

US EPA ARCHIVE DOCUMENT



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION IX  
75 Hawthorne Street  
San Francisco, CA 94105

March 26, 2012

Kathleen Rehberg  
Bureau of Land Management  
Winnemucca District Office  
5100 E. Winnemucca Blvd.  
Winnemucca, Nevada 89445

Subject: Draft Environmental Impact Statement for the Hycroft Mine Expansion Project, Humboldt and Pershing Counties, Nevada [CEQ# 20120016]

Dear Ms. Rehberg,

The U.S. Environmental Protection Agency has reviewed the Draft Environmental Impact Statement for the Hycroft Mine Expansion Project. Our review and comments are provided pursuant to the National Environmental Policy Act, the Council on Environmental Quality Regulations (40 CFR Parts 1500-1508), and our NEPA review authority under Section 309 of the Clean Air Act. We appreciate BLM's willingness to provide us with additional time to complete our review.

The Proposed Action would include the expansion of mining and mineral exploration activities at the existing Hycroft Mine, increasing the Project area from 8,858 to 14,753 acres of private and public land, and adding approximately 2,172 acres of new surface disturbance. The expansion would increase the mine life by an additional 12 years. On June 30, 2011, EPA provided extensive scoping comments for the Project which included detailed recommendations on water resources, air quality, mining waste management and reclamation

We have rated the DEIS as *Environmental Concerns – Insufficient Information* (EC-2). Please see enclosed "*Summary of EPA Rating Definitions*." An "EC" signifies that EPA's review of the DEIS has identified environmental impacts that should be avoided in order to provide adequate protection for the environment. A "2" rating signifies that the DEIS does not contain sufficient information for EPA to fully assess environmental impacts that should be avoided in order to fully protect the environment.

In the enclosed detailed comments, we have identified issues of concern along with specific recommendations for your consideration. In particular, EPA is concerned about potential impacts on water resources. The DEIS does not provide sufficiently detailed information on water usage, water quality, and groundwater availability. Inconsistencies within the document make it difficult to verify the accuracy of the information presented, particularly with respect to groundwater quality and water usage. We recommend that the water quality data be examined more closely by analyzing the geochemical patterns of the surface water, groundwater, and mine process waters. We also recommend that BLM consider measures to further minimize impacts to various resources and include additional information on air quality, cumulative impacts, and other topics, as described in our detailed comments.

EPA appreciates the opportunity to review this DEIS, and we are available to discuss these comments with you further. Please send one hard copy of the Final Environmental Impact Statement and two CD ROM copies to this office at the same time it is officially filed with our Washington D.C. Office. If you have any questions, please contact me at 415-972-3521, or contact Ann McPherson, the lead reviewer for this project. Ann can be reached at 415-972-3545 or [mcpherson.ann@epa.gov](mailto:mcpherson.ann@epa.gov).

Sincerely,

/s/

Kathleen Martyn Goforth, Manager  
Environmental Review Office (CED-2)

Enclosures: EPA Summary of Rating Definitions  
EPA Detailed Comments

Cc: Bruce Holmgren, Nevada Division of Environmental Protection

## **SUMMARY OF EPA RATING DEFINITIONS\***

This rating system was developed as a means to summarize the U.S. Environmental Protection Agency's (EPA) level of concern with a proposed action. The ratings are a combination of alphabetical categories for evaluation of the environmental impacts of the proposal and numerical categories for evaluation of the adequacy of the Environmental Impact Statement (EIS).

### **ENVIRONMENTAL IMPACT OF THE ACTION**

#### ***"LO" (Lack of Objections)***

The EPA review has not identified any potential environmental impacts requiring substantive changes to the proposal. The review may have disclosed opportunities for application of mitigation measures that could be accomplished with no more than minor changes to the proposal.

#### ***"EC" (Environmental Concerns)***

The EPA review has identified environmental impacts that should be avoided in order to fully protect the environment. Corrective measures may require changes to the preferred alternative or application of mitigation measures that can reduce the environmental impact. EPA would like to work with the lead agency to reduce these impacts.

#### ***"EO" (Environmental Objections)***

The EPA review has identified significant environmental impacts that should be avoided in order to provide adequate protection for the environment. Corrective measures may require substantial changes to the preferred alternative or consideration of some other project alternative (including the no action alternative or a new alternative). EPA intends to work with the lead agency to reduce these impacts.

#### ***"EU" (Environmentally Unsatisfactory)***

The EPA review has identified adverse environmental impacts that are of sufficient magnitude that they are unsatisfactory from the standpoint of public health or welfare or environmental quality. EPA intends to work with the lead agency to reduce these impacts. If the potentially unsatisfactory impacts are not corrected at the final EIS stage, this proposal will be recommended for referral to the Council on Environmental Quality (CEQ).

