# **Gold Bar Mine Project**

DRAFT ENVIRONMENTAL IMPACT STATEMENT VOLUME I

Case File NVN-091037 | March 2017

U.S. Department of the Interior Bureau of Land Management Mount Lewis Field Office Battle Mountain District 50 Bastian Road Battle Mountain, NV 89820



Cooperating Agencies: The Eureka County Board of Commissioners The National Park Service The Nevada Department of Wildlife The United States Fish and Wildlife Service The United States Environmental Protection Agency, Region 9



#### **BLM Mission Statement**

It is the mission of the Bureau of Land Management to sustain the health, diversity, and productivity of the public lands for the use and enjoyment of present and future generations.

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#### Draft Environmental Impact Statement for the Gold Bar Mine Project

| (X)Draft                                | ( )Final   |
|---|--|
| Lead Agency:                            | U.S. Department of the Interior                      |
|   | Bureau of Land Management                            |
|   | Mount Lewis Field Office                             |
| Cooperating Agencies:                   | Eureka County Board of Commissioners                 |
|   | Nevada Department of Wildlife                        |
|   | National Park Service                                |
|   | United States Fish and Wildlife Service              |
|   | Environmental Protection Agency, Region 9            |
| Counties Directly Affected:             | Eureka County, Nevada                                |
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| Comments must be received by:           | April 17, 2017                                       |

ABSTRACT

This Draft Environmental Impact Statement (EIS) analyzes the potential direct, indirect, and cumulative impacts associated with McEwen Mining Inc.'s proposal to construct and operate the Gold Bar Mine Project. The proposed Project's total surface disturbance would be 1,129 acres located on both BLM-administered lands (946 acres) and private land (183 acres). Proposed activities would consist of open pits, heap leach pads, waste rock dumps, and ancillary facilities. Activities would occur on both existing disturbance and new disturbance.

In addition to the proposed Project, four Alternatives are analyzed including: the 25kV Overhead Distribution Line Alternative, the Three Bars Road/Atlas Haul Road as Only Access Alternative, the Mount Hope and North Roberts Creek Road for Light Vehicle Traffic Alternative, and the No Action Alternative. Development of alternatives focused on reducing impacts to greater sage-grouse habitat.

The actions involved in the decision to be made by United States Department of the Interior, BLM includes authorization of the Gold Bar Plan of Operations (NVN-091037).

Authorized Officer Responsible for the Draft Environmental Impact Statement:

Jon D. Sherve Field Manager Mount Lewis Field Office Bureau of Land Management EXECUTIVE SUMMARY

### **Executive Summary**

#### Introduction

The following sections summarize the Draft Environmental Impact Statement (DEIS) for the Gold Bar Mine Project (Project). This information is provided as a synopsis for the public, but it is not a substitute for the review of the complete DEIS. The document is structured into six chapters and one appendix section. The document structure is as follows: Chapter 1 provides an introduction to the Project; Chapter 2 describes the Proposed Action and alternatives; Chapter 3 discusses the affected environment and identifies each resource examined in the DEIS; Chapter 4 discloses the environmental consequences, and the potential impacts to the resources including cumulative effects occurring from past, present, and reasonably foreseeable future actions when combined with the Proposed Action and alternatives; Chapter 5 discusses the consultation and coordination that was conducted during the DEIS process, including a description of the scoping process and a list of preparers and reviewers; and Chapter 6 includes the references, glossary and index.

The Gold Pick and Gold Ridge satellite deposits were mined by the Atlas Corporation between 1986 and 1994, and included the construction of open pits, waste rock disposal areas (WRDAs), and extensive exploration disturbance. The area was abandoned in 1999 when the Atlas Corporation filed for bankruptcy, leaving nearly 654 acres of unreclaimed disturbance within the proposed Project boundary. The Project would utilize approximately 395 acres of this existing unreclaimed disturbance, including the existing disturbance associated with North Roberts Creek Road (NVN-052399), for which McEwen Mining Inc. (MMI) would assume full reclamation liability. MMI has been conducting exploration activities within the Project boundary and is currently responsible for reclamation of the associated disturbances. Exploration has been conducted under five Bureau of Land Management (BLM) notices in accordance with 43 Code of Federal Regulations (CFR) 3809.300 et seq. These notices have authorized approximately 16 acres of exploration related disturbance. Exploration activities have consisted of drill roads and pad construction, surface sampling, trenching, bulk sampling, and drilling. Exploration activities have also included geotechnical investigations, geophysical surveys, water exploration, and monitor well installation. Upon approval of the Plan of Operations (Plan) and issuance of a Record of Decision, these notices would be incorporated into the Plan and officially closed. MMI has also submitted an amendment to Notice of Intent NVN 086229 to conduct an investigation of a clay resource for use as a clay liner for the heap leach pad (HLP). This investigation would include eight geotechnical borings and eight shallow trenches that would be entirely within the proposed Cabin Creek pit footprint.

MMI submitted a Plan to the BLM in December 2013, revised it in February 2014, December 2015, and May 2016 (MMI, 2016a). Total proposed Project disturbance would be approximately 1,129 acres, which includes both proposed new disturbance and existing disturbance that would be incorporated into the Project, with approximately 946 acres on public land administered by the BLM Mount Lewis Field Office and 183 acres on private land. The Plan boundary encompasses 5,362 acres of public land and 199 acres of private land.

This Environmental Impact Statement (EIS) is being prepared by the BLM in coordination with the cooperating agencies as part of the review process of the Plan, and follows Council on Environmental Quality regulations at 40 CFR 1500 *et seq.* that implement the National Environmental Policy Act of 1969.

#### Proposed Action

The Proposed Action to be evaluated in the EIS includes an open pit gold mine, a water pipeline, and access roads. The Project would consist of:

- Four open pits;
- WRDAs;
- Crushing, screening, and agglomeration facilities;
- HLP, associated process solution pond, and an event pond;
- An adsorption, desorption, and recovery plant including barren and pregnant solution tanks;
- Ancillary and other facilities including:
  - Explosive storage area;
  - Prill silos;
  - Liquid natural gas (LNG) Cryostorage, or compressed natural gas (CNG) generators and switch station;
  - Truck shop and wash bay;
  - Ready line;
  - Landfill, laydown areas;
  - Water and power infrastructure;
  - Buildings;
  - Yards;
  - Parking;
  - Storage;
  - Growth media stockpiles;
  - Production water wells (GBPW-210 and GBPW-211) and associated water supply pipeline;
  - Groundwater monitoring wells (GBMW-01, GBMW-03, and GBMW-04);
  - Communication facilities;
  - Potable water and fire water facilities;
  - Septic systems, and fencing;
- Mine access roads:
  - $_{\circ}$  Three Bars Road;
  - Atlas Haul Road;
  - North Roberts Creek Road (NVN-052399);
  - Bypass Road (NVN-91566); and
  - Roberts Creek Road.

Heavy vehicle traffic would access the Plan boundary from United States (U.S.) Highway 50 by traveling north on the existing Three Bars Road for approximately 16 miles, and then east for 1.5 miles on the existing Gold Bar Road to the former Atlas Mill area. From the former mill area, access is gained to the east on the existing Atlas Haul Road for approximately seven miles to the mine facilities.

Employees would be transported to the mine facilities using three, 12- to 15-passenger vans. Vans, pickup trucks, and automobiles are considered light vehicle traffic. Light vehicle traffic access to the mine facilities would be from U.S. Highway 50 and traveling north on the existing Roberts Creek Road for approximately 13 miles, then west on the Bypass Road for approximately one mile to North Roberts Creek Road, then northeast on North Roberts Creek Road for 0.6 mile, then northwest on North Roberts Creek Road for 1.5 miles to the proposed mine facilities. The Project does not propose any improvements to Three Bars Road (including Atlas Haul Road), Roberts Creek Road, or Bypass Road. MMI would improve the existing North Roberts Creek Road to 60 feet in width, which would be consistent with the width of the Bypass Road and Roberts Creek Road.

Seasonal timing restrictions are incorporated into the use of access roads to the Project. These seasonal restrictions would be implemented to reduce impacts to greater sage-grouse leks within four miles of the two access routes to the Project (i.e., Three Bars Road access routes and the Roberts Creek Road access route) during lekking season. Project-related traffic on Three Bars Road and Roberts Creek Road would be subject to seasonal timing restrictions from 6:00 AM to 10:00 AM and from 6:00 PM to 4:30 AM from March 1 to May 15 to reduce impacts to nearby greater sage-grouse leks. These restrictions do not apply to local or emergency traffic.

The Project power supply would be provided by a series of three natural gas (LNG or CNG) selfcontained generators (two operating and one backup), two 2,175 boiler horse power (1,442 kilowatt [kW] site rating), and one 1,716 boiler horse power (1,083 kW site rating).

#### 25 kV Overhead Distribution Line Alternative

A 25 kilovolt (kV) power distribution line was considered as an alternative means to supply power to the Project, as opposed to the on-site LNG/CNG generators proposed in the Plan. The proposed distribution line would consist of the construction and operation of approximately 25 miles of new 25 kV overhead distribution line, and five miles of existing power distribution line (Atlas 25 kV line) to supply the needed power for Project operations. The power would be supplied by Mt. Wheeler Power, Inc. (Mt. Wheeler) to whom the necessary BLM right-of-way (ROW) would be granted. The new overhead distribution line would extend from the existing Machacek Substation located on BLM managed lands west, then north adjacent to the existing Falcon-Gonder 345 kV transmission line to the existing Atlas 25 kV overhead distribution line. At this intersection, the proposed new 25 kV overhead distribution line would tap the existing Atlas 25 kV overhead line. From there, the existing line would be utilized for approximately 4.75 miles west to a tap point on North Roberts Creek Road. At this location, a new segment of 25 kV overhead distribution line would extend northwest along North Roberts Creek Road

approximately 7.5 miles to the mine site. The proposed power distribution line would require an 80-foot wide temporary construction ROW, and a 40-foot wide permanent operation and maintenance ROW.

Access to the power distribution line corridor would be through existing roads along the corridor and through existing roads by the Machacek Substation. A centerline access road is proposed in the permanent ROW to provide access during construction and maintenance. Proposed disturbance associated with the power distribution line and access road would occur within the 40-foot permanent ROW. Both the 80-foot temporary construction ROW and the 40-foot permanent operation and maintenance ROW include a cultural avoidance area where no disturbance can occur. Total potential disturbance associated with the 40-foot permanent operation and maintenance ROW (not including the cultural avoidance area) would be 130 acres, with 124 acres of disturbance on BLM administered public land and six acres on private land. Total disturbance associated with the 80-foot temporary construction ROW (not including the cultural avoidance area) would be 246 acres, with 235 acres on BLM administered public land and 11 acres on private land.

#### Three Bars Road/Atlas Haul Road as Only Access Alternative

An alternative to the Plan was considered to use Three Bars Road and Atlas Haul Road as the only means of access for both heavy and light vehicle traffic to the mine facilities. Under this alternative, Three Bars Road and Atlas Haul Road would be the only route used to access the Project area and mine facilities. There would be no other access. Traffic under this alternative would be subject to the same seasonal timing restrictions as specified for the Proposed Action, which would consist of seasonal timing restrictions from 6:00 AM to 10:00 AM and from 6:00 PM to 4:30 AM from March 1 to May 15 to reduce impacts to nearby greater sage-grouse leks. No improvements would be made to Three Bars Road or Atlas Haul Road to implement this alternative, and the proposed disturbance would remain the same as the Proposed Action. Under this alternative, North Roberts Creek Road would still be improved to allow for all-weather access along the water pipeline to the wells. This alternative was considered to reduce environmental impacts resulting from using two access routes, particularly impacts to greater sage-grouse leks within four miles of the proposed Roberts Creek Road access route even though the travel distance for light vehicle traffic would increase by 20 miles. There is no change in the amount of surface disturbance compared to the Proposed Action.

## Mount Hope and North Roberts Creek Road for Light Vehicle Traffic Alternative

An alternative to accessing the mine facilities was considered for light vehicle traffic to use the authorized Mount Hope Access Road and well field road as access to the Plan boundary. This alternative would require light vehicle traffic to use State Route 278 to the Mount Hope Access Road, and then use the Mount Hope well field road to access Roberts Creek Road. The Bypass Road (NVN-91566) and North Roberts Creek Road would be used from that point to access the Plan boundary. Heavy vehicle traffic would use Three Bars Road and the Atlas Haul Road, the same as the Proposed Action. Traffic under this alternative would be subject to the same

seasonal timing restrictions as specified for the Proposed Action, including the Mount Hope access road and well field road, which would consist of seasonal timing restrictions from 6:00 AM to 10:00 AM and from 6:00 PM to 4:30 AM from March 1 to May 15 to reduce impacts to nearby greater sage-grouse leks. Proposed disturbance for this alternative would be the same as the Proposed Action. All improvements to the Mount Hope Access Road would be within the previously authorized disturbance area for the Mount Hope project. This alternative was considered to reduce environmental impacts resulting from using a longer stretch of Roberts Creek Road for light vehicle traffic, particularly impacts to greater sage-grouse leks within four miles of the proposed Roberts Creek Road access route.

#### **No Action Alternative**

Under the No Action Alternative, the MMI Plan would not be authorized by BLM and the activities described in the Proposed Action would not occur. Mineral resources would remain undeveloped and the construction and operation of the proposed mining and mineral beneficiation facilities would not occur. The 654 acres of existing disturbance from past mining operations within the Project mine boundary would remain unreclaimed. The reclamation plan associated with the Proposed Action would not be implemented, and no revegetation or recontouring of existing disturbances to match the natural topography would occur. MMI may continue exploration efforts that are already approved (approximately 16 acres of disturbance).

#### Introduction to Resource Impacts

In Chapter 4 of this DEIS, the environmental consequences of the Proposed Action are evaluated and compared to the Action Alternatives and No Action Alternative. The primary environmental impacts for the Proposed Action and Alternatives are outlined in Chapter 4. The section below provides a summary of the potential impacts from the implementation of the Proposed Action and Action Alternatives.

#### Air Quality

#### Proposed Action

Project-related activities have the potential to affect air quality in the vicinity of the Project. The Proposed Action involves area source emissions. These include fugitive emissions from drilling, blasting, loading, unloading, wind erosion, haul roads, and dozing. Also included are tailpipe emissions from equipment and haul road vehicles. The Project has the potential to increase emissions of criteria air pollutants (i.e., particulate matter less than 10 microns [PM<sub>10</sub>], sulfur dioxide, nitrogen oxides, carbon monoxide) for the short-term (lasting through the end of mining) and would be within Nevada Ambient Air Quality Standards and the National Ambient Air Quality Standards. Following the completion of mining and subsequent reclamation, air quality would return to background levels determined by emissions from other regional source operations and/or natural background pollutant concentrations; therefore, impacts to air quality are considered to be short-term, localized, and with no substantial adverse effects.

Potential changes to the Project area resulting from the effects of climate change forecasted by the Central Basin and Range Rapid EcoRegional Assessment could include higher than normal growing season temperatures, contraction or expansion of some existing vegetation communities, the expansion of existing noxious weed populations, and the introduction of noxious weeds previously undocumented in the ecoregion and Project area (Comer et al., 2013).

Annual emissions of greenhouse gases (GHG) from construction and operations sources are directly related to the consumption of fuels (combustion). The Project would provide its own power using generators so there would be no indirect contribution to GHG emissions at the power plants that furnish power to the grid due to the Project. GHG emissions for the Project are generated from direct combustion of fossil fuels including diesel, LNG, and gasoline by process sources, insignificant sources, and mobile mining equipment. GHG emissions would contribute cumulatively to global annual GHG emissions. Per the Environmental Protection Agency (EPA) GHG Equivalencies Calculator, the Proposed Action would produce approximately the same amount of GHG emissions annually as that produced by 16,399 households annually from energy consumption.

#### 25 kV Overhead Distribution Line Alternative

From an air pollutant emissions perspective, the 25 kV Overhead Distribution Line Alternative, would remove emissions associated with the generators from the Proposed Action and add fugitive and tailpipe emissions from the access road for distribution line construction and maintenance, which are expected to be minimal. The result would be a reduction in direct criteria air pollutant and GHG emissions and, to a lesser extent, an increase in indirect emissions. Overall emissions are expected to be lower than for the Proposed Action, but impacts are anticipated to be short-term, localized, with no substantial adverse effects.

#### Three Bars Road/Atlas Haul Road as Only Access Alternative

Since mining and processing operations under the Three Bars Road/Atlas Haul Road as Only Access Alternative would be the same as the Proposed Action, impacts would be the same as the Proposed Action. However, light vehicle traffic associated with mining operations would not use Roberts Creek Road, and all vehicle traffic, both light vehicle traffic and heavy vehicle traffic, would use Three Bars Road. From an air pollutant emissions perspective, this alternative would be similar to the Proposed Action except all the light vehicle traffic fugitive dust and tailpipe emissions would be concentrated on Three Bars Road/Atlas Haul Road instead of Roberts Creek Road. This alternative is estimated to generate a slightly higher amount of facility-wide emissions than the Proposed Action; however, the impact would still be considered short-term, localized, with no substantial adverse effects. This alternative differs from the Proposed Action only with respect to the different access road configurations. However, GHG emissions are anticipated to slightly increase from the same as the Proposed Action.

#### Mount Hope and North Roberts Creek Road for Light Vehicle Traffic Alternative

Since mining and processing operations under the Mount Hope and North Roberts Creek Road for Light Vehicle Traffic Alternative would be the same as the Proposed Action, impacts would be the same as the Proposed Action. However, access under this alternative would use State Route 278, Mount Hope access road, and Mount Hope well field road to access the Project. From an air pollutant emissions perspective, this alternative would be similar to the Proposed Action, except fugitive dust and tailpipe emissions would occur at the Mount Hope well field road rather than Roberts Creek Road. The Mount Hope and North Roberts Creek Road for Light Vehicle Traffic Alternative is estimated to generate approximately the same amount of facility-wide emissions as the Proposed Action. This alternative is estimated to generate slightly less facility-wide emissions as the Proposed Action; however, the impact would still be considered short-term, localized, with no substantial adverse effects.. This alternative differs from the Proposed Action only with respect to the different access road configurations. However, GHG emissions for this alternative are anticipated to slightly decrease from the Proposed Action.

#### No Action Alternative

Under the No Action Alternative, up to 16 acres of surface disturbance would continue within the Project area under authorized Notice-level activities. The existing conditions would include the existing approximately 654 acres of disturbance from the previous Atlas mining operations. Since the Project would not be approved under the No Action Alternative, no reclamation would occur on portions of this existing disturbance (approximately 420 acres of existing disturbance are proposed for reclamation under the Proposed Action). There would be no direct emissions of criteria air pollutants (except for PM/PM<sub>10</sub>/PM<sub>2.5</sub>) or GHG pollutants. Potential fugitive dust impacts from the existing disturbance may continue to occur under this alternative. Impacts to air quality from this alternative are expected to be short-term, localized, with no substantial adverse effects.

#### **Cultural Resources**

#### Proposed Action

Based on the Class III inventories, a total of 16 prehistoric sites, 45 historic sites, and 15 multicomponent sites were identified in the direct effects area of potential effect (APE). Of the 16 prehistoric sites and 15 prehistoric components, three of the prehistoric sites and eight of the prehistoric components were recommended as eligible for the National Register of Historic Places (NRHP). The remaining prehistoric sites and prehistoric components were recommended as not eligible. Of the 45 historic sites and 15 historic components, 33 historic sites and 10 historic components were recommended as eligible for the NRHP. The remaining sites and historic components were recommended as not eligible for the NRHP. All of the NRHP-eligible sites (i.e., historic properties) within the APE potentially would be impacted by the Proposed Action, from ground disturbance, blasting vibrations, construction of haul roads and ancillary facilities, storm water runoff, and visual or auditory disruption to the character and setting of the area. In consultation with the Nevada State Historic Preservation Office (SHPO), the BLM would determine whether construction and operation of the Project would have an adverse effect on any historic properties. If the BLM determines that a property would be adversely affected, then avoidance would be recommended. If avoidance is not feasible, measures to minimize or mitigate effects would be proposed in accordance with a Memorandum of Agreement (MOA) and detailed in a Historic Preservation and Treatment Plan (HPTP) developed in coordination with the SHPO. For those cultural resources that do not meet the criteria of NRHP eligibility, but may be significant to Native American tribes (e.g., sacred sites), the BLM, in consultation with interested tribes would determine the appropriate means to avoid, minimize, or mitigate impacts on a case-by-case basis.

Direct effects to historic properties, including unanticipated discoveries, would be minimized, or mitigated in accordance with the MOA, HPTP, Environmental Protection Measures (EPMs), and any additional mitigation measures determined by the BLM in consultation with the SHPO. Indirect effects such as illegal collecting and/or inadvertent damage potentially would occur because of increased human activity in the Project area. Under the Proposed Action, direct and indirect effects to historic properties are anticipated to be result in no adverse effect.

#### 25 kV Overhead Distribution Line Alternative

Impacts to the resources within the Plan boundary would be the same as those described under the Proposed Action. However, in addition, 21 sites are located within the 25kV overhead distribution line including three prehistoric-era sites, 15 historic-period sites, and three multicomponent sites. Of these, one prehistoric site, one prehistoric component, and one historic site are recommended eligible for the NRHP. These NRHP-eligible sites and components (i.e., historic properties) potentially would be impacted by this alternative. The types of direct and indirect impacts to these historic properties that could occur under the 25 kV Overhead Distribution Line Alternative would be the same as those described for the Proposed Action, so impacts would be localized, short-term, and would result in no adverse effect with the implementation of the MOA

#### Three Bars Road/Atlas Haul Road as Only Access Alternative

Since mining and processing operations under the Three Bars Road/Atlas Haul Road as Only Access Alternative would be the same as the Proposed Action, with the exception that all vehicular traffic (heavy and light) would use Three Bars Road and the Atlas Haul Road, impacts would be the same as the Proposed Action: localized, short-term, and would result in no adverse effect with the implementation of the MOA.

#### Mount Hope and North Roberts Creek Road for Light Vehicle Traffic Alternative

Since mining and processing operations under the Mount Hope and North Roberts Creek Road for Light Vehicle Traffic Alternative would be the same as the Proposed Action, with the exception that light vehicle traffic would use the Mount Hope access road and well field road, impacts would be the same as the Proposed Action: localized, short-term, and would result in no adverse effect with the implementation of the MOA.

Under the No Action Alternative, no impacts to historic properties as identified for the Proposed Action would occur. However, seven prehistoric sites, 11 historic sites, and seven multicomponent sites have been identified within the area of authorized Notice-level exploration activities. Of these 25 cultural resources, 10 historic sites, two prehistoric sites, and seven multicomponent sites are recommended as eligible for the NRHP. Although exploration activities are exempt from Section 106, these activities fall under the purview of BLM's standard stipulations issued for exploration activities. The stipulations detail the penalties if any unnecessary or undue degradation to cultural resources on federal lands should occur, and additionally detail the actions to be taken in the event cultural resources, including human remains, funerary objects, and sacred items, are discovered during the activities. With implementation of and compliance with BLM's standard stipulations issued for exploration activities to historic properties, including unanticipated discoveries, would not be anticipated under this alternative. Impacts are anticipated to be localized, short-term, and would result in no adverse effect.

#### Environmental Justice

#### Proposed Action

The Proposed Action would not be expected to disproportionately affect any particular population. The minority and low income populations within the area of analysis are not meaningfully greater than in Eureka County or the State of Nevada. Environmental effects may occur at a distance from the Project area, such as noise or air quality impacts, would affect the area's population equally, without regard to nationality or income level, so impacts to environmental justice would be negligible.

#### 25 kV Overhead Distribution Line Alternative

Impacts from the 25 kV Overhead Distribution Line Alternative would be the same as the Proposed Action.

#### Three Bars Road/Atlas Haul Road as Only Access Alternative

Since mining and processing operations under the Three Bars Road/Atlas Haul Road as Only Access Alternative would be the same as the Proposed Action, with the exception that all vehicular traffic (heavy and light) would use Three Bars Road and the Atlas Haul Road, impacts would be the same as the Proposed Action.

#### Mount Hope and North Roberts Creek Road for Light Vehicle Traffic Alternative

Since mining and processing operations under the Mount Hope and North Roberts Creek Road for Light Vehicle Traffic Alternative would be the same as the Proposed Action, with the exception that all vehicular traffic (heavy and light) would use Three Bars Road and the Atlas Haul Road, impacts would be the same as the Proposed Action.

Under the No Action Alternative, up to 16 acres of surface disturbance would continue within the Project area under authorized Notice-level activities. Impacts to an environmental justice population are anticipated to be negligible.

#### **Forest Products**

#### Proposed Action

Direct impacts of the Proposed Action would include removal of approximately 649 acres of woodland communities (e.g., 167 acres of curl-leaf mountain mahogany woodland and 482 acres pinyon-juniper woodland). Loss of woodland species would result from construction of process facilities and ponds, shop facilities, administration buildings, laydown yards, pit excavations, WRDAs, HLP, growth media stockpiles, landfill, sediment basins, and improvement or construction of roads. Most disturbance would come from the WRDAs, open pits, and the HLP. Impacts to woodland communities would last 50 to 100 years until woodland species succeed (gradually replace) species planted during reclamation.

None of the woodland or forest community types within the Plan boundary are considered unique or rare. These tree-dominated communities are prevalent in areas adjacent to the Project and throughout central Nevada. Disturbed areas would be reclaimed after mining to a grass and forb dominated community, and eventually a shrub dominated community depending on success of reclamation. This vegetation community is abundant on public lands in the area surrounding the Proposed Action. The direct impact of removal of woodland species and impacts to access for woodland harvesting would be localized, long-term, and minor.

#### 25 kV Overhead Distribution Line Alternative

In addition to the impacts to woodland products from mining and processing facilities, the 40-foot wide operation and maintenance ROW associated with the 25 kV Overhead Distribution Line Alternative would directly remove an additional approximately eight acres of pinyon-juniper woodland. The 80-foot wide temporary construction ROW would remove and additional approximately 16 acres of pinyon-juniper woodland. However, the 80-foot wide temporary construction ROW is to be used during the six-month construction schedule for staging equipment and storing materials, and it is unlikely that woodland products would be removed. The loss of these acres would reduce the number of trees available for pine nut harvest, fuel wood cutting, and Christmas tree cutting. Due to the large acreage of pinyon-juniper woodland available within the vicinity this loss is negligible in comparison to the regional supply. Overall, impacts to forest products from the 25 kV overhead distribution line would be long-term, localized, and minor.

#### Three Bars Road/Atlas Haul Road as Only Access Alternative

Since mining and processing operations under the Three Bars Road/Atlas Haul Road as Only Access Alternative would be the same as the Proposed Action, with the exception that all vehicular traffic (heavy and light) would use Three Bars Road and the Atlas Haul Road, impacts would be the same as the Proposed Action.

#### Mount Hope and North Roberts Creek Road for Light Vehicle Traffic Alternative

Since mining and processing operations under the Mount Hope and North Roberts Creek Road for Light Vehicle Traffic Alternative would be the same as the Proposed Action, with the exception that all light vehicle traffic would use the Mount Hope access road and well field road, impacts would be the same as the Proposed Action.

#### No Action Alternative

Under the No Action Alternative, up to 16 acres of surface disturbance would continue within the Project area under authorized Notice-level activities. The vegetation types within the authorized Notice-level area include curl-leaf mountain mahogany, pinyon- juniper woodlands, and sagebrush. Notice-level activities may occur within these vegetation types, so woodland species may be impacted by the No Action Alternative to a lesser degree than the Proposed Action. The existing conditions would include the approximately 654 acres of disturbance from the Atlas mining operations. Since the Project would not be approved under the No Action Alternative, reclamation of the approximately 420 acres of existing disturbance would not occur as proposed under the Proposed Action. This may have long-term impacts to forest products because the existing disturbance would continue to lack appropriate understory vegetation to assist with regrowth of woodland species. Impacts to forest products from this alternative are expected to be localized, long-term, and negligible.

#### **Geology and Minerals**

#### Proposed Action

The Proposed Action would have direct and indirect impacts to the geology and mineral resources within the Plan boundary. The Proposed Action would entail mining approximately 72.5 million tons of waste rock and 13 million tons of ore that would be processed onsite. The Proposed Action would ship offsite approximately 325,000 ounces of gold over the life of the Project. Waste rock dumps containing some 73 million tons of rock would cover 351 acres immediately adjacent to the mine pits, limiting access to any remaining underlying mineral resources by covering the underlying lithologies. The lined heap leach facility containing 13 million tons of ore would cover 106 acres and hinder access to any subsequently discovered underlying mineral resources. The disturbances constitute a fraction of a percent of the acreage containing the geologic and mineral resources. As such these areas of the Proposed Action involve a permanent minor to negligible portion of the regional geologic and mineral resource.

