

ISABELLA DAM SAFETY MODIFICATION PROJECT

9-10 November 2022

Presented by:

Isabella DSMP Project Delivery Team



US Army Corps
of Engineers®



HISTORY

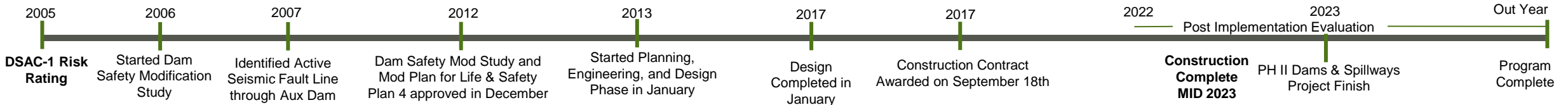


Original Construction:
1944 Flood Control Act
Fully Operational by 1953

Features:
Main Dam & Outlet Works
Aux. Dam & Borel Conduit
Spillway & Ogee Weir

Dam Safety Study: 2005

Dam Safety Mod Study:
Completed in 2012 (Plan 4)





PROJECT OVERVIEW

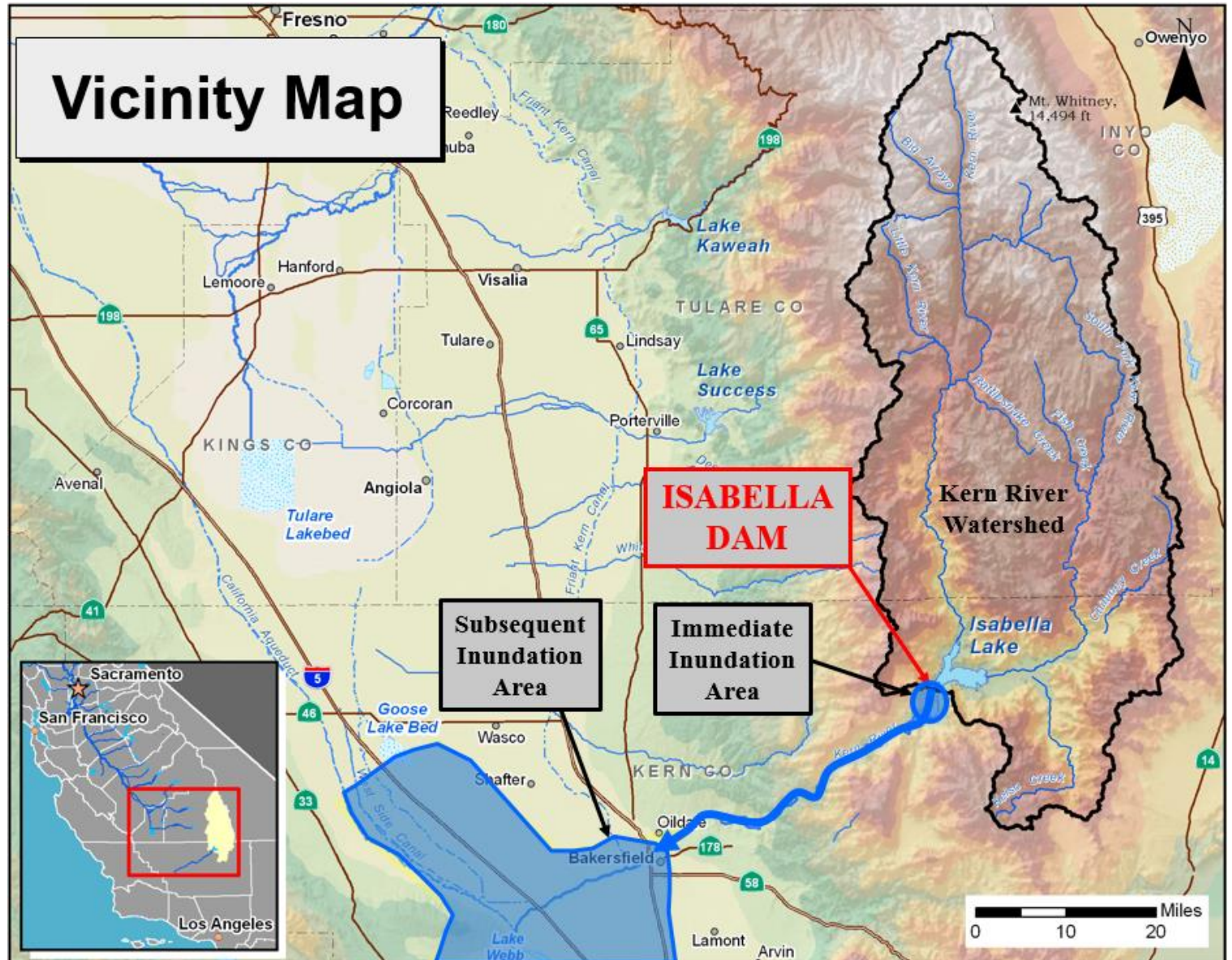


Project Location:
Isabella Lake and Dams
Kern County, California
~110 miles north of Los Angeles

Watershed:
Kern River ~ 2,100 sq. mi

Rated as a DSAC 1
(Dam Safety Action Classification)

Status:
Construction (Began Jan. 2018)
Contractor: Flatiron Dragados
Sukut Joint Venture





