California Aqueduct Subsidence Program

Consultation Meeting 8-28-24

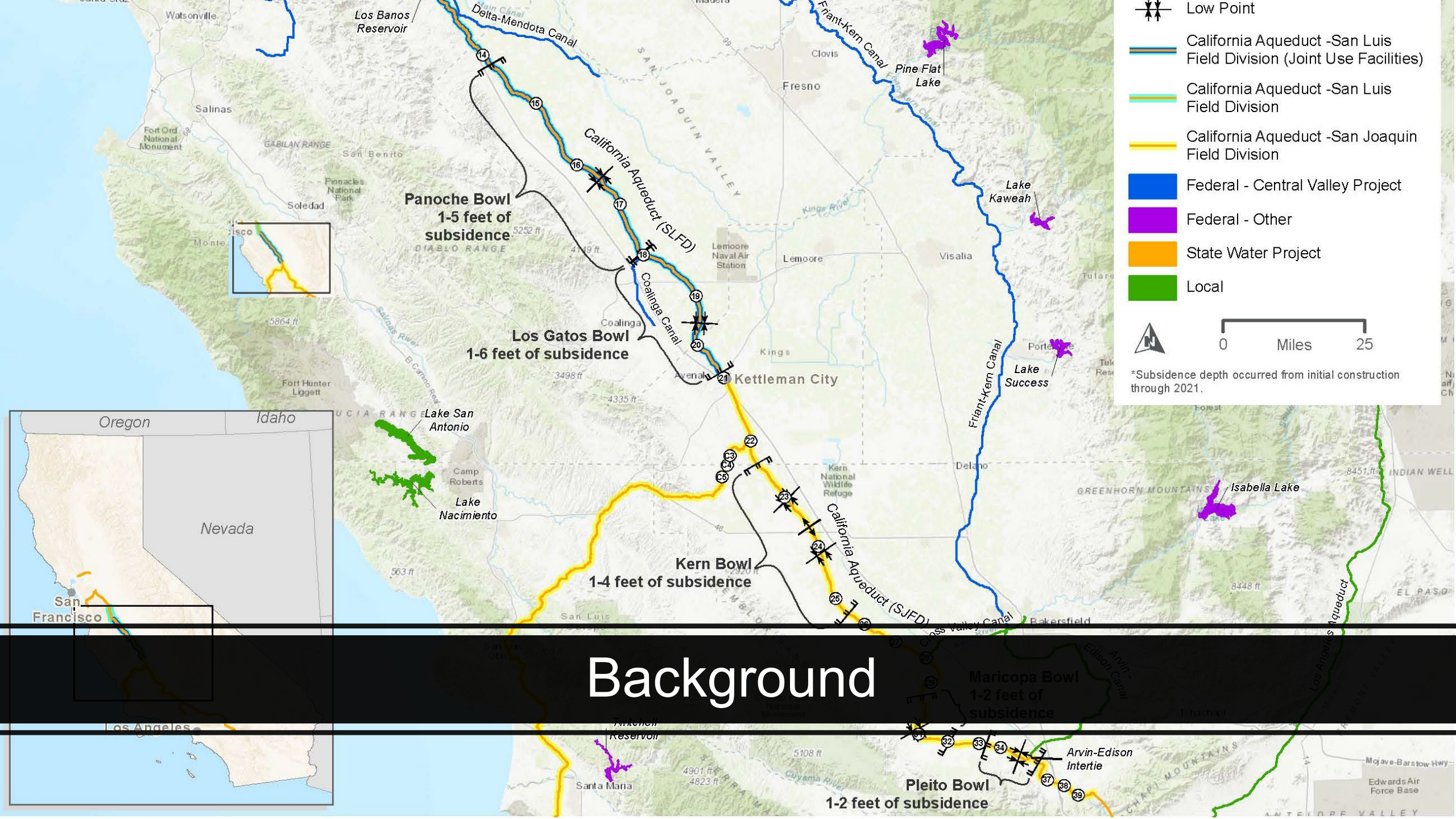
Presentation Overview

Proposed Topic	Presenters
Overview of the CASP	Jesse Dillon, DWR CASP Manager
CASP – Subsidence and Groundwater Monitoring Project Overview	Philip Meyer, DWR Environmental Project Manager

