Letter 15

The Toiyabe Chapter of the Sierra Club
Nevada and Eastern California
PO Box 8096, Reno, NV 89507

One Earth,
One Chance.

2001 MAY -3 AM 8:15

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May 4, 2001

Pam Jarnecke
Bureau of Land Management
50 Bastian Road
Battle Mountain, Nevada 89820

RE: Phoenix Project Draft Environmental Impact Statement

Dear Ms. Jarnecke,

These brief comments represent a partial response to the Draft EIS on the Phoenix Project. They are not complete, but are submitted in three subject areas where I feel that the BLM clearly understands that severe problems exist, but, like the previous decisions on mines, are basing incorrect conclusions on proponent supported consultants. In Nevada as a whole, and the Battle Mountain BLM district in particular, very few clearly acid generating mines have been proposed. The promise has always been that the mines would not contaminate water, but in the case of the Battle Mountain Gold mines, groundwater quality impacts have occurred for many years, and have continued after the current 3809 regulations have been passed as well at the Nevada groundwater protection regulations in regard to mining. For both sets of regulations, the BLM has clearly failed to protect groundwater and has not managed the affected lands to prevent undue and necessary degradation. 15-1

But now we have a new mine that is profoundly acid generating, and probably the most contaminating mine ever proposed in Nevada. Although the generation of acid is recognized in the DEIS, the same tone of the analysis is present. The BLM seems to trust BMG (Newmont) that this mine is still not going to cause additional and serious ground and surface water contamination. The mine will indeed increase the environmental problems at the mine, and leave an increased long-term source of contamination that even Newmont may not be able to fund in the decades ahead. Ultimately, it probably will become the responsibility of the BLM again.

1. Refilling the pit: The DEIS proposes to refill the pit to the water table with reactive rock, with the idea that once it is submerged, the rock will no longer generate acid. In previous BLM documents, refilling the pits (even in dry pits) was discarded as an option because the rock surfaces would result in contamination of the groundwater as meteoric water rinsed the surfaces. But now we are to believe that this option is acceptable. In fact, the acid generating 15-2

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15-1 The BLM believes that the Proposed Action provides a comprehensive operations/reclamation plan that would address many current conditions and prevent undue or unnecessary degradation by the new facilities. Additionally, financial assurances would be in place before startup of the Proposed Action to ensure funding of reclamation and potential ground water mitigation, if necessary.

15-2 The waste rock to be backfilled in the submerged portion of the pits would be amended with neutralizing and reducing reagents to minimize the impact to downgradient ground water quality. Potential impacts to ground water under the Proposed Action were fully evaluated in the EIS using conservative modeling methods. Results of that evaluation show impacts to ground water are possible, though not necessarily likely. In any event, impacts to water resources from the backfilled pits would be mitigated under the Contingent Long-term Groundwater Management Plan (Brown and Caldwell 2000c).

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15-2 surfaces will almost certainly and severely contaminate groundwater. However, the pit will be filled with reactive rock and effectively no methods for treating that water will be available.

15-3 Instead, the pit should be left open and allowed to fill with water. While it will be very acidic, lime can be added aggressively to reduce metals and sulfate loading. Once the pit chemistry has stabilized and filled, the amount of lime required to be added can be decreased over the years, similar to what the Sleeper Pit lake is experiencing. However, if the waste rock is added prior to filling, there will effectively be no method for neutralization. The groundwater will ultimately return to the premining gradient and flow through the filled pit and rinse many of the contaminants out of the pit area to springs and groundwater down gradient.

15-4 Another option is to pump the pit area *in perpetuity* to keep the water table lowered. This option may be a less expensive method over the long term, but would require up front bonding for the long term pumping. Even my good friends at Exponent will agree that water quality in the filled or unfilled pit will be poor and ultimately will flow downward and contaminate and degrade groundwater, unless it is pumped forever.

15-5 The Exponent staff now also understand that when a groundwater table is lowered in sulfidic rock, oxidation takes place in the dewatered cone of depression and represents a very large reservoir of contaminants that will be rinsed into the pit area (filled or not). It is insufficient to only consider the waste rock surface in the pit, and any analysis of the eventual water quality must consider the oxidations that occur in the dewatered wall rock volume. This is, in fact, occurring from seeps in the Fortitude Pit area (page 3.2-75), although it appears to be neutralized by a limestone formation present in the pit bottom. The seeps are a good indication that oxidations occur in the wall rock and are likely to affect groundwater quality substantially during refilling and after the pit area water table has been re-established. This is illegal under Nevada groundwater regulations.

15-6 2. The heap closure discussion is similar to the analyses presented in EA's and EIS's 5-10 years ago. But we all know better now, particularly after the recent series of heap closure workshops organized by Dirk van Zyl and attended by several BLM employees. Heap drainage after closure is virtually certain, and the water quality in those heaps is poor. Unless data are available to the contrary, the BLM should assume that the heaps in the Battle Mountain area will act similarly. Closure plans should include how that water will be managed. The discussion of Heap Leach Facilities on page 3.2-57 is devoid of any current understanding of the problems of heap closure and really needs to be modified to discuss how the long-term drainage fluids will be managed. Referring to the Nevada regulations is not acceptable, since the state really does not have any regulations, and appears to allow almost any method of management of the water, including drainage into the subsoil in French Drains. The EIS indicates in several places that the heaps are "zero-discharge" facilities. This statement is false, except during the operation of

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15-3 Leaving the pits open would add other potentially significant impacts to the proposed project. The area required for surface-deposited waste rock facilities would increase substantially. The area of the long-term residual drawdown cone also would increase due to ongoing evaporative loss from the pit lakes.

