

# Leviathan Mine History and Water Board Activities

September 19, 2023

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Lahontan Water Board

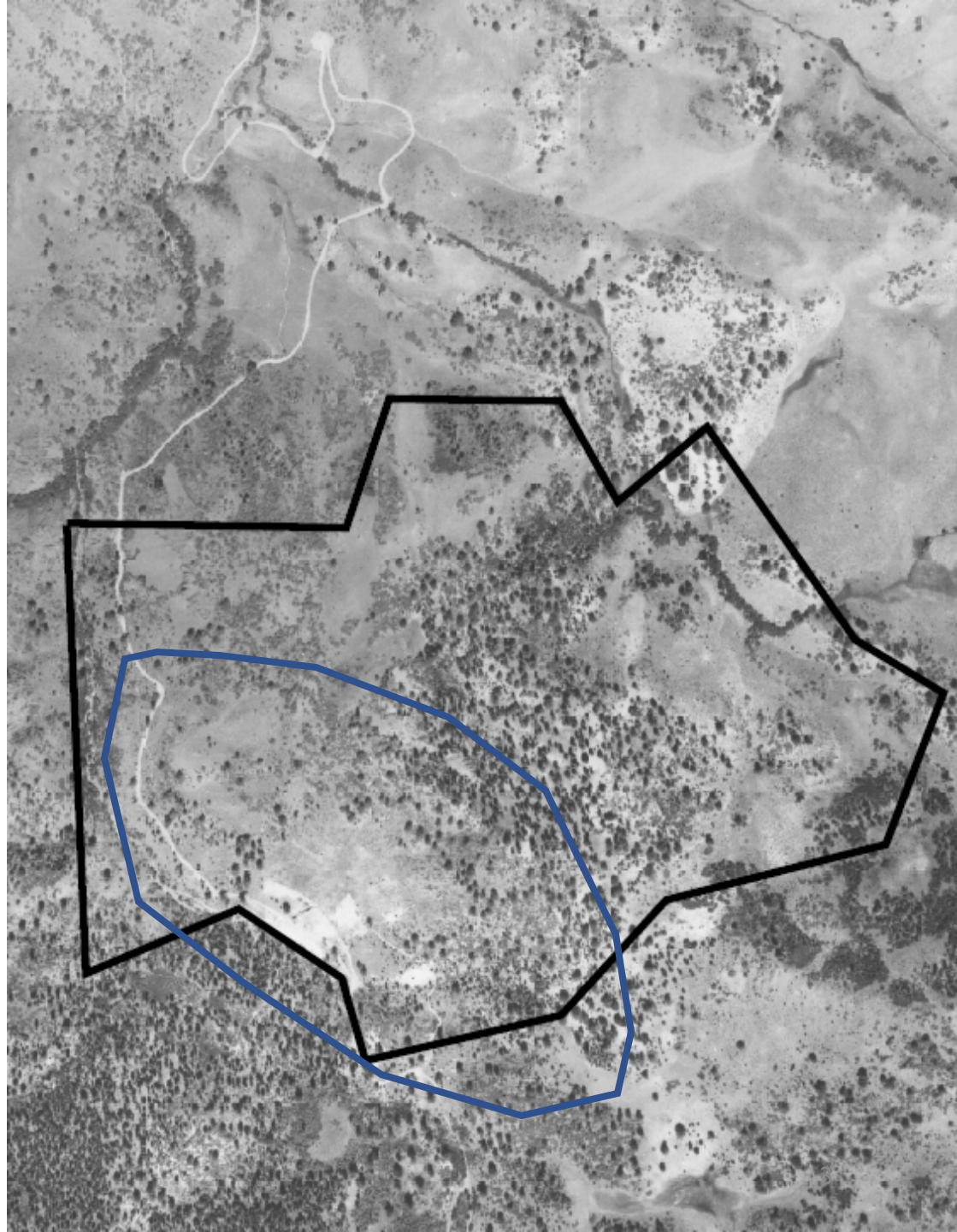
# Leviathan Mine History

Historical mining activities at Leviathan Mine included underground and open pit extraction of sulfur-rich ore.

