UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
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San Francisco, CA 94105-3901

MAR 28 2012

OFFICE OF THE
REGIONAL ADMINISTRATOR

Amy Lueders
Bureau of Land Management
1340 Financial Boulevard
Reno, Nevada 89520

Subject: Mount Hope Project Draft Environmental Impact Statement (EIS), Eureka County, Nevada [CEQ #20110404]

Dear Ms. Lueders:

The U.S. Environmental Protection Agency (EPA) has reviewed the above referenced document. Our review and comments are provided pursuant to the National Environmental Policy Act (NEPA), the Council on Environmental Quality's (CEQ) NEPA Implementation Regulations at 40 CFR 1500 - 1508, and our review authority under Section 309 of the Clean Air Act, as well as the May 21, 2008 Memorandum of Understanding between the Bureau of Land Management (BLM) and EPA.

According to the Draft EIS, the proposed Mount Hope molybdenum mine would directly disturb 8,318 acres of land, most of which is managed by BLM, and have an active mine life of 44 years, followed by 30 years of reclamation, and five years of post closure monitoring. The proposed project would consume up to 11,300 acre feet per year of groundwater, resulting in a 10 foot drawdown contour encompassing an area likely in excess of 200 square miles[1]. The Draft EIS predicts potential adverse impacts to 22 perennial springs and 7.7 miles of perennial stream segments. Impacts associated with the drawdown of groundwater table levels in Kobeh Valley are anticipated to persist for over 100 years, while those associated with the mine's dewatering operation will persist for well over 400 years. Unless these impacts are mitigated for the duration that they occur, the project may result in the loss of miles of perennial waters essential for wildlife, livestock, and human use.

The Draft EIS states that draindown solutions from the tailings storage facilities are expected to contain aluminum, antimony, cadmium, fluoride, manganese, molybdenum, and sulfate concentrations that exceed water quality standards, and will become acidic over time. Waste rock seepage will contain high concentrations of aluminum, arsenic, cadmium, fluoride, manganese, nickel, zinc, copper, iron, lead, beryllium, thallium, selenium, sulfate, and total dissolved solids. If tailings and waste rock disposal facilities, fluid collection systems, and evapotranspiration cells are not properly managed over the long-term, the project could result in significant and long-term degradation of surface water and/or groundwater quality, as well as wildlife exposure to these waters.

[1] Using Google Earth Pro and Figure 3.2.19 of the Draft EIS, we found that the maximum draw-down area approximates a polygon with an area of over 200 square miles, which is greater than the surface area of Lake Tahoe (http://tahoe.usgs.gov/facts.html).

Following closure of the proposed Mount Hope Mine, long-term post-closure monitoring and mitigation will be necessary at the mine and within the approximately 200-square-mile area affected by the project. BLM will require the operator Eureka Moly, LLC (EML) to establish a long-term funding mechanism to cover the costs of these obligations; however, the Draft EIS lacks critical information regarding many of these activities, as well as the estimated costs of these post-closure obligations, and the nature and adequacy of the funding mechanism.

EPA has rated the Mount Hope Draft EIS as "EO-3 – Environmental Objections - Inadequate Information" (see Enclosure 1: "Summary of Rating Definitions and Follow-Up Action"). The basis for this rating is summarized below. Our detailed comments on the Draft EIS are enclosed (Enclosure 2).

Our objections to the project, as it is currently proposed, are based on the likelihood that surface water and groundwater resources would be significantly and adversely affected. The proposed monitoring and mitigation measures do not provide sufficient assurance that the potential impacts can or will be mitigated. For example, the Mitigation Plan requires a cessation in spring and stream flow to occur prior to further environmental analysis and implementation of mitigation. This would result in a substantial and harmful time lag between impact and measures essential to fully protect these resources. Furthermore, it is unclear that the water necessary for the proposed surface water mitigation is available for this purpose. Without this water, the proposed mitigation appears infeasible, ineffective, and not viable over the long term.

The Draft EIS is inadequate because it does not disclose any detail on how BLM will ensure that funds will be available as long as they are needed to implement the closure and post-closure obligations. The availability of adequate resources to ensure effective reclamation, closure, and post-closure management is a critical factor in determining the significance of the project's potential impacts and its environmental acceptability. An adequate reclamation/closure bond and post-closure funding mechanism are needed to ensure that the costs of stabilizing, reclaiming, and managing the site after closure are covered by the mine operator for as long as necessary. If mitigation funds would not be adequate to effectively protect environmental resources from significant and long-term degradation, the project would be environmentally unacceptable.

EPA continues to believe that the adequacy of financial assurance is a critical element to be addressed in the NEPA process and should be disclosed. We believe such disclosure is consistent with CEQ guidance, which states that all relevant, reasonable mitigation measures that could improve the project are to be identified in an EIS and, to ensure that environmental effects of a proposed action are fairly assessed, the probability of the mitigation measures being implemented should also be discussed.[2] We also believe that recent CEQ guidance concerning mitigation may be relevant; this guidance views a discussion of funding for implementation of mitigation commitments as critical to ensuring informed decision making, and suggests that agencies should not commit to mitigation measures if it is not reasonable to foresee the availability of sufficient resources to ensure the performance of the mitigation.[3]

EPA is concerned that the discussion of the project's potential impacts to air quality requires revision for a number of reasons, including a lack of consideration of particulate emissions resulting from the loss of phreatophyte vegetation, insufficient information regarding the emission of Hazardous Air Pollutants from the toll roasting process, and a lack of clarity in regards to air modeling protocols employed. The

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[2] CEQ, Memorandum for Federal NEPA Liaisons, Federal, State and Local Officials and Other Persons Involved in the NEPA Process, Question 19b, March 16, 1981.

[3] CEQ, *Appropriate Use of Mitigation and Monitoring and Clarifying the Appropriate Use of Mitigated Findings of No Significant Impact.* 76 Fed. Reg. 3843, 3848-3849 (Jan. 21, 2011).

Draft EIS also does not provide sufficient information on the transport and fate of constituents in seepage/draindown solutions from the tailings and waste rock disposal facilities (WRDF).

We recommend that BLM determine the appropriate level of funding for the reclamation/closure bond and the proposed long-term funding mechanism for the proposed Mount Hope Project; analyze the adequacy of the funding amount and mechanism, including associated uncertainties to ensure that sufficient funds would be available as long as they are needed; include additional cap and liner controls in the WRDFs to provide more robust source control to protect water quality; analyze and revise the discussion of potential impacts to and mitigation measures associated with water resources, including their potential risks and anticipated effectiveness; and prepare more detailed monitoring and mitigation plans with established contingencies in the event that the project proponent is no longer financially capable of implementing essential mitigation measures. This information should be circulated in a Supplemental Draft EIS for public comment, in accordance with NEPA and CEQ's NEPA Implementation Regulations. EPA respectfully requests the opportunity to review this information and provide BLM our feedback before you publish the Supplemental Draft EIS.

We appreciate the opportunity to review this Draft EIS and look forward to working with BLM to resolve the issues outlined in this letter. We will call to arrange a meeting with you to discuss plans for completing the NEPA process. In the meantime, if you have any questions, please call me at (415) 947-4238 or have your staff contact Carter Jessop, our lead NEPA reviewer for this project, at (415) 972-3815. Please send a copy of the Supplemental Draft EIS to this office (mail code CED-2) at the same time it is filed with our Washington, D.C. office.

Sincerely,

Keith Takata

for Jared Blumenfeld

Enclosures
(1) Summary of Rating Definitions and Follow-Up Action
(2) EPA's detailed comments on the Mount Hope Project Draft EIS

cc: Doug Furtado, BLM-Battle Mountain District Office
Colleen Cripps, Nevada Division of Environmental Protection
Alan Jenne, Nevada Division of Wildlife
Lee Kreutzer, National Park Service
Eureka County Board of Commissioners

Mount Hope Project Draft Environmental Impact Statement
EPA Detailed Comments – March 28, 2012

Financial Assurance for Reclamation/Closure and Post-Closure Obligations

Need for a Long-Term Funding Mechanism

Numerous post-closure monitoring and mitigation activities will need to be conducted by Eureka Moly, LLC (EML) to ensure protection of water quality and wildlife in the area affected by Mount Hope Mine. BLM will require EML to establish a long-term funding mechanism (LTFM) to ensure implementation of post-closure monitoring and management obligations at the proposed mine site and within the approximately 200-square-mile area affected by the mine. The Draft EIS does not identify the cost estimate for the LTFM or analyze the adequacy and uncertainties associated with this funding amount. Nor does the Draft EIS describe or analyze the actual funding mechanism (or funding options) in any detail to demonstrate how it will ensure that the costs of post-closure monitoring and mitigation will be covered for as long as needed.

> **Recommendation:** We recommend that BLM determine the appropriate level of funding for the Mount Hope LTFM and disclose the specific mechanism that will be established for the proposed project; analyze the adequacy of the funding amount and mechanism; and circulate this information in a Supplemental Draft EIS for public comment.

There is no single right way to establish a trust; however, the overall goal is clear: ensuring that the trust has sufficient assets to cover the costs for which it was established, for as long as needed.

> **Recommendation:** We recommend BLM consider the following approaches to help ensure that the Mount Hope LTFM covers the costs of all necessary post-closure monitoring and operation and maintenance (O&M) obligations for as long as they may be needed, which we believe may be at least several hundred years.

- **Shift to current value trusts or use more realistic discount rates.** BLM uses net present value (NPV) trusts (i.e., cost estimates calculated using a discount rate). EPA allows for current value trusts (i.e., cost estimates calculated in current dollars) in many situations, and under this approach, the trust is fully funded immediately. Where NPV trusts are used, the single most important factor in calculating the beginning amount of the trust corpus (and therefore, the value of the trust in the future) is to use an appropriate discount rate. Overly aggressive discount rates "backload" contributions to the trust over time, and also limit true-up contributions. EPA suggests that BLM consider the use of current value trusts or NPV trusts with a standard benchmark discount rate as opposed to an individually negotiated rate. For example, EPA has authorized the 30-year Treasury Constant Maturity return for some trusts that allow for NPV.

- **Shift to annual true-up cycle.** BLM requires adjustments, or "true-ups", to trust funds every three years if they are not meeting their growth performance goals. EPA strongly supports the idea of a true-up requirement, but recommends that BLM consider using an annual true-up cycle rather than a 3-year cycle, to address both problematic investment performance and the risk of grantor bankruptcy or other corporate failure more often. Catching either of these problems quickly (i.e., with a shorter true-up cycle) would ensure that the trust is better positioned to secure the appropriate funds to make the trust whole.

- **Consider a more conservative investment portfolio requirement.** BLM imposes few limitations on the types of investments allowed for its trust funds. EPA generally imposes significant limitations on potential investments, especially when the trust is an NPV trust. We acknowledge that there is a downside to conservative investment strategies (namely, that the grantor contribution would likely increase), but believe, given the adverse consequences of trust failure for future taxpayers and/or the environment, that a conservative approach may be appropriate in this instance.

Specific Long-Term Monitoring and O&M Activities and Costs

According to the Draft EIS (p. 2-71), the LTFM obligations could include maintenance of process draindown evapotranspiration (ET) cells, mitigation of potential impacts to seeps and springs and other surface waters, and fencing maintenance, as described in Plan of Operations (POO) section 6.E. However, we were unable to find any description of these activities or any other post-closure O&M activities in the POO or Draft EIS.

