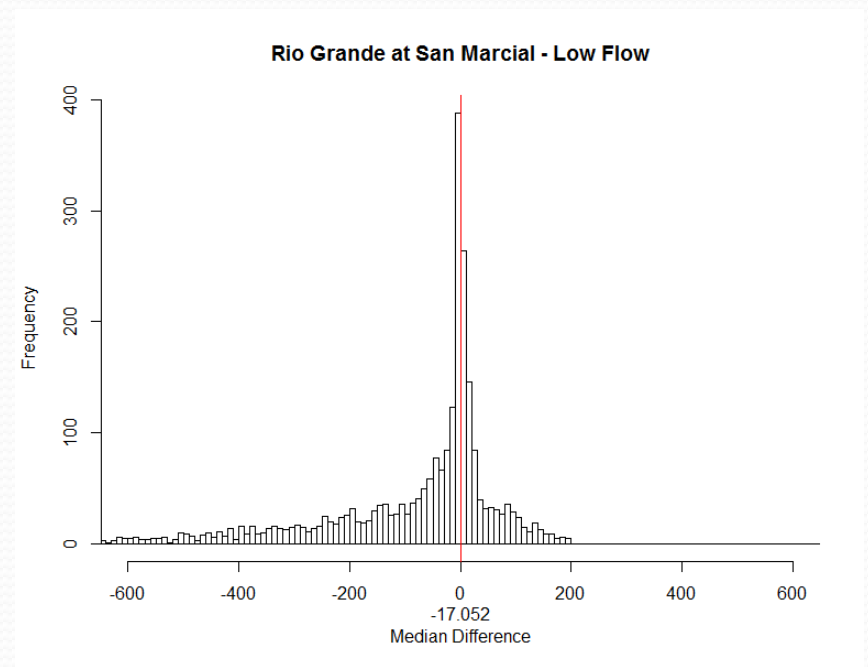
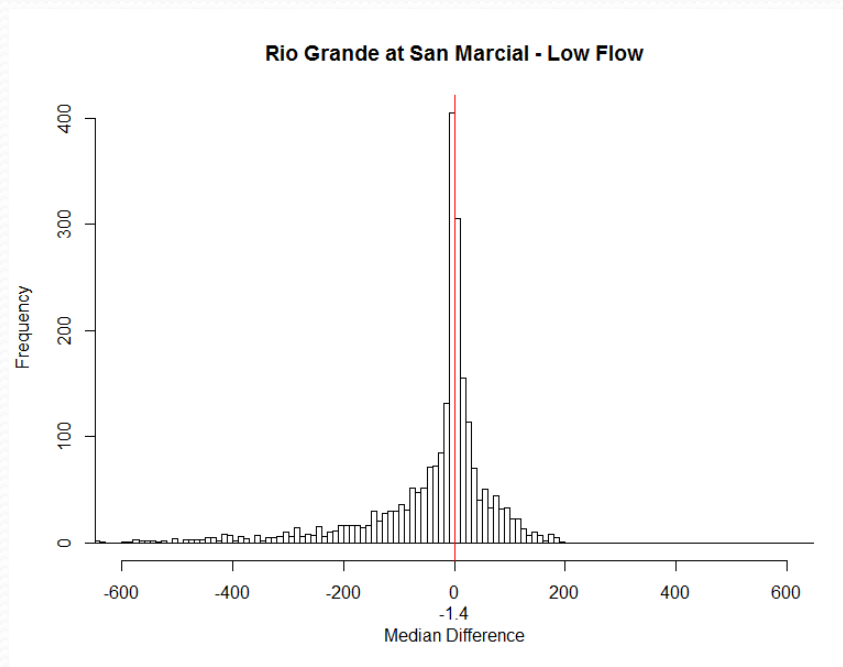
Full Model