- Intermittent underground mining activity (1860s – 1940s)
- Open-pit mining activity (1950s – 1960s)



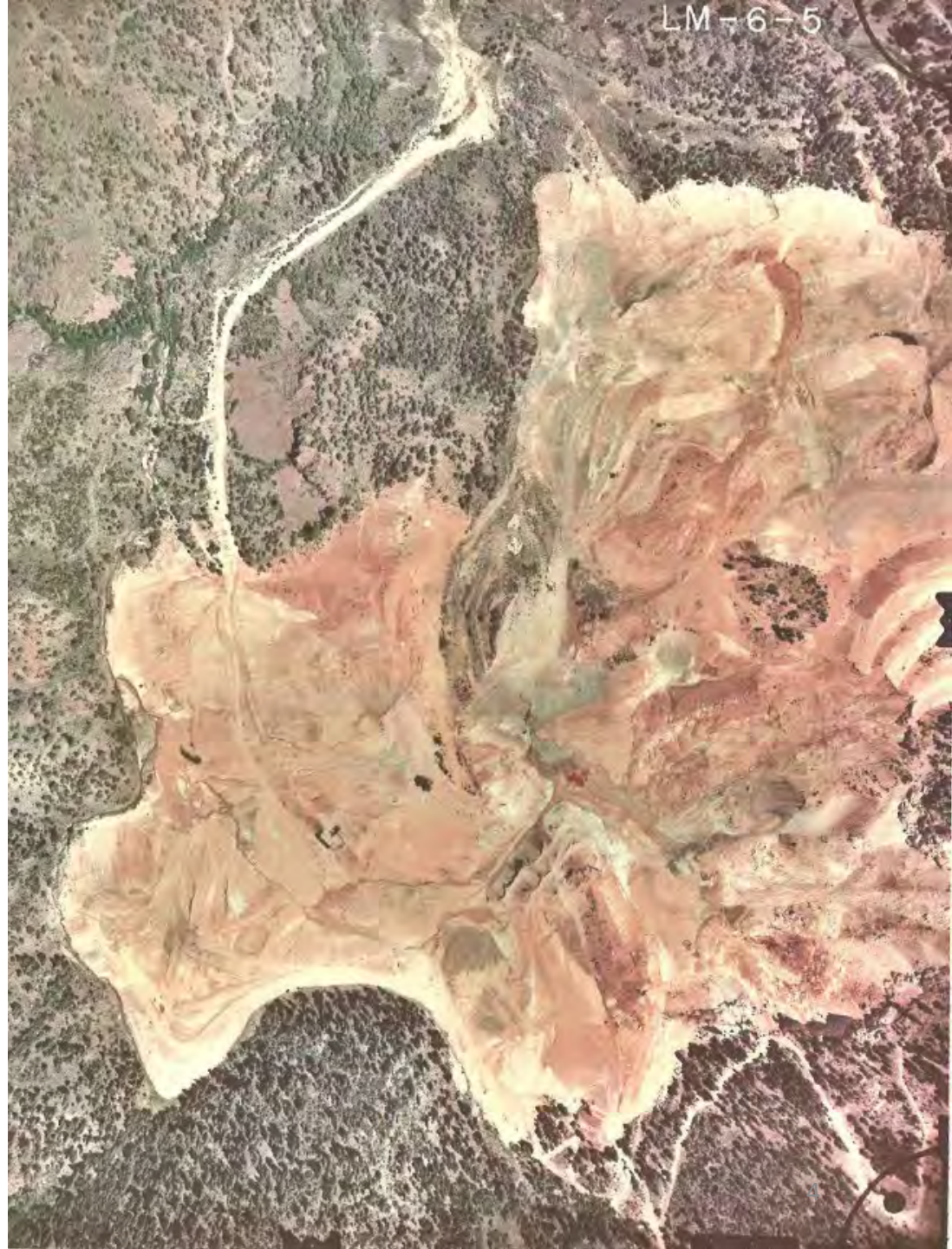
Arial photo  
before open-pit  
mining at  
Leviathan Mine  
July 21, 1940