It will be important to ensure that the tailings and waste rock disposal facility (WRDF) covers, evaporation ponds, and ET cells are conservatively maintained and rehabilitated/replaced and meet performance standards in perpetuity. We believe that excavation and disposal of ET cell fill and rehabilitation of ET cells will be needed, although the anticipated frequencies of these activities for each ET cell are unknown. Regular inspections and repairs of the tailings and WRDFs will be important, especially after storms and spring snowmelt, as will ongoing O&M and replacement of ponds, liners, draindown collection systems. The Draft EIS does not describe any of these activities nor identify them as post-closure obligations. Additional post-closure obligations will be needed as well, such as road and culvert maintenance; erosion repair and revegetation; maintenance of stormwater channels, retention ponds, and best management practices; water quality monitoring; site security; and associated equipment, materials and labor costs. In light of the monitoring and O&M needs to maintain the assumed performance during the post-closure period, we assume that a crew consisting of two full time employees and equipment and materials, as necessary, may be needed.

> **Recommendation:** The Supplemental Draft EIS should specify all of the post-closure monitoring, O&M, and replacement activities, and describe their performance standards. The Supplemental Draft EIS should also include the cost estimates for these activities, which will be used to estimate the LTFM obligations.

According to the Draft EIS, impacts resulting from the consumption of groundwater associated with the proposed project would persist for a period greater than 400 years. In fact, even at the end of the 400 year groundwater modeling period, the 10 foot groundwater drawdown contour displays almost no reduction in area around the mine pit. It will, therefore, be important to ensure that funding exists for maintenance of surface water and groundwater monitoring stations and mitigation measures far into the future. While the Draft EIS and the appended Monitoring and Mitigation Plans give cursory mention of the need for long term funding to maintain these activities, development of post-closure funding is delayed for evaluation during the post-Project closure period (p. 3-99).

> **Recommendation:** The Supplemental Draft EIS should provide further detail in regards to the nature and likely expense of long term mitigation measures required for ensuring that surface water resources and senior water rights are maintained after the prescribed 30 year post-closure period.

Contingencies for Closure Earlier than Planned
The past decade has seen the price of molybdenum oxide increase from approximately $5 (USD) per pound to a peak over $45 per pound, only to crash back down to less than $10 per pound. Although the market has rebounded slightly to approximately $15 per pound, EPA believes that, particularly in light of the observed volatility of the molybdenum market, it is essential that the Draft EIS consider contingencies in the event that the mine should close prior to the anticipated completion of operations at year 44. EML has indicated that it has contracts for the sale of its product for the first 5 years of mining and milling and is negotiating for an additional 5 years of contracts. However, the proposed project has a 44 year active mining and milling period, only after which will much of the activity take place that is necessary to ensure that the long term impacts of the project are managed.

> **Recommendation**: The Supplemental Draft EIS should consider contingencies for purposes of estimating the net present value and/or current value of the LTFM in the event that the mine should close prior to the planned closure period.

Although the Draft EIS considers the extent and propagation of the depression of groundwater levels near the pit and in the project well field area after the cessation of pumping at year 44, it contains no analysis as to the location and extent of drawdown levels should mining cease at some time prior to year 44. The location and extent of groundwater drawdown at various points in time prior to year 44 may affect the significance and timing of the potential impacts the project has on groundwater resources.

> **Recommendation**: The Supplemental Draft EIS should analyze, discuss, and display the location and extent of groundwater drawdown levels at regular intervals during the active mining and milling period. It should also consider the propagation of drawdown levels and flow direction should dewatering and extraction from Kobeh Valley cease during any of the identified intervals.

Reclamation/Closure Cost Estimate
The Draft EIS does not provide the estimated cost of the reclamation/closure obligations for the proposed project. EPA believes transparency in the EIS regarding this information is important because it addresses whether financial resources will be adequate to meet closure/reclamation obligations and ensure protection of water quality and biological resources. We believe the PAG WRDF should be capped with a geomembrane or equivalent (see comments on pages 7 and 8 below), and the costs associated with this cover should be accounted for in both the closure/reclamation bond and the LTFM.

We also note that the reclamation/closure cost estimate in the POO does not appear to include the cost for converting ponds into ET cells or netting for ponds during the closure period. In addition, the closure period is only considered 30 years in the POO. If active evaporation at the WRDF or tailings collection/evaporation ponds takes longer than 30 years, closure-related O&M costs would not be adequately covered.

> **Recommendation:** The Final EIS should include the estimated costs of all closure/reclamation obligations and mitigation measures for the proposed project. Closure/reclamation costs should include contingencies for collection/evaporation pond closure beyond 30 years.

<u>Impacts Resulting from the Extraction of Groundwater</u>

The proposed project and its action alternatives would result in the extraction of a total of 11,300 acre feet of groundwater per year for ore processing and other consumptive use. This extraction of groundwater resources would result in a 10 foot drawdown contour encompassing an area likely in excess of 200 square miles, including two perennial streams and 22 perennial springs. The Draft EIS indicates that impacts to these resources would persist for up to 400 years (Figure 3.2.19). This reduction in groundwater and surface water availability could alter ecological regimes throughout the hydrologic study area and affect the availability of water for future human, livestock and wildlife use. Table 3.2-9 summarizes the location, mitigation trigger, mitigation, anticipated mitigation effectiveness and additional disturbance associated with mitigation for each natural perennial surface water source for which significant impacts are anticipated. Although EPA appreciates the inclusion of this comprehensive table, the proposed monitoring and mitigation measures identified do not provide sufficient assurance that the potential impacts associated with the proposed groundwater consumption can or will be mitigated.

EPA understands that, on July 15, 2011, the Nevada State Engineer granted Kobeh Valley Ranch, LLC (a company formed by Eureka Moly LLC to handle, hold and control water rights for the Mount Hope Mine project) a total combined duty of 11,300 acre feet annually (afa). Based on the information contained in the Draft EIS at Table 3.2-7 it appears that, for the entirety of the proposed 44 years of active mining and milling, Eureka Moly will require all 11,300 afa they have been allocated in order to operate the Mount Hope Mine. Many of the proposed mitigation measures in Table 3.2-9, however, require the piping of groundwater from the project's water supply to the impact location to supplement reduced flows. In some cases, the volume of groundwater proposed for mitigation is in excess of 6,500 gallons per minute (gpm). It is unclear, based upon the Draft EIS and its appendices, what the source and water right for this water would be, given the Project's stated water needs. NEPA requires that an EIS discuss mitigation measures with "sufficient detail to ensure that environmental consequences have been fairly evaluated."[4] An essential component of this discussion is an assessment of whether the proposed mitigation measures can be effective.[5] Furthermore, Council on Environmental Quality (CEQ) guidance states that "to ensure that environmental effects of a proposed action are fairly assessed, the probability of the mitigation measures being implemented must also be discussed."[6] We acknowledge that the Draft EIS attempts to convey the effectiveness of each proposed mitigation measure and the additional impacts that would occur due to mitigation in Table 3.2-9. However, without additional groundwater allocation for which EML does not currently hold the rights, it would seem that most, if not all, of the proposed mitigation for surface water impacts described in Table 3.2-9 would not be possible during the 44 year active mining and milling period. In the absence of these mitigations, the Project is anticipated to result in significant impacts to surface waters (Draft EIS, p. 3-86, Impact 3.2.3.3-2).

> **Recommendation:** In order for the feasibility, effectiveness, and long term viability of the proposed mitigations to be determined, the Supplemental Draft EIS should specify the source for all supplemental water proposed for use as mitigation. It should identify the owner(s) of all water rights to be utilized and the potential environmental consequences of additional groundwater extraction for mitigation purposes. If EML would be required to divert this water out of its current groundwater allocation, the Supplemental Draft EIS should consider the potential consequences of this on the rate of mining and milling, the socioeconomics of the project, and other affected resource areas.

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[4] *Robertson v. Methow Valley Citizens Council, et al.,* 490 U.S. 332, 352 (1989)
[5] *Neighbors of Cuddy Mountain v. U.S. Forest Service*, 137 F.3d 1372, 1381 (9th Cir. 1998).
[6] Council on Environmental Quality, *Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations*, 46 Fed. Reg. 18026 (1981), Question 19b.

Many of the mitigation measures identified in Section 3.2.3 and Appendix C of the Draft EIS have the potential to produce substantial environmental impacts themselves, including direct disturbance from the construction of pipelines and changes in the project's impacts on groundwater levels. In order to ensure that mitigation essential to the protection of the environment is available as soon as monitoring identifies a need, it is important that environmental impact statements consider in detail the additional impacts that may be associated with mitigation measures. If the EIS does not thoroughly analyze the environmental consequences of proposed mitigation measures, additional environmental review may be necessary before they can be implemented. In many cases, the environmental review process can be lengthy and where mitigation is time-critical, as is the case in regards to surface water resources for the proposed project, significant environmental harm could occur while the environmental review process is taking place.

> **Recommendation:** The Supplemental Draft EIS should analyze the potential environmental impacts associated with the mitigation measures proposed in the Draft EIS and its appendices at a level of detail sufficient to minimize, if not eliminate, the need for additional environmental review prior to implementation of mitigation.

Section 3.11.3 of the Draft EIS states that 4,122 acres of phreatophyte vegetation occur within the 10 foot drawdown area and, therefore, could be lost due to the groundwater extraction associated with the Project (p. 3-388). In addition, approximately four acres of riparian vegetation associated with springs and "an undetermined number of acres associated with the 7.7 miles of perennial streams" (p. 3-389) would potentially be affected by the Project. It is unclear why the acreage and function of riparian habitat along these perennial waters have not been assessed. It seems likely that the amount of riparian habitat these waters support is substantial. While this section of the Draft EIS goes on to state that mitigation for the loss of riparian vegetation is anticipated to be "effective to highly effective," it is impossible to determine the true effectiveness of these measures without a proper baseline assessment of the amount of riparian vegetation present in the anticipated impact area. As previously discussed, the Draft EIS provides insufficient information regarding the source and amount of supplemental water for use as mitigation. The proposed replacement of dying riparian vegetation at a 3:1 ratio with cuttings, plugs and seeds will not mitigate riparian habitat loss, if hydrology does not exist to support this habitat (p. 3-389).

> **Recommendation:** The Supplemental Draft EIS should include an analysis and discussion of the amount of riparian vegetation along Roberts and Henderson Creeks in order to provide a baseline condition so that potential impacts can be adequately predicted and appropriate mitigation measures can be identified. The potential destruction, reduction or deterioration of any and all riparian/wetland zones should be disclosed. The total acreage of wetland/riparian vegetation associated with potentially impacted surface waters should be determined and the potential impacts to those communities should be described. Any measures that could mitigate the potential environmental impacts associated with this loss of habitat should be discussed and disclosed as required by 40 CFR 1502.14(f) & 1502.16(h).

According to the Draft EIS, the proposed project would result in the direct loss of ephemeral and intermittent streams; however, the reach and extent of these waters have not been provided in the Draft EIS. Ephemeral stream channel flows contribute significantly to groundwater recharge in arid regions.[7]

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[7] Levick, L. J. Fonseca, D. Goodrich, M. Hernandez, D. Semmens, J. Stromberg, R. Leidy, M.Scianni, D.P. Guertin, M. Tluczek, and W. Kepner. 2008. *The Ecological and Hydrological Significance of Ephemeral and Intermittent Streams in the*

Stormwater flows also provide seasonally significant surface water contributions to downstream waters. Collectively, in unaltered watersheds, storm flows are a significant source of water contributing to the base flow of downstream receiving waters.[8] In addition, ephemeral and intermittent streams provide resting and forage for wildlife, and serve as important corridors for wildlife movement.