Rio Grande at San Marcial

Reach Only

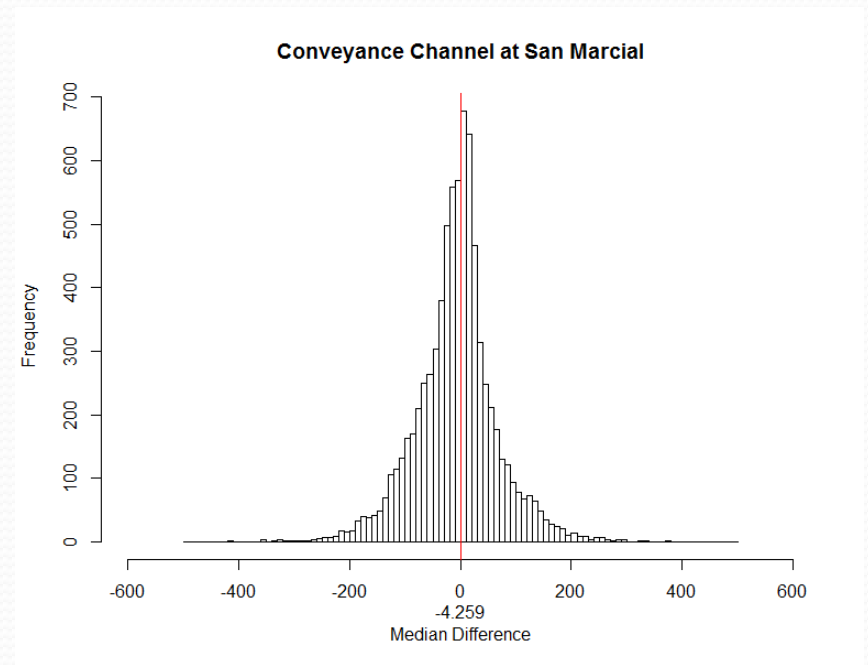
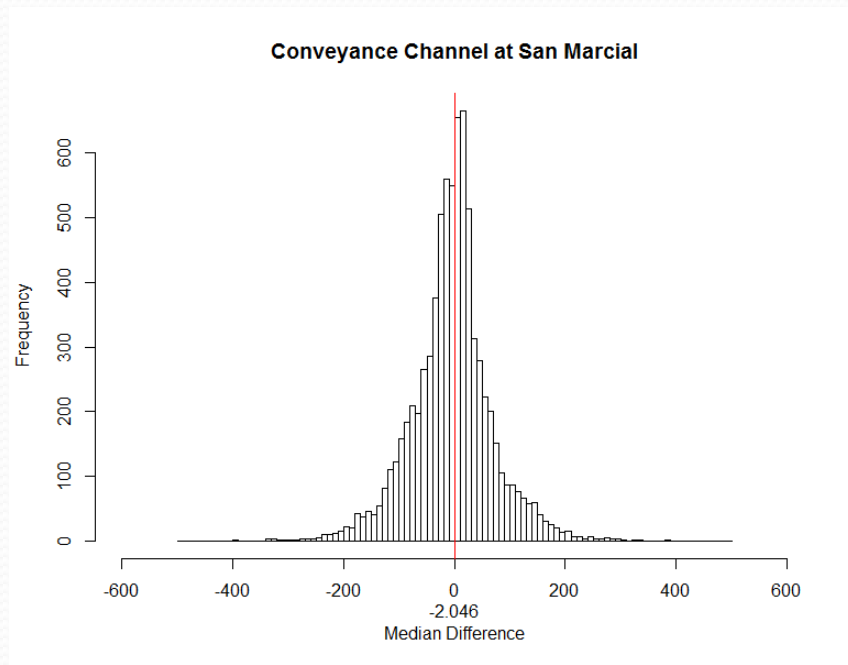
Full Model



