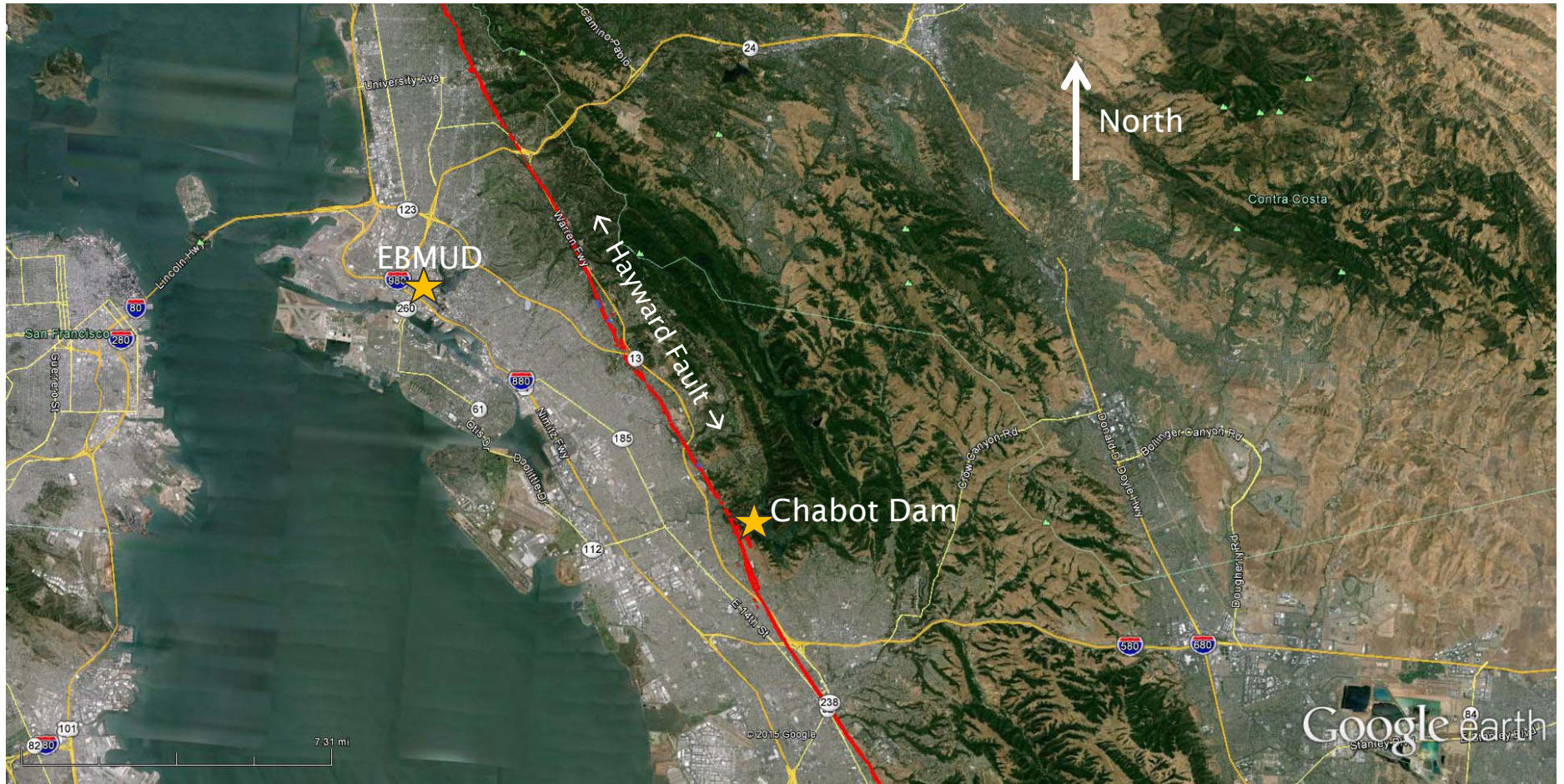


Chabot Dam Seismic Upgrade Project

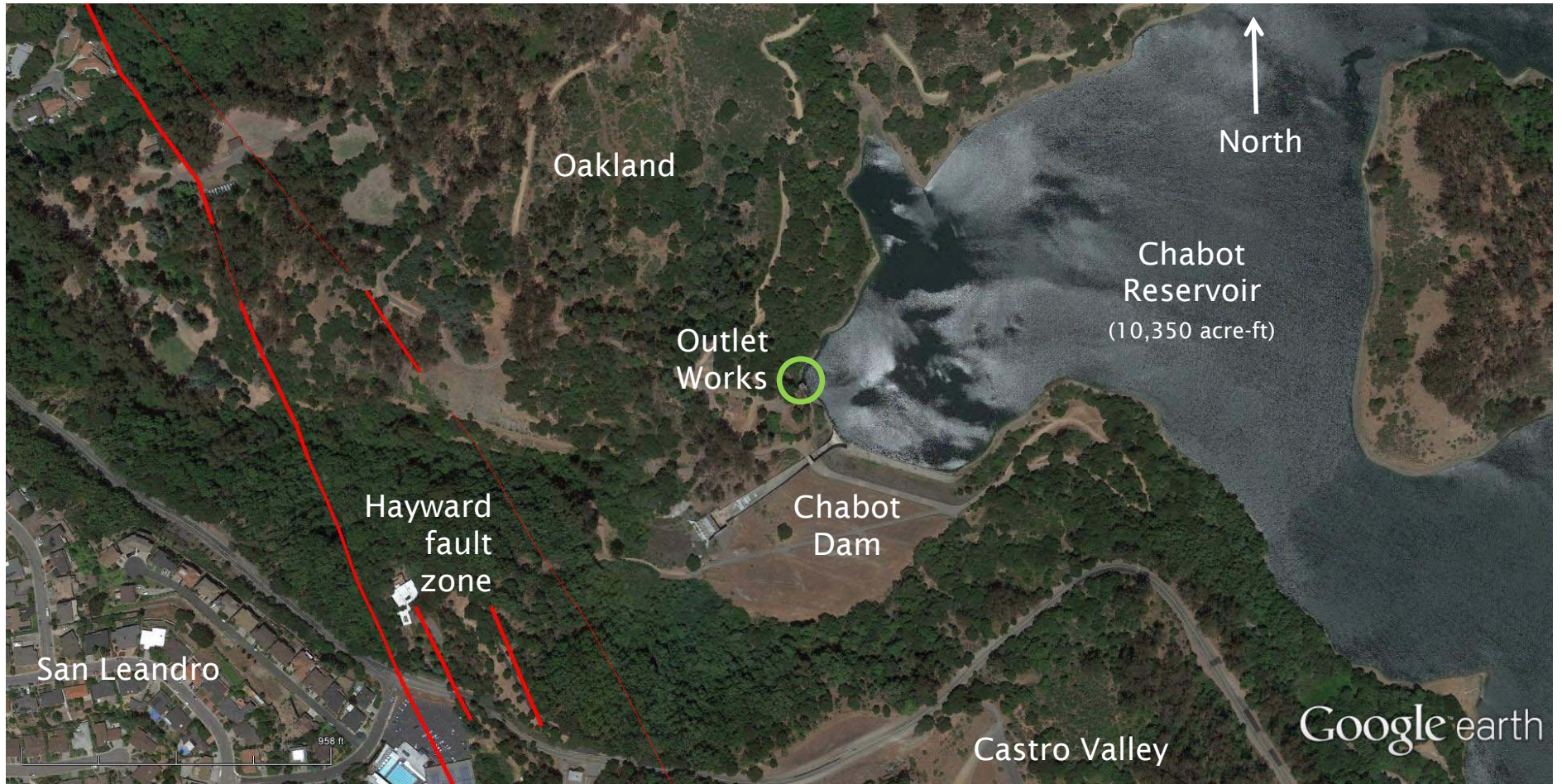
Tom Boardman, Project Manager

November 14, 2018

Project Location



Project Location



Chabot Dam and Outlet Works

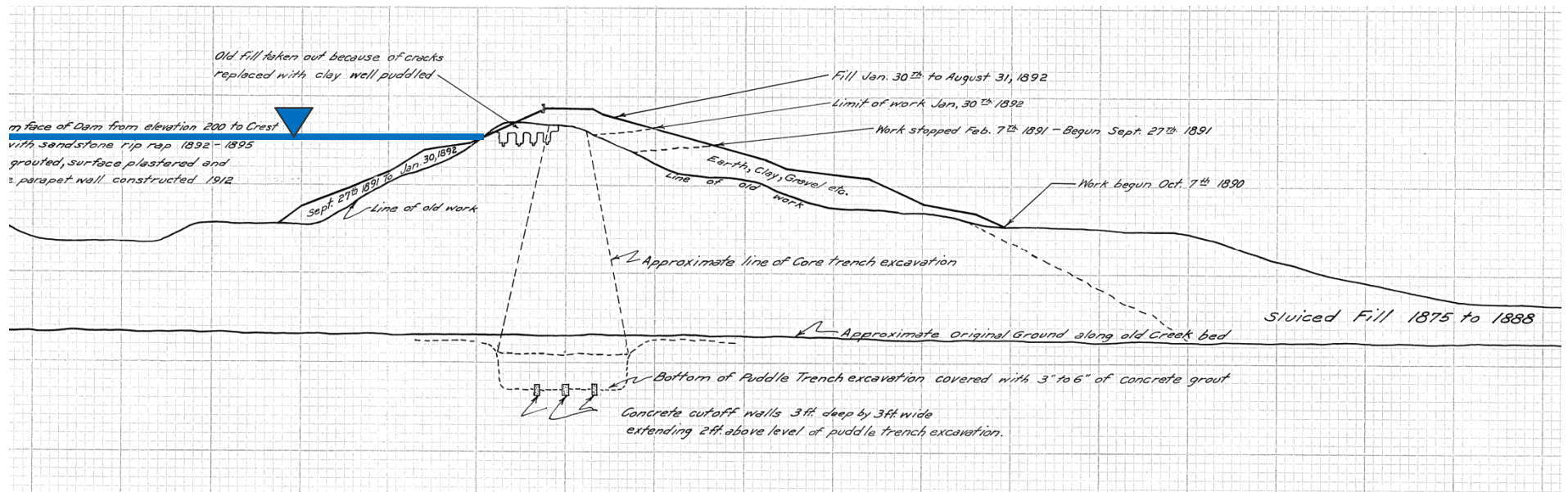


Project Description