### **ADEQUACY OF THE IMPACT STATEMENT**

#### ***"Category 1" (Adequate)***

EPA believes the draft EIS adequately sets forth the environmental impact(s) of the preferred alternative and those of the alternatives reasonably available to the project or action. No further analysis or data collection is necessary, but the reviewer may suggest the addition of clarifying language or information.

#### ***"Category 2" (Insufficient Information)***

The draft EIS does not contain sufficient information for EPA to fully assess environmental impacts that should be avoided in order to fully protect the environment, or the EPA reviewer has identified new reasonably available alternatives that are within the spectrum of alternatives analysed in the draft EIS, which could reduce the environmental impacts of the action. The identified additional information, data, analyses, or discussion should be included in the final EIS.

#### ***"Category 3" (Inadequate)***

EPA does not believe that the draft EIS adequately assesses potentially significant environmental impacts of the action, or the EPA reviewer has identified new, reasonably available alternatives that are outside of the spectrum of alternatives analysed in the draft EIS, which should be analysed in order to reduce the potentially significant environmental impacts. EPA believes that the identified additional information, data, analyses, or discussions are of such a magnitude that they should have full public review at a draft stage. EPA does not believe that the draft EIS is adequate for the purposes of the NEPA and/or Section 309 review, and thus should be formally revised and made available for public comment in a supplemental or revised draft EIS. On the basis of the potential significant impacts involved, this proposal could be a candidate for referral to the CEQ.

\*From EPA Manual 1640, Policy and Procedures for the Review of Federal Actions Impacting the Environment.

## Water Resources

### *Water Usage and Water Rights*

The U.S. Environmental Protection Agency is concerned about water rights and water usage associated with the Hycroft Mine Expansion Project. The Draft Environmental Impact Statement presents conflicting information on water rights and limited information on water usage, particularly with respect to the Proposed Action. The Hycroft Mine is located within the Black Rock Desert Hydrographic Basin, which has a sustained yield of approximately 30,000 acre-feet per year (pgs. 3-55; 3-71). Water rights totaling 21,808 afy have been distributed within the basin by manner of use, with 4,515 afy allocated to mining and milling (pg. 3-71). The DEIS states, in Chapter 1, that Hycroft Resources and Development, Inc. holds water rights for approximately 1.6 billion gallons of annual consumption, or 4,910.2 afy (pg. 1-17). In Chapter 3, however, the DEIS states that HRDI's water rights include 2,910.83 afy within the basin (pg. 3-72).

The DEIS provides very limited information on water usage associated with the proposed project, except to note that current consumption is approximately 900 million gallons per year, or 2,762 afy (pg. 1-17). If this estimate is correct - and HRDI's water rights are, indeed, 2,910.83 afy - this would mean that only 148 afy of water would be available for the proposed expansion of the Hycroft Mine.

In the permit application<sup>1</sup> submitted to the State of Nevada, HRDI states that the existing Brimstone Heap currently uses approximately 1,800 gallons/minute (2,903 afy), and the total maximum make-up water application rate for the proposed North Brimstone Heap facility would be 4,100 gpm (6,612 afy), which includes 2,300 gpm (3,709 afy) for the expanded heap. The maximum make-up water application rate for the proposed South Heap facility will be 2,700 gpm (4,354 afy). Therefore, the total make-up water demand for the Hycroft Mine Expansion project is expected to be 6,800 gpm (10,967 afy). According to the application, existing flow rights total 2,897 afy. Based on these numbers, it would appear that HRDI would need an additional 8,070 afy for the expansion of the Proposed Project. If that is correct, then the water usage associated with the Proposed Project would surpass the 4,515 afy currently allocated to mining and milling within the Black Rock Desert Hydrographic Basin.

#### *Recommendations:*

The Final Environmental Impact Statement should:

- Describe the consumptive water use associated with the Hycroft Mine, including current operations and the proposed expansion of the Mine.
- Define the quantity of groundwater needed for the Proposed Action and the No Action Alternative.
- Describe the extent of HRDI's water rights, including whether HRDI holds water rights in multiple basins or strictly within the Black Rock Desert Hydrographic Basin.

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<sup>1</sup> Application for Permit to Appropriate the Public Waters of the State of Nevada, Application No. 81409, December 23, 2011.

- Clarify whether the water usage associated with the Proposed Project will surpass mining and milling allocations within the Black Rock Desert Hydrographic Basin and, if so, what other sources would be used for the proposed Project.
- Revise the text to eliminate any inconsistencies in the numbers used to quantify water rights and water usage.

