

# Water Symposium

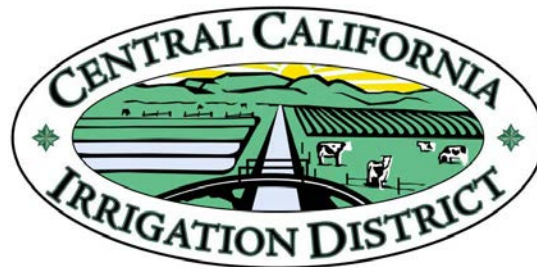
## Subsidence Monitoring and Response in San Joaquin River Exchange Contracts Area

A Local Perspective

Presented by Chris White, Manager  
Central California Irrigation District

**Water Education Foundation**

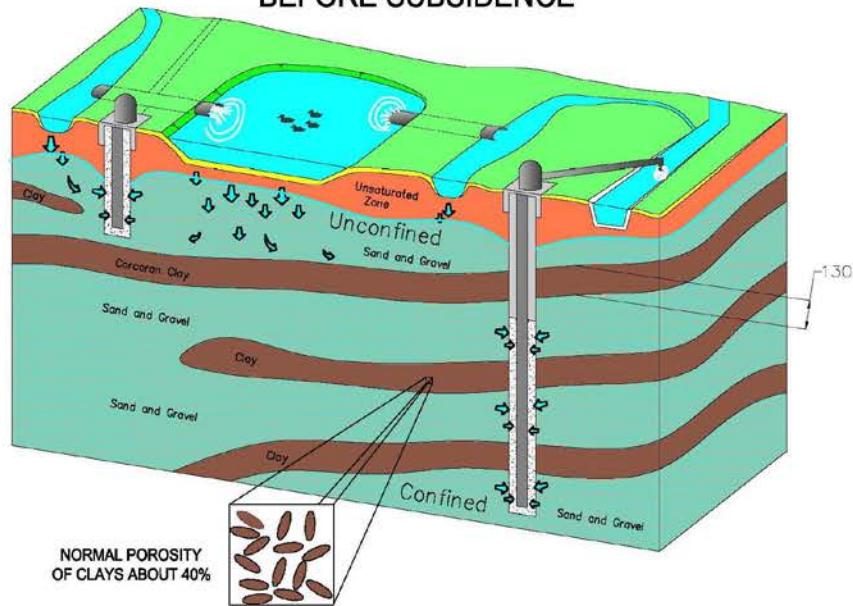
March 14, 2018