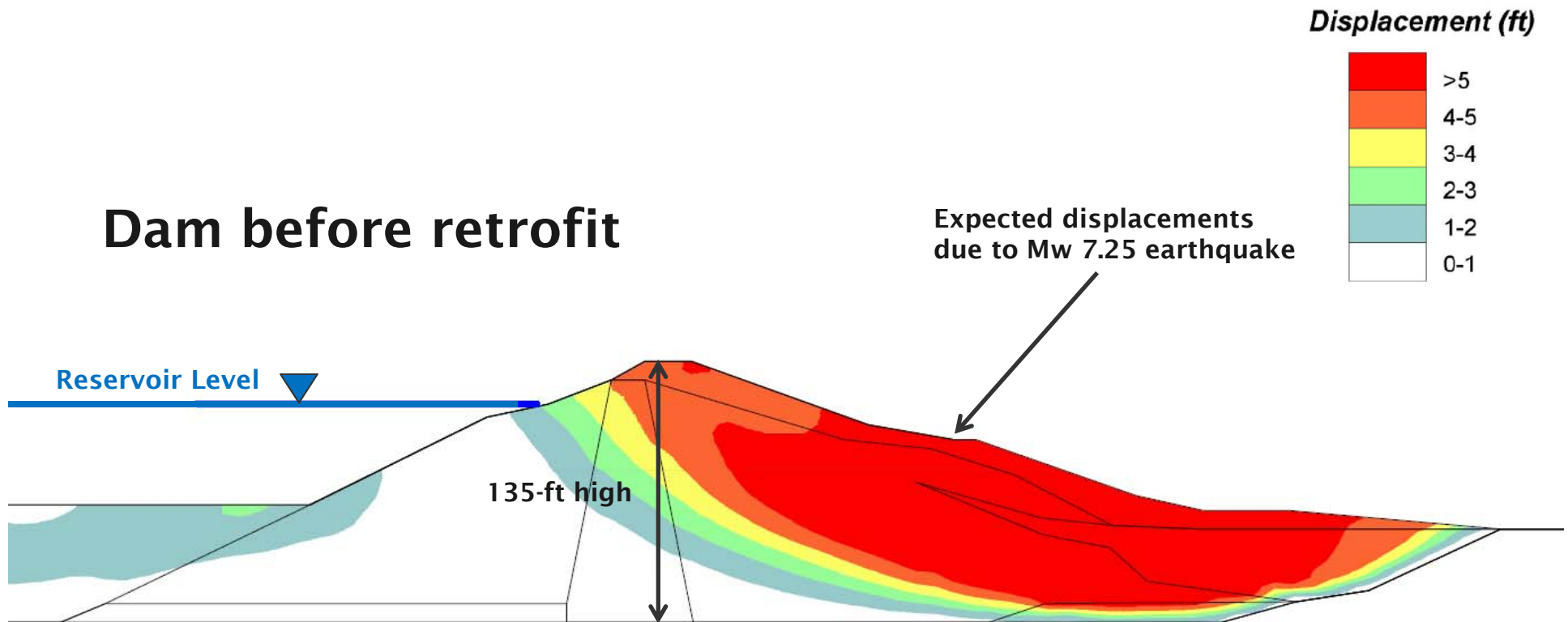


- 140-yr old dam and 90-yr old outlet works
- During M7.25 earthquake on Hayward fault:
 - Earth dam settles and slides
 - Outlet works collapses; can't drain lake
- In 2006, DSOD directed EBMUD to develop plans to upgrade earth dam and outlet works to improve seismic performance