ORIGINAL CONSTRUCTION

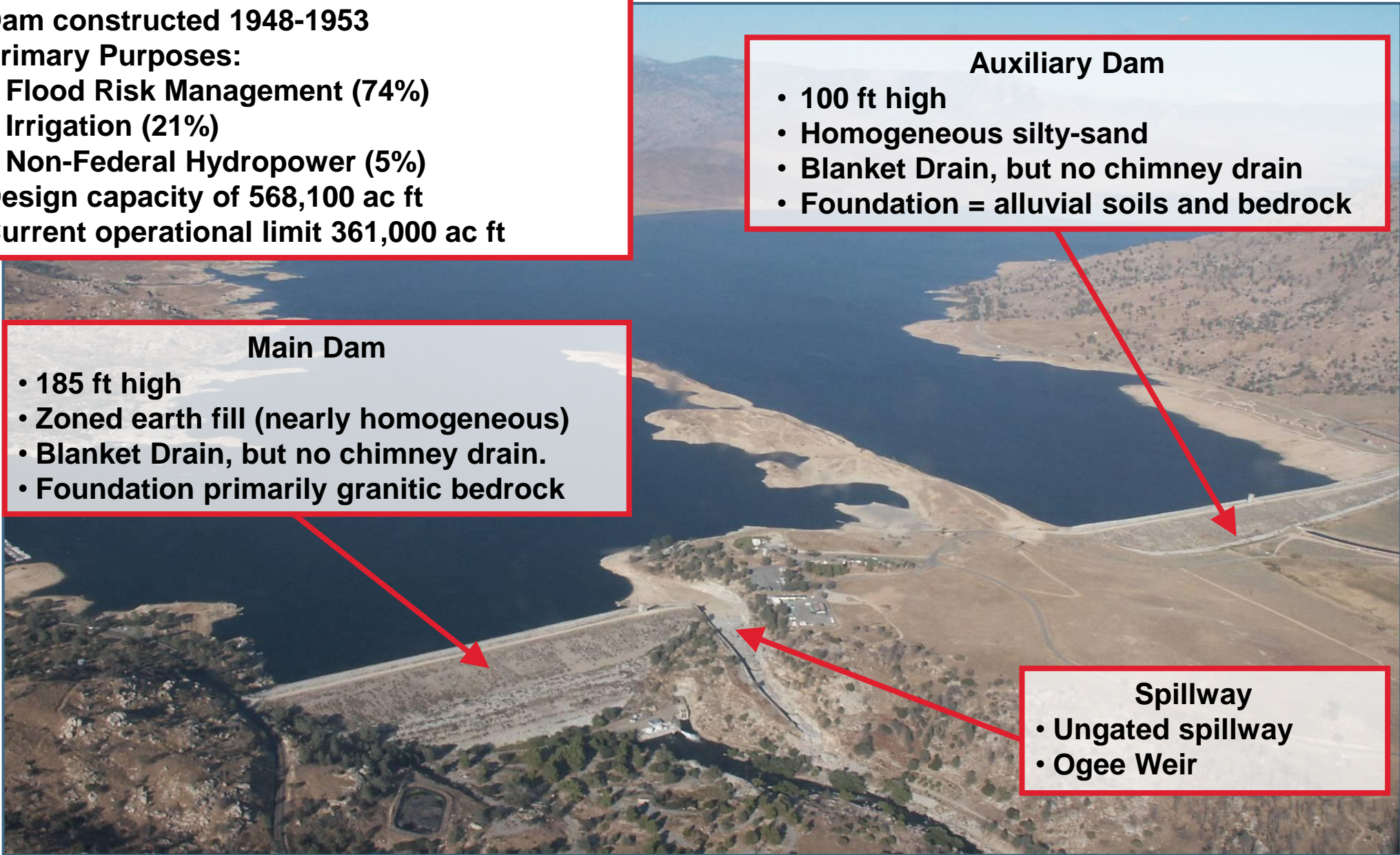


- Dam constructed 1948-1953
- Primary Purposes:
 - Flood Risk Management (74%)
 - Irrigation (21%)
 - Non-Federal Hydropower (5%)
- Design capacity of 568,100 ac ft
- Current operational limit 361,000 ac ft

- ### Auxiliary Dam
- 100 ft high
 - Homogeneous silty-sand
 - Blanket Drain, but no chimney drain
 - Foundation = alluvial soils and bedrock

- ### Main Dam
- 185 ft high
 - Zoned earth fill (nearly homogeneous)
 - Blanket Drain, but no chimney drain.
 - Foundation primarily granitic bedrock