> **Recommendation**: In order to fully assess the environmental impacts of the proposed project, the direct and indirect impacts associated with the loss of ephemeral and intermittent streams should be analyzed in the Supplemental Draft EIS.

In identifying its significance criteria for impacts to resources related to groundwater drawdown, the Draft EIS states that "impacts are considered to be significant where the predicted ten-foot water table drawdown contour encompasses [the water dependent resource in question]." (p. 3-63). The Draft EIS goes on to state that this threshold is used "in part because changes in ground water levels of less than ten feet are difficult to distinguish from natural seasonal and annual fluctuations in groundwater levels." Although EPA understands that analysis of a groundwater table drawdown contour less than 10 feet may present a modeling challenge, such uncertainty alone should not preclude the consideration of potentially significant environmental impacts. Groundwater table drawdown as little as one to two feet is regularly identified when sufficient monitoring of an aquifer is in place. Considering the groundwater monitoring program proposed for the Mount Hope Mine project, it seems unlikely that the natural fluctuation in groundwater levels will be impossible to distinguish from drawdown associated with the pumping program until such levels exceed 10 feet of drawdown. In addition, in light of the substantial impacts associated with only a few feet of groundwater table drawdown in Diamond Valley, it seem reasonable to expect that drawdown of five feet or less within Kobeh Valley will also have impacts upon spring and seep flow, vegetation, and other groundwater dependent resources.

> **Recommendation:** BLM should consider the appropriateness of the ten-foot groundwater table drawdown contour as the threshold for significance. If it is reasonable to anticipate that adverse environmental impacts could be associated with a drawdown of a lesser extent, the Supplemental Draft EIS should analyze that threshold. The Supplemental Draft EIS should disclose all resources likely to be affected by the proposed groundwater pumping under the revised significance threshold.

EPA notes that the United States Army Corps of Engineers (USACE) Jurisdictional Delineation (JD) of Waters of the United States for the proposed project, cited in Section 3.2.2.5 of the Draft EIS, was completed in May of 2007. Jurisdictional delineations require reissuance on a 5 year interval. To date, EPA is not aware of any dialog between the Corps and BLM or the project applicant in regards to this matter.

> **Recommendation:** A new JD should be conducted for the Project and sent to the USACE and EPA for review consistent with current Rapanos guidance.[9] The Supplemental Draft EIS should discuss the status of the JD and any ongoing dialog with the USACE in regards to this matter.

Arid and Semi-arid American Southwest. U.S. EPA and USDA/ARS Southwest Watershed Research Center, EPA/600/R-08/134, ARS/233046, 116 p.

[8] Ibid.

[9] U.S. Environmental Protection Agency and U.S. Army Corps of Engineers, Memorandum on Clean Water Act Jurisdiction Following the U.S. Supreme Court's Decision in Rapanos v. United States & Carabel v. United States, December 2, 2008. Available at: http://water.epa.gov/lawsregs/guidance/wetlands/upload/2008_12_3_wetlands_CWA_Jurisdiction_Following_Rapanos120208.pdf. Proposed revisions to this guidance memorandum are at: http://water.epa.gov/lawsregs/guidance/wetlands/upload/wous_guidance_4-2011.pdf.

Facilities Design and Water Quality

Seepage from the PAG WRDF is expected to contain elevated concentrations of aluminum, arsenic, cadmium, fluoride, manganese, nickel, zinc, copper, iron, lead, beryllium, thallium, selenium, sulfate, and total dissolved solids (Draft EIS, section 3.3.2.2.3). The proposed PAG WRDF and low-grade ore stockpile liners and collection system to promote and control seepage from these facilities should help protect surface water and groundwater quality if they are well designed, properly graded, installed with appropriate quality assurance/quality control, and properly operated and maintained. The collection ponds would store runoff/infiltration from the PAG WRDF and low-grade ore (LGO) stockpile. According to the POO (p. 80), long-term seepage from the PAG WRDF toe is not anticipated for average or dry conditions due to placement of a soil cover over the WRDF, and the PAG runoff/infiltration evaporation pond will be converted to an ET cell upon closure of the PAG WRDF and LGO stockpile. However, modeled WRDF seepage estimates are not provided in the Draft EIS to support any conclusions for average to dry conditions or for wetter conditions during the periods either before or after closure of these facilities. Waste rock facilities that have very low average seepage one year may have orders of magnitude greater seepage the following year (for several weeks to several months) in response to wet conditions. It is unclear from the Draft EIS, therefore, that the proposed soil cover will provide source control essential to proper functioning of the seepage collection system and ET cell, which will be needed to protect water resources from PAG seepage.

Recommendations:
In light of the anticipated contaminant concentrations in the PAG seepage, EPA recommends the PAG WRDF be capped with a geomembrane or equivalent to provide more robust source control needed to protect water quality.

The Supplemental Draft EIS should describe the modeling conducted to determine the full range of seepage volumes over time (i.e., throughout operations, closure/reclamation, and post-closure) from the PAG WRDF and LGO stockpile, and describe the modeling results. The discussion should also include:

- The fate and transport of constituents in the PAG WRDF and LGO stockpile seepage over the course of operations, closure, and post-closure; and
- How unintended and/or unmitigated releases of seepage from these facilities could affect surface water or groundwater quality.

Based on the geochemical characterization of the waste rock, seepage from the non-PAG waste rock could also contain elevated concentrations of several constituents, including iron, manganese, aluminum, arsenic, fluoride, nickel, zinc, and cadmium (Draft EIS, section 3.3.2.2.3). Modeled WRDF seepage estimates are not provided in the Draft EIS to support any conclusions regarding the seepage movement through the non-PAG WRDF during the periods either before or after closure of this facility. It is unclear, therefore, why the non-PAG WRDF would not also be lined.

Recommendations:
In light of the anticipated elevated concentrations of seepage from the non-PAG WRDF under non-acidic conditions, we believe the non-PAG WRDF should include a lined foundation, drainage network, and collection system similar to the system planned for the PAG WRDF. We also believe that a reliable method is needed to identify non-PAG waste rock with high potential to leach lead, zinc, and cadmium so that this material can be assigned to the PAG WRDF. A

contingency measure should be included to convert the non-PAG sedimentation ponds into ET cells after closure should monitoring of seepage from the non-PAG WRDF during operations indicate the need to preclude it from being discharged to surface waters. The Supplemental Draft EIS should address these issues.

The Supplemental Draft EIS should describe the modeling conducted to determine the full range of seepage volumes over time from the non-PAG WRDF, and describe the modeling results. The discussion should also include:

- The fate and transport of constituents in the non-PAG WRDF seepage over the course of operations, closure, and post-closure; and
- How unintended and/or unmitigated releases of seepage from this facility could affect surface water or groundwater quality.

The Draft EIS does not describe in detail the potential fate or impacts of underdrain and draindown solutions from the North and South Tailings Storage Facilities. Furthermore, it describes neither the potential long-term impacts to vegetation and wildlife from accumulation of salts and metals in the tailings or WRDF ET cells, nor the post-closure passive ET system management activities necessary to keep the ET cells working effectively. For example, the July 27, 2011 POO cover letter (p. 9) indicates that precipitates expected to form in the tailings ET cells include gypsum, siderite, and ankerite. These cells are expected to have a "finite life but indeterminate life, and an LTFM will be established for long-term maintenance." The accumulation of precipitates and salts in the ET cells could reduce the ET cells' draindown containment capacity and plant viability, and, therefore, their evapotranspirative capacities over time; however, neither the POO nor the Draft EIS estimate ET cell life for any of the ET cells.

The July 27, 2011 POO cover letter (p. 10) also states that, because the draindown solutions in the ET cells are anticipated to be of "relatively good quality," the constituents that could potentially be taken up by vegetation are not likely to provide a risk to wildlife receptors; however, at the time of final permanent closure, a Screening Level Ecological Risk Assessment (SLERA) would be completed to determine the detailed risks based on the fluids present in the tailings storage facilities, and the design would be modified accordingly. None of the documents we have reviewed appear to support the statement that solutions in any of the ET cells will be of relatively good quality. For example, over time, the tailings will become acidic with elevated aluminum, antimony, arsenic, cadmium, fluoride, manganese, molybdenum and sulfate concentrations (Draft EIS, p. 2-53). Seepage from the PAG WRDF is expected to contain elevated concentrations of aluminum, arsenic, cadmium, fluoride, manganese, nickel, zinc, copper, iron, lead, beryllium, thallium, selenium, sulfate, and total dissolved solids; and seepage from the non-PAG WRDF may have high levels of iron, manganese, aluminum, arsenic, fluoride, nickel, zinc, and cadmium (Draft EIS, section 3.3.2.2.3). EPA believes an ecological risk assessment should be conducted as part of the NEPA process. The potential risks associated with the ET cells should be determined and disclosed in the Supplemental EIS so that appropriate mitigation measures can be developed and disclosed, and the reclamation/closure and post-closure costs can be estimated for inclusion in the financial assurance for the project.

Recommendation: Appropriate modeling and analysis should be conducted to determine the potential fate and impacts of constituents in the seepage and draindown solutions from the WRDFs (including the non-PAG WRDF), LGO stockpile, and tailings over the course of closure and post-closure, as well as the ecological risks posed by their ET cells. The Supplemental Draft EIS should provide the following information:

- Identify the constituents and their potential concentration ranges anticipated in the seepage and draindown solutions over the course of operations, reclamation/closure, and post-closure.
- Describe and discuss the potential problems that could result from contaminants concentrated in the ET cells after closure.
- Describe plans for vegetating the ET cells, and discuss whether changing draindown rates over time would be expected to result in changes in species types and densities for each ET cell.
- For each ET cell, describe the initial and total anticipated loading of metals and other contaminants, whether they are expected to plug up over the long term, whether they will need to be occasionally excavated, and if so, how frequently. This discussion should be supported with the results of modeling conducted to address these issues.
- For each ET cell that may need to be excavated, describe how excavated ET fill would be disposed and ET cells reconstructed and maintained.
- Describe the plant and animal exposure pathways for constituents from draindown solution in each of the ET cells, and any unintended ponding that may occur.
- Discuss whether anticipated concentrations of contaminants from any of the pathways would be harmful to plants or wildlife.
- Describe the potential contaminant uptake and bioaccumulation predicted for plants, invertebrates, and other wildlife in the ET cells. The discussion should address all potential pathways, including the ET cell fill (tailings) and growth medium as precipitates, metals, and salts accumulate, as well as any ponding that may occur.
- Discuss whether vegetation would need to be occasionally harvested in order to reduce bioaccumulation of metals in the food web, and at what frequency, based on modeling conducted to address these issues. Address whether and how the timing of ET cell excavations could affect the timing and need for vegetation harvests.
- Describe methods that would be used to exclude wildlife (e.g., netting and fencing) from the ET cells or any ponded water to minimize risks to wildlife during operations, closure, and/or post-closure.