Chabot Dam built in 1875



Earth Dam – Seismic Displacement Model

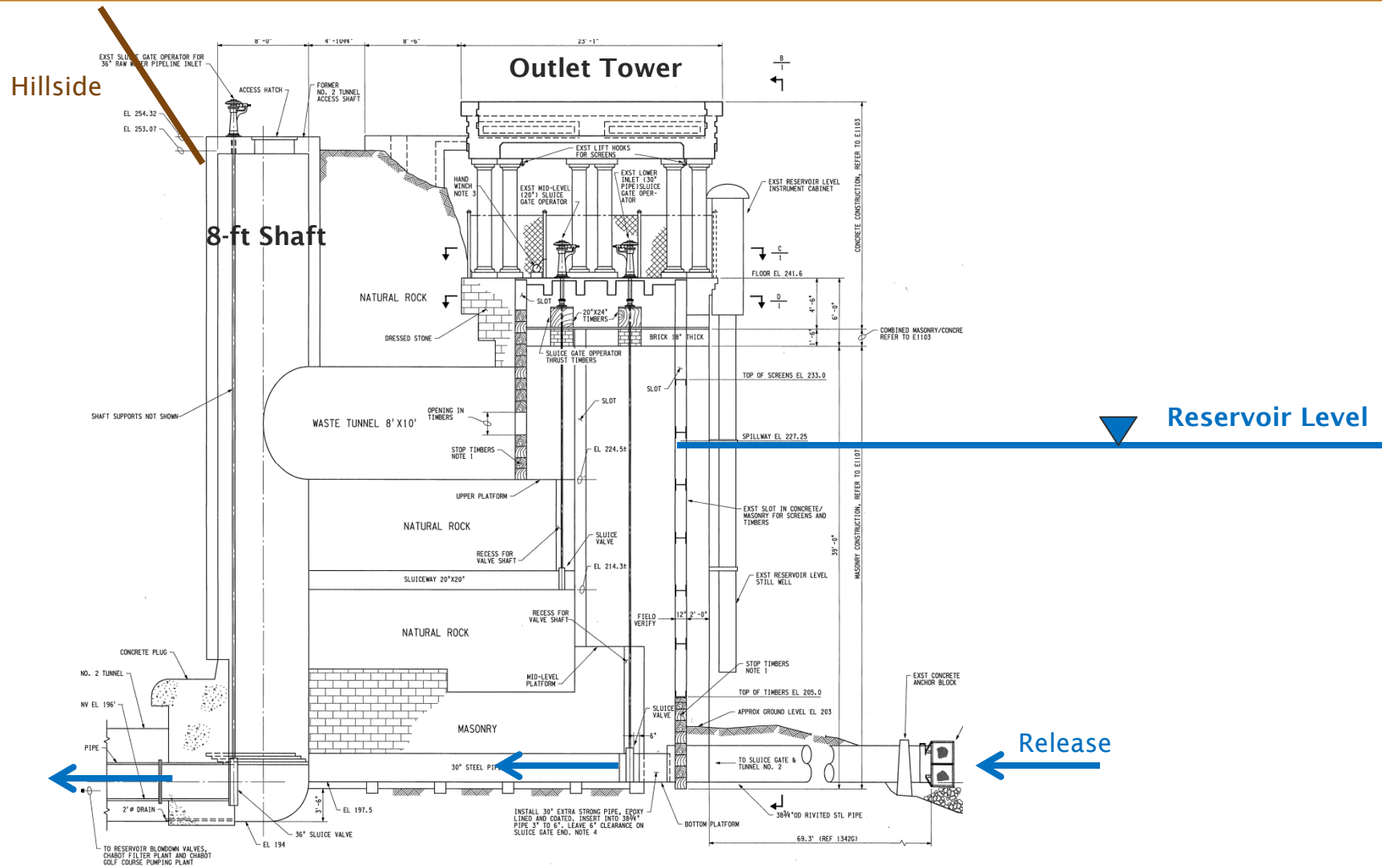


Outlet Works Retrofit

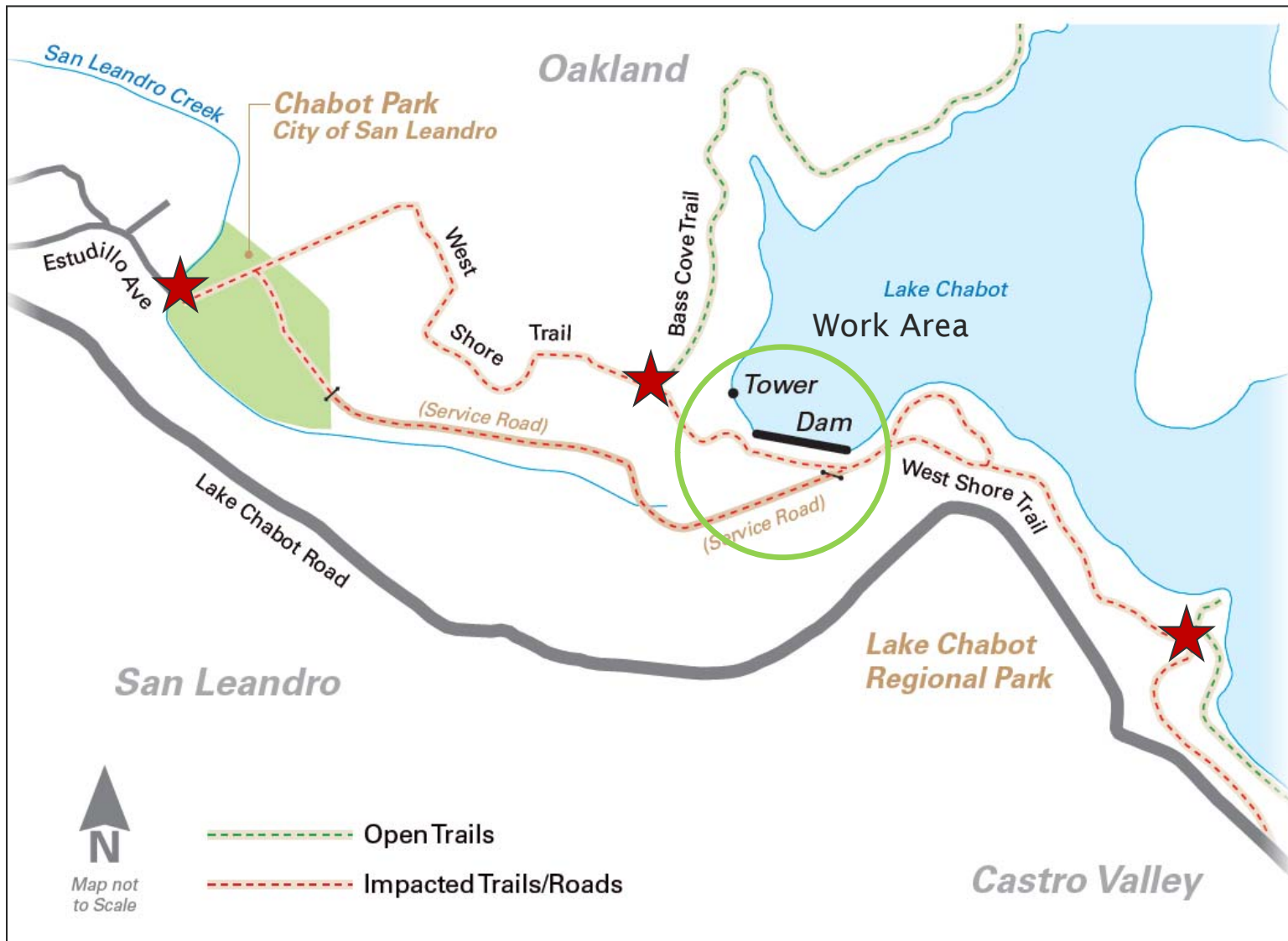