Tribal Outreach

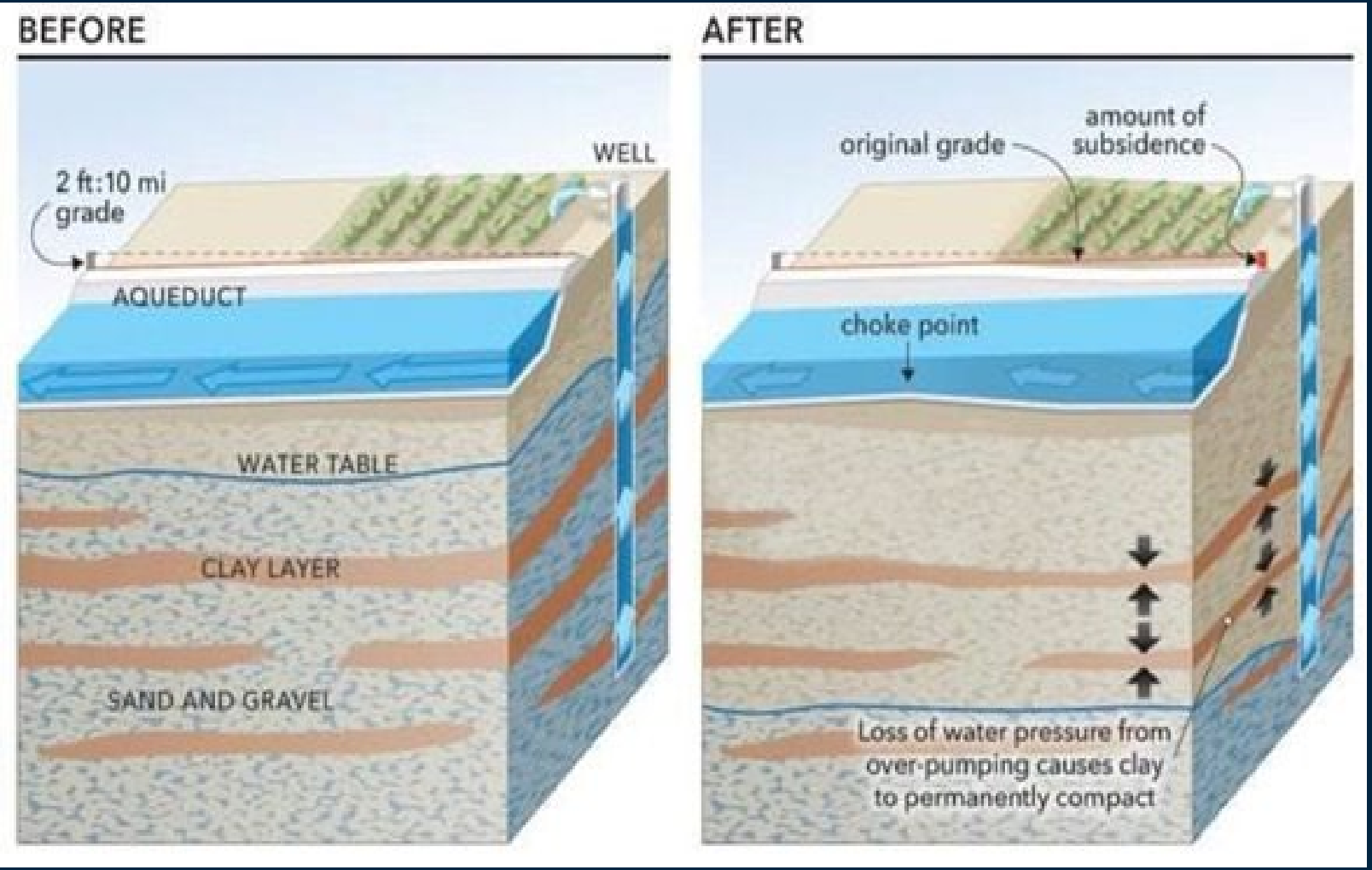
- Kitanemuk & Yowlumne Tejon Indians
- Salinan Tribe of Monterey, San Luis Obispo Counties
- **Santa Rosa Rancheria Tachi Yokut Tribe***
- Santa Ynez Band of Chumash Indians
- **Tejon Indian Tribe***
- Tule River Indian Tribe
- Xolon-Salinan Tribe
- yak tityu tityu yak tiłhini – Northern Chumash Tribe

