Remedial Investigation and Planned Interim Cleanup Action at Furnace Creek

United States Environmental Protection Agency

Black Butte Mine Superfund Site

July 2017

Project Background and Overview

The Black Butte Mine Superfund Site is a former mercury mining and processing operation located near Cottage Grove, Oregon in Lane County. The mine was first developed in the late 1890s and operated intermittently until the late 1960s. The site features include collapsed and mine access tunnels, waste rock piles near the mine entrances, tailings dumps adjacent to Dennis and Furnace Creeks, and two historic furnace structures where the ore was processed to recover mercury.

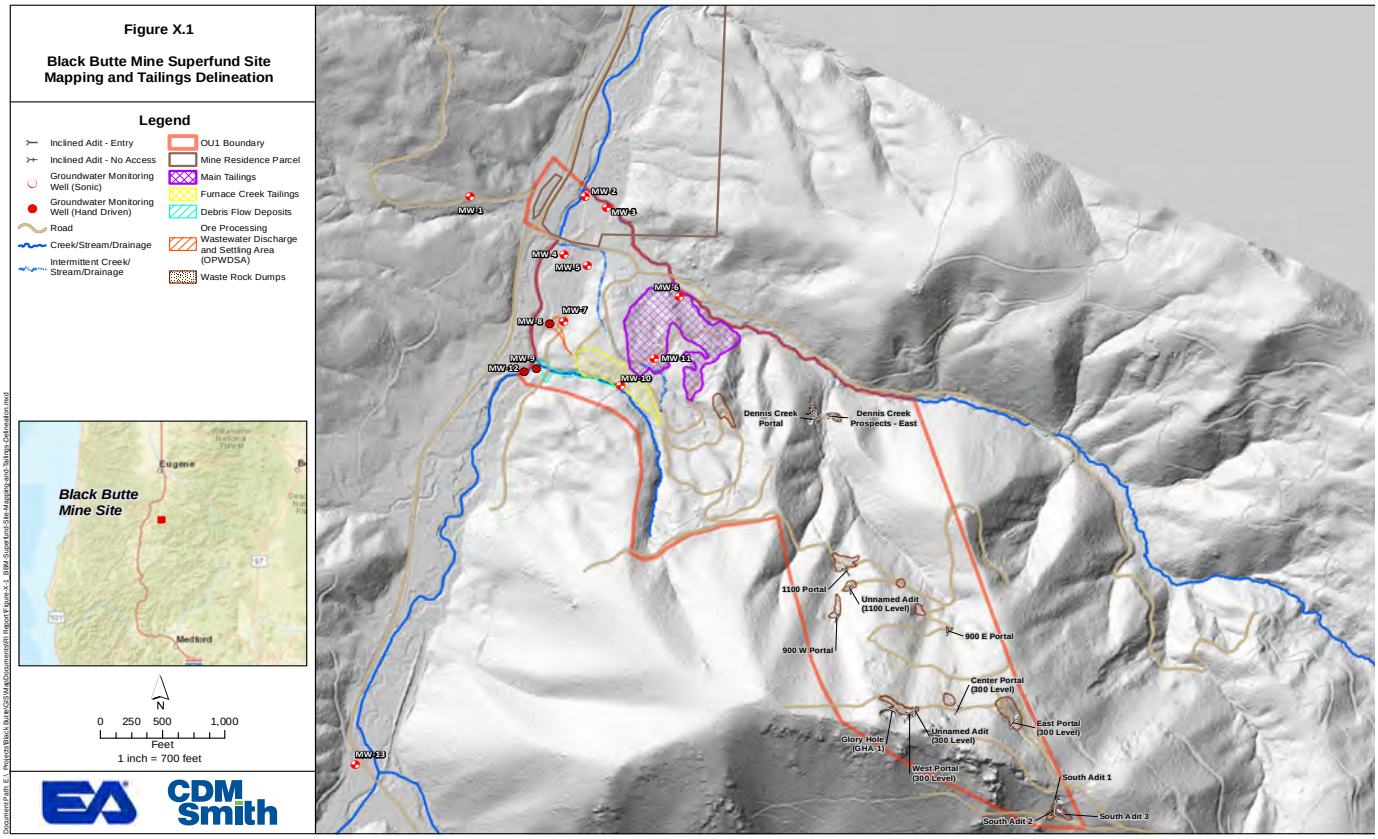

Figure 1 – Black Butte Mine Superfund Site Features Map

Waste materials at the site, such as waste rock and tailings, contain mercury and other metals that are harmful to people if ingested. The waste rock and tailings continue to erode, releasing mercury into the headwaters of the Coast Fork Willamette River. These mercury-contaminated particles are transported downstream and deposited in Cottage Grove Reservoir.