#### 25 kV Overhead Distribution Line Alternative

The 25 kV Overhead Distribution Line Alternative would have the same impacts as the Proposed Action and additionally would impact the surface of colluvium and alluvium along the distribution line route. Approximately 45 acres of disturbance would be created in the basin-fill sediments, in addition to re-disturbance of approximately 85 acres along existing distribution facilities during construction. The indirect impact would be limitation of access to bedrock lithologies underlying the distribution facilities constructed for this alternative. The disturbance and occupancy of an additional 45 acres of Quaternary to Holocene sediments would be a short-term, negligible impact on the geology and mineral resources of the area.

#### Three Bars Road/Atlas Haul Road as Only Access Alternative

Since mining and processing operations under the Three Bars Road/Atlas Haul Road as Only Access Alternative would be the same as the Proposed Action, with the exception that all vehicular traffic (heavy and light) would use Three Bars Road and the Atlas Haul Road, impacts would be the same as the Proposed Action.

#### Mount Hope and North Roberts Creek Road for Light Vehicle Traffic Alternative

Since mining and processing operations under the Mount Hope and North Roberts Creek Road for Light Vehicle Traffic Alternative would be the same as the Proposed Action, impacts would be the same as the Proposed Action. However, access under this alternative would use State Route 278, Mount Hope access road, and Mount Hope well field road to access the Project. The maintenance activities during use of these existing roads, hosted in Quaternary and Holocene sediments, would have short-term, negligible direct and indirect impact to the geology and mineral resources.

#### No Action Alternative

Under the No Action Alternative, no mining would occur, so there would be no additional exposure of lithologies in the existing mine pits. There would be no extraction of the gold reserves. Up to 16 acres of surface disturbance would continue within the Project area under authorized Notice-level activities. No impacts to geology and minerals would occur from this alternative.

#### **Grazing Management**

#### Proposed Action

Direct impacts to rangeland resources from the implementation of the Proposed Action would include a potential reduction in active animal unit months (AUMs) due to a loss of forage availability and reduced access to some portions of the Project area due to fencing or high anthropogenic activity during operations. Direct impacts could also include the potential for livestock injury or mortality from vehicle collisions. The Proposed Action would be primarily located within two grazing allotments, which include Three Bars and Roberts Mountain allotments. Implementation of the Proposed Action could result in the permanent loss of 10 AUMs (due to unreclaimed mine features) and the temporary loss (i.e., until successful reclamation) of 69 AUMs, but any adjustment to permitted AUMs would be based on forage lost, removed, or otherwise inaccessible due to mining operation. Permitted active AUMs are 5,840 for the Three Bars Allotment and 9,624 for the Roberts Mountain Allotment, both divided between cattle and sheep. The Proposed Action would result in a less than 0.01 percent loss of AUMs in either allotment. This anticipated to be a temporary, regional, and minor impact.

Indirect impacts from the Proposed Action include economic impacts from the potential reduction in AUMs from the Proposed Action. In total, approximately \$790.30 in economic impacts would be realized annually based on the permanent loss of 10 AUMs from the Proposed Action. Long-term loss of 69 AUMs (57 in the Roberts Mountain Allotment and 12 in the Three Bars Allotment) would equate to approximately \$43,625 over the life of the mine and

majority of reclamation (estimated at six years after cessation of mining and residual heap leaching. This impact would not be long-term, regional, and minor to the ranching community and agricultural or grazing sector of Nevada's or Eureka County's economy, but the economic impact to the affected permittees could be long-term, regional, and moderate.

#### 25 kV Overhead Distribution Line Alternative

Direct impacts to rangeland resources from the implementation of the 25 kV overhead distribution line alternative in addition to those realized for the Proposed Action could include a negligible, temporary reduction of eight active AUMs due to a loss of forage availability until vegetation is re-established after reclamation. Adverse, temporary, negligible effects would be greater during the construction phase of the power line. Revegetation of the ROW would occur under this alternative, so grazing productivity would return over time. Impacts are anticipated to be temporary (lasting until revegetation is established), regional, and negligible.

#### Three Bars Road/Atlas Haul Road as Only Access Alternative

Since mining and processing operations under the Three Bars Road/Atlas Haul Road as Only Access Alternative would be the same as the Proposed Action, impacts would be the same as the Proposed Action. However, light vehicle traffic associated with mining operations would not use Roberts Creek Road, and all vehicle traffic, both light vehicle traffic and heavy vehicle traffic, would use Three Bars Road. The potential for livestock-vehicle collisions may be increased along Three Bars road, since the light-duty vehicle traffic would also be using this access road. Overall, impacts to grazing management from this alternative would be long-term, regional, and negligible, the same as those described for the Proposed Action.

#### Mount Hope and North Roberts Creek Road for Light Vehicle Traffic Alternative

Since mining and processing operations under the Mount Hope and North Roberts Creek Road for Light Vehicle Traffic Alternative would be the same as the Proposed Action, impacts would be the same as the Proposed Action. However, access under this alternative would use State Route 278, Mount Hope access road, and Mount Hope well field road to access the Project. Potential impacts from vehicle-livestock collisions may be reduced because the Mount Hope Plan boundary would be fenced, excluding livestock. Overall, impacts to rangeland resources from this alternative would be long-term, regional, and negligible, the same as those described for the Proposed Action.

#### No Action Alternative

Under the No Action Alternative, up to 16 acres of surface disturbance would continue within the Project area under authorized Notice-level activities The existing conditions would include approximately 654 acres of disturbance from the Atlas mining operations. Since the Project would not be approved under the No Action Alternative, reclamation would not occur on portions of the existing disturbance. Impacts to grazing management from this alternative are expected to be localized, negligible, and short-term.

#### Hazardous or Solid Waste

#### Proposed Action

The Proposed Action would result in the use of hazardous materials and waste management practices for mine production, with the potential to affect the air, water, soil, and biological resources from an accidental release of hazardous materials and/or solid and hazardous waste during transportation to and from the Project area, or during storage and use on the Project site. It is anticipated that the Proposed Action would result in the classification of the facilities as a Small Quantity Generator of hazardous waste as defined by the EPA (between 220 pounds, or 100 kilograms, and 2,205 pounds, or 1,000 kilograms, per month). Management of hazardous waste, including storage, disposal, and reporting, would be in accordance with the Resource Conservation and Recovery Act requirements. Petroleum waste and hazardous materials that are not spent or consumed on site would be recycled or disposed off-site at an approved facility in accordance with applicable federal and state regulations. A spill contingency plan has been prepared by MMI that establishes procedures for responding to accidental spills and releases of petroleum products. Based upon the small quantities of hazardous waste that would be generated by the Proposed Action, an accident resulting in a release of hazardous waste to the environment during transportation off the Proposed Action area is not anticipated. Impacts from hazardous and solid waste from the Project are expected to be long-term, regional, and minor.

#### 25 kV Overhead Distribution Line Alternative

The types of wastes managed and the applicable management practices applied for the 25 kV Overhead Distribution Line Alternative would be the same as for the Proposed Action. The environmental impacts of these practices for the 25 kV Overhead Distribution Line Alternative would, therefore, be the same as the Proposed Action.

#### Three Bars Road/Atlas Haul Road as Only Access Alternative

Since mining and processing operations under the Three Bars Road/Atlas Haul Road as Only Access Alternative would be the same as the Proposed Action, with the exception that all vehicular traffic (heavy and light) would use Three Bars Road and the Atlas Haul Road, impacts would be the same as the Proposed Action. The types of wastes managed and the applicable management practices applied for the Three Bars Road/Atlas Haul Road as Only Access Alternative would be the same as for the Proposed Action. The environmental impacts of these practices for the Three Bars Road/Atlas Haul Road as Only Access Alternative would be the same as the Proposed Action.

#### Mount Hope and North Roberts Creek Road for Light Vehicle Traffic Alternative

Since mining and processing operations under the Mount Hope and North Roberts Creek Road for Light Vehicle Traffic Alternative would be the same as the Proposed Action, with the exception that light vehicle traffic would use the Mount Hope access road and well field road, impacts would be the same as the Proposed Action. The types of wastes managed and the applicable management practices applied for the Mount Hope and North Roberts Creek Road for Light Vehicle Traffic Alternative would be the same as for the Proposed Action. The environmental impacts of these practices for the Mount Hope and North Roberts Creek Road for Light Vehicle Traffic Alternative would, therefore, be the same as the Proposed Action.

#### No Action Alternative

Under the No Action Alternative, up to 16 acres of surface disturbance would continue within the Project area under authorized Notice-level activities. Notice-level activities would result in the use of hazardous materials, and have the potential for an accidental release of hazardous materials during transportation to and from the Project area, or during storage and use on the Project site. Hazardous materials used on site would be spent or consumed during Notice-level operations. Materials that were not spent or consumed, such as used antifreeze and oil, would be recycled or disposed in accordance with applicable federal, state, and local regulations. Impacts from hazardous or solid waste are expected to be short-term, regional, and negligible under this alternative.

#### **Historic Trails**

#### **Proposed Action**

The Pony Express NHT does not cross the main mining Project area, but the two existing access roads which are part of the Plan boundary do cross the Pony Express NHT. Public and recreational access to the trail would not be affected by mining and processing facilities. However, there would be increased mine traffic. While mining and processing facilities would be located outside of the National Trail study corridor, many of the facilities and much of the surface disturbance would be visible from within the corridor, which would introduce form, line, color, and texture elements that contrast with existing landscape. These modifications would be short-term, localized, and negligible to minor on the visual setting of the NHT. Impacts to the setting of the Pony Express NHT from noise impacts would be short-term, localized, and moderate. Impacts relating to a change in the accessibility of the trail and the level of traffic on adjacent roads would be short-term, localized, and negligible. Widening and improving North Roberts Creek Road would result in changes to the scenic quality of National Trail Study Corridor, but impacts to the intended purposes or uses, or the setting of the Pony Express NHT would be long-term, localized, and negligible.

#### 25 kV Overhead Distribution Line Alternative

The visual contrasts associated with mining and processing facilities would be the same for the 25 kV Overhead Distribution Line Alternative as described for the Proposed Action. The proposed distribution line would cross the Pony Express NHT and associated study corridor. The ROW for the distribution line would not restrict or alter existing public access to the trail. However, the overheard distribution line would have visual impacts on the setting of the trail. Impacts to the intended purposes, uses, and setting of the Pony Express NHT would be short-term, localized, and minor.

#### Three Bars Road/Atlas Haul Road as Only Access Alternative

Since mining and processing operations under the Three Bars Road/Atlas Haul Road as Only Access Alternative would be the same as the Proposed Action, with the exception that all

vehicular traffic (heavy and light) would use Three Bars Road and the Atlas Haul Road, impacts would be the same as the Proposed Action.

#### Mount Hope and North Roberts Creek Road for Light Vehicle Traffic Alternative

Since mining and processing operations under the Mount Hope and North Roberts Creek Road for Light Vehicle Traffic Alternative would be the same as the Proposed Action, with the exception that all light vehicle traffic would use the Mount Hope access road and well field road, impacts would be the same as the Proposed Action. The authorized Mount Hope mine access road and well field road cross the Pony Express NHT. While all improvements to the Mount Hope access road would be within the previously permitted disturbance area for the Mount Hope Project, the number of vehicle trips on the roads would increase with the additional traffic to the Project. The additional traffic would increase ambient noise levels and could impact the user's experience by altering the feeling of a remote setting. Impacts to the intended purposes, uses, and setting of the Pony Express NHT would be localized, short-term, and minor.

#### No Action Alternative

Under the No Action Alternative, there would be no new impacts to the ambient noise levels within the National Trail study corridor from the continuation of these activities. Also, under this alternative, the Project would not be constructed, so the additional visual impacts associated with construction and operation of the Project would not occur. However, up to 16 acres of authorized surface disturbance would continue within the Project area under authorized Notice-level activities, which may currently be impacting the visual setting of the area of analysis. The existing conditions would include the existing approximately 654 acres of disturbance from the Atlas mining operations. Under the No Action Alternative, reclamation would not occur on the portions of existing disturbance. Impacts to the Pony Express NHT under this alternative would be short-term and minor, lasting for the duration of exploration activities within the area of analysis. The existing disturbance within the Project area would continue to be a long-term, localized, minor impact on the visual setting of the Pony Express NHT.

#### Land Use, Access, Realty, and Transportation

#### Proposed Action

Mining and processing facilities associated with the Proposed Action would result in the disturbance of approximately 1,129 acres, Project related disturbance would result in the short-term, minor, direct loss of approximately 946 acres (including exploration operations, but not including non-MMI disturbance to be reclaimed) of public land for multiple use authorizations for the seven-year life of the mine (i.e., five years of active mining and heap leaching plus two years of residual leaching). Approximately 154 acres (approximately 14 percent of the total mine related disturbance), including the pits, ponds, roads and stormwater diversion channels, would remain as post-reclamation features, which may result in permanent, localized, and negligible indirect impacts to land uses.

Mining and processing facilities would not result in conflicts, substantial modifications or termination of any authorized ROWs or land use authorizations, and public access would not be

prohibited on the access roads, and these access roads would remain open for public access during mining operations. Impacts to existing land use authorizations, and public access on the access roads from the Proposed Action are anticipated to be short-term, localized, and negligible.

The Project proposes to bus the majority of employees to the site from a park-and-ride location in the Town of Eureka. Traffic generation on the Roberts Creek Road route is anticipated to be 20 light vehicles per shift (i.e., 10 vehicles entering the site and 10 vehicles exiting the site per shift), for a total of 40 trips per day, which includes the vans used to transport employees and other light vehicle traffic associated with the Project. Large vehicle traffic generation is estimated at 10 round trips per day on Three Bars Road. Whereas this does result in an increase of daily traffic above baseline conditions, MMI would maintain these roads in coordination with Eureka County, so impacts from this traffic increase would be short-term, regional, and minor.

#### 25 kV Overhead Distribution Line Alternative

Since mining and processing operations under the 25 kV Overhead Distribution Line Alternative would be the same as the Proposed Action, impacts would be the same as the Proposed Action. The 25 kV Overhead Distribution Line Alternative would result in an additional direct loss of 124 acres of public land for multiple use authorizations, and six acres of private land, for the life of the distribution line. Impacts to multiple use authorizations from the 25 kV Overhead Distribution Line Alternative would be short-term, regional, and negligible because the distribution line would be within an existing power line corridor, or would follow an existing road.

#### Three Bars Road/Atlas Haul Road as Only Access Alternative

Since mining and processing operations under the Three Bars Road/Atlas Haul Road as Only Access Alternative would be the same as the Proposed Action, with the exception that all vehicular traffic (heavy and light) would use Three Bars Road and the Atlas Haul Road, impacts would be the same as the Proposed Action. Traffic impacts on Roberts Creek Road described under the Proposed Action would not occur under this alternative. However, North Roberts Creek Road would still be improved as detailed under the Proposed Action, in order to provide access for construction and maintenance of the water supply pipeline and production wells. Construction and maintenance of the water supply pipeline would generate temporary, localized, and negligible traffic impacts from this alternative.

#### Mount Hope and North Roberts Creek Road for Light Vehicle Traffic Alternative

Since mining and processing operations under the Mount Hope and North Roberts Creek Road for Light Vehicle Traffic Alternative would be the same as the Proposed Action, with the exception that all light vehicle traffic would use the Mount Hope access road and well field road, impacts would be the same as the Proposed Action. This alternative would increase traffic generation on the Mount Hope access road and Mount Hope well field road by 40 trips per day, thus reducing traffic on Roberts Creek Road by the same amount, which would be a short-term, regional, minor impact.

Under the No Action Alternative, up to 16 acres of surface disturbance would continue within the Project area under authorized Notice-level activities. The existing conditions would include the existing approximately 654 acres of disturbance from the Atlas mining operations. Since the Project would not be approved under the No Action Alternative, no reclamation would occur on the approximately 420 acres of existing disturbance proposed under the Proposed Action. This would be a permanent, localized impact, as multiple use authorizations would not benefit from having these areas reclaimed. Impacts to land use, access, realty, or transportation from this alternative are expected to be short-term, localized, and negligible.

#### Native American Cultural Concerns

#### Proposed Action

To date, no traditional cultural property, property of traditional religious cultural importance, or sacred site has been identified by the tribe or bands participating in the government-to-government consultation process or through cultural resources inventories. If a place of traditional cultural importance is identified by tribal representatives and avoidance is not feasible, specific operating procedures, stipulations, or mitigation measures would be developed in consultation with the affected tribal groups with the goal of reducing or eliminating impacts to the identified resource. If mitigation is required at a site listed, or eligible for listing, on the NRHP, an HPTP would be developed and approved by the BLM and SHPO. Tribal representatives would be asked to participate in the development of any such treatment plan. Direct and indirect impacts to a place of traditional cultural importance, including burials/gravesites, as a result of the Project would be the same as described for cultural resources

#### 25 kV Overhead Distribution Line Alternative

Direct and indirect impacts from the 25 kV Overhead Distribution Line Alternative would be the same as described for the Proposed Action.

#### Three Bars Road/Atlas Haul Road as Only Access Alternative

Since mining and processing operations under the Three Bars Road/Atlas Haul Road as Only Access Alternative would be the same as the Proposed Action, with the exception that all vehicular traffic (heavy and light) would use Three Bars Road and the Atlas Haul Road, impacts would be the same as the Proposed Action.

#### Mount Hope and North Roberts Creek Road for Light Vehicle Traffic Alternative

Since mining and processing operations under the Mount Hope and North Roberts Creek Road for Light Vehicle Traffic Alternative would be the same as the Proposed Action, with the exception that all light vehicle traffic would use the Mount Hope access road and well field road, impacts would be the same as the Proposed Action.

Under the No Action Alternative, up to 16 acres of surface disturbance would continue within the Project area under authorized Notice-level activities. Any potential impacts to places of traditional cultural importance (including unanticipated discoveries) that may have occurred under the Proposed Action would not occur under this alternative. To date, no places of traditional cultural importance have been identified in the area of the Notice-level exploration activities. No impacts to places of traditional cultural importance for traditional cultural importance are expected from this alternative.

#### Noise

#### Proposed Action

Impacts to noise levels from the Project would be related to construction and operation. Noise impacts during operation would occur from mining, blasting, and travel along roads. The Project is not predicted to generate hourly noise levels exceeding the EPA exterior noise criteria of 55 A-weighted decibels (dBA) average, or equivalent, sound level at either of the two ranches. The impacts from noise are expected to be minor, localized, and short-term, lasting for the duration of mining. Noise impacts from blasting are expected to be minor, localized, and short-term, lasting for the duration of Project.

#### 25 kV Overhead Distribution Line Alternative

Impacts from noise to humans under the 25 kV Overhead Distribution Line Alternative would be the same as those described for the Proposed Action for mine construction, operation, and blasting. There would be some temporary noise generated during construction of the distribution line, but impacts are anticipated to be localized and negligible.

#### Three Bars Road/Atlas Haul Road as Only Access Alternative

Since mining and processing operations under the Three Bars Road/Atlas Haul Road as Only Access Alternative would be the same as the Proposed Action, with the exception that all vehicular traffic (heavy and light) would use Three Bars Road and the Atlas Haul Road, impacts would be the same as the Proposed Action. However, there would be no noise generated from Project-related travel along Roberts Creek Road under this alternative, but according to the analysis noise along this road was not a top contributor to noise detected at the Roberts Creek Ranch.

#### Mount Hope and North Roberts Creek Road for Light Vehicle Traffic Alternative

Since mining and processing operations under the Mount Hope and North Roberts Creek Road for Light Vehicle Traffic Alternative would be the same as the Proposed Action, with the exception that all light vehicle traffic would use the Mount Hope access road and well field road, impacts would be the same as the Proposed Action There would be additional noise generated from travel along Mount Hope roads under this alternative. However, this additional travel would likely not be audible from the ranches.

Under the No Action Alternative, up to 16 acres of surface disturbance would continue within the Project area under authorized Notice-level activities, which would generate noise associated with the exploration operations. Authorized Notice-level exploration operations would continue, which would result in negligible, localized, and short term noise impacts at the Three Bars Ranch and the Roberts Creek Ranch.

#### Paleontological Resources

#### **Proposed Action**

Mining conducted as part of the Proposed Action would blast, remove, and crush the host formations for vertebrate and invertebrate fossils. Any significant resources within the mine pits would be impacted by these activities. These impacts would be permanent, localized, and minor The Proposed Action would affect the resource indirectly because the exposures in the remnant mine benches would leave this resource accessible to vandalism and theft after mine closure; however, the remnant mine benches would also provide new exposures for academic study.

#### 25 kV Overhead Distribution Line Alternative

Impacts from the 25KV Overhead Distribution Line Alternative would be similar to the direct and indirect impacts of the Proposed Action. The disturbances for the installation of the distribution line would be primarily in Quaternary and Holocene sediments which have low potential fossil yield classifications, with minor distribution line segments founded in Devils Gate Limestone and/or Vinini Formation which have low to moderate potential fossil yield classifications.

#### Three Bars Road/Atlas Haul Road as Only Access Alternative

Since mining and processing operations under the Three Bars Road/Atlas Haul Road as Only Access Alternative would be the same as the Proposed Action, with the exception that all vehicular traffic (heavy and light) would use Three Bars Road and the Atlas Haul Road, impacts would be the same as the Proposed Action.

#### Mount Hope and North Roberts Creek Road for Light Vehicle Traffic Alternative

Since mining and processing operations under the Mount Hope and North Roberts Creek Road for Light Vehicle Traffic Alternative would be the same as the Proposed Action, impacts would be the same as the Proposed Action. However, access under this alternative would use State Route 278, Mount Hope access road, and Mount Hope well field road to access the Project. The maintenance of the existing Mount Hope access road and well field road, hosted in formations with low potential fossil yield classification, for light vehicle traffic would prevent access to underlying paleontological resources for the life of the Project, which would be a short-term, regional (since the Mount Hope access road and well field road are outside of the Project boundary), negligible impact.

#### No Action Alternative

Under the No Action Alternative, there would be no additional exposure of lithologies in the existing mine pits. There would be no reclamation of certain existing mine pits; exposures of the

fossiliferous McColley Canyon Formation in the Gold Pick pit would remain open for scientific access. Under this alternative, up to 16 acres of surface disturbance would continue within the Project area under authorized Notice-level activities which is not expected to impact paleontological resources.

#### Recreation

#### Proposed Action

The Proposed Action mining and processing facilities would result in short-term, direct effects due to access restrictions within the Project boundary, including within the 127 acres of fenced area within the Plan boundary, for the duration of the Project. In areas of active mining (including around the open pits and WRDAs), recreation activities would be restricted and would likely result in recreationists using other areas surrounding the Project. The Proposed Action would reduce the area available for dispersed recreation by approximately 946 acres. The Proposed Action is anticipated to have short-term, localized, minor impacts associated with reduction in available recreation. Approximately 154 acres (approximately 14 percent of the total mine related disturbance), including the pits, ponds, roads and stormwater diversion channels, would remain as post reclamation features. Impacts to recreation activities resulting from the pits, ponds, roads, and diversion channels that would not be reclaimed is anticipated to be permanent, localized, and minor because the existing conditions already includes similar features (e.g., pits and roads).

The Proposed Action mining and processing facilities would have a short-term, minor, indirect effect on surrounding areas due to the displacement of recreationists to surrounding areas resulting from Project activities, which would be a short-term, regional, minor impact.

#### 25 kV Overhead Distribution Line Alternative

Since mining and processing operations under the 25 kV Overhead Distribution Line Alternative would be the same as the Proposed Action, impacts would be the same as the Proposed Action. The 25 kV Overhead Distribution Line Alternative would result in additional impacts to 124 acres of public land that may be used for dispersed recreation for the life of the power line, and approximately six acres of private land. Impacts to recreation resources from this alternative would be temporary, regional, and negligible because the alternative would follow existing roads or power line corridors, and recreation within the ROW area would return after construction of the power line is completed

#### Three Bars Road/Atlas Haul Road as Only Access Alternative

Since mining and processing operations under the Three Bars Road/Atlas Haul Road as Only Access Alternative would be the same as the Proposed Action, with the exception that all vehicular traffic (heavy and light) would use Three Bars Road and the Atlas Haul Road, impacts would be the same as the Proposed Action.

#### Mount Hope and North Roberts Creek Road for Light Vehicle Traffic Alternative

Since mining and processing operations under the Mount Hope and North Roberts Creek Road for Light Vehicle Traffic Alternative would be the same as the Proposed Action, with the exception that all light vehicle traffic would use the Mount Hope access road and well field road, impacts would be the same as the Proposed Action.

#### No Action Alternative

Under the No Action Alternative, up to 16 acres of surface disturbance would continue within the Project area under authorized Notice-level activities. The existing conditions would include the existing approximately 654 acres of disturbance from the Atlas mining operations. Since the Project would not be approved under this alternative, no reclamation would occur on the approximately 420 acres of existing disturbance proposed under the Proposed Action, which would remain as an existing long-term, minor impact to recreation uses and the recreation setting. The types and levels of dispersed recreation would remain the same as existing conditions This alternative would have a long-term (due to the unreclaimed disturbances), localized, minor impact on recreation activities.

#### Social and Economic Values

#### Proposed Action

Considering the relatively short construction schedule of the Project, and that many of the workers would be contractors, moving in and out of the area as their particular skills were needed, it is assumed that many of the needed construction workers may come from outside of Town of Eureka, whereas the short duration of construction suggests that most of the secondary job opportunities generated by Project construction would be filled by individuals already residing in the vicinity of the Project. Unlike construction, it is expected that most of the Project workers would come from within the local area of analysis, and a high percentage of secondary job opportunities would be filled by individuals already residing in the area. Assuming many construction workers would be non-local, the permanent housing market would not be impacted to any substantial degree during construction. They would, however, place a substantial demand on local temporary housing resources in Eureka and surrounding communities. The approximately seven-year operating life of the Project (including construction pre-stripping and the additional two years for residual leaching) would likely result in a majority of the operations' workers seeking residence in the Project vicinity with most of them locating in or near Eureka primarily because of proximity to the Project site. It is anticipated that there would be sufficient housing available to accommodate the Project-related demand. In summary, construction of the mine would have a short-term, localized, moderate, positive short-term fiscal effect on the entities within the area of analysis, and operation and maintenance of the mine would have a long-term, minor positive fiscal effect for the life of the Project. These effects would effectively cease at the time the Project is completed and reclaimed.

#### 25 kV Overhead Distribution Line Alternative

Construction of the 25 kV Overhead Distribution Line Alternative would require employment of approximately six to 10 contract workers for a period of up to six months. Construction of the

distribution line would generate additional wages and salaries, including benefits; however, any such work would be done by existing staff of Mt. Wheeler and would not be expected to affect employment or income in the vicinity of the Project. Initial capital expenditures and operating costs would be reduced, in part due to the reduction in fuel needed for the use of generators. During the operational life of the 25 kV distribution line, in summary, construction of this alternative would have a localized, temporary, minor, positive fiscal effect on the entities within the area of analysis.

#### Three Bars Road/Atlas Haul Road as Only Access Alternative

Since mining and processing operations under the Three Bars Road/Atlas Haul Road as Only Access Alternative would be the same as the Proposed Action, with the exception that all vehicular traffic (heavy and light) would use Three Bars Road and the Atlas Haul Road, impacts would be the same as the Proposed Action.

#### Mount Hope and North Roberts Creek Road for Light Vehicle Traffic Alternative

Since mining and processing operations under the Mount Hope and North Roberts Creek Road for Light Vehicle Traffic Alternative would be the same as the Proposed Action, with the exception that all light vehicle traffic would use the Mount Hope access road and well field road, impacts would be the same as the Proposed Action.

#### No Action Alternative

Under the No Action Alternative, the Project would not be developed and associated effects on social and economic values in the area would not occur. Up to 16 acres of surface disturbance would continue within the Project area under authorized Notice-level activities. Under this alternative, the number of employees would continue at existing low levels and impacts to social and economic values is expected to be short-term, localized, and negligible.

#### Soils

#### Proposed Action

Soil disturbance is proposed for 1,129 acres within the Plan boundary (including exploration activities), of which 395 acres have been previously disturbed. New disturbance to undisturbed soils would include approximately 718 acres of long-term disturbance with implementation of the Project. Approximately 154 acres would not be reclaimed after the Project ceases operation, which include the pits, process ponds, some roads, and storm water diversion channels. Impacts to soils would primarily be long-term and localized, since reclamation would occur; however, the areas not reclaimed would result in permanent, localized soil disturbance. The Proposed Action would result in structural, physical, and chemical alterations that could result in the potential for decreased soil function leading to poor quality of the topsoil, the potential for increase in wind or water erosion, and the potential contamination of soils from spills or leaks of chemicals associated with mining operations. Overall, impacts to soils are expected to be long-term, localized, and minor to moderate over the life of the mine and after life of mine.