The Draft EIS contains several inconsistencies and/or items that need clarification regarding the PAG and non-PAG collection channels and ponds. For example, page 2-58 describes the PAG and non-PAG WRDF diversion and collection channels as being lined with 60-mil HDPE. The Mount Hope Project Stormwater Management Plan (SRK, July 2011) indicates, however, that the non-PAG WRDF collection channels will be lined with geomembrane in steeper areas and rip-rap in less steep areas where the channels flow into sediment retention basins. Figures 2.1.10 and 2.1.19 in the Draft EIS depict the collection channel at the toe of the non-PAG WRDF as an unlined diversion channel with rip-rap and the PAG WRDF collection/diversion channel with compacted low permeability base and rip-rap. These figures do not indicate use of geomembranes. Page 2-84 of the Draft EIS indicates that the collection pond for the PAG WRDF will be lined with a geomembrane but does not indicate whether the non-PAG collection pond would be lined with a geomembrane.

Recommendations:
EPA recommends that the PAG and non-PAG WRDF collection channels and ponds be lined with a geomembrane.

The Supplemental Draft EIS should rectify the discrepancies identified above.

The proposed North and South Tailings Storage Facility liner and collection systems are designed to control tailings underdrain solutions and storm water and keep them from entering surface waters and groundwater during operations, closure, and post-closure. The tailings are expected to become acidic over time, and concentrations of several constituents in the underdrain solution, including aluminum, antimony, cadmium, fluoride, manganese, molybdenum, and sulfate, are expected to exceed NDEP Profile II values (Draft EIS (p. 2-53). Proper installation and O&M of the tailings impoundments, embankments, and collection systems will be critical to protecting water quality. It appears that the ET cells for the tailings facilities will be sized to contain average post-closure draindown rates based on the simplified draindown response curves presented in *Mount Hope Project South and North Tailings Storage Facility Draindown Estimate* (AMEC Earth & Environmental, June 2011). The numeric modeling draindown responses in that report predict higher drainage rates between years 30 and 200 than the simplified draindown response curves predict.

> **Recommendation:** For purposes of planning post-closure obligations (e.g., ET cell O&M and excavations) and estimating post-closure costs, EPA recommends the more conservative draindown response curves be used. In addition, contingencies should be applied for greater than anticipated draindown during wet periods (500-yr event, rain-on-snow storm event, or a wet period preceding a large storm), which could lead to increased draindown reporting to the ponds and ET cells.

The Draft EIS states that the run-on diversion channel for the North Tailings Facility will not be designed until two years before closure.

> **Recommendation:** The Supplemental Draft EIS should provide a general description of the proposed run-on channel and depict it in maps of the proposed mine facilities.

Monitoring and Mitigation

The Draft EIS and its appendices identify various mitigation measures that have been developed for specific resources. The Mount Hope Project Water Resources Monitoring Plan (Appendix B) and Mount Hope Mitigation Summary Plan (Appendix C) take an adaptive management approach to provide a framework for future implementation of mitigation where needed and to set out a process by which BLM will develop further measures to mitigate observed effects. Although EPA agrees that an adaptive management approach is appropriate in cases where significant uncertainty remains despite a good faith effort to perform thorough upfront environmental analysis, as in this case, we have serious concerns that these monitoring and mitigation plans are insufficient to ensure that water resources would be adequately protected in the long term.

In regards to surface water resources, the text of Section 3.2.3.3 states that "if monitoring indicated that flow reduction of perennial surface waters are occurring... the following measures would be implemented..." (p. 3-86). In contrast, the Mitigation Plan relies upon Table 3.2-9 of the Draft EIS for identification of site specific measures. This table states that mitigation would be triggered by a "cessation in flow coincident with a reduction in ground water levels in this area". This mitigation trigger is applied for nearly all surface water resources, including Roberts Creek, which experiences flow rates in excess of 6,500 gallons per minute (p. 3-96). EPA objects to the use of *cessation* of flow as the trigger for implementation of measures essential to ensuring the continued flow of surface waters. Should surface water resources be allowed to run completely dry before BLM or EML even begins the process of further analyzing site specific mitigation (Appendix C, page C-4), it seems unavoidable that

the riparian habitat and beneficial wildlife, livestock, and human uses associated with these surface waters would be severely and adversely impacted. In addition, this mitigation trigger directly contradicts the stated goal of the monitoring program at Item 10, which states that this Plan would "provide an early warning before project impacts become unmanageable" (Appendix B, page 2).

According to the Draft EIS, impacts resulting from the pumping of groundwater in Kobeh Valley under the proposed project would persist for over 100 years, while those associated with the pit dewatering operations would remain for a period greater than 400 years. In fact, even after the 400 year period modeled, the groundwater table drawdown associated with pit dewatering displays only a mild contraction in total area. Despite this, Mitigation Measures 1 and 3 for Surface Water Resources in Appendix C discuss long term impacts associated with the project as uncertainties that would need further analysis to assess. Responsibility for monitoring and mitigation is required of EML for only a 30 year period after the cessation of mining and milling operations, and additional analysis of the nature of longer term measures to ensure maintenance of surface water resources is delayed until the mine closure period. Considering the scale and duration of potential impacts associated with this project, it seems unavoidable that much longer term mitigation measures will be necessary if surface water resources are to be maintained. As such, the current discussion regarding long term surface water maintenance activities is insufficiently vague and does not provide firm enough commitments to guarantee long term protections.

> **Recommendation:** BLM should require mitigation to be triggered by any reduction in flow attributable to mine-induced drawdown of groundwater levels. Table 3.2.9 should be revised to reflect this requirement. The Supplemental Draft EIS should require that trend analysis be an ongoing element of the water quantity monitoring plan so that, as reductions in water quantity are detected, they can be investigated and mitigation measures can be implemented in an expedited fashion. The Supplemental Draft EIS should also provide firmer commitment to long term surface water mitigation measures.

The Mount Hope Project Monitoring Plan (Draft EIS, App. B) primarily addresses water quantity monitoring and provides almost no information on water quality monitoring. For example, the Monitoring Plan identifies only four wells and two locations in Roberts Creek that will be monitored for water quality, but it does not specify the parameters to be monitored, the frequency of monitoring, or the mine phases during which monitoring will be conducted. We were unable to find any additional discussion of water quality monitoring or identification of water quality monitoring sites in the Draft EIS. Tables 6-12 and 6-13 in the POO identify several wells and facility fluid collection areas that would be monitored, but for only the mine closure period, and for only up to 30 years. These tables do not include monitoring of the pit lake or WRDF seepage and draindown solutions.

> **Recommendations:** BLM should require water quality monitoring of groundwater, springs (including the spring drainage from under the non-PAG WRDF and adjacent to the PAG WRDF), stormwater, seepage collection ponds, other surface expressions of water, and ET cells. Such monitoring will be critical to ensuring that the mine facilities are working properly and that measures can be taken quickly to rectify problems if adverse water quality trends are detected. EPA believes that all of this monitoring, as well as pit lake monitoring, will likely be needed for hundreds of years after closure. For planning and cost estimation purposes, water quality and flow monitoring at the mine should be required in perpetuity.

The Supplemental Draft EIS should include a detailed table identifying all groundwater, surface water, and mine facility locations that will be monitored throughout mine operations, closure/reclamation, and post-closure. The table should identify the parameters to be monitored, frequency of monitoring and reporting, and the standards that will need to be met for each parameter in each setting. Trend analysis should be an ongoing element of the water quality monitoring plan so that, as water quality trends are detected, they can be investigated and appropriate mitigation measures can be implemented promptly.

We were unable to find a map anywhere in the Draft EIS or POO depicting the mine facilities with an overlay of the proposed water quality and water quantity monitoring locations. This compounds the lack of clarity regarding which sites and facilities will be monitored, whether the proposed monitoring sites are the most appropriate, and whether additional or alternate monitoring locations may be needed.

Recommendation: The Supplemental Draft EIS and Monitoring Plan should provide one or more maps depicting the locations of all monitoring sites for both water quality and water quantity overlaid on the mine facilities and appurtenances. The identifying labels for each monitoring location on the maps should be consistent with the identifying labels for each monitoring location in the Monitoring Plan.

According to the Draft EIS (Table 2.1-10), seepage from the PAG WRDF would only be monitored for five years after closure (i.e., years 28 through 33). EPA believes, however, that long-term closure and post-closure monitoring of both the PAG and non-PAG WRDFs will be needed.

Recommendation: Monitoring should address the integrity of the WRDF cap/covers, solution collection systems, evaporation ponds, and ET cells; the water quality of the collected solutions, groundwater, stormwater, and any other surface water expressions in the vicinity of, or potentially associated with, the WRDFs; and the composition of the ET cell growth medium, pore water, and vegetation from the standpoint of bioaccumulation and ecological risk. Such monitoring should continue in perpetuity.

The Mitigation Summary Plan provides neither the action levels that would trigger measures to rectify water quality deterioration problems, nor the mitigation measures that would be implemented in each case.

Recommendation: The detailed monitoring table recommended above should also specify the Action Levels for each water quality parameter in each setting. Action Levels should be established to trigger investigation and mitigation measures before standards are exceeded to ensure continued protection of water quality. The Mitigation Summary Plan should provide specific mitigating actions to be implemented in the event that monitoring identifies mine-related degradation of surface water or ground water quality.

EPA is not clear why the Mount Hope Monitoring Plan and Mitigation Plan have been separated rather than being presented as a single Monitoring and Mitigation Plan. Monitoring and mitigation should work seamlessly together to identify and rectify environmental impacts before problems become unmanageable. Organizing these plans individually reduces clarity and introduces the possibility for inconsistency.

Recommendation: The Monitoring Plan and Mitigation Plan should be joined into a Monitoring and Mitigation Plan that provides a more comprehensive approach to controlling and preventing environmental contamination.

Air Quality

The Draft EIS estimates substantial loss of phreatophytic vegetation as a consequence of drawdown of groundwater table levels. This change in vegetative coverage may increase the amount of windblown dust particulate emissions in the region. While the Draft EIS makes no statement as to the significance of these emissions, it is possible that they could have significant adverse impacts on local and regional air quality. However, because no evaluation of this impact has been provided, no conclusions can be made regarding the severity of these emissions in relation to the National Ambient Air Quality Standards (NAAQS) for particulate matter 10 microns or less (PM_{10}), or for particulate matter 2.5 microns or less ($PM_{2.5}$).

Recommendation: The Supplemental Draft EIS should discuss the anticipated particulate emissions associated with the loss of vegetative communities due to groundwater drawdown. While there may not be an emissions factor for estimating emissions from this source, it is often possible to develop an emission factor based on site-specific geologic conditions that would generate a more accurate emissions estimate. We recommend BLM's air quality analysts consult with windblown dust experts from the Nevada research community, whom we are aware have done extensive wind-blown dust studies, to develop site-specific emissions factors.

The proposed Mount Hope Mine would toll roast molybdenum ore from other mines, involving delivery of up to seven 22-ton capacity highway trucks per day, and off-site transport of up to nine 22-ton capacity highway trucks every two days. The Draft EIS does not include additional information regarding the potential sources of this off-site ore or the estimated vehicle miles traveled associated with it. It is also unclear whether the emissions associated with on-site and off-site delivery of toll roast ore, process chemicals, fuels, etc., have been accounted for in the criteria pollutant emissions estimates for the proposed project and alternatives.

Recommendation: The Supplemental Draft EIS should describe the direct, indirect, and cumulative air impacts associated with the project. The discussion should include the potential toll roast ore sources, and estimates of the vehicle miles traveled and criteria pollutant emissions associated with all aspects of the project including: toll roast ore, process chemicals, fuels, and other materials.

