

Closure Planning at Kennecott Utah Copper

Planning for the closure of the Bingham Canyon Mine and associated facilities is an important part of our business planning at Kennecott Utah Copper. While there is tremendous opportunity to develop the landholding around the mine, mill, smelter, refinery, and tailings impoundment, we must also plan for the rehabilitation or the long-term management of land that has been disturbed by mining and processing. We've recently asked our closure planning team a few questions about reclamation and closure.

When will Kennecott stop mining at Bingham Canyon?

Our current plans include mining through 2019. However, we are diligently looking at plans that will allow us to continue mining the open pit beyond 2019. The life of Bingham Canyon could be shortened or extended based on metals prices. In addition, as advances in mining technologies allow us to economically reach deeper ore, the life of the mine could be prolonged.

Why is Kennecott talking about closure now?

It is best practice and a regulatory obligation in the modern mining industry to plan the closure of a mine before it is ever opened. Although there has been mining at Bingham Canyon for more than 100 years and it looks like there are many years left, planning for closure now allows us to adjust mining practices to minimize the costs of closing the mine, lessen the environmental impact, and facilitate the re-use of mining-affected land. It also allows us to look at the relationship that we have with the community as an employer, purchaser of goods and services, taxpayer, and charitable contributor, and plan measures that smooth the socioeconomic impacts of mine closure.

What government agencies regulate mine closure at Bingham Canyon?

A number of government agencies regulate environmental matters at Kennecott. We work primarily with two state agencies in planning for closure of the Bingham Canyon mine. The Utah Division of Oil, Gas and Mining is responsible for regulating mining under the 1975 Utah Mined Land Reclamation Act. Kennecott filed its first Mining and Reclamation Plan with the Division in 1976. That plan, which describes reclamation at the Bingham Pit and Waste Rock areas, South Tailings Impoundment, and some processing facilities was last updated and approved in 2003. Kennecott also has separate approved reclamation plans for the North Tailings Expansion and the Copperton Concentrator.

We also have permits with the Utah Division of Water Quality, which is responsible for protecting surface and groundwater quality. Many of Kennecott's facilities have a Groundwater Discharge Permit, which specify water management practices for the active operation and require monitoring after the facility closes.

Where can the public view a copy of the Kennecott closure plan?

Kennecott's Mining and Reclamation Plans are available for review in the Public Information Center at the Division of Oil, Gas and Mining, 1594 West North Temple, Suite 1210, Salt Lake City, Utah, 801-538-5283.

Does being a part of Rio Tinto influence closure planning at Kennecott?

Rio Tinto is the parent company of Kennecott Utah Copper and Kennecott Land. As part of Rio Tinto, Kennecott Utah Copper adheres to the Rio Tinto Closure Standard, which aims to influence the design, development, operation and closure of all group operations. This is to ensure the best possible outcome to closure in terms of social, environmental and economic development needs and expectations. We believe that our legacy at Bingham Canyon may well determine Rio Tinto's future access to land, people and capital at other mining sites. Our mining and closure plans also follow the Rio Tinto Environmental Standard for Acid Rock Drainage Prediction and Control.

The Rio Tinto closure standard requires all operations to have closure plans. Rio Tinto reviews these plans regularly to ensure that they remain relevant. Kennecott's closure plan was most recently reviewed against the standard in 2006 and complied with the standard.

The Rio Tinto closure standard is at:

www.riotinto.com/documents/ClosureStandard.pdf

The Rio Tinto Acid Rock Drainage Prediction and Control is at:

www.riotinto.com/documents/ARD_control_Sep03.pdf

Information on Closure and Legacy is at:

www.riotinto.com/ourapproach/7167_closure_legacy_2007.asp

What is acid rock drainage?

By some accounts, acid rock drainage is the number one environmental concern that the metal mining industry faces. The ore body and surrounding rock at Bingham Canyon contains pyrite, or fool's gold, and certain other sulfide minerals. When exposed to air, water, and certain native bacteria, these sulfide minerals dissolve in water and cause 'acid rock drainage' or 'ARD.' Besides being acidic, this water can have high concentrations of sulfate and heavy metals including aluminium, iron, manganese, and copper. ARD must be controlled to prevent pollution.