#### 25 kV Overhead Distribution Line Alternative

Since mining and processing operations under the 25 kV Overhead Distribution Line Alternative would be the same as the Proposed Action, impacts would be the same as the Proposed Action. Temporary impacts to soils would occur within the 80-foot working ROW during construction, while the longer-term impacts would occur within the 40-foot ROW where the existing poles and maintenance road would remain. Soils would be disturbed during overland movement, construction of the center line travel road, or where soils would be bladed or removed during construction. All disturbed soils would have an increased potential for wind or water based erosion, and would result in degradation of soil function (e.g., water holding capacity, plant support). Approximately 130 acres of soils would have direct, short-term, regional, and moderate impacts, but after reclamation of the working ROW these impacts are expected to be short-term and minor as the ROW soils establish vegetated cover.

#### Three Bars Road/Atlas Haul Road as Only Access Alternative

Since mining and processing operations under the Three Bars Road/Atlas Haul Road as Only Access Alternative would be the same as the Proposed Action, with the exception that all vehicular traffic (heavy and light) would use Three Bars Road and the Atlas Haul Road, impacts would be the same as the Proposed Action. Since this alternative would utilize existing roads for mine access, this alternative would not result in any new additional disturbance to soil resources from what is detailed for the Proposed Action because the soils in the roadways have already been disturbed. The continual use of Three Bars Road and Atlas Haul Road would increase the risk of soil erosion; however, this impact would be considered short-term, localized, and negligible.

#### Mount Hope and North Roberts Creek Road for Light Vehicle Traffic Alternative

Since mining and processing operations under the Mount Hope and North Roberts Creek Road for Light Vehicle Traffic Alternative would be the same as the Proposed Action, with the exception that all light vehicle traffic would use the Mount Hope access road and well field road, impacts would be the same as the Proposed Action. The continual use of the Mount Hope roads would increase the risk of soil erosion, however, this impact would be considered short-term, localized, and negligible.

#### No Action Alternative

Under the No Action Alternative, up to 16 acres of surface disturbance would continue within the Project area under authorized Notice-level activities. Notice-level activities may include direct soil removal, compaction, and soil redistribution associated with drill pad and drill road construction. Use of existing roadways would result in increased potential for soil erosion from wind and water due to the lack of vegetation or protective cover, and additional soil compaction. Impacts to soils from this alternative are expected to be minor, long-term, and localized.

#### Vegetation

#### Proposed Action

Vegetation communities within the Project area include curl-leaf mountain mahogany, limber pine, pinyon/juniper woodland, and sagebrush steppe. There is approximately 660 acres of existing disturbance within the Project area where vegetation has already been disturbed. Direct impacts of the Proposed Action would include removal of approximately 1,129 acres of vegetation (including exploration activities), 395 acres of which have been previously disturbed. Approximately 167 acres of curl-leaf mountain mahogany, 482 acres of pinyon/juniper woodland, and 20 acres of sagebrush steppe would be disturbed from Project activities. Unreclaimed features include pits, ponds, some roads, and stormwater diversion channels, totaling 154 acres (14 percent of total disturbance within the Plan boundary). Impacts to vegetation resources from noxious weeds and non-native invasive species would include the establishment and spread of these species during construction or reclamation. Project EPMs would substantially reduce the spread and establishment of noxious weeds and non-native invasive species from the Proposed Action. Overall impacts to vegetation communities would be long-term and minor. Overall impacts to vegetation communities from the Proposed Action would be long-term, localized, and minor.

Three special status plant species have the potential to occur in the Project area; however, none were identified during baseline surveys conducted in 2012. Direct and indirect impacts to special status plant species would include the disturbance of 669 acres of vegetation communities that may provide potential habitat for least phacelia, Beatley buckwheat, and Monte Neva paintbrush. Impacts to special status plant species from the Proposed Action are expected to be long-term, localized, and negligible. The Proposed Action would be in conformance with the ESA and other Federal regulations regarding special status plant species.

#### 25 kV Overhead Distribution Line Alternative

Direct impacts from the 25 kV Overhead Distribution Line Alternative in addition to those realized under the Proposed Action would include removal of approximately 130 acres of vegetation. The Sagebrush Steppe and Inter-Mountain Basins Big Sagebrush Shrubland would be the communities most disturbed from this alternative (i.e., 86 percent of total disturbance). Indirect impacts to vegetation communities would include the added potential for spread and introduction of noxious weeds and non-native invasive species; the loss of forage for wildlife, wild horses, and livestock; and potential for increased soil erosion. Overall, direct and indirect impacts to vegetation communities for this alternative would be long-term, regional, and minor.

#### Three Bars Road/Atlas Haul Road as Only Access Alternative

Since mining and processing operations under the Three Bars Road/Atlas Haul Road as Only Access Alternative would be the same as the Proposed Action, with the exception that all vehicular traffic (heavy and light) would use Three Bars Road and the Atlas Haul Road, impacts would be the same as the Proposed Action. One indirect impact from this alternative would be the reduced potential for the spread of noxious weeds and non-native species along the Roberts Creek Road because this road would not be utilized for light-duty vehicles accessing the mine.

#### Mount Hope and North Roberts Creek Road for Light Vehicle Traffic Alternative

Since mining and processing operations under the Mount Hope and North Roberts Creek Road for Light Vehicle Traffic Alternative would be the same as the Proposed Action, with the exception that all light vehicle traffic would use the Mount Hope access road and well field road, impacts would be the same as the Proposed Action. No additional direct impacts to vegetation resources would be anticipated from this alternative. Indirect impacts would be long-term, regional, and negligible and include the potential for noxious weeds and non-native species spread along Mount Hope roads from the travel of light-duty vehicles accessing the mine.

#### No Action Alternative

Under the No Action Alternative, up to 16 acres of surface disturbance would continue within the Project area under authorized Notice-level activities. The vegetation types within the authorized Notice-level area include curl-leaf mountain mahogany, pinyon-juniper woodland, and sagebrush. The existing conditions would include the existing approximately 654 acres of disturbance from the Atlas mining operations. Since the Project would not be approved under this alternative, no reclamation would occur on the approximately 420 acres of existing disturbance proposed for reclamation under the Proposed Action. This may have a long-term impact on vegetation, since without reclamation of these disturbed areas, and without the implementation of the Noxious Weed Management Plan under this alternative, noxious weeds and non-native invasive species may spread throughout the Project area. Impacts to vegetation from this alternative are expected to be minor, localized, and long-term.

#### Visual Resources

#### **Proposed Action**

The removal of vegetation cover and mass movement of soils and landforms associated with the Project would introduce form, line, color, and texture elements that contrast with the features of the existing landscape. In addition, the facilities and structures associated with Project, such as mine administrative office, the truck shop, and fencing, would also introduce form, line, color, and texture elements that contrast with the features of the existing landscape. The contrasting visual resource elements introduced by the Project are anticipated to be long-term, lasting through the life of the Project. Reclamation would reduce the visibility of the Project and lessen the degree of contrast it would have with existing landscape features; however, the features not reclaimed, including the pits, would continue to result in visual contrast with the existing landscape after mining operations cease. Mining and processing facilities would be located on BLM-administered public lands that have been designated as Visual Resource Management (VRM) Class IV. The Project would not conflict with the VRM Class IV designation objectives. However, the northern portion of the Project would be within an area designated as a VRM Class II. These disturbances would not be consistent with the VRM Class II. Use of Project lights would contribute to the illumination of night sky in an area that is largely uninhabited and unlit. The Project would have short-term, regional, and negligible impacts on night sky lighting because there are very few existing light sources in the area and the ambient light level is very low, and because the Project would introduce relatively few light sources to the area.

#### 25 kV Overhead Distribution Line Alternative

Under the 25 kV Overhead Distribution Line Alternative, the visual impacts from mining and processing facilities would be the same as described for the Proposed Action. The distribution line would repeat some visual elements in the landscape, but not dominant or common elements. Thus, it is anticipated that the distribution line would have a moderate degree of visual contrast. However, the level of change and impact from the Key Observation Points would be consistent with the objectives of BLM VRM Class IV.

#### Three Bars Road/Atlas Haul Road as Only Access Alternative

Since mining and processing operations under the Three Bars Road/Atlas Haul Road as Only Access Alternative would be the same as the Proposed Action, with the exception that all vehicular traffic (heavy and light) would use Three Bars Road and the Atlas Haul Road, impacts would be the same as the Proposed Action.

#### Mount Hope and North Roberts Creek Road for Light Vehicle Traffic Alternative

Since mining and processing operations under the Mount Hope and North Roberts Creek Road for Light Vehicle Traffic Alternative would be the same as the Proposed Action, with the exception that all light vehicle traffic would use the Mount Hope access road and well field road, impacts would be the same as the Proposed Action.

#### No Action Alternative

Under the No Action Alternative, up to 16 acres of surface disturbance would continue within the Project area under authorized Notice-level activities, which adds linear and irregular shaped forms to the landscape from exploration roads and drill pads. However, the color of the roads and drill pads would be very similar to and repeat the color of existing mine disturbance and road disturbance within the Project boundary. Visual contrast would be anticipated to be localized, minor, and negligible and consistent with the BLM VRM Class IV objectives.

#### Water Quality and Quantity

#### **Proposed Action**

#### Surface Water Impacts

Impacts to surface water resources within or adjacent to the Project are not expected because there are no perennial streams or springs within the Plan boundary, drawdown associated with the Project would be limited to the alluvial aquifer in Kobeh Valley, and appropriate EPMs and Best Management Practices for erosion and sediment control would be implemented to protect surface water resources from pollution related to mining and processing operations.

#### Groundwater Impacts

The Proposed Action includes proposed water supply of alluvial groundwater from the area near the Roberts Creek Ranch from two wells that would be used to pump an estimated average of 380 gallons per minute alluvial groundwater for the seven-year estimated life of mine, and a maximum of 500 gallons per minute during the seven-year mining period. Under the most conservative pumping scenario the 10-foot drawdown isopleth would extend up to two miles from the two production wells, and drawdown at the Roberts Creek Ranch well would be around 25 feet. Only the Roberts Creek Ranch well would be impacted by the pumping of production water from the alluvial aquifer near the Roberts Creek Ranch. Ninety-nine percent recovery of ground water levels are expected within two years after cessation of pumping. No springs or seeps would be impacted by pumping of the production wells. Impacts to groundwater are anticipated to be long-term, regional, and minor.

#### Geochemistry Impacts

No pit dewatering is planned by MMI during mining operations. Consequently, no post-mining pit lakes are expected in any of the four proposed mine pits. Therefore, impacts associated with the four mine pits that would remain on site after the cessation of mining are anticipated to be longterm, regional, and negligible. Waste rock characterization test results showed that approximately 90 percent of the waste rock expected to be generated would be non-acid generating (Non-Designated waste) and have excess neutralization capacity because of the carbonate-rich sedimentary rock that would compose the great majority of waste rock. Approximately 10 percent of the waste rock to be generated by the Project would consist of unoxidized sulfide-bearing carbonaceous and decalcified limestone, which is potentially acid generating (Designated waste rock). The Non-Designated waste rock would be placed in one of the nine WRDAs developed for this type of waste. The Designated waste would be placed in the Designated Waste Cell located at the Pick East Lower WRDA. This facility would be a constructed basin buttressed by Non-Designated waste and surrounded by a downgradient berm constructed of Non-Designated waste, and covered with an amended soil using bentonite to minimize meteoric infiltration. Impacts are anticipated to be long-term, localized, and negligible. The HLP would have an engineered liner and leak detection system, and would be a zero discharge facility. Environmental impacts from the HLP during operation are anticipated to be long-term, regional, and negligible. because it would be designed as a zero discharge facility in accordance with Nevada Administrative Code guidelines. The two monitoring wells that surround the facility would be monitored to ensure no impacts to groundwater beyond the Plan boundaries.

#### 25 kV Overhead Distribution Line Alternative

Potential impacts to surface water, groundwater, and geochemistry from the 25 kV Overhead Distribution Line Alternative would be similar to the Proposed Action.

#### Three Bars Road/Atlas Haul Road as Only Access Alternative

Since mining and processing operations under the Three Bars Road/Atlas Haul Road as Only Access Alternative would be the same as the Proposed Action, with the exception that all vehicular traffic (heavy and light) would use Three Bars Road and the Atlas Haul Road, impacts to surface water, groundwater, and geochemistry would be the same as the Proposed Action.

#### Mount Hope and North Roberts Creek Road for Light Vehicle Traffic Alternative

Since mining and processing operations under the Mount Hope and North Roberts Creek Road for Light Vehicle Traffic Alternative would be the same as the Proposed Action, with the

exception that all light vehicle traffic would use the Mount Hope access road and well field road, surface water, groundwater, and geochemistry impacts would be the same as the Proposed Action.

#### No Action Alternative

Under the No Action Alternative, up to 16 acres of surface disturbance would continue within the Project area under authorized Notice-level activities. The existing conditions would include the existing approximately 654 acres of disturbance from the Atlas mining operations. Since the Project would not be approved under the No Action Alternative, no reclamation would occur on the approximately 420 acres of existing disturbance proposed for reclamation under the Proposed Action. Erosion and sedimentation may continue to occur on areas that are not reclaimed which may have an impact to surface water quality. Impacts to water quality from this alternative are expected to be long-term, regional, and negligible

#### Wetland and Riparian Zones

#### Proposed Action

There are no wetlands or riparian habitat within the Plan boundary; therefore, there would be no impacts to these resources as a result of the Proposed Action.

Groundwater modeling of the two production wells generally indicates that impacts to the alluvial aquifer from pumping at the proposed production wells do not appear to be significant in terms of appreciably lowering of water levels in the area. There are no wetlands located within the 10-foot drawdown contour for either scenario of groundwater pumping. The contours do overlap areas within Roberts Creek that are mapped as dry meadow and willow, which both support some riparian vegetation. Since these areas are upgradient of the production wells and are supported by headwaters located outside of areas impacted by the predicted pumping drawdown from the Proposed Action, impacts are anticipated to be regional, negligible, and long-term.

#### 25 kV Overhead Distribution Line Alternative

There are no wetland or riparian resources identified within the 25 kV Overhead Distribution Line Alternative; therefore, impacts to wetland and riparian resources would be the same as for the Proposed Action. Impacts to wetland and riparian resources would be regional, negligible, and long term.

#### Three Bars Road/Atlas Haul Road as Only Access Alternative

Since mining and processing operations under the Three Bars Road/Atlas Haul Road as Only Access Alternative would be the same as the Proposed Action, with the exception that all vehicular traffic (heavy and light) would use Three Bars Road and the Atlas Haul Road, impacts would be the same as the Proposed Action, and would be negligible and long term.

#### Mount Hope and North Roberts Creek Road for Light Vehicle Traffic Alternative

Since mining and processing operations under the Mount Hope and North Roberts Creek Road for Light Vehicle Traffic Alternative would be the same as the Proposed Action, with the exception that all light vehicle traffic would use the Mount Hope access road and well field road, impacts would be the same as the Proposed Action. There are no identified wetland or riparian areas along Mount Hope road alignments.

#### No Action Alternative

Under the No Action Alternative, up to 16 acres of surface disturbance would continue within the Project area under authorized Notice-level activities. There are no wetlands or riparian areas within the Notice-Level activities, so there would be no direct or indirect impacts to wetland and riparian resources from this alternative, so impacts are assumed to be regional, long-term, and negligible.

#### Wildlife

#### Proposed Action

Direct impacts to wildlife populations could include limited direct mortalities from construction vehicle-related mortalities, habitat loss or alteration, incremental habitat fragmentation, and animal displacement. Indirect impacts could result from increased noise and additional human presence. Construction of the Proposed Action would disturb three types of wildlife habitat; curleaf mountain mahogany, pinyon-juniper woodland, and sagebrush steppe. The Proposed Action would disturb a total of approximately 1,129 acres (including exploration activities), including approximately 718 acres of disturbance in habitat that has not been previously disturbed, and 395 acres within areas of existing disturbance. Approximately 167 acres of curl-leaf mountain mahogany, 482 acres of pinyon/juniper woodland, and 20 acres of sagebrush steppe would be disturbed from Project activities. Unreclaimed features include pits, ponds, some roads, and stormwater diversion channels, totaling 154 acres (14 percent) of total disturbance within the Plan boundary. The disturbance areas would be converted to a grass and forb dominated community, and eventually a shrub-dominated community after reclamation, and the seed mix would provide for species similar to pre-disturbance communities, except for existing tree species like pinyon, juniper, and curl-leaf mountain mahogany.

#### General Wildlife

Impacts to small mammals would include direct mortality during clearing and grubbing operations and a loss of available habitat. Other larger, more mobile wildlife throughout the Plan boundary would disperse once construction begins. These impacts are expected to be long-term, localized, and minor to most species and the impacts would not result in population level impacts.

#### Migratory Birds

Project activities would disturb habitat that supports migratory birds, including species that utilizing the woodland communities (i.e., pinyon-juniper and curl-leaf mountain mahogany) within the Project area. Until reclamation occurs, this habitat would be lost as potential migratory bird

nesting and foraging habitat. Most of the mine features would be reclaimed, and once restored, would present suitable habitat for many migratory bird species. However, reclaimed areas would not provide habitat for woodland species because these communities can take 50 to 100 years or more to reestablish. Impacts to migratory birds from habitat removal and, fragmentation are anticipated to be long-term, localized and minor. Impacts resulting from displacement are anticipated to be long-term, regional, and minor.

#### Raptors

Potential impacts to raptors include direct mortality, habitat or nesting substrate removal, and indirect (e.g., noise) disturbance resulting in displacement. Direct mortality and indirect disturbance to raptors would be prevented or limited by the EPMs. Impacts are anticipated to be long-term, localized, and negligible to minor.

#### Mule Deer

Implementation of the Proposed Action would result in the disturbance of mule deer habitat. Impacts are anticipated to be long-term, localized, and minor. Noise and human activity would be expected to cause deer to avoid areas adjacent to active disturbance, and the location of the proposed disturbance within the Plan boundary is in proximity to a known migratory corridor for mule deer where deer move between summer range in the higher elevation woodlands to the lower piedmont slopes in the winter. Impacts are anticipated to be long-term, regional, and minor.

#### Pronghorn Antelope

The Proposed Action would disturb approximately 18 acres of year-round habitat for pronghorn antelope. Direct effects to Pronghorn antelope from the Proposed Action could occur as a result of vehicle collisions or loss of habitat. These effects would be localized, long-term, and minor to moderate for individuals, but negligible for the population as a whole due to the small amount of disturbance relative to habitat available.

#### Greater Sage-Grouse

The Proposed Action is not expected to result in direct mortality to greater sage-grouse, as any individuals within the Plan boundary are expected to disperse upon commencement of any ground-disturbing activities. However, the Proposed Action would result in the direct loss of greater sage-grouse habitat. The Proposed Project would disturb approximately 11 acres of undisturbed late summer habitat, approximately five acres of undisturbed winter habitat, and approximately six acres of undisturbed nesting and early brood rearing habitat. According to the Sagebrush Ecosystem Program (SEP) December 2015 mapping, the Proposed Action would disturb approximately 297 acres of PHMA and 767 acres of General Habitat Management Areas (GHMA), of which approximately 395 acres (37 percent) has been previously disturbed. Both direct impacts from disturbance as well as indirect impacts, primarily associated with noise, would either be offset using the state of Nevada's Conservation Credit System (CCS) as described for the Proposed Action, or a proponent driven mitigation plan would be developed in coordination with the BLM, the Nevada Department of wildlife (NDOW) and the U.S. Fish and

Wildlife Service (USFWS). Because noise modelling indicates that increases exceeding the 10 dBA threshold are unlikely, and because EPMs would be in place restricting access road use during the lekking period, long-term, indirect effects of increased anthropogenic activity and noise on greater sage-grouse are expected to be long-term, regional, may affect, but not likely to adversely affect greater sage-grouse.

#### Other Special Status Species

The Proposed Action impacts to BLM sensitive birds would be similar to the impacts described for migratory birds. Direct mortality and indirect long-term effects due to noise/increased human presence are expected to be regional and may affect, but not likely to adversely affect, due in part to the EPMs. Because sage-thrasher, Brewer's sparrow, pinyon jay, loggerhead shrike, Northern goshawk, and Swainson's hawk are expected to occur only occasionally, and because sagebrush and pinyon-juniper habitat is abundant within the region, the impacts to these species associated with habitat removal would be long-term, localized, may affect, but not likely to adversely affect special status species. Impacts from habitat removal are anticipated to be long-term, localized, may affect, but not likely to adversely affect special status species.

An aerial survey conducted by Great Basin Ecology, Inc. in 2012 observed six active golden eagle nests and one inactive golden eagle nest. None of the active or inactive golden eagle nests were within the Plan boundary. Golden eagles are known to abandon nests early in the nesting chronology due to anthropogenic disturbance. Project EPMs require preconstruction clearance surveys during raptor breeding season to determine nest occupancy, and if a nest is found to be active, an appropriate construction buffer would be enacted until the bird's nest is no longer considered active and/or the young have fledged. As a result, impacts to nesting golden eagles are not anticipated. Long-term direct impacts of habitat loss would be localized, and may affect, but not likely to adversely affect golden eagles because of the amount of foraging habitat available in the area.

No ferruginous hawk nests have been identified within the Plan boundary during baseline surveys, although ferruginous hawks are known to nest in the general area. Three nests were located in the pinyon-juniper–sagebrush steppe interface near the Plan boundary during the 2012 baseline surveys. Because no ferruginous hawk nests have been identified within the Plan boundary, and because of the EPMs in place, neither direct mortality nor indirect noise related effects are expected. Loss of habitat associated with the Project is anticipated to result in long-term, localized, and may affect, but not likely to adversely affect.

Western burrowing owl suitable habitat is available adjacent to the Atlas Haul Road and one adult bird was observed near the Atlas Mill Site in late August 2012 during baseline surveys. During construction, burrowing owl burrows could be crushed and/or covered by construction. MMI would make reasonable effort to conduct vegetation-clearing activities outside of the breeding season for western burrowing owls, or preconstruction clearance surveys would be conducted prior to vegetation clearing activities. Long-term direct habitat loss would also occur,
but is also expected to be localized, long-term, and may affect, but not likely to adversely affect western burrowing owl due to the habitat available in the area.

Pygmy rabbit habitat was identified near the Atlas Haul Road. Because there would be no disturbance along the Atlas Haul Road, with the exception of maintenance activities, impacts in that area would be limited to direct mortality due to vehicle collisions. Given the relatively small size of the area to be impacted, it is anticipated that few burrows would be impacted and the impacts would be localized, long-term, and may affect, but not likely to adversely affect pygmy rabbit.

Shafts or adits are not known to occur within the Plan boundary. The principal impacts to BLM-sensitive bat species would occur due to a loss of forested habitats, which represent potential roosting areas for such species as long-eared myotis, silver-haired bats, and as bat foraging habitat The effects of habitat removal would be long term, but are expected to be localized and may affect, but not likely to adversely affect sensitive bats as roosting habitat (i.e., pinyon-juniper and cliffs/outcrops) are common throughout the region.

# 25 kV Overhead Distribution Line Alternative

The 25 kV Overhead Distribution Line Alternative contains most of the primary elements of the Proposed Action. As a result, most of the direct and indirect impacts would be similar to the Proposed Action, but with the potential for additional impacts due to the disturbance associated with construction and operation of the distribution line. Construction of the 25 kV distribution line would disturb two types of wildlife habitat, pinyon-juniper woodland (approximately eight acres) and sagebrush steppe/other mixed sagebrush shrubland (approximately 122 acres).

# General Wildlife

Impacts to general wildlife within the Plan boundary would be the same as described for the Proposed Action. Within the distribution line ROW, impacts to small mammals include direct mortality during clearing and grubbing operations, direct mortality due to increased predation from perching raptors, indirect impacts due to construction noise, and loss of available habitat in areas temporarily and permanently cleared for disturbance. Impacts are anticipated to be minor, regional, and long-term.

# Migratory Birds

Within the distribution line ROW, the types of impacts to migratory birds would be the same as described for the Proposed Action, with the exception of the potential for collisions and increased predation. Direct mortality and indirect short-term impacts would be negligible due to the EPMs. The primary impact would be the disturbance of an additional 130 acres of habitat for migratory birds. Until reclamation occurs, this habitat would be lost as potential migratory bird nesting and foraging habitat. the impacts would be long-term, regional, minor, and would not result in population level impacts.

### Raptors

Raptor species that would forage and nest within the Project area, would also use the ROW corridor for forage. Within the Plan boundary, the types of impacts to raptors would be the same as described for the Proposed Action and for migratory birds. However, additional impacts from the distribution line may occur, which includes the risk of collisions and electrocutions, noise disturbance, and additional forage area disturbance. When combined with other impacts of the Proposed Action, the impacts would be long-term, regional, minor, and would not result in population level impacts.

#### Mule Deer

Approximately 130 acres of mule deer habitat would be lost until reclamation has taken place. Long-term direct effects of 130 acres of habitat loss would have a minor effect on mule deer due to the presence of suitable habitat adjacent to the ROW. Noise and construction activity related indirect effects would be short-term, and are not expected to have more than a negligible effect on mule deer. Effects within the Plan boundary would be the same as described for the Proposed Action and the combined impact would be long-term, regional, minor, and would not result in population level impacts.

#### Pronghorn Antelope

Approximately 89 acres of mapped habitat for pronghorn antelope would be lost until reclamation has taken place. Effects to pronghorn antelope are anticipated to be the same as described above for mule deer; long-term, regional, minor effects due to habitat loss and negligible effects due to noise and human activity.

#### Greater Sage-Grouse

Impacts to greater sage-grouse within the Plan boundary would generally be as described for the Proposed Action, with the exception of the possibility of increased predation. the Proposed Action, with the exception of increased predation. Construction of the distribution line would have similar types of effects, but there would be a greater overall loss of habitat. This alternative would potentially disturb an additional approximately 126 acres of late summer habitat, 106 acres of winter habitat, and approximately 75 acres of nesting and early brood rearing habitat. According to the SEP December 2015 mapping, construction of the distribution line would disturb approximately 80 acres of PHMA, 33 acres of GHMA, and 13 acres of Other Habitat Management Areas. However, approximately 24 acres of Priority Habitat Management Areas (PHMA) has been previously disturbed from the existing Atlas 25 kV distribution line. This disturbance is in addition the disturbance from the Proposed Action. Both direct impacts from disturbance as well as indirect impacts, primarily associated with noise, would either be offset using the state of Nevada's CCS as described for the Proposed Action, or a proponent driven mitigation plan would be developed in coordination with the BLM, the NDOW and the USFWS. As such, the long-term impacts to greater sage-grouse, even with the additional disturbance, may affect, but not likely to adversely affect greater sage-grouse.

#### Other Special Status Species

Impacts along the distribution line ROW to BLM sensitive birds would be similar to the impacts described for migratory birds. Because sage-thrasher, Brewer's sparrow, pinyon jay, loggerhead shrike, Northern goshawk, Swainson's hawk, and other raptors are expected to occur only on a migratory basis, and because sagebrush and pinyon-juniper habitat is abundant within the region, the impacts to these species associated with habitat removal would be long-term and may affect, but not likely to adversely affect these species.

Pygmy rabbit habitat was identified along the distribution line ROW where it parallels Roberts Creek Road. Installation of the distribution line has potential to provide additional perch sites for raptors in the area, which could result in increased predation of small mammals such as pygmy rabbits. Disturbance within this area could result in direct mortality and the destruction of burrows. Given the small size of the area likely to be impacted, it is anticipated that few burrows would be impacted and any habitat removal may affect, but would not likely to adversely affect pygmy rabbit.

Impacts to bats within the Plan boundary would be the same as described for the Proposed Action. Within the distribution line ROW, an additional nine acres of forested habitat, which provides bat roosting sites, would be lost. Bats may forage within the ROW, but because hibernacula habitat would not be disturbed, direct and indirect impacts to bats may affect, but would not likely adversely affect sensitive bat species.

# Three Bars Road/Atlas Haul Road as Only Access Alternative

Since mining and processing operations under the Three Bars Road/Atlas Haul Road as Only Access Alternative would be the same as the Proposed Action, impacts would be the same as the Proposed Action. However, light vehicle traffic associated with mining operations would not use Roberts Creek Road reducing anthropogenic activity in northern Kobeh Valley, and all vehicle traffic, both light vehicle traffic and heavy vehicle traffic, would use Three Bars Road, thereby increasing activity in northwestern Kobeh Valley. Impacts associated with increased anthropogenic activity in the form of light and large vehicle traffic along the Three Bars Road/Atlas Haul Road for this alternative are expected to be slightly greater as those discussed under the Proposed Action. This is particularly true for leks in closer proximity to and especially within line-of-sight of the Three Bars Road/Atlas Haul Road. However, no potential traffic impacts would occur as a result of this alternative to those leks adjacent the Roberts Creek Road as there would be no vehicles using it.