### *Water Quality*

According to the DEIS, surface water in the vicinity of the Hycroft Mine is very limited and consists of ephemeral streams and two mapped springs west of the Project facilities, which have accumulated ponded water at the clay borrow source area (pg. 3-60). The two springs are sampled semi-annually and the clay borrow ponded area was sampled in 1991, 2005, and 2011. Elevated concentrations of arsenic, chloride, fluoride, sulfate and total dissolved solids are seen at these three locations (pg. 3-67; table 3.7-4). In addition, concentrations of aluminum, antimony, beryllium, iron, lead, manganese, mercury, and pH are also elevated.

Groundwater quality data were collected in 2010 and 2011. A summary is presented in Table 3.7-5 and includes minimum and maximum concentrations, as well as reference values (pg. 3-68). Elevated concentrations of several constituents, including those detected in surface water samples, were also detected in the groundwater samples. Elevated concentrations of some constituents can be indicative of natural processes, including basic geology and geothermal activity, or potential contamination from mining processes.

According to the DEIS, there appear to be multiple aquifers in the Project Area vicinity, with the surface water data representing the shallow perched aquifer system. The DEIS concludes that the perched aquifer system does not appear to be connected to the deeper groundwater system; however, the DEIS provides no basis for this conclusion and, in fact, notes that fault zones may serve as conduits for vertical groundwater flow between shallow, deep, and basement systems (pg. 3-62). Although it is reasonable to assume that the springs likely represent the shallow perched aquifer system, we are concerned, nonetheless, that there may be connections between the perched aquifer and the deeper groundwater system. Without further information on baseline/reference conditions and more detailed information on the surface and groundwater samples, it is not possible to ascertain whether the systems are interconnected, or the degree of connectivity, based on the information presented in the DEIS.

One way to determine if there are potential connections between surface and groundwater systems is to examine the geochemistry of the samples collected, particularly the composition of major ions. The geochemistry of groundwater is the result of interactions between groundwater, minerals, rocks and soils; however, human activity can alter water chemistry by contributing additional ions. Elevated levels of some ions may indicate anthropogenic inputs of contaminants, including industrial discharges. Major ion data are often examined graphically, using Piper or Stiff Diagrams, to determine if there is a geochemical pattern that can be associated with a particular site or sample. In many cases, a geochemical pattern, or fingerprint, can be identified that can be used to characterize groundwater, surface water, and leachate.

In February 1999, EPA published a report<sup>2</sup> on the characterization of mine leachates as part of an effort to develop a groundwater monitoring strategy for mine sites. EPA obtained water quality monitoring records from 22 heap leaching facilities in Nevada, including the Hycroft Mine, and four copper mines in Arizona. EPA determined that mine waste leachate has a distinct ionic composition that characterizes it at the source and can be used to differentiate it from adjacent surface water or groundwater. Geochemical monitoring results from the Hycroft Mine (1991 – 1993) show that the ionic composition of the barren pond is identical to that observed at the pregnant pond, providing a reliable signature for the mine process water. Furthermore, the ionic composition of the makeup water is distinguishable from that of the mine process water and that of the spring water nearby. The report notes that groundwater samples were not collected because it was considered unlikely that groundwater would be impacted from mining operations, due to the high rate of evaporation and the depth to groundwater (500 feet).

*Recommendations:*

Examine the ionic composition of the surface water samples and groundwater samples to verify that the ionic composition of the deeper groundwater is distinct from the ionic composition of the perched aquifer, as reflected by the spring box/surface water samples. Summarize this information in the FEIS.

Examine the major ion chemistry of the water samples at each of the monitoring wells and sampled sites to determine how groundwater varies spatially.

Determine the geochemical signature of the mine process water and makeup water and summarize this information in the FEIS.

Evaluate the ionic compositions of the mine process water, makeup water, surface water (springs), and groundwater and determine if they are unique. Ascertain whether there are any indications that the mine process water could be interacting with makeup water, surface water, or groundwater.

Compare these results with data collected and published previously, for example the data published in 1991-1993, to ensure that there have been no significant temporal shifts.

Data collected during the initial years of operation should also be examined, as should any samples representing baseline, or reference, conditions.

Discuss, in the FEIS, the influence of geothermal activity on water quality samples.

*Contamination of Shallow Groundwater*

The DEIS does not mention contamination of groundwater at the Hycroft Mine; however, contamination of shallow groundwater is discussed briefly in the Hycroft Mine amended Plan of Operations (September 2010; Appendix C – pg. 29). According to this document, the influence of process solution

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<sup>2</sup> Characterization of Mine Leachates and the Development of a Ground-Water Monitoring Strategy for Mine Sites, EPA/600/R-99/007, February 1999.

is still evident in several shallow investigation wells that are sampled quarterly. Monitoring data indicate that the residual effects of historic losses of process solutions on shallow groundwater are diminishing, since remediation measures were initiated in 2003. Furthermore, these concentrations do not appear to be migrating away from these areas and affecting the shallow groundwater system.