Does Kennecott provide a financial guarantee for reclamation?

The Utah Mined Land Reclamation Act requires mine operators to provide a financial guarantee (or surety) for reclamation of all mining operations. Several forms of surety are acceptable to the Division of Oil, Gas and Mining. For the Bingham Canyon Mine and South Tailings impoundment, Kennecott has entered into a reclamation contract with the Board of Oil, Gas and Mining. We have also posted surety bonds issued by third-party providers for reclamation of the Copperton Concentrator and North Tailings Expansion.

BINGHAM PIT

What does Kennecott plan to do with the pit when the mine closes?

After closure, the Bingham Canyon Mine, which is listed on the National Register of Historic Places, will look essentially as it does today. Kennecott is required by the Mining and Reclamation Plan approved by the Division of Oil, Gas and Mining to assure that the walls of the Bingham Pit are stabilized and that all unneeded facilities are removed. We will have only very limited opportunity to revegetate the pit slopes because they are generally bare rock, extremely steep, and inaccessible.

After closure, we will continue to pump and manage water from the pit in order to maintain a dry pit or a small lake at the pit bottom. This is necessary because some of the rock in the pit walls contains pyrite, and could generate acid rock drainage. By maintaining a dry pit, we expect that water pumped from the pit will have neutral pH, and with treatment to remove sulfate and iron could be beneficially used.

WASTE ROCK EMPLACEMENTS

What is waste rock?

Waste rock is any rock that does not contain economic mineral grades and needs to be excavated and moved to access ore. Mining at Bingham Canyon has generated nearly 5 billion tons of waste rock, and could generate 2 to 3 billion additional tons before the mine closes. Waste rock has been placed in the canyons and drainages surrounding the Bingham pit and covers approximately 5,100 acres. The waste rock emplacements are the yellow-orange, barren, flat-topped, and steep-sloped features visible from Salt Lake and Utah valleys.

Will Kennecott reclaim the waste rock emplacements?

The waste rock disposal areas are known as “emplacements”. These emplacements are the permanent repositories for this rock. Kennecott’s approved Mining and Reclamation Plan requires that the waste rock emplacements be left in a stable condition. Beyond this requirement, Kennecott’s closure objectives for the waste rock emplacements are to create conditions that minimize the amount of rain and snowmelt that soaks into the emplacements and minimize visual impact. Closure work that has been completed or is planned for the waste rock emplacements includes:

- Reclamation has been completed on 330 acres of older waste rock emplacements, which included regrading, covering with topsoil, and revegetation. These include the lowest waste rock slopes just south of Copperton.
- Reclamation of the outer slope of recently placed waste rock in Bingham Canyon is nearing completion. Top soil salvaged from the canyon before waste rock placement will cover the regraded outer slope and be seeded with grasses, shrubs, and trees.
- Regrading of for approximately 4,100 acres of waste rock, including 900 acres that currently have favorable soil conditions that will allow revegetation.
- Segregation of newly mined waste rock that has characteristics that will allow vegetation to grow. This material has been stockpiled for later use in reclamation.
- Placement of future waste rock in a manner that makes it easier to flatten out slopes (shorter bench heights and greater bench setbacks).

Nevertheless, we are not planning to reclaim many of the taller waste rock slopes that face the Salt Lake Valley due to environmental considerations. To regrade these slopes, we would need to push waste rock out several hundred feet toward the valley covering not only natural areas that provide wildlife habitat, but also critical water pollution prevention structures at the toe of the emplacements. Suitable plant growth material is not readily available to cover the regraded slopes so that vegetation could be established. The increased footprint would increase the amount of precipitation that infiltrates the dumps, increasing the amount of acid rock drainage that we need to manage. The aesthetic benefit of regrading the waste rock does not justify the potential detriment to the environment.

Why doesn’t anything grow on the waste rock?

The weathered surfaces of the waste rock emplacements are generally acidic and have high salt content due to the chemical reactions associated with acid rock drainage. These soil conditions prevent plants from growing. However, over time, soil conditions improve as rain and snowmelt rinse the salt content from the surface.

Is erosion a concern for the waste rock emplacements?