# Mount Hope and North Roberts Creek Road for Light Vehicle Traffic Alternative

Since mining and processing operations under the Mount Hope and North Roberts Creek Road for Light Vehicle Traffic Alternative would be the same as the Proposed Action, impacts would be the same as the Proposed Action, including the use of Three Bars Road for heavy vehicle traffic. However, access under this alternative would use State Route 278, Mount Hope access road, and Mount Hope well field road to access the Project. NVN-091566 and North Roberts Creek Road would still be used to access the Project under this alternative, but Roberts Creek Road would not be used for access. The direct and indirect effects of this alternative would be similar to those described for the Proposed Action, except under this alternative there would be impacts from traffic on the Mount Hope access road and well field road. The amount of traffic going to/from the mine would be the same under this alternative as for the Proposed Action, only the location of traffic related impacts (including direct impacts from vehicle related mortality and indirect effects from noise) would change. Under this alternative, indirect effects to the leks along the Three Bars/Atlas Haul Road would be the same as the Proposed Action and impacts along the Roberts Creek Road would not occur. However, there would be impacts to the Henderson Pass lek (located 0.12 miles from the Mount Hope well field road) in addition to the other leks identified within four miles of the alternative (excluding Roberts Creek Road). Impacts to greater sage-grouse from this alternative are expected to be long-term, may affect, and would likely adversely affect this lek. However, implementation of seasonal road timing restrictions along the access roads from 6:00 AM to 10:00 AM and from 6:00 PM to 4:30 AM from March 1 to May 15, impacts are expected to reduce impacts from this alternative.

# No Action Alternative

Under the No Action Alternative, most of the impacts discussed for the Proposed Action would not occur. However, exploration activities associated with the No Action Alternative would impact various types of wildlife habitat throughout the area of analysis. Impacts may include habitat avoidance, wildlife displacement to adjacent areas from noise and increased human presence, and vegetation removal. The Notice-level activities may occur within both PHMA and GHMA habitat for greater sage-grouse. Impacts from this alternative are anticipated to be long term and minor, for wildlife, due to the availability of other suitable habitat in adjacent areas, and may affect, but would not adversely affect sensitive species.

# Wild Horses and Burros

# Proposed Action

Direct impacts of the Proposed Action to wild horses include loss of habitat, a reduction in forage availability, and possible mortality or injury from vehicle collisions. The Proposed Action would have a long-term impact from removal of 718 acres of existing vegetation communities within the Plan boundary. Removal of vegetation from construction of the mine facilities reduces the habitat and forage available for wild horses. Additionally, 127 acres would be fenced, excluding use by wild horses, but also protecting them from potential harm in these areas. The effects would be moderate and localized within the immediate Project area, but minor on the regional Herd Management Area (HMA) scale. The habitat is not highly valuable to wild horses due to pinyon and juniper cover, terrain and the existing disturbance from previous mining, and though wild horse distribution and use patterns are expected and could be moderate and long term within the Project area (localized) and minor or negligible in the rest of the HMA (regional).

#### 25 kV Overhead Distribution Line Alternative

Direct impacts from the implementation of the 25 kV Overhead Distribution Line Alternative would include a potential reduction of forage available for wild horses and disturbance by increased human presence during construction. Additional impacts beyond those analyzed for the Proposed Action would be localized, short term and minor. Slight reductions in noise would occur as fewer generators would be in use at the processing facility due to the availability of electricity delivered to the site by the proposed distribution line.

### Three Bars Road/Atlas Haul Road as Only Access Alternative

Since mining and processing operations under the Three Bars Road/Atlas Haul Road as Only Access Alternative would be the same as the Proposed Action, impacts would be the same as the Proposed Action. However, light vehicle traffic associated with mining operations would not use Roberts Creek Road, and all vehicle traffic, both light vehicle traffic and heavy vehicle traffic, would use Three Bars Road. The potential for vehicle-wild horse collisions may be increased along Atlas Haul Road between the Three Bars Road and the Project boundary. Overall, impacts to wild horses from this alternative would be long-term, localized, and minor, the same as those described for the Proposed Action.

# Mount Hope and North Roberts Creek Road for Light Vehicle Traffic Alternative

Since mining and processing operations under the Mount Hope and North Roberts Creek Road for Light Vehicle Traffic Alternative would be the same as the Proposed Action, impacts would be the same as the Proposed Action. However, access under this alternative would use State Route 278, Mount Hope access road, and Mount Hope well field road to access the Project. NVN-091566 and North Roberts Creek Road would still be used to access the Project under this alternative, but Roberts Creek Road would not be used for access. Potential impacts from vehicle-wild horse collisions may be reduced because the Mount Hope Project boundary would be fenced, excluding wild horses. However, this access road is not as straight as Roberts Creek or Three Bars Road, increasing opportunity for collisions due to reduced visual distance on corners. Overall, impacts to wild horses from this alternative would be long-term, localized, and minor, the same as those described for the Proposed Action.

#### No Action Alternative

Under the No Action Alternative, up to 16 acres of surface disturbance would continue within the Project area under authorized Notice-level activities (exploration). The existing conditions would include the existing approximately 654 acres of disturbance from the Atlas mining operations. Since the Project would not be approved under this alternative, no reclamation would occur on the approximately 420 acres of existing disturbance proposed under the Proposed Action, which may have a long-term impact on wild horses that may benefit from reclaiming these areas and potentially increasing forage area. No impacts to wild horses are expected from this alternative.

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# LIST OF ACRONYMS & ABBREVIATIONS

- °F Degrees Fahrenheit
- μg/m<sup>3</sup> Micrograms Per Cubic Meter
- AADT Annual Average Daily Traffic
- AAQS Ambient Air Quality Standards
- ABA Acid Base Accounting
- ACHP Advisory Council on Historic Preservation
- ADR Adsorption, Desorption, and Recovery
- AERMOD American Meteorological Society/USEPA Regulatory Model
- AFY Acre-Feet Per Year
- AIRFA American Indian Religious Freedom Act
- AML Appropriate Management Levels
- amsl Above Mean Sea Level

| ANFO              | Ammonium Nitrate and Fuel Oil   |
|-------------------|---|
| APE               | Area of Potential Effect  |
| APLIC             | Avian Power Line Interaction Committee  |
| ARDML             | Acid Rock Drainage and Metal Leaching   |
| ARM               | Appropriate Management Levels   |
| ARMPA             | Nevada and Northeastern California Greater Sage-Grouse Approved<br>Resource Management Plan Amendment |
| ARPA              | Archaeological Resource Protection Act of 1979  |
| ASTM              | American Society for Testing and Materials  |
| ATV               | All-Terrain Vehicle   |
| AUM               | Animal Unit Months  |
| BAPC              | Bureau of Air Pollution Control   |
| bgs               | Below Ground Surface  |
| BLM               | Bureau of Land Management   |
| BMP               | Best Management Practices   |
| BMRR              | Bureau of Mining Regulation and Reclamation   |
| BP                | Before Present  |
| BWM               | Bureau of Waste Management  |
| CAA               | Clean Air Act   |
| CaO               | Calcium oxide   |
| CCD               | Census County Division  |
| CCS               | Conservation Credit System  |
| CDP               | Census Designated Place   |
| CEQ               | Council on Environmental Quality  |
| CERCLA            | Comprehensive Environmental Response, Compensation, and Liability Act                                 |
| CESA              | Cumulative Effects Study Area   |
| CFR               | Code of Federal Regulations   |
| cfs               | Cubic Feet Per Second   |
| CH₄               | Methane   |
| Chambers          | Chambers Group  |
| cm/sec            | Centimeter Per Second   |
| CNG               | Compressed Natural Gas  |
| CO                | Carbon Monoxide   |
| CO <sub>2</sub>   | Carbon Dioxide  |
| CO <sub>2</sub> e | Carbon Dioxide Equivalent   |
| CWA               | Clean Water Act   |
| dB                | Decibel (unit of measurement)   |
| dBA               | A-weighted Decibels   |
| DEIS              | Draft Environmental Impact Statement  |
| E                 | Evaporation   |
| EA                | Environmental Assessment  |
| EIS               | Environmental Impact Statement  |
| EO                | Executive Order   |
| EPA               | Environmental Protection Agency   |
| EPCRA             | Emergency Planning and Community Right-to-Know Act  |
| EPM               | Environmental Protection Measures   |

| ESA             | Endangered Species Act of 1973                 |
|-----------------|--|
| ET              | Evapo-transpiration                            |
| FCC             | Federal Communications Commission              |
| FEIS            | Final Environmental Impact Statement           |
| FLPMA           | Federal Land and Policy Management Act of 1976 |
| FMUD            | Final Multiple Use Decisions                   |
| FOS             | Factor of Safety                               |
| FPPC            | Final Plan for Permanent Closure               |
| ft <sup>3</sup> | Cubic Feet                                     |
| FY              | Fiscal Year                                    |
| GAI             | Geochemical Abundance Index                    |
| gals/day        | Gallons Per Day                                |
| gals/yr         | Gallons Per Year                               |
| GBC             | Great Basin College                            |
| GBE             | Great Basin Ecology, Inc.                      |
| GHG             | Greenhouse gas                                 |
| GHMA            | General Habitat Management Areas               |
| GIS             | Geographic Information Systems                 |
| gpm             | Gallons Per Minute                             |
| H:V             | Horizontal:Vertical                            |
| H₂SO₄           | Sulfuric Acid                                  |
| НА              | Herd Area                                      |
| HCI             | Hydrochloric Acid                              |
| НСТ             | Humidity Cell Tests                            |
| HDPE            | High Density Polyethylene                      |
| HF              | Hydrofluoric Acid                              |
| Hg              | Mercury  |
| HLP             | Heap Leach Pad                                 |
| НМА             | Herd Management Area                           |
| HNO₃            | Nitric Acid                                    |
| HPTP            | Historic Properties Treatment Plan             |
| HQT             | Habitat Quantification Tool                    |
| HSA             | Hydrologic Study Area                          |
| HUC             | Hydrologic Unit Code                           |
| IM              | Instruction Memorandum                         |
| Kautz           | Kautz Environmental Consultants, Inc.          |
| KOP             | Key Observation Point                          |
| kV              | Kilovolt                                       |
| kW              | Kilowatt                                       |
| L <sub>50</sub> | Average noise level                            |
| L <sub>90</sub> | Residual ambient noise level                   |
| lb              | Pound  |
| lbs             | Pounds   |
| LCRS            | Leak Collection and Recovery System            |
| L <sub>dn</sub> | Day/night average sound level                  |
| L <sub>eq</sub> | Average, or equivalent, sound level            |

| L <sub>max</sub> | Hourly maximum noise level  |
|------------------|---|
| LNG              | Liquid Natural Gas  |
| LR2000           | Legacy Rehost 2000 System   |
| LTFM             | Long-Term Funding Mechanism   |
| LUPA/FEIS        | Nevada and Northeastern California Greater Sage-Grouse Proposed Land Use Plan Amendment and Final EIS |
| mg/L             | Milligrams per Liter  |
| MLFO             | Mount Lewis Field Office  |
| MLRA             | Major Land Resource Area  |
| mm/yr            | Millimeters Per Year  |
| MMI              | McEwen Mining Inc.  |
| MMPA             | Mining and Mineral Policy Act of 1970   |
| MOA              | Memorandum of Agreement   |
| MOU              | Memorandum of Understanding   |
| mph              | Miles Per Hour  |
| MSHA             | Mine Safety and Health Administration   |
| Mt               | Million Tons  |
| Mt. Wheeler      | Mt. Wheeler Power, Inc.   |
| Mt/y             | Million Tons Per Year   |
| mv               | Millivolts  |
| MWMP             | Meteoric Water Mobility Procedure   |
| N <sub>2</sub> O | Nitrous Oxide   |
| NAAQS            | National Ambient Air Quality Standards  |
| NAC              | Nevada Administrative Code  |
| NaCN             | Sodium Cyanide  |
| NAG              | Net Acid Generation   |
| NAGPRA           | Native American Graves Protection and Repatriation Act  |
| NaNO₃            | Sodium Nitrate  |
| NaOH             | Sodium Hydroxide  |
| NDEP             | Nevada Division of Environmental Protection   |
| NDOT             | Nevada Department of Transportation   |
| NDOW             | Nevada Department of Wildlife   |
| NDWR             | Nevada Division of Water Resources  |
| NEPA             | National Environmental Policy Act of 1969   |
| NHPA             | National Historic Preservation Act  |
| NHT              | National Historic Trail   |
| NNHP             | Nevada Natural Heritage Program   |
| NO <sub>2</sub>  | Nitrogen Dioxide  |
| NOA              | Notice of Availability  |
| NOI              | Notice of Intent  |
| NOx              | Nitrogen Oxides   |
| NP               | Neutralization Potential  |
| NPDES            | National Pollutant Discharge Elimination System   |
| NPS              | National Park Service   |
| NRCS             | Natural Resources Conservation Service  |
| NRHP             | National Register of Historic Places  |
| NRS                     | Nevada Revised Statutes  |
|-------------------------|--|
| NST                     | National Scenic Trails   |
| NTSA                    | National Trails System Act of 1968   |
| <b>O</b> <sub>3</sub>   | Ozone  |
| OHMA                    | Other Habitat Management Areas   |
| OHV                     | Off-Highway Vehicle  |
| OHWM                    | Ordinary High Water Mark   |
| OPLA-PRP                | Omnibus Public Land Management Act of 2009 Paleontological Resources<br>Preservation |
| ORP                     | Oxidation-Reduction Potential  |
| PAG                     | Potentially Acid Generating  |
| Pb                      | Lead   |
| PbNO <sub>3</sub>       | Lead Nitrate   |
| PCPI                    | Per Capita Personal Income   |
| PCS                     | Petroleum-contaminated Soils   |
| PEL                     | Pick East Lower  |
| PFYC                    | Potential Fossil Yield Classification  |
| PHMA                    | Priority Habitat Management Areas  |
| Plan                    | Plan of Operations   |
| PLS                     | Pregnant Leach Solution  |
| <b>PM</b> <sub>10</sub> | Particulate matter less than 10 microns  |
| PM <sub>2.5</sub>       | Particulate matter less than 2.5 microns   |
| ppb                     | Parts per Billion  |
| ppm                     | Part per Million   |
| Project                 | Gold Bar Mine Project  |
| PSD                     | Prevention of Significant Deterioration  |
| PWR                     | Public Water Reserves  |
| R                       | Range  |
| RCRA                    | Resource Conservation and Recovery Act   |
| REA                     | Rapid EcoRegional Assessment   |
| ReGAP                   | Regional Gap Analysis Project  |
| RFFA                    | Reasonably Foreseeable Future Action   |
| RMCD                    | Roberts Mountain Charcoal District   |
| RMP                     | Resource Management Plan   |
| ROD                     | Record of Decision   |
| ROW                     | Right-of-Way   |
| RV                      | Recreational Vehicle   |
| SARA                    | Superfund Amendments and Reauthorization Act   |
| SCP                     | Spill Contingency Plan   |
| SDS                     | Safety Data Sheets   |
| SEC                     |  |
| SEP                     | Sagebrush Ecosystem Program  |
| SEII                    | Sagebrush Ecosystem Technical Team   |
| 200                     | State Historic Preservation Office   |
| 51U <sub>2</sub>        | Silica   |
| ык                      | Scientific investigation Report  |

| SO <sub>2</sub> | Sulfur Dioxide                                  |
|-----------------|---|
| SR              | State Route                                     |
| SRK             | SRK Consulting (U.S.) Inc.                      |
| Stantec         | Stantec Consulting Services Inc.                |
| STM             | State-and-Transition Models                     |
| т               | Township  |
| ТСР             | Traditional Cultural Property                   |
| TDS             | Total Dissolved Solids                          |
| TNW             | Traditional Navigable Waters                    |
| tpy             | Tons Per Year                                   |
| U.S.            | United States                                   |
| U.S.C.          | United States Code                              |
| UNR             | University of Nevada, Reno                      |
| USACE           | United States Army Corps of Engineers           |
| USDA            | United States Department of Agriculture         |
| USDOT           | United States Department of Transportation      |
| USEPA           | United States Environmental Protection Agency   |
| USFS            | United States Forest Service                    |
| USFWS           | United States Fish and Wildlife Service         |
| USGS            | United States Geological Survey                 |
| UTM             | Universal Transverse Mercator                   |
| UUD             | Unnecessary or Undue Degradation                |
| V               | Volt  |
| VFS             | Volunteer Fire Service                          |
| VOC             | Volatile Organic Compound                       |
| VRM             | Visual Resource Management                      |
| WFRHBA          | Wild Free-Roaming Horses and Burros Act of 1971 |
| WOUS            | Waters of the United States                     |
| WPCP            | Water Pollution Control Permit                  |
| WRCC            | Western Regional Climate Center                 |
| WRDA            | Waste Rock Disposal Area                        |
| WSA             | Wilderness Study Area                           |

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# CHAPTER 1 INTRODUCTION

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# Chapter 1 Introduction

## **1.1** Introduction and General Location

In December 2013, McEwen Mining Inc. (MMI) submitted a Plan of Operations (Plan) (NVN-091037) and Nevada Reclamation Permit Application for the Gold Bar Mine Project (Project) to the Mount Lewis Field Office (MLFO) of the Battle Mountain District Bureau of Land Management (BLM) and Nevada Division of Environmental Protection (NDEP), Bureau of Mining Regulation and Reclamation (BMRR). A revised Plan was submitted in February 2014, December 2015, and May 2016.

The Plan was submitted to comply with Title 43 Code of Federal Regulations (CFR), subpart 3809 (43 CFR 3809.401 *et seq.*, as amended), State of Nevada regulations governing the reclamation of mined lands (Nevada Administrative Code [NAC] 519A.010-635), and BLM Instruction Memorandum (IM) No. NV-2011-004-Guidance for Permitting 3809 Plans of Operation. The 43 CFR 3809 regulations require that the BLM fulfill its obligation under the National Environmental Policy Act of 1969 (NEPA) by analyzing and disclosing the potential environmental impacts of the proposed Project. The Plan is on file and available for public review at the BLM MLFO in Battle Mountain, Nevada, during regular business hours (Monday through Friday, excluding holidays, from 7:30 AM to 4:30 PM PST).

The proposed Project is located approximately 30 miles northwest of Eureka in the southern Roberts Mountains in Eureka County, Nevada. **Figure 1.1-1** depicts the Project location within the State of Nevada. Total proposed Project disturbance would be approximately 1,129 acres of surface disturbance with approximately 946 acres on public land administered by the BLM MLFO and 183 acres on private land. The private and public lands are shown on **Figure 1.1-2**. The Plan boundary encompasses 5,362 acres of public land and 199 acres of private land located within all or portions of the following Townships (T), Ranges (R), and Sections relative to the Mount Diablo Base and Meridian (**Table 1.1-1**):

| Townships | Ranges  | Sections  |
|-----------|---------|---|
| 22 North  | 50 East | 1, 2, 3, 4, 9, 10, 11, 12, 13, 14, 15, 21, 22, 24, 25, 28, 29, 30 |
| 22 North  | 49 East | 25, 26, 27, 28, 33  |
| 21 North  | 49 East | 4, 9, 16, 21, 22, 27, 34  |
| 20 North  | 49 East | 3, 10, 11, 14, 23, 24, 25, 36                                     |
| 20 North  | 50 East | 31  |
| 19 North  | 50 East | 6, 7, 8, 17   |
| 22 North  | 51 East | 30, 31, 32  |
| 21 North  | 51 East | 5, 8, 9, 16, 21, 27, 28, 34                                       |
| 20 North  | 51 East | 3, 10, 15, 22, 23, 26, 35   |
| 23 North  | 50 East | 34  |

Table 1.1-1 Project Legal Description

MMI, through its wholly owned subsidiaries White Knight Gold (U.S.) Inc., WKGUS LLC, Quito Gold Corp., and Golden Pick LLC, controls 310 unpatented lode mining claims and one parcel (Eureka County Assessor's Parcel Number 009-160-01) of privately owned land in the Gold Bar Project area. All private land within the mine Project area is owned by Golden Pick LLC (MMI, 2016a).

The BLM is serving as the lead agency for preparing the Environmental Impact Statement (EIS) in compliance with the following: the NEPA; the Council on Environmental Quality (CEQ) NEPA implementing regulations (40 CFR 1500-1508); the BLM's NEPA Handbook (H-1790-1); Nevada State Office IM NV-90-435, BLM-wide Guidance on Cumulative Effects Analysis (July, 2005); Nevada State Office IM NV-2010-014, Nevada BLM Rock Characterization and Water Resources Analysis Guidance for Mining Activities (January 2010); Nevada BLM State Office IM NV-2008-032, Nevada BLM Water Resource Data and Analysis Policy for Mining Activities (April 2008): CEQ's 2005 Guidance on the Consideration of Past Actions in Cumulative Effects Analysis; and other applicable guidance (BLM, 1994a, 2008a, 2008b, 2010a; USEPA CEQ, 2005). Eureka County is an official cooperating agency for preparation and review of the EIS, as outlined in the Memorandum of Understanding (MOU) (BLM-NV-MOU-LLNVB01000-2016-004). The BLM and the United States (U.S.) Environmental Protection Agency (EPA) have an agency-wide MOU for coordination on NEPA projects, and the EPA has actively coordinated with the BLM on this EIS. Although not under an MOU, the Nevada Department of Wildlife (NDOW), National Park Service (NPS), and the United States Fish and Wildlife Service (USFWS) have also actively coordinated with the BLM on the preparation of this EIS. The EIS considers the quality of the natural environment based on the physical impacts to the public and private lands that may result from implementation of the proposed Project. The Plan and all baseline data reports used in the preparation of the EIS are on file at the BLM MLFO.

The proposed Project is subject to review and approval by the BLM pursuant to the Federal Land Policy and Management Act of 1976 (FLPMA) as amended, and the BLM's 3809 Surface Management Regulations. Review of the Plan by the BLM under the Surface Management Regulations has concluded that the approval of the proposed Project would constitute a major federal action since the proposed Project may have significant effects on the human and natural environment. Consequently, the BLM has determined that an EIS should be prepared for this proposed Project to fulfill its NEPA requirements.





This document is required to follow CEQ regulations at 40 CFR 1500 *et seq.* that implement the NEPA. These regulations establish procedural and content requirements for NEPA documents. In order to comply with the CEQ regulations, NEPA documents must: 1) analyze the impacts of the proposed Project; 2) identify and analyze reasonable alternatives; 3) inform the public about the proposed Project and alternatives; 4) acquire and synthesize information needed to make informed decisions using an interdisciplinary approach; 5) solicit public comment on the proposed Project and alternatives; and 6) provide federal decision-makers with adequate information upon which to base decisions. Pursuant to 40 CFR 1508.25, in determining the scope of analysis, the BLM must consider the range of actions, alternatives, and impacts to be considered in an EIS. To determine the scope of an EIS, the BLM considers three types of actions, alternatives; and similar actions. The types of alternatives considered include the no action alternative and other reasonable action alternatives.

## **1.2** Summary of the Proposed Action

The Proposed Action to be evaluated in the EIS includes an open pit gold mine, a water pipeline, and access roads. The Project would consist of:

- Four open pits;
- Waste rock disposal areas (WRDAs);
- Crushing, screening, and agglomeration facilities;
- Heap leach pad (HLP), associated process solution pond, and an event pond;
- An adsorption, desorption, and recovery (ADR) plant including barren and pregnant solution tanks;
- Ancillary and other facilities including:
  - Explosive storage area;
  - Prill silos;
  - Liquid natural gas (LNG) Cryostorage, or compressed natural gas (CNG) generators and switch station;
  - Truck shop and wash bay;
  - Ready line;
  - Landfill, laydown areas;
  - Water and power infrastructure;
  - Buildings;
  - Yards;
  - Parking;
  - Storage;
  - Growth media stockpiles;
  - Production water wells (GBPW-210 and GBPW-211) and associated water supply pipeline;
  - o Groundwater monitoring wells (GBMW-01, GBMW-03, and GBMW-04);

- Communication facilities;
- Potable water and fire water facilities;
- Septic systems, and fencing;
- Mine access roads:
  - Three Bars Road;
  - Atlas Haul Road;
  - North Roberts Creek Road (NVN-052399);
  - Bypass Road (NVN-91566); and
  - Roberts Creek Road.

Construction and operation of the proposed mining facilities would result in approximately 1,129 acres of surface disturbance, which includes existing and proposed disturbance. Approximately 25 acres of existing non-MMI disturbance would also be reclaimed as part of the Proposed Action, which is classified as disturbance in the Plan but would not be directly disturbed by Project operations. Total Project disturbance associated with the proposed mine facilities, including the 25 acres of existing non-MMI disturbance to be reclaimed and exploration disturbance authorized under previous Notices would be 1,154 acres.

Preliminary mine design consists of a single pit for each of the Gold Pick and Gold Ridge deposits and two pits in the Cabin Creek area. Mineral recovery would be performed during a projected seven-year mine life. The Project schedule would be as follows: four months of pit pre-stripping; one year of construction; seven years of mining operations (i.e., five years of active mining and two years of residual heap leaching); approximately six years of reclamation following cessation of mining and active leaching on the HLP; and approximately 4.5 years of monitoring after reclamation is completed.

## **1.3** Purpose of and Need for the Action

## 1.3.1 Purpose and Need

The BLM is responsible for administering mineral rights access on certain federal lands as authorized by the General Mining Law of 1872. Under the law, qualified prospectors are entitled to reasonable access to mineral deposits on public domain lands, which have not been withdrawn from mineral entry. In order to use public lands managed by the BLM for locatable mineral exploration and development, persons must comply with FLPMA and BLM's Surface Management Regulations, State of Nevada laws and regulations applicable to mine reclamation, and other applicable statutes and regulations.

MMI is proposing to extract ore from public lands where it holds mining claims, as well as on MMI controlled private lands.

The purpose of this federal action and associated EIS is to analyze the environmental impacts associated with MMI's Proposed Action. The NEPA mandates the BLM evaluate the impacts of

the proposed Project and develop alternatives and mitigation, when necessary, to lessen any impacts to environmental resources (40 CFR 1502).

The need for the federal action is established by the BLM's responsibilities under FLPMA to respond to an applicant's request for approval of a Plan of Operations for the applicant to exercise their rights under the General Mining Law of 1872. Additional aspects of the need of the federal action are:

- to further the "Minerals" objective of the applicable BLM Resource Management Plan, which is to "...provide opportunity for exploration and development of locatable minerals, such as gold, silver, copper, lead, molybdenum, etc., consistent with the preservation of fragile and unique resources in areas identified as open to the operations of the mining laws."; and
- 2) "...to provide for mining and reclamation of the Project area in a manner that is environmentally responsible and in compliance with federal mining laws, including preventing unnecessary or undue degradation of public lands, FLPMA, State of Nevada laws and regulations applicable to mine reclamation, and other applicable laws and regulations."

## 1.3.2 Decision to be Made

The BLM's MLFO Manager would decide whether to permit the proposed Project as described within the Plan, as submitted, or modify the decision based on the potential unnecessary or undue degradation (UUD), impacts analysis, and associated mitigation, as identified in this EIS.

## 1.4 Land Use Plan Conformance

## 1.4.1 BLM Resource Management Plan

## 1.4.1.1 Shoshone-Eureka Resource Management Plan

The Proposed Action conforms with the BLM's Shoshone-Eureka Resource Management Plan (RMP), as amended, dated March 1986 (BLM, 1986a). Specifically, on page 29 in the Shoshone-Eureka RMP Record of Decision (ROD), under the heading "Minerals" subtitled "Objectives" number 1:

"Make available and encourage development of mineral resources to meet national, regional, and local needs consistent with national objectives for an adequate supply of minerals."

Under "Management Decisions", "Locatable Materials" page 29, number 1:

"All public lands in the planning areas will be open for mining and prospecting unless withdrawn or restricted from mineral entry."

Under "Management Decisions", number 5, "Current Mineral Production Areas":

"Recognize these areas as having a highest and best use for mineral production and encourage mining with minimum environmental disturbance..." (BLM, 1986a).

## 1.4.1.2 Nevada and Northeastern California Greater Sage-Grouse Approved Resource Management Plan Amendment

The Proposed Action is consistent with the Nevada and Northeastern California Greater Sage-Grouse Approved Resource Management Plan Amendment (ARMPA) (BLM, 2015a). The BLM prepared the ARMPA to identify and incorporate appropriate measures in existing land use plans. It is intended to conserve, enhance, and restore greater sage-grouse (*Centrocercus urophasianus*) habitat by avoiding, minimizing, or compensating for unavoidable impacts on greater sage-grouse habitat in the context of the BLM's multiple use and sustained yield mission under FLPMA (BLM, 2015a).

A table of the management decisions and required design features from the ARMPA are provided in **Appendix A**. The table also identifies whether or not the measure is applicable to the Project, and whether the proposed Project is consistent with each measure.

