

Inter-Subbasin Impact Modeling: Effects on Water Availability

**Salinas Valley Basin Groundwater Sustainability Agency
Board of Directors Meeting**

January 8, 2026

Introduction

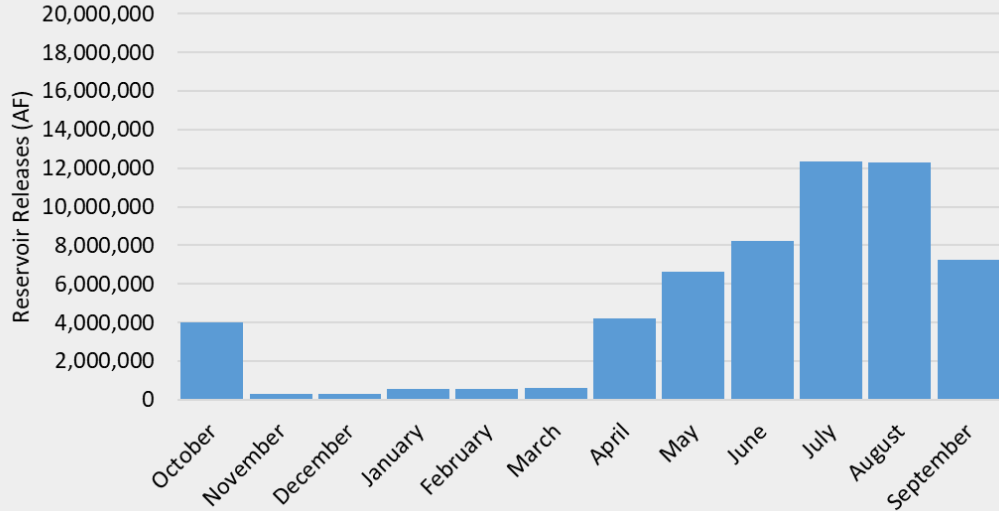
- Understand how overall water **availability** is impacted by pumping
- Hypothetical superposition modeling, results should be considered as “order-of-magnitude” accuracy (e.g., 10,000 to 15,000, instead of 13,051)
 - “What if” scenarios, hypothesis testing
 - Change one input, assess impact on results
 - Focus is on Upper Valley, Forebay, 180/400, and East Side Subbasins
 - Purpose is to assess the impacts of pumping in one subbasin on the other three subbasins
- Evaluate simulated changes in Salinas River and groundwater flows and changes in groundwater elevations and groundwater storage

Findings

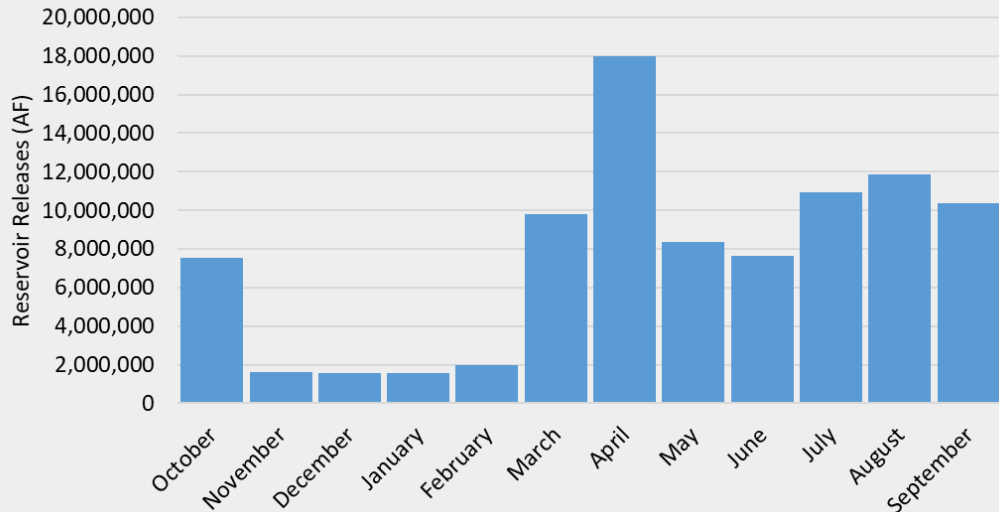
- The hydrology of the SVGB represents a single water resource composed of interconnected surface water and groundwater
- Significant portions of pumped groundwater are derived directly from reservoir conservation releases
- Pumping in each subbasin impacts water availability in at least one other subbasin – flows between subbasins and groundwater elevations
- The Salinas River is a significant hydrologic connection between the Upper Valley, Forebay, and 180/400 Subbasins
- Up-Valley pumping reduces Salinas River stream recharge down Valley
- Groundwater in the 180/400 is a significant source of water for the East Side