# Arial Photo of Leviathan Mine after open pit mining

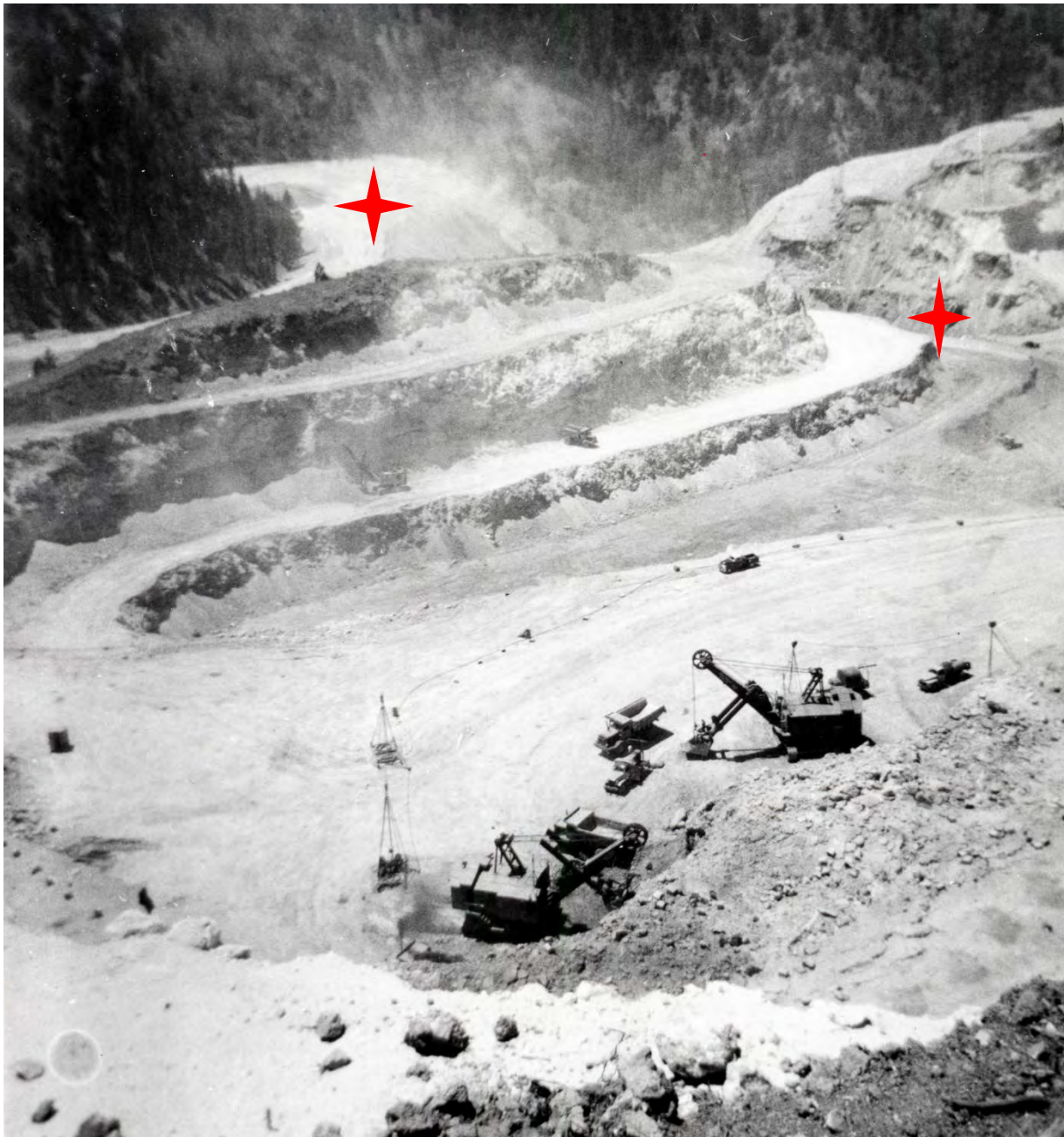
June 28, 1975

- Approx. 253 acres of disturbance.
- State purchased the property (1984) due to ongoing concerns with Water Quality impacts.
- State Pollution Abatement Project constructed (1984 – 1985).



