



Working with Communities to Protect Their Land, Air, and Water

P.O. Box 207, Reno, NV 89504
775-348-1986, www.gbrw.org

January 28, 2018

Michelle Griffin
Nevada Division of Environmental Protection
Bureau of Mining Regulation and Reclamation
901 South Stewart Street, Room 4001
Carson City, Nevada 90701-5249

Re: *Renewal of Water Pollution Control Permit NEV2003107, Hollister Development Block Project*

Dear Ms Griffin,

Great Basin Resource Watch appreciates your assistance in gathering materials to review this permit renewal. We do have some concerns regarding this project and the permit as written.

Groundwater Monitoring

There needs to be at least in the schedule of compliance the addition of up and downgradient groundwater wells around the underground workings. The permit lists the following groundwater monitoring wells, W-E-1, DGW-1R, DGW-2A, DGW-2B, DGW-2C. None of these wells directly monitor the existing or proposed underground workings. According to geochemical analysis reactive rock will be exposed in the underground workings that is expected to degrade groundwater. The analysis goes on to conclude that most of the initially elevated constituents will decrease in concentration as fresh groundwater replaces the flooded underground workings and dilution occurs. Monitoring is needed to determine the extent of the degradation and whether the degradation is diminishing over time.

The underground workings monitoring wells must also be screened to sample the various hydrogeologic¹ formations that may exhibit different water chemistry.

Boundary of Compliance

The permit needs to clearly specify the boundary of compliance for the underground workings. The expectation is that there will be some level of groundwater degradation early on as the workings fill following the completion of mining, and that the contamination plume will travel downgradient. Thus, waters of the State would be degraded, which violates state law. Klondex Hollister Mine Inc. (KHMI) assumes that as long as the concentrations of various constituents is below NDEP standards at the mine project boundary, then there is no violation of state law. This needs to be clarified in the permit. Is the degradation of water only applied at the boundary

of the mine operation? And if, so what is the justification of this? Groundwater degradation has occurred at many other mines in Nevada within mine boundaries requiring action to be taken to arrest the degradation.

Waste rock

The Plan of Operations and the renewal application are unclear as to the management of the waste rock from the underground workings. The Fact Sheet¹ (p 5) indicates that the majority of the waste rock is acid generating, and the renewal application² states an in-situ treatment with dolomite of the waste rock in an attempt to arrest acid mine drainage. Based on the text in the renewal application it appears as though there will be a permanent waste rock facility and that a significant portion of the waste rock will be used to “backfill production stopes as they are mined.” The Enchemica³ report from 2010 states, “The underground workings will be backfilled with waste rock that will occupy an estimated 25% to 30% of the workings volume,” (p 4). The report goes on to say, “. . . backfilled waste rock will not be crushed or otherwise treated before placement in the underground workings . . . The backfilled waste rock will be stabilized by the emplacement of concrete every six feet,” (p 4, 6). The permit application does indicate a “concrete cap,” but it is not clear that concrete will be used every 6 feet. Is plan outlined in the 2010 report still being proposed?

GBRW is generally concerned about the acid generating aspects of the rock and ore at the site. The data available shows a strongly acid generating potential.⁴ Thus, long term management is a distinct possibility. Humidity tests conducted in 2004 show that the addition of dolomite is effective in the short term, but these test are not necessarily a good prediction of long term behavior. Due to the high potential for acidic drainage the Bureau should consider requiring a liner for the waste rock dump as an additional barrier and require a mitigation plan in the event of contaminant failure of the waste rock dump(s).

Groundwater Degradation

Degradation of groundwater seems definite as the underground workings are flooded during closure. The geochemical analysis anticipates that as the underground workings become flooded the acid generated from waste rock and the walls will react with any cementing material in the workings. The extent of cement will determine whether the acid is neutralized completely. In the scenario described in the “Technical Memorandum 3” from Brown and Caldwell⁵ there will exist sufficient cement material to neutralize acid generated and subsequent reactions are predicted to produce alkaline conditions in the long term. The analysis does predict exceedences of the following constituents: aluminum, antimony, chromium, selenium, thallium, sulfate, TDS,

¹ Nevada Division of Environmental Protection, Bureau of Mining Regulation and Reclamation (NDEP-BMRR), “FACT SHEET, Hollister Development Block Project,” 27 December 2017.

² NDEP-BMRR, “Water Pollution Control Permit NEV2003107 Renewal Application,” Hollister Project, Waterton Global Mining Company, LLC, October 2013.

³ Enchemica. 2010. Rodeo Creek Hollister Mine Underground Workings Water Quality Prediction. Prepared for Rodeo Creek Gold Inc. October 2008.

⁴ Hecla Mining Company, “Report on Modified Cell Kinetic ARD Potential Tests – Hollister Q+A/s Waste Rock Composites and Q+A/S – Dolomite Amendment Tests,” Performed by McClelland laboratories, Sparks Nevada, April 9, 2004.

⁵ Brown and Caldwell, “Predictive Simulations of Post-Mining Groundwater Transport of Water Quality Constituents from the Refilled Hollister Mine,” February 21, 2012.

and pH, with elevated levels of aluminum, thallium, sulfate and pH persistent up to 400 years. Additionally, both pH and aluminum are expected to exceed standards well past 400 years, potentially in perpetuity.

The renewal applications and associated Plan of Operations does not sufficiently describe the mitigation procedures to avoid violations of state law, degrading waters of the State. It is assumed based on the modeling from Brown and Caldwell⁵ that downgradient (from the workings) reactions and dilution will arrest the degradation. GBRW views this as insufficient as modeling is often wrong. There needs to be a more aggressive plan to arrest the groundwater contamination. GBRW is not convinced that the “existing mining plan” will optimally avoid the need for long-term treatment and potential violations of state law. GBRW strongly urges the Bureau to have KHMI explore ways to prevent groundwater degradation including subsurface barriers and pumping downgradient and treating the water to prevent the plume from advancing.

Conclusion

The Hollister site has had a history of high acid generating rock and contamination of groundwater. GBRW questions whether a project that will knowingly degrade groundwater should be permitted in the first place. We foresee the potential for very-long term management at this site with the block development project adding an additional need for management with the possibility of very long term treatment, possibly in perpetuity.

At this time, GBRW does not support the renewal of this Water Pollution Control Permit. GBRW is open to discussing these concerns with both the Bureau and Klondex Hollister Mine Inc.

Sincerely,

A handwritten signature in black ink that reads "John Hadder". The signature is written in a cursive style with a large, looping initial "J" and a long, sweeping underline.

John Hadder
Director