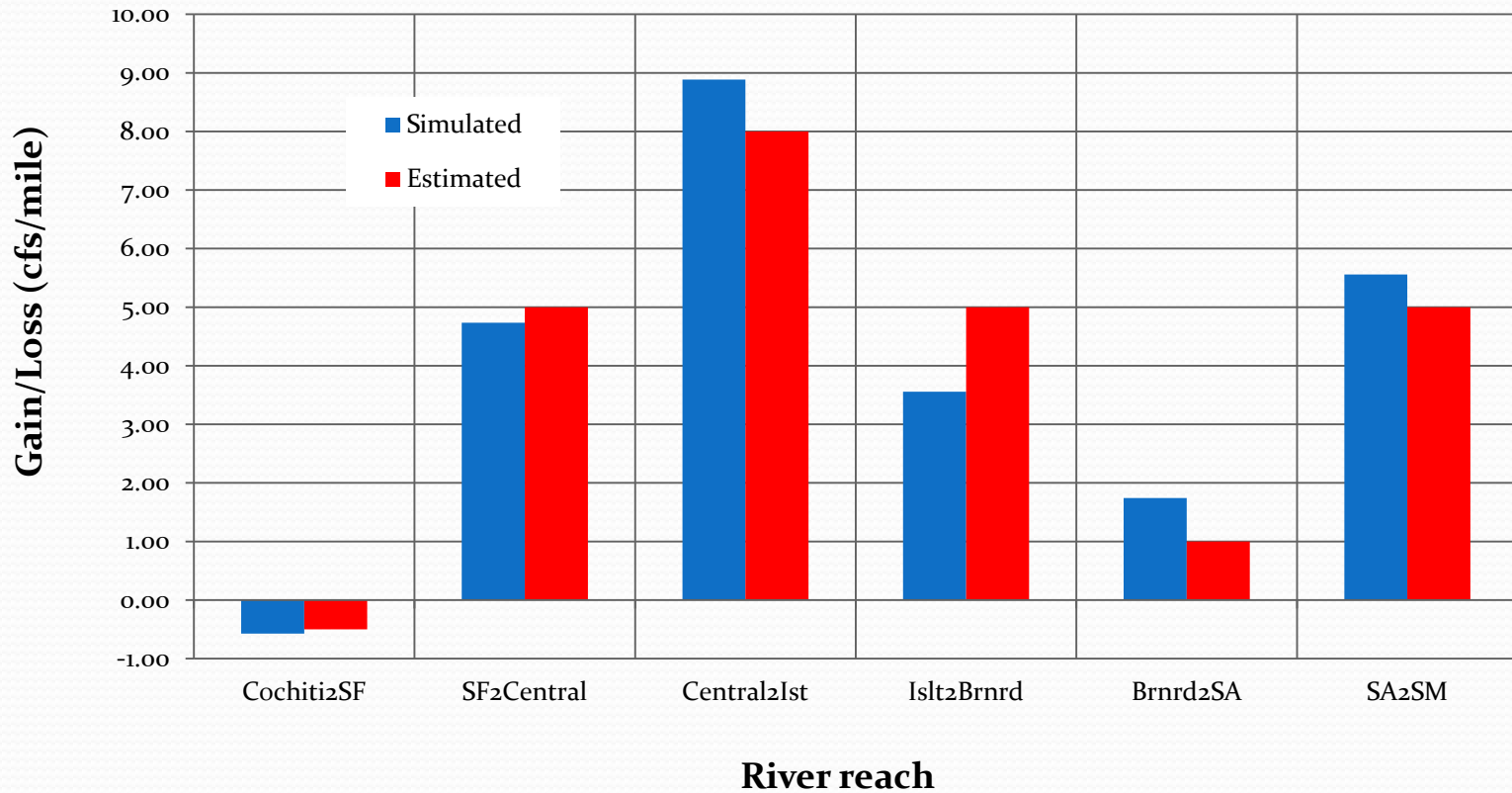
Rio Grande at San Marcial

Reach Only

