



United States Environmental Protection Agency  
Region 8 Emergency Response Unit  
Denver, CO



**Report:** Camp Bird Removal Objectives and Estimated Costs

**Date:** 12/21/2016

**Site Name:** Camp Bird Mine

**Site ID:** A8H9

**On Scene Coordinator:** Martin McComb

**Contact:** [mccomb.martin@epa.gov](mailto:mccomb.martin@epa.gov)

**Website:** <https://epaosc.org/campbird>

**Notice:** Preliminary Information

**Category:** Site Description

**Last Updated:** 11/17/2016

The Camp Bird is a famous gold mine located near Ouray, CO. A large amount of mine waste is located at the entrance to the mine's Level 14. Three water bodies run in direct contact to this mine waste: Sneffels Creek, Imogene Creek and Canyon Creek (which is formed by the confluence of Sneffels and Imogene Creeks).

*Aerial View of the Camp Bird Mine at the Entrance to Level 14 in 2002<sup>1</sup>*



<sup>1</sup> Source: Mining History Association, <http://www.mininghistoryassociation.org/CampBird.htm>.

**Notice:** Preliminary Information

**Category:** Removal Site Evaluation

**Last Updated:** 12/06/2016

EPA response personnel have visited the site during a variety of stream flow regimes. Mine waste containing heavy metals is being actively eroded into Sneffels Creek, Imogene Creek and Canyon Creek. There is a potential that this erosion may dramatically increase due to increased runoff, streamflow and/or the mass failure of existing slopes. Although some areas at the site are included in an existing mining permit with the State of Colorado, the mine is in bankruptcy and is not being maintained.

Circumstances at the Site meet the requirements for a removal action under Section 300.415(b)(2) of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP).

