

# Elizabeth Mine Site Update

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## 2013 Summary:

The 2013 activities at the Elizabeth Mine were focused on monitoring, water treatment, cover system maintenance, and ecological restoration. Specific activities included:

- Continued monitoring of the surface water and groundwater;
- Operation of the TP-1 leachate treatment system;
- Maintenance of the TP-1/TP-2 cover system (seeding areas with sparse grass and mowing);
- Raising the elevation of the access road along the toe of TP-1 for flood protection;
- Cleaning drainage channels;
- Ecological restoration activities for the area surrounding TP-1 and TP-2 (tree and shrub planting and wetland creation);
- Stabilization of the soil stockpiles remaining after the cover system installation;
- Stabilization of the slope behind the former WWII buildings;
- Soil sampling at areas outside the cover system;
- Sediment sampling;
- Residential well sampling;
- Surface water and sediment toxicity testing;
- Vermont ANR bio-monitoring;
- VT ANR cleaning of the toe drains and horizontal drains;
- Weed control;
- Borings to assess bedrock conditions at the South Open Cut;
- Historic resource investigation at the South Mine; and
- Mine shaft investigation at the South Mine.

Additional work relating to the design for the cleanup of the South Mine and South Open Cut along with the design for long-term land use restrictions relating to contaminated groundwater continued in 2013. The Popular Report about the history of the Elizabeth Mine was also under development in 2013. No major activities took place during the winter. A short drilling program was performed in December 2013 and another may take place in late April/May 2014 to collect information about an abandoned mine shaft at the South Mine. The surface water monitoring will begin again in spring 2014.

## Cleanup Assessment:

The monitoring data continues to show substantial improvement at the Site. The Vermont ANR biological monitoring has shown full recovery in the West Branch with respect to benthic organisms for the past two years. The water quality monitoring continues to document a dramatic reduction in the metal concentrations and pH. Copper concentrations at the mouth of Copperas Brook are dropped to 1% of the long-term average (3,240 ug/l before the cleanup 26 ug/l avg for 2013). The annual average pH has increased from 2.5 to 7.2. The flow of leachate from TP-1 has reduced from 55 gallons per minute to 21 gallons per minute. The cover system looks good with no significant problems after the first year.

## Expected Activities for 2014

The expected activities for 2014 include:

- Operation of the water treatment system;
- Surface water and groundwater monitoring;
- Mowing and other maintenance activities (drain cleaning);
- Site inspections;
- Completion of the design for the cleanup activities associated with the South Mine and South Open Cut along with any additional site restoration activities;
- Continued work on the design for land-use restrictions to protect the cleanup actions and prevent consumption of contaminated groundwater; and
- Five-Year Review of the Elizabeth Mine cleanup.

## Five-Year Review

EPA is required to perform a Five-Year Review of all cleanup actions that leave waste in place. The Five-Year Review evaluates the cleanup actions to make sure that they are protective of human health and the environment. The initial Five-Year Review takes place five years after the start of the first remedial action at the Site. The Copperas Factory cleanup was the first remedial action at the Elizabeth Mine – the other cleanup actions were a Time-Critical Removal Action and Non-Time-Critical Removal Action. The Copperas Factories remedial action began in May 2009, therefore the initial Five-Year Review for the Elizabeth Mine will occur in 2014.

In addition to evaluating whether the completed cleanup actions are protective of human health and the environment, the Five-Year Review will also evaluate areas of the Site not designated for cleanup to make sure those areas are not a threat to human health or the environment. To support the Five-Year Review, the following data Soil samples were collected in 2013 from several areas not designated for cleanup: Furnace Flats South and North; the former smelter area along Sargent Brook; waste rock adjacent the entrance to the 1948 adit; waste rock surrounding the former Tyson Shaft; waste rock between the former Copperas Factories; and waste rock at the South Mine and South Open Cut not currently included in the cleanup plan. Surface water and sediment toxicity tests to updated the ecological assessment of Copperas Brook , Lord Brook, and the tributaries to Lord Brook that flow from the South Mine and South Open Cut were also performed in 2013. This new data will be used along with the routine surface water, groundwater, and biological monitoring data collected for the Elizabeth Mine to support the Five-Year Review.

More information about the Five-Year Review process can be found at:  
<http://www.epa.gov/superfund/cleanup/postconstruction/5yr.htm>