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Manh Choh drainage could be toxic to aquatic life

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The most consequential environmental issue in the development of a hardrock mine is the potential for waste rock, pit walls and tailings to generate sulfuric acid when exposed to oxygen.

If a new mineral prospect generates acid, the drainage from the mine site will become toxic to aquatic life in downstream habitats unless that water is contained and treated to neutralize the acid and precipitate dissolved metals. Acid mine drainage (AMD), as it is commonly referred to, can persist for hundreds or thousands of years after the mineral prospect has been exhausted and requires perpetual mitigation to preserve water quality downstream. Most hardrock mines and mine prospects in Alaska today are known or predicted to produce AMD. These include Red Dog, Greens Creek, Donlin and Pebble. And now, with the recent postings on the DNR Large Mines website, we know that the Manh Choh Mine will also generate AMD. A notable exception is the Fort Knox mine that does not generate AMD.

Prior to the establishment of the National Environmental Policy Act of 1969 and a series of subsequent environmental legislation, mining companies simply walked away from hardrock mines when they were finished. Many of these legacy mines remain toxic oozing sores on the landscape that are now under the care of the Superfund Program managed by the Environmental Protection Agency (EPA).

One of the largest and most damaging examples of this in the U.S. is an abandoned copper mine near Butte, Montana, and its central feature, the Berkley Pit. The giant pit and associated underground tunnels are full of highly acidic water (pH 2.5). The effluent from the mine has contaminated over 70 miles of the upper Clarks Fork River in the Columbia drainage. The EPA is restoring the river to its previous condition and is expected to continue treating the effluent from the pit lake for thousands of years to come.

Mining regulations in Alaska require the proponents of hardrock mines expected to generate

AMD to prepare a reclamation and closure plans that, among other things, would prevent the discharge of AMD. Further, the state requires an assurance bond that would eventually be allocated to future generations that would inherit the mitigation responsibilities for hundreds or thousands of years.

The reclamation and closure plan for the Manh Choh mine site, once the ore has been removed, is to move the waste rock back into the two pits and landscape the surface for stability and subsequent plant growth. The most reactive AMD waste rock will be in the bottom of the south pit below the level where the top of the groundwater is expected to reach. Submerging the reactive rock in water will minimize oxygen exposure and subsequent AMD. A thick layer of nonreactive waste rock will cap the reactive material and elevate the surface above the expected water level but not as high as the rim of the pit. Groundwater from the pit is expected to seep slowly into perennial streams that flow to the Tetlin Lake to the east and the Tok River to the west.

The proponents believe the AMD will be sufficiently diluted once it reaches surface waters that Alaska water quality standards will be achieved. They intend to monitor water quality from a series of ground and surface water test points on both sides of the Tetlin Hills for at least seven years following closure. The implication being that if water quality did not achieve their expectations, they would be required to create a more robust mitigation plan.

Ore from the Fort Knox mine does not generate AMD. As a result, the Fort Knox reclamation and closure plan is much simpler than for AMD producing mines and full closure is expected to be achieved in about 100 years following mining. Some Alaska mines, such as Red Dog and Donlin will require generations of people far into the future to mitigate the AMD production. But what happens to the Fort Knox closure plans after four to five years of processing AMD ore from the Manh Choh mine? Will Fort Knox then require perpetual mitigation of effluent? The Manh Choh documents suggest that Fort Knox will not require any additional permits or oversight to accept and process these AMD ore deliveries. Considering that no environmental assessment of this issue has been conducted, perhaps the DNR should reevaluate the Fort Knox closure plans and the associated assurance bond.

After all, the drainage from Fort Knox will flow downstream into the Chena River and right through Fairbanks.

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