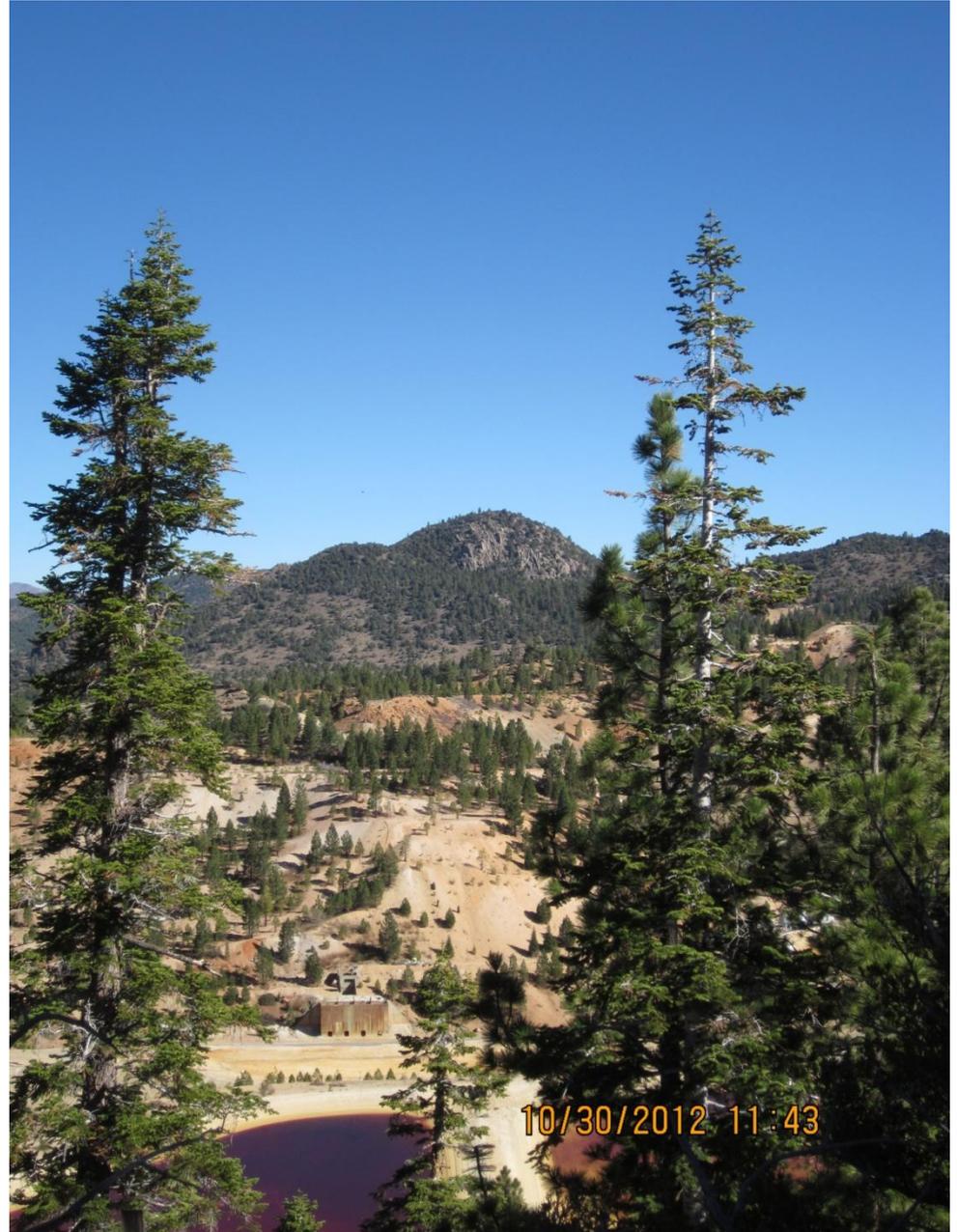
