## Modeling Subsidence in the Central Valley

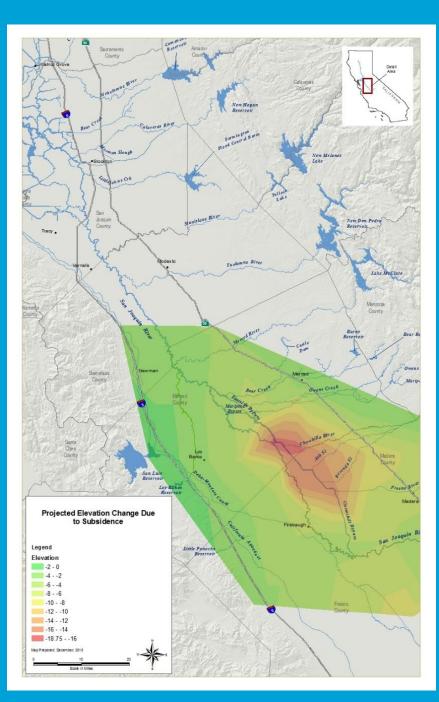
Evaluating Current and Future Impact on Flood Risk





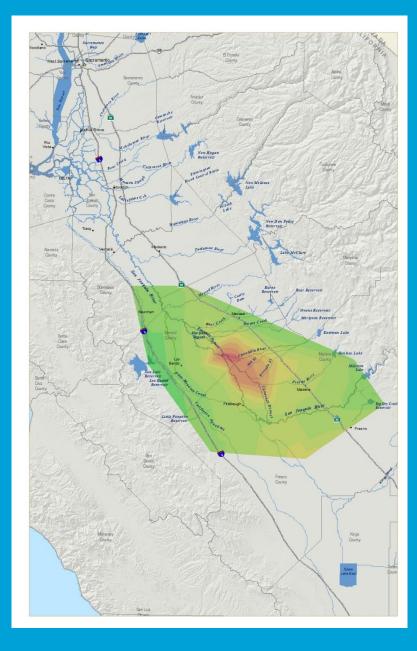
#### **Projected Subsidence**

- DWR study based on measured rates of subsidence
- Projected to 2062-mid level projection
- Variable throughout the San Joaquin Basin - most impact on Eastside Bypass near Sand Slough Diversion Structure



## Goals of Hydraulic Analysis Evaluate:

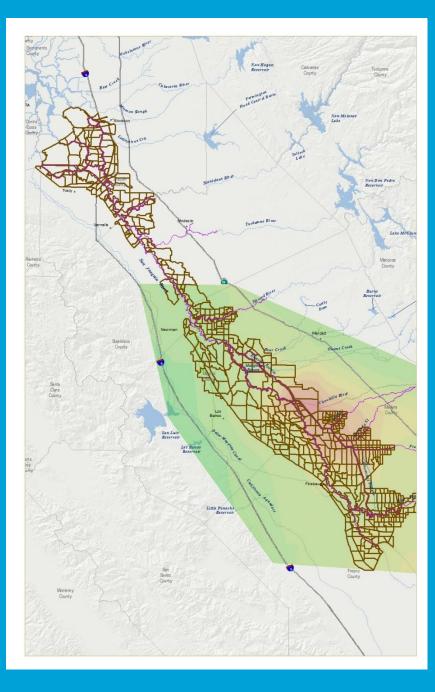
- Conveyance capacity
- Changes to flood inundation
- Changes to timing-flow delivery



## Methods

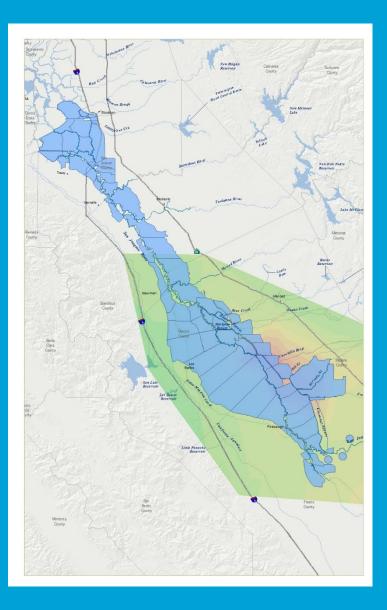
#### Two investigations:

- 1. CVFPP flow delivery model
- 2. CVFED HEC-RAS model



## CVFPP flow delivery model Methods

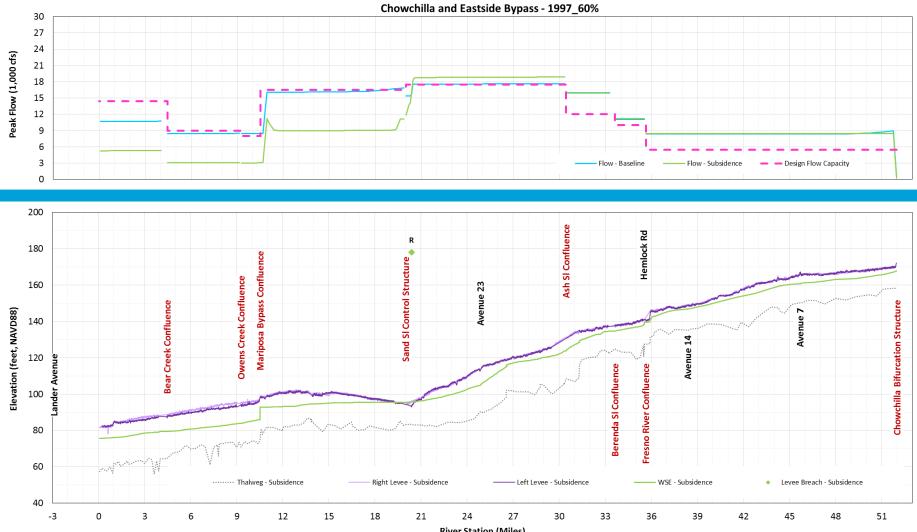
- Adjusted HEC-RAS model geometry to reflect subsidence TIN
- Ran three scaled events from CVHS
- Looked at changes in conveyance, floodplain overflow and timing



#### CVFPP flow delivery model Results

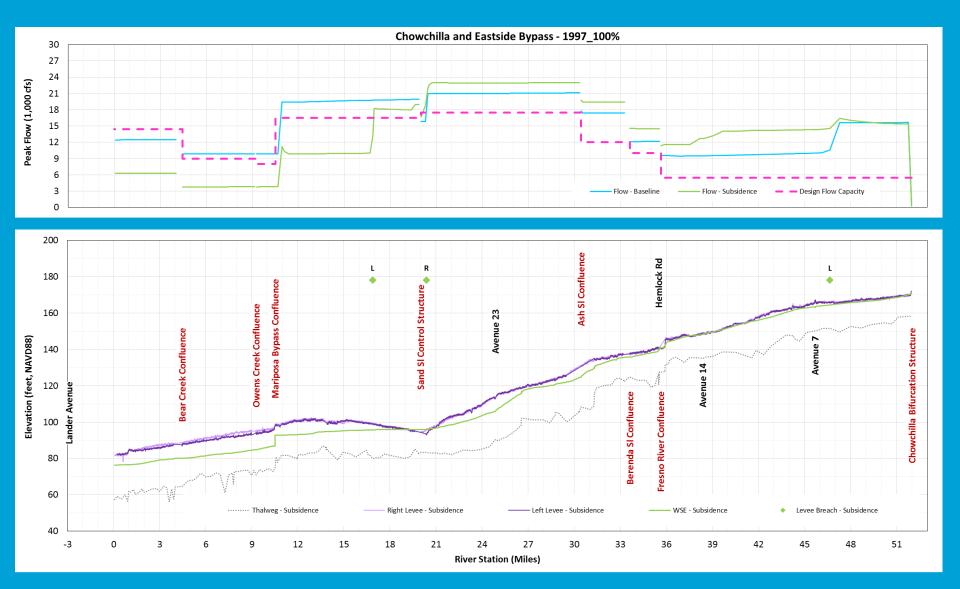
- Decreased conveyance in Eastside Bypass from Sand Slough Control Structure to Mariposa Bypass
- Increased overbank flooding in Upper and Mid SJR Basin in three events studied
- Slight attenuation of flows in lower system