Full Model

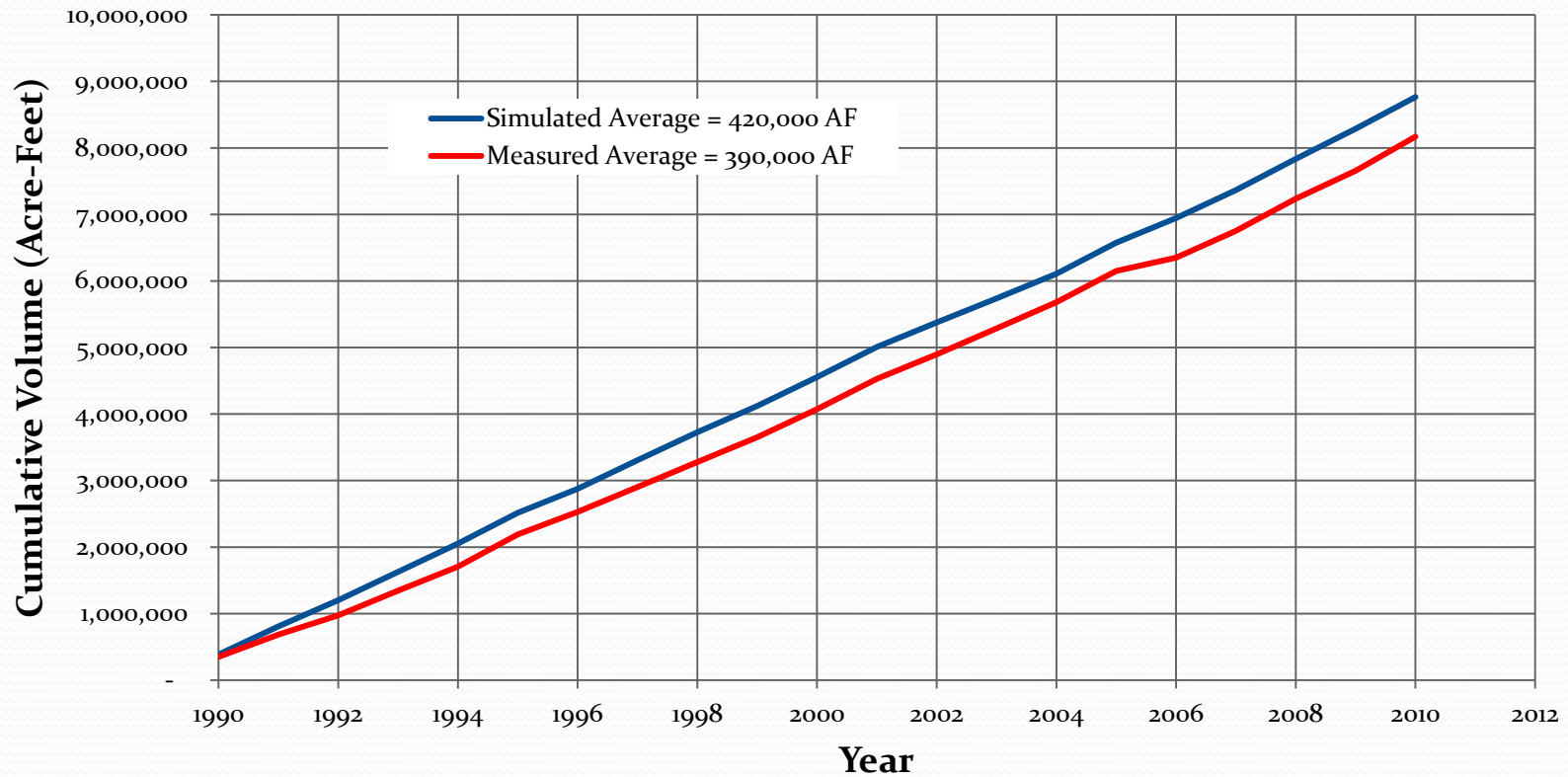


River Reach Gain(-)/Loss(+)