## 1.4.2 Surface Management Authorizations and Plan

BLM authority derives from the FLPMA. BLM regulations for the surface management of BLM administered land affected by mining were promulgated as 43 CFR 3809 in 1981 and revised in 2001, and derive their mandate from Sections 302 and 303 of the FLPMA. MMI submitted their Plan for the proposed Project as required by the 43 CFR 3809 regulations. In order to use public land administered by the MLFO, MMI must comply with the BLM Surface Management Regulations (as amended) (43 CFR 3809) and other applicable statutes, including the Mining and Mineral Policy Act of 1970 (MMPA) (as amended), and the FLPMA. The BLM has the responsibility and authority to manage the surface and subsurface resources on public lands located within the jurisdiction of the MLFO.

The General Mining Law of 1872 allows individuals to locate and patent mining claims, such as lode claims. On federal lands open to mineral location, lode claims provide the claimant with a possessory interest (right) limited to exploring for and developing ores contained in mineralized rock. Title to the claims (patent) may be conveyed only with a valid discovery of commercially profitable ore. Since 1994, Congress has maintained a moratorium on BLM processing of mineral patent applications. Under the mill site provision, 30 United States Code (U.S.C.) 42, no location of a claim on non-mineral lands, called mill sites, may exceed five acres each. However, more than one mill site claim can be located if each site is used for at least one of the purposes described in 43 CFR Section 3832.34. The amount of located mill site acreage is that which is reasonably required for use or to be occupied for efficient and reasonably compact mining or milling operations.

The BLM has reviewed MMI's Plan and has prepared this EIS to ensure compliance with these surface management requirements and the requirements of NEPA.

## 1.4.3 BLM Cyanide Management Plan

The BLM's national cyanide management policy requires that BLM state offices prepare a Cyanide Management Plan. The Nevada State Office of the BLM has prepared and administers the Cyanide Management Plan (BLM, 1992a). The Cyanide Management Plan is applicable to all BLM-administered lands in Nevada and would be applicable to the proposed Project's cyanide heap leaching activities and relevant precious metal recovery processes. The Plan provides guidance on cyanide use in mining activities and lists the following objectives:

- Implement the BLM's national cyanide management policy;
- Ensure that mining operations using cyanide on BLM-administered lands follow Best
  Management Practices (BMPs) and do not cause UUD of the federal lands;
- Provide both the mine operator and the BLM technical staff with standards for development and evaluation of mining projects that use cyanide; and
- Use state standards, if established.

The Cyanide Management Plan is not intended to duplicate requirements of other federal or state agencies with responsibility for managing the use of cyanide in mining operations. Where standards are established for mining operations by the State of Nevada through the NDEP BMRR, they shall apply when reviewing the Cyanide Management Plan. The BLM has reviewed the Plan for the proposed Project to ensure that it is in conformance with the Cyanide Management Plan.

## 1.4.4 BLM Reclamation Standards

The MMPA mandates that federal agencies ensure that closure and reclamation of mine operations be completed in an environmentally responsible manner. The MMPA states that the federal government should promote the "development of methods for the disposal, control, and reclamation of mineral waste products, and the reclamation of mined lands, so as to lessen any adverse impact of mineral extraction and processing upon the physical environment that may result from mining mineral activities."

Relevant BLM policy and standards for reclamation are presented in the BLM Manual Handbook H-3042-1: Solid Minerals Reclamation Handbook (BLM, 1992a) that provides consistent reclamation guidelines for all solid non-coal mineral activities conducted under the authority of the BLM Minerals Regulations in 43 CFR 3809. BLM's short-term reclamation standards and goals include stabilization of disturbed areas and protection of both disturbed and adjacent undisturbed areas from UUD. The BLM's long-term reclamation standards and goals include the establishment of a self-sustaining, safe, and stable condition providing productive post-mining use of the land that conforms to the approved land use plan for the area. The BLM has reviewed the Reclamation Plan for the proposed Project to ensure that the proposed Project would meet BLM's reclamation

standards and goals. The proposed Project also would be required to obtain a reclamation permit from, and meet the reclamation standards of, the State of Nevada Department of Conservation and Natural Resources and the NDEP BMRR.

## 1.4.5 Relationship to County Policies

The Eureka County 1973 Master Plan, updated in 2000 and again in 2010, contains planning elements with goals and objectives to provide a long-term plan for the physical development of Eureka County and to provide mechanisms to address immediate growth management issues (Eureka County, 2010). The Eureka County Master Plan 2010 includes an Economic Development Element which incorporates recommendations for increased land use planning that expands and diversifies the County's economy. The Natural Resources and Federal or State Land Use Element was developed and incorporated into the Master Plan in response to Nevada Senate Bill 40, which was passed in 1983, which directs counties to develop plans and strategies for resources that occur within lands managed by federal and state agencies. The Natural Resource and Federal or State Land Use Element provides a framework for establishing community planning goals and provides details of goals and actionable objectives for a number of high-priority land use issues. Goals and objectives within the Eureka County Master Plan promote environmentally responsible exploration, development, reclamation, and the retention of and compliance with the General Mining Law of 1872 (Eureka County, 2010).

The Natural Resources and Federal or State Land Use Element is an executable policy for natural resource management and land use on federal and state administered lands in Eureka County. This element is designed to accomplish the following: 1) protect the human and natural environment of Eureka County; 2) facilitate federal agency efforts to resolve inconsistencies between federal land use decisions and County policy; 3) enable federal and state agency officials to coordinate their efforts with Eureka County; and 4) provide strategies, procedures, and policies for progressive land and resource management (Eureka County, 2010). The BLM acknowledges that MMI would have to comply with any applicable Eureka County codes. Consideration with the goals and policies in the Eureka County Master Plan have been included into **Appendix B** in order to provide a comprehensive analysis of Project compliance and potential conflicts with the Master Plan in one location in the Draft EIS (DEIS).

## 1.5 Environmental Review Process

Numerous opportunities for public input occur during the NEPA decision-making process. The initial step in the EIS process was to notify the public and other government agencies of the BLM's intent to prepare an EIS. The BLM published a Notice of Intent (NOI) to prepare an EIS for the proposed Project in the Federal Register on September 11, 2015. This initiated a 30-day public scoping period for the proposed Project. The purpose of public scoping is to actively solicit and acquire input from the public and other interested federal, state, tribal, and local agencies about the proposed Project. The BLM hosted one public scoping meeting for the proposed Project in the town of Eureka Nevada, on October 6, 2015. The BLM received 12 comment letters during the scoping period.

The following are issues that represent public and the BLM Interdisciplinary Team concerns about the proposed Project:

- How will the Project's emissions affect air quality, greenhouse gas emissions, and climate change;
- How will the Project affect cultural resources, forest and woodland products, grazing management, paleontological resources, recreation resources, soils, wildlife including migratory birds, vegetation, and visual resources;
- What are the impacts from noxious weeds and invasive species from the Project;
- What are the impacts to threatened and endangered species as well as special status species, specifically greater sage-grouse, burrowing owl (*Athene cunicularia*), loggerhead shrike (*Lanius ludovicianus*), pinyon jay (*Gymnorhinus cyanocephalus*), black-throated gray warbler (*Setophaga nigrescens*), and Lahontan cutthroat trout (*Oncorhynchus clarkii* henshawi);
- What are the potential impacts from noise from the Project;
- What are the results of consultation with Native American Tribes on potential impacts from the Project;
- How will hazardous and solid wastes from the Project be managed;
- What are the potential impacts from the Project to surface and ground water quantity and quality, local water rights, and wetlands and riparian zones;
- Are there potential impacts to environmental justice from the Project;
- What are the potential impacts to social and economic values from the Project; and
- What are the potential impacts to wild horses and their habitat from the Project?

Information received during the public scoping period assists the BLM in identifying potential environmental issues/impacts, alternatives, and mitigation measures associated with the development of the proposed Project.

After completion of the public scoping period, this DEIS was prepared and addresses the environmental effects associated with the proposed Project including the issues and concerns identified during the scoping period. Upon publishing this DEIS through the Notice of Availability in the Federal Register, the public has the opportunity to comment on the DEIS during a 45-day comment period.

## **1.6 Project Permits and Approvals**

In addition to the EIS, implementing the Proposed Action would require authorizing actions from other federal, state, and local agencies with jurisdiction over certain aspects of the proposed Project. **Table 1.6-1** lists the required permits or approvals that are already in place or would be obtained and the responsible regulatory agencies. MMI is responsible for amending existing permits, and applying for and acquiring additional permits, as needed.

| Permit/Authorization  | Granting Agency  |  |  |  |
|---|--|--|--|--|
| Federal Permits, Approvals and Reviews  |  |  |  |  |
| EIS and ROD<br>Plan of Operations   | U.S. Department of the Interior, BLM   |  |  |  |
| Endangered Species Act of 1973 (ESA);<br>16 U.S.C. 1531 et seq.   | USFWS  |  |  |  |
| Explosives Permit   | U.S. Bureau of Alcohol, Tobacco, and Firearms  |  |  |  |
| EPA Hazardous Waste ID No.  | EPA  |  |  |  |
| Notification of Commencement of Operations  | Mine Safety and Health Administration (MSHA)   |  |  |  |
| Section 106 National Historic Preservation Act,<br>18 U.S.C. Section 841-848; 27 CFR 181  | U.S. Department of the Interior, BLM and the<br>State of Nevada Historical Preservation Office |  |  |  |
| Federal Communications Commission (FCC) Permit  | FCC  |  |  |  |
| State of Nevada   | a Permits  |  |  |  |
| Air Quality Operating Permit<br>Air Quality Permit to Construct<br>Surface Air Disturbance Permit                                       | NDEP/Bureau of Air Pollution Control   |  |  |  |
| Mercury Operating Permit and Mercury Operating<br>Permit to Construct   | NDEP/Bureau of Air Quality Planning/Nevada<br>Mercury Air Emissions Control Program            |  |  |  |
| Permit to Appropriate Water<br>Dam Safety Permit  | Nevada Division of Water Resources   |  |  |  |
| Water Pollution Control Permit<br>Mining Reclamation Permit   | NDEP/BMRR  |  |  |  |
| Class III Waivered Landfill Permit  | NDEP/Bureau of Waste Management (BWM)  |  |  |  |
| Solid Waste Permit  | NDEP/Bureau of Waste Management  |  |  |  |
| Encroachment Permit   | Nevada Department of Transportation  |  |  |  |
| General Stormwater Discharge Permit<br>Septic Treatment Permit<br>Sewage Disposal System Permit<br>Stormwater Pollution Prevention Plan | NDEP/Bureau of Water Pollution Control   |  |  |  |
| Potable Water System Permit   | Nevada Bureau of Safe Drinking Water   |  |  |  |
| Nevada Mine Registry  | Nevada Division of Minerals  |  |  |  |
| Fire and Life Safety Permit<br>Hazardous Materials Storage Permit   | Nevada Fire Marshall   |  |  |  |
| Hazardous Waste<br>Management Permit  | NDEP/BWM   |  |  |  |
| Industrial Artificial Pond Permit   | NDOW   |  |  |  |
| State Business License  | Nevada Secretary of State  |  |  |  |

 Table 1.6-1
 List of Potential Permits and Approvals

| Permit/Authorization                             | Granting Agency  |  |  |
|--|--|--|--|
| Local Agreements                                 |  |  |  |
| County Road Use and Maintenance Permit/Agreement | Eureka County Board of Commissioners and Public Works Department |  |  |

## **1.7** Organization of the Environmental Impact Statement

The remainder of the Gold Bar Mine EIS is organized into six chapters as described below.

Chapter 2.0 provides detailed information regarding existing disturbance at the Project, the description of the Proposed Action including reclamation and environmental protection measures (EPM), action alternatives, the No Action Alternative, and alternatives considered but eliminated from detailed analyses. Numerous figures are provided that illustrate the Proposed Action or action alternatives. This section also provides a summary table of the impacts associated with each alternative and the BLM's preferred alternative.

Chapter 3.0 describes the existing natural and human environment resources within the study area for each resource.

Chapter 4.0 describes the potential direct and indirect impacts to natural and human environment resources with the implementation of the Proposed Action and alternatives; cumulative impacts to these resources with the implementation of the Proposed Action and alternatives in combination with impacts contributed by other past, present, and reasonably foreseeable future actions; monitoring and mitigation measures developed to avoid or minimize resource impacts; and residual impacts to these resources after the implementation of proposed monitoring and mitigation measures the relationship between short-term uses of the human environment and the maintenance and enhancement of long-term productivity, and irreversible and irretrievable commitment of resources.

Chapter 5.0 provides a summary of the public participation and scoping process used to solicit comments on the Proposed Action and alternatives and identify issues or concerns; consultation and coordination undertaken to prepare the EIS; a list of federal, state, and local agencies, tribal organizations, and private organizations and companies that were contacted during the preparation of the EIS; and agencies, organizations, and persons to whom copies of the EIS were sent. Chapter 5.0 also provides a list of lead and cooperating agency personnel and Stantec Consulting Services Inc.'s (Stantec's) team members that developed the EIS document.

Chapter 6.0 lists the references that were used in the EIS to document the source or sources of information and includes a glossary of terms the readers can use to obtain definitions for scientific or technical terms.

Appendices included in the EIS provide supplemental detailed information used to support statements or findings documented in the EIS.

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## CHAPTER 2 PROPOSED ACTION AND ALTERNATIVES

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# Chapter 2 Proposed Action and Alternatives

## 2.1 Introduction

This chapter describes the Proposed Action, three action alternatives, and the No Action Alternative, in compliance with 40 CFR 1502.14. The details of the proposed mine development are summarized from the MMI Plan (MMI, 2016a). Figures are included that clearly show the components of the proposed Plan.

In addition to the Proposed Action, three action alternatives are evaluated in detail in this EIS. These alternatives were developed to address issues identified by BLM resource specialists and from comments received during the public scoping process. The alternatives were evaluated for their potential to reduce or minimize impacts associated with the Proposed Action. The action alternatives are described in Section 2.3. The No Action Alternative (Section 2.3.1) is also considered, as required in the CFR (40 CFR 1502.14(d)). As discussed in Section 2.4, several additional potential alternatives were considered, but were eliminated from detailed consideration in this EIS when it was determined that they were not reasonable or economically feasible or would not substantially reduce potential impacts associated with the Proposed Action or other action alternatives. Section 2.5 compares the impacts from the alternatives analyzed in the EIS.

## 2.2 Proposed Action

The description of the Proposed Action is based on the Plan submitted by MMI to the BLM in December 2013, revised in February 2014, December 2015, and May 2016 (MMI, 2016a). Readers desiring greater detail can review the descriptions, maps, and drawings available in the Plan, which is available at the BLM Battle Mountain District Office, located at 50 Bastian Road, Battle Mountain, NV 89820.

## 2.2.1 Mining Operations

MMI proposes to develop the Project in the southern Roberts Mountains in central Nevada approximately 30 miles northwest of Eureka, Nevada. The Project would be located primarily on public land administered by the BLM MLFO and on private land controlled by MMI.

The Project would involve extracting gold via open pit mining and heap leach beneficiation of ore from the deposits known as Gold Pick, Gold Ridge, and Cabin Creek. The preliminary mine design consists of a single pit for each of the Gold Pick and Gold Ridge deposits and two pits in the Cabin Creek area. Open pit mining operations would be performed during a projected seven-year period (i.e., five years of active mining and leaching plus two years of residual leaching). The proposed facilities are shown on **Figure 2.2-1**.

The Gold Pick and Gold Ridge satellite deposits were mined by the Atlas Corporation between 1986 and 1994, and included the construction of open pits, WRDAs, and extensive exploration disturbance. The area was abandoned in 1999 when Atlas filed for bankruptcy, leaving nearly 654 acres of unreclaimed disturbance within MMI's currently proposed Project boundary. The Project would utilize approximately 395 acres of this existing unreclaimed disturbance, including the existing disturbance associated with North Roberts Creek Road, for which MMI would assume full reclamation liability. In addition, MMI would reclaim approximately 25 acres of existing non-MMI disturbance, which would not be disturbed during Project operations, but would be reclaimed by MMI making total existing disturbance associated with Project mining activities to be reclaimed approximately 420 acres. In addition to the 420 acres of existing disturbance, MMI proposes disturbance to 718 acres of previously undisturbed ground, and to incorporate 16 acres of Notice (exploration) disturbance for a total Project disturbance of 1,154 acres (**Table 2.2-1**).

MMI would commence work outlined in the Plan upon approval from the BLM and issuance of the required permits from the Nevada Department of Conservation and Natural Resources, NDEP-BMRR, and other relevant federal, state, and local federal regulatory agencies. Existing disturbance within the Project footprint on public and private land, and proposed new disturbance is summarized in **Table 2.2-1**. **Table 2.2-1** includes non-MMI disturbance to be reclaimed. Non-MMI disturbance to be reclaimed is not factored in to the total Project disturbance discussed throughout this EIS; however, the non-MMI disturbance to be reclaimed is included in **Table 2.2-1** and discussed throughout this EIS for reclamation purposes.

The Project is scheduled to operate on two, 10- or 12-hour shifts per day. Active mining would occur for 360 days per year and leaching would occur for 365 days per year. The mine life is estimated to be seven years (i.e., five years of active mining and leaching plus two additional years of residual heap leaching) with an additional four months of pit pre-stripping. Life-of-mine mining rate averages are estimated at 2.6 million tons per year (Mt/y) of ore and approximately 14.5 Mt/y of waste rock.



**BLM District** Mount Lewis Field Office

0

Fee 3,500 7,000 1 in = 3,500 feet

**FIGURE 2.2-1** 

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Α

|  | Existing<br>Authorized                     | Pre-MMI<br>Distur  | Pre-MMI Existing<br>Disturbance <sup>2</sup> |                    | ed New<br>bance <sup>3</sup> | Total Project                       |
|--|--|--------------------|--|--------------------|------------------------------|-------------------------------------|
| Component  | MMI<br>Disturbance <sup>1</sup><br>(acres) | Private<br>(acres) | Public<br>(acres)                            | Private<br>(acres) | Public<br>(acres)            | Disturbance <sup>4</sup><br>(acres) |
| Open Pits  |  |                    |  |                    |                              |                                     |
| Cabin Phase 1 Pit  | 0  | 0                  | 2.2  | 0                  | 6.2                          | 8.4                                 |
| Cabin Phase 2 Pit  | 0  | 0                  | 0.9  | 0                  | 3.4                          | 4.3                                 |
| Gold Pick Pit  | 0  | 56.1               | 2.2  | 36.5               | 4.6                          | 99.4                                |
| Gold Ridge Pit   | 0  | 12.7               | 4.7  | 4.2                | 7.8                          | 29.4                                |
| Waste Rock Disposal<br>Areas   |  |                    |  |                    |                              |                                     |
| Cabin Lower  | 0  | 0                  | 1.3  | 0                  | 18.2                         | 19.5                                |
| Cabin Upper East   | 0  | 0                  | 1.4  | 0                  | 6.3                          | 7.7                                 |
| Cabin Upper West   | 0  | 0                  | 0.2  | 0                  | 1.5                          | 1.7                                 |
| Pick East Upper<br>Access Road   | 0  | 0.01               | 8.9  | 0.1                | 10.1                         | 19.1                                |
| Pick East Upper and<br>Lower   | 0  | 18.4               | 44.7   | 3.5                | 119.3                        | 185.9                               |
| Pick Jump Ramp   | 0  | 0.7                | 0.7  | 1.8                | 1.6                          | 4.8                                 |
| Pick South   | 0  | 0                  | 6.8  | 0                  | 19.7                         | 26.5                                |
| Pick West  | 0  | 1.8                | 1.9  | 12                 | 14.1                         | 29.8                                |
| Ridge Lower  | 0  | 0                  | 20.3   | 0                  | 8.4                          | 28.7                                |
| Ridge Upper  | 0  | 0                  | 27   |                    | 0.5                          | 27.5                                |
| Existing Non-MMI<br>Disturbance to be<br>Reclaimed <sup>5</sup>  | N/A  | 1.4                | 23.1   | N/A                | N/A                          | 24.5                                |
| Screen Area and<br>Conveyor Corridor   | 0  | 0                  | 0  | 0                  | 5.3                          | 5.3                                 |
| Growth Media<br>Stockpiles   | 0  | 1.5                | 2.1  | 0.4                | 15.8                         | 19.8                                |
| Administration and<br>Process Area <sup>6</sup>  | 0  | 0                  | 0.6  | 0                  | 16.5                         | 17.1                                |
| Exploration  | 16   | 0                  | 0  | 0                  | 49.1                         | 65.1                                |
| Proposed Mine Road <sup>7</sup>  | 0  | 0.7                | 2.7  | 0                  | 31.5                         | 34.9                                |
| Existing Haul Road<br>Proposed for use by<br>MMI   | 0  | 3.6                | 92.1   | 0                  | 0.1                          | 95.8                                |
| Inter-facility<br>Disturbance <sup>8</sup>   | 0  | 4.4                | 1.6  | 1.5                | 15.4                         | 22.9                                |
| Heap Leach Facility  | 0  | 0                  | 1.6  | 0                  | 104.2                        | 105.8                               |
| Ancillary Facilities:<br>Explosive storage<br>area, prill silos,<br>crusher, ore<br>stockpiles, truck<br>shop, generators,<br>and LNG storage<br>area. | 0  | 0                  | 1.6  | 0.1                | 9.9                          | 11.6                                |

 Table 2.2-1
 Proposed Action Disturbances

|  | Existing<br>Authorized                     | Pre-MMI Existing<br>Disturbance <sup>2</sup> |                   | Proposed New<br>Disturbance <sup>3</sup> |                   | Total Project                       |
|--|--|--|-------------------|--|-------------------|-------------------------------------|
| Component  | MMI<br>Disturbance <sup>1</sup><br>(acres) | Private<br>(acres)                           | Public<br>(acres) | Private<br>(acres)                       | Public<br>(acres) | Disturbance <sup>4</sup><br>(acres) |
| Class III-Waivered<br>Landfill and<br>Designated Waste Cell <sup>9</sup>     | 0  | 0  | 0                 | 0  | 0                 | 0                                   |
| Sediment Basins  | 0  | 0  | 0.2               | 0  | 3.3               | 3.5                                 |
| Existing North Roberts<br>Creek Road <sup>10</sup>                           | 0  | 0.2  | 6.7               | 0.3                                      | 9.7               | 16.9                                |
| Potential Ancillary Pit<br>Disturbance <sup>11</sup>                         | 0  | 10.2   | 8.0               | 7.4                                      | 36.8              | 62.4                                |
| Potential Ancillary<br>Waste Rock Disposal<br>Area Disturbance <sup>11</sup> | 0  | 3.8  | 40.8              | 1.3                                      | 112.9             | 158.8                               |
| Potential Ancillary<br>Disturbance <sup>11</sup>                             | 0  | 0  | 0.1               | 0  | 16.3              | 16.4                                |
| Sub-Total  | 16   | 115.5  | 304.4             | 69.1                                     | 648.5             | 1 152 5                             |
| Total  | 16.0                                       |  | 419.9             | 717.6                                    |                   | 1,153.5                             |

<sup>1</sup> Notice-level exploration previously authorized (on public land).

<sup>2</sup> Existing site disturbance by previous operators within the proposed Gold Bar Project boundary that would be used in by MMI in the proposed operations.

<sup>3</sup> Proposed new disturbance for the proposed operations.

<sup>4</sup> Total project disturbance (existing disturbance to be used plus new proposed disturbance).

<sup>5.</sup> Includes existing disturbance that would not be disturbed during Project operations, but would be reclaimed by MMI.

<sup>6.</sup> The Administration and Process Area includes the process pond, the event pond, process/adsorption, desorption and recovery building, the warehouse, the warehouse storage area, the laboratory, fuel storage, and the administration office.

<sup>7.</sup> Includes weather station access road.

<sup>8</sup> Inter-facility disturbance includes interior access roads, sediment pond access roads, the portions of the water pipeline not within the disturbance footprint of another facility, and the portions of the power line corridor not within the disturbance footprint of another facility. Sediment pond access roads, the power line corridor, and the water pipeline were assumed to generate a 16-foot wide disturbance corridor.

<sup>9</sup> Class III-Waivered Landfill and Designated Waste Cell are accounted for in the Pick East Upper WRDA and the Pick East Lower WRDA disturbance footprint.

<sup>10</sup> North Roberts Creek Road existing disturbance width varies. These roads are assumed to be widened to 60 feet total road width. Portions of the water supply pipeline fall within the disturbance area for these two roads, and are included in the disturbance area for the roads.

<sup>11.</sup> Potential Ancillary disturbance areas consist of a buffer around proposed disturbance. Although no disturbance is proposed, the area may be disturbed only in the case of operators accidently grading or placing waste rock material outside of proposed disturbance footprints, or in the case of pit high wall failure. These areas are being permitted as if they would be disturbed.

Note: Access Roads (i.e., Three Bars Road, Atlas Haul Road, Roberts Creek Road, and Bypass Road) were not included in these disturbance calculations, as they are existing roads and would not be improved.

#### 2.2.2 Roads

Seasonal timing restrictions are incorporated into the use of access roads to the Project from mine-related traffic. These seasonal restrictions would be implemented to reduce impacts to greater sage-grouse leks within four miles of the two access routes to the Project (i.e., Three Bars Road access routes and the Roberts Creek Road access route). These seasonal restrictions would reduce impacts to the greater sage-grouse leks within four miles of the access roads from noise and other impacts during lekking season. A discussion of impacts to greater sage-grouse from use of the access roads is detailed in Section 4.21. Heavy vehicle traffic would access the Plan boundary from U.S. Highway 50 by traveling north on the existing Three Bars Road for approximately 16 miles, and then east for 1.5 miles on the existing Gold Bar Road to the former Atlas Mill area. From the former mill area, access is gained to the east on the existing Atlas Haul Road for approximately seven miles to the mine facilities.

Employees would be transported to the mine facilities using three 12 to 15-passenger vans. Vans. pickup trucks, and automobiles are considered light vehicle traffic. Light vehicle traffic access to the mine facilities would be from U.S. Highway 50 and traveling north on the existing Roberts Creek Road for approximately 13 miles, then west on the Bypass Road for approximately one mile to North Roberts Creek Road, then northeast on North Roberts Creek Road for 0.6 mile, then northwest on North Roberts Creek Road for 1.5 miles to the proposed mine facilities. These access routes are described in more detail in Sections 2.2.13 and 2.2.14. The Project does not propose any improvements to Three Bars Road (including Atlas Haul Road), Roberts Creek Road, or Bypass Road. MMI would improve the existing North Roberts Creek Road to 60 feet in width, which would be consistent with the width of the Bypass Road and Roberts Creek Road. MMI would enter into a cooperative agreement with Eureka County for maintenance activities on this mine access route Roberts Creek Road. Mine-related traffic on Three Bars Road and Roberts Creek Road would be subject to seasonal timing restrictions from 6:00 AM to 10:00 AM and from 6:00 PM to 4:30 AM from March 1 to May 15 to reduce impacts to nearby greater sage-grouse leks. These restrictions do not apply to local or emergency traffic. Three Bars Road is a gravel road and is maintained for year-round access. MMI would enter into a cooperative agreement with Eureka County for maintenance activities on this mine access route.

Most of the mine haul roads would be designed for 100-ton rigid frame trucks. MMI may utilize 45-ton articulating trucks in limited areas where the haul roads from the pit areas are too narrow for 100-ton trucks to safely travel with two-way traffic. Haul roads would be constructed to BMPs and safety berms would be designed in accordance with MSHA requirements.

Internal mine roads would be approximately 30 feet in width and HLP access roads would be approximately 15 feet in width (**Figure 2.2-2**). The actual road disturbance width may be wider, depending on topography, to allow for cuts, fills and safety berms. MMI would control fugitive dust emission from roads using water or chemical dust suppressant application (such as magnesium chloride or lignin sulfonate), where appropriate.