In a discussion of roaster off gas emissions, the Draft EIS (p. 2-42) does not identify any hazardous air pollutants (HAP) associated with the proposed Mount Hope roasters. Lead, mercury, arsenic, antimony, cadmium, selenium, nickel and manganese may be associated with molybdenum roaster emissions. HAPs concentrations in molybdenum concentrate vary from mine to mine, and it is unclear from Section 3.6, Air and Atmospheric Values, whether HAPs from toll roasting of ore from other mines were accounted for in the HAPs emissions estimates in Table 3.6-10.

Recommendation: Table 3.6-10 in the Supplemental Draft EIS should include estimated HAPs emissions from the Mount Hope roasters for all sources of concentrate, i.e., from the Mount Hope mill and from offsite mines.

The Draft EIS (p. 3-277) states that the maximum modeled nitrogen dioxide (NO_2) concentration is well below the Nevada State and National Ambient Air Quality Standards (NSAAQS and NAAQS). While Table 3.6-9 in the Draft EIS indicates that the modeled NO_2 concentration does not exceed the 1-hour NO_2 NAAQS, it comes relatively close. The Draft EIS also states that, because modeling indicates that project emissions from criteria pollutants would not exceed the NSAAQS and NAAQS, no additional mitigation measures are proposed, other than those mentioned on page 2-65. Even when projects are expected to meet all NAAQS, we encourage agencies to explore mitigation measures that can further reduce emissions of criteria pollutants. Several mitigation measures exist to reduce particulate matter, nitrogen dioxide (NO_2), ozone precursors, and other HAPs.

Recommendations: In addition to the dust control measures mentioned in the Draft EIS (p. 2-65), EPA recommends the following mitigation measures be included in the Supplemental Draft EIS in order to reduce impacts associated with emissions of particulate matter, NO_x, ozone, and other toxics from mining activities:

- Limit idling of heavy equipment to less than 5 minutes and verify through unscheduled inspections;
- Maintain and tune engines per manufacturer's specifications to perform at EPA certification levels, prevent tampering, and conduct unscheduled inspections to ensure these measures are followed;
- If practicable, lease new, clean equipment meeting the most stringent of applicable Federal standards[10]. In general, commit to the best available emissions control technology. Tier 4 engines should be used for project construction equipment to the maximum extent feasible[11];
- Lacking availability of non-road construction equipment that meets Tier 4 engine standards, EML should commit to using best available control technology to reduce emissions of diesel particulate matter and other pollutants at the mine site; and
- Consider alternative fuels such as natural gas and electricity (plug-in or battery).

It is unclear based upon the information presented in the Draft EIS whether all potential sources of NO_2 have been accounted for in the model. Section 3.6.3.2, which summarizes the modeling protocols employed for the project, only discusses particulate emissions rather than all Clean Air Act criteria pollutants associated with the project.

Recommendation: Ensure that all sources of NO_2 have been accounted for in the model. Provide additional information in Section 3.6.3.2.1 summarizing the modeling protocols employed for all criteria pollutants associated with the project, not just particulate emissions.

The Draft EIS (p. 3-254) indicates that EPA would update the 8-hour ozone standard in late 2011. The standard was revised on March 12, 2008 to 0.075 parts per million, which is the current standard. EPA is proceeding with designating new nonattainment areas for the 2008 8-hour ozone standard. There are no new nonattainment areas in Nevada for the 2008 8-hour ozone standard.

Recommendation: The FEIS should update this language.

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[10] EPA's website for nonroad mobile sources is http://www.epa.gov/nonroad/.

[11] Diesel engines < 25 hp rated power started phasing in Tier 4 Model Years in 2008. Larger Tier 4 diesel engines will be phased in depending on the rated power (e.g., 25 hp - <75 hp: 2013; 75 hp - < 175 hp: 2012-2013; 175 hp - < 750 hp: 2011 - 2013; and ≥ 750 hp 2011- 2015).

SUMMARY OF EPA RATING DEFINITIONS

This rating system was developed as a means to summarize EPA's 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 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 must 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 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."

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Financial Assurance for Reclamation/Closure and Post-Closure Obligations

Need for a Long-Term Funding Mechanism

Numerous post-closure monitoring and mitigation activities will need to be conducted by Eureka Moly, LLC (EML) to ensure protection of water quality and wildlife in the area affected by Mount Hope Mine. BLM will require EML to establish a long-term funding mechanism (LTFM) to ensure implementation of post-closure monitoring and management obligations at the proposed mine site and within the approximately 200-square-mile area affected by the mine. The Draft EIS does not identify the cost estimate for the LTFM or analyze the adequacy and uncertainties associated with this funding amount. Nor does the Draft EIS describe or analyze the actual funding mechanism (or funding options) in any detail to demonstrate how it will ensure that the costs of post-closure monitoring and mitigation will be covered for as long as needed.

> **Recommendation:** We recommend that BLM determine the appropriate level of funding for the Mount Hope LTFM and disclose the specific mechanism that will be established for the proposed project; analyze the adequacy of the funding amount and mechanism; and circulate this information in a Supplemental Draft EIS for public comment.

There is no single right way to establish a trust; however, the overall goal is clear: ensuring that the trust has sufficient assets to cover the costs for which it was established, for as long as needed.

> **Recommendation:** We recommend BLM consider the following approaches to help ensure that the Mount Hope LTFM covers the costs of all necessary post-closure monitoring and operation and maintenance (O&M) obligations for as long as they may be needed, which we believe may be at least several hundred years.

- **Shift to current value trusts or use more realistic discount rates.** BLM uses net present value (NPV) trusts (i.e., cost estimates calculated using a discount rate). EPA allows for current value trusts (i.e., cost estimates calculated in current dollars) in many situations, and under this approach, the trust is fully funded immediately. Where NPV trusts are used, the single most important factor in calculating the beginning amount of the trust corpus (and therefore, the value of the trust in the future) is to use an appropriate discount rate. Overly aggressive discount rates "backload" contributions to the trust over time, and also limit true-up contributions. EPA suggests that BLM consider the use of current value trusts or NPV trusts with a standard benchmark discount rate as opposed to an individually negotiated rate. For example, EPA has authorized the 30-year Treasury Constant Maturity return for some trusts that allow for NPV.

- **Shift to annual true-up cycle.** BLM requires adjustments, or "true-ups", to trust funds every three years if they are not meeting their growth performance goals. EPA strongly

supports the idea of a true-up requirement, but recommends that BLM consider using an annual true-up cycle rather than a 3-year cycle, to address both problematic investment performance and the risk of grantor bankruptcy or other corporate failure more often. Catching either of these problems quickly (i.e., with a shorter true-up cycle) would ensure that the trust is better positioned to secure the appropriate funds to make the trust whole.

- **Consider a more conservative investment portfolio requirement.** BLM imposes few limitations on the types of investments allowed for its trust funds. EPA generally imposes significant limitations on potential investments, especially when the trust is an NPV trust. We acknowledge that there is a downside to conservative investment strategies (namely, that the grantor contribution would likely increase), but believe, given the adverse consequences of trust failure for future taxpayers and/or the environment, that a conservative approach may be appropriate in this instance.

Specific Long-Term Monitoring and O&M Activities and Costs

According to the Draft EIS (p. 2-71), the LTFM obligations could include maintenance of process draindown evapotranspiration (ET) cells, mitigation of potential impacts to seeps and springs and other surface waters, and fencing maintenance, as described in Plan of Operations (POO) section 6.E. However, we were unable to find any description of these activities or any other post-closure O&M activities in the POO or Draft EIS.

It will be important to ensure that the tailings and waste rock disposal facility (WRDF) covers, evaporation ponds, and ET cells are conservatively maintained and rehabilitated/replaced and meet performance standards in perpetuity. We believe that excavation and disposal of ET cell fill and rehabilitation of ET cells will be needed, although the anticipated frequencies of these activities for each ET cell are unknown. Regular inspections and repairs of the tailings and WRDFs will be important, especially after storms and spring snowmelt, as will ongoing O&M and replacement of ponds, liners, draindown collection systems. The Draft EIS does not describe any of these activities nor identify them as post-closure obligations. Additional post-closure obligations will be needed as well, such as road and culvert maintenance; erosion repair and revegetation; maintenance of stormwater channels, retention ponds, and best management practices; water quality monitoring; site security; and associated equipment, materials and labor costs. In light of the monitoring and O&M needs to maintain the assumed performance during the post-closure period, we assume that a crew consisting of two full time employees and equipment and materials, as necessary, may be needed.

> **Recommendation:** The Supplemental Draft EIS should specify all of the post-closure monitoring, O&M, and replacement activities, and describe their performance standards. The Supplemental Draft EIS should also include the cost estimates for these activities, which will be used to estimate the LTFM obligations.

According to the Draft EIS, impacts resulting from the consumption of groundwater associated with the proposed project would persist for a period greater than 400 years. In fact, even at the end of the 400 year groundwater modeling period, the 10 foot groundwater drawdown contour displays almost no reduction in area around the mine pit. It will, therefore, be important to ensure that funding exists for maintenance of surface water and groundwater monitoring stations and

mitigation measures far into the future. While the Draft EIS and the appended Monitoring and Mitigation Plans give cursory mention of the need for long term funding to maintain these activities, development of post-closure funding is delayed for evaluation during the post-Project closure period (p. 3-99).

> **Recommendation:** The Supplemental Draft EIS should provide further detail in regards to the nature and likely expense of long term mitigation measures required for ensuring that surface water resources and senior water rights are maintained after the prescribed 30 year post-closure period.

Contingencies for Closure Earlier than Planned

The past decade has seen the price of molybdenum oxide increase from approximately $5 (USD) per pound to a peak over $45 per pound, only to crash back down to less than $10 per pound. Although the market has rebounded slightly to approximately $15 per pound, EPA believes that, particularly in light of the observed volatility of the molybdenum market, it is essential that the Draft EIS consider contingencies in the event that the mine should close prior to the anticipated completion of operations at year 44. EML has indicated that it has contracts for the sale of its product for the first 5 years of mining and milling and is negotiating for an additional 5 years of contracts. However, the proposed project has a 44 year active mining and milling period, only after which will much of the activity take place that is necessary to ensure that the long term impacts of the project are managed.

> **Recommendation**: The Supplemental Draft EIS should consider contingencies for purposes of estimating the net present value and/or current value of the LTFM in the event that the mine should close prior to the planned closure period.

Although the Draft EIS considers the extent and propagation of the depression of groundwater levels near the pit and in the project well field area after the cessation of pumping at year 44, it contains no analysis as to the location and extent of drawdown levels should mining cease at some time prior to year 44. The location and extent of groundwater drawdown at various points in time prior to year 44 may affect the significance and timing of the potential impacts the project has on groundwater resources.

> **Recommendation**: The Supplemental Draft EIS should analyze, discuss, and display the location and extent of groundwater drawdown levels at regular intervals during the active mining and milling period. It should also consider the propagation of drawdown levels and flow direction should dewatering and extraction from Kobeh Valley cease during any of the identified intervals.

Reclamation/Closure Cost Estimate

The Draft EIS does not provide the estimated cost of the reclamation/closure obligations for the proposed project. EPA believes transparency in the EIS regarding this information is important because it addresses whether financial resources will be adequate to meet closure/reclamation obligations and ensure protection of water quality and biological resources. We believe the PAG WRDF should be capped with a geomembrane or equivalent (see comments on pages 7 and 8

below), and the costs associated with this cover should be accounted for in both the closure/reclamation bond and the LTFM.