Outlet Works, July 2013

Outlet Tower Retrofit



Temporary Park Closures



Site Access Issues



Site Access Issues



Site Access Issues



Cliff Swallow



Rob Schell Photography 2010

Dusky Footed Wood Rat



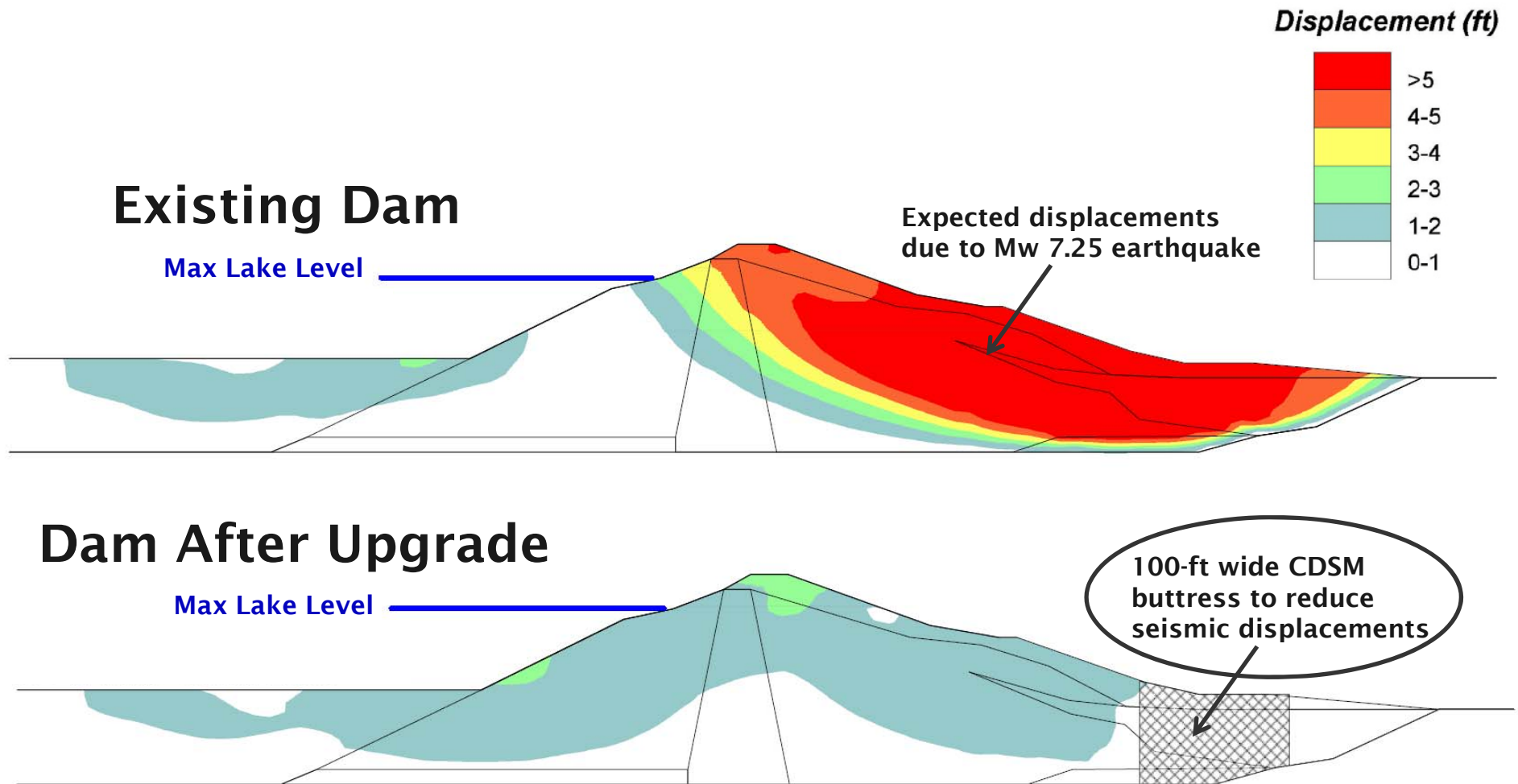
Swallow Nests



Wood Rat Midden



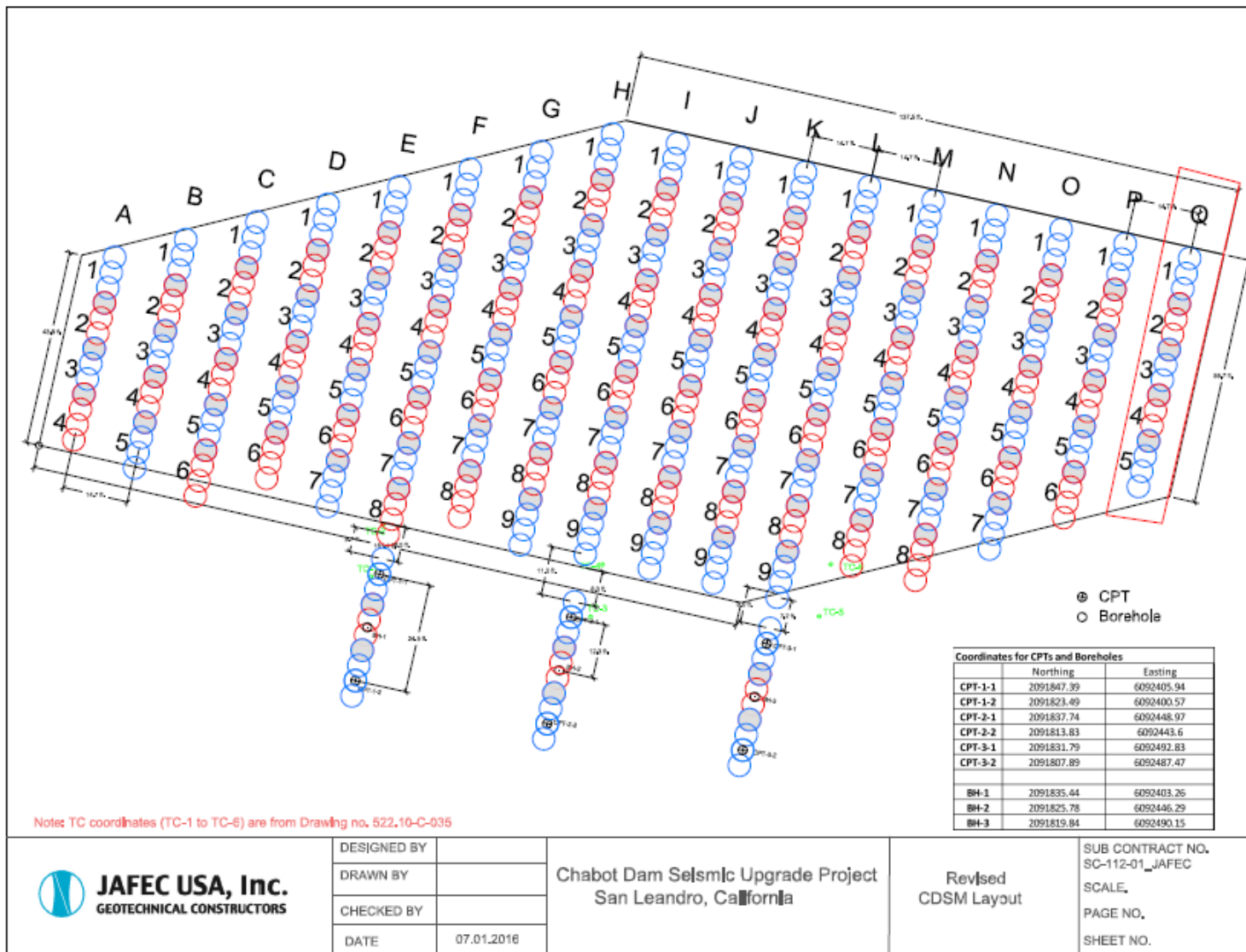
Earth Dam Seismic Upgrade



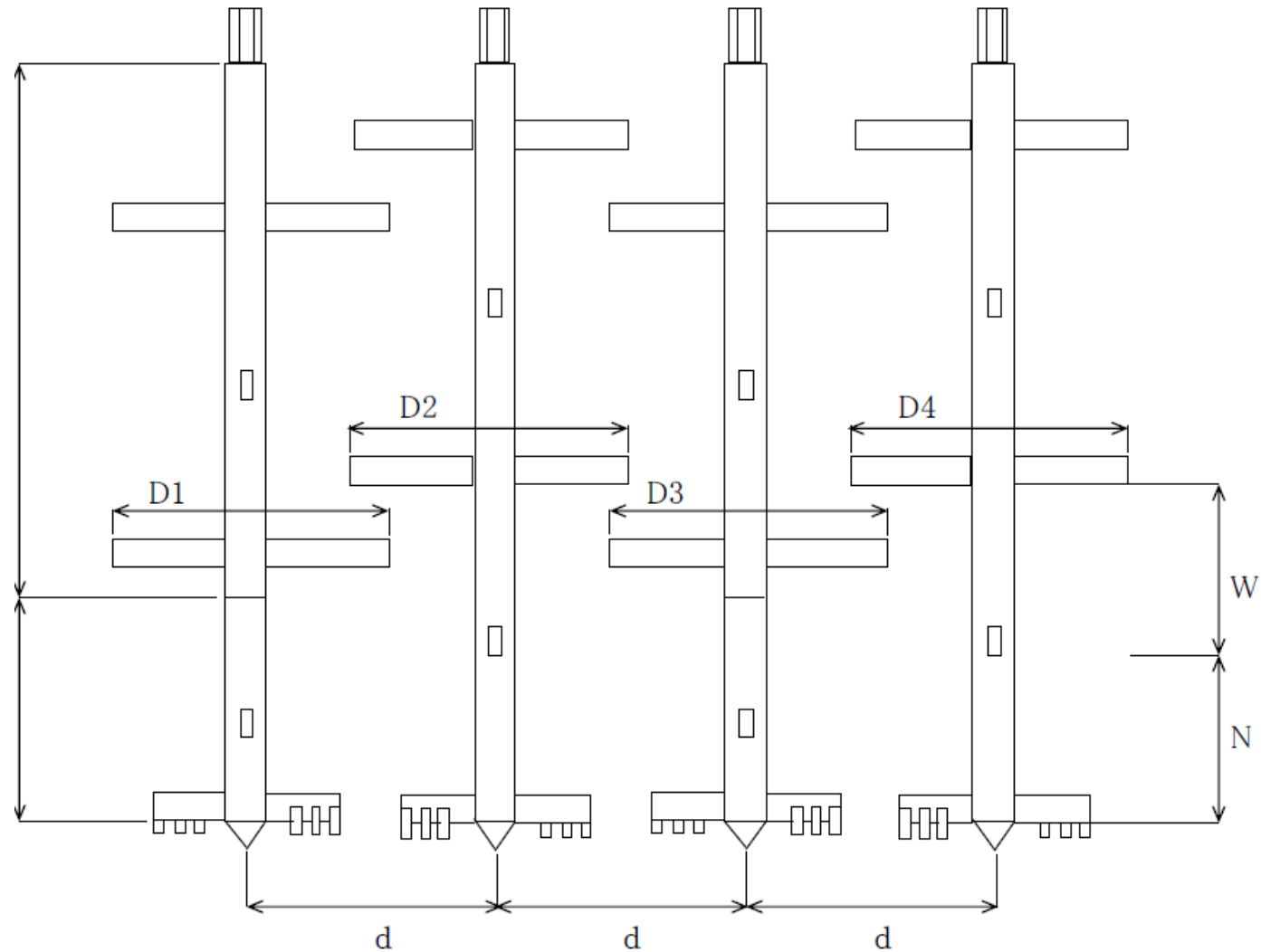