Leviathan Mine 2009  
Satellite imagery





**Leviathan Mine 1950's**



**Leviathan Mine 2012**

# Leviathan Mine prior to Water Board Pollution Abatement Project





# Leviathan Creek June 1983



# Impacts from Leviathan Mine flowing into the East Fork Carson River 1969



# Leviathan Mine Background

- On May 11, 2000, USEPA placed Leviathan Mine on the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) National Priorities List, thus making Leviathan Mine a Superfund site.
- July 2000 USEPA issued the Water Board an Administrative Abatement Action (AAA) to implement certain pollution abatement and site monitoring activities.
- Of the five sources of Acid Mine Drainage (AMD), Water Board are responsible for year-round capture and seasonal treatment of the Pit Underdrain and Adit.



# Leviathan Mine

- Site infrastructure including: AMD storage ponds, regraded pit area, Leviathan Creek Diversion Channel, Pond Water Treatment Plant at Pond 1, High Density Sludge Treatment Plant at Pond 4, and the Aspen Seep Bioreactor.
- Leviathan Creek Basin Landslide



**Legend**

- Pit Underdrain
- Adit
- Leviathan Creek Culvert
- Creek
- Pit
- Landslide

N

0 0.05 0.1 0.2 0.3 0.4 Miles

**Leviathan Mine**

**Water Boards**

# Water Board Site Activities

- Treat AMD stored in Upper Pond System annually, if needed, conduct Spring Treatment
- Operations and Maintenance of the site
  - Remove accumulated sediment from storm water conveyance ditches (over 17,000 linear feet) and replace BMPs as needed
  - Coordinate with El Dorado County Department of Agriculture to spray invasive Tall Whitetop and Dyer's Woad
  - Maintain site roads
  - Flow and Stage monitoring
  - Repair and replace site infrastructure as needed (e.g. concrete thrust block in Pond 2 North and South)



# Summer Pond Water Treatment



- Assembly of Pond Water Treatment Plant late June and early July
- AMD treatment July – September
- Decommission of Pond Water Treatment Plant October