#### Eastside Bypass: 60% of 1997 event

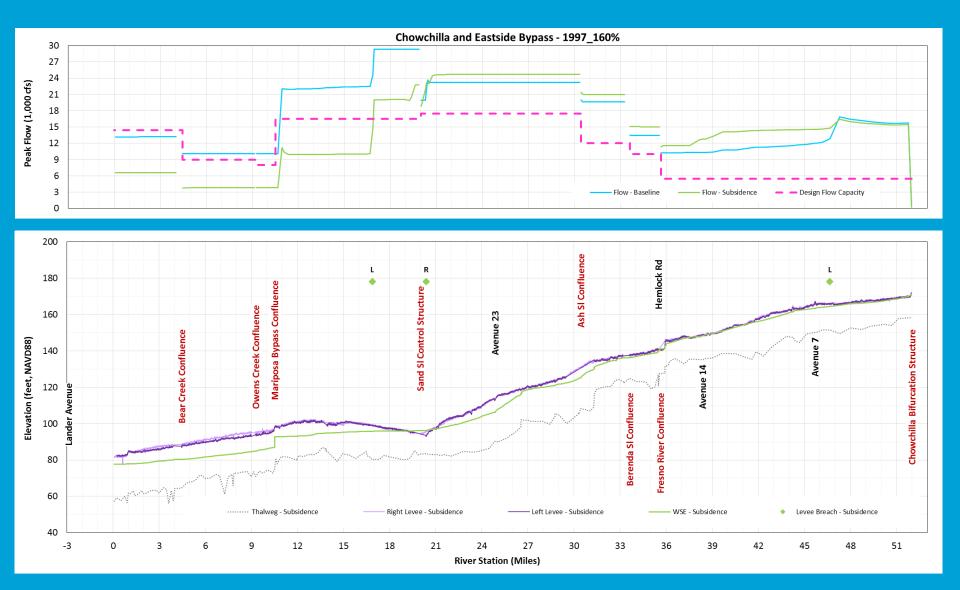


**River Station (Miles)** 

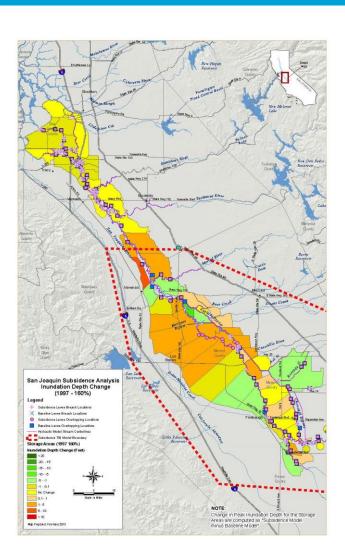
#### Eastside Bypass: 100% of 1997 event



