URGWOM WATER QUALITY

Advisory Committee Meeting
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URGWOM Water Quality Tasks

- **Summary document for CADSWES**
  - Spreadsheet models to confirm equations in the Manual
- **Test conceptual framework by modeling for a test reach**
  - Base/Thin Case Test
    - Bernardo to San Acacia, 1990-2000
    - Constant input concentration (400mg/L)
    - Vary thickness of upper zone of groundwater objects
      - Upper layer thickness of the base case set to 19.69'
      - Upper layer thickness of the thin case set to 8'
    - *How would we expect salt concentration to change with a thinner upper layer?*
      - Lower volume thin case will have higher and lower concentrations than the base case; base case's larger volume will buffer the response to salt concentration change due to surface water (irrigation, evaporation)
    - *What responses would we expect to remain constant?*
      - In a gaining test reach, we would expect minimal difference in lower layer salt concentration

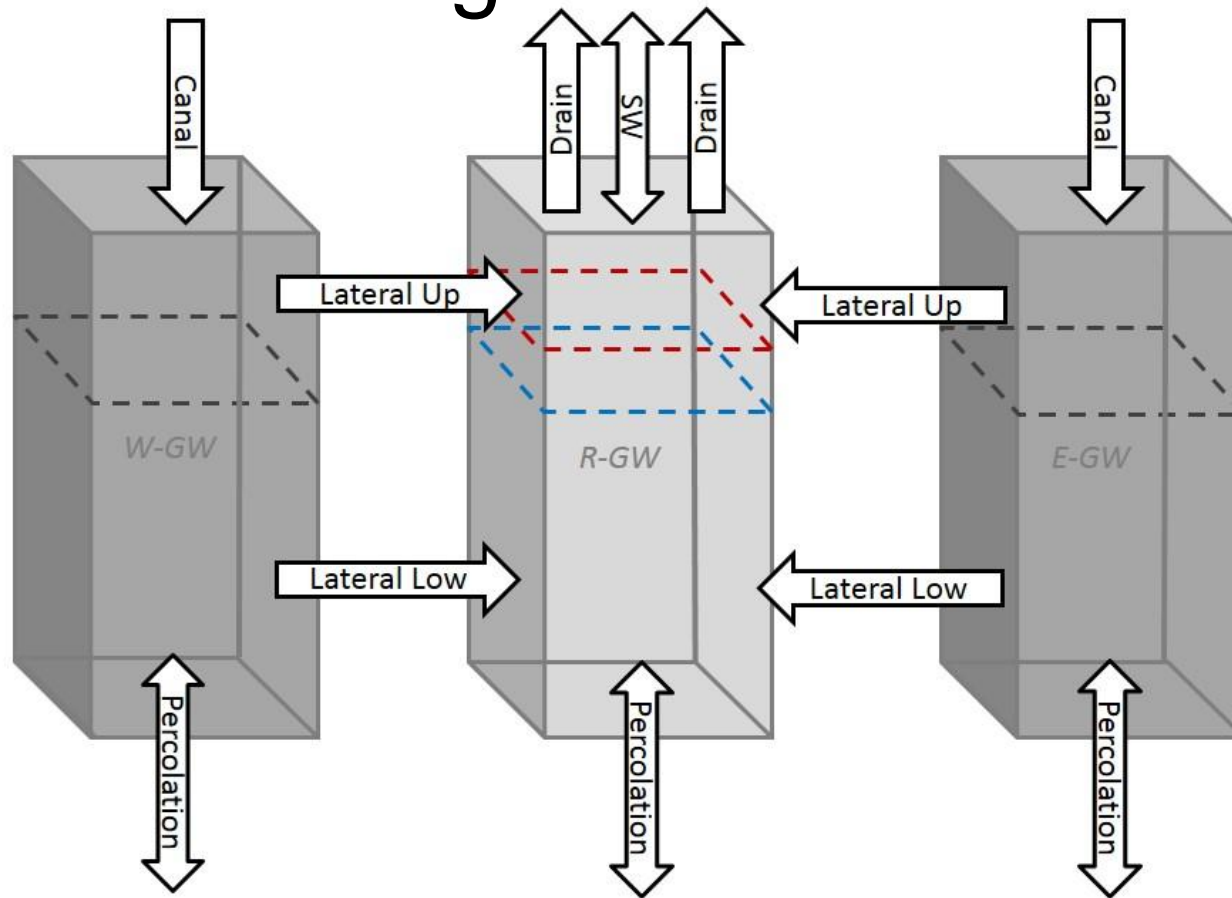# Two-layer River Groundwater Object Thickness Testing

Figure 1: Conceptual model of URGWOM groundwater objects (grey boxes) with upper and lower layers (dashed lines) and the difference between the base case (19.69', blue) and thin case (8', red) upper layer thicknesses in the R-GW object. Water and salt fluxes and their dominant directions to and from groundwater objects are shown with arrows for this mostly gaining reach.

