

Empire Mine State Historic Park and Northstar Mining Museum

Start Date: Saturday 14th June

Start Time: 7:30

Start Location: Sacramento Convention Center

End Date: Saturday 14th June

End Time: 18:00

End Location: Sacramento Convention Center

(participants in Arsenic Short Course will be delivered to hotels in Grass Valley or Nevada City, CA)

Contacts: Charlie Alpers (cnalpers@usgs.gov)

Registration (until April 20, 2014): <http://goldschmidt.info/2014>

Price: 75\$US (Lodging not included)



This one-day trip is in conjunction with a 2-day workshop (short course) on arsenic to be held after the field trip (15th-16th June) in nearby Nevada City, CA. Registration is separate for the field trip and workshop. (Please note that this field trip is not sponsored by the Mineralogical Society of America.)

Arsenic contamination is one of the most significant environmental problems associated with historical gold mining in California and elsewhere. The Empire Mine State Historic Park (EMSHP, http://www.parks.ca.gov/?page_id=499) provides an opportunity to see how public agencies have studied and mitigated problems including elevated arsenic concentrations in waste rock, which was used in places for hiking trails that have since been rerouted or excavated and covered with clean fill, and contaminated mine drainage, which is being treated passively in a newly constructed wetland system. Ongoing studies of arsenic bioavailability and bioaccessibility of waste rock and soils from EMSHP will be explained. The nearby North Star Mining Museum (http://nevadacountyhistory.org/html/mining_museum.html) will also be visited, time permitting.

Itinerary:

7:30 am Leave Sacramento Convention Center

8:45 am Arrive at EMSHP

Stop 1. (9:00 –10:00) Empire Mine main mine waste pile and stamp mill

Stop 2. (10:00 –11:00) Cyanide plant and Sand Dam with mill tailings

Stop 3. (11:00 –12:00) Short hike to other mine waste piles at Empire Mine; explanation of arsenic bioavailability / bioaccessibility studies

Stop 4. (12:00 – 12:30) EMSHP Visitor Center (includes scale model of underground mine workings)

Stop 5. (12:30 – 13:30) Lunch (Cornish Miner's Lunch at EMSHP, if available; otherwise, catered box lunch).

Stop 6. (13:30 – 15:15) Tour other features at EMSHP including mine superintendent's office, inclined shaft, and underground tunnel (if accessible), and Magenta Drain constructed wetlands (passive water treatment system).

15:15 – 15:30 Drive to North Star Mining Museum, Grass Valley.

Stop 7. (15:30 – 16:45) North Star Mining Museum.

This museum is registered on the List of Historic Mechanical Engineering Landmarks. The significance lies in its collection of Pelton water wheels, including the world's largest tangential water wheel (30 ft diameter). There is a working stamp mill.

Field Trip Participants who **ARE NOT** participating in the Arsenic Short Course:

16:45 – 18:00 Drive back to Sacramento

Field Trip participants who **ARE** participating in the Arsenic Short Course

16:45 – 17:30 Transportation provided to hotels in the Grass Valley / Nevada City area.

Costs, Transport, Food, and Lodging:

Lunch will be provided on Saturday 14th June. If the "Cornish Miner's Lunch" is available from the EMSHP (served by volunteers in period costumes), we will get this, otherwise a box lunch will be provided. Menus will be provided upon arrival at the State Park at 9:00 am on Sat. 14th June. Bottled water and snacks will be available during the trip. Other meals are not included.

Maximum enrollment is 120.

Students should contact organizer to inquire about discount.

Most dietary restrictions should be able to be accommodated for lunch.

No lodging is included.