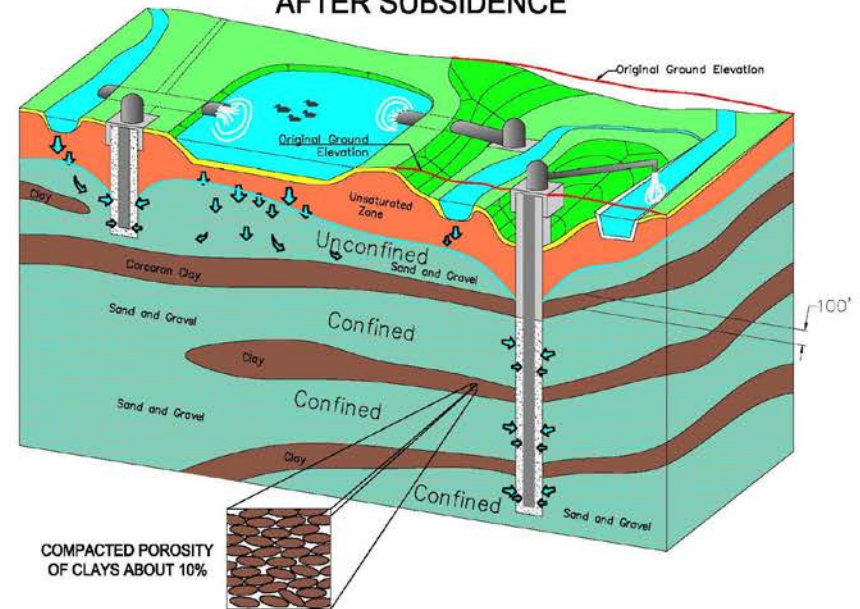
# Subsidence Monitoring

## Document the Signs

UNCONFINED AND CONFINED AQUIFER BEFORE SUBSIDENCE



UNCONFINED AND CONFINED AQUIFER AFTER SUBSIDENCE



Redtop Gas Well



Redtop water well

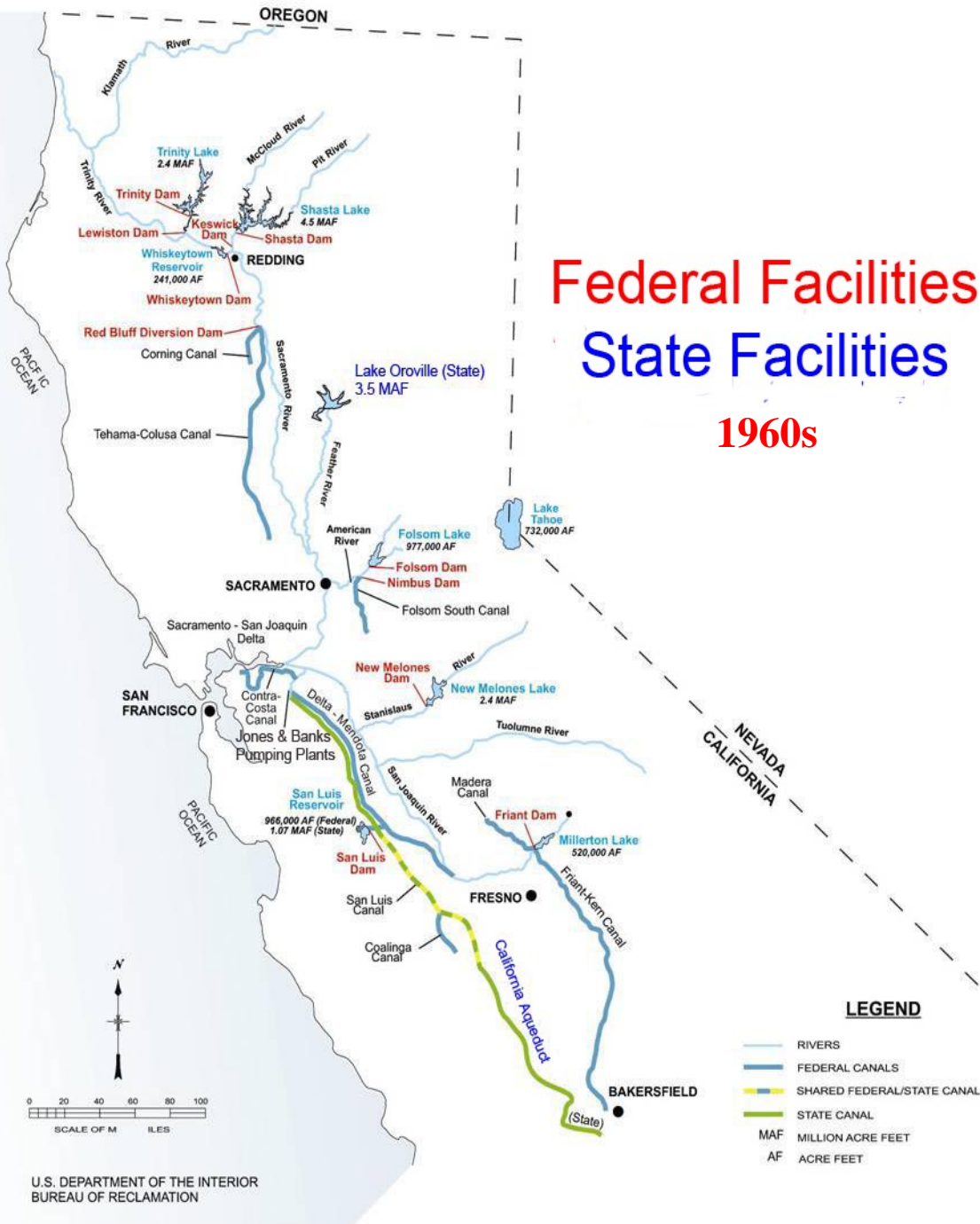


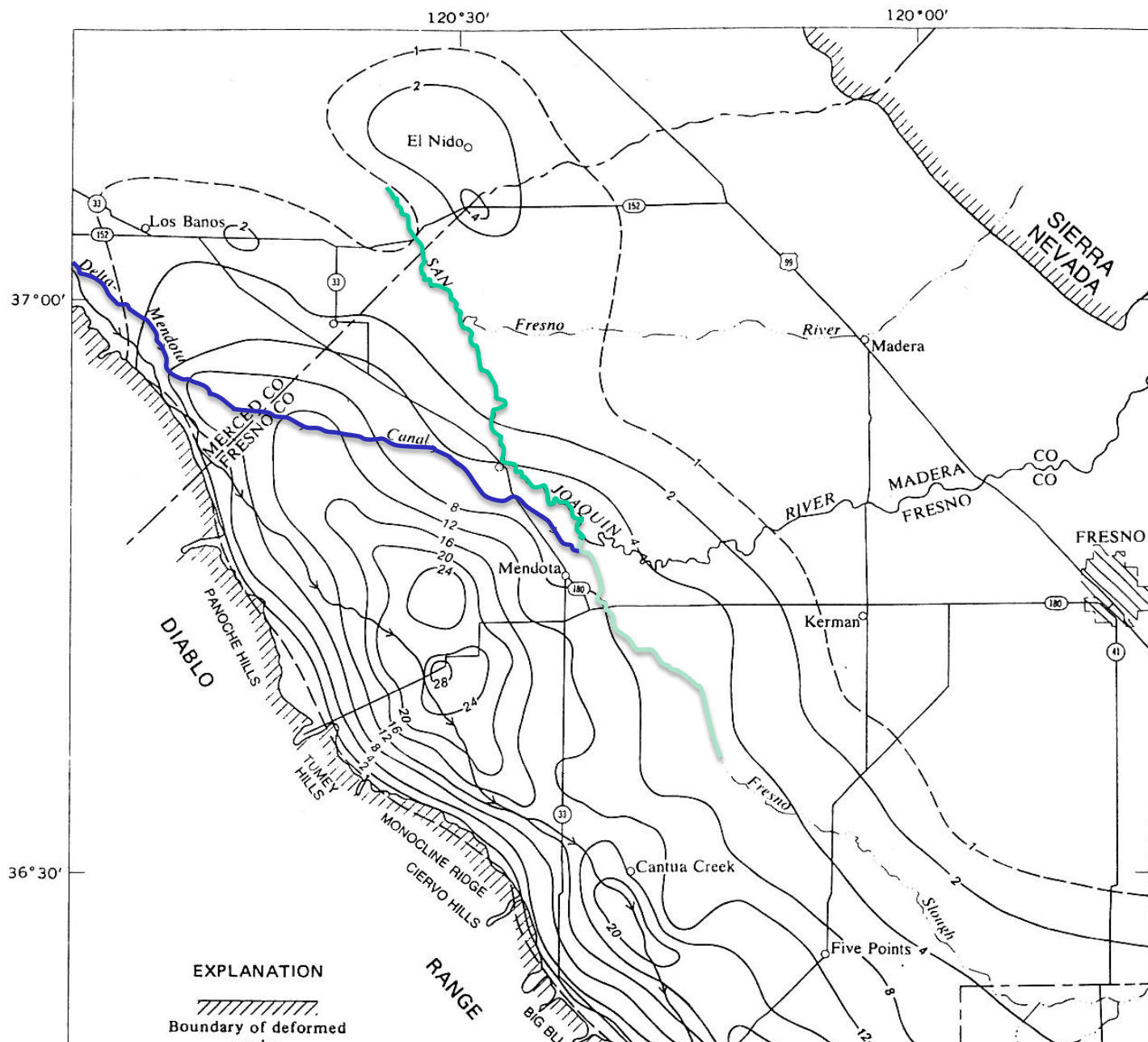


# Federal Facilities

## State Facilities

1960s