Reservoir Releases and Pumping

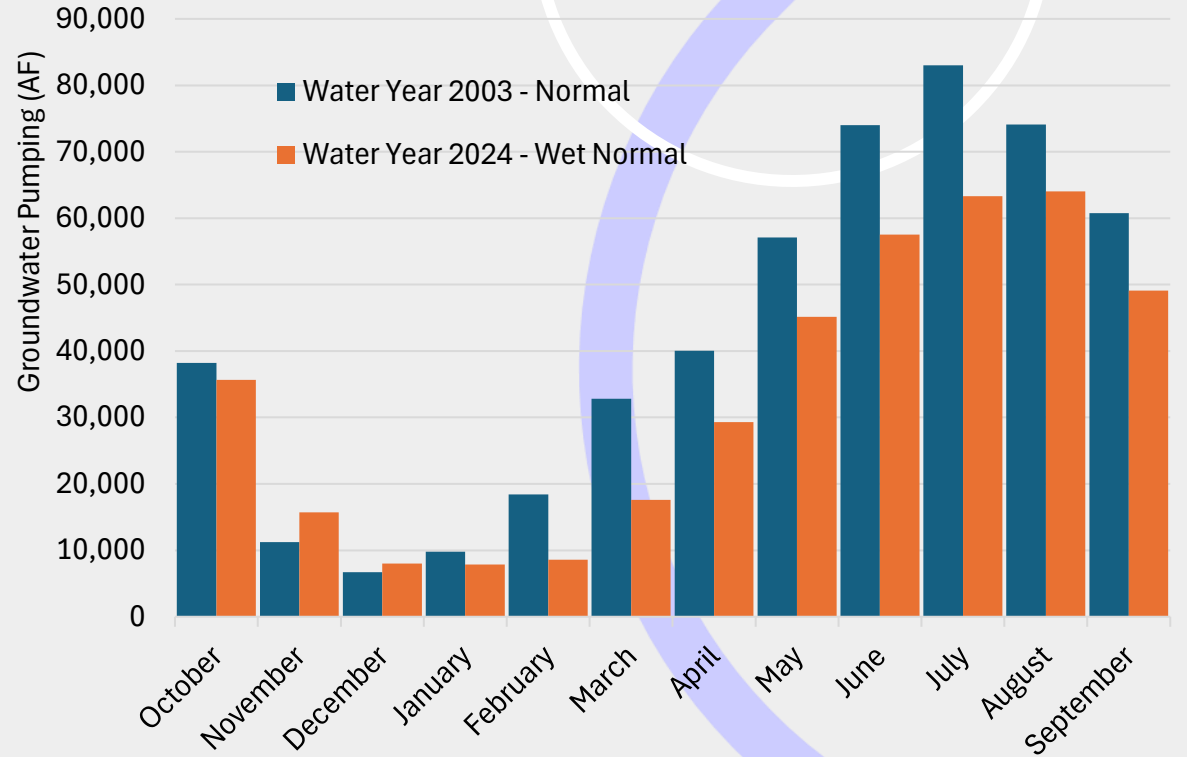
Water Year 2003: Normal



Water Year 2024: Wet-Normal

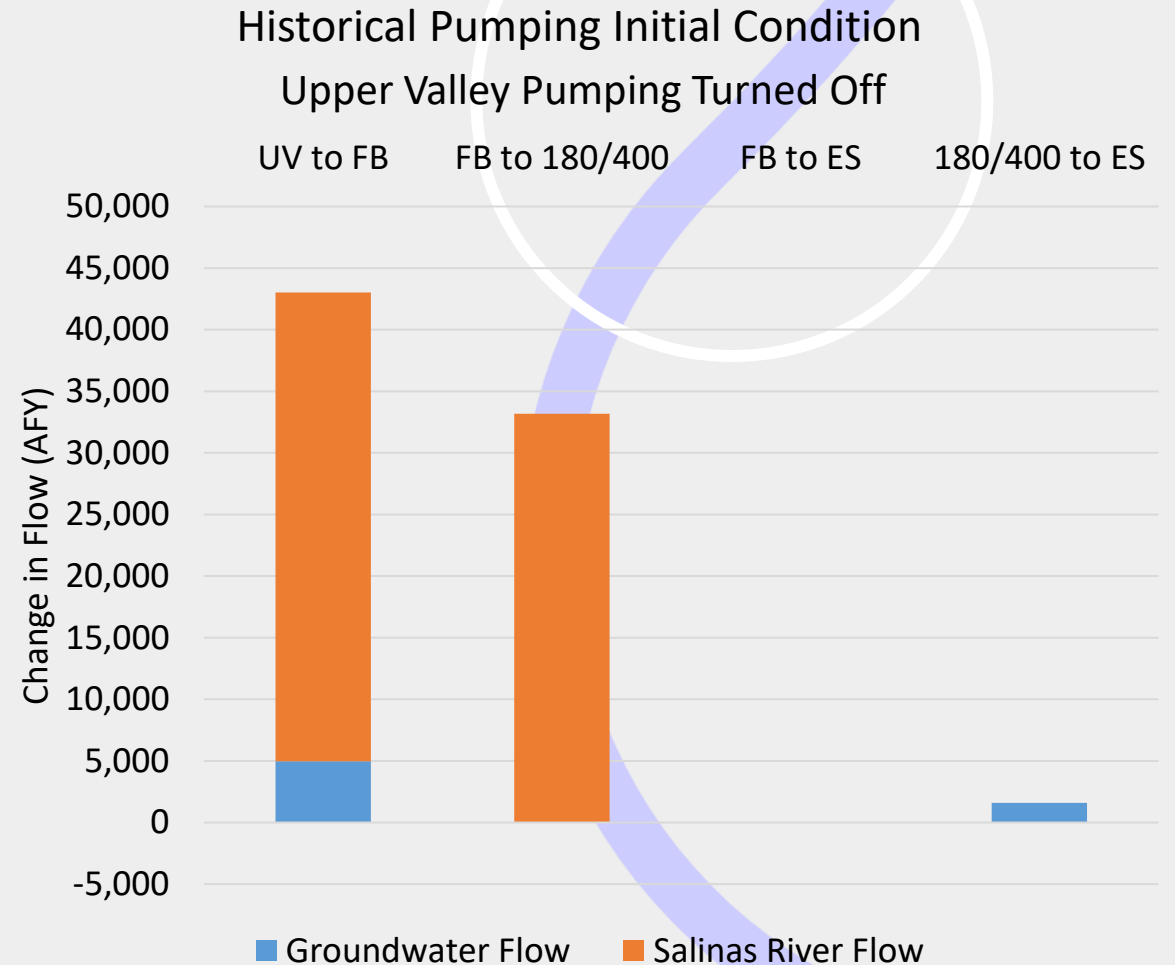


Total SVGB Groundwater Extractions



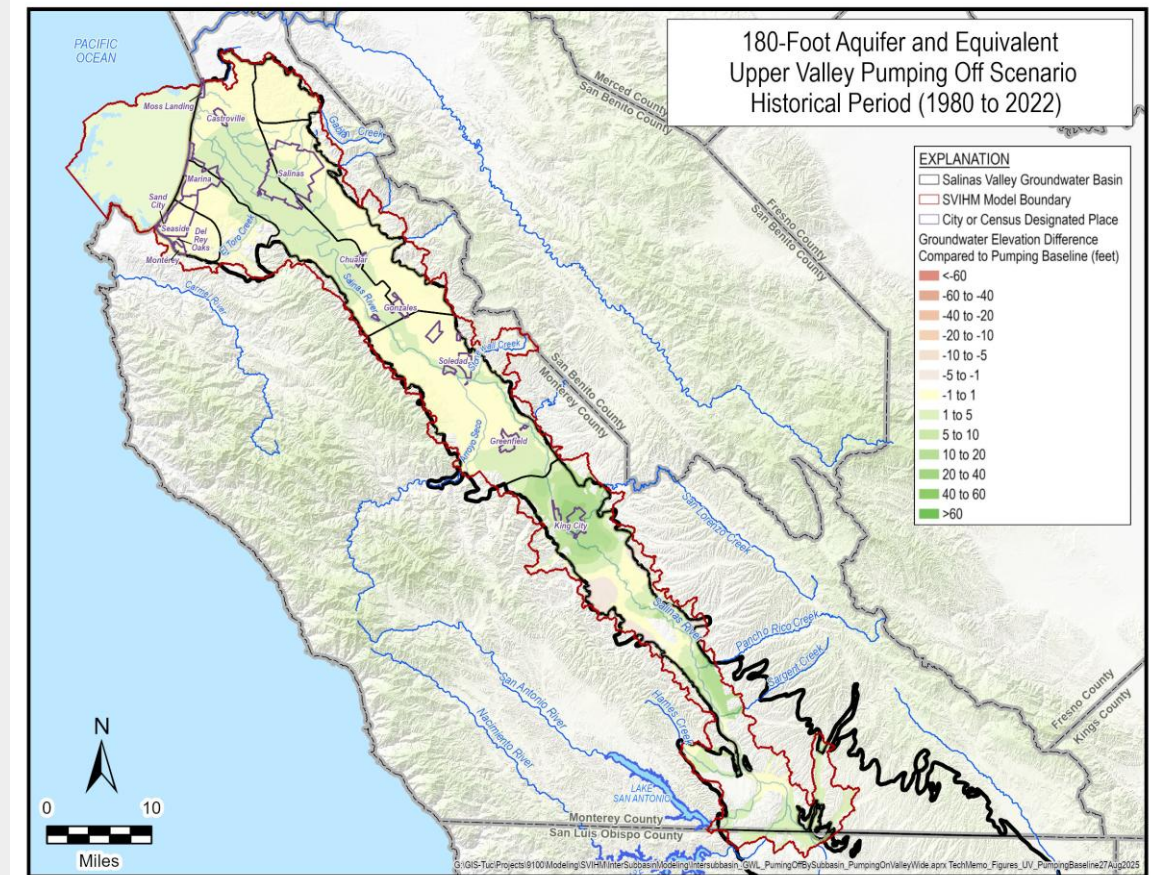
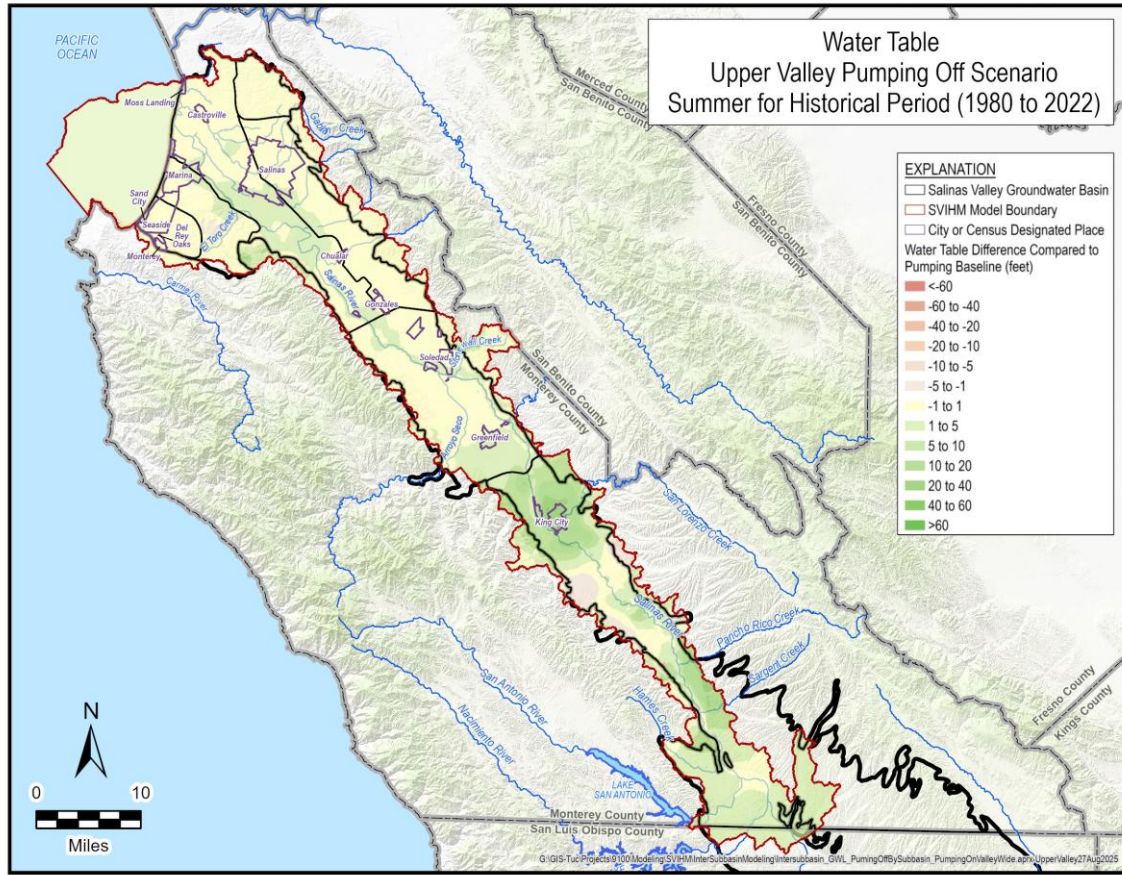
Pumping Off in the Upper Valley Changes in Flow Between Subbasins

- Salinas River flow UV to FB increases by around 40,000 AFY
- Salinas River flow FB to 180/400 increases by around 30,000 AFY
- Changes in Salinas River flow greater than changes in groundwater flow
- However, changes facilitate stream recharge in 180/400 and Forebay