- ### Spillway
- Ungated spillway
 - Ogee Weir

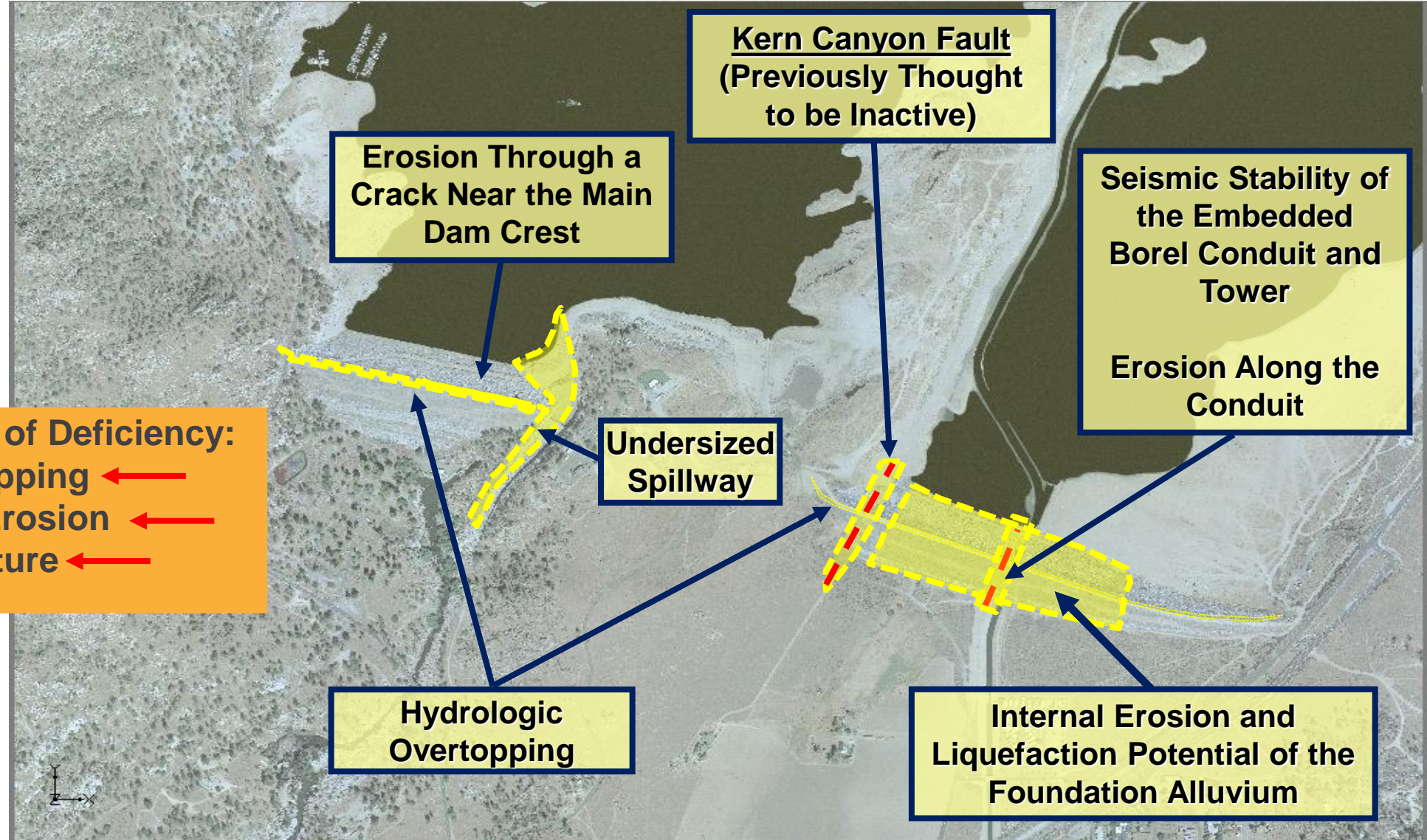




THE PROBLEM(S)

Three Primary Areas of Deficiency:

- Hydrologic Overtopping ←
- Seepage/Internal Erosion ←
- Seismic/Fault Rupture ←



Erosion Through a Crack Near the Main Dam Crest

Kern Canyon Fault (Previously Thought to be Inactive)

Seismic Stability of the Embedded Borel Conduit and Tower
Erosion Along the Conduit