*Tribes on DWR's AB 52 Request for Notification List


Low Point
California Aqueduct -San Luis Field Division (Joint Use Facilities)
California Aqueduct -San Luis Field Division
California Aqueduct -San Joaquin Field Division
Federal - Central Valley Project
Federal - Other
State Water Project
Local
0
Miles
25
*Subsidence depth occurred from initial construction through 2021.
Panoche Bowl
1-5 feet of subsidence
Los Gatos Bowl
1-6 feet of subsidence
Kern Bowl
1-4 feet of subsidence
Maricopa Bowl
1-2 feet of subsidence
Pleito Bowl
1-2 feet of subsidence
California Aqueduct (SLFD)
Coalinga Canal
California Aqueduct (SJFD)
Delta-Mendota Canal
Friant-Kern Canal
Cross Valley Canal
Los Angeles Aqueduct
Arvin-Edison Intertie
Los Banos Reservoir
Pine Flat Lake
Lake Kaweah
Lake Success
Isabella Lake
Lake San Antonio
Lake Nacimiento
Whitney Reservoir
Kettleman City
Watsonville
Salinas
Soledad
Fresno
Clovis
Lemoore
Visalia
Delano
Bakersfield
Oregon
Idaho
Nevada
San Francisco
Los Angeles

Background

Subsidence Defined



Subsidence refers to the permanent sinking of the land surface.

Subsidence is the result of physical compression that occurs within certain types of soils depending on changing physical conditions.

Since the mid-1920s, groundwater pumping in the San Joaquin Valley has caused increased subsidence.

Department of Water Resources (DWR)

State Water Project (SWP)

Division of Engineering (DOE)

California Aqueduct Subsidence Program (CASP)

Developing and implementing the most beneficial and affordable preventive and corrective actions to mitigate the adverse effects of subsidence on the California Aqueduct.

CASP Background

- Launched in 2017 by the State Water Project (SWP) to help improve resiliency and prepare for future subsidence needs.

- The CASP's goal is to develop and implement the most beneficial and affordable, preventive, and corrective actions to mitigate the adverse effects of current and future subsidence along the California Aqueduct in the San Joaquin Valley.

- The CASP also engages in and supports other efforts for continued current, near-term, and long-term SWP operations

CASP Geographic Area

State of California
California Natural Resources Agency
DEPARTMENT OF WATER RESOURCES
Division of Engineering

CALIFORNIA AQUEDUCT SUBSIDENCE STUDY
San Luis Field Division
San Joaquin Field Division