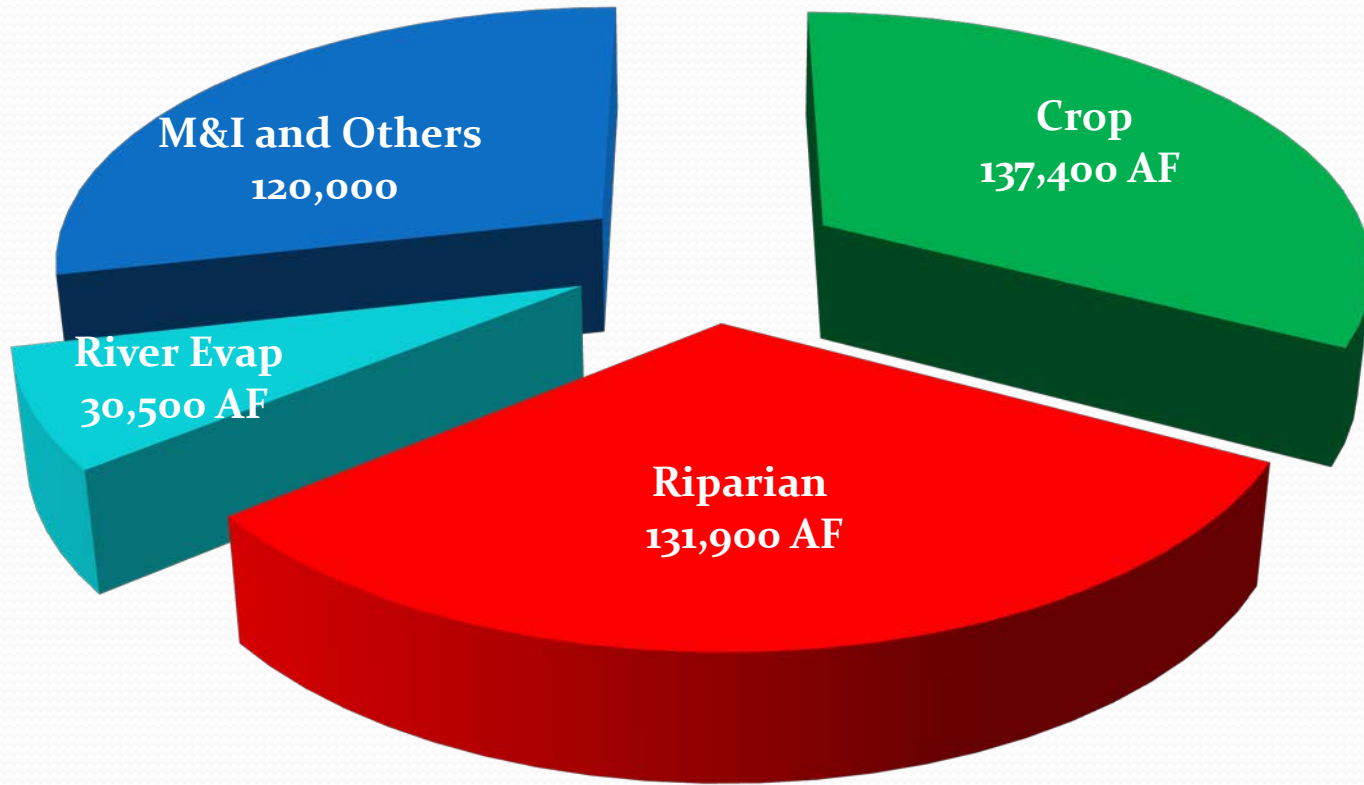


Cumulative Surface Water Depletion

Annual Cumulative Surface Water Depletion (Cochiti to San Marcial)



Average Surface Water Depletion



Simulated SW Average Annual Depletion = 420,000 AF

Incorporation of Calibration Model Into Water Operations Model

- Differences between old and new Middle Valley too great to just make changes to old model.
- Old Middle Valley portion of Water Operations model cut out and replaced by new calibration model.
- Followed instructions set out by Craig Burroughs.
- Changes to accounting, rules, and other parts of model completed.
- New Model ready for 2014 Annual Operating Plan.

Future Work

- Documentation of calibration
- Investigate Bernardo Reach
- Continue investigation of San Marcial to Elephant Butte Reach