

**United States Environmental Protection Agency**  
**Region IV**  
**POLLUTION REPORT**

**Date:** Thursday, June 12, 2008

**From:** Leo Francendese

**Subject:** Capping Progresses/Acid Pit Water Quality Continues to Improve  
Barite Hill Nevada Goldfields  
McCormick, SC  
Latitude: 33.8711000  
Longitude: -82.2972000

<b>POLREP No.:</b>	11	<b>Site #:</b>	A4NZ
<b>Reporting Period:</b>	5/25/08 thru 6/12/08	<b>D.O. #:</b>	
<b>Start Date:</b>	10/15/2007	<b>Response Authority:</b>	CERCLA
<b>Mob Date:</b>	10/15/2007	<b>Response Type:</b>	Time-Critical
<b>Demob Date:</b>		<b>NPL Status:</b>	Non NPL
<b>Completion Date:</b>		<b>Incident Category:</b>	Removal Action
<b>CERCLIS ID #:</b>		<b>Contract #</b>	
<b>RCRIS ID #:</b>			

#### Site Description

The Barite Hill/Nevada Goldfields site is located approximately 3 miles south of McCormick, South Carolina between US 378 and US 221 on the northern side of Road 30 in McCormick County, South Carolina. The mine site is relatively remote; there are no buildings, homes, or commercial buildings within 0.5 miles of the boundary. The site actively mined gold from 1991 to 1995. From 1995 until Nevada Goldfields filed for Chapter 7 Bankruptcy in 1999, the reclamation of the site was being addressed by Nevada Goldfields. On July 7, 1999 Nevada Goldfields handed the facility's keys to SCDHEC and abandoned the site.

The site is located along a topographic high ridge area forming the headwaters of an unnamed tributary to Hawes Creek. The topography of the area consists of rolling hills with ridgelines at an elevation of about 500 feet. Within the site, the ridgeline comprising the site has a high point of about 510 feet and an average elevation of approximately 480 feet.

The permitted mine site totals 795.2 acres. Of this total, 659.7 acres are designated as buffer area (areas not disturbed beyond the pre-mine natural state); therefore the maximum disturbance area is 135.5 acres.

The facility used a cyanide solution in a heap leach process to extract gold from ore. There are 7 processing ponds and 1 sediment pond onsite. Three large, multi-acre waste rock piles exist in varying condition. Each waste rock pile has the potential for producing acid. Storm water run on and runoff are not controlled at the site. The Main Pit ("Acid Pit") from the mining operations remains. The 10 acre Acid Pit contains approximately 60,000,000 gallons of water with an average pH of 2 ~ 2.2 and a high dissolved metal content. Seeps from the Acid Pit containing acidic water with high dissolved metal content are being released to the northern unnamed tributaries of Hawes Creek which borders the pit at a rate of approximately 5 gpm.

As per a referral by the State of South Carolina, the EPA Region 4 Removal Program conducted a Removal Site Evaluation (RSE) according to the National Contingency Plan (NCP). During the RSE of March 2007, the OSC conducted an emergency response whose scope included the demolition of a furnace building and onsite neutralization of over 2000 lbs of varying strength acids and bases. As of 9/19/07, the Agency has approved an Action Memorandum to conduct a removal action. The removal action commenced on 10/15/07 and includes a Bureau of Reclamation designed cap for the 250,000 CYS of acid producing waste rock adjacent to the Acid Pit, Acid Pit neutralization and cyanide deactivation in one of the onsite process ponds.

The project is expected to take about 12 to 16 months to complete and is projected to cost approximately 4,000,000 dollars. Details concerning this action can be found in both the documents section and Pollution Reports (POLREPS) which are updated on a periodic basis.

#### Current Activities

##### CONSTRUCTION ACTIVITIES

- The former Acid Pit retains oxidation reduction potential(ORP) conducive to bacterial growth, and exhibits signs of ongoing metabolism as evidenced by visible carbon dioxide off gasing. Analytical results indicate that sufficient concentrations of soluble

total organic carbon (TOC) has been provided and remains in the water column to drive complete metal reduction of the existing dissolved metals and additionally a significant portion of the reducible sediments. In addition ferric, the acid producing variety of iron is non-detect and the remaining iron exists in the ferrous state as bacteria continue to reduce and convert the remaining iron to FeS (iron monosulfide) and FeCO<sub>3</sub> (iron carbonate) which is being formed as a dense, non-reversible sediment at the bottom of the former Acid Pit. The pH is maintaining an approx average of 5.5. Please see the Interim Pit Lake Treatment Report in the documents section of this website for further detail.

<https://www.epaossc.net/sites/2768/files/interim%20report%20on%20barite%20hill%20neutralization%20and%20treatment.doc>

- Additional evidence of improving water quality has been observed with the arrival of 2 adult turtles, numerous frogs in the receiving seep creek and an increasing abundance of dragonflies and water striders in and around the former Acid Pit.
- Excavation/transport and grading of site sourced clay to the former north and south waste rock piles continues according to the Bureau of Reclamation (BOR) design. Details of this design can be found in the documents section of this webpage.
- Approximately 1500 tons of rip rap have been delivered to the site for use in cap erosion control feature construction with approx 30 percent of the cap-former acid pit shoreline interface armored.
- To date, Georgia Pacific delivered approx 1500 cubic yards (CYS) of donated material to be used as topsoil. After technical consult with the South Carolina Department of Environmental Compliance(SCDHEC) an initial target soil blend of 40% organic and 60% clay/sand blend will be generated using available onsite materials. Carbon and nitrogen analysis indicate a current 60:1 ratio in the organic material. Further refinements in the topsoil blend are under consideration in consult with SCDHEC.
- SCDHEC is currently working on submitting suitable vegetative alternatives for the cap.

#### INVESTIGATION/EVALUATION ACTIVITIES IN SUPPORT OF BOR DESIGN

- BOR Spillway design calculations are 100% complete.
- Satellite recorded mini-trolls continue to operate in the Acid Pit at 5' and 40' measuring parameters such as DO, ORP, pH, temperature and turbidity.
- Please see [www.isi-data.com](http://www.isi-data.com) for updates 4 times a day. Login:jharrington Pass: jharrington.
- Weather station continues to monitor and record daily work conditions.

#### MEETINGS/PUBLIC AFFAIRS

- SCDHEC representatives were onsite 5-5-08 to survey the progress. The State continues to be satisfied with the pace, design and success of the project.
- Discussions continue regarding the potential for a US based mining/restoration company to pursue taking on post removal operations and maintenance.
- Representatives from Clemson Geology Museum and SC State Museum were onsite to evaluate mineral specimens for future placement in addition to the ones already received.
- EPA OSC has coordinated with HRS Site Assessment request for additional onsite records evaluation. Onsite date of records review is pending.
- EPA CIC was on site 6-11-08 to update fact sheets and conduct preliminary public outreach concerning potential for the local museum to receive mineral specimens of interest.
- EPA OSC is in coordinated efforts with R4 Remedial Program to construct monitoring systems for the functioning of the cap. BOR is acting as liason for this endeavor.

[response.epa.gov/baritehillnevadagoldfieldsremoval](http://response.epa.gov/baritehillnevadagoldfieldsremoval)