June 2017

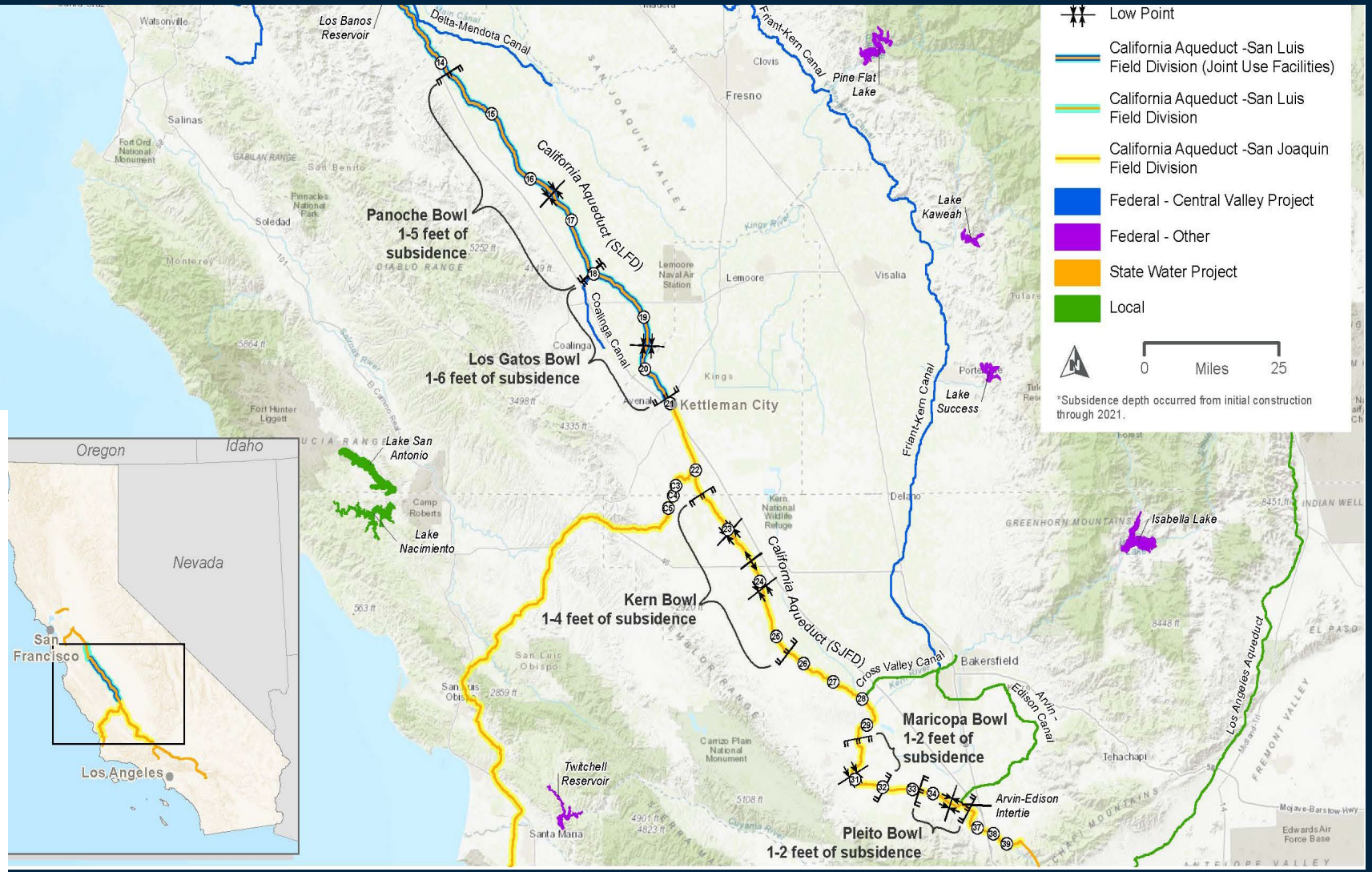
State of California
California Natural Resources Agency
DEPARTMENT OF WATER RESOURCES
Division of Engineering