Pumping Off in the Upper Valley

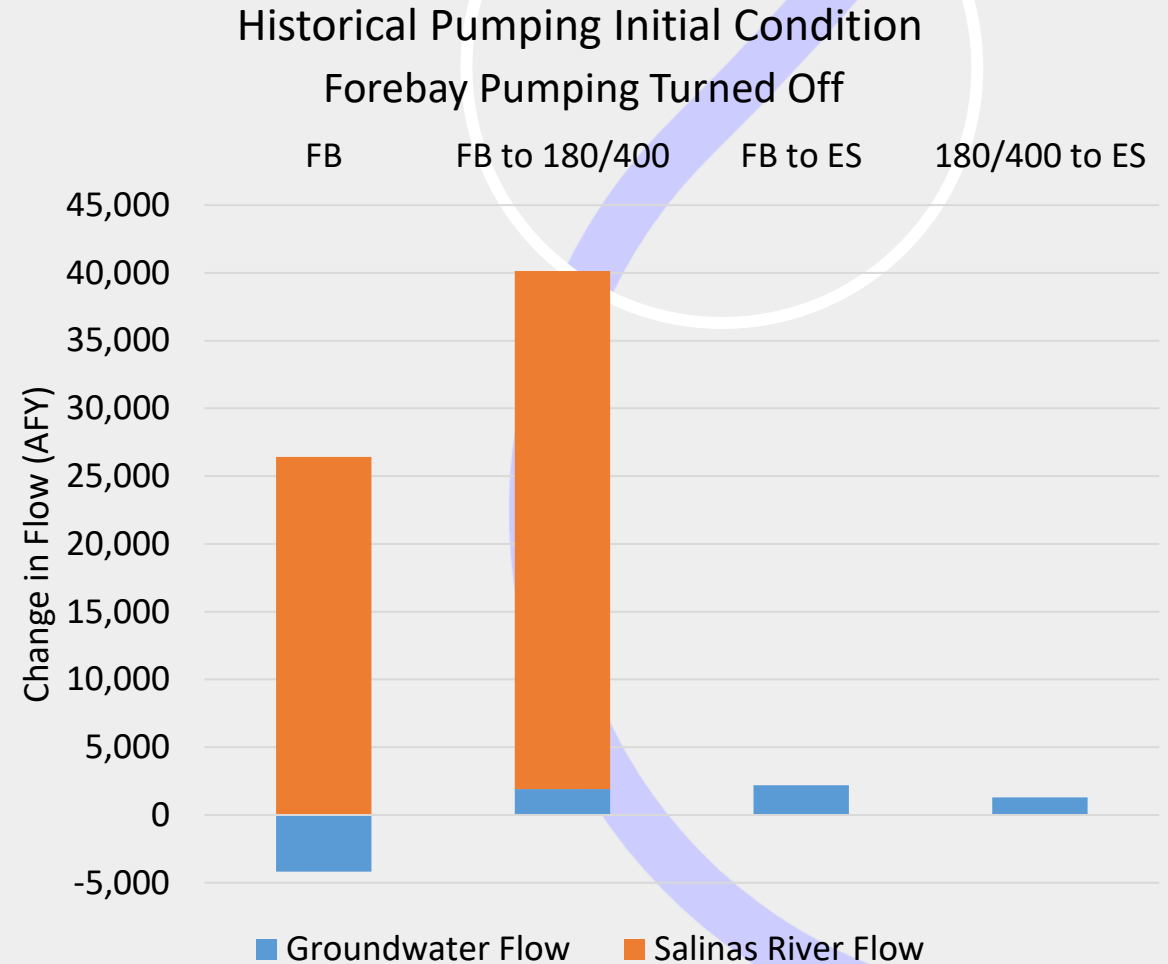
Average Changes in Groundwater Elevations and Storage



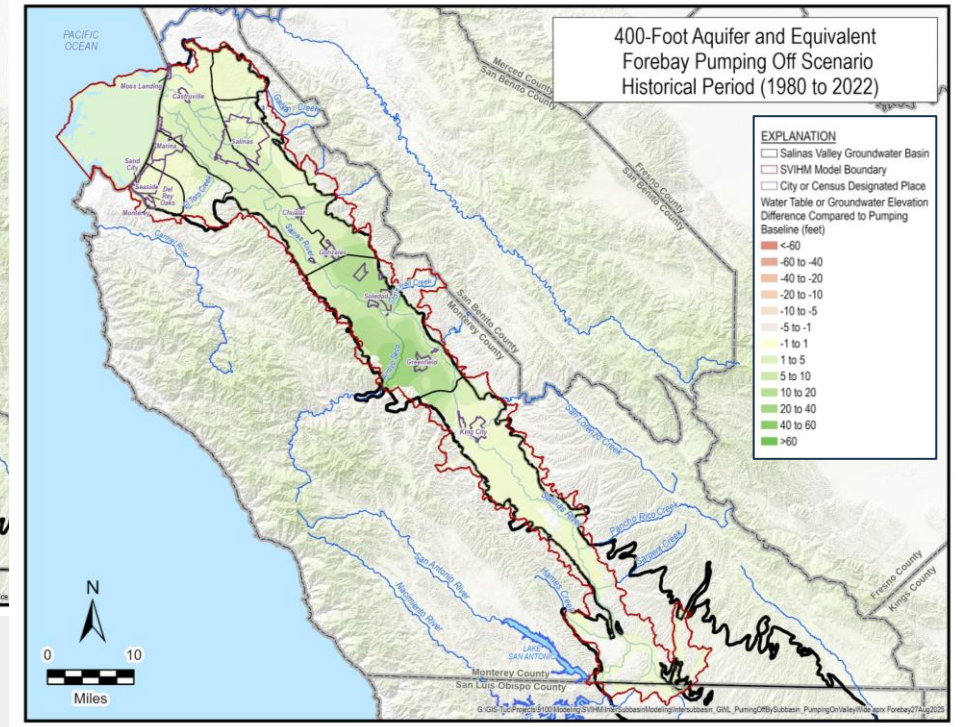
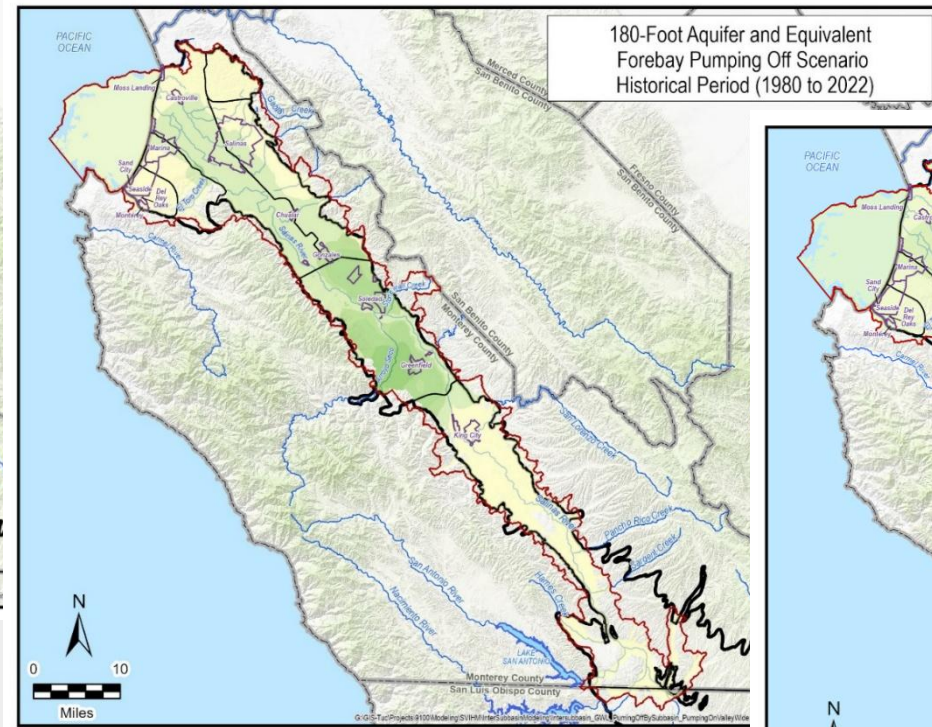
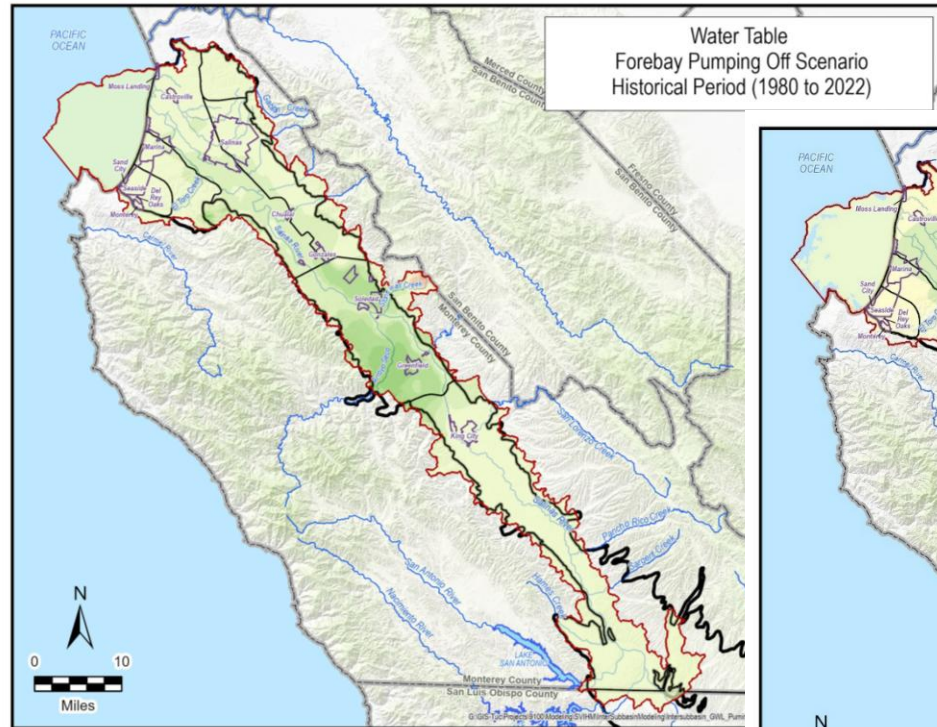
- Average increase downstream of UV about 1 to 5 feet (mostly in 180/400) (and similar in 400-Ft Aquifer)
- Maximum increases are higher than 1 to 5 feet