We also note that the reclamation/closure cost estimate in the POO does not appear to include the cost for converting ponds into ET cells or netting for ponds during the closure period. In addition, the closure period is only considered 30 years in the POO. If active evaporation at the WRDF or tailings collection/evaporation ponds takes longer than 30 years, closure-related O&M costs would not be adequately covered.

> **Recommendation:** The Final EIS should include the estimated costs of all closure/reclamation obligations and mitigation measures for the proposed project. Closure/reclamation costs should include contingencies for collection/evaporation pond closure beyond 30 years.

Impacts Resulting from the Extraction of Groundwater

The proposed project and its action alternatives would result in the extraction of a total of 11,300 acre feet of groundwater per year for ore processing and other consumptive use. This extraction of groundwater resources would result in a 10 foot drawdown contour encompassing an area likely in excess of 200 square miles, including two perennial streams and 22 perennial springs. The Draft EIS indicates that impacts to these resources would persist for up to 400 years (Figure 3.2.19). This reduction in groundwater and surface water availability could alter ecological regimes throughout the hydrologic study area and affect the availability of water for future human, livestock and wildlife use. Table 3.2-9 summarizes the location, mitigation trigger, mitigation, anticipated mitigation effectiveness and additional disturbance associated with mitigation for each natural perennial surface water source for which significant impacts are anticipated. Although EPA appreciates the inclusion of this comprehensive table, the proposed monitoring and mitigation measures identified do not provide sufficient assurance that the potential impacts associated with the proposed groundwater consumption can or will be mitigated.

EPA understands that, on July 15, 2011, the Nevada State Engineer granted Kobeh Valley Ranch, LLC (a company formed by Eureka Moly LLC to handle, hold and control water rights for the Mount Hope Mine project) a total combined duty of 11,300 acre feet annually (afa). Based on the information contained in the Draft EIS at Table 3.2-7 it appears that, for the entirety of the proposed 44 years of active mining and milling, Eureka Moly will require all 11,300 afa they have been allocated in order to operate the Mount Hope Mine. Many of the proposed mitigation measures in Table 3.2-9, however, require the piping of groundwater from the project's water supply to the impact location to supplement reduced flows. In some cases, the volume of groundwater proposed for mitigation is in excess of 6,500 gallons per minute (gpm). It is unclear, based upon the Draft EIS and its appendices, what the source and water right for this water would be, given the Project's stated water needs. NEPA requires that an EIS discuss mitigation measures with "sufficient detail to ensure that environmental consequences have been fairly evaluated."[4] An essential component of this discussion is an assessment of whether the

[4] *Robertson v. Methow Valley Citizens Council, et al.,* 490 U.S. 332, 352 (1989)

proposed mitigation measures can be effective.[5] Furthermore, Council on Environmental Quality (CEQ) guidance states that "to ensure that environmental effects of a proposed action are fairly assessed, the probability of the mitigation measures being implemented must also be discussed."[6] We acknowledge that the Draft EIS attempts to convey the effectiveness of each proposed mitigation measure and the additional impacts that would occur due to mitigation in Table 3.2-9. However, without additional groundwater allocation for which EML does not currently hold the rights, it would seem that most, if not all, of the proposed mitigation for surface water impacts described in Table 3.2-9 would not be possible during the 44 year active mining and milling period. In the absence of these mitigations, the Project is anticipated to result in significant impacts to surface waters (Draft EIS, p. 3-86, Impact 3.2.3.3-2).

> **Recommendation:** In order for the feasibility, effectiveness, and long term viability of the proposed mitigations to be determined, the Supplemental Draft EIS should specify the source for all supplemental water proposed for use as mitigation. It should identify the owner(s) of all water rights to be utilized and the potential environmental consequences of additional groundwater extraction for mitigation purposes. If EML would be required to divert this water out of its current groundwater allocation, the Supplemental Draft EIS should consider the potential consequences of this on the rate of mining and milling, the socioeconomics of the project, and other affected resource areas.

Many of the mitigation measures identified in Section 3.2.3 and Appendix C of the Draft EIS have the potential to produce substantial environmental impacts themselves, including direct disturbance from the construction of pipelines and changes in the project's impacts on groundwater levels. In order to ensure that mitigation essential to the protection of the environment is available as soon as monitoring identifies a need, it is important that environmental impact statements consider in detail the additional impacts that may be associated with mitigation measures. If the EIS does not thoroughly analyze the environmental consequences of proposed mitigation measures, additional environmental review may be necessary before they can be implemented. In many cases, the environmental review process can be lengthy and where mitigation is time-critical, as is the case in regards to surface water resources for the proposed project, significant environmental harm could occur while the environmental review process is taking place.

> **Recommendation:** The Supplemental Draft EIS should analyze the potential environmental impacts associated with the mitigation measures proposed in the Draft EIS and its appendices at a level of detail sufficient to minimize, if not eliminate, the need for additional environmental review prior to implementation of mitigation.

Section 3.11.3 of the Draft EIS states that 4,122 acres of phreatophyte vegetation occur within the 10 foot drawdown area and, therefore, could be lost due to the groundwater extraction associated with the Project (p. 3-388). In addition, approximately four acres of riparian vegetation associated with springs and "an undetermined number of acres associated with the 7.7 miles of perennial streams" (p. 3-389) would potentially be affected by the Project. It is unclear

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[5] *Neighbors of Cuddy Mountain v. U.S. Forest Service*, 137 F.3d 1372, 1381 (9th Cir. 1998).

[6] Council on Environmental Quality, *Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations*, 46 Fed. Reg. 18026 (1981), Question 19b.

why the acreage and function of riparian habitat along these perennial waters have not been assessed. It seems likely that the amount of riparian habitat these waters support is substantial. While this section of the Draft EIS goes on to state that mitigation for the loss of riparian vegetation is anticipated to be "effective to highly effective," it is impossible to determine the true effectiveness of these measures without a proper baseline assessment of the amount of riparian vegetation present in the anticipated impact area. As previously discussed, the Draft EIS provides insufficient information regarding the source and amount of supplemental water for use as mitigation. The proposed replacement of dying riparian vegetation at a 3:1 ratio with cuttings, plugs and seeds will not mitigate riparian habitat loss, if hydrology does not exist to support this habitat (p. 3-389).

> **Recommendation:** The Supplemental Draft EIS should include an analysis and discussion of the amount of riparian vegetation along Roberts and Henderson Creeks in order to provide a baseline condition so that potential impacts can be adequately predicted and appropriate mitigation measures can be identified. The potential destruction, reduction or deterioration of any and all riparian/wetland zones should be disclosed. The total acreage of wetland/riparian vegetation associated with potentially impacted surface waters should be determined and the potential impacts to those communities should be described. Any measures that could mitigate the potential environmental impacts associated with this loss of habitat should be discussed and disclosed as required by 40 CFR 1502.14(f) & 1502.16(h).

According to the Draft EIS, the proposed project would result in the direct loss of ephemeral and intermittent streams; however, the reach and extent of these waters have not been provided in the Draft EIS. Ephemeral stream channel flows contribute significantly to groundwater recharge in arid regions.[7] Stormwater flows also provide seasonally significant surface water contributions to downstream waters. Collectively, in unaltered watersheds, storm flows are a significant source of water contributing to the base flow of downstream receiving waters.[8] In addition, ephemeral and intermittent streams provide resting and forage for wildlife, and serve as important corridors for wildlife movement.

> **Recommendation**: In order to fully assess the environmental impacts of the proposed project, the direct and indirect impacts associated with the loss of ephemeral and intermittent streams should be analyzed in the Supplemental Draft EIS.

In identifying its significance criteria for impacts to resources related to groundwater drawdown, the Draft EIS states that "impacts are considered to be significant where the predicted ten-foot water table drawdown contour encompasses [the water dependent resource in question]." (p. 3-63). The Draft EIS goes on to state that this threshold is used "in part because changes in ground water levels of less than ten feet are difficult to distinguish from natural seasonal and annual fluctuations in groundwater levels." Although EPA understands that analysis of a groundwater

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[7] Levick, L. J. Fonseca, D. Goodrich, M. Hernandez, D. Semmens, J. Stromberg, R. Leidy, M.Scianni, D.P. Guertin, M. Tluczek, and W. Kepner. 2008. *The Ecological and Hydrological Significance of Ephemeral and Intermittent Streams in the Arid and Semi-arid American Southwest.* U.S. EPA and USDA/ARS Southwest Watershed Research Center, EPA/600/R-08/134, ARS/233046, 116 p.

[8] Ibid.

table drawdown contour less than 10 feet may present a modeling challenge, such uncertainty alone should not preclude the consideration of potentially significant environmental impacts. Groundwater table drawdown as little as one to two feet is regularly identified when sufficient monitoring of an aquifer is in place. Considering the groundwater monitoring program proposed for the Mount Hope Mine project, it seems unlikely that the natural fluctuation in groundwater levels will be impossible to distinguish from drawdown associated with the pumping program until such levels exceed 10 feet of drawdown. In addition, in light of the substantial impacts associated with only a few feet of groundwater table drawdown in Diamond Valley, it seem reasonable to expect that drawdown of five feet or less within Kobeh Valley will also have impacts upon spring and seep flow, vegetation, and other groundwater dependent resources.

> **Recommendation:** BLM should consider the appropriateness of the ten-foot groundwater table drawdown contour as the threshold for significance. If it is reasonable to anticipate that adverse environmental impacts could be associated with a drawdown of a lesser extent, the Supplemental Draft EIS should analyze that threshold. The Supplemental Draft EIS should disclose all resources likely to be affected by the proposed groundwater pumping under the revised significance threshold.

EPA notes that the United States Army Corps of Engineers (USACE) Jurisdictional Delineation (JD) of Waters of the United States for the proposed project, cited in Section 3.2.2.5 of the Draft EIS, was completed in May of 2007. Jurisdictional delineations require reissuance on a 5 year interval. To date, EPA is not aware of any dialog between the Corps and BLM or the project applicant in regards to this matter.

> **Recommendation:** A new JD should be conducted for the Project and sent to the USACE and EPA for review consistent with current Rapanos guidance.[9] The Supplemental Draft EIS should discuss the status of the JD and any ongoing dialog with the USACE in regards to this matter.

Facilities Design and Water Quality

Seepage from the PAG WRDF is expected to contain elevated concentrations of aluminum, arsenic, cadmium, fluoride, manganese, nickel, zinc, copper, iron, lead, beryllium, thallium, selenium, sulfate, and total dissolved solids (Draft EIS, section 3.3.2.2.3). The proposed PAG WRDF and low-grade ore stockpile liners and collection system to promote and control seepage from these facilities should help protect surface water and groundwater quality if they are well designed, properly graded, installed with appropriate quality assurance/quality control, and properly operated and maintained. The collection ponds would store runoff/infiltration from the PAG WRDF and low-grade ore (LGO) stockpile. According to the POO (p. 80), long-term seepage from the PAG WRDF toe is not anticipated for average or dry conditions due to placement of a soil cover over the WRDF, and the PAG runoff/infiltration evaporation pond will

[9] U.S. Environmental Protection Agency and U.S. Army Corps of Engineers, Memorandum on Clean Water Act Jurisdiction Following the U.S. Supreme Court's Decision in Rapanos v. United States & Carabel v. United States, December 2, 2008. Available at: http://water.epa.gov/lawsregs/guidance/wetlands/upload/2008_12_3_wetlands_CWA_Jurisdiction_Following_Rapanos120208.pdf. Proposed revisions to this guidance memorandum are at: http://water.epa.gov/lawsregs/guidance/wetlands/upload/wous_guidance_4-2011.pdf.

be converted to an ET cell upon closure of the PAG WRDF and LGO stockpile. However, modeled WRDF seepage estimates are not provided in the Draft EIS to support any conclusions for average to dry conditions or for wetter conditions during the periods either before or after closure of these facilities. Waste rock facilities that have very low average seepage one year may have orders of magnitude greater seepage the following year (for several weeks to several months) in response to wet conditions. It is unclear from the Draft EIS, therefore, that the proposed soil cover will provide source control essential to proper functioning of the seepage collection system and ET cell, which will be needed to protect water resources from PAG seepage.