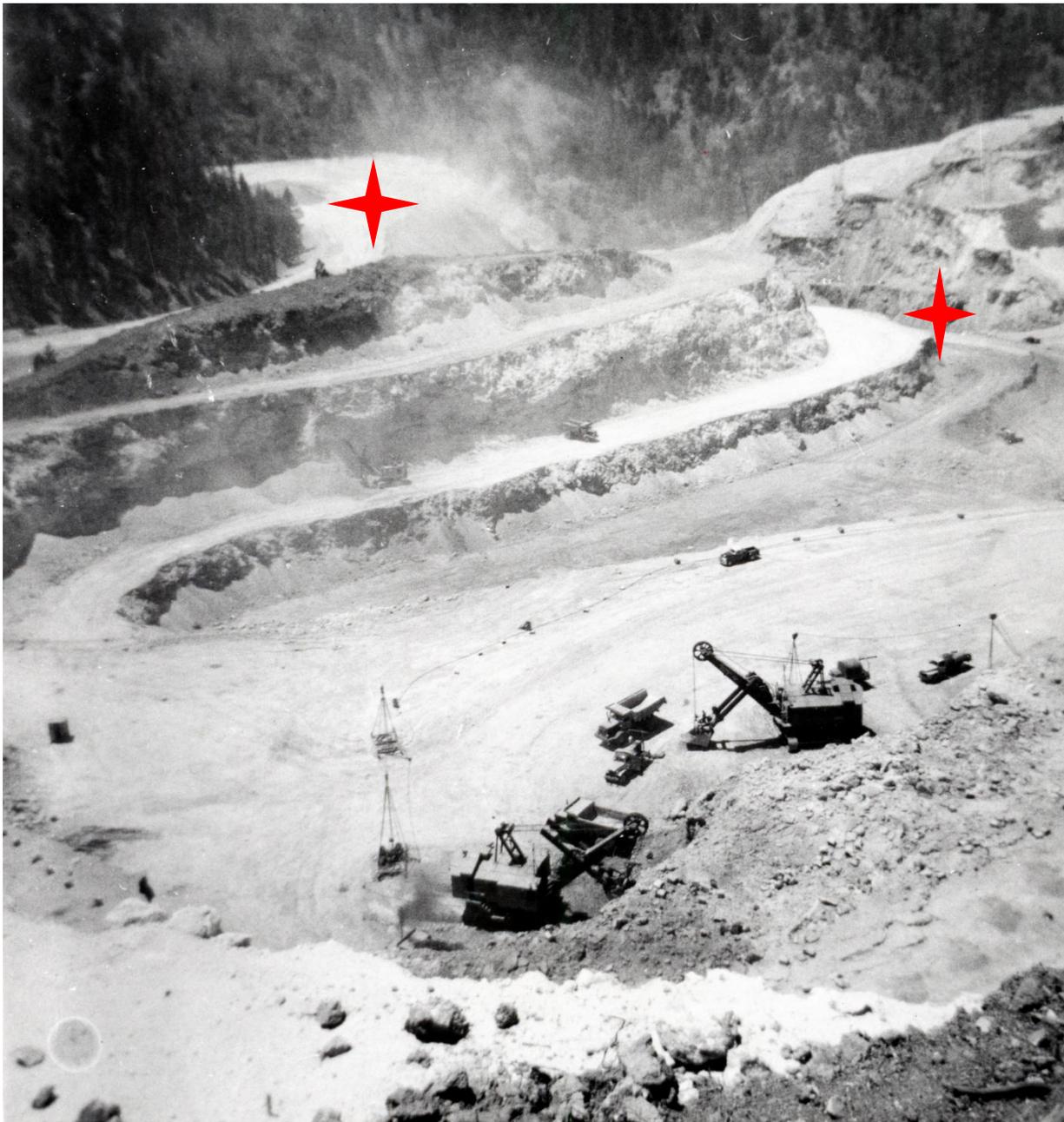