*Recommendation:*

The contamination of groundwater, due to historic causes or other reasons, should be discussed in the FEIS, including any remediation measures that have been implemented. Temporal and spatial trends relevant to the geochemical characterization of site waters should also be examined.

*Springs and Seeps*

The DEIS states that the Proposed Action would not impact the flows of nearby springs or seeps, but offers insufficient justification for this conclusion (pg. 3-73). According to the DEIS, initial pump tests on the production and potable water wells showed favorable groundwater replenishment to the aquifer in the vicinity of the well, with projections of zero residual drain down (pg. 1-17). Pumping activities to date have confirmed these findings, with the wells producing adequate quantities of water and groundwater levels replenishing during the times of temporary closure (pg. 3-73). Detailed information on the type of testing performed (well tests, slug tests, or aquifer tests) is not presented in the DEIS. Likewise, as mentioned earlier, the DEIS provides very little information on water usage associated with the proposed project. Without more detailed information, we are unable to concur with this conclusion and remain concerned that the Proposed Action could impact the flows of nearby springs or seeps.

*Recommendation:*

The FEIS should provide the basis for the conclusion that the Proposed Action will not impact the flows of nearby springs or seeps. If well tests or aquifer tests were conducted to support that determination, such reports should be summarized and referenced in the FEIS and included in an Appendix.

*Open Pits*

The DEIS concludes that pit lakes are not anticipated due to the depth of the groundwater and the limited extent of groundwater in the vicinity of the open pits; however, this conclusion is not clearly supported in the document. The discussion on pg. 3-74 references Table 3.7-2 regarding the elevation of the water table, and Table 2.1-2 regarding the planned depth of the Project open pits, yet depths of the open pits and elevations of the water table are not presented in either of these tables. Based on our rough estimates, using Figures 1.9.1 and 3.7.3 and Table 2.1-3, as well as Drawing 1 from the Plan of Operations, it appears that pit lakes could form at the Brimstone Pit and Central Pit. Furthermore, it seems possible that the shallow perched aquifer could transect the open pits, resulting in the formation of pit lakes unless dewatering activities were implemented.

*Recommendations:*

The FEIS should provide the basis, including supporting documentation, for concluding that pit lakes will not form at any of the open pit locations. Include a table that shows the proposed



depths of the various pits along with the depth to groundwater at these locations, or revise Table 2.1-3 accordingly.

Overlay the locations of the pits onto Figure 3.7.3 in order to illustrate the groundwater table at each of the proposed pits.

Correct the incorrect references to figures and tables.

Inconsistencies in the DEIS make it difficult to verify the accuracy of the information presented in the document. For example, Table 2.1-3 describes the proposed open pit parameters for the Brimstone, Boneyard, Center, and Bay Area Pits (pg. 2-3); however, the locations of the Center Pit and the Bay Area Pit are not shown on the figures in the DEIS that illustrate other pits, such as Figure 1.9.1 or Figure 2.1.1.

*Recommendation:*

Provide detailed maps in the FEIS that illustrate the locations of all the open pits, including the Center Pit and Bay Area Pit.

According to the DEIS, the Boneyard and Bay Area Open Pits would be completely backfilled, the Center Open Pit would be backfilled up to 90 percent, and the Brimstone Open Pit would not be backfilled (pg. 2-41). Figures 2.1.10 and 2.1.11 illustrate the elevations of the proposed Brimstone Open Pit and Bay Area and Boneyard Open Pits using 2008, 2012, and 2024 topography. Elevations used in both these figures, however, do not concur with the depths presented in Table 2.1-3 for the Brimstone Pit, Bay Area Pit, and Boneyard Pit. For example, the profiles of the Brimstone Pit and the Bay Area/Boneyard Pits show that the elevation will go down to about 4,250 feet (fig. 2.1.10; fig. 2.1.11). Table 2.1-3, however, shows the following proposed pit depths: Brimstone Pit (4,300 feet), Bay Area Pit (4,350 feet), and Boneyard Pit (4,350 feet).

*Recommendation:*

Compare Figures 2.1.10 and 2.1.11 with Table 2.1-3 and verify that depths and elevations for the Brimstone Pit, Bay Area Pit, and Boneyard Pit are accurately depicted. Revise and correct figures and tables if necessary.

Explain why the Brimstone open pit will not be backfilled in the future.

*Waste Rock Characterization Study*

The DEIS states that results from the waste rock characterization study are discussed in detail in Section 2.1.3.1 and 3.7.2.3.5 to 3.7.2.3.6 (pg. 3-73); however, Sections 3.7.2.3.5 and 3.7.2.3.6 do not exist.