## 2.2.3 Open Pits

Mining would occur in the existing Gold Pick and Gold Ridge pits and the proposed Cabin Creek Phase 2 (also known as Cabin Creek North) and Cabin Creek Phase 1 (also known as Cabin Creek South) pits (Figure 2.2-1). Conventional open pit mining methods (truck and shovel/loader) would be used to extract ore and waste rock. Rock would be drilled and blasted for excavation using ammonium nitrate (also known as prill) and fuel oil (ANFO) explosive mixture, or other appropriate blasting agents as determined by site-specific rock characteristics. Explosives would be stored and used in accordance with MSHA, the Bureau of Alcohol Tobacco and Firearms, and the Department of Homeland Security rules and regulations, as well as any and all other applicable federal, state, and local statutes and regulations regarding the transportation, storage, and handling of explosives. Blasting material would be kept in an explosive storage area (Figure 2.2-1). One blast per day is currently anticipated, and the total amount of explosives used would vary depending on the size of the working face of the pit(s). Blasting would be limited to once per day during the afternoon to ensure any blasting noise produced is outside of greater sage-grouse lekking hours and is after the time of day when inversions are likely to occur that could affect the propagation of blasting noise. The preliminary mine design consists of a single pit for each of the Gold Pick and Gold Ridge deposits and two pits in the Cabin Creek area. Approximate pit dimensions and stripping ratios are provided in Table 2.2-2.

| Pit                     | Width<br>(feet) | Length<br>(feet) | Depth<br>(feet) | Volume<br>(million<br>cubic yards) | Pit Bottom<br>Elevation<br>(feet) | Stripping<br>Ratio |
|-------------------------|-----------------|------------------|-----------------|------------------------------------|-----------------------------------|--------------------|
| Gold Pick               | 2,500           | 3,400            | 460             | 39.5                               | 7,480                             | 5.6                |
| Gold Ridge              | 1,400           | 1,400            | 280             | 5.4                                | 8,220                             | 7.7                |
| Cabin Creek Phase 2 Pit | 450             | 550              | 120             | 0.4                                | 7,300                             | 1.4                |
| Cabin Creek Phase 1 Pit | 800             | 650              | 200             | 1.3                                | 7,020                             | 1.0                |

 Table 2.2-2
 Approximate Pit Dimensions and Stripping Ratios

## Pit Slope Stability

A geotechnical pit slope stability evaluation was completed to determine the maximum slope height, inter-ramp slope angle, bench face angle, and bench height for the proposed open pits. The results of the analyses are described in detail in the pit stability report (SRK, 2012a) in the Plan and summarized in **Table 2.2-3**. Cross sections showing typical slope angles for the Gold Pick, Cabin Creek, and Gold Ridge pits are shown on **Figures 2.2-3**, **2.2-4**, and **2.2-5**, respectively. Illustrations of the typical pit wall configurations are shown on **Figure 2.2-6**.

| Table 2.2-3 | Summary of Pit Slope Design Recommendations |
|-------------|---|
|             |   |

| Area                | Max. Slope<br>Height<br>(feet) | Max. Inter-ramp<br>Slope Angle<br>(degrees) | Bench Face<br>Angle<br>(degrees) | Catch<br>Bench<br>Spacing<br>(feet) | Catch<br>Bench<br>Width<br>(feet) |
|---------------------|--------------------------------|---|----------------------------------|-------------------------------------|-----------------------------------|
| Gold Pick           | 820                            | 54  | 75                               | 60                                  | 27                                |
| Gold Ridge          | 570                            | 42  | 62                               | 40                                  | 23                                |
| Cabin Creek Phase 2 | 490                            | 54  | 75                               | 60                                  | 27                                |
| Cabin Creek Phase 1 | 490                            | 54  | 75                               | 60                                  | 27                                |



No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.



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|         | TYPICAL CROSS S<br>OF THE GOLD PIC                 | ECTION<br>CK PIT |
|         | TYPICAL CROSS S<br>OF THE GOLD PIC<br>FIGURE 2.2-3 |                  |



| 14454000 |                                      |                  |
|----------|--------------------------------------|------------------|
| 14453000 |                                      |                  |
| 14452000 |                                      |                  |
|          |                                      |                  |
|          |                                      |                  |
|          |                                      |                  |
|          | TYPICAL CROSS SE<br>OF THE CABIN CRE | ECTION<br>EK PIT |



|   | OF THE GOLD RID | GE PIT   |
|---|-----------------|----------|
| h | FIGURE 2.2-5    | REVISION |
| į | 12/14/2016      | A .      |



#### Pit Dewatering Operations

Available drill hole data indicate that the proposed pit depths would not intercept groundwater and no groundwater inflows to the pits are anticipated during or after mining, as identified in **Table 2.2-4. Figure 2.2-7** provides detail on groundwater depth in relation to drill holes and monitoring wells. Groundwater has never been encountered during prior mining in these locations. Due to the high overall elevation of the proposed mining operation, and as supported by historic and recent exploration drilling, the Plan does not contain any provisions for pit dewatering. Similarly, geotechnical evaluations of pit slope stability have assumed all pits would be dry. MMI would further minimize inflows of surface waters to the open pits by managing and, where necessary, diverting surface water from each pits' catchment areas. Storm events may result in ephemeral accumulations of water in the pit bottoms. However, these are expected to be minimal and short-term, and no pit dewatering would be required during or following completion of pit reclamation activities.

| Pit                       | Anticipated Depth<br>to Groundwater<br>below Pit Bottom<br>(feet) | Comment   |
|---------------------------|---|---|
| Gold Ridge Pit            | Minimum = 850   | Constrained by negative data (no water encountered in deepest drill holes)      |
| Gold Pick Pit             | Minimum = 900   | Constrained by exploration holes  |
| Cabin Creek Phase 2 North | Minimum = 1000  | Constrained by 2011 condemnation reverse circulation holes (dry to total depth) |
| Cabin Creek Phase 1 South | Minimum = 800   | Constrained by 2011 condemnation reverse circulation holes (dry to total depth) |

 Table 2.2-4
 Anticipated Depth to Groundwater below Pit Bottoms

#### **Pit Access**

The Gold Pick pit area includes previously mined pits incorporated into the footprint of the proposed pit. These existing pits, combined with the steep terrain, make access to the pits challenging. As part of the pre-mining activities, access to the Gold Pick pit would be developed by constructing a series of roads on the north side and inside of the pit. Roads would be built using cut-and-fill construction. The Cabin Creek pits are in a previously undeveloped area. The initial section of road to the Cabin Creek pits would be built using fill material borrowed from the existing Pick WRDA. Once the fill road extends down to the existing WRDA, the road would be cut into the WRDA with dozers through the existing waste rock material. This road would eventually meet the natural grade. A temporary road would be built to get the haul trucks and support equipment to the Cabin Creek pits. The road would be widened to allow two-way traffic for the haul trucks and be covered with waste rock from the Cabin Creek pits to make an all-weather road surface. The Gold Ridge area would be accessed from existing haul roads. The previous operator had completed extensive development of the Gold Ridge deposit. These existing roads would be used to facilitate mining access to the Gold Ridge pit.
## 2.2.4 Waste Rock Disposal

Mining is anticipated to generate approximately 14.5 million tons (Mt) of waste rock annually (approximately 72.5 Mt total over life-of-mine [i.e., five years of active mining and leaching and two years of residual leaching]). Waste rock generated from the operation would be placed in WRDAs adjacent to the pits (Figures 2.2-1 and 2.2-9). WRDAs have been designed to have final side-slopes configured to match as closely as practicable the underlying natural topography. In most cases, waste rock would be placed over existing WRDA surfaces. A summary of basic design parameters and dimensions for the Project WRDAs is included in **Table 2.2-5** and a typical cross section of the WRDAs are illustrated on Figure 2.2-8. Waste rock is assumed to have a loose material density factor of about 95 pounds per cubic foot. Each WRDA was designed with a minimum of 10 percent additional volume to increase operational flexibility. Generally, enddump methods would be used to place the waste rock at the WRDAs. Where possible, multibench dumps have been developed to allow for setbacks incorporated into each lift to produce an overall average slope ranging from 2H:1V (Horizontal:Vertical) to 3.8H:1V. A preliminary worst case stability analysis for the WRDAs was conducted at a slope angle of 2H:1V and is provided in the Slope Stability and Settlement Analyses as an appendix to the Plan (MMI, 2016a). The predicted stability of the critical cross sections satisfies the minimum recommended factors of safety established by the BMRR for both static and pseudostatic (earthquake) conditions (SRK, 2012a).

| WRDA                      | Crest-to-<br>Toe<br>Height<br>(feet) | Max Height<br>Above<br>Current<br>2015 Topo<br>(feet) | Top<br>Surface<br>Elevation<br>(feet) | Volume<br>(tons) | As-built<br>Slope<br>(H:V) | Reclaimed<br>Slope<br>(H:V<br>average) <sup>1</sup> |
|---------------------------|--------------------------------------|---|---------------------------------------|------------------|----------------------------|---|
| Pick West                 | 475                                  | 140   | 8,700                                 | 2,533,000        | 1.5:1                      | 4.4:1   |
| Pick East Upper<br>Access | 575                                  | 95  | 8,220                                 | 1,943,000        | 1.5:1                      | 3.8:1   |
| Pick East Upper           | 650                                  | 343   | 7,970                                 | 35,841,000       | 1.5:1                      | 3.8:1   |
| Pick East Lower           | 280                                  | 240   | 7,500                                 | 9,920,000        | 1.5:1                      | 3.8:1   |
| Pick Jump Ramp            | 150                                  | 85  | 7,900                                 | 320,000          | 1.5:1                      | 3.7:1   |
| Pick South                | 420                                  | 175   | 7,840                                 | 4,464,000        | 1.5:1                      | 3.0:1   |
| Cabin Upper West          | 100                                  | 40  | 7,420                                 | 52,000           | 1.5:1                      | 3.4:1   |
| Cabin Upper East          | 150                                  | 60  | 7,345                                 | 350,000          | 1.5:1                      | 3.5:1   |
| Cabin Lower               | 270                                  | 115   | 7,300                                 | 1,523,000        | 1.5:1                      | 7.9:1   |
| Ridge Lower               | 570                                  | 145   | 8,305                                 | 5,420,000        | 1.5:1                      | 2.6:1   |
| Ridge Upper               | 400                                  | 345   | 8,655                                 | 7,447,100        | 1.5:1                      | 3.1:1   |

| Table 2.2-5 | Approximate | Dimensions | of the WRDAs |
|-------------|-------------|------------|--------------|
|-------------|-------------|------------|--------------|

<sup>1</sup> Benches would be graded to two percent minimum, and reclaimed WRDA intermediate lift slopes would range from 2:1 to 3:1. Overall average slope is calculated from WRDA crest to toe.



| 4 | DRILL HOLES USED TO DETER<br>MINIMUM GROUNDWATER DIST | MINE<br>ANCE |
|---|---|--------------|
|   | FIGURE 2.2-7  | REVISION     |
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The majority of the waste rock generated during mining would be valley-fill Non-designated Waste, but the operation would also apply a pit backfill strategy where practicable. For example, the existing south pit at Gold Ridge may be backfilled with the waste rock from the upper benches of the new Gold Ridge Pit. There may be additional opportunities to backfill portions of the Pick and Cabin mining areas during operations. The current Plan does not include backfilling with pit material in the Pick Pit as the resource is still open in that mining area and the decision to do so would be made during operations if it proves economical. Cabin Phase 2 may require backfill material to be hauled in from Cabin Phase 1, if it is determined during operations that there would be surface water run-on issues for that pit (**Figure 2.2-9**). Waste rock would be placed by trucks and would be expected to contain a mixture of varying-sized material placed in lifts. Dozers would be used for final contouring of the material on the WRDAs. The final surfaces of the WRDAs would be constructed to create natural appearing topography. On sloped terrain, where safe and practicable, some weathered geologic materials may be pushed downhill below the growth media to construct toe berms and prevent rocks from scattering on the hillsides below the toes of the WRDAs. A Waste Rock Management Plan was prepared as part of the Plan (SRK, 2015a).

## Waste Rock and Ore Geochemistry

A mine waste rock characterization program was conducted as part of the planning and impact assessment for the Project (SRK, 2014a). The characterization program was designed to investigate the potential for development of Acid Rock Drainage and Metal Leaching (ARDML) due to oxidation of sulfide minerals, such as pyrite, that are unstable under atmospheric conditions. Upon exposure to oxygen and water, sulfide minerals would oxidize, releasing metals, acidity, and sulfate. The geochemical characterization investigated the potential for rock that would be exposed in the Gold Bar WRDAs and heap leach facilities to generate acid and/or leach constituents when exposed to the atmosphere.

Samples used in the characterization program consisted of drill core from drilling activities completed for the exploration and geotechnical programs. A total of 84 sample intervals were selected from within the proposed pit boundaries to represent the range of waste rock and ore material types that would be encountered during mining and were classified according to alteration and oxidation. The resulting sample dataset is spatially representative of the main material types identified for the Gold Bar mining operations from the current Plan. In addition, eight samples representative of spent ore were collected from the metallurgical test work program to provide a prediction of long term heap solution chemistry.

The static test methods used for the characterization program included multi-element analysis using four-acid digestion and inductively coupled plasma and mass spectrometry analysis, Nevada Modified Sobek Acid Base Accounting (ABA), Net Acid Generation (NAG) test, and the Nevada Meteoric Water Mobility Procedure (MWMP). These static tests were selected to address total acid generation or neutralization potential of the samples and concentration of constituents in leachates derived from the material. However, these static tests do not consider the temporal variations that may occur in leachate chemistry as a result of long-term changes in oxidation, dissolution, and desorption reaction rates. To address these factors, kinetic testing was completed

for eight representative humidity cell tests (HCTs) conducted according to the American Society for Testing and Materials D-5744-96 methodology.

The ABA data indicate the carbonate-rich sedimentary host rocks of the Gold Bar deposit contain significant neutralization capacity and limited sulfide mineral content with only two of the 84 samples classified as potentially acid generating (one sample of decalcified and carbonaceous ore and one sample of silicic limestone) from the ABA tests. Material types that contain significant sulfide sulfur (i.e., greater than 0.5 weight percent) include the decalcified and carbonaceous material that is unoxidized and typically ore grade. Despite the higher sulfide content, most of the decalcified and carbonaceous samples contain neutralization potential in excess of acid generation potential and are predicted to be net neutralizing. The exception to this is one sample of carbonaceous ore material with significant sulfide sulfur and lower neutralization potential that is classified as potentially acid generating. The acid generation potential of this sample was confirmed by the HCT program.

From the ABA data, the silicic limestone shows the lowest neutralizing capacity of all the material types; however, sulfide sulfur concentrations in these samples were also low and only one sample of silicic limestone shows an uncertain potential for acid generation. The remaining silicic limestone samples are classified as non-acid generating. The HCT program indicates this material type is essentially inert and does not have a potential to generate acid.

The argillic limestone is the main material type that would be encountered in the Gold Bar pits. The results of the ABA and NAG tests indicate this material type is acid neutralizing. Therefore, the bulk of the Gold Bar waste rock and ore material is likely to be net neutralizing and presents a low risk for acid generation. Although the excess of neutralizing capacity means that net acid conditions are unlikely to develop at Gold Bar, several constituents are likely to be mobile under the moderately alkaline conditions. The results of the MWMP and HCT tests showed arsenic, antimony, and thallium are consistently elevated under neutral to alkaline conditions. The greatest release of these constituents is seen for the ore grade samples due to the presence of orpiment  $(As_2S_3)$ , realgar  $(As_4S_4)$ , and stibnite  $(Sb_2S_3)$  associated with the gold mineralization. These minerals are generally not present in the waste grade material and as a result arsenic and antimony release is an order of magnitude lower for the waste rock samples.

The unoxidized limestone material types (i.e., carbonaceous and decalcified limestone) exhibited the highest risk of metal leaching under both acidic and alkaline conditions. The carbonaceous ore material containing sulfides and limited neutralization potential was the only material type predicted to generate acid from the static and kinetic test results. This material type showed a potential to leach aluminum, antimony, arsenic, beryllium, cadmium, chromium, fluoride, iron, lead, magnesium, manganese and nickel, sulfate, and thallium above NDEP reference values under low pH conditions. Significant metalloid (e.g., arsenic) leaching under high pH conditions was also observed for the unoxidized decalcified material. Based on these results, the oxidation state of the material can be used to predict the geochemical behavior of the Gold Bar material and special handling and management of the unoxidized limestone material types (i.e., carbonaceous and decalcified limestone) is recommended for the Project.



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From an ore processing perspective, the sulfide bearing decalcified and carbonaceous material is considered preg-robbing (removes cyanide from solution) and it is not amenable to standard heap leach extraction. Therefore, the unoxidized ore material would be managed as waste rock during operations and would report to the WRDAs. According to the geologic block model, the unoxidized decalcified and carbonaceous limestone material types (waste and ore-grade) comprises about 10 percent of the total waste rock that would be mined from the Gold Pick pit and a minor amount of the waste rock from the Cabin Creek pits (i.e., less than one percent). None of the waste rock from the Gold Ridge Pit would consist of unoxidized limestone.

Waste rock from the Project can be separated into the following two waste rock management classes based on material type:

- Non-Designated Waste; and
- Designated Waste.

Designated Waste is defined as waste rock that demonstrates a potential to generate acid with a potential for metal release or is net neutralizing with a potential for metalloid release. All material types that do not fall within this classification are termed Non-Designated Waste.

Material types that have been classified as Designated Waste include the unoxidized carbonaceous limestone and decalcified limestone. Since this type of unoxidized ore would be managed as waste rock and placed on the WRDAs, the Designated Waste classification applies to both the waste grade and ore grade carbonaceous and decalcified limestone material. The term 'Designated Waste' is being used instead of the more commonly used 'Potential Acid Generating Waste' due to the component of the unoxidized carbonaceous limestone and decalcified limestone material that is net neutralizing but requires management due to the potential for metalloid release in circumnetural to moderately alkaline conditions (SRK, 2015a). The spent ore samples included in the study consisted entirely of oxidized material. The sulfidebearing carbonaceous ore was not included in the metallurgical test columns because this material would not be placed on the heap leach facility. Geochemical results indicate the oxide spent (leached) ore material contains significant neutralizing capacity and is predicted to be nonacid generating from both the ABA and NAG results. The potential for metal leaching from the spent ore material is also low with the exception of arsenic, antimony, mercury, and thallium that are elevated under alkaline conditions. These constituents are predicted to be elevated in the long-term heap drain down solution from the Gold Bar heap leach facility (MMI, 2016a). Waste rock that would be mined from the Gold Bar pits would consist primarily of Non-Designated Waste material (i.e., greater than 94 percent), with six percent of the total waste rock being considered designated waste (SRK, 2015a).

Designated Waste, which is generated entirely from the Pick Pit, would be stored in a repository, within the WRDA, immediately southeast of that pit. The Designated Waste repository would be constructed within the Pick East Lower WRDA (**Figure 2.2-1**). The Designated Waste, which is mined mainly in the final year of production, would be stacked along the toe of the Pick East Upper

WRDA. As this waste is being placed, non-designated waste material would be stacked to the outside of the designated waste in order to buttress as well as encapsulate it.

Stormwater would be managed in the area via localized grading and berm or channel construction as necessary to ensure water contacting the Designated Waste is not allowed to run off. During closure and reclamation, non-designated waste from the Pick East Upper WRDA would be dozer pushed and compacted via equipment traffic over the repository and graded to drain away from the area. The thickness of this initial non-designated waste rock layer would vary, but would generally be a minimum of five feet thick. A 12-inch-thick layer of clay rich or bentonite-amended fined-grained waste rock or alluvium would be placed and compacted over the initial lift of non-designated waste rock. If required, bentonite would be thoroughly blended into the loose soil prior to compaction at a rate of not less than four percent by weight. An additional five-foot-thick layer of non-designated waste rock would then be placed and compacted with equipment traffic over the bentonite-amended layer to protect it from the potential effects of freeze-thaw cycles and root penetration.

# 2.2.5 Ore Handling

MMI plans to process approximately 2.8 Mt of ore per year at the Project. The configuration of the proposed process facilities is depicted on Figure 2.2-1 and Figure 2.2-10. Mined ore would be transported by truck and stockpiled at the crusher facility. If any ore is determined to be suitable for direct placement and heap leaching as run-of-mine it would be treated with lime in the truck load prior to placement. Lime would be added at a rate of 3.0 lbs of hydrated lime per ton of runof-mine ore from a storage silo and feeding unit located near the heap leach pad. The ore would be picked up by a loader and fed to a jaw crusher, where it would be crushed to a size 80 percent passing four inches. Crushed material would then be conveyed to a screen where screen undersize material would be treated with cement and fed to an agglomeration drum. Oversize material would bypass the agglomeration drum. The oversize and agglomerated material would be recombined and transferred on to the HLP via a heap conveyor stacking system. Ore would be stacked on the heap by a series of portable grasshopper conveyors followed by an indexing conveyor and radial stacker. Stacked ore would then be leached on the HLP with a weak cyanide solution to extract the contained gold. Leach solution applied to the top of the heap is called barren solution and gold-bearing leach solution draining from the bottom of the heap is called pregnant solution. Gold would be recovered from the pregnant leach solution (PLS) in an ADR plant by adsorbing the extracted gold onto activated carbon followed by desorption into an upgraded and purified gold-bearing solution, electrowinning, and final pouring of a doré via a melting furnace. The leach solution after the gold is removed (barren solution) would be rejuvenated with reagents as required to elevate the pH and maintain the dissolved cyanide concentration before being pumped back to the HLP and applied to the top of the heap.

# 2.2.6 Heap Leaching

The dedicated HLP, barren and pregnant solution tanks, process solution pond, and ancillary facilities are designed to accommodate a leachable reserve of approximately 17.3 Mt of ore from the Gold Pick, Gold Ridge, and Cabin Creek open pits.



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The proposed Gold Bar HLP would be built in two phases, Phase 1A and Phase 1B, and would be located in an area of moderately undulating topography between two natural drainages (**Figure 2.2-1** and **Figure 2.2-10**). The HLP would extend in a southeast-to-northwest direction from an elevation of 6,750 feet above mean sea level (amsl) to an elevation of 6,985 feet amsl. As identified in **Table 2.2-6**, the HLP would have a total lined area of approximately 3,933,600 square feet and a total ore capacity of approximately 14,082,000 cubic yards.

The HLP would be constructed in accordance with Nevada regulations, NAC 445A.432-445A.438. The HLP liner system would consist of a compacted low permeability soil layer (secondary liner) overlain by a single synthetic primary liner. The primary liner would be an 80-mil High Density Polyethylene (HDPE) geomembrane liner and the underlying secondary liner would consist of one foot (12 inches) of a bentonite-soil admixture with a hydraulic conductivity of 1×10<sup>-6</sup> centimeter per second (cm/sec) (or approximately 3.9×10<sup>-7</sup> inches per second) or less. The low-permeability. secondary liner layer would be constructed in place by excavating to a minimum depth of one foot, mixing the excavated soil with bentonite at the designated ratio, moisture conditioning, then compacting the mixture to a finished base grade. Alternatively, local clay borrow sources in the Cabin Creek Pit area would be borrowed for construction of the low-permeability, secondary liner layer. The finished surface of this prepared sub-liner layer would then be overlain by the primary liner and overliner material. A uniform, permeable overliner layer consisting of three feet of crushed and screened rock or ore would be placed over the primary liner to protect it from punctures and provide a drainage layer under the ore. The overliner layer would also minimize hydraulic head on the liner during operations by promoting rapid conveyance of fluids. The overliner layer would include a network of perforated pipes to collect solution and direct it to the main solution pipes delivering solution to the pregnant solution tanks in the ADR plant. The HDPE liner would be installed in a manner that would prevent structural damage to the liner during ore placement. Figure 2.2-11 presents a typical liner design. General HLP cross sections are presented on Figure 2.2-12. The HLP dimensions are summarized in Table 2.2-6.

| Heap<br>Phase      | Maximum<br>Width*<br>(feet) | Minimum<br>Width*<br>(feet) | Maximum<br>Length*<br>(feet) | Minimum<br>Length*<br>(feet) | Maximum<br>Lift Height<br>(feet) | Maximum<br>Heap Height<br>above Liner<br>(feet) | Maximum<br>Elevation<br>(feet amsl) | Lined Area<br>(square<br>feet) | Net Ore<br>Capacity<br>(cubic<br>yards) |
|--------------------|-----------------------------|-----------------------------|------------------------------|------------------------------|----------------------------------|---|-------------------------------------|--------------------------------|---|
| Phase 1A           | 1,760                       | 1,470                       | 1,860                        | 1,450                        | 26                               | 179   | 7,064                               | 2,684,900                      | 8,805,000                               |
| Phase 1B           | 1,248                       | 890                         | 1,060                        | 850                          | 26                               | 192   | 7,110                               | 1,248,700                      | 5,277,000                               |
| Total Lined Area   |                             |                             |                              |                              |                                  |   |                                     | 3,933,600                      |   |
| Total Ore Capacity |                             |                             |                              |                              |                                  |   |                                     | 14,082,000                     |   |

 Table 2.2-6
 Summary of Heap Leach Pad Dimensions

\*The heap is not symmetrical so dimensions can vary widely.



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## Construction

Construction of the HLP is planned for two phases. The first phase (Phase IA) would have the capacity to contain approximately 8.8 million cubic yards of crushed and agglomerated ore, and the second phase (Phase IB) would have the capacity to contain approximately 5.3 million cubic yards of crushed and agglomerated ore for a total of approximately 14,082,000 million cubic yards. HLP construction would include foundation preparation, liner system installation, PLS collection piping system installation, and placement of overliner material. During construction, a Quality Assurance/Quality Control team would be present to monitor secondary liner preparation and HDPE liner installation to document that the liner system is installed properly and to make sure any damage to the HDPE geomembrane is repaired prior to covering with overliner. Standard quality assurance and control consistent with NAC 445A.439 would be conducted to identify, prevent, and/or repair geomembrane liner punctures or welding defects along the liner seams during construction.

## Heap Leach Pad Stability Analysis

Slope stability and seismic hazard analyses were completed for the HLP design configuration using Probabilistic Seismic Hazard Analysis and the computer program SLIDE. The analyses and results provided in the Plan demonstrate that the proposed HLP would be stable under both static and pseudostatic conditions for both the Phase 1 and Final Ore Grading configurations (SRK, 2015b).

### Heap Leach Pad Solution Recovery System

The PLS collection and recovery system would consist of a network of collection pipes designed to gravity drain PLS to tanks in the ADR plant area. HDPE pipes from the PLS solution recovery system would be placed in ditches that are lined with 80-mil HDPE to serve as secondary containment. The HDPE lined ditches from the HLP to the process building would be backfilled with gravel and the HDPE lined ditches between the process solution pond and the ADR plant would not be backfilled during operations. Piping associated with the process solution pond would be contained within a system of lined berms surrounding the pond.

### Heap Leach Pad Stormwater Diversions

The HLP would require the construction of up-gradient stormwater controls to divert potential drainage of stormwater around the HLP. This would be accomplished through triangular channels (v-ditches) constructed adjacent to the upstream side of the HLP perimeter berm. Both Phase-1A and Phase-1B perimeter berms would have triangular channels upstream to divert the 100-year, 24-hour peak flow around the HLP. A hydrologic analysis of the watersheds up-gradient of the HLP was performed using the proposed site design with HEC-HMS software developed by the U.S. Army Corps of Engineers. The U.S. Department of Agriculture WinTR-55 methodology was used to calculate the 100-year, 24-hour peak flow rates for the channels. Triangular channels with a depth of three feet and 2H:1V sideslopes are proposed to convey the 100-year peak flow rates from upstream watersheds. A three-foot deep triangular channel has the capacity to convey 90 cfs which is adequate to manage the 100-year peak flow rates for Phase-1A and Phase-1B of 17 and 19 cfs respectively. The channels will be lined with a one-foot-thick layer of riprap with a

median size (D50) of six inches based on the Federal Highway Administration Hydraulic Engineering Circular No. 15 method (MMI, 2016a).

### Heap Leach Pad Stormwater Control

During HLP operations, precipitation falling directly onto the HLP would be managed by the solution collection and recovery system in the same manner as the applied process solution. Stormwater that does not infiltrate into the heap would be handled by the perimeter channel formed between the toe of the HLP and the perimeter berm, which is specified as a minimum of two feet deep. At the low point, stormwater would enter the lined solution channel by overflow through four lined "notches" in the stability/solution containment berm and flow to the event pond. Stormwater runoff from the growth media surface over the final, post-reclamation configuration of the leach pad between the heap and the perimeter access road. This channel would be constructed during initial leach pad construction and grading. At the low point, stormwater would enter the lined solution channel by overflow through four lined solution channel by overflow through four lined solution channel by overflow through four lined between the heap and the perimeter access road. This channel would be constructed during initial leach pad construction and grading. At the low point, stormwater would enter the lined solution channel by overflow through four lined "notches" in the stability/solution containment berm and flow to the event pond.

## Heap Leach Pad Solution Channel System

Under normal operations, barren solution would report from the carbon columns to the barren tank located within the ADR plant where reagents are added and the solution is pumped to the leach pad. The main barren solution pump is also contained within the ADR plant. All piping not inside of containment (i.e. not over pond or heap leach pad liner, inside concrete containment or inside the leach pad perimeter berm) would be placed inside a geomembrane-lined ditch or installed inside a secondary pipe to satisfy the requirements of NAC 445A.436.