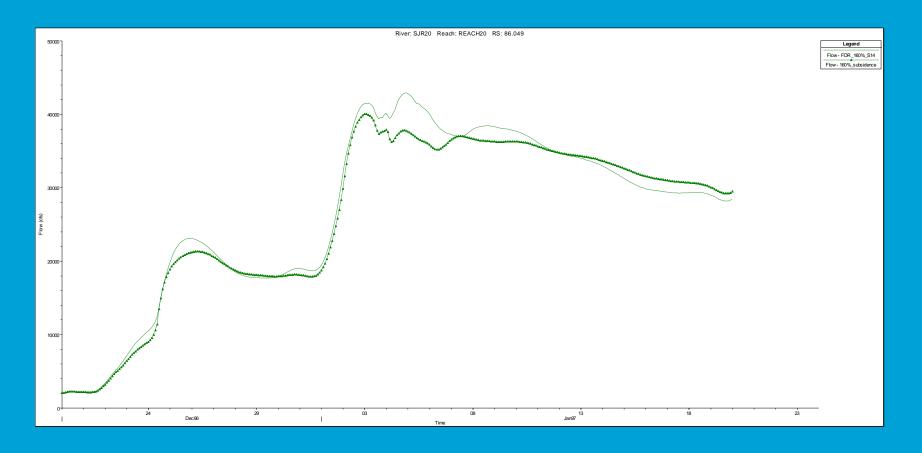
#### Eastside Bypass: 160% of 1997 event



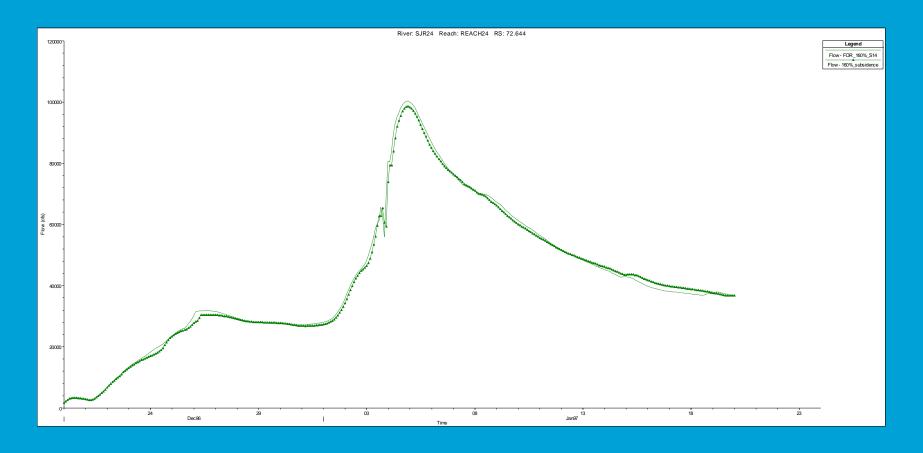
## Overbank Flooding



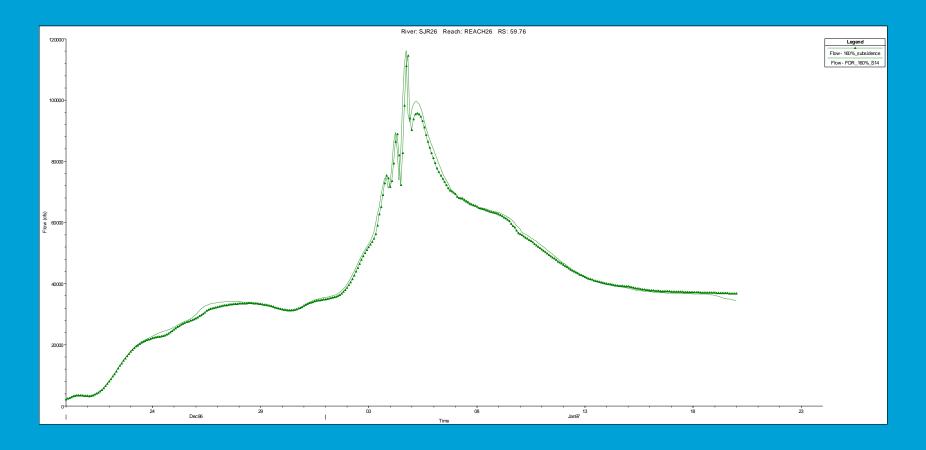
#### Flow upstream of confluence with Tuolumne River