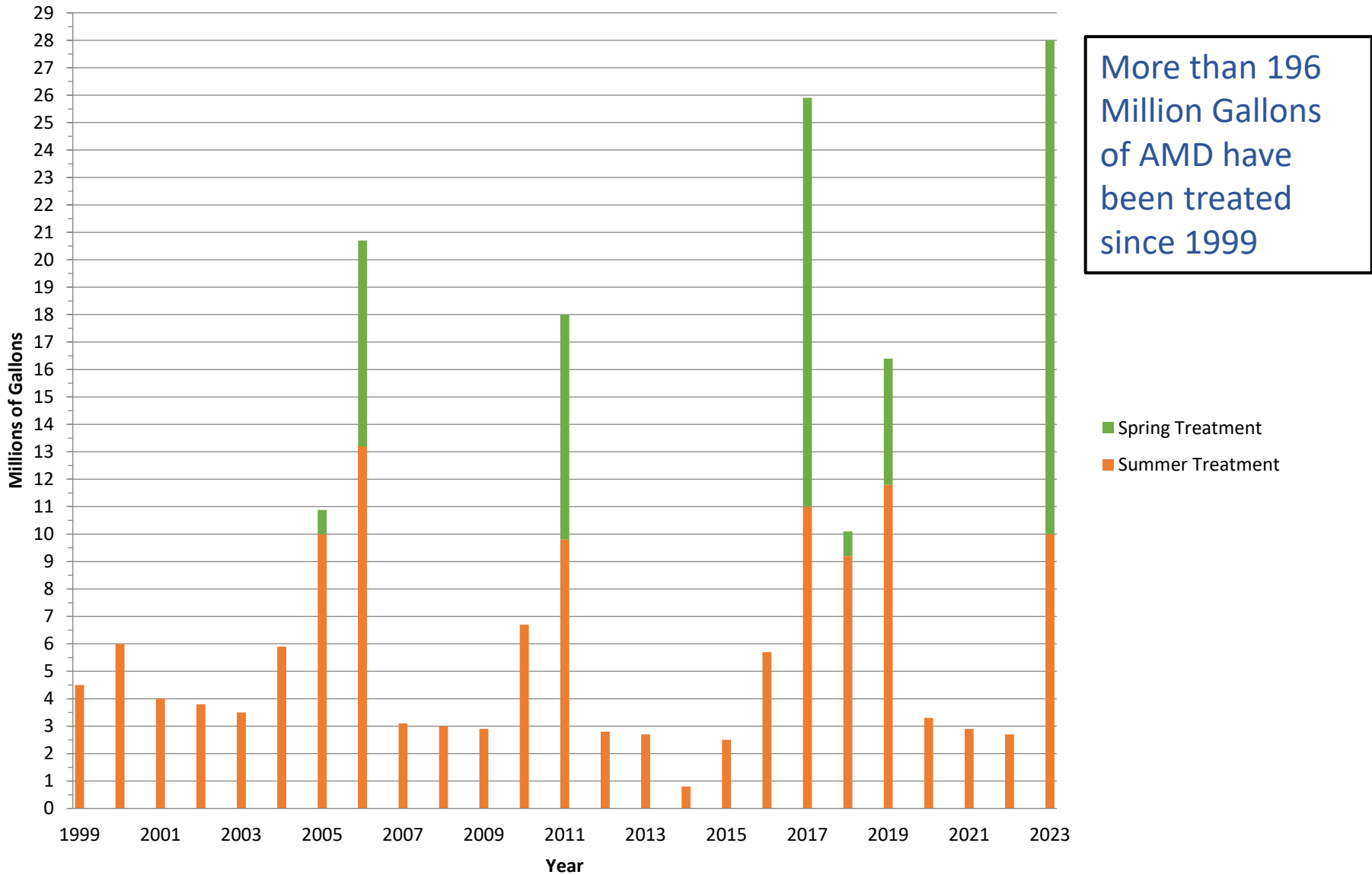
07/02/2018 10:31



Sludge is excavated from the Pit Clarifier from the previous treatment season and hauled offsite for disposal in a hazardous waste landfill.