CDSM Rig Onsite



CDSM Buttress Drilling Pattern



CDSM Mixing Blades



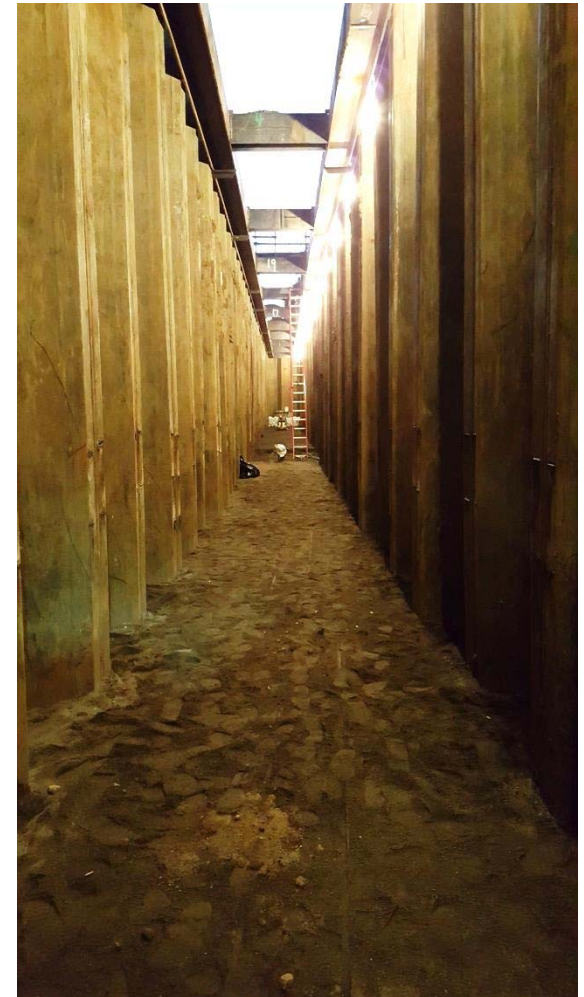
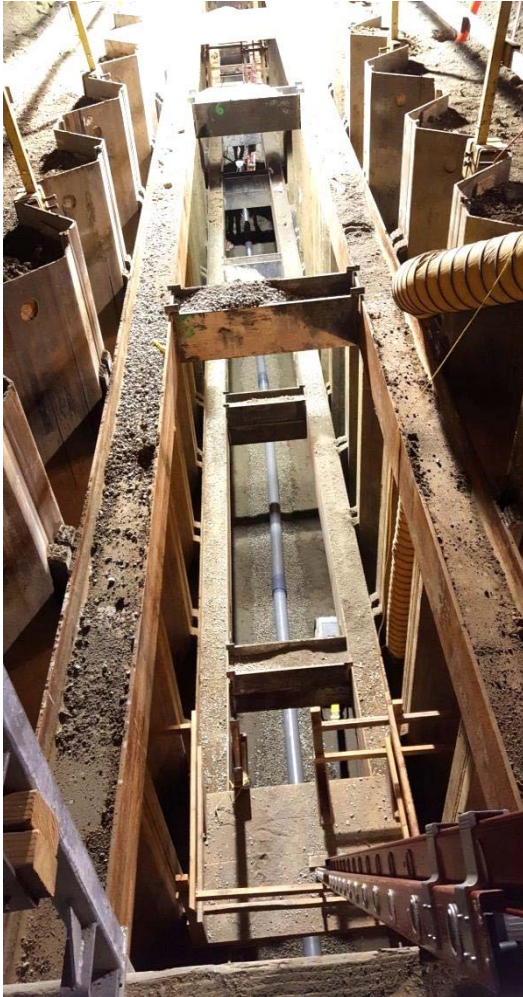
CDSM Mixing Blades