#### Flow upstream of confluence with Stanislaus River

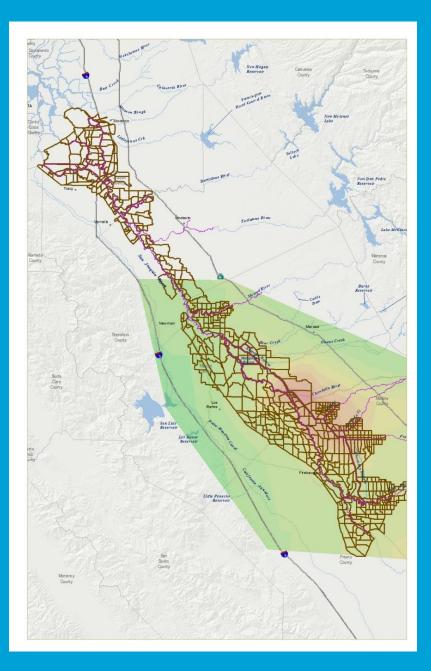


# Flow downstream of confluence with Stanislaus River



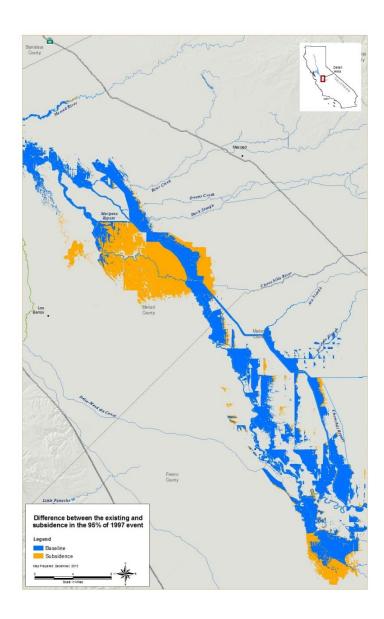
## CVFED HEC-RAS model Methods

- Created Subsidence Surface
- Modified geometry to reflect adjusted TIN with subsidence
- Ran the model with three scaled events

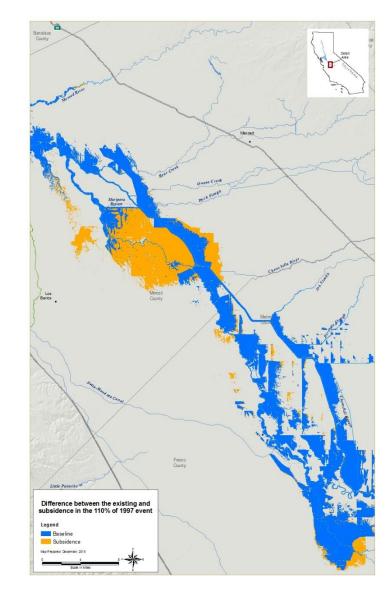


#### CVFED HEC-RAS model Results

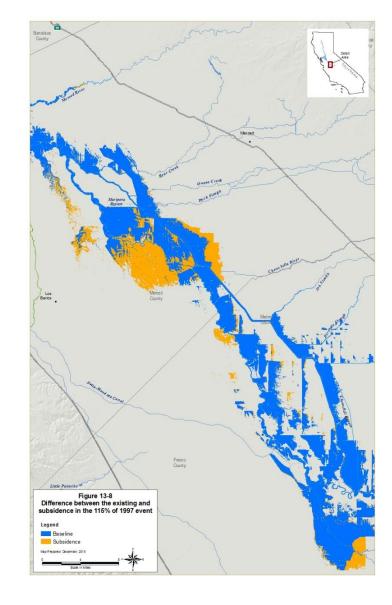
- Decreased conveyance in Eastside Bypass from Sand Slough Control Structure to Mariposa Bypass
- Increased overbank flooding in Upper and Mid SJR Basin in three events studied
- 95% of the 1997 event



#### 110% of 1997 event



#### 115% of 1997 event





Questions