# Land Subsidence

- How bad can it get?

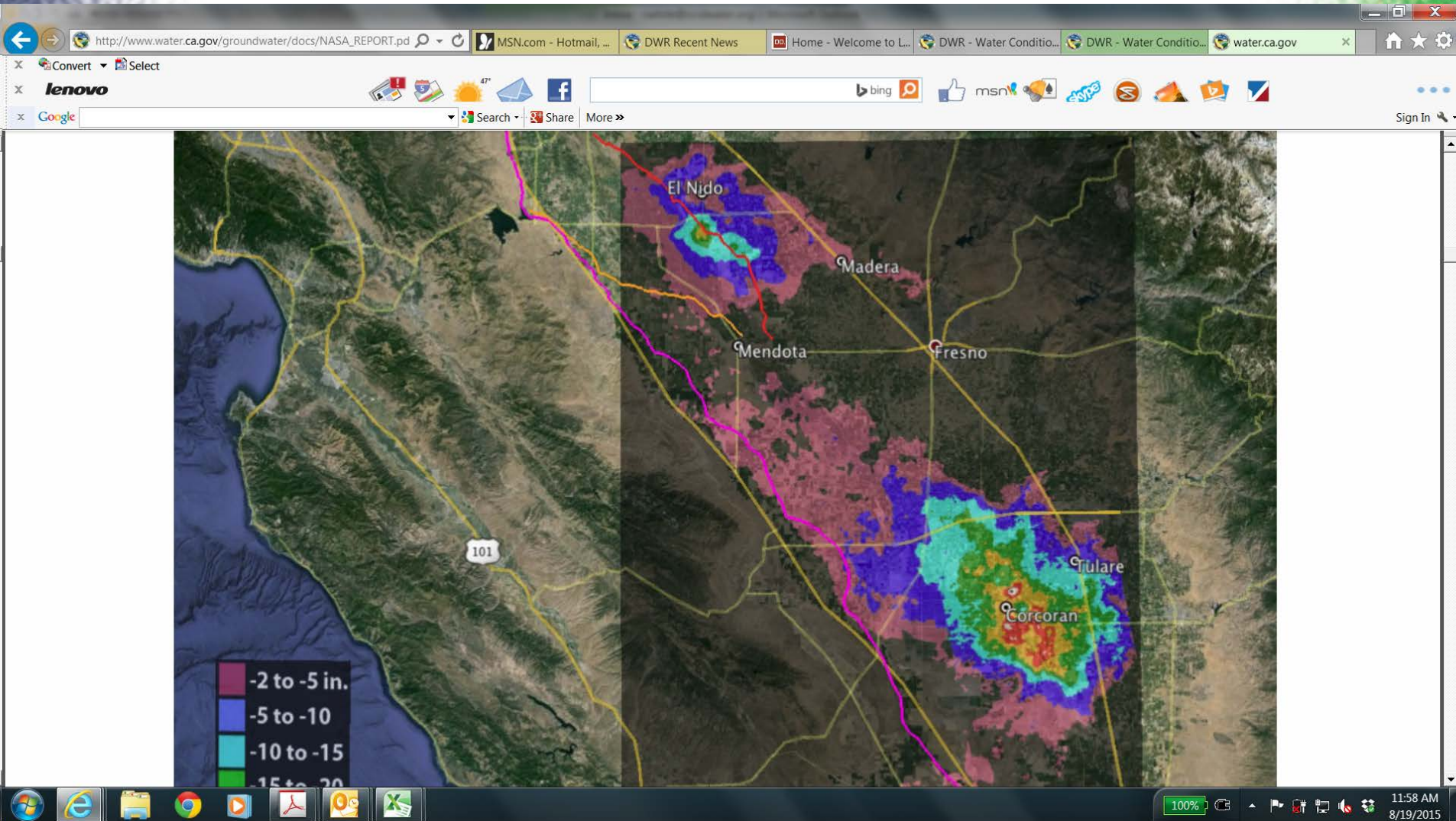
Approximate location of maximum subsidence in the United States identified by research efforts of Dr. Joseph F. Poland (pictured). Signs on pole show approximate altitude of land surface in 1925, 1955, and 1977. (28 feet in 50 years, .56 feet/year)