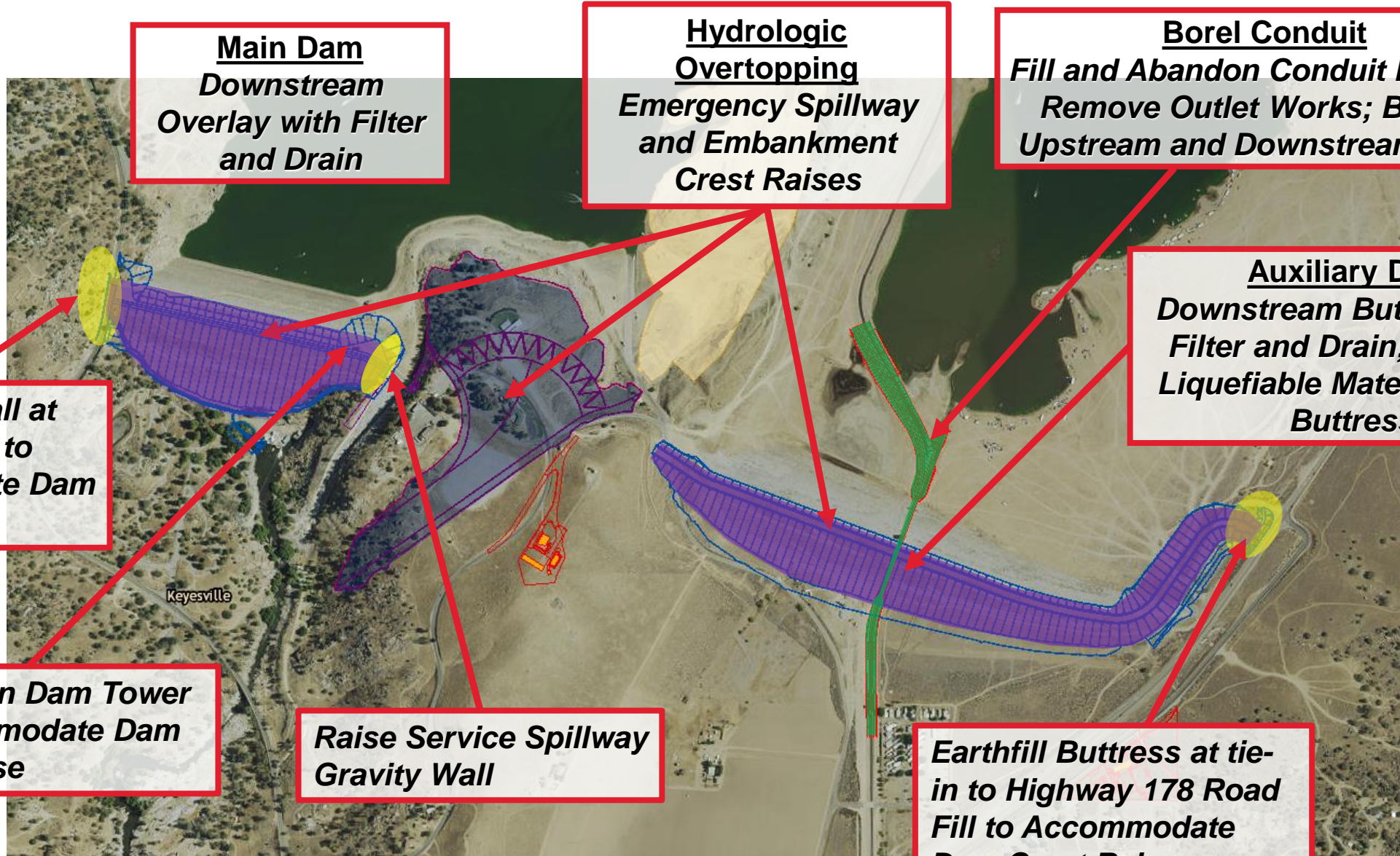
Undersized Spillway

Hydrologic Overtopping

Internal Erosion and Liquefaction Potential of the Foundation Alluvium



THE SOLUTIONS



Main Dam
***Downstream
Overlay with Filter
and Drain***

**Hydrologic
Overtopping**
***Emergency Spillway
and Embankment
Crest Raises***

Borel Conduit
***Fill and Abandon Conduit In-place;
Remove Outlet Works; Backfill
Upstream and Downstream Canal***

Auxiliary Dam
***Downstream Buttress with
Filter and Drain; Remove
Liquefiable Material Under
Buttress***