Pumping Off in the Forebay Changes in Flow Between Subbasins

- Salinas River flow in FB increases by around 25,000 AFY
- Salinas River flow FB to 180/400 increases by around 40,000 AFY
- Changes in Salinas River flow greater than changes in groundwater flow
- However, changes facilitate stream recharge in 180/400



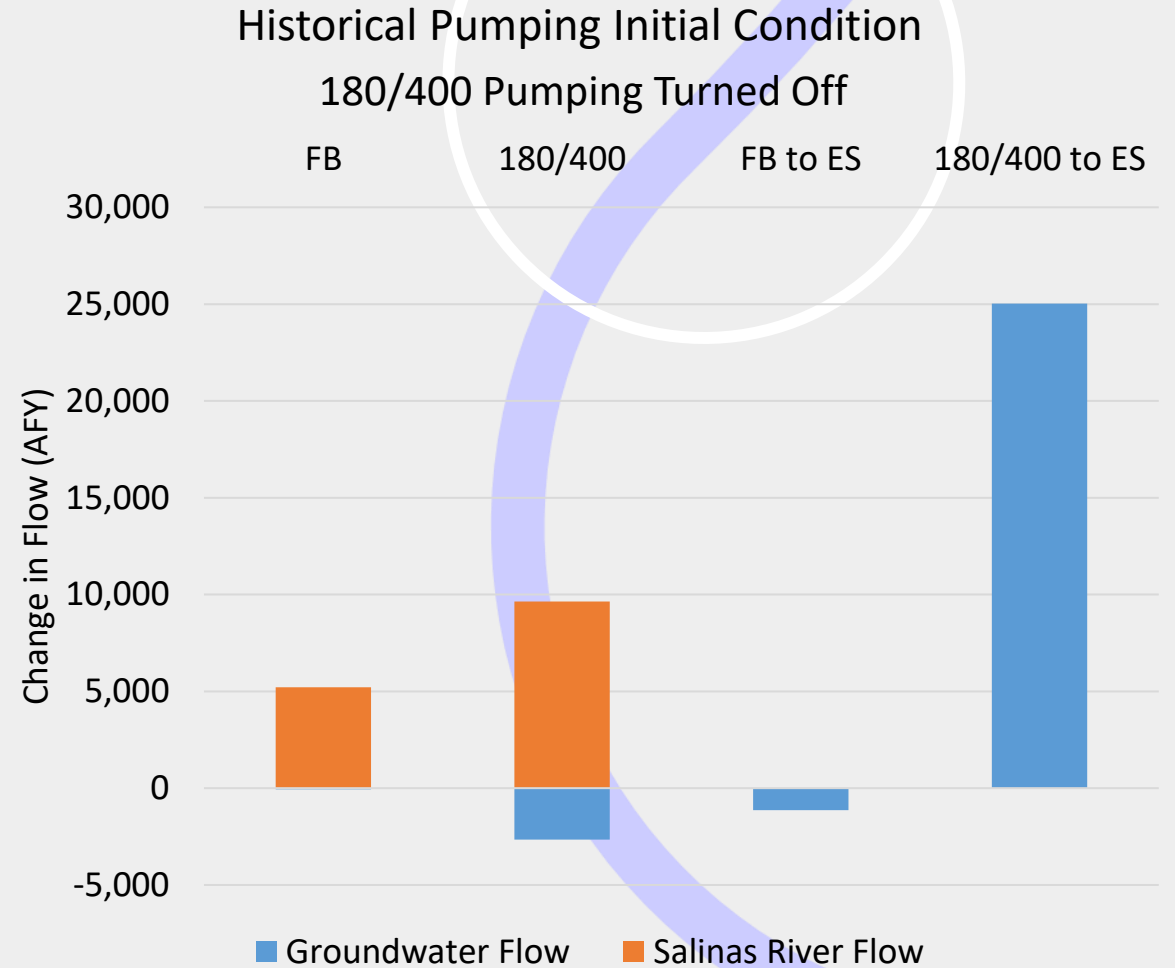
Average Changes in Groundwater Elevations and Storage