06/19/2018 08:16

# AMD Neutralized by Treatment Year - Lahontan Water Board PWT





Winter/Spring Treatment conducted at Pond 3



02/16/2023 14:37

# 2023 Pit Slump Stabilization



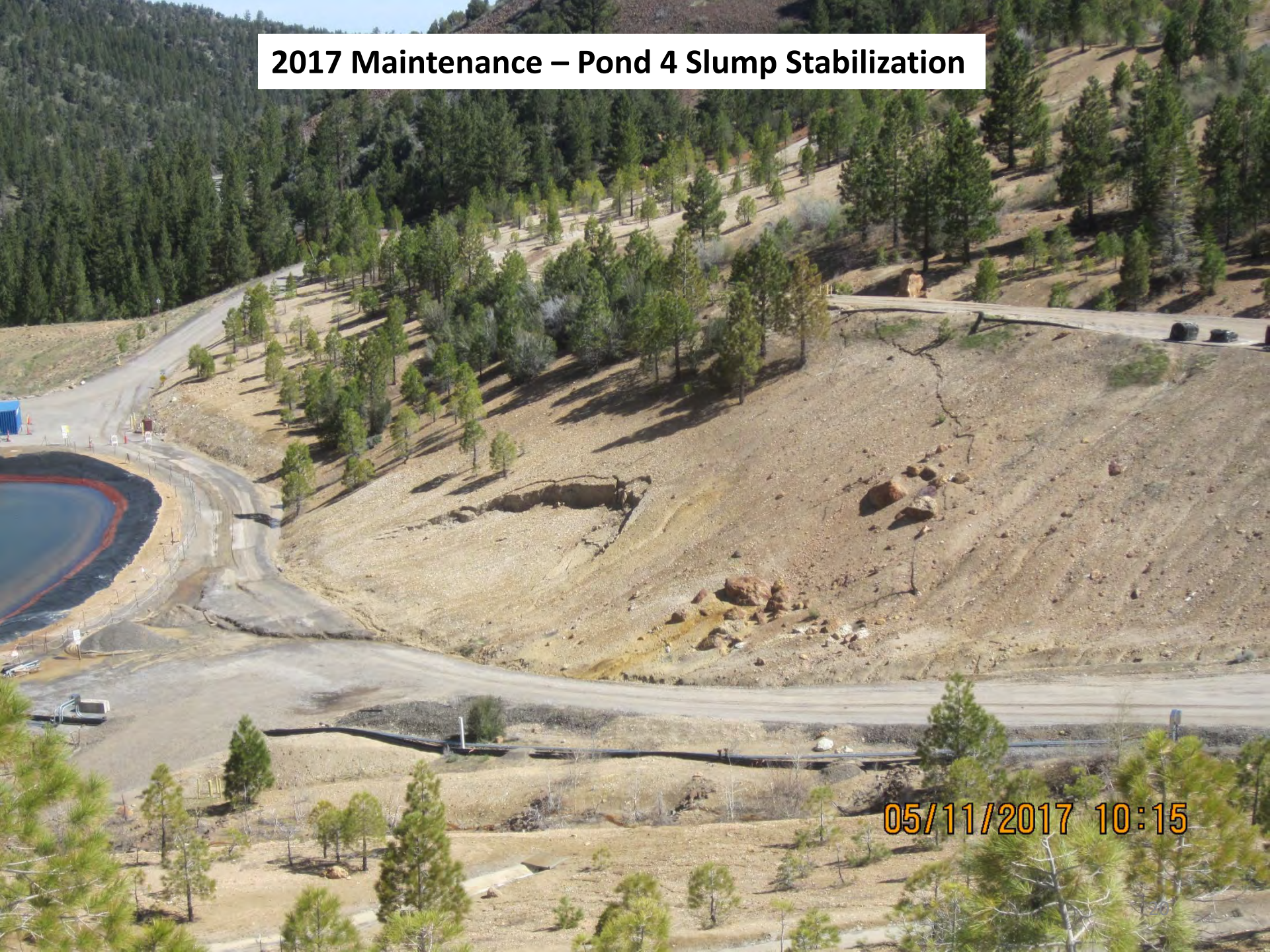
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# 2023 Pit Slump Stabilization