The site is in the San Joaquin Valley southwest of Mendota, California, 15 miles southwest of Sack Dam.





# Recent NASA Data





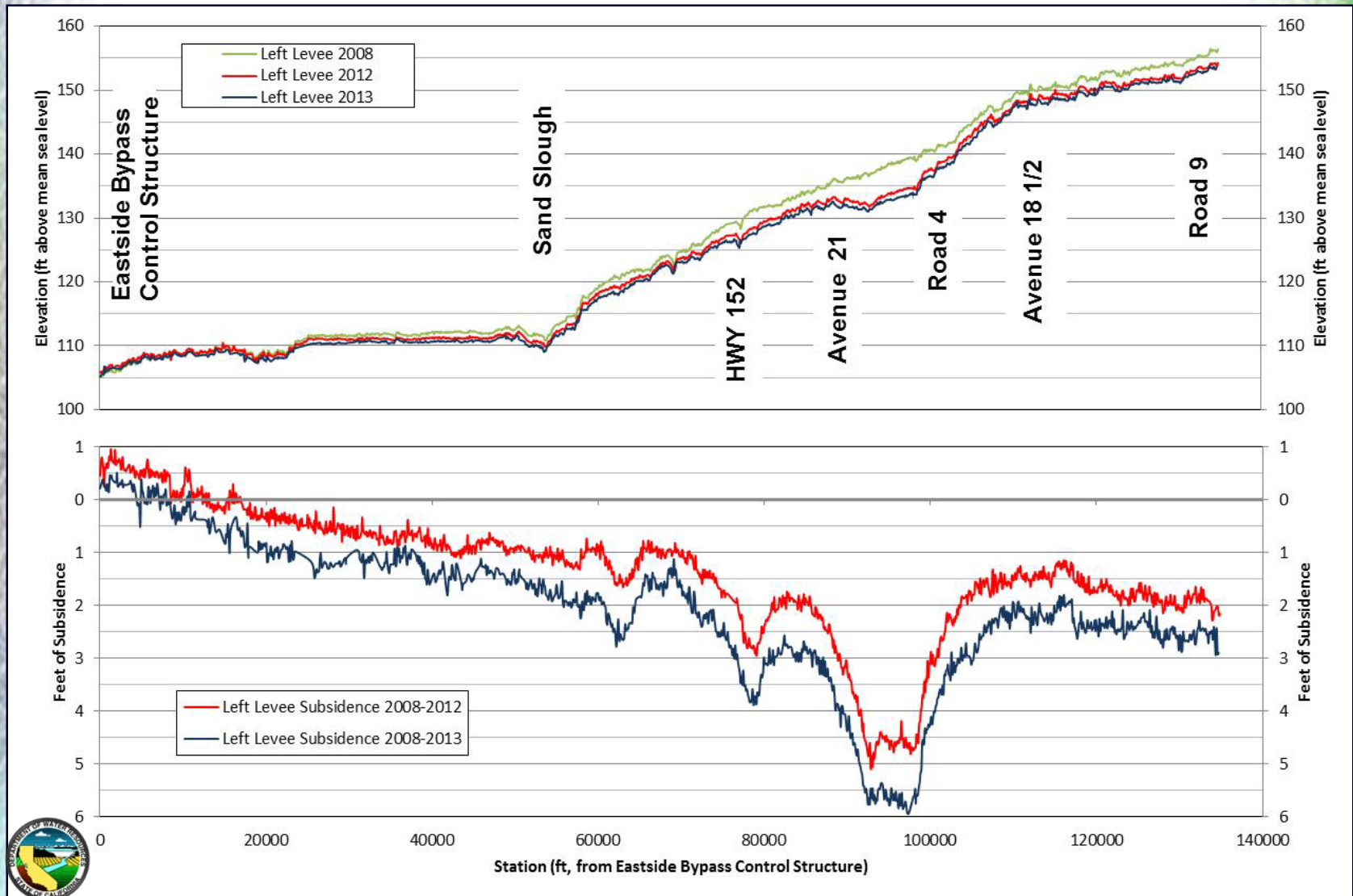


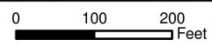
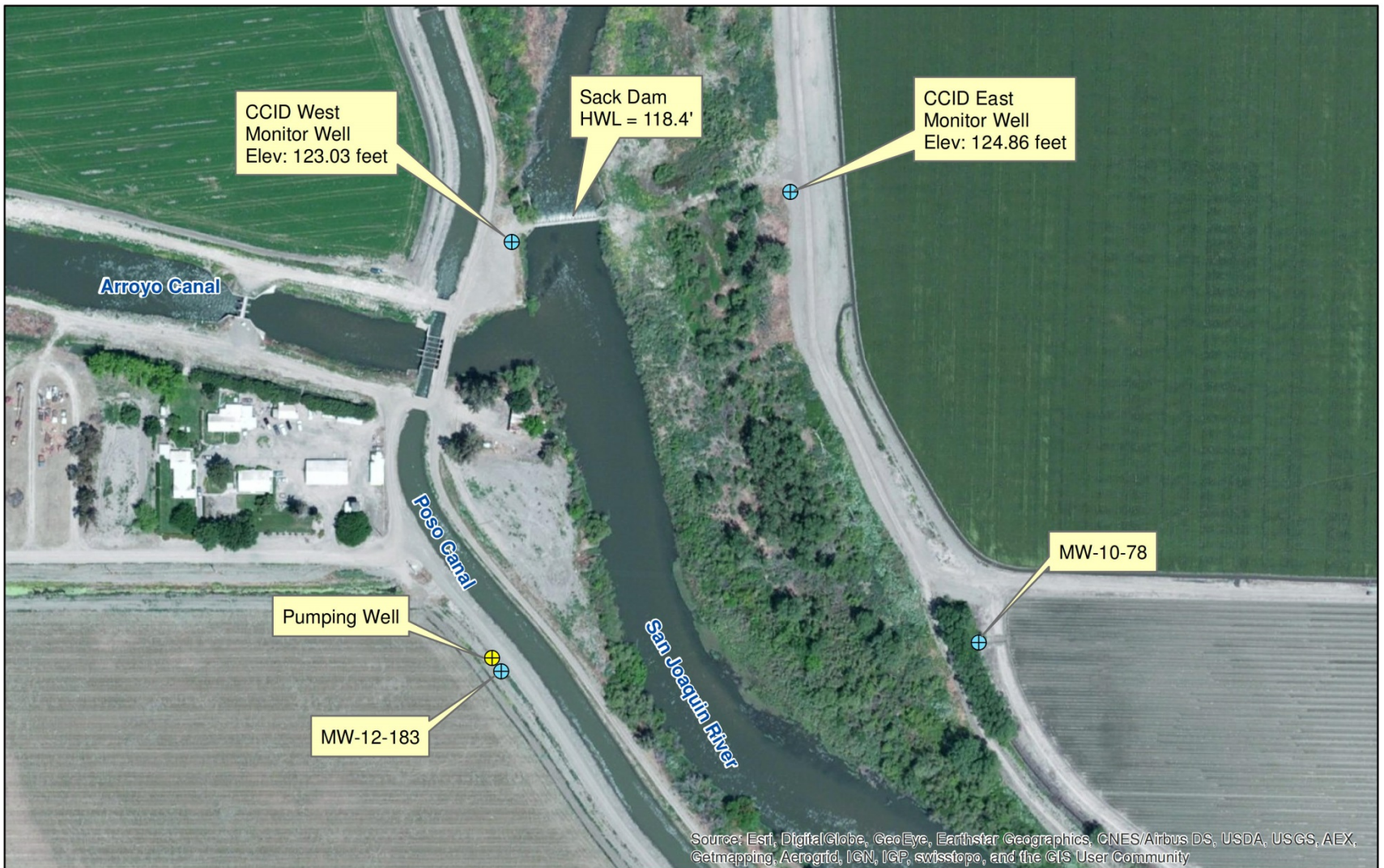
# **Subsidence, if not stopped, will...**

- Cause flooding in Western Madera & Merced counties
  - Highway 152
  - Elementary school
  - City of Dos Palos
  - Valuable farmland and dairies
- Jeopardize water supply of neighboring districts – up to 20% reduction in water district conveyance capacity
  - Central California Irrigation District
  - San Luis Canal Company
- Jeopardize the San Joaquin River Restoration Program



# Ground Subsidence along the left levee in the Upper and Middle Eastside Bypasses





- ⊕ Monitor Well
- ⊕ Pumping Well

EST. 1968  
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Bakersfield, CA 93301  
(661) 616-5900

### Sack Dam Subsidence

Pumping and Monitor  
Well Locations



## **Additional Costs to Arroyo Canal Screening and Sack Dam replacement project**

- Add pumping plant to deliver water to San Luis Canal Company (Currently a gravity diversion) - \$30m**
- Increase height of Sack Dam – Not yet designed - original costs of the project is \$35m.**