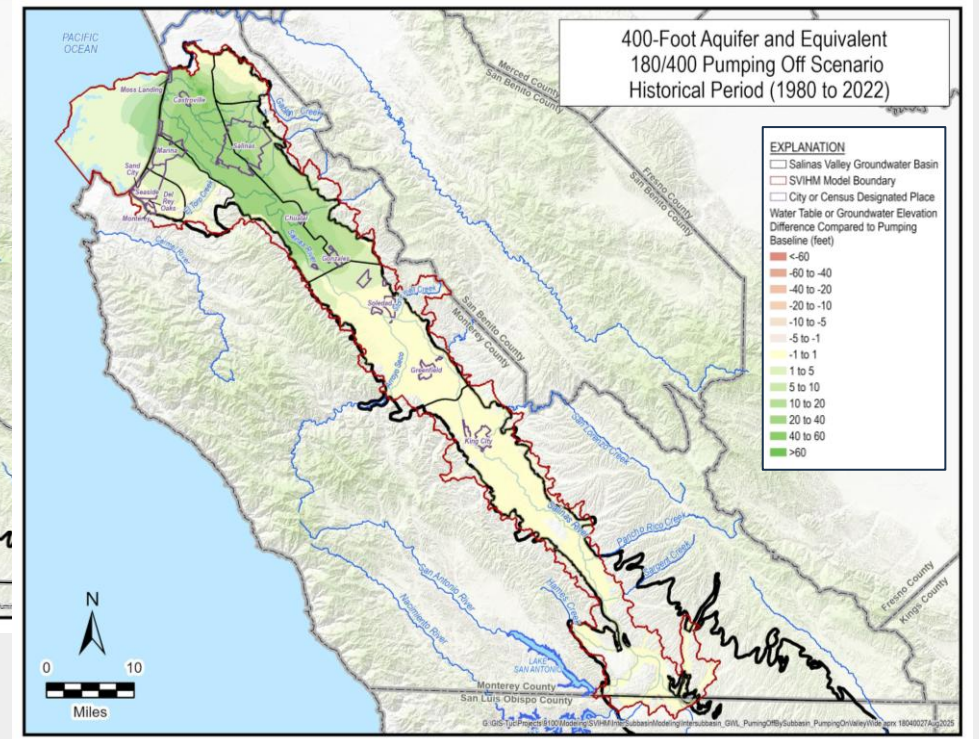
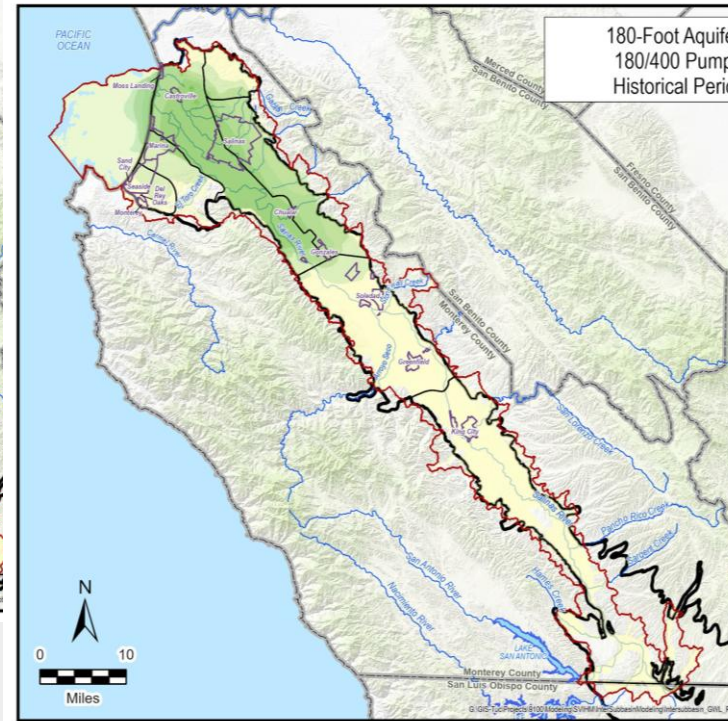
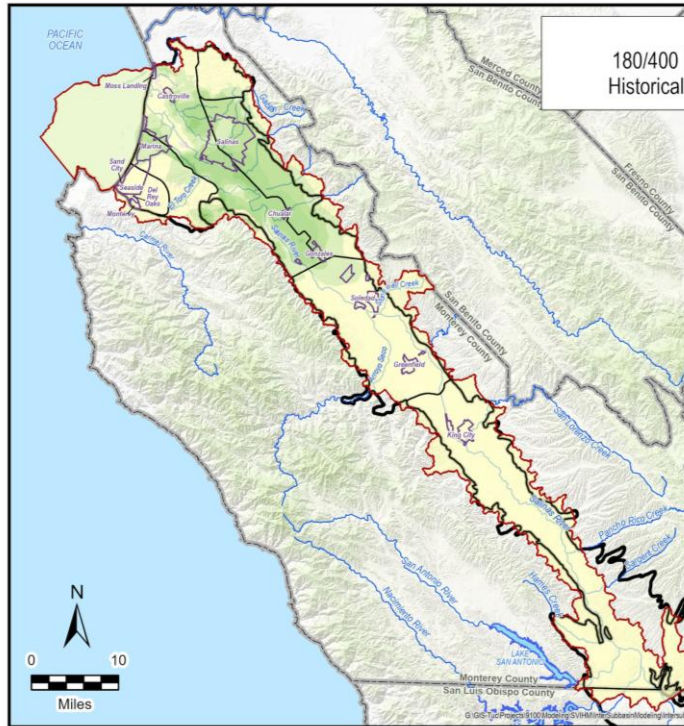
- Modest increase in northern Upper Valley (upstream)
- Average increase downstream of Forebay is about 1 to 5 feet
- Maximum increases are higher than 1 to 5 feet