***Retaining Wall at
Highway 155 to
Accommodate Dam
Crest Raise***

***Raise Main Dam Tower
to Accommodate Dam
Crest Raise***

***Raise Service Spillway
Gravity Wall***

***Earthfill Buttress at tie-
in to Highway 178 Road
Fill to Accommodate
Dam Crest Raise***

Keyesville

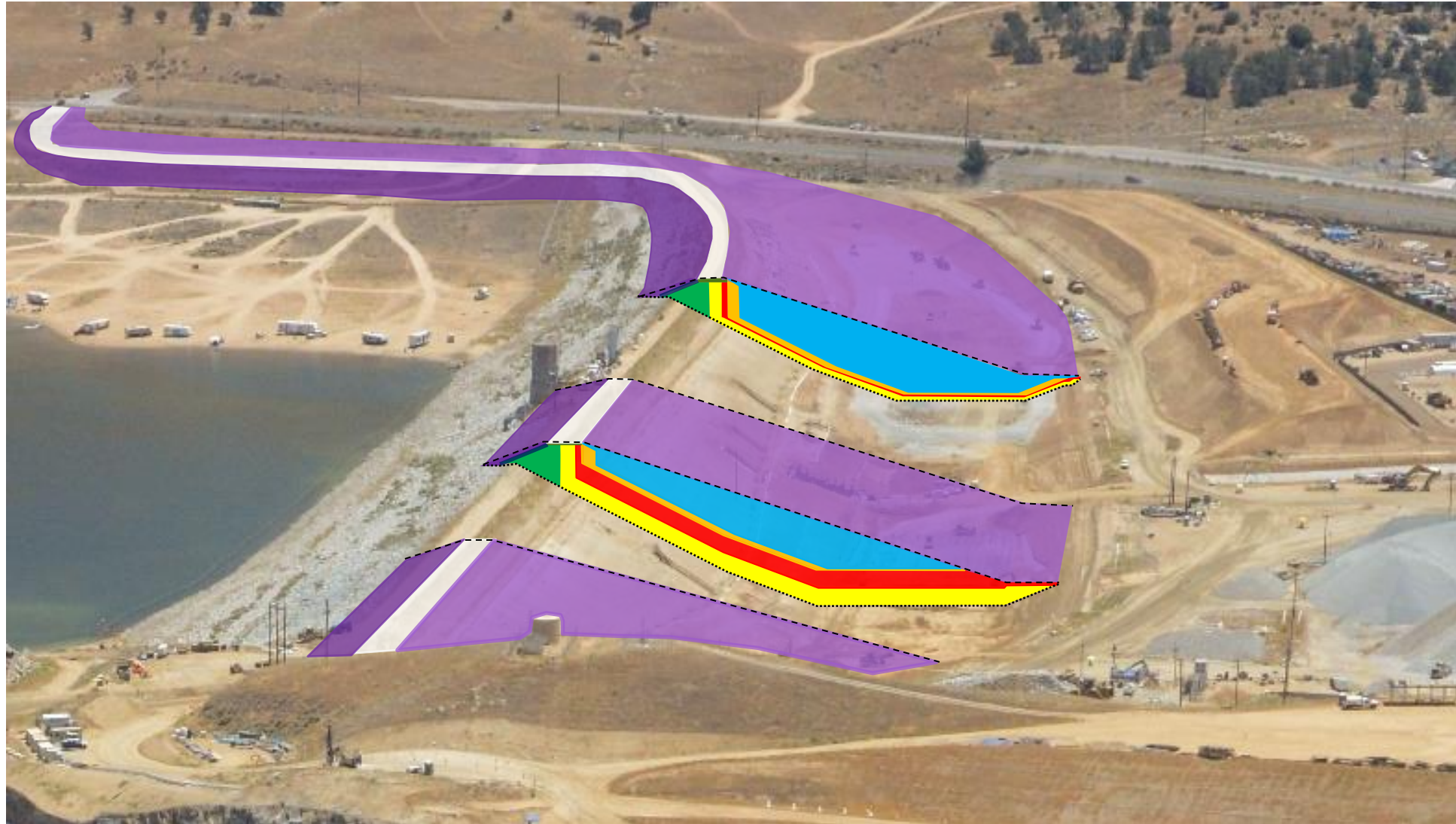


EMERGENCY SPILLWAY AND LABYRINTH WEIR





AUXILIARY DAM MODIFICATIONS





BOREL CONDUIT AND TOWER ABANDONMENT



Conduit and Control Tower Abandoned Using Lightweight Cellular Concrete (LCC)