*Recommendation:*

Revise the text in the FEIS to correctly reference the appropriate sections that discuss the waste rock characterization study.

Material types from the Hycroft deposit that are predicted to generate acid and leach potentially deleterious constituents when exposed to air and water include argillic, silica, and propylitic altered material that has been partially oxidized or unoxidized (pg. 3-71). The DEIS concludes, though, that predictive modeling indicates that seepage and runoff from the proposed waste rock facilities would not degrade waters of the State (SRK 2011). According to the DEIS, modeling also indicates that runoff from waste rock facility surfaces would be circum-neutral, with all chemical constituents below Nevada Division of Environmental Protection reference values (pg. 3-73). The DEIS does not, however, reference specific documents that support this conclusion.

*Recommendation:*

Include supporting documentation, within the FEIS, for the conclusion that seepage and runoff from the proposed waste rock facilities would be circum-neutral and are not expected to degrade waters of the state. Describe the infiltration and seepage rates that were used to make this determination. Explain exactly what is meant by “circum-neutral” in this context.

*Waste Rock Facilities*

The DEIS states that the waste rock facilities have been designed to manage potentially acid generating materials and to minimize visual contrasts with natural topography (pg. 2-8). Such facilities will be constructed by end dumping waste rock from mine haul trucks over existing waste rock facilities, onto native alluvial soil, or into existing open pits. Twenty-four inches of non-PAG material, including 6 inches of growth media, would be deposited over waste rock material to limit the exposure to meteoric water during operation (pg. 2-8). The DEIS does not, however, describe what will be used at the bottom or base of the waste rock facilities.

*Recommendation:*

Describe what will be used underneath the waste rock facilities. If liners or compacted soil and/or clay will not be used, the FEIS should provide sufficient justification for the conclusion that such protective measures would not be necessary to prevent environmental degradation.

After closure, if any slopes of waste and development rock piles are left without encapsulation by non-PAG material, they would be sloped prior to placement of a two-foot thickness of non-PAG material, followed by six inches of growth media (pg. 2-42). These requirements differ, however, from those described in Section 2.1.3.1 (pg. 2-8) and Section 2.1.18.1 (pg. 2-41).

*Recommendations:*

Provide the basis for utilizing a greater thickness of non-PAG material and growth media (30 inches) on the slopes of the waste and development rock piles, as compared to the waste rock facilities (24 inches). Correct inconsistencies within the text regarding cover requirements, particularly in Sections 2.1.3.1 and 2.1.18.1.

Include a copy of the Waste Rock Management Plan in the FEIS within an appendix.

### *Heap Leach Pads*

The DEIS states that a growth media cover would be placed on the heap leach pads to a depth of six inches to isolate the process materials in the heap leach pads from storm water, as demonstrated on the Lewis heap leach facility (pg. 2-51). We note, however, that the cover requirements at waste rock facilities appear to be more stringent than at the heap leach pads, as the waste rock facilities utilize 24 inches of non-PAG material, including 6 inches of growth medium (pg. 2-41). Furthermore, the DEIS states that a soil cover is not needed for the purpose of limiting infiltration of meteoric water into the heaps (pg. 2-50).

#### *Recommendations:*

The FEIS should clarify why the requirements for the amount of cover differ for heap leach pads versus waste rock facilities.

Clarify whether the underlying media and the cover that will be used at the other heap leach facilities are, in fact, comparable to those used at the Lewis heap leach facility. If not, then results might not be comparable to the Lewis heap leach facility, and additional precautions may be needed.

The DEIS states that the Brimstone heap leach facility would be expanded by placing waste rock to the north of the heap to create an engineered (geotechnically sound) and compacted fill, on which the four process ponds would be located (pg. 2-10). EPA is concerned about the suitability of using waste rock as the base for four process ponds associated with the heap leach facility. Even if liners are used on top of the waste rock, we are concerned that the compacted fill and waste rock might shift due to varying loads on top of the facilities or seismic activity.

#### *Recommendation:*

The FEIS should discuss the suitability of using waste rock as the base for four process ponds in the heap leach facilities and provide supporting documentation to account for the geotechnical suitability of such an action.

### *Post-Reclamation Monitoring and Maintenance*

Heap effluent drainage from closed heaps would be monitored in accordance with the Water Pollution Control Permit. Post-closure vegetation monitoring would consist of surveys coordinated with the Bureau of Land Management and the Nevada Division of Environmental Protection. Post-mining ground water quality would be monitored according to the requirements established by the NDEP upon approval of the permanent closure plan, with the goal of demonstrating non-degradation of groundwater quality (pg. 2-54).