08/31/2023 14:23

# 2017 Maintenance – Pond 4 Slump Stabilization



05/11/2017 10:15

# Pond 4 Slump during stabilization activities 2017



07/25/2017 11:41

## Pond 4 Slump near the end of stabilization activities



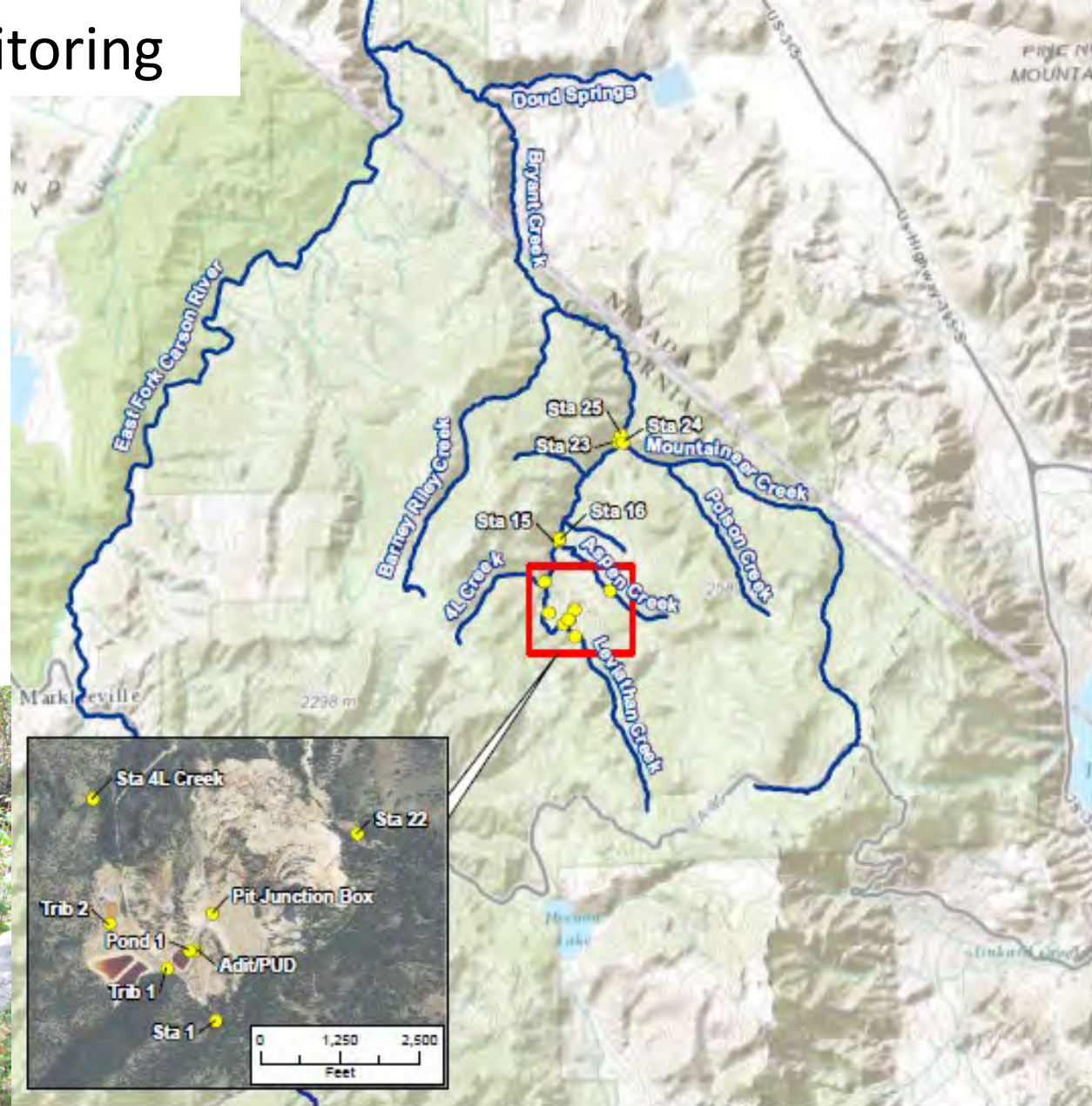
- Installation of a subsurface drainage system
- Regrade slope
- Armor/buttress slump
- Regrade main access road
- Line Pond 3 access road ditch
- Regrade Pond 3 access road

# Channel Underdrain pipe clean-out activities during 2021



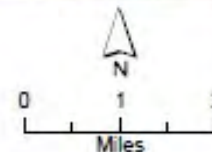
# Flow and Stage Monitoring

- Contract with USGS to perform flow and stage monitoring work at 14 locations.



New weir located on 4L Creek

- Flow and Stage Monitoring Location
- River/Creek
- National Forest



Flow and Stage Monitoring Locations

Figure 6





06/21/2018 1

1984



1999



Pond 2 East and North slopes revegetation over time

2021



# Water Board Activities

- Review and comment on Remedial Investigation/Feasibility Study Workplans, Statistics review for Reference Threshold Values, Remedial Investigation Report, Human Health and Ecological Risk Assessments, and Focused Feasibility Studies.
- Designed upgrades for Pond 1 Pond Water Treatment Plant to be implemented over next few years.
- Constructed upgrades designed at Pond 3 to support Emergency Winter/Spring Treatment activities.
- Secured funding and finalized design plans for relining the Leviathan Creek Concrete Channel.
- Secure funding and contracts for projects to satisfy USEPA requirements.





Questions?

10/11/2017 13:19