# Progress on Solutions

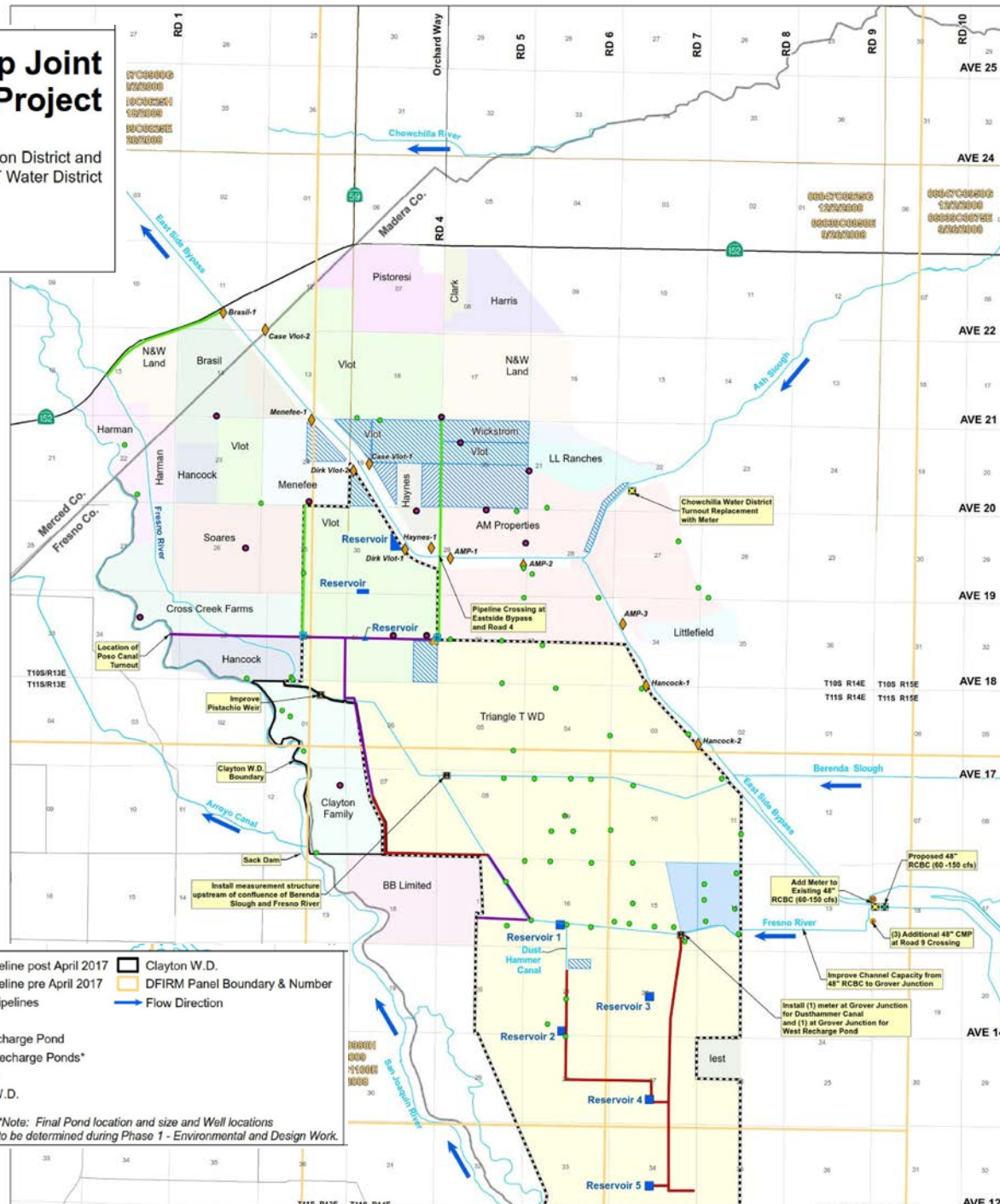


- Triangle T (Tri T) is a 12,000-acre property, with 11,300 acres planted to Almonds and Pistachios. 530 acres are farmed to dryland crops in dry years, and groundwater recharge in wet years.
  - In 2017 approximately 37,000 acre feet of surface water was recharged in Triangle T; groundwater level (gwl) rise of 60 feet at ponds
  - Just as importantly, flood water was used to irrigate the almond and pistachio orchards, offsetting 10,000 acre feet of groundwater pumping; regional gwl rise 20 feet by summer 2017, 2018 measurements underway.
  - In 2017 it is estimated that 65,000 acre feet of recharge occurred in the Eastside Bypass from Road 9 to Hwy 152, while running for 192 days.
- Long term monitoring and technical review committee established; Cross River Pipeline built and operational; Tri T and Vlot formed Water District; Neighbors wanting to join; Grant application submitted in January 2018 for Cal OES and FEMA Hazard Mitigation Program.