Table 2.1-15 illustrates the proposed reclamation schedule for the Hycroft Mine. According to this table, monitoring will be conducted until 2035 (pg. 2-33). The DEIS states that post-closure monitoring time frames are based on the regulatory minimum, but could be extended based on actual field conditions.

*Recommendations:*

Include a copy of the Hycroft Mine Monitoring Plan in the FEIS and describe what type of conditions would lead to extended monitoring.

Describe the groundwater monitoring that would be undertaken in accordance with existing permits.

Describe the water quality monitoring that will be required to ensure compliance with water quality standards. Describe the locations of all groundwater monitoring wells and points of compliance on the site, including screening intervals, parameters to be monitored, and monitoring frequencies.

## **Air Quality**

### *National Ambient Air Quality Standards*

On page 3-18 (Summary of Impact 3.2.3.3-2), the DEIS states that the modeled NO<sub>2</sub> and SO<sub>2</sub> 1-hour concentrations would be in exceedance of the NAAQS, but concludes: “Even with this impact, the Proposed Action would be in compliance with the FCAA. This is due to the NAAQS exceedance resulting from mobile and fugitive sources of NO<sub>2</sub> and SO<sub>2</sub>. The mobile sources are regulated under Title II of the FCAA, which requires engine manufacturers to meet specific emission standards. The Proposed Action is regulated under Title I of the FCAA. Therefore, these mobile and fugitive sources are not considered when a permit is issued under Title I of the FCAA.” On page 3-26 (Summary of Impact 3.2.3.4-2), the DEIS sets forth the same type of rationale for finding that the No Action Alternative would be in compliance with the FCAA, notwithstanding the modeling results that indicate that there would be exceedances of the 1-hour NO<sub>2</sub> and SO<sub>2</sub> NAAQS. Further, this information is summarized in Table 2.3-1 (pgs. 2-61 and 2-62).

We recognize that some of the emissions sources associated with the Proposed Action would be covered by a permit issued by Bureau of Air Pollution Control, and some emissions sources associated with the Proposed Action (such as the combustion emissions from mobile equipment) would not be covered. We also recognize that the permit would be issued under a program approved by EPA as meeting the requirements of Title I of the FCAA, and that nearly all of the mobile sources are, to some degree, subject to emissions standards established by EPA under regulations promulgated under Title II of the FCAA. However, source-specific emissions standards are fundamentally different than health-based ambient air quality standards. For NEPA purposes, ambient air quality impact analyses should not distinguish between Title I sources and Title II sources, nor should such analyses discount emissions sources because they were manufactured to meet certain emissions standards. Instead, the impact analyses should take into account all Project-related emissions sources (fugitive and non-fugitive stationary, area, and mobile) and evaluate whether such sources, considered together, would cause or contribute to an exceedance of the NAAQS.

Based on the results presented in the DEIS, it is clear that the emissions sources associated with the Proposed Action would result in modeled exceedances of the one-hour NO<sub>2</sub> and SO<sub>2</sub> NAAQS. This does not mean that the Proposed Action would violate the FCAA, but it does indicate that the project would likely result in an adverse environmental impact.

*Recommendation:*

Revise the text in Section 3.2.3.3.1, Section 3.2.3.4.1, and Table 2.3-1 accordingly, and identify any feasible mitigation measures.

On page 3-26 (Summary of Impact 3.2.3.4-2), the DEIS states that the NO<sub>2</sub> and SO<sub>2</sub> modeled concentrations would be expected to be above the NAAQS (except the 1-hour standards). The text is incorrect as written and should be revised to state the NO<sub>2</sub> and SO<sub>2</sub> modeled concentrations would be expected to be below the NAAQS (except the 1-hour standards). This error is repeated in Table 2.3-1 (pg. 2-61).

*Recommendation:*

Revise the text in Section 3.2.3.4.1 (pg. 3-26) and Table 2.3-1 (pg. 2-61), accordingly.

The DEIS describes and estimates air emissions from the proposed expansion of the Hycroft Mine. The DEIS states that PM<sub>10</sub> and PM<sub>2.5</sub> emissions are generated by almost all sources listed in Table 3.2-4, but this table lists background values for criteria pollutants instead of emission sources (pg. 3-16).

*Recommendation:*

Revise the text in Section 3.2.3.3.1 to indicate the correct table.

*Mercury Emissions*

The DEIS states that the current operations are permitted for a mercury emissions rate of 0.00529 ton/year, approximately 20 percent less than the projected emissions of the Proposed Action (pg. 3-26). The text appears to be incorrect as written, since 20% less than the projected emissions<sup>3</sup> of the Proposed Action would be 0.02032 ton/year. Based on the information provided in the DEIS, it appears that mercury emissions associated with the Proposed Action will be 4-5 times higher than current emissions.