Pumping Off in the 180/400 Changes in Flow Between Subbasins

- Salinas River flow in 180/400 increases by around 10,000 AFY
- Groundwater flow 180/400 to ES increases by around 25,000 AFY
- Significant changes in groundwater flow 180/400 to ES



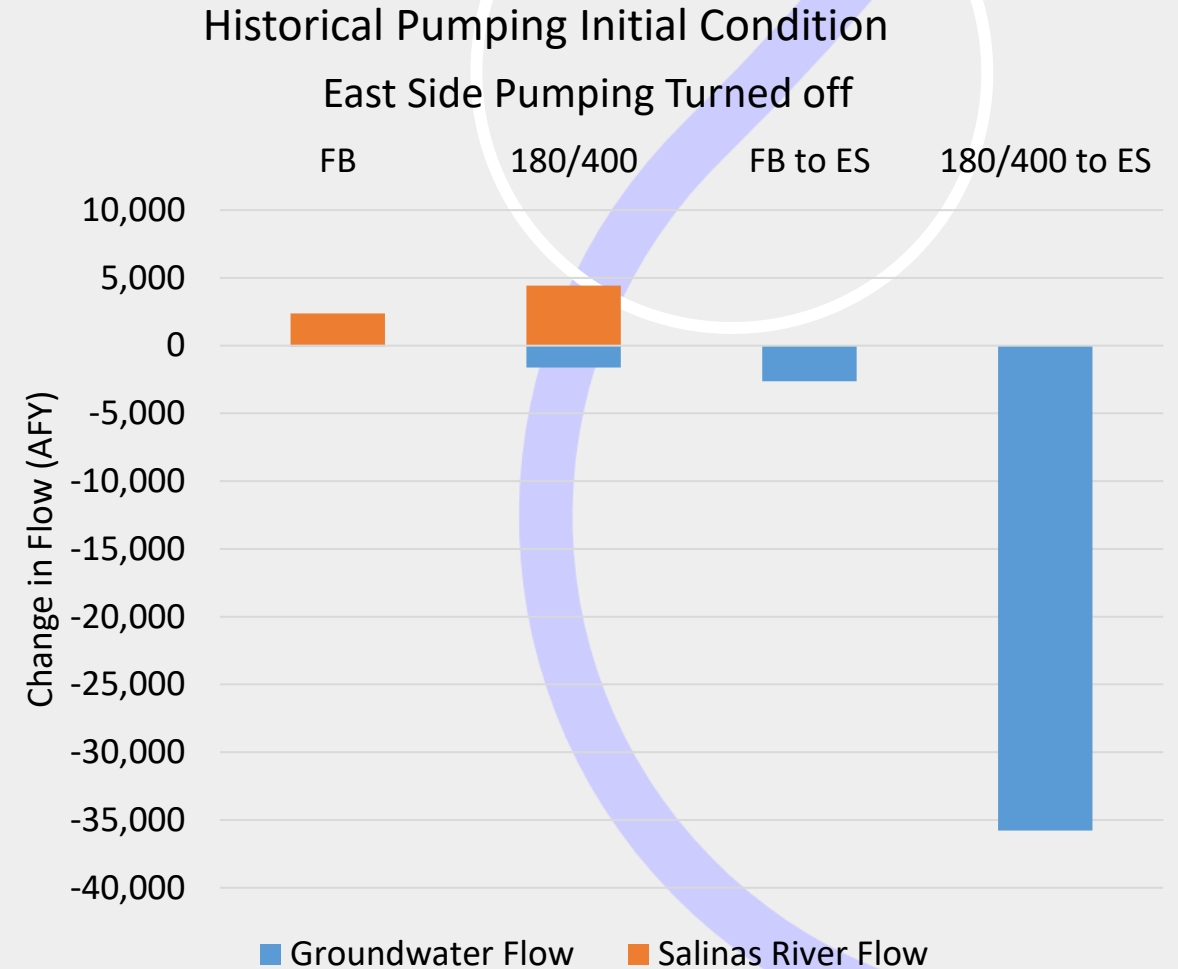
Average Changes in Groundwater Elevations and Storage