CALIFORNIA AQUEDUCT SUBSIDENCE STUDY: SUPPLEMENTAL REPORT

San Luis Field Division

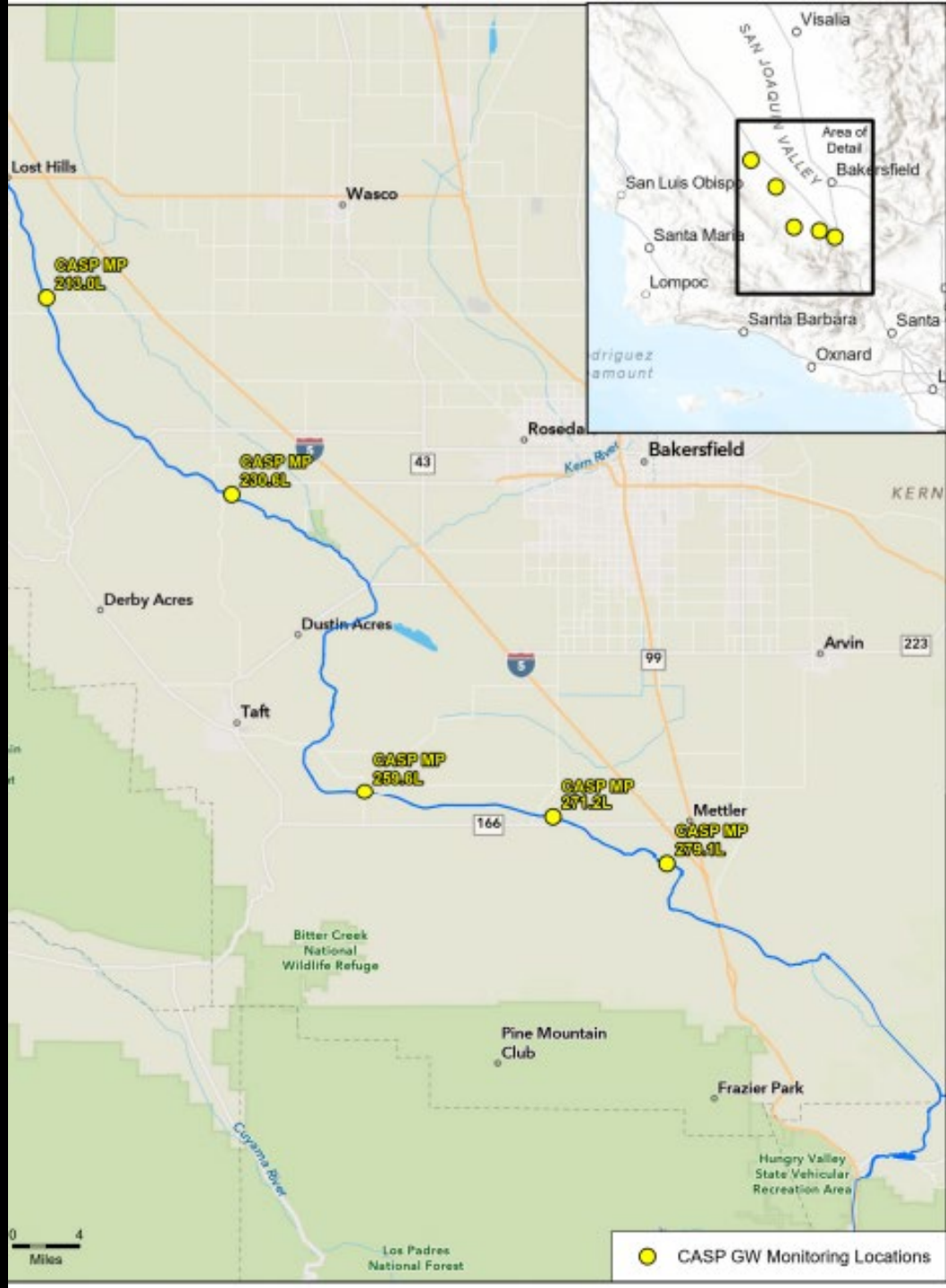
San Joaquin Field Division

March 2019



Subsidence and Groundwater Monitoring Project – IS/MND

- Provide real-time data to monitor groundwater levels and other spatial information as they relate to ground subsidence.
- The data would be used to help inform how subsidence is affecting the Aqueduct and would assist in maintaining infrastructure of the State Water Project.
- Subset of five locations with increased potential for environmental impacts.