*Recommendations:*

Revise the text to provide the correct numbers.

Clarify whether the Mercury Operating Permit to Construct will need to be revised; and provide the status of any such revision.

*Recommended Measures to Reduce Emissions*

The area where the Proposed Project will be implemented is in “attainment – unclassifiable” for all pollutants having an air quality standard. In the interest of minimizing adverse impacts, EPA recommends consideration of measures to reduce emissions of criteria air pollutants and hazardous air pollutants.

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<sup>3</sup> The projected emissions of mercury for the Proposed Action are 0.0254 tpy (pg. 3-23). Twenty percent of the projected emissions would be  $0.2 * 0.0254 = 0.00508$  tpy. Twenty percent less than the projected emissions would then be  $0.0254 - 0.00508 = 0.02032$ .

*Recommendations:*

- *Equipment Emissions Mitigation Plan (EEMP)* – The FEIS should identify the need for an EEMP. An EEMP will identify actions to reduce diesel particulate, CO, hydrocarbons, and NO<sub>x</sub> associated with construction activities. We recommend that the EEMP require that all construction-related engines:
  - are tuned to the engine manufacturer’s specification in accordance with an appropriate time frame;
  - do not idle for more than five minutes (unless, in the case of certain drilling engines, it is necessary for the operating scope);
  - are not tampered with in order to increase engine horsepower;
  - include particulate traps, oxidation catalysts and other suitable control devices on all construction equipment used at the Project site;
  - use diesel fuel having a sulfur content of 15 parts per million or less, or other suitable alternative diesel fuel, unless such fuel cannot be reasonably procured in the market area; and
  - include control devices to reduce air emissions. The determination of which equipment is suitable for control devices should be made by an independent Licensed Mechanical Engineer. Equipment suitable for control devices may include drilling equipment, generators, compressors, graders, bulldozers, and dump trucks.
  
- *Fugitive Dust Control Plan* - The FEIS should identify the need for *Fugitive Dust Control Plan*. We recommend that it include these general recommendations:
  - Stabilize open storage piles and by covering and/or applying water or chemical/organic dust palliative where appropriate. This applies to both inactive and active sites, during workdays, weekends, holidays, and windy conditions.
  - Install wind fencing and phase grading operations where appropriate, and operate water trucks for stabilization of surfaces under windy conditions; and
  - When hauling material and operating non-earthmoving equipment, prevent spillage and limit speeds to 15 miles per hour (mph). Limit speed of earth-moving equipment to 10 mph.

### **Cumulative Impacts**

In the cumulative impacts analysis, the DEIS notes that the Proposed Action would result in significant cumulative impacts to air quality due to the exceedances in the 1-hour NO<sub>2</sub> and SO<sub>2</sub> NAAQS (pg. 4-24). In contrast, the DEIS does not discuss the significance of the 1-hour exceedances in Chapter 3 and concludes, instead, that the Proposed Action would be in compliance with the FCAA, because the NAAQS exceedances result from mobile and fugitive sources of NO<sub>2</sub> and SO<sub>2</sub>. [Mobile sources are regulated under Title II of the FCAA; whereas, the Proposed Action is regulated under Title I of the FCAA.]

*Recommendation:*

Discuss the significance of the 1-hour exceedances within Chapter 3 as well as Chapter 4 (Cumulative Impacts).

The DEIS includes estimates for the criteria pollutant emissions (PM<sub>10</sub>, SO<sub>2</sub>, NO<sub>2</sub>, and CO) from existing mining operations within the Cumulative Effects Study Area, but does not include similar estimates for Hazardous Air Pollutants.

*Recommendation:*

Provide estimates for Hazardous Air Pollutants from the other mining projects within the Cumulative Effects Study Area.

The Cumulative Effects Study Area for water quality and quantity (surface and ground) is defined as the Devil's Corral HUC 5 Watershed (pg. 4-8). The DEIS states that no impacts to groundwater quality or quantity were identified in the Proposed Action or alternatives, so the cumulative impacts analysis addresses only surface water. As we noted previously, however, contamination of shallow groundwater was discussed in the Hycroft Mine Expansion Project Amendment to Plan of Operations; therefore, the potential impacts to shallow groundwater and the existing contamination are issues that should be addressed in the FEIS. Furthermore, discrepancies were noted regarding the extent of HRDI's water rights and water usage. Consumptive use of groundwater in a desert environment is a potentially significant issue and should be examined in greater detail.

*Recommendations:*

Extend the Cumulative Effects Study Area for groundwater to encompass the Black Rock Desert Hydrographic Basin.

Discuss the contamination of shallow and deep groundwater, due to historic causes or other reasons, in the FEIS. Discuss any remediation measures that have been implemented at the Hycroft Mine or any other mine within the newly defined Cumulative Effects Study Area.