Recommendations:
In light of the anticipated contaminant concentrations in the PAG seepage, EPA recommends the PAG WRDF be capped with a geomembrane or equivalent to provide more robust source control needed to protect water quality.

The Supplemental Draft EIS should describe the modeling conducted to determine the full range of seepage volumes over time (i.e., throughout operations, closure/reclamation, and post-closure) from the PAG WRDF and LGO stockpile, and describe the modeling results. The discussion should also include:

- The fate and transport of constituents in the PAG WRDF and LGO stockpile seepage over the course of operations, closure, and post-closure; and
- How unintended and/or unmitigated releases of seepage from these facilities could affect surface water or groundwater quality.

Based on the geochemical characterization of the waste rock, seepage from the non-PAG waste rock could also contain elevated concentrations of several constituents, including iron, manganese, aluminum, arsenic, fluoride, nickel, zinc, and cadmium (Draft EIS, section 3.3.2.2.3). Modeled WRDF seepage estimates are not provided in the Draft EIS to support any conclusions regarding the seepage movement through the non-PAG WRDF during the periods either before or after closure of this facility. It is unclear, therefore, why the non-PAG WRDF would not also be lined.

Recommendations:
In light of the anticipated elevated concentrations of seepage from the non-PAG WRDF under non-acidic conditions, we believe the non-PAG WRDF should include a lined foundation, drainage network, and collection system similar to the system planned for the PAG WRDF. We also believe that a reliable method is needed to identify non-PAG waste rock with high potential to leach lead, zinc, and cadmium so that this material can be assigned to the PAG WRDF. A contingency measure should be included to convert the non-PAG sedimentation ponds into ET cells after closure should monitoring of seepage from the non-PAG WRDF during operations indicate the need to preclude it from being discharged to surface waters. The Supplemental Draft EIS should address these issues.

The Supplemental Draft EIS should describe the modeling conducted to determine the full range of seepage volumes over time from the non-PAG WRDF, and describe the modeling results. The discussion should also include:

- The fate and transport of constituents in the non-PAG WRDF seepage over the course of operations, closure, and post-closure; and
- How unintended and/or unmitigated releases of seepage from this facility could affect surface water or groundwater quality.

The Draft EIS does not describe in detail the potential fate or impacts of underdrain and draindown solutions from the North and South Tailings Storage Facilities. Furthermore, it describes neither the potential long-term impacts to vegetation and wildlife from accumulation of salts and metals in the tailings or WRDF ET cells, nor the post-closure passive ET system management activities necessary to keep the ET cells working effectively. For example, the July 27, 2011 POO cover letter (p. 9) indicates that precipitates expected to form in the tailings ET cells include gypsum, siderite, and ankerite. These cells are expected to have a "finite life but indeterminate life, and an LTFM will be established for long-term maintenance." The accumulation of precipitates and salts in the ET cells could reduce the ET cells' draindown containment capacity and plant viability, and, therefore, their evapotranspirative capacities over time; however, neither the POO nor the Draft EIS estimate ET cell life for any of the ET cells.

The July 27, 2011 POO cover letter (p. 10) also states that, because the draindown solutions in the ET cells are anticipated to be of "relatively good quality," the constituents that could potentially be taken up by vegetation are not likely to provide a risk to wildlife receptors; however, at the time of final permanent closure, a Screening Level Ecological Risk Assessment (SLERA) would be completed to determine the detailed risks based on the fluids present in the tailings storage facilities, and the design would be modified accordingly. None of the documents we have reviewed appear to support the statement that solutions in any of the ET cells will be of relatively good quality. For example, over time, the tailings will become acidic with elevated aluminum, antimony, arsenic, cadmium, fluoride, manganese, molybdenum and sulfate concentrations (Draft EIS, p. 2-53). Seepage from the PAG WRDF is expected to contain elevated concentrations of aluminum, arsenic, cadmium, fluoride, manganese, nickel, zinc, copper, iron, lead, beryllium, thallium, selenium, sulfate, and total dissolved solids; and seepage from the non-PAG WRDF may have high levels of iron, manganese, aluminum, arsenic, fluoride, nickel, zinc, and cadmium (Draft EIS, section 3.3.2.2.3). EPA believes an ecological risk assessment should be conducted as part of the NEPA process. The potential risks associated with the ET cells should be determined and disclosed in the Supplemental EIS so that appropriate mitigation measures can be developed and disclosed, and the reclamation/closure and post-closure costs can be estimated for inclusion in the financial assurance for the project.

Recommendation: Appropriate modeling and analysis should be conducted to determine the potential fate and impacts of constituents in the seepage and draindown solutions from the WRDFs (including the non-PAG WRDF), LGO stockpile, and tailings over the course of closure and post-closure, as well as the ecological risks posed by their ET cells. The Supplemental Draft EIS should provide the following information:

- Identify the constituents and their potential concentration ranges anticipated in the seepage and draindown solutions over the course of operations, reclamation/closure, and post-closure.
- Describe and discuss the potential problems that could result from contaminants concentrated in the ET cells after closure.
- Describe plans for vegetating the ET cells, and discuss whether changing draindown rates over time would be expected to result in changes in species types and densities for each ET cell.
- For each ET cell, describe the initial and total anticipated loading of metals and other contaminants, whether they are expected to plug up over the long term, whether they will need to be occasionally excavated, and if so, how frequently. This discussion should be supported with the results of modeling conducted to address these issues.
- For each ET cell that may need to be excavated, describe how excavated ET fill would be disposed and ET cells reconstructed and maintained.
- Describe the plant and animal exposure pathways for constituents from draindown solution in each of the ET cells, and any unintended ponding that may occur.
- Discuss whether anticipated concentrations of contaminants from any of the pathways would be harmful to plants or wildlife.
- Describe the potential contaminant uptake and bioaccumulation predicted for plants, invertebrates, and other wildlife in the ET cells. The discussion should address all potential pathways, including the ET cell fill (tailings) and growth medium as precipitates, metals, and salts accumulate, as well as any ponding that may occur.
- Discuss whether vegetation would need to be occasionally harvested in order to reduce bioaccumulation of metals in the food web, and at what frequency, based on modeling conducted to address these issues. Address whether and how the timing of ET cell excavations could affect the timing and need for vegetation harvests.
- Describe methods that would be used to exclude wildlife (e.g., netting and fencing) from the ET cells or any ponded water to minimize risks to wildlife during operations, closure, and/or post-closure.

The Draft EIS contains several inconsistencies and/or items that need clarification regarding the PAG and non-PAG collection channels and ponds. For example, page 2-58 describes the PAG and non-PAG WRDF diversion and collection channels as being lined with 60-mil HDPE. The Mount Hope Project Stormwater Management Plan (SRK, July 2011) indicates, however, that the non-PAG WRDF collection channels will be lined with geomembrane in steeper areas and rip-rap in less steep areas where the channels flow into sediment retention basins. Figures 2.1.10 and 2.1.19 in the Draft EIS depict the collection channel at the toe of the non-PAG WRDF as an unlined diversion channel with rip-rap and the PAG WRDF collection/diversion channel with compacted low permeability base and rip-rap. These figures do not indicate use of geomembranes. Page 2-84 of the Draft EIS indicates that the collection pond for the PAG WRDF will be lined with a geomembrane but does not indicate whether the non-PAG collection pond would be lined with a geomembrane.

Recommendations:
EPA recommends that the PAG and non-PAG WRDF collection channels and ponds be lined with a geomembrane.

The Supplemental Draft EIS should rectify the discrepancies identified above.

The proposed North and South Tailings Storage Facility liner and collection systems are designed to control tailings underdrain solutions and storm water and keep them from entering surface waters and groundwater during operations, closure, and post-closure. The tailings are expected to become acidic over time, and concentrations of several constituents in the underdrain solution, including aluminum, antimony, cadmium, fluoride, manganese, molybdenum, and sulfate, are expected to exceed NDEP Profile II values (Draft EIS (p. 2-53). Proper installation and O&M of the tailings impoundments, embankments, and collection systems will be critical to protecting water quality. It appears that the ET cells for the tailings facilities will be sized to contain average post-closure draindown rates based on the simplified draindown response curves presented in *Mount Hope Project South and North Tailings Storage Facility Draindown Estimate* (AMEC Earth & Environmental, June 2011). The numeric modeling draindown responses in that report predict higher drainage rates between years 30 and 200 than the simplified draindown response curves predict.

> **Recommendation:** For purposes of planning post-closure obligations (e.g., ET cell O&M and excavations) and estimating post-closure costs, EPA recommends the more conservative draindown response curves be used. In addition, contingencies should be applied for greater than anticipated draindown during wet periods (500-yr event, rain-on-snow storm event, or a wet period preceding a large storm), which could lead to increased draindown reporting to the ponds and ET cells.

The Draft EIS states that the run-on diversion channel for the North Tailings Facility will not be designed until two years before closure.

> **Recommendation:** The Supplemental Draft EIS should provide a general description of the proposed run-on channel and depict it in maps of the proposed mine facilities.

Monitoring and Mitigation

The Draft EIS and its appendices identify various mitigation measures that have been developed for specific resources. The Mount Hope Project Water Resources Monitoring Plan (Appendix B) and Mount Hope Mitigation Summary Plan (Appendix C) take an adaptive management approach to provide a framework for future implementation of mitigation where needed and to set out a process by which BLM will develop further measures to mitigate observed effects. Although EPA agrees that an adaptive management approach is appropriate in cases where significant uncertainty remains despite a good faith effort to perform thorough upfront environmental analysis, as in this case, we have serious concerns that these monitoring and mitigation plans are insufficient to ensure that water resources would be adequately protected in the long term.

In regards to surface water resources, the text of Section 3.2.3.3 states that "if monitoring indicated that flow reduction of perennial surface waters are occurring... the following measures would be implemented..." (p. 3-86). In contrast, the Mitigation Plan relies upon Table 3.2-9 of

the Draft EIS for identification of site specific measures. This table states that mitigation would be triggered by a "cessation in flow coincident with a reduction in ground water levels in this area". This mitigation trigger is applied for nearly all surface water resources, including Roberts Creek, which experiences flow rates in excess of 6,500 gallons per minute (p. 3-96). EPA objects to the use of *cessation* of flow as the trigger for implementation of measures essential to ensuring the continued flow of surface waters. Should surface water resources be allowed to run completely dry before BLM or EML even begins the process of further analyzing site specific mitigation (Appendix C, page C-4), it seems unavoidable that the riparian habitat and beneficial wildlife, livestock, and human uses associated with these surface waters would be severely and adversely impacted. In addition, this mitigation trigger directly contradicts the stated goal of the monitoring program at Item 10, which states that this Plan would "provide an early warning before project impacts become unmanageable" (Appendix B, page 2).