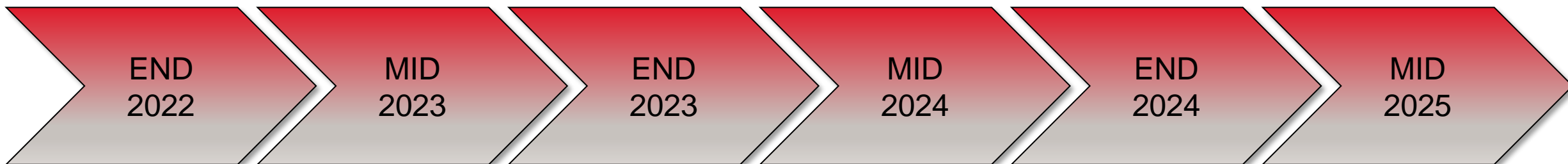


MAIN DAM MODIFICATIONS





OVERALL SCHEDULE



Dam Safety Work Complete

Phase II Complete

Ops Bldg. Solicited

Ops Bldg. Construction

Ops Bldg. Construction

Ops Bldg. Complete

VC Acquisition

VC Design

VC Solicited

VC Construction

VC Construction

VC Complete

Campground Design

Campground Solicited

Campground Construction

Campground Complete

Veg. Mitigation awarded