Demonstrate whether there is sufficient groundwater for the lifetime of this Project and other reasonably foreseeable projects in the study area. Describe the current status of groundwater within the Black Rock Desert Hydrographic Basin, including whether it is over-allocated.

Discuss the potential effect of climate change on the Proposed Project and groundwater development.

### **Biological Resources, Habitat and Wildlife**

Up to 2,172 acres of surface disturbance and vegetation removal would occur as a result of the Hycroft Mine expansion project. Such activities could adversely affect sage grouse, golden eagles, or other raptors, which are known to occur in and around the Project area. The BLM has recently issued Greater Sage-Grouse Conservation Guidance in the form of two Instructional Memoranda (IM No. 2012-043 and IM No. 2012-044) that are designed to guide both immediate and longer-term conservation actions aimed at conserving the greater sage-grouse and its sagebrush habitat in 10 Western states, including Nevada. Neither of these new IMs, however, are mentioned in the DEIS.

All raptor and owl species are protected under the Migratory Bird Treaty Act. The golden eagle and bald eagle also receive protection under the Bald and Golden Eagle Protection Act. In September 2009, the

U.S. Fish and Wildlife Service finalized permit regulations under the BGEPA for the take of bald and golden eagles on a limited basis, provided that the take is compatible with preservation of the eagle and cannot be practicably avoided. The final rule states that if advanced conservation practices can be developed to significantly reduce take, the operator of a facility may qualify for a programmatic take permit. Most permits under the new regulations would authorize *disturbance*, rather than take. Projects or activities that could impact golden or bald eagles may require the preparation of an Eagle Conservation Plan.

*Recommendations:*

Work with the USFWS to ensure that requirements regarding the protection of eagles and other raptors are appropriately addressed in the FEIS.

Consider incorporating appropriate actions and management strategies included in the BLM's Greater Sage Grouse IMs into the FEIS.

Mitigation and monitoring measures that result from consultation with USFWS to protect sensitive biological resources should be included in the FEIS and incorporated into the Record of Decision.

Discuss and identify potential compensatory mitigation for loss of sage-grouse habitat. Coordinate closely with the USFWS in the identification of such lands to ensure that compensatory lands are of comparable or superior quality. Discuss mechanisms that will ensure habitat selected for compensatory mitigation will be protected in perpetuity.

The FEIS should include a requirement for a Worker Environmental Awareness Training program in order to ensure project personnel and contractors are aware of their responsibility to implement the Best Management Practices and mitigation measures. Knowledge and practice of these measures should be the responsibility of all on-site personnel.

## **Geology**

Geology in the Project Area is shown on Figure 3.8.1, but the locations of the proposed facilities are not illustrated on the map.

*Recommendation:*

Overlay the locations of the pits, waste rock facilities, and heap leach pads as seen on Figure 2.1.1 onto Figure 3.8.1 to provide greater clarity to the reader.

## **Solar Energy Development as an Option for Future Use of Reclaimed Areas**

According to the DEIS, HRDI intends to explore the nature and extent of the geothermal resources at the Hycroft Mine and, if appropriate, develop those resources for purposes of power generation. From the proposed reclamation plans, it appears that there will be large flat surfaces at the top of many of the reclaimed mining facilities, including pits, waste rock facilities, heap leach pads, and process ponds. Such reclaimed mine surfaces may be appropriate for other types of power generation as well.



*Recommendation:*

Consider the suitability of the reclaimed mine surfaces for solar as well as geothermal energy development.

## **Financial Assurance**

As noted in Chapter 4 (Cumulative Effects) of the DEIS, State and federal regulations require project operators of Notices and plans of operation to provide financial assurance to guarantee that surface disturbance due to mineral activities would be reclaimed when mineral exploration and mining activities have been completed (pgs. 4-27; 4-29; 4-30; 4-34; and 4-35). Typically, requirements regarding financial assurance for reclamation are noted in the Description of the Proposed Action and Alternatives (Chapter 2) of a DEIS. We found no further mention of such requirements in the DEIS for the Hycroft Mine Expansion Project, except for the mention of a Reclamation Bond Determination within Table 1.6-1 (Major Permits and Authorizations).

*Recommendations:*

The FEIS should:

Note any existing closure and reclamation bond for the Hycroft Mine, and discuss any additional bond that would be required for the Proposed Project. We recommend presenting this information in Chapter 2 of the FEIS.

Discuss the project's need, if any, for long-term financial assurance. If long-term monitoring would be required, the FEIS should include at least a draft long-term financial assurance cost estimate and address how financial assurance requirements would be met (based on future monitoring), should the project proponent be no longer financially viable following the unplanned cessation or planned conclusion of operations.