Monitoring Program Goals

- Fill monitoring data gaps along the aqueduct
- Measure ground surface elevations at higher frequency along the aqueduct
- Monitor groundwater elevations at various levels in the aquifer system (multi-completion wells)
- Measure aquifer compaction
- Evaluate relationship between monitored/measured parameters
- Share monitoring data in public sphere via SGMA Data Viewer (https://sgma.water.ca.gov/webgis)

Monitoring Program Approach

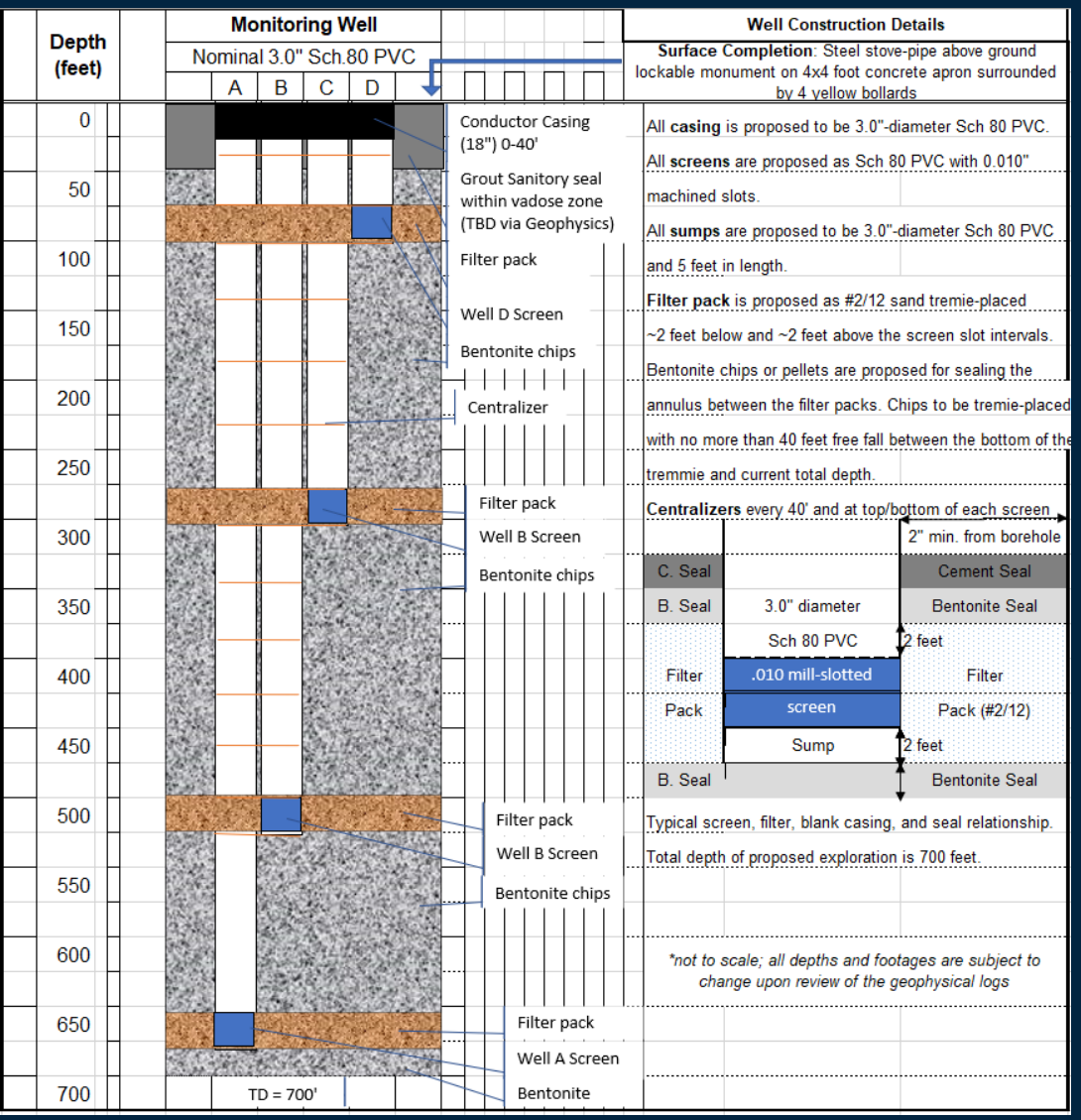
- Evaluate and compile available data
  - Satellite data (e.g., InSAR), survey data, extensometers, groundwater monitoring wells, continuous GPS, etc.
- Identify monitoring needs along the aqueduct
- Adjust DWR locations based on other existing monitoring networks