Seepage Trench



Seepage Trench



Earthwork and Seepage Trench



Before Project



During Final Grading



During Seepage Trench

Outlet Works Retrofit



Outlet Works in 1924



Outlet Tower Demolition



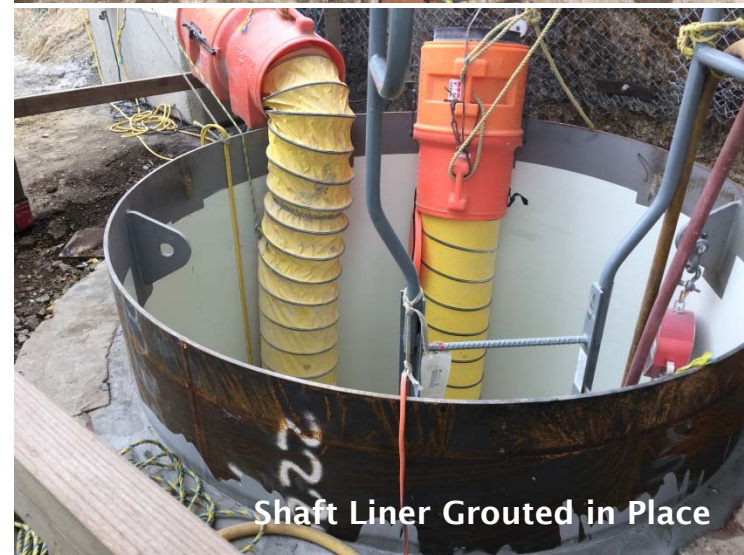
Outlet Works Retrofit



Shaft Liner Installation

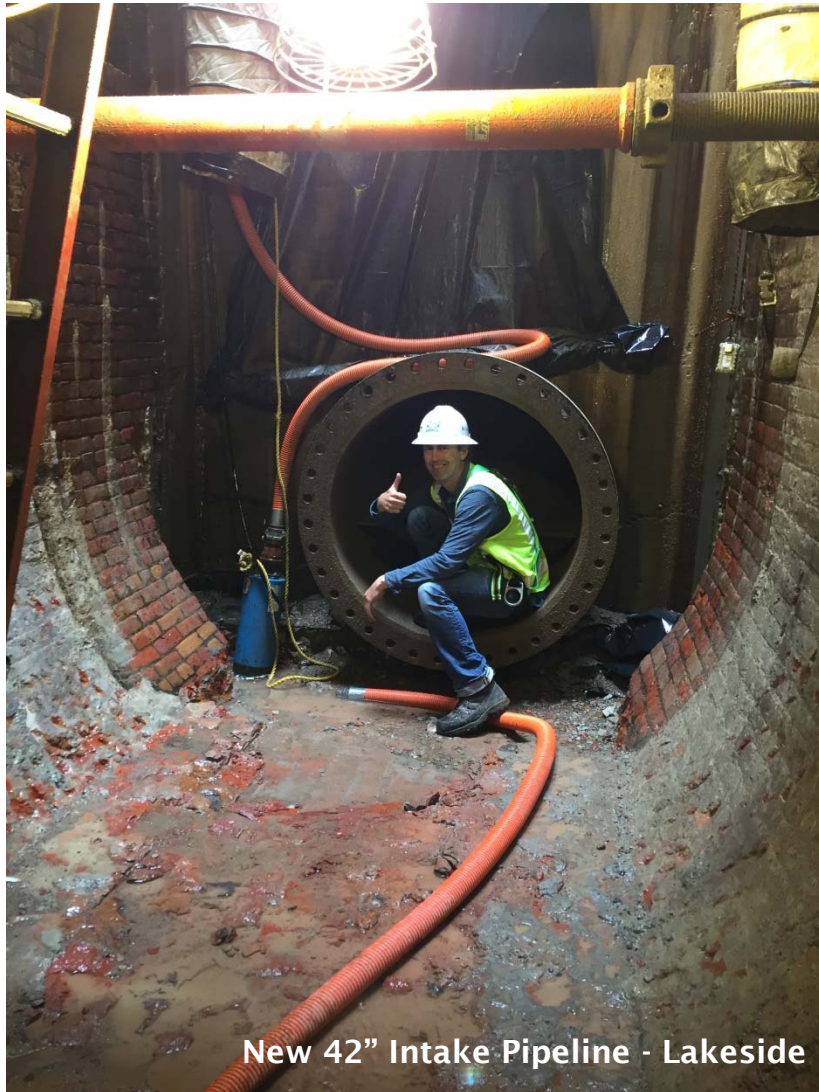


Brick Lined Access Shaft



Shaft Liner Grouted in Place

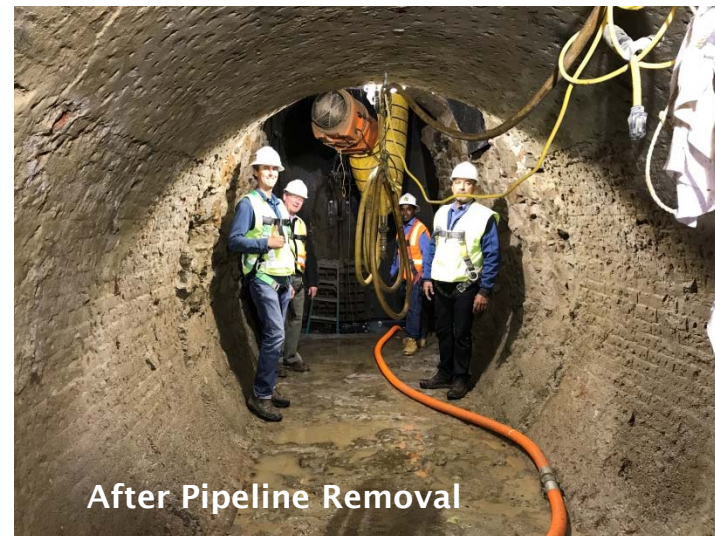
Outlet Works Retrofit



New 42" Intake Pipeline - Lakeside



During Pipeline Removal



After Pipeline Removal

Outlet Works Retrofit



Outlet Works After Demolition



New Outlet Works
in Rock Hillside



End of Construction



Replacement Staff Gage and Safety Buoys



Final Downstream Slope of Dam



View of Former Outlet
Tower across Lake

2016/2017 Winter Rainfall



- Record breaking rainfall ~44-inches
- Spilled Jan to May 2017
- Delays to earthwork on dam
- Chabot fish go over spillway