Solution from the main barren pump would be conveyed to and around the base of the leach pad in a 12-inch diameter steel solution delivery pipe. The solution delivery pipe would run inside the leach pad perimeter berm at the toe of the ore slope. The berm would be lined to the inside crest in order to provide containment in the event of a pipe break or a storm event. The space between the toe of the ore and perimeter berm would form a two-foot-deep channel to convey draindown, stormwater and pregnant solution (in the event of a pipe breach) to the event pond. The solution pipe would have tees at 500-foot intervals with HDPE "takeoffs" for solution delivery to the top of the heap. Each takeoff would be valved and the main solution line would have valves at minimum intervals of 2,000 feet. The solution delivery pipes would connect to smaller feeder pipes feeding one half inch-diameter drip lines spaced on 30-inch centers with drip emitters every 30 inches.

After passing through the ore, pregnant solution would be collected by a network of perforated collection piping located at the base of the pad. The perforated piping would consist of four-inch diameter perforated, corrugated HDPE on 30-foot centers with 12-inch diameter collector pipes on the downhill edges and center of each cell. The proposed leach pad would be divided into discrete cells with a three-foot high divider berm between each cell.

Solution would be conveyed to the lowest corner of each cell in perforated pipes that would connect to a solid pipe for conveyance to the primary solution collection line running along the

east, west and south edges of the leach pad. The main conveyance pipeline would consist of an 18-inch diameter corrugated, smooth internal wall HDPE pipe that would sit at the inside toe of the perimeter berm and would be covered with overliner for thermal stability. The 18-inch pipe would carry solution to the pregnant tanks located near the edge of the process solution pond in an HDPE-lined trapezoidal channel connecting the leach pad to the ponds. This channel would have the same lining system as the leach pad.

Solution would be pumped from the pregnant tanks to the carbon columns in the ADR plant. A channel would connect the process solution pond to the event pond to maximize containment (MMI, 2015b and 2016b).

The solution channel includes two, four-inch-diameter perforated corrugated pipes to accelerate drainage of fluids entrained in the channel drain rock and minimize hydraulic head development (i.e., to less than one foot under normal operating conditions) over the composite liner system. The effectiveness of these overliner drainage pipes would govern the potential for development of hydraulic head above the liner.

MMI would install two standpipe piezometers in the solution channel drain rock to measure the head above the synthetic liner in the solution channel (SCP-01 and SCP-02). These would be measured monthly under normal operating conditions and any trends showing greater than one foot of head would be addressed by installing additional perforated drainage piping above the liner to increase system permeability and reduce head trends.

## **Process Solution Pond and Event Pond**

The process solution pond would hold weak cyanide solution collected from the heap, contain overflow from the pregnant and barren solution tanks, and provide make-up water to the barren or pregnant solution systems. Solutions to and from the process solution pond would be contained in HDPE pipes; the pipes would be placed within 80-mil HDPE lined ditches or berms for secondary containment. Secondary containment is described in the Water Pollution Control Permit (WPCP) (Volume 5, Appendix B.2) (MMI, 2016b). The process solution pond would be sized to accommodate operating and stormwater volumes in accordance with the requirements of design criteria under NAC 445A.433 and 445A.435. The process solution pond would be double geomembrane-lined with an integrated Leak Collection and Recovery System (LCRS). Similarly, an event pond would be sized to accommodate the design storm in accordance with NAC 445A.433 and 445A.435. Water balance calculations and a description of the assumptions that went into developing them are included in WPCP (Appendix I) (MMI, 2016b). The layout of the process and event ponds is shown on Figure 2.2-1 and Figure 2.2-10. Design parameters of the solution pond and event pond are identified in Table 2.2-7. Environmental Protection Measures (EPMs) for lined ponds would minimize impacts to wildlife (MMI, 2016a) and are presented in Section 2.2.20.

| Pond Name                | Crest<br>Width<br>(feet) | Crest<br>Length<br>(feet) | Pond<br>Sideslopes<br>(H:V) | Total<br>Depth<br>(feet) | Pump Dead<br>Storage<br>(feet) | Freeboard<br>(crest to<br>spillway)<br>(feet) | Operating<br>Capacity<br>(gallons) | Total Pond<br>Capacity<br>(gallons) | Surface Area<br>at Crest<br>(square feet) | Liner System                |
|--------------------------|--------------------------|---------------------------|-----------------------------|--------------------------|--------------------------------|---|------------------------------------|-------------------------------------|---|-----------------------------|
| Event Pond               | 225                      | 330                       | 3:1                         | 26                       | 4                              | 2   | 5,970,800                          | 7,027,400                           | 74,250                                    | 80-mil over 60-<br>mil HDPE |
| Process<br>Solution Pond | 225                      | 350                       | 3:1                         | 30                       | 4                              | 2   | 7,730,000                          | 9,028,000                           | 78,750                                    | 80-mil over 60-<br>mil HDPE |

 Table 2.2-7
 Design Parameters for the Solution Pond and Event Pont

When available, make-up water would be pumped from the event pond to either the process solution pond for temporary storage or to the barren solution tank in the ADR plant for incorporation into the solution circuit, as needed. If no water is available in the event pond, make-up water needed in the barren solution tank would be pumped from the process solution pond or the off-site production well, or distributed by gravity from the 500,000-gallon main water storage tank located east of the heap leach pad off the process area entrance road.

### Adsorption, Desorption, and Recovery Plant

The Project would use an ADR processing plant. The ADR plant would be sized to handle a solution flow of approximately 2,000 gallons per minute (gpm). The carbon adsorption, stripping, and acid washing vessels would process 2.5 tons of carbon per vessel.

The ADR building would include reagent tanks, pipes, and vessels on a concrete floor with stem walls and joints sealed with "waterstops" to provide secondary containment. Secondary containment would accommodate 110 percent of the largest tank within each individual containment area or within the process building. The sealed concrete floor slab would drain through a pipe-in-pipe to the process pond.

Adsorption of the dissolved gold in the PLS onto activated granular carbon would be conducted in a five stage counter current reactor. Carbon would be advanced through each of the five carbon adsorption columns and contacted with the PLS to maximize the gold concentration on the carbon (carbon loading). The resulting barren solution would be pumped back to the heap.

The loaded carbon would be transferred from the first adsorption column to an acid wash vessel where it would be acid washed to remove impurities, neutralized, and then transferred to a carbon strip vessel. Sodium hydroxide would be added to the cyanide stripping solution to aid stripping and provide electrolytes for the subsequent electrowinning stage.

At the end of the carbon stripping cycle, the stripped carbon would be transferred to a kiln where the carbon would be regenerated at approximately 1,200 degrees Fahrenheit (°F) for 10 minutes. The reactivated carbon would then be transferred back into the last adsorption column for reuse completing the carbon adsorption/desorption cycle.

Recovery of the gold from the carbon strip solution would be conducted in two electrowinning cells. The rich eluate solution would be heated in a heat exchanger to 185°F and then transferred to the electrowinning cells. The precious metal ions would transfer from the solution to the stainless steel wool cathode. The lean eluate solution would then return to the stripping vessel for reuse completing the elution cycle.

The precious metal laden steel wool from the electrowinning step would be transferred to a mercury retort to remove and recover mercury as by-product. Mercury would be volatilized at 1,100°F and then condensed and collected into flasks for storage and/or disposal. Mercury produced by the Project would be managed and disposed offsite as a hazardous waste per 40 CFR 261.33. Elemental mercury would be collected from the onsite laboratory and retort

condenser and transported to a designated Department of Energy long-term storage facility. Spent carbon from the mercury emission control system would be transported and disposed of offsite by a licensed hazardous waste handler.

With the mercury removed, the gold bearing steel wool would then be transferred to the induction furnace for melting. Fluxes would be added to collect any additional impurities and the furnace heated to 2,370°F. The gold would then be poured into cascading molds where it would cool and separate from the slag. The slag would then be removed from the gold doré bullion bars prior to shipment to the market. An illustration depicting the process flow chart can be seen on **Figure 2.2-13**.

## 2.2.7 Ancillary Facilities

On-site ancillary facilities include various infrastructure buildings, power supply, fuel storage and distribution, water storage and distribution, and roads. **Figure 2.2-1** shows the location of the main ancillary infrastructure.

## **Power Supply**

The Project power supply would be provided by a series of three natural gas (LNG or CNG) selfcontained generators (two operating and one backup), two 2,175 boiler horse power (1,442 kilowatt [kW] site rating), and one 1,716 boiler horse power (1,083 kW site rating). The location of these generators is shown on **Figure 2.2-1**. Three generators are necessary to allow for fluctuating loads through the Project life and routine preventative maintenance. The generators would be controlled by automatic switchgear that would automatically start or remove generators as load demand increases or decrease.

A self-contained 571 kW diesel generator at the ADR would provide backup power for the process fluid management system in the event of interruption of natural gas supply or catastrophic failure of the primary power supply. This independent back up power supply would ensure that the barren pumps have uninterrupted power to maintain the pump back system to the HLP so the tank and pond levels can be maintained within normal operating volumes at all times.

A separate 455 kW self-contained diesel generator would be located at the primary water well (GBPW-210). This generator would power both the water wells and the booster pumps required to lift water from the well head tank to the 500,000-gallon water storage tank.

All generators would include enhanced generator silencing packages which includes high ambient and sound-attenuated enclosures, use of noise absorbent materials, and an internal exhaust silencer system. The acoustic enclosures used for the LNG generators are estimated to achieve 78 A-weighed decibels (dBA) at a distance of 23 feet, and the acoustic enclosures used for the diesel generator at the production well site is estimated to achieve 75 dBA at a distance of 23 feet.



No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.

#### **Power Distribution**

Power distribution within the Plan boundary would consist of a 4,160 volt (V) overhead distribution line connecting the process facilities, offices, and shop/warehouse buildings to the generators. Power would be reduced to 110/220 V or 480 V as required. Anti-perching devices would be installed as described in the EPMs (Section 2.2.20). The overhead distribution line is identified on **Figure 2.2-1**.

### Standby Power System

Uninterruptable power supplies would be used to provide back-up power to critical control systems. This equipment would be sized to permit operations to shut down and back up the computer and control systems and to facilitate start-up on restoration of normal generator power. Battery power packs would supply back-up power to the fire alarm system and egress lighting fixtures.

### Administration Building

The administration building would be a modular structure, and would contain offices for administration, accounting, human resources, restroom facilities, survey/engineering area, space for cubicles, a meeting/training room, and a lunch room. The location of the administration building is shown on **Figures 2.2-1** and **2.2-10**.

### Warehouse and Warehouse Storage Area

The warehouse area would have two offices and an attached shop area, which would also include an office, a two-ton pedestal crane, a compressor and welding outlets. The buildings would share restroom facilities and a lunch area. These facilities are identified on **Figures 2.2-1** and **2.2-10**.

### Process/ADR Building

The process building would be a pre-engineered steel building, and would include the ADR plant. The electrowinning/mercury retort and melt furnace would be in an attached building. The ADR operations office, security office, change room and rest room facility would be housed in a two story building attached to the process building. The process building is identified on **Figures 2.2-1** and **2.2-10**.

### Laboratory

The laboratory would be a separate building located north of the warehouse building. The laboratory building would consist of a sample preparation room, a fire assay area, Met/Wet (metallurgical/wet assay) laboratory area, two offices, restroom facilities, and a lunch area. The location of the laboratory is identified on **Figures 2.2-1** and **2.2-10**.

Reagents used in the analytical and metallurgical test procedures would be stored at the laboratory in secondary containment and would generally include small quantities of nitric acid, sulfuric acid, hydrochloric acid, and sodium hydroxide. Fire assay reagents would generally include litharge, borax, carbon, silica, and sodium carbonate. Small quantities of other reagents may be used periodically.

### Truck Shop and Wash Bay

The truck maintenance shop would be located adjacent to the existing haul road, west of the HLP, as identified on **Figures 2.2-1** and **2.2-10**. The truck shop would have a self-contained wash bay and three bays sized to handle 100-ton trucks. The truck shop building would also include offices, a lunch room, a tool crib, a storage room, and changing rooms. Bulk lubrication and hydraulic oils, anti-freeze and grease would be stored in an attached partition of the building. Used oil and coolant would be transported offsite by a licensed oil transporter for recycling. Other minor chemicals would include aerosol cleaners, sealants, lubricants, and cleaning solvents and supplies. These would be used in de mimimis amounts and would be considered general shop supplies. Parts washing solvents would be contained in the parts washer that is serviced periodically by a parts washer supplier. Used oil would be stored in either a 1,000-gallon tank or 660-gallon totes in the truck shop containment area, and would be recycled by either the fuel and lubricant supplier or a used oil recycler. The wash bay would be a zero-discharge facility. Used wash water would drain to an oil water separator; oil collected from the wash water would be transported off-site by the licensed oil transporter.

#### **Fuel Storage**

There would be fuel storage at the administration and process area to supply gasoline for light vehicles and off-road diesel located adjacent to the truck shop for haul trucks and mine equipment (**Figures 2.2-1** and **2.2-10**). The truck shop station would contain two 10,000-gallon diesel fuel storage tanks and one 5,000-gallon gasoline storage tank in the administration area for light vehicles.

#### LNG or CNG Storage

LNG or CNG would be stored in two 10,000-gallon tanks located adjacent to the generators in the designated area shown on **Figures 2.2-1** and **2.2-10**. If LNG is used, cryogenic tanks would be required.

#### Septic

Four septic systems would be installed: one would service the process building; one would service the administration building and laboratory; another would service the truck shop; and the last would service the warehouse/shop. The mine and crushing facilities would use portable toilets serviced by a contractor.

#### **Communication Facilities**

Mine operations would be supported by an on-site radio system. For the safety of employees, contractors, and regulators, communications with outside systems would be maintained through the use of internet and cell phones.

#### **Monitoring Wells**

The groundwater monitoring program for baseline water monitoring would be conducted as described in the site Monitoring Plan included in the Plan. Facility groundwater monitoring during operations would be carried out in accordance with the NDEP WPCP requirements. Monitoring wells are located near the HLP, as shown on **Figure 2.2-1**. MMI has installed three monitoring

wells (GBMW-01, GBMW-02, and GBMW-03) within the Project process area to monitor groundwater in the vicinity of the HLP and ponds. Data from these wells has been submitted to the NDEP on a quarterly basis and serves as the baseline water quality data for the HLP area. GBMW-02 would be plugged and abandoned in accordance with applicable NAC 534.4365, 534.4369 and 534.4371 regulations prior to HLP construction as it is within the HLP lined area and would be covered by the heap. GBMW-03 would continue to serve as the down-gradient monitoring well for the HLP and process ponds area. An additional groundwater monitoring well (GBMW-04) was installed near the Project's production water well (GBPW-210) southeast of the Plan boundary. Groundwater monitoring activities would consist of quarterly testing of Profile I constituents, water elevation, field pH, specific conductance, and temperature. The locations of the monitoring wells are shown on Figure 2.2-1 (MMI, 2015a and 2016). The entire ground water monitoring program has been proposed to be maintained into the post-closure monitoring period to demonstrate performance of the closure activities. The monitoring program would be conducted until concurrence is received from NDEP and BLM that the closure commitments in the Final Plan for Permanent Closure (submitted two years prior to final closure) have been achieved. The monitoring plan is included as Appendix C of the Plan.

## Class III-Waivered Landfill

A Class III-waivered solid waste landfill would be located on the south side of the Pick East Lower WRDA (**Figure 2.2-1**). This on-site landfill would only be used for the disposal of nonhazardous solid wastes generated at the site including waste paper, wood, scrap metal, and domestic trash. The Class III-Waivered Landfill would be closed during reclamation of the Pick East Upper WRDA, at which time a new mine site landfill would be sited and permitted for all nonhazardous solid wastes.

### **Borrow Areas**

Local clay borrow sources in the Cabin Creek Pit area would be borrowed for construction of the low-permeability, secondary liner layer. It is currently anticipated that a borrow source for construction fill material would not be needed for the Project. However, if a borrow source were needed for construction fill material, borrow material would come from the HLP and building area, pre-disturbance footprints.

### Fencing

Solar powered security gates would be installed at the Project boundary on Atlas Haul Road and North Robert's Creek Road, as identified on **Figure 2.2-1**. These security gates would be equipped with an electronic keypad for use by mine personnel, and a wireless remote entry system for site visitors. Signage would direct all site visitors to the administration building.

The buildings and process facilities including the warehouse/shop, office, laboratory, ADR plant HLP, and ponds would be fenced to specifications outlined in the BLM Handbook 1741-1 and the NDOW Industrial Artificial Pond Permit, as applicable. In addition, individual facilities, including the Hazardous Waste Storage, ADR plant, ponds, LNG/CNG storage tank and natural gas generators would be fenced separately. In areas where a higher level of security is required,

chain-link fences would be erected. Proposed fencing is illustrated on **Figure 2.2-1**. Proposed fencing surrounding the process buildings and ponds is shown in detail on **Figure 2.2-1**.

## Inter-Facility Disturbance

Islands of vegetation between facilities that would likely become disturbed during Project construction and operations have been identified as Inter-facility Disturbance (**Figure 2.2-1**). These areas would be designated as yards for reclamation purposes.

## 2.2.8 Stormwater Management

Stormwater management for the WRDAs would consist of implementing BMPs such as straw wattles, sediment traps constructed with straw bales, or sediment basins located downstream of the WRDAs. In general, stormwater diversion and erosion/sediment structural control BMPs include the following types (MMI, 2015b):

- Upstream Control: Diversion of stormwater that originates upstream of roads, disturbed areas, and other potential pollution sources would be accomplished by using a combination of berms, channels, culverts, and water bars. These control measures would divert and minimize the amount of upstream stormwater potentially contacting disturbed areas or pollution sources. Erosion protection consisting of a riprap channel lining may be used in steep or constricted areas to limit the scouring effect of stormwater.
- Downstream Control: Downstream stormwater controls aim to manage stormwater that has contacted a potential pollution source (contact water) and include a combination of berms, channels, culverts, water bars, sediment basins or sediment traps. Downstream structural controls would capture stormwater originating on WRDAs, roads or stockpiles and direct it to sediment basins or sediment traps to reduce velocity and deposit suspended sediment. Erosion protection consisting of a riprap channel lining may be used in steep or constricted areas to limit the scouring effect of stormwater.
- Temporary Construction Controls: Temporary construction structural controls would be implemented for short-term construction activities. For temporary construction controls, a combination of silt fences, straw bales, straw wattles, and/or temporary diversion ditches would be installed. Temporary construction structural controls may be relocated as construction activities progress.

The HLP and process facility are designed together as a "zero-discharge facility", i.e., all accumulations resulting from the 25-year, 24-hour storm event is completely contained. The leach pad would be constructed with an 80-mil HDPE primary liner above a low permeability (less than 1x10<sup>-6</sup> cm/sec, or approximately  $3.9 \times 10^{-7}$  inches per second) soil layer. The clays to be used for the soil layer would come from the overburden area below Cabin Creek (within proposed footprint of proposed disturbance). Rainfall on the leach pad would combine with process fluids and discharge into the pregnant storage tanks and then flow into the process solution pond. The process solution pond would be double-lined with 80-mil HDPE geomembrane primary liner, 80 mil HDPE secondary liner, and a LCRS. The process and event ponds are sized to contain a 25-year, 24-hour storm volume and to withstand a 100-year, 24-hour storm event. An internal spillway would connect the process solution and event control pond and allow solution to pass between the two double-lined ponds during storm events. The event pond design includes an

emergency spillway to discharge flows exceeding a 100-year, 24-hour storm event to a natural drainage downstream from the pond. The internal spillway would be set one-foot lower than the elevation of the emergency (external) spillway to allow both ponds to collectively store a 100-year storm volume without discharge through the emergency spillway. The process building would include reagent tanks, pipes, and vessels on a concrete floor with stem walls and joints sealed with "waterstops" to provide secondary containment. Secondary containment would accommodate 110 percent of the largest tank within each individual containment area or within the process building. The sealed concrete floor slab would drain through a pipe-in-pipe to a process pond.

Diversion channels would be constructed upstream of the HLP and process ponds to divert potential stormwater run-on from impacting the facilities. The channels would be located on the upstream side of the existing Atlas Haul Road, the run-of-mine haul road, and the HLP perimeter access road (**Figure 2.2-1**). Diversion channels would be armored with riprap where necessary to reduce velocity and potential for scouring and erosion. Roadside ditches and/or berms would be located upstream of the crusher facility and ore stockpile to divert potential stormwater run-on from entering these facilities. Diverted runoff would be returned to natural drainages and report to a sediment basin to limit migration of sediment downstream of the Project site.

The results of the waste rock characterization indicate a minor amount of waste rock material (six percent) has the potential to generate acid. This material would be identified and actively managed as designated waste to isolate the material from the effects of weathering and to eliminate the potential for acid rock drainage as described in the WRMP located in Appendix B of the Plan (MMI, 2016a). Stormwater originating from WRDAs would be managed with BMPs consisting of straw wattles, sediment traps constructed with hay bales, or sediment basins located downstream of the WRDA. Proposed sediment basin locations are shown on **Figure 2.2-1** and are sized to settle fine sand particles (diameter of 0.01 millimeter [or approximately 0.004 inches] is considered fine sand according to the ASTM method D2487) during the peak flow into the basin for a two-year, 24-hour storm event.

Stormwater runoff originating on roadways and the growth media stockpiles would be directed via berms and swales into sediment traps consisting of straw wattles and straw bales. Sediment traps would be constructed at strategic locations based on topography and catchment area (MMI, 2015b and 2016).

## 2.2.9 Water Needs and Uses

## Non-Potable Water/Production Water Supply

The peak make-up water requirement for the Project is 500 gpm. The water source for the Project would be primary production water well GBPW-210, and a secondary production water well GBPW-211. Water from the production wells would be pumped to a 500,000-gallon storage tank, located on the west side of the HLP. A pump located near the ADR would lift water to a second 50,000-gallon water tank located west and above the truck shop. This tank would supply water to the truck shop and the jaw or impact crusher, screen area, and lime silo for dust control, and to

the water truck load out for seasonal dust suppression. Production wells, water tanks, and the water pipeline corridors are located as shown on **Figure 2.2-1**. The majority of the water pipeline corridor would be within the footprint of the proposed and existing roads or the footprint of another facility.

## **Potable Water**

Water from the 50,000-gallon water tank would supply a potable drinking water tank/drinking water system. The drinking water system would be permitted by the Nevada Bureau of Safe Drinking Water. The potable water tank is identified on **Figures 2.2-1** and **2.2-10**. Pipelines for the potable water system would be isolated from pipelines for non-potable water with backflow prevention, but would exist within the same water pipeline corridor shown on **Figure 2.2-1**.

## 2.2.10 Hazardous Materials Storage

The fuel stations would be located outdoors, the mine fleet fuel station adjacent to the truck shop would contain two 10,000-gallon diesel fuel storage tanks and the light vehicle station near the administration building would contain one 5,000-gallon gasoline storage tank. These tanks would be within secondary containment that consists of an HDPE liner or a sealed concrete curb that would hold 110 percent of the largest volume tank and have additional capacity to hold a 100-year, 24-hour storm event. The secondary containment would contain leaks and would supply both bulk and independent vehicle dispensing equipment.

Most reagents would be stored in tanks located outside of the process facilities in secondary containment. The secondary containment for the reagent tanks would hold 110 percent of the largest volume tank or tanks in series (i.e., tanks that flow from one to another by gravity) and, if outdoors would include additional capacity to hold a 100-year, 24-hour storm event (NAC 445A.436). The floor of the reagent storage areas would be sealed to prevent spills from entering cracks or permeating the concrete and being released to the environment. Bulk handling systems would be provided for the receipt, storage, mixing and distribution of sodium hydroxide, sodium cyanide, hydrochloric acid, anti-scalant, and activated carbon. **Table 2.2-8** presents the primary reagents that would be used and the volumes that would be stored on site. MMI may elect to substitute reagents with similar chemical compositions for those listed if higher efficiencies could be realized. Additional information regarding solution management and containment is included in the WPCP (Appendix B.2) (MMI, 2016b). The Project is expected to meet the definition of a Small Quantity Hazardous Waste Generator as per 40 CFR 262.34(d), whereby the operations would generate more than 100 kilograms per month but less than 1,000 kilograms per month of hazardous wastes.

Drivers off-loading fuel would be MSHA certified. Appropriate equipment would be located within the secondary containment to facilitate collection of spilled fuels, if necessary. A sump would be located at one end of the secondary containment so that spilled fuels could be pumped from the secondary containment using a portable pump. Collected fuel would be pumped into either drums or tanks, and would be recycled or disposed of off-site in accordance with applicable federal, state, and local regulations. Other smaller quantities of hydrocarbons, fluxes, and reagents (such as borax, sodium nitrate, silica, soda ash, sodium carbonate, and calcium fluoride) would be located at the truck shop, warehouse, and process area. These would be kept indoors in proper storage and secondary containment systems.

Reagents used in the analytical and metallurgical test procedures would be stored at the laboratory in secondary containment and would generally include small quantities of nitric acid, sulfuric acid, hydrochloric acid, hydrofluoric acid, and sodium hydroxide. Fire assay reagents would generally include litharge, borax, carbon, silica, and sodium carbonate. Small quantities of other reagents may be used periodically. Lab sinks would be designated either as an "acid" sink or a "base" sink. These sinks would drain to tanks within secondary containment. The tank contents would be neutralized on a regular basis. The neutralized waste would be disposed of in accordance with applicable federal, state, and local regulatory requirements.

| Chemical   | Container  | Storage                          | Usage                                    |
|--|--|----------------------------------|--|
| Fuels  |  |                                  |  |
| Diesel   | 10,000-gallon  | 2 tanks                          | 1,290,000 gals/yr<br>(or 3,534 gals/day) |
| Gasoline   | 5,000-gallon   | 1 tank                           | 116,000 gals/yr (or<br>318 gals/day)     |
| Maintenance                                      |  |                                  |  |
| Engine oil                                       | 660-gallon bulk tote<br>containers or 55<br>gallon drums | 3 totes                          | 10,000 gals/yr                           |
| Engine coolant                                   | 660-gallon bulk tote<br>containers or 55<br>gallon drums | 2 totes                          | 15,000 gals/yr                           |
| Hydraulic oil                                    | 660-gallon bulk tote<br>containers or 55<br>gallon drums | 2 totes                          | 5,000 gals/yr                            |
| Differential oil                                 | 660-gallon bulk tote<br>containers or 55<br>gallon drums | 1 tote                           | 3,000 gals/yr                            |
| Parts washer solvents                            | Contained in a parts<br>washer                           | 8 drums (4 active, 4<br>reserve) | 1,500 gals/yr                            |
| Crushing   |  |                                  |  |
| Dust Suppressant (surfactant – tackifying agent) | 30-gallon drums  | 2 drums                          | 20 lbs/day                               |
| ADR Plant  |  |                                  |  |
| Sodium Cyanide (NaCN) – Dry                      | Dry tanker truck   | 12 tons                          | 2,500 lbs/day                            |
| NaCN – mix at site to 25%<br>NaCN                | 6,000 gallon-tanker<br>truck load                        | 25,000 gallons                   |  |
| Cement   | 25-ton truck load  | 100-ton silo                     | 60 tons/day                              |
| Calcium Oxide (CaO) – dry<br>pebble at 90% CaO   | 25-ton truck load  | 60-ton silo                      | 4 tons/day                               |
| Anti-Scalant (liquid surfactant)                 | 240 lb carboy  | 2 carboys                        | 30 lbs/day                               |

 Table 2.2-8
 Primary Fuels, Reagents, and Volumes

| Chemical   | Container                                 | Storage              | Usage                   |
|--|---|----------------------|-------------------------|
| Fluxes   |   |                      |                         |
| Borax – Pentahydrate – Dry                                       | 50-lb sacks                               | 20 sacks             | 20 lbs/day              |
| Silica – (SiO <sub>2</sub> ) – Dry                               | 50-lb sacks                               | 10 sacks             | 10 lbs/day              |
| Niter – (NaNO <sub>3</sub> ) – Dry                               | 50-lb sacks                               | 5 sacks              |                         |
| Feldspar – Dry   | 50-lb sacks                               | 5 sacks              |                         |
| Mercury Control  |   |                      |                         |
| Sulfide Impregnated Carbon dry                                   | 50-lb sacks                               | 40 sacks             | 25 lbs/day              |
| Mercury Recovered  |   |                      |                         |
| Mercury (Hg)   | 80 lbs/flask                              |                      | 5 lb/day                |
| Carbon Acid Wash and Neutrali                                    | zation                                    |                      |                         |
| Hydrochloric Acid (HCl) liquid<br>95%                            | 250 gallon totes                          | 2 totes              | 10 lbs/day              |
| Sodium Hydroxide – (NaOH) –<br>Dry - mix at 20% solution         | 250 gallon totes                          | 2 totes              | 5 lb/day                |
| Electrolytes   |   |                      |                         |
| Sodium Hydroxide – (NaOH) –<br>Dry                               | 20-lb sacks                               | 10 sacks             | 15 lbs/day              |
| Total Electrolytes for ADR Plan                                  | t   | 20 sacks             | 20 lbs/day              |
| Assay and Met Lab  |   |                      |                         |
| Sulfuric Acid (H <sub>2</sub> SO <sub>4</sub> ) Reagent<br>Grade | 1 gallon                                  | 6                    |                         |
| Nitric Acid (HNO <sub>3</sub> ) Reagent<br>Grade                 | 1 gallon                                  | 10                   | 1 lb/day                |
| Hydrofluoric Acid (HF) Reagent<br>Grade                          | 1 gallon                                  | 2                    |                         |
| Hydrochloric Acid (HCl)<br>Reagent Grade                         | 1 gallon                                  | 4                    |                         |
| Sodium Cyanide (NaCN)<br>Reagent Grade – Dry                     | 5-lb box                                  | 10                   | 1 lb/day                |
| Buffer Solution Reagent Grade – Dry                              | 5-lb box                                  | 10                   | -                       |
| Lead Nitrate (PbNO <sub>3</sub> ) –Dry                           | 20-lb bag                                 | 1                    |                         |
| Acetylene  | Size 4.5 Industrial<br>Acetylene Cylinder | 3 - Lab<br>15 - Shop | 2 cylinders per<br>week |
| Fluxes   |   |                      |                         |
| Borax Penta – Use Plant<br>Source                                |   |                      |                         |
| Silica – Use Plant Source  |   |                      |                         |
| Lead Oxide – Reagent Grade                                       | 80-lb/pail                                |                      | 2 lbs/day               |
| Methyl Ethyl Ketone  | 5-gallon pail                             | 1 pail               |                         |
| Silver Inquart   | 10 lbs/package                            | 1 package            |                         |

gals/yr = gallons per year gals/day = gallons per day lbs = pounds lb = pound

## 2.2.11 Explosive Materials Storage

Explosive agents would be purchased, transported, stored, and used in accordance with the MSHA, the Bureau of Alcohol, Tobacco, Firearms, and Explosives and the Department of Homeland Security regulations, and other applicable federal, state, or local legal requirements. The primary explosive used would be ANFO. Explosive agents, boosters, and blasting caps would be stored within a secured explosives storage area (**Figure 2.2-1**).