**Leviathan Mine
December 2012
TAC Meeting
Lahontan Water Board**





Leviathan Mine 1950's



Leviathan Mine 2012



Tasks in 2012:

- Summer Pond Water Treatment
- Flow and Stage Monitoring
- Routine Maintenance
- Non-Routine Maintenance

2012 Pit Clarifier Sludge Removal and Disposal



06/18/2012 10:13

- Approximately 1,000 tons of sludge were hauled off site for disposal in late June.
- Sludge generated during the treatment of 9.8 million gallons of AMD in 2011.

2012 Summer Pond Water Treatment Startup



- Pit Clarifier sand layer replenished following sludge disposal in 2012
- Assembly of pond water treatment plant
- Discharge of treated AMD to the Pit Clarifier began on July 9, 2012
- Discharge of treated AMD to Leviathan Creek began on July 12, 2012

2012 Summer Pond Water Treatment

- 2.8 million gallons of AMD treated and discharged
- Influent pH range 2.16 – 2.46 SU
- Influent average TDS 7,500 mg/L
- Field and lab data show all USEPA discharge criteria met except total recoverable selenium

- 62.09 tons lime (dry weight)
- 2,349 gallons diesel
- 312 gallons gasoline
- 290 pounds of flocculent
- 5,235 mg lime / liter AMD

07/27/2012 12:55

Sludge generated is contained in the pit clarifier



10/30/2012 10:04

~ 240 – 300 tons of sludge generated during the 2012 season will be hauled off site for disposal in 2013.

**Maximum capacity is available
for AMD storage entering the
2012/13 winter season**



08/09/2012 10:22

Ponds 2 North and 2 South at the end of the 2012 treatment season

Flow and stage monitoring



- 18 locations during the 2012 water year
- CUD, Pond 4, and the Aspen Seep removed due to Health and Safety concerns
- 15 locations during the 2013 water year

2012 Routine Maintenance



Routine Maintenance

- Removed accumulated sediment from storm water conveyance ditches
- Repaired perimeter fence
- Sprayed to eradicate invasive Tall Whitetop

Non-routine maintenance by Hannah Schembri

2012 Non-routine Maintenance



Non-routine Maintenance

- Upper Tributary Channel clean-out
- Pond 1 Sludge Removal
- Pond 3 inlet/outlet maintenance
- Pond Liner Leak Detection Survey
- Pond Liner Repairs

Upper Tributary Maintenance



- Removed accumulated sediment/debris from Upper Tributary conveyance channel

Pond 1 Sludge Removal



- Removed approx. 1660 tons of material from Pond 1
- Used long-arm tracked excavator and skid steer

Pond 1 after Sludge Removal



Pond 3 Inlet, Outlet, and Boot Repairs



08/21/2012 10:08

- Replaced all boots and exposed piping on the inlets and outlet in Pond 3

Pond 3 Inlet, Outlet, and Boot Repairs



- Pond 2 inlet prior to repairs

Pond 3 Inlet, Outlet, and Boot Repairs



- Enhanced stability of piping with stainless steel tie down on Pond 2 inlet

Leak Location Survey



08/21/2012 13:58

- Conducted leak location survey on Pond 1, Pond 2 North and South, and Pond 3
- Used equipment to create a voltage potential throughout the earth cover material in survey area to detect anomalies

Leak Location Survey



08/21/2012 13:25

- Double Dipole used for Leak Location Survey
- Isolation trenches surrounding the area to be surveyed (Pond 3)
- Calibration process required a certain moisture content for pond liner cover material

Leak Location Survey



08/22/2012 09:35

- Located two holes – one wooden grading stake in Pond 2 South, and one two inch hole in Pond 1 that was created during sludge removal activities

Pond liner repairs



- Repairs were made using a PPL-36 patch material with Pangofol cement.
- Air Lance non-destructive testing per ASTM D4437 was used to test each repair made on the pond liner geomembrane.

Questions?