Base and Thin Case Salt Concentration of River Groundwater Object in Upper and Lower Layers
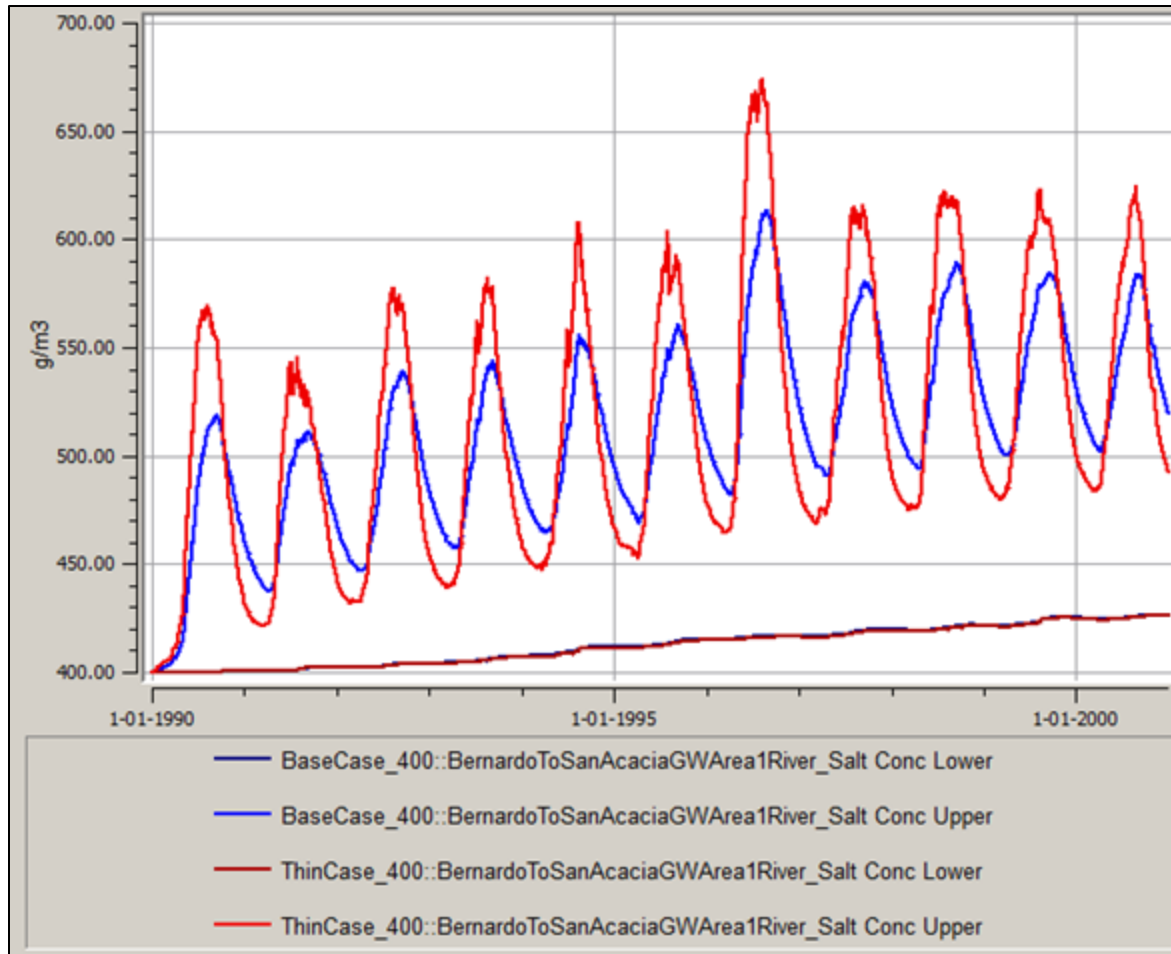

Figure 2: Salt concentration in the upper and lower layers of the River Groundwater Object over time in **base** and **thin** cases.

Concentration increases during irrigation season in the upper layer in both cases.

Base case salt concentration is less variable than the thin case in the upper layer
(σ = 43.75197 and 60.63567)

The lower layer salt concentration is similar in both cases and less variable than the upper layer
(σ = 8.6677 and 8.5457)

Real Water Quality Data Testing

- Daily water quality data for Bernardo and San Acacia
  - Specific conductance (SC) converted to total dissolved salinity (TDS)
  - Availability will determine time period for real data model run
  - Minimal data collected in canals and drains
  - Gaps in data and/or unmeasured input will need to be defined

- Use the latest calibrated model test reach from Bernardo to San Acacia and add WQ
  - Add Salinity Water Quality Methods for new model
    - Create slots for WQ data
    - Create links using Smart Linker, manually where needed
  - Use DMI to import measured data to model input
    - Data availability limits model run from 1990-1992
    - Data gaps were filled systematically using HEC-VUE DSS
    - Define non-measured data input
- Test model output
  - Flow, Salt fluxes
- Compare modeled salinity at San Acacia to measured salinity data

Questions?