San Leandro Creek below Dam

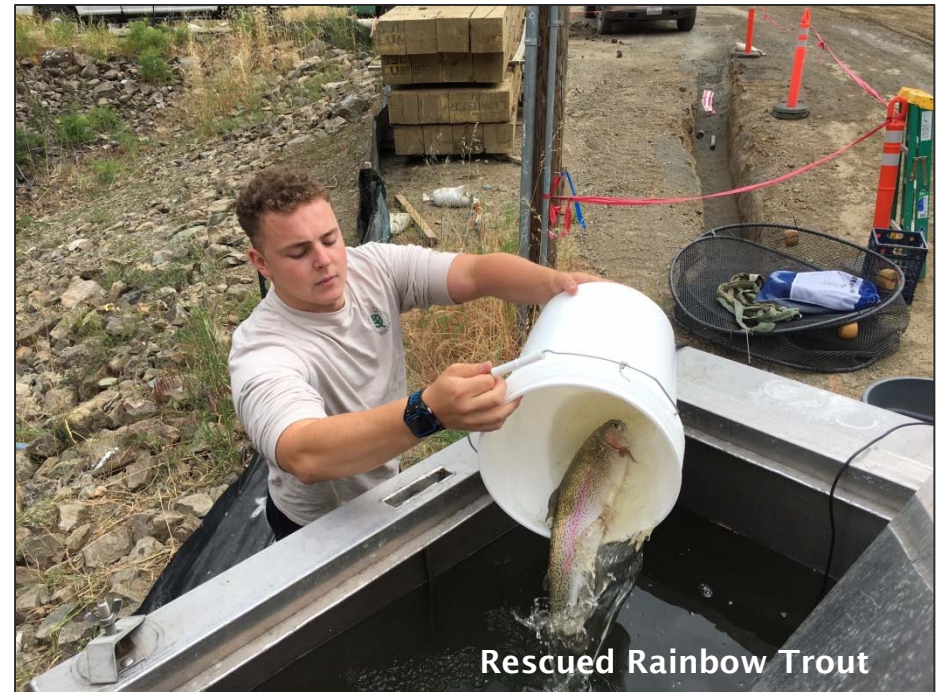


Main Spillway Jan 26, 2017

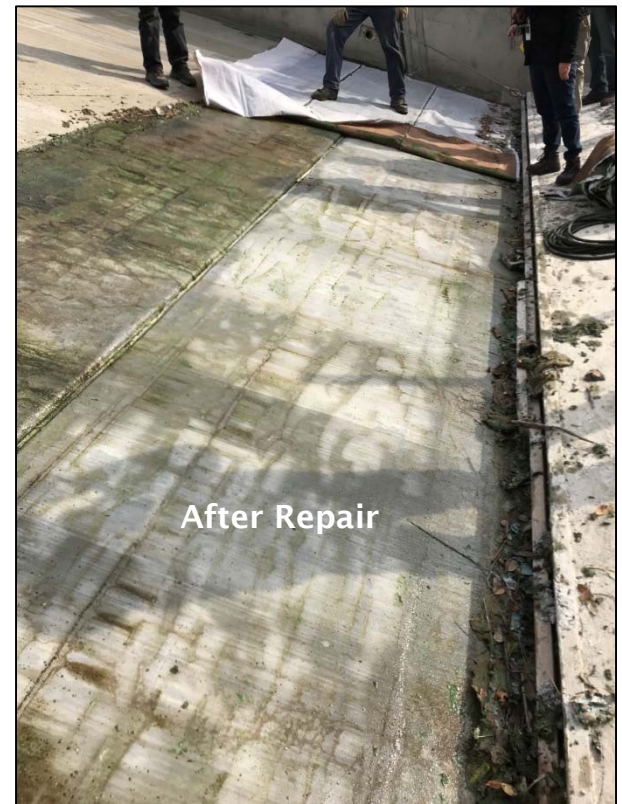
San Leandro Creek – Fish Flows



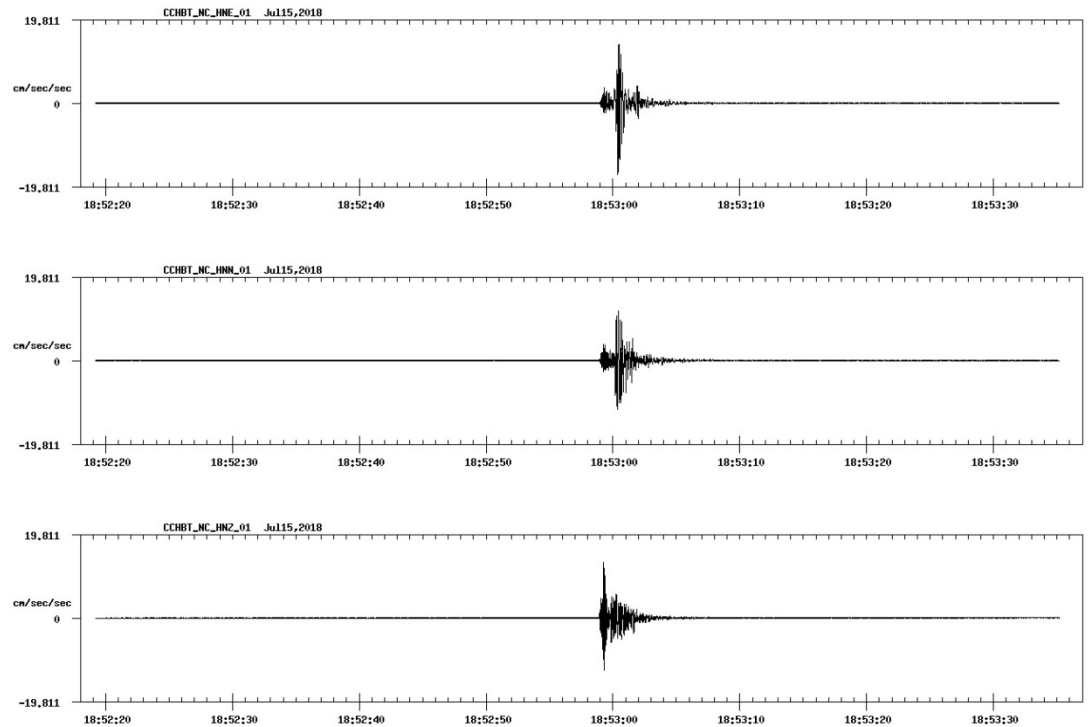
- Rescued ~80 rainbow trout; returned to Chabot
- Currently releasing ~80 gpm (0.2 cfs)
- EBMUD still working with CDFW to develop long-term strategy for fish flows in creek



Spillway Repair



Earthquake Monitoring



**Mw 3.0 earthquake July 15, 2018
~ 2 miles from Chabot Dam**

Questions?