Veg. Mitigation ongoing

Veg. Mitigation ongoing

Veg. Mitigation ongoing

Veg. Mitigation ongoing

Veg. Mitigation ongoing – 2027

Initial Fill Plan Approved

Initial Fill*

Dam Safety Rating Changed

*Contingent upon sufficient snowpack and runoff



OPERATIONS FACILITIES



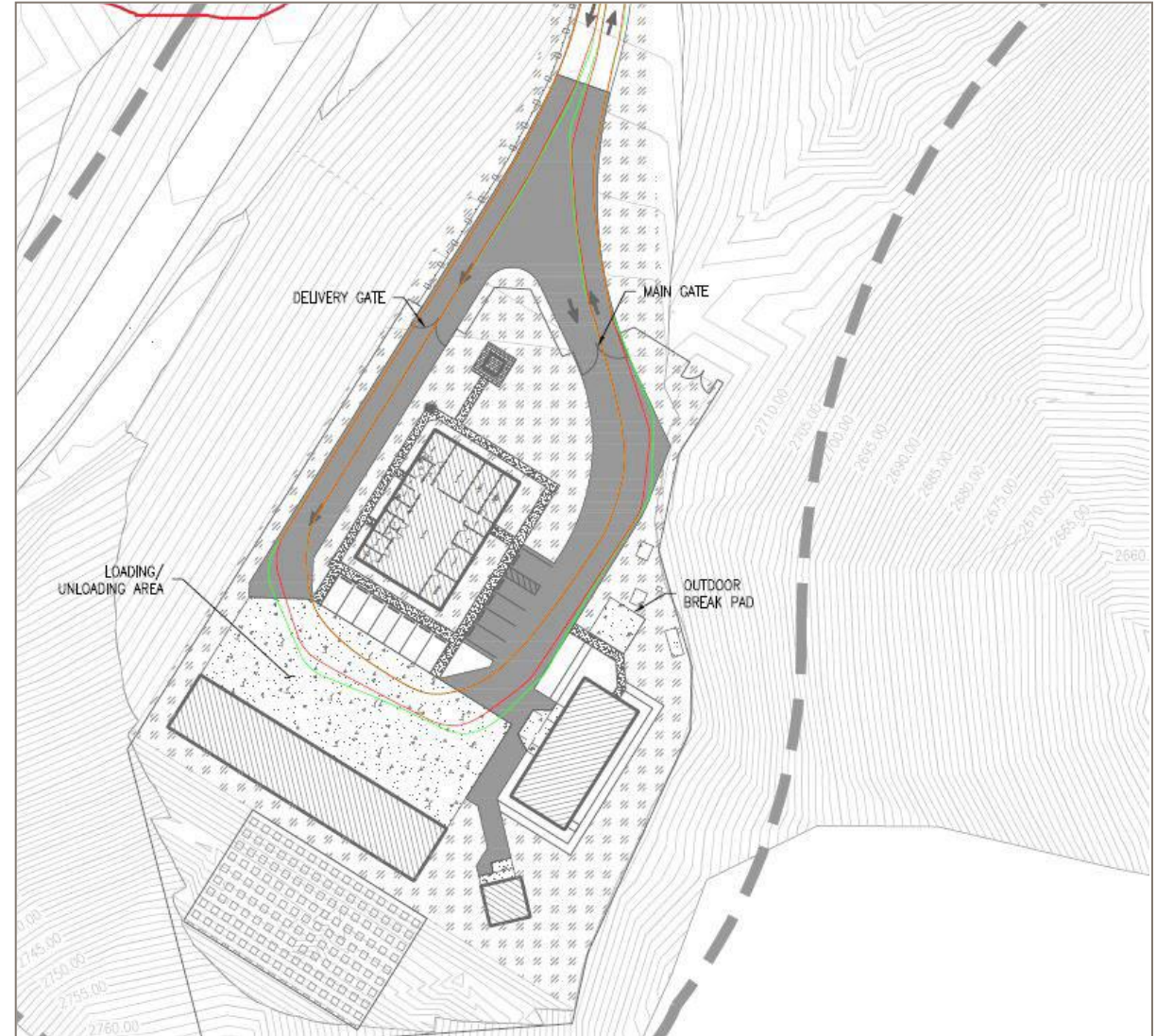
Scope: Construct permanent USACE Operations Facilities at Lake Isabella to include Admin Building, Maintenance Shop and storage.