*Contaminated Material Entering Canyon Creek at the Camp Bird Mine*



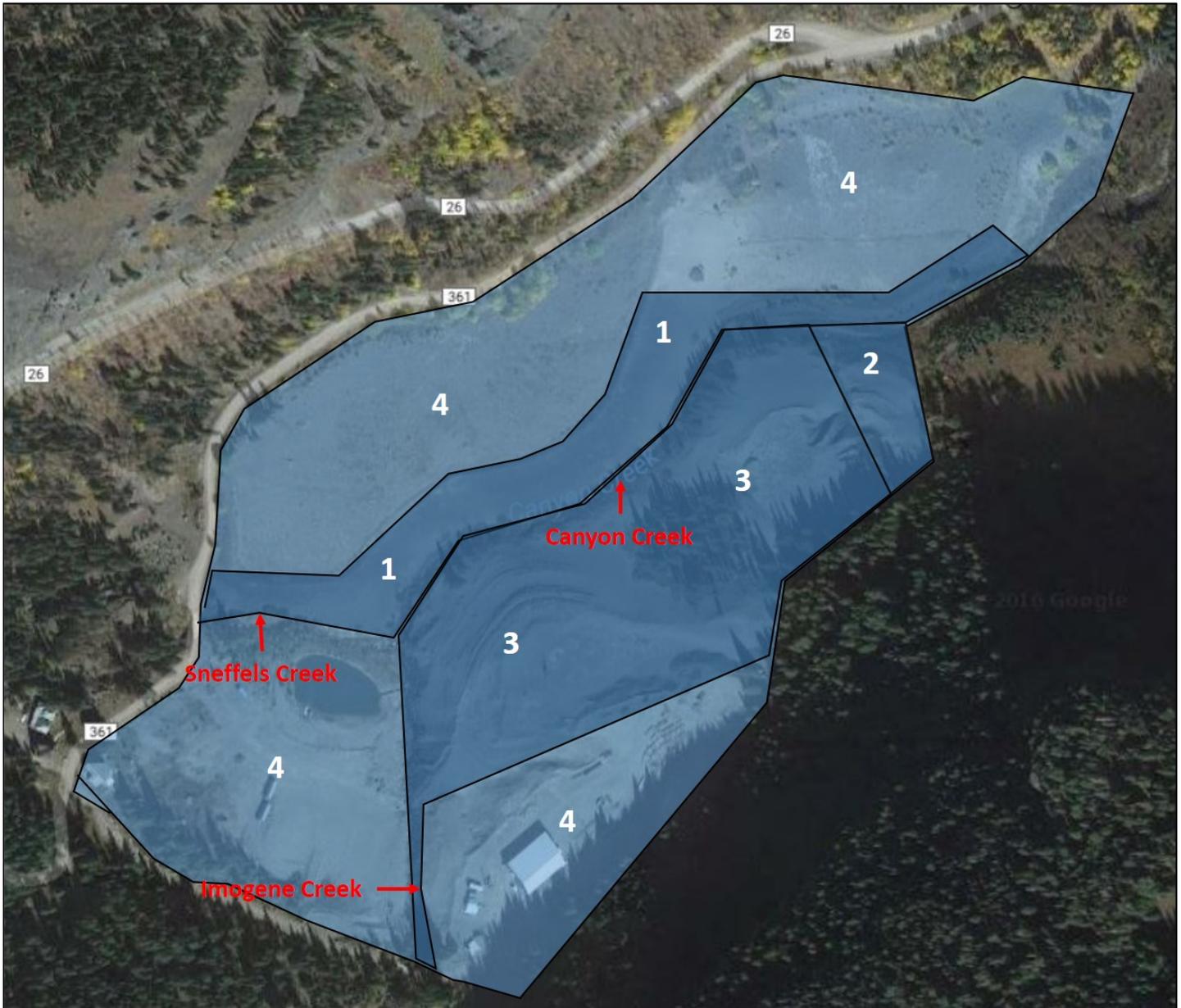
**Notice:** Preliminary Information

**Category:** Removal Action Objectives

**Last Updated:** 12/21/2016

EPA's On Scene Coordinator has established the following minimum objectives for a removal action at the Camp Bird Mine Site. These objectives may change if new land use patterns develop or additional information changes the On Scene Coordinator's assessment of threats to public health and/or the environment.

*Areas of Interest at the Camp Bird Site*



**A. Stabilize the slopes of the existing tailings deposits.**

The area to the north of both Sneffels Creek and Canyon Creek contains a large tailings deposit. This area is generally included in an existing mining permit with the State of Colorado but the property is in bankruptcy and the area is not being maintained. The slopes of this tailings deposit are too steep, not well covered and are showing signs of instability. These slopes are depicted in Area 1 of the attached diagram.

The slope of the tailings deposit along Sneffels Creek upstream of its confluence with Canyon Creek shall be regraded to pull the toe back away from the creek.

All slopes in Area 1 shall be stabilized by: 1) re-grading the slopes to support the installation of topsoil and/or compost and revegetation and/or 2) installing erosion fabric that is keyed in at the top and bottom of the slopes. This erosion fabric will be covered with large rip rap at the base of the slopes along the creeks and smaller rip rap towards the top. Much of this rip rap material may be harvested from Level 3 of the Camp Bird Mine workings.

#### **B. Remove the downstream mine waste deposit.**

The waste deposit that is furthest downstream on the south side of Canyon Creek is uncovered and bisected by a side drainage which is actively eroding the deposit. This area is not included in the existing mining permit with the State of Colorado.

The waste deposit east of the side drainage (as roughly depicted as Area 2 in the attached diagram) shall be removed and consolidated with the waste on the west side of the side drainage (Area 3). The disturbed area shall be amended with topsoil and/or compost and revegetated. Erosion control features shall be constructed and the side drainage shall be stabilized with rip rap. This rip rap material may be harvested from Level 3 of the Camp Bird Mine workings.

#### **C. Regrade and stabilize the mine waste deposits.**

The large waste deposits south of Canyon Creek and between Imogene Creek and the side drainage (roughly depicted as Area 3 in the attached diagram) are uncovered and adjacent to both drainages. This area is not included in the existing mining permit with the State of Colorado. The waste deposits in Area 3 shall be excavated back away from Imogene Creek, Canyon Creek and the side drainage. The waste deposits shall be regraded to support vegetation and waste material shall be consolidated upland away from the creeks. Erosion control features shall be installed across the entire area and uncovered areas shall be amended with topsoil and/or compost and revegetated.

#### **D. Stabilize the Drainages**

The choke point in Canyon Creek shall be removed and the banks of Sneffels Creek, Imogene Creek and Canyon Creek drainages shall be armored with rip rap. All three drainages shall be restored with vegetation and erosion control features to accommodate 100-year flood events.

#### **E. Post-Removal Site Control**

All features constructed to support Objectives A, B, C and D shall be maintained. In addition, the areas outside of this removal action yet within the existing mining permit with the State of Colorado (roughly depicted as Area 4 in the attached diagram) shall be regraded, revegetated and/or otherwise restored to prevent long-term erosion should those areas no longer be used to support mining activities.