# MARPO Red Top Joint Banking Project

Central California Irrigation District and Triangle T Water District



\*Note: Final Pond location and size and Well locations to be determined during Phase 1 - Environmental and Design Work.

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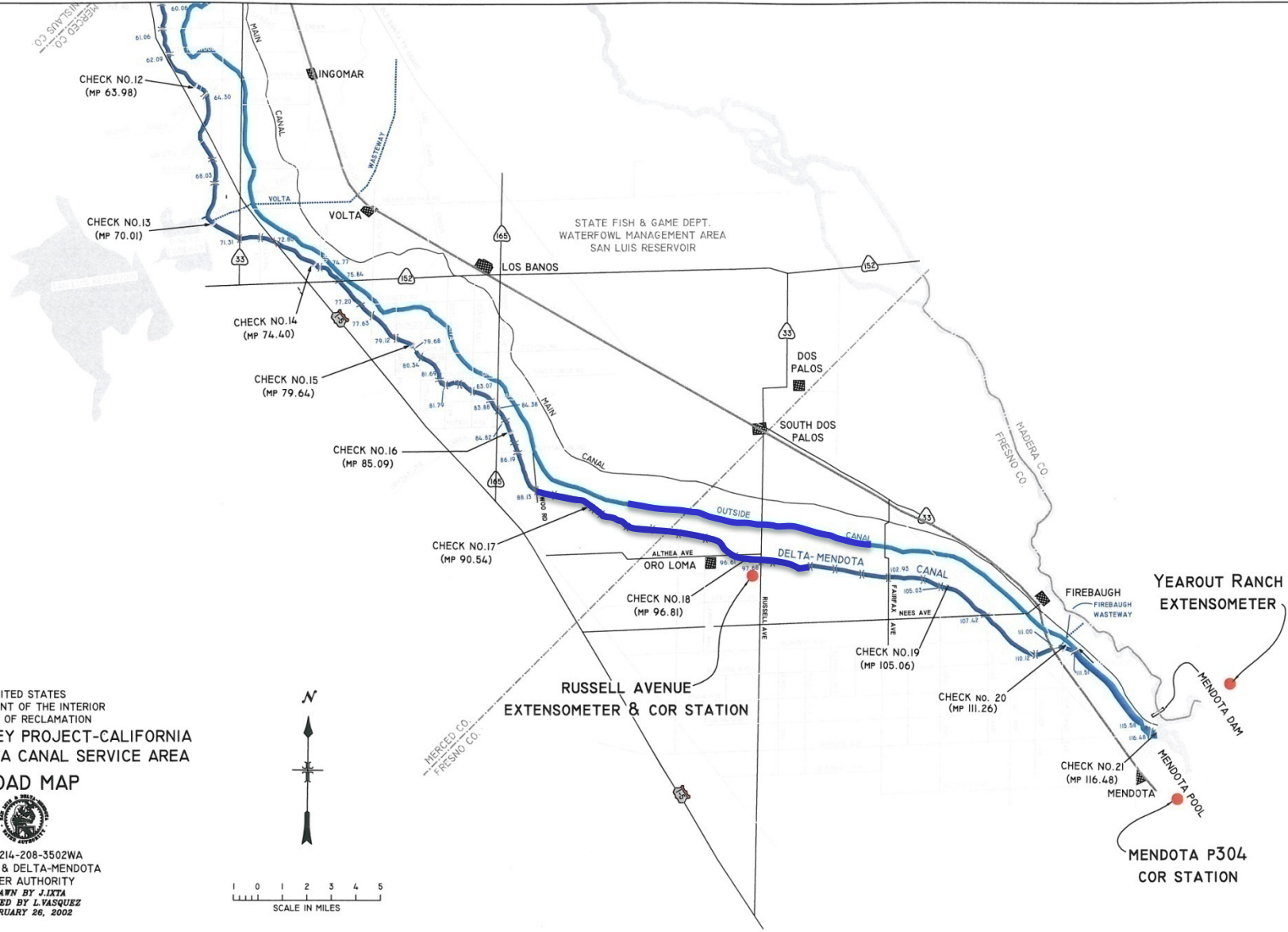
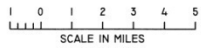
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 Miles

UNITED STATES  
 DEPARTMENT OF THE INTERIOR  
 BUREAU OF RECLAMATION  
**CENTRAL VALLEY PROJECT-CALIFORNIA  
 DELTA-MENDOTA CANAL SERVICE AREA**

**ROAD MAP**



DWG. 214-208-3502WA  
 SAN LUIS & DELTA-MENDOTA  
 WATER AUTHORITY  
 DRAWN BY J.LIXTA  
 CHECKED BY L.VASQUEZ  
 FEBRUARY 26, 2002