In the reservoir, inorganic mercury from the site is converted to the more toxic methyl mercury and becomes concentrated in fish tissue. Eating mercury-contaminated fish is a public health concern, so the Oregon Health Authority issued a fish advisory for Cottage Grove Reservoir. Due to its ongoing significant contribution of mercury to sediment and fish tissue, Black Butte Mine was added to EPA's National Priorities List in 2010, making it eligible for federal funds for investigation and long-term cleanup. Historical releases of mercury will remain in the sediments in the reservoir, even after the source at Black Butte Mine has been cleaned up.

A project team, comprised of EPA and State of Oregon scientists and engineers was formed to investigate and cleanup the site. Initial investigation activities are focused on the mine site (also called Operable Unit 1 or OU 1). Future investigations will focus on downstream areas that are impacted, including the Coast Fork Willamette (OU 2) and Cottage Grove Reservoir (OU 3).

Project Status and Recent Developments

The project team has completed a number of actions and investigations at the mine site in recent years. Key accomplishments to date included an early cleanup action in 2007 to stabilize contaminated mine wastes and reduce delivery into the downstream watershed, and field investigations and data collection from 2012 to 2017. More information on these activities can be found in past project updates located at (URL)

Recent and upcoming milestones include completion of data collection activities, preparation of a remedial investigation report, and implementation of another interim cleanup action. These milestones are discussed in more detail below.

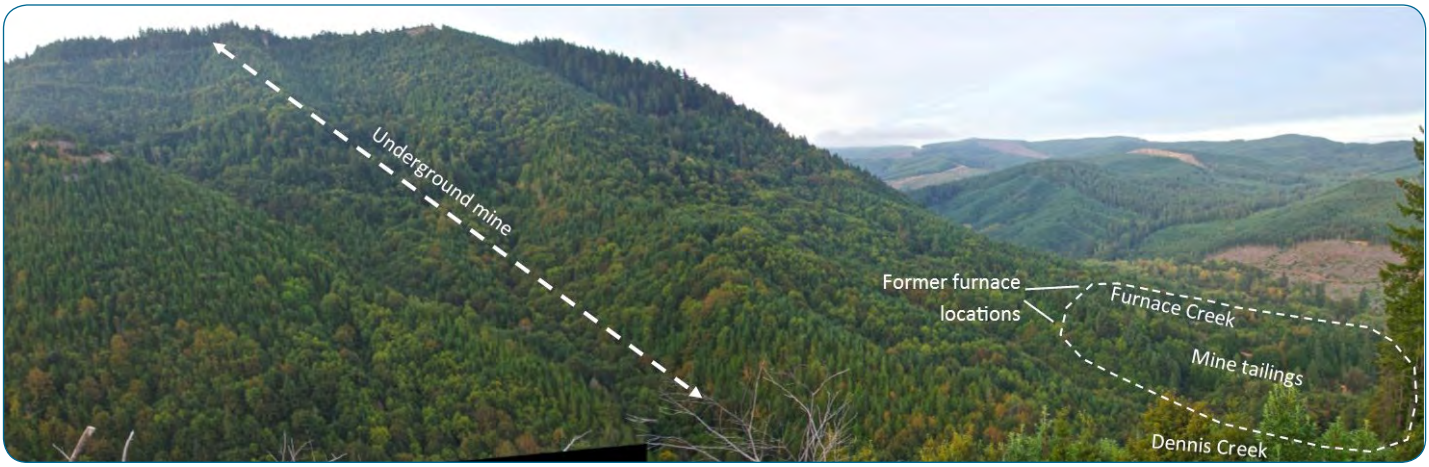

Figure 2 – 2016 photograph of the Black Butte Mine Superfund Site with a view to the south showing locations of main features obscured by trees

Data Collection

In summer 2016, field mapping and screening of rock and soil for metals was conducted to determine the extent of mine waste rock and tailings. As part of the field mapping, the location and condition of underground mine entrances were examined. In fall 2016, systematic soil sampling over the waste rock, tailings, furnace areas, and non-mine areas were completed and samples were analyzed at the laboratory to determine metal concentrations in soil at each of these areas. Samples of building materials, such as brick, concrete and wood, were also collected from the remnant structures at the former ore processing furnace areas. In early 2017, surface water was sampled at Furnace, Dennis, and Garoutte Creeks during a storm event to further evaluate the source and loading of mercury to the watershed.

Remedial Investigation Report

Figure 3 – View into the West Portal 300 Level of the mine

A Remedial Investigation Report (or RI Report) is now being prepared for the Black Butte Mine site, and the expected completion date for this report in early 2018. This report will summarize the findings of all the site investigations and data collection activities that have been completed. This report will describe the nature and extent of contamination, and include the results of human health and ecological risk assessments. Once this report is complete, a feasibility study report will be prepared to evaluate options for cleaning up the site.

Figure 4 –
Field screening soil for metals using an X-ray fluorescence (XRF) analyzer.

Sampling building materials from one of the former furnace areas. Figure 5 –

Figure 6 –
EPA warning sign posted near one of the former furnace areas.