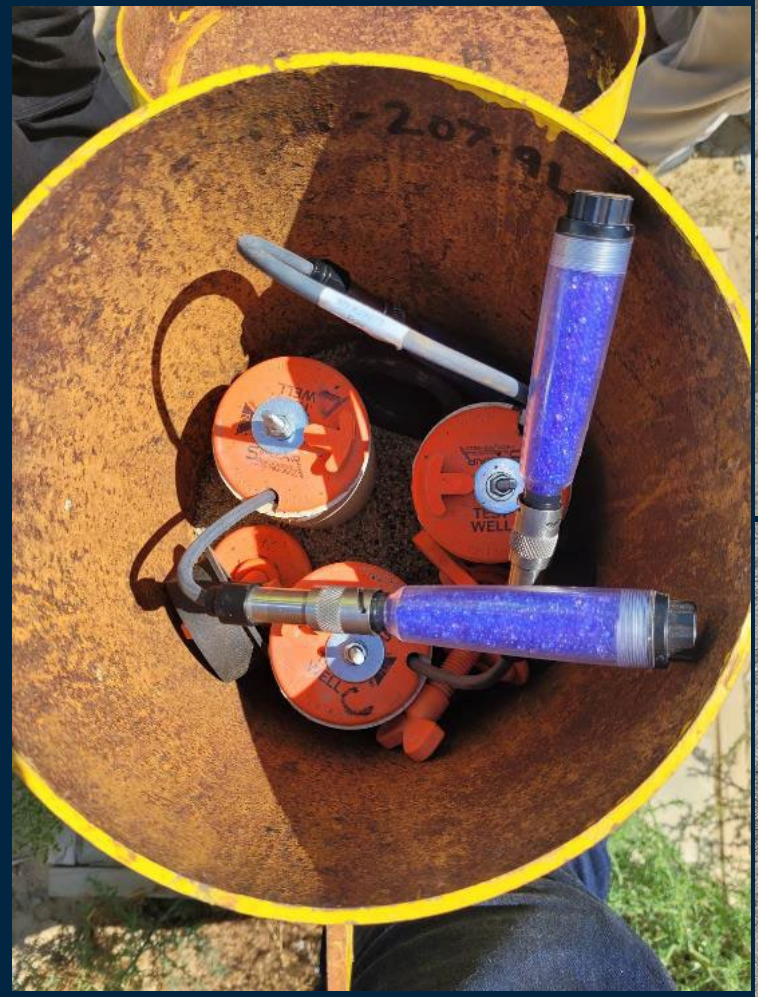
Monitoring Station Installations

- Main ground surface disturbance/digging within a few feet of the drill hole (but there is a lot of equipment that moves around).
- Depths to natural, in-place soils varies along Aqueduct.
  - Commonly encountered within 10-20 feet below ground surface.
- Shallow ‘mud’ pits for drilling could be utilized (e.g., 1-2 feet deep), but mud pan is preferred.

Drilling – Deep Holes for Multi-completion Groundwater Monitoring Wells

Groundwater Monitoring Well





Lots of equip. & materials

Drilling – Shallow Holes for Geotechnical Properties

Surface and Infrastructure Completions

- Lockable well monuments.
- Small structures housing infrastructure
  - e.g., cable or pipe extensometer
- Fenced-off areas
  - e.g., Continuous GPS station (cGPS)
- Limited site activity after installation

OPEN DISCUSSION

- Questions, comments, recommendations, outline next steps...

CASP Website

https://water.ca.gov/Programs/Engineering-And-Construction/Subsidence

Tribal Engagement Website

https://water.ca.gov/Programs/Engineering-And-Construction/Subsidence/TribalEngagement

Thank You!

For additional information, please contact:

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