Tentative Schedule:

- Construction Contract Award: Early 2023
- Construction Start: Mid-2023
- Construction Complete: Mid-2024

Impacts:

- Temporary traffic controls on Barlow Rd. to Boat Launch 19
- Additional truck traffic around project
- Minimal noise, light and dust pollution





USFS VISITOR'S CENTER

Scope: Provide new USFS Visitor's Center at former Bank of America property.

Tentative Schedule:

- Design Complete: End of 2023
- Construction Start: Mid-2024
- Construction Complete: Mid-2025

Impacts:

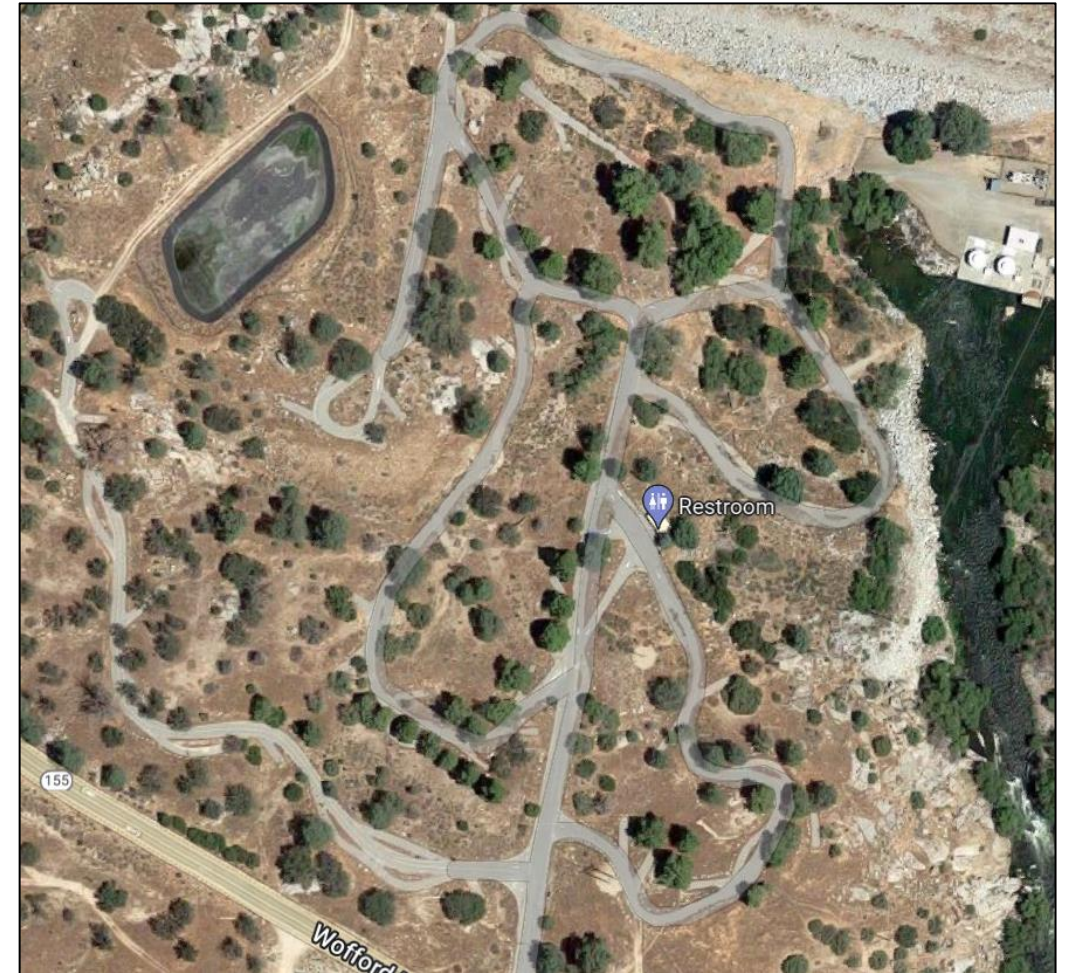
- Potential lane/sidewalk closures on Lake Isabella Blvd.
- Additional truck traffic around project
- Minimal noise, light and dust pollution





FUTURE USACE PROJECTS

- Initial Fill
- DSAC rating change and return to normal operations
- Main Dam Campground
- Cultural Resources Mitigation





QUESTIONS?



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