10/09/2009 15:29





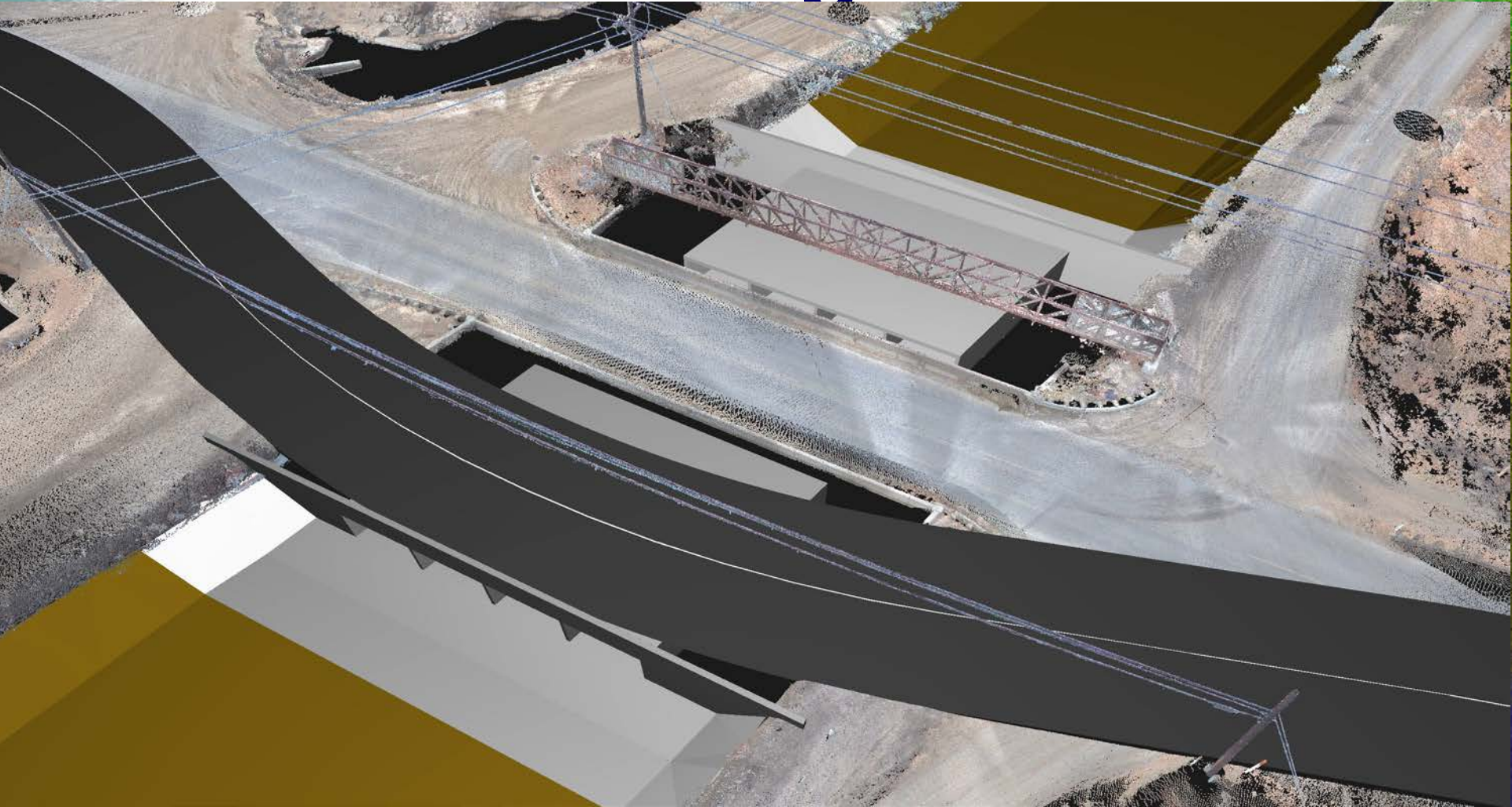
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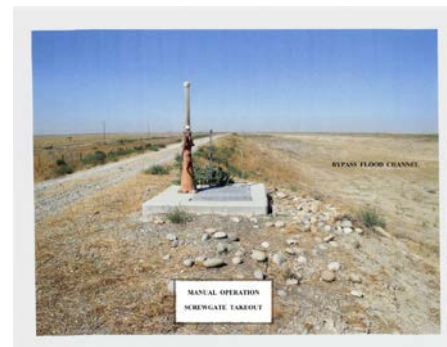
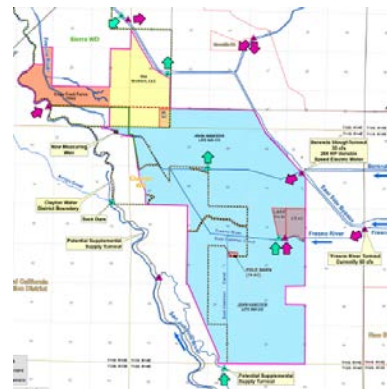
# **\$5.2 Million Russell Ave Bridge**





# Subsidence Study - Long Term Solutions

- Complete subsidence and wheeling agreement and import water through Red Top Pipeline. (Avoid adjudication)
- Continue to revive existing districts, to manage water supply, subsidence and SGMA.
- Continue needed project improvements.
- Curtail Subsidence and help our neighbors comply with SGMA.
- Subsidence has been reduced by 50% through management.



# Contact Information

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Irrigation District

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