The steep, barren slopes of unreclaimed waste rock are subject to erosion. The waste rock generally develops a hard crust as it weathers which prevents wind erosion, but severe rainstorms can erode waste rock. We have constructed sediment basins at the toe of each waste dump on the east and south sides of the pit to collect eroded material.

Are the waste rock emplacements stable?

We are required by our Mining and Reclamation Plan approved by DOGM to maintain the waste rock emplacements in a “safe and stable” condition. We periodically reassess the stability of the waste rock emplacements in terms of potential for erosion of near surface waste rock as well as the potential for deeper failures under both static and earthquake conditions. Initial indications from our latest review are that the risk of deep-seated failure is low. As a result of severe thundershower events, we have had off-site releases of sediment due to surface erosion of waste rock. In response to a recent release, we have implemented

additional sediment controls and are undertaking further study of practices that may enhance the robustness of our sediment control systems.

What is leaching? Does Kennecott leach the waste rock dumps today?

Beginning in the 1920s, early miners at Bingham Canyon began applying water to waste rock piles to dissolve, or leach, the low grades of copper in the waste rock. They collected and processed the leach water from the toe of the piles to recover the copper. The leach system was upgraded and expanded over the years. However, in 2000, we stopped the application of water on the waste rock. Rain and snowmelt continue to infiltrate the waste rock and we continue to capture this water at our collection structures.

How does Kennecott manage acid rock drainage now? What about after closure?

We collect and treat water that contacts the waste rock to prevent pollution. A series of 29 acid-resistant concrete walls have been constructed in the drainages below the waste rock emplacements on the east and south side of the pit. These walls extend below the surface to bedrock and capture surface water and shallow groundwater. We continue to recover copper from this water, then mix the acidic water with mill tailings to neutralize the water.

After closure, we will continue to collect water that contacts the waste rock. We will construct a new water treatment plant before closure to neutralize the water so that it meets all regulatory standards.

Could there be development on the waste rock emplacements?

If and how redevelopment around the mine will occur will be a consideration in Kennecott Land Company's long-term West Bench planning.

TAILINGS IMPOUNDMENTS

What are tailings?

Tailings are the material left over after the majority of the valuable metals have been removed from the ore extracted from the Bingham Canyon Mine. The rock is crushed and ground until it is the consistency of fine sand. The ore is then separated from the tailings using a separation process. Tailings are transported to the tailings impoundment as mud-like slurry where the solids settle out and the water is recovered and reused in our operations. Tailings storage in the south impoundment began in 1906. By 2001, all active tailings deposition completely ceased and transitioned to the new north impoundment.

Are the tailings contaminated?

No, the tailings in the impoundment have a concentration of metals similar to soils found throughout the western United States but with a slightly higher concentration of copper.

Is reclamation of the South Impoundment complete?

We have reclaimed over 5,600 acres or 97% of the South Impoundment. Plants are successfully growing and now support a variety of wildlife and controls dust.

How will the North Impoundment be reclaimed?

We will begin to reclaim the North Impoundment several years prior to mine closure. As we did with the South Impoundment, dikes will be constructed to separate the impoundment into sections that will be reclaimed systematically. A section is allowed to dry until equipment can move onto the surface to spread mulch and seed. The outer slopes of the impoundment will be vegetated during the operating life of the impoundment.

Will the surface of the tailings impoundment be useable after mine closure?

The potential for redeveloping the surface of the impoundment will be considered in Kennecott Land Company's long term planning for the West Bench.

GROUNDWATER CONTAMINATION

Will groundwater remediation be completed by mine closure?

We are currently cleaning up a large plume of contaminated groundwater east of the Bingham Canyon Mine. We anticipate that this cleanup will take a number of decades and could last beyond closure of the mine. This has been anticipated in agreements that we have made with the U.S. Environmental Protection Agency and the Utah Department of Environmental Quality. As specified in the *South Facilities Groundwater Operations, Maintenance, and Replacement Plan* which is part of a Federal Consent Decree, at least three years prior to closure, we must provide a plan for post-closure treatment of contaminated groundwater and construct the treatment system by the time of mine closure. We have provided \$15 million in financial assurance to EPA to assure that this work is completed. We will also be treating contaminated groundwater to produce drinking water for the community through at least 2046 under a settlement with the State of Utah for damage to natural resources.

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Send questions or comments to info-kennecott@riotinto.com