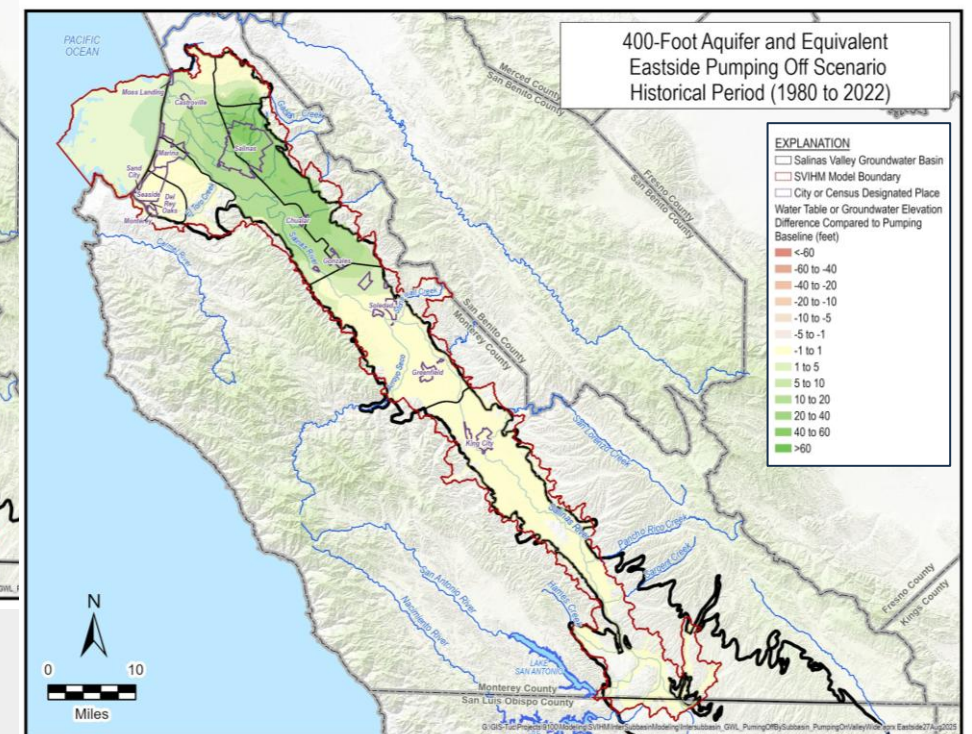
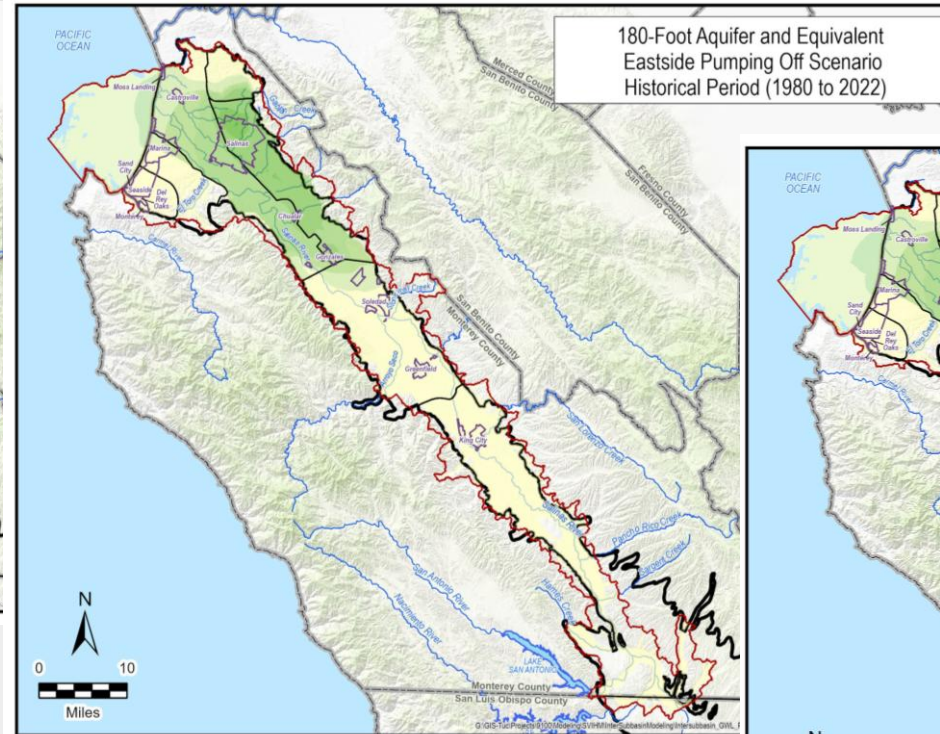
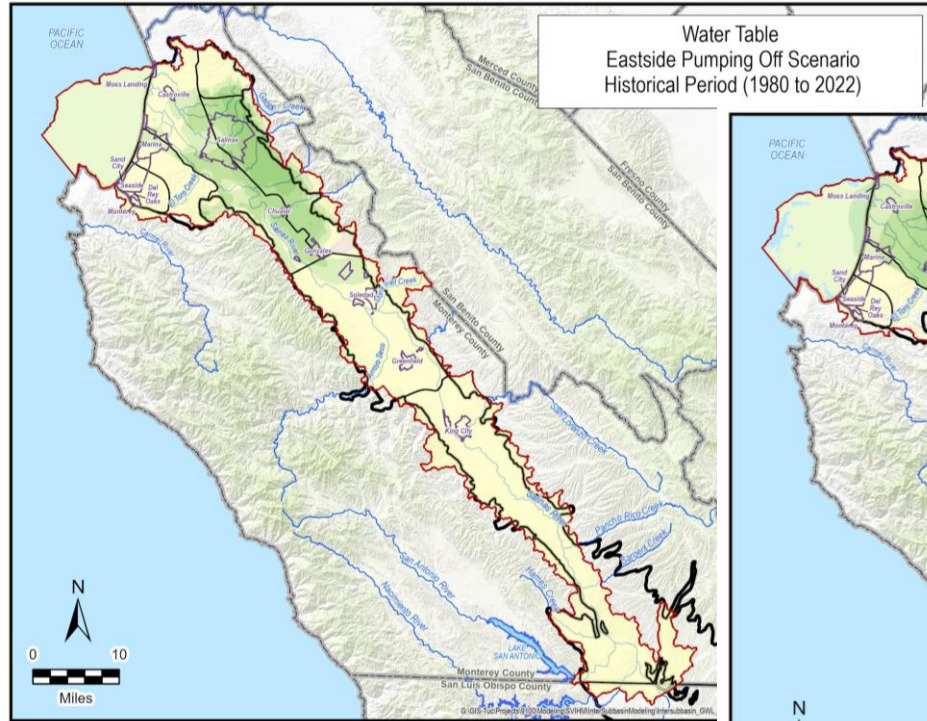
- Modest increase in northern Forebay (upstream)
- Average increase in East Side is 1 to 20 feet
- Maximum increases are higher than 1 to 20 feet

Pumping Off in the East Side Changes in Flow Between Subbasins

- Salinas River flow minimally changed
- Groundwater flow from 180/400 to ES decreases by around 35,000 AFY
- Significant change in groundwater flow 180/400 to ES



Pumping Off in the East Side Average Changes in Groundwater Elevations



- Modest increase in northern Forebay (upstream)
- Average increase in 180/400 is 1 to 10 feet
- Maximum increases are higher than 1 to 10 feet

Changes in Groundwater Storage in the 180/400

- SVBGSA uses a storage coefficient of 0.078 and an area of 76,000 acres in the non-SWI area to estimate the basin-wide change in groundwater storage in the 180/400
- 60% is a reasonable estimate of the area in the 180/400 with groundwater elevation increases of 1 – 5 feet for the UV-off and FB-off scenarios
- Subbasin wide, the average increase is likely greater than 2 ft
- Thus, a reasonable estimate of the increased groundwater storage in the 180/400 is 15,000 AFY for the combined UV-off and FB-off scenarios

Conclusions

- The inter-subbasin impact modeling demonstrates:
 - Significant amount of groundwater water extracted from upstream subbasins derived directly from reservoir conservation releases during the primary agricultural growing season
 - Pumping in any one of the subbasins in the SVGB impacts water availability in at least one other subbasin
 - Groundwater elevations and groundwater storage in downstream subbasins would decrease with increased pumping in upstream subbasins
 - These decreases would occur primarily because less water would be available in the Salinas River for stream recharge in downstream subbasins