Interim Cleanup Action

Recent studies show that Cottage Grove Reservoir continues to receive significant amounts of mercury from upstream sources, especially after heavy rainfall. Mine tailings in a three-acre area portion of the site, adjacent to Furnace Creek, are the most significant source of mercury continuing to enter the watershed. To address the most significant remaining source of mercury, EPA is continuing to plan an interim cleanup action at Furnace Creek.

An Engineering Evaluation and Cost Analysis (EE/CA) for the Furnace Creek area was prepared in 2016. This document evaluated alternatives for cleanup. In the fall of 2016, EPA proposed an interim cleanup action at Furnace Creek. The proposed action is to excavate mercury-containing mine tailings, soil, and sediment within the Furnace Creek drainage and place the excavated material in an existing on-site repository. The excavated areas will be graded and revegetated to stabilize the bank slopes, which will reduce further erosion of mine materials into Furnace Creek. This approach will remove the primary source of mercury contamination and reduce the amount of mercury being transported to the downstream watershed. To learn more about the recommended interim cleanup action, the alternatives considered, and the detailed evaluation of their effectiveness, you can read the EE/CA online. (https://go.usa.gov/xNHt4)

Public comments were invited on the proposed action in fall 2016, including a public meeting held at the Cottage Grove Community Center to take spoken and written comments on September 14, 2016. Approximately 17 individuals participated in the public meeting, and EPA received a total of six comments during the comment period from individuals and organizations. Commenters expressed concerns relating to mercury contamination and the proposed cleanup action, and made suggestions to add to or modify the proposed cleanup action. Most commenters requested clarification or asked questions on topics including methods of work, use of local resources, schedule and site restoration. EPA's action memorandum will include a responsiveness summary with written responses to all public comments received.

EPA, with support from the Oregon Department of Environmental Quality (DEQ), is now in the process of preparing a decision document to select the interim cleanup action in the Furnace Creek drainage. Once the cleanup alterative is selected, the project team will refine the design and develop an implementation plan, with the intent of having this project "shovel-ready." The actual implementation will depend on the availability of funding, but may occur as early as 2018.

For More Information

More information about the Black Butte Mine, including previous project updates, can be found at: www.epa.gov/superfund/black-butte-mine or the Cottage Grove Library, 700 E. Gibbs Avenue, Cottage Grove.

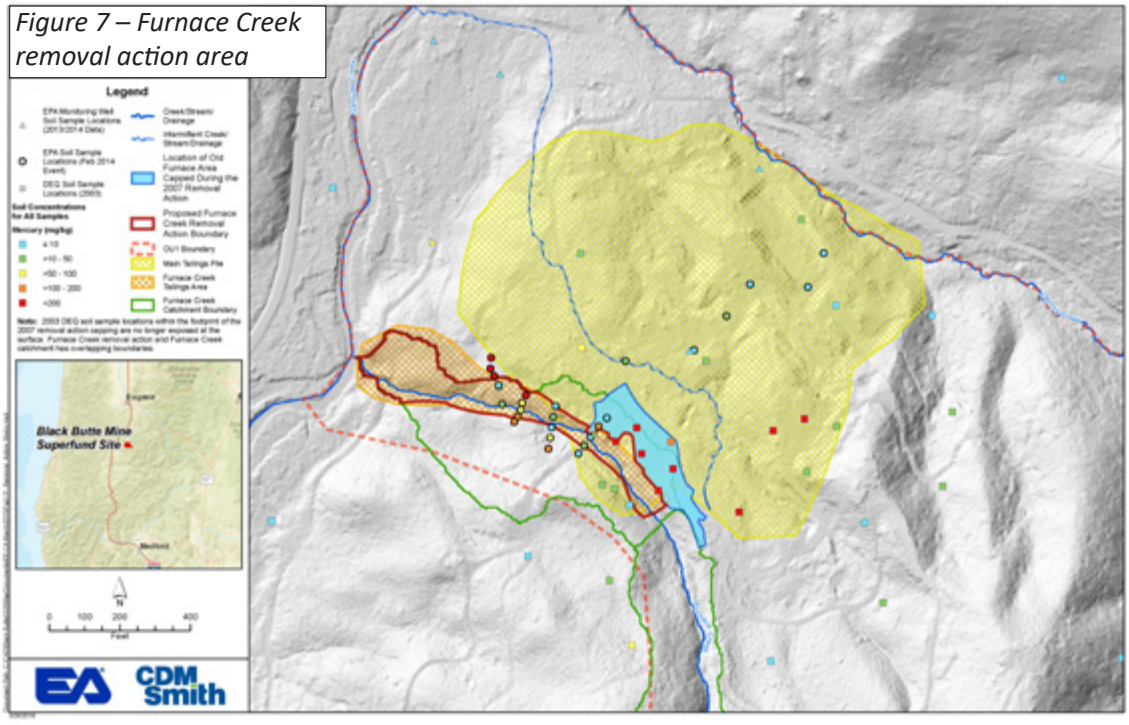

Figure 7 – Furnace Creek removal action area