15-4 Pumping the pit(s) in perpetuity would be similar to the drainage conduit alternative that was initially considered for the Phoenix Pit but was subsequently eliminated; the drainage conduit alternative is discussed in Section 2.5.2.1 of the EIS. The discharge management issue from perpetual pit pumping would be similar in that high concentrations of metals and sulfate would be expected. Another impact of the perpetual pit pumping scenario would be a greatly expanded long-term cone of depression in ground water, which could result in increased impacts to flows in springs and streams. Another potential impact would be the increased footprint of surface-deposited waste rock facilities. The combination of amending submerged waste rock and long-term ground water monitoring with contingent recovery make the Proposed Action a more reasonable and appropriate alternative.

15-5 As suggested in the comment, some oxidation of sulfide-bearing rock would occur in the pit walls exposed during mining and, to a lesser extent, within the mass of fractured bedrock dewatered during mining. The amount of oxidation products released from the rocks within the cone of depression would likely be small relative to the quantity of oxidation products that could potentially be released from the waste rock material. Assuming sufficient moisture and sulfide minerals are present, the rate of sulfide oxidation in the rock mass would be controlled by the availability of oxygen. The bedrock that would be exposed in the pit walls and the rock mass within the cone of depression has a significantly lower specific yield or effective porosity (average of 1 to 2 percent [Baker Consultants, Inc. 2000a, Table 3.4]) compared to the waste rock material (average of 25 percent [Exponent 2000a, Appendix B3]). This low effective porosity and correspondingly low permeability would restrict oxygen diffusion and limit the rate of sulfide oxidation in the intact rock mass. Another key factor affecting the rate of oxidation is particle size; smaller rock fragments oxidize faster because of greater exposure surfaces. Unlike waste rock piles, the intact rock within the cone of depression is not composed of relatively small rock fragments with large surface areas; sulfide minerals would likely be exposed and susceptible to oxidation primarily in the pit walls and occasional open fractures in the rock mass. The time of exposure is also a key factor in determining the amount of oxidation that could occur. The pit surfaces would be exposed for a relatively short period prior to backfilling, which would limit the amount of sulfide oxidation in the pit walls (Exponent 2000a, Appendix B3). The partial recovery of the water table that is predicted to occur also would limit the potential exposure period for rocks within the drawdown cone.

In summary, the low permeability, limited surface exposure, and limited exposure times would likely restrict the rate of oxidation and limit the release of oxidation products from the pit walls and cone of depression. Therefore, effects from oxidation in the pit walls and the surrounding cone of depression would not likely be measurable above the predicted effects of the pit backfill and surface waste rock facilities. Oxidation products released from the pit walls and the surrounding cone of depression would likely enter the amended pit backfill materials and downgradient ground water. Effects of oxidation within the pit walls or cone of depression that are large enough to degrade ground water would be detected during monitoring, and such effects would be managed through the Contingent Long-Term Groundwater Management Plan (Brown and Caldwell 2000c), incorporated into the Proposed Action. Consequently, no violation of Nevada ground water quality regulations is anticipated.

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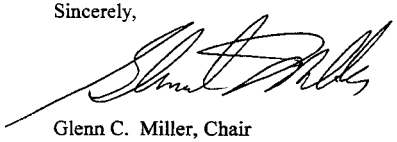
15-6 the facility. The BLM needs to clearly indicate how the fluids will be managed following closure.

15-7 3. The BLM should look at Newmont's Rain waste rock dump to determine how well acid-generating waste rock dumps are managed by Newmont. This large dump was supposed to be capped and managed to minimize acid release. It is now releasing large amounts of acidic and contaminated water, and will continue to do so for the foreseeable future. A statement is made on page 3.2-57 that suggests that the MWMP test can predict the water quality of waste rock seepage. As I have stated in several previous EIS's, if this is the case, the BLM should show that this test has been validated as a test for drainage water quality. Waste rock dumps that contain sulfides should be designed to capture those acids that drain from the waste rock dumps and bonded for *in perpetuity* treatment. As has occurred as several other sites in the Fortitude area, acids are generated and are causing surface and groundwater impacts.

Sincerely,



Glenn C. Miller, Chair
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15-6 Closure of the heap leach facility is discussed in Section 2.4.21.8 of the EIS, and options for managing heap draindown fluids are referenced. Management of heap draindown fluids also is discussed in Section 6.1 of the Phoenix Project Plan of Operations (Brown and Caldwell 2000h), and costs for management of heap draindown using forced evaporation equipment have been included in the reclamation bond estimate. Draindown management options would be reevaluated when a final closure plan is developed for the project, based on additional data developed during project operations.

15-7 The Proposed Action includes a Contingent Long-term Groundwater Management Plan (Brown and Caldwell 2000c) that provides assurance that oxidation products that may migrate from waste rock facilities would be captured. The referenced statement on page 3.2-57 on the Draft EIS refers to surface runoff from waste rock facilities; the results of MWMP tests were not used to represent waste rock seepage water quality.