According to the Draft EIS, impacts resulting from the pumping of groundwater in Kobeh Valley under the proposed project would persist for over 100 years, while those associated with the pit dewatering operations would remain for a period greater than 400 years. In fact, even after the 400 year period modeled, the groundwater table drawdown associated with pit dewatering displays only a mild contraction in total area. Despite this, Mitigation Measures 1 and 3 for Surface Water Resources in Appendix C discuss long term impacts associated with the project as uncertainties that would need further analysis to assess. Responsibility for monitoring and mitigation is required of EML for only a 30 year period after the cessation of mining and milling operations, and additional analysis of the nature of longer term measures to ensure maintenance of surface water resources is delayed until the mine closure period. Considering the scale and duration of potential impacts associated with this project, it seems unavoidable that much longer term mitigation measures will be necessary if surface water resources are to be maintained. As such, the current discussion regarding long term surface water maintenance activities is insufficiently vague and does not provide firm enough commitments to guarantee long term protections.

> **Recommendation:** BLM should require mitigation to be triggered by any reduction in flow attributable to mine-induced drawdown of groundwater levels. Table 3.2.9 should be revised to reflect this requirement. The Supplemental Draft EIS should require that trend analysis be an ongoing element of the water quantity monitoring plan so that, as reductions in water quantity are detected, they can be investigated and mitigation measures can be implemented in an expedited fashion. The Supplemental Draft EIS should also provide firmer commitment to long term surface water mitigation measures.

The Mount Hope Project Monitoring Plan (Draft EIS, App. B) primarily addresses water quantity monitoring and provides almost no information on water quality monitoring. For example, the Monitoring Plan identifies only four wells and two locations in Roberts Creek that will be monitored for water quality, but it does not specify the parameters to be monitored, the frequency of monitoring, or the mine phases during which monitoring will be conducted. We were unable to find any additional discussion of water quality monitoring or identification of water quality monitoring sites in the Draft EIS. Tables 6-12 and 6-13 in the POO identify several wells and facility fluid collection areas that would be monitored, but for only the mine

closure period, and for only up to 30 years. These tables do not include monitoring of the pit lake or WRDF seepage and draindown solutions.

> **Recommendations:** BLM should require water quality monitoring of groundwater, springs (including the spring drainage from under the non-PAG WRDF and adjacent to the PAG WRDF), stormwater, seepage collection ponds, other surface expressions of water, and ET cells. Such monitoring will be critical to ensuring that the mine facilities are working properly and that measures can be taken quickly to rectify problems if adverse water quality trends are detected. EPA believes that all of this monitoring, as well as pit lake monitoring, will likely be needed for hundreds of years after closure. For planning and cost estimation purposes, water quality and flow monitoring at the mine should be required in perpetuity.
>
> The Supplemental Draft EIS should include a detailed table identifying all groundwater, surface water, and mine facility locations that will be monitored throughout mine operations, closure/reclamation, and post-closure. The table should identify the parameters to be monitored, frequency of monitoring and reporting, and the standards that will need to be met for each parameter in each setting. Trend analysis should be an ongoing element of the water quality monitoring plan so that, as water quality trends are detected, they can be investigated and appropriate mitigation measures can be implemented promptly.

We were unable to find a map anywhere in the Draft EIS or POO depicting the mine facilities with an overlay of the proposed water quality and water quantity monitoring locations. This compounds the lack of clarity regarding which sites and facilities will be monitored, whether the proposed monitoring sites are the most appropriate, and whether additional or alternate monitoring locations may be needed.

> **Recommendation:** The Supplemental Draft EIS and Monitoring Plan should provide one or more maps depicting the locations of all monitoring sites for both water quality and water quantity overlaid on the mine facilities and appurtenances. The identifying labels for each monitoring location on the maps should be consistent with the identifying labels for each monitoring location in the Monitoring Plan.

According to the Draft EIS (Table 2.1-10), seepage from the PAG WRDF would only be monitored for five years after closure (i.e., years 28 through 33). EPA believes, however, that long-term closure and post-closure monitoring of both the PAG and non-PAG WRDFs will be needed.

> **Recommendation:** Monitoring should address the integrity of the WRDF cap/covers, solution collection systems, evaporation ponds, and ET cells; the water quality of the collected solutions, groundwater, stormwater, and any other surface water expressions in the vicinity of, or potentially associated with, the WRDFs; and the composition of the ET cell growth medium, pore water, and vegetation from the standpoint of bioaccumulation and ecological risk. Such monitoring should continue in perpetuity.

The Mitigation Summary Plan provides neither the action levels that would trigger measures to rectify water quality deterioration problems, nor the mitigation measures that would be implemented in each case.

> **Recommendation:** The detailed monitoring table recommended above should also specify the Action Levels for each water quality parameter in each setting. Action Levels should be established to trigger investigation and mitigation measures before standards are exceeded to ensure continued protection of water quality. The Mitigation Summary Plan should provide specific mitigating actions to be implemented in the event that monitoring identifies mine-related degradation of surface water or ground water quality.

EPA is not clear why the Mount Hope Monitoring Plan and Mitigation Plan have been separated rather than being presented as a single Monitoring and Mitigation Plan. Monitoring and mitigation should work seamlessly together to identify and rectify environmental impacts before problems become unmanageable. Organizing these plans individually reduces clarity and introduces the possibility for inconsistency.

> **Recommendation:** The Monitoring Plan and Mitigation Plan should be joined into a Monitoring and Mitigation Plan that provides a more comprehensive approach to controlling and preventing environmental contamination.

Air Quality

The Draft EIS estimates substantial loss of phreatophytic vegetation as a consequence of drawdown of groundwater table levels. This change in vegetative coverage may increase the amount of windblown dust particulate emissions in the region. While the Draft EIS makes no statement as to the significance of these emissions, it is possible that they could have significant adverse impacts on local and regional air quality. However, because no evaluation of this impact has been provided, no conclusions can be made regarding the severity of these emissions in relation to the National Ambient Air Quality Standards (NAAQS) for particulate matter 10 microns or less (PM_{10}), or for particulate matter 2.5 microns or less ($PM_{2.5}$).

> **Recommendation:** The Supplemental Draft EIS should discuss the anticipated particulate emissions associated with the loss of vegetative communities due to groundwater drawdown. While there may not be an emissions factor for estimating emissions from this source, it is often possible to develop an emission factor based on site-specific geologic conditions that would generate a more accurate emissions estimate. We recommend BLM's air quality analysts consult with windblown dust experts from the Nevada research community, whom we are aware have done extensive wind-blown dust studies, to develop site-specific emissions factors.

The proposed Mount Hope Mine would toll roast molybdenum ore from other mines, involving delivery of up to seven 22-ton capacity highway trucks per day, and off-site transport of up to nine 22-ton capacity highway trucks every two days. The Draft EIS does not include additional information regarding the potential sources of this off-site ore or the estimated vehicle miles traveled associated with it. It is also unclear whether the emissions associated with on-site and

off-site delivery of toll roast ore, process chemicals, fuels, etc., have been accounted for in the criteria pollutant emissions estimates for the proposed project and alternatives.

> **Recommendation:** The Supplemental Draft EIS should describe the direct, indirect, and cumulative air impacts associated with the project. The discussion should include the potential toll roast ore sources, and estimates of the vehicle miles traveled and criteria pollutant emissions associated with all aspects of the project including: toll roast ore, process chemicals, fuels, and other materials.

In a discussion of roaster off gas emissions, the Draft EIS (p. 2-42) does not identify any hazardous air pollutants (HAP) associated with the proposed Mount Hope roasters. Lead, mercury, arsenic, antimony, cadmium, selenium, nickel and manganese may be associated with molybdenum roaster emissions. HAPs concentrations in molybdenum concentrate vary from mine to mine, and it is unclear from Section 3.6, Air and Atmospheric Values, whether HAPs from toll roasting of ore from other mines were accounted for in the HAPs emissions estimates in Table 3.6-10.

> **Recommendation:** Table 3.6-10 in the Supplemental Draft EIS should include estimated HAPs emissions from the Mount Hope roasters for all sources of concentrate, i.e., from the Mount Hope mill and from offsite mines.

The Draft EIS (p. 3-277) states that the maximum modeled nitrogen dioxide (NO_2) concentration is well below the Nevada State and National Ambient Air Quality Standards (NSAAQS and NAAQS). While Table 3.6-9 in the Draft EIS indicates that the modeled NO_2 concentration does not exceed the 1-hour NO_2 NAAQS, it comes relatively close. The Draft EIS also states that, because modeling indicates that project emissions from criteria pollutants would not exceed the NSAAQS and NAAQS, no additional mitigation measures are proposed, other than those mentioned on page 2-65. Even when projects are expected to meet all NAAQS, we encourage agencies to explore mitigation measures that can further reduce emissions of criteria pollutants. Several mitigation measures exist to reduce particulate matter, nitrogen dioxide (NO_2), ozone precursors, and other HAPs.

> **Recommendations:** In addition to the dust control measures mentioned in the Draft EIS (p. 2-65), EPA recommends the following mitigation measures be included in the Supplemental Draft EIS in order to reduce impacts associated with emissions of particulate matter, NO_x, ozone, and other toxics from mining activities:
>
> - Limit idling of heavy equipment to less than 5 minutes and verify through unscheduled inspections;
> - Maintain and tune engines per manufacturer's specifications to perform at EPA certification levels, prevent tampering, and conduct unscheduled inspections to ensure these measures are followed;
> - If practicable, lease new, clean equipment meeting the most stringent of applicable Federal standards[10]. In general, commit to the best available emissions control

[10] EPA's website for nonroad mobile sources is http://www.epa.gov/nonroad/.

technology. Tier 4 engines should be used for project construction equipment to the maximum extent feasible[11];

- Lacking availability of non-road construction equipment that meets Tier 4 engine standards, EML should commit to using best available control technology to reduce emissions of diesel particulate matter and other pollutants at the mine site; and
- Consider alternative fuels such as natural gas and electricity (plug-in or battery).

It is unclear based upon the information presented in the Draft EIS whether all potential sources of NO_2 have been accounted for in the model. Section 3.6.3.2, which summarizes the modeling protocols employed for the project, only discusses particulate emissions rather than all Clean Air Act criteria pollutants associated with the project.

> **Recommendation:** Ensure that all sources of NO_2 have been accounted for in the model. Provide additional information in Section 3.6.3.2.1 summarizing the modeling protocols employed for all criteria pollutants associated with the project, not just particulate emissions.

The Draft EIS (p. 3-254) indicates that EPA would update the 8-hour ozone standard in late 2011. The standard was revised on March 12, 2008 to 0.075 parts per million, which is the current standard. EPA is proceeding with designating new nonattainment areas for the 2008 8-hour ozone standard. There are no new nonattainment areas in Nevada for the 2008 8-hour ozone standard.

> **Recommendation:** The FEIS should update this language.

[11] Diesel engines < 25 hp rated power started phasing in Tier 4 Model Years in 2008. Larger Tier 4 diesel engines will be phased in depending on the rated power (e.g., 25 hp - <75 hp: 2013; 75 hp - < 175 hp: 2012-2013; 175 hp - < 750 hp: 2011 - 2013; and ≥ 750 hp 2011- 2015).