## 2.2.12 Water Supply Pipeline

The Proposed Action would require a water supply pipeline which would extend from two production wells on Roberts Creek Ranch to a 500,000-gallon storage tank, located on the west side of the HLP. A pump located near the ADR would lift water to a second 50,000-gallon water tank located west and above the truck shop. The water pipeline would provide the primary water supply to the Project. The water supply pipeline would be within the Plan boundary. Where portions of the proposed water supply pipeline cross private land, an easement between MMI and the private land owners would be executed.

The estimated peak water usage for the Project during operations is approximately 500 gpm, or up to a maximum of 500 acre-feet per year (AFY). Peak water requirements would occur during the summer, when both water for mine dust suppression and construction are required. The Gold Bar Process Road would provide access to the water pipeline during construction. The proposed pipeline and associated facilities would take approximately one to two months to construct. Brush and debris within the footprint of the trench may need to be removed for construction of the water pipeline.

The water pipeline would be approximately four miles long. The water pipeline would cross approximately 3.8 miles of public land and approximately 1,446 feet of private land. Portions of the water supply pipeline are included in other proposed disturbances, including the proposed disturbance area of North Roberts Creek Road and the mine road. All temporary use areas would be within the project boundary, and no additional areas outside of the project boundary would be needed for staging during construction or maintenance of the water pipeline. The water pipeline would be buried on the shoulder of the roads, where possible. The trench would be 48 inches deep and a minimum of 24 inches wide at the base. The water pipeline would be backfilled to a minimum of four inches of fine aggregate pipe bedding. The trench would be backfilled to a minimum of eight inches above the pipeline with fine aggregate pipe bedding. The remainder of the trench would be backfilled with random fill and compacted. The water pipeline would be constructed of eight-inch inside diameter pipe. The pipe would be a combination of DR-7.5 and DR-9 HDPE. The pipeline would be designed to operate at a maximum of 225 pounds per square inch.

Prior to digging a trench for the pipeline, the top six to 12 inches of growth media would be stripped and placed to one side, while the soil would be excavated from the trench and placed on the other side of the trench. Once the pipe is installed, the trench would be backfilled to the ground surface, and the growth media would then be spread back over the excavation. The pipeline would have grades ranging from one to seven percent. The aggregate required for the pipeline construction would be determined during the final pipeline design and coordinated with the BLM.

# 2.2.13 North Roberts Creek Road

Part of the Proposed Action consists of widening North Roberts Creek Road to a 60-foot total road disturbance footprint. MMI is proposing to improve approximately 2.3 miles of the existing North Roberts Creek Road to 60 feet wide. This road would be used for light vehicle traffic as discussed in Section 2.2.2 and are within the Plan boundary. Where the portions of the proposed North Roberts Creek Road cross private land, an easement between MMI and the private land owners would be executed.

Improvements to the road would meet the requirements of both Eureka County and/or Nevada Department of Transportation (NDOT), and MMI during operations. MMI would enter into a cooperative agreement with Eureka County for maintenance activities on this mine access route. No additional temporary access would be needed during road improvement activities and no temporary use areas would be needed for staging during improvement or maintenance activities. MMI would be responsible for all road improvement activities.

Aggregate road base may be needed for the widening of North Roberts Creek Road. If needed, the road base would be purchased from off-site private sources (Roberts Creek Ranch) or come from the mine site and be transported to the construction site in dump trucks. The amount of road base required to improve the road would be determined during final road design and coordinated with the BLM. Improvement of the existing road would occur after BLM issues the decision for the Plan. It is anticipated that improvements to the existing road would take approximately one month. Vegetation would be cleared within the disturbance area, and soil would be stockpiled along the road for future reclamation use at the mine site, if needed.

## 2.2.14 Atlas Haul Road

Part of the Proposed Action is to use Atlas Haul Road, which includes 6.8 miles of existing gravel road with a total road width of 80 feet. Atlas Haul Road was used between 1986 and early 1994 by the Atlas Corporation to haul ore from the existing open pits within the Project mine boundary to the former Atlas Mill area for processing. Atlas Haul Road would be used for heavy vehicle traffic to the Project. Easements across private land would not be required for Atlas Haul Road since there is a Prior Existing Right because the road existed prior to the patents being granted. The road is documented in the Mineral Surveys for the Patent Application as an existing road and access through the patent cannot be restricted (BLM, 1986b, 1986c, and 1986d).

No new road construction, improvements, or temporary use areas for staging would be required. MMI would be responsible for all maintenance activities on Atlas Haul Road. Aggregate road base may be needed for maintenance of the existing road. If needed, the road base material would be purchased from off-site private sources (Roberts Creek Ranch) or come from the mine site and transported to the construction site in dump trucks. The amount of road base required would be determined during the final road design and coordinated with the BLM. The amount of road base that would be needed to improve the road is currently unknown and would be determined based on road maintenance needs.

# 2.2.15 Exploration

MMI has conducted exploration within the Project mine boundary and is currently responsible for reclamation of the associated disturbances (**Figure 2.2-14**). Exploration activities have consisted of drill roads and pad construction, surface sampling, trenching, bulk sampling, and drilling using both reverse circulation and core drill rigs. Exploration activities have also included geotechnical investigations, geophysical surveys, water exploration, and monitor well installation. Exploration has been conducted under a series of BLM notices in accordance with 43 CFR 3809.300 et seq. A summary of the authorized notices, including acres authorized, is provided in **Table 2.2-9**. Upon approval of the Plan and issuance of a ROD, these notices would be incorporated into the Plan and officially closed. MMI has submitted an amendment to NOI NVN 086229 to conduct an investigation of a clay source for use as a clay liner for the HLP, as shown on **Figure 2.2-14**. This investigation would include eight geotechnical borings and eight shallow trenches that would be entirely within the proposed Cabin Creek pit footprint.

| Serial Number | Geographic Name | Total Acres Authorized |
|---------------|-----------------|------------------------|
| NVN085490     | Target          | 4.47                   |
| NVN086229     | Satellite       | 3.18                   |
| NVN087459     | Pads            | 2.35                   |
| NVN090300     | Неар            | 2.09                   |
| NVN082329     | Hunter          | 3.94                   |
| Total         |                 | 16.03                  |

Table 2.2-9 BLM Notice Summary for the Gold Bar Mine Project Exploration Activities

Source: MMI, 2016a

MMI proposes to include an additional 49 acres of exploration-related surface disturbance, for a total of 65 acres with the existing authorized Notices. Exploration operations would continue through the life of the Project. Proposed exploration disturbance would generally include construction of access roads, drill pads, sumps, trenches, surface sampling, bulk sampling, and staging areas. Exploration methods would include both reverse circulation and core drilling, with minor trenching also planned. Exploration activities may also include water exploration and monitor well installation. Exact locations of the exploration disturbance have not been determined. However, exploration operations would include an additional 65,000 linear feet of drill road (average width of 20 feet) and 300 drill pads (average dimensions of 40 feet by 70 feet). Drill holes would have an average diameter of five inches and a maximum depth of 1,200 feet below ground surface. No more than three exploration drill rigs would be on site at any given time. Drilling would utilize conventional reverse-circulation or core rigs. Placement of drill holes would be guided by reserve requirements, geotechnical studies, geochemical exploration results, and geochemical sampling. The roads and pads would be sited as much as possible to avoid any identified cultural resources. If additional disturbance for exploration activities is necessary, an amendment to the Plan would be prepared and submitted to BLM for review and approval. MMI would provide the

BLM and NDEP with annual documentation of surface disturbance locations for the exploration activities and any completed concurrent reclamation as required by Nevada Revised Statue (NRS) 519A and NAC 519A on or before April 15 of the following year.

## 2.2.16 Work Force and Schedule

Anticipated average staff for the mining operation is shown in **Table 2.2-10**. Blasting would be done by a contractor using a three-man blasting crew. The three-man blasting crew is included in **Table 2.2-10**. The mine is scheduled to operate on two, 10-hour or 12-hour shifts per day, 360 days per year. The mine would require an average of 91 mining staff. This number would vary based on the mining schedule and haulage requirements. The leach facilities would operate 365 days per year and process manpower includes crusher, agglomerator, and conveyor operators, ADR plant workers, and laboratory managers and technicians. A total of 30 staff would support leaching and processing (**Table 2.2-11**). An additional 14 staff would provide general and administrative support to the operations (**Table 2.2-12**). The combined manpower total for the operation would be up to 135 employees, comprised of contractors and MMI staff. All 135 employees would not be on site every shift since the mine would run with two shifts, a morning shift and a night shift, with four rotating crews to provide for seven days per week, 365 days per year coverage. The rotating day and night shift mining and processing crews are made up of four crews of approximately 25 employees each that are scheduled to provide coverage for the 14 shifts per week (day and night) including holidays when the process crew must be on site.

| Description                | Number of Personnel |
|----------------------------|---------------------|
| Mine Superintendent        | 1                   |
| Shift Supervisor           | 4                   |
| Mining Engineer            | 2                   |
| Geologist                  | 2                   |
| Surveyor                   | 2                   |
| Maintenance Supervisor     | 1                   |
| Drilling & Blasting*       | 15                  |
| Loading                    | 8                   |
| Hauling                    | 16                  |
| Roads & WRDAs              | 20                  |
| Mechanics and Electricians | 16                  |
| Maintenance Labor          | 4                   |
| Total Mining Personnel     | 91                  |

## Table 2.2-10Mining Personnel

\*Blasting would be done by a contractor typically using a three man blasting crew.



| Project Area<br>ntent Boundaries | • | Proposed Drill Sites for Clay Borrow Area<br>(Amendment to Notice of Intent NVN-<br>086229) |
|----------------------------------|---|---|
| Permitted                        |   | Permitted Access-   |
| Constructed                      |   | Permitted Access-   |
| Reclaimed                        |   | Permitted Roads   |
|                                  |   | Proposed Drill Roads for Clay Borrow Area<br>(Amendment to Notice of Intent NVN-<br>086229) |
|                                  |   | Existing Roads  |

### Table 2.2-11 Processing Staff

| Unit                       | Number of Personnel |
|----------------------------|---------------------|
| Plant Superintendent       | 1                   |
| Metallurgist               | 1                   |
| Shift Foreman              | 4                   |
| Clerk                      | 1                   |
| Crushing and Agglomeration | 7                   |
| Неар                       | 2                   |
| ADR                        | 7                   |
| Assay Laboratory           | 3                   |
| Maintenance                | 4                   |
| Total Processing Staff     | 30                  |

 Table 2.2-12
 General and Administrative Personnel

| Description           | Number of Personnel |
|-----------------------|---------------------|
| General Manager       | 1                   |
| Accountant            | 1                   |
| Purchasing Agent      | 1                   |
| Environmental Manager | 1                   |
| Safety Manager        | 1                   |
| Technician            | 2                   |
| Clerk                 | 1                   |
| Security Guard        | 5                   |
| Janitor               | 1                   |
| Total G&A Personnel   | 14                  |

## 2.2.17 Equipment

Open pit mining would be carried out by conventional, diesel-powered equipment, a combination of blast-hole drills, rubber-tired wheel loaders, a track-mounted excavator, and off-highway, 100-ton haul trucks and 45-ton articulating trucks. Support equipment comprised of graders, track dozers, and water trucks would aid in the mining of ore and waste rock. A list of primary mining equipment and support mining equipment are provided in **Tables 2.2-13** and **2.2-14**, respectively.

### Table 2.2-13 Primary Mining Equipment

| Description                                  | Estimated Number Required |
|--|---------------------------|
| Blast Drill Rig                              | 3                         |
| Hydraulic Excavator                          | 1                         |
| Wheel Loader (Cat 992K or Equivalent)        | 2                         |
| Haul Truck (Cat 777F or Equivalent)          | 12                        |
| Articulating Trucks (Cat 745C or equivalent) | 2                         |

| Description                                     | Estimated Number Required |
|---|---------------------------|
| Blasting Truck                                  | 1                         |
| Motor Grader (Cat 16M or Equivalent)            | 1                         |
| Bulldozer (Cat D8T, D9T and D10T or Equivalent) | 3                         |
| Water Truck (8,000 gallon)                      | 2                         |
| Fuel/lube Truck                                 | 1                         |
| Mechanics Truck                                 | 1                         |
| Field Tire Truck                                | 1                         |
| Light Plant                                     | 8                         |
| Light Vehicle                                   | 4                         |

Table 2.2-14 Support Mining Equipment

# 2.2.18 Parking Lot

MMI would lease Lot 500 on County Road 101 to use for employee parking. Access to the lot is immediately adjacent to U.S. Highway 50 (**Figure 2.2-15**). Employees would park at this lot, and would take one of the three passenger vans to the Plan area, per shift. It is estimated that 30 employees would be transported for each shift, for a total of 60 employees per day. The lot is approximately 1.4 acres and is located on private land. The lot would not need any additional construction for parking. The lot currently is graded and improved with compacted gravel to manage stormwater flow into the Eureka stormwater collection ditches. Power, water, and sewer connections have been made to the lot. Low voltage lighting in the parking area is planned for employee safety, which would be installed in conformance with Eureka County requirements to ensure no lighting impacts on the neighboring properties.

## 2.2.19 Reclamation

Reclamation of disturbed areas resulting from the Project would be completed in accordance with BLM and NDEP regulations. The purpose of the BLM's regulations set forth in 43 CFR 3809-Surface Management is to prevent UUD of public lands by operations authorized by the current mining laws. Anyone intending to develop mineral resources on public lands must prevent UUD of the land and reclaim disturbed areas. This subpart establishes procedures and standards to ensure that operators and mining claimants meet this responsibility and provide for the maximum possible coordination with appropriate state agencies to avoid duplication and to ensure that operators prevent UUD.

The State of Nevada requires that a reclamation plan be developed for any new mining projects and for expansions of existing operations (NAC 519A). The Reclamation Plan (included in the Plan) details the reclamation measures to be utilized for the Project. The intent of the reclamation plan is to restore areas within the Project to a beneficial post-mining land use, prevent UUD of the environment, and reclaim disturbed areas to ensure visual and functional compatibility with surrounding areas. As noted earlier in Section 2.2.1, nearly one-third of the total Project mine disturbance would consist of areas currently disturbed by previous operators and abandoned.



No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.
All surface disturbance associated with the Project would be subject to reclamation as described in the Reclamation Plan (MMI, 2016a). As determined by the BLM, roads on public lands suitable for public access or which continue to provide public access consistent with pre-mining conditions would not be reclaimed at closure. MMI would continue to use Roberts Creek Road or Three Bars Road, North Roberts Creek Road, and Atlas Haul Road to access the Project area for monitoring and other purposes. Atlas Haul Road would be narrowed at closure to become a utility road approximately 12 feet wide. The pits, reclaimed WRDAs, and HLP would remain as features in the landscape, and the process pond and event pond would be converted to evaporation (E) or evapo-transpiration (ET) cells during closure. These facilities would remain for the passive management of draindown solutions from the heap. Additional details (including the draindown curve) are in the WPCP, Appendix I (MMI, 2016b). The detailed E- or ET-cell design would be presented in a Final Plan for Permanent Closure (FPPC) at least two years prior to the closure of the heap leach facility.

## Post-Mining Land Use

Pre-mining land uses occurring in the Project area include mineral exploration and development, livestock grazing, wildlife and wild horse habitat, and dispersed recreation. The Project area is relatively isolated and undeveloped. There are no recreation facilities within the Project area and vicinity, and in this part of Nevada, developed or designated recreational opportunities are relatively sparse. In the Project area, opportunities for dispersed recreation primarily include off-highway vehicle use, hunting and camping, mountain biking, horseback riding, sightseeing, outdoor photography, nature study, wildlife viewing, bird watching and rock collecting may also occur. Following closure, the Project area would continue to support the multiple land uses of livestock grazing, wildlife and wild horse habitat, and dispersed recreation. MMI would work with the appropriate regulatory agencies and local governments to evaluate alternative land uses that could provide long-term socioeconomic benefits from the mine infrastructure. Post-closure land uses are in conformance with the BLM Shoshone-Eureka RMP (BLM, 1986a) and Eureka County Master Plan and zoning ordinances. The objectives of the reclamation program are as follows:

- Isolation, control, or removal of acid-forming, toxic, or deleterious substances;
- Regrading and reshaping to conform with adjacent landforms, facilitate revegetation, control drainage, and minimize erosion;
- Placement of growth medium and establishment of self-sustained revegetation;
- Removal or stabilization of buildings, structures, or other support facilities;
- Plugging of drill holes;
- Providing for post-mining monitoring, maintenance, or treatment;
- To provide a stable post-mining landform that supports defined land uses;
- To minimize erosion damage and protect water resources through control of water runoff and stabilization of mine components;

- To establish post-reclamation surface soil conditions conducive to the regeneration of a stable plant community through stripping, stockpiling and re-application of growth media;
- To revegetate disturbed areas with a diverse mixture of plant species in order to establish long-term productive plant communities compatible with post-mining land uses; and
- To maintain public safety by stabilizing or limiting access to landforms that could constitute a public hazard.

## **Drill Hole Plugging**

All exploration drill holes and monitoring wells remaining at the close of the Project would be plugged and abandoned in accordance with applicable NAC 534.4365, 534.4369 and 534.4371. Exploration drill holes would be plugged immediately after obtaining all necessary data from the drill hole. A drill hole may be left open for a period of time following the initial drilling if it is anticipated that the hole may be re-entered to drill deeper or to use down-hole geophysical techniques. In the event that a drill hole is left open, a rock or equivalent heavy object would be placed on top of the hole to protect wildlife. Drill holes drilled as part of a monitoring program would be plugged and abandoned following completion of monitoring activities upon approval of the BLM and NDEP.

## **Regrading and Reshaping**

The final regrading plan for the Project is designed to mitigate aesthetic impacts, provide for slope stability, control runoff, and reduce infiltration into mine process facilities. Slopes would be regraded with standard mine mobile equipment (dozers, trucks, loaders, scrapers) to blend with surrounding topography, interrupt straight-line features, and facilitate revegetation where practical. Where feasible, large facilities such as the HLP or WRDAs may be rounded with variable slope angles to mimic nearby topography. Post-reclamation topography is shown on Figure 2.2-16. Additional detail for reshaping the WRDAs to facilitate revegetation is provided in the Conceptual Reclamation/Revegetation Plan for the Gold Bar Project Waste Rock Dumps (Cedar Creek, 2016). The WRDA slopes are broken by terraces to facilitate hydraulic application of seed and mulch, flat and gentle slopes are maximized while minimizing the overall footprint and disturbance to native habitats. The flat terraces provide both an opportunity for additional flat surfaces for optimal revegetation potential and also provide slope breaks to reduce erosion potential. The terraces would be graded slightly back into the slope to harvest available water and serve as a tie in to the existing topography where excess water can be shed. Where possible, the dumps have been designed to tie into adjacent ridges so water can drain effectively off the benches from the dumps (Cedar Creek, 2016).

## Wildlife Habitat Rehabilitation

Wildlife habitat is one of the designated post-mining land uses and the reclamation plan is designed to establish equivalent or better wildlife habitat compared to existing conditions. The seed mix and reclamation techniques proposed would convert the disturbed areas to a sagebrush and grass -dominated habitat. There are no wetlands or riparian zones located within the Project area.



No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.

#### Handling and Application of Growth Media

Growth media that is practicably salvageable would be removed prior to facility construction. Unless used directly for concurrent reclamation, salvaged growth media would be excavated, loaded, and hauled to one of the designated growth media storage locations (**Figure 2.2-1**). Growth media handling operations would be conducted using dozers, front-end loaders, haul trucks, and other equipment. Growth media would be preferentially placed on the tops and interlift benches of the regraded WRDAs with side slopes receiving the balance of available material. Both the top and side-slopes of the regraded HLP would be covered with growth media following regrading. Based on current predictions of available growth media, it is anticipated that approximately 12 inches of growth media would be available for placement on the WRDA surfaces, while approximately three feet of growth media would be available for covering the regraded HLP top and side-slopes. An evaluation of topsoil, alluvium, and geologic materials within the Project boundary has been completed to potentially increase the volumes of growth media available for reclamation (Cedar Creek, 2017a). An estimated growth media balance is provided in **Table 2.2-15** with the Growth Media Salvage Summary provided in **Table 2.2-16**.

Due to the limited growth media resources in the pit areas and WRDAs, alternate sources of material have been identified in the Alternative Growth Media Assessment (Cedar Creek, 2017a). Topsoil, alluvium, and geologic materials within the Project boundary have been evaluated to spatially identify and characterize adequate volumes of topsoil and various alternate growth media for reclamation. Opportunities for growth media salvage are prioritized by the reclamation goals presented in the "Conceptual Reclamation/Revegetation Plans for the Gold Bar Project Waste Rock Dumps" (Cedar Creek, 2016). Material are grouped based on physical and chemical properties that would best accommodate final landform design and post mining land use. As such, Tier 1 materials would comprise of topsoil and alluvium, and target flatter sloped reclamation. Tier 2 materials would target steeper sloped reclamation, comprised of alluviums, weathered waste rock and stockpiled materials, and easily weathered geologic units. These alternate growth media sources include locally sourced geologic materials that can be used to either extend known growth media sources or, with amendments, could be used directly as growth media.

| Feature                     | Facility                 | Acreage<br>(2D) | Туре        | Depth<br>(Feet) | Surface<br>Acres | Volume<br>(ft³) by<br>Type | Total<br>Volume<br>(ft <sup>3</sup> ) |  |
|-----------------------------|--------------------------|-----------------|-------------|-----------------|------------------|----------------------------|---------------------------------------|--|
| Growth Media Demand Summary |                          |                 |             |                 |                  |                            |                                       |  |
| _                           | Cabin Lower              | 13.18           | Tier 1      | 1               | 14.12            | 615,276                    | 1 000 570                             |  |
|                             |                          | 5.92            | Tier 1 or 2 | 1               | 10.87            | 473,296                    | 1,000,372                             |  |
|                             | Cabin Upper<br>Dump East | 3.54            | Tier 1      | 1               | 3.78             | 164,576                    | 427 104                               |  |
|                             |                          | 3.28            | Tier 1 or 2 | 1               | 6.26             | 272,528                    | 437,104                               |  |
| Dumps                       | Cabin Upper<br>Dump West | 0.81            | Tier 1      | 1               | 0.87             | 37,923                     | 09 950                                |  |
|                             |                          | 0.68            | Tier 1 or 2 | 1               | 1.40             | 60,936                     | 90,009                                |  |
|                             | Pick East                | 0.59            | Tier 1      | 1               | 0.66             | 28,644                     | 4 400 500                             |  |
|                             | Тор                      | 15.33           | Tier 1 or 2 | 1               | 32.32            | 1,407,877                  | 1,436,522                             |  |

Table 2.2-15Growth Media Balance

| Feature              | Facility     | Acreage<br>(2D) | Туре        | Depth<br>(Feet) | Surface<br>Acres | Volume<br>(ft <sup>3</sup> ) by<br>Type | Total<br>Volume<br>(ft <sup>3</sup> ) |
|----------------------|--------------|-----------------|-------------|-----------------|------------------|---|---------------------------------------|
|                      | Pick East    | 55.70           | Tier 1      | 1               | 57.71            | 2,513,894                               | 0.004.000                             |
|                      |              | 88.67           | Tier 1 or 2 | 1               | 154.28           | 6,720,489                               | 9,234,383                             |
|                      | Diele luman  | 2.02            | Tier 1      | 1               | 2.11             | 92,011                                  | 070 070                               |
|                      | Ріск Јитр    | 2.26            | Tier 1 or 2 | 1               | 4.24             | 184,862                                 | 276,873                               |
|                      | Dials South  | 5.44            | Tier 1      | 1               | 5.77             | 251,399                                 | 1 202 072                             |
|                      | PICK South   | 14.45           | Tier 1 or 2 | 1               | 23.91            | 1,041,674                               | 1,293,073                             |
|                      | Dick West    | 14.46           | Tier 1      | 1               | 15.64            | 681,168                                 | 1 750 010                             |
|                      | PICK West    | 12.95           | Tier 1 or 2 | 1               | 24.59            | 1,071,144                               | 1,752,512                             |
|                      | Ridge Lower  | 5.84            | Tier 1      | 1               | 6.41             | 279,093                                 | 1 470 145                             |
|                      | Ridge Lower  | 15.98           | Tier 1 or 2 | 1               | 27.34            | 1,191,052                               | 1,470,145                             |
|                      | Didge Lipper | 9.93            | Tier 1      | 1               | 10.36            | 451,229                                 | 1 706 444                             |
| Ridge Opper          |              | 14.76           | Tier 1 or 2 | 1               | 28.82            | 1,255,214                               | 1,700,444                             |
| Dump Subto           | tal          | 295 90          | Tier 1      | 1               | 117.43           | 5,115,215                               | 19 704 299                            |
| Dump Subto           | lai          | 205.00          | Tier 1 or 2 | 1               | 314.03           | 13,679,073                              | 10,794,200                            |
| Leach Pad            |              | 105 79          | Tier 1      | 3               | 133.06           | 5,795,950                               | 18,217,707                            |
| Leach rau            |              | 105.75          | Tier 1 or 2 | 3               | 44.35            | 12,421,757                              |                                       |
|                      | East         | 5.42            | Tier 1      | 1               | 5.85             | 254,833                                 | 1 400 816                             |
| Reclamation          |              | 11.53           | Tier 1 or 2 | 1               | 28.37            | 1,235,983                               | 1,490,010                             |
| Obligation           | West         | 12.42           | Tier 1      | 1               | 13.20            | 575,188                                 | 2 000 454                             |
|                      | West         | 25.37           | Tier 1 or 2 | 1               | 55.68            | 2,425,266                               | 3,000,434                             |
| Reclamation          | Obligation   | 54 74           | Tier 1      | 1               | 19.05            | 830,021                                 | 1 101 271                             |
| Subtotal             |              | 54.74           | Tier 1 or 2 | 1               | 84.05            | 3,661,250                               | 4,431,271                             |
| Road Subtot          | al           | 130 57          | Tier 1      | 1               | 81.42            | 2,307,067                               | 7 092 880                             |
|                      | ш.           | 100.07          | Tier 1 or 2 | 1               | 116.26           | 4,785,813                               | 7,032,000                             |
| Ancillary/Other      |              | 70 01           | Tier 1      | 1               | 58.00            | 2,526,602                               | 3 804 875                             |
| Disturbance Subtotal |              | 70.01           | Tier 1 or 2 | 1               | 29.35            | 1,278,273                               | 0,004,010                             |
| Growth Medi          | a Demand     | 710 80          | Tier 1      | 1               | 408.97           | 16,575,855                              | 52 401 021                            |
| Total                |              | , 10.00         | Tier 1 or 2 | 1               | 588.04           | 35,826,165                              | 52,701,021                            |
| Growth Medi          | a Demand     |                 | Tier 1      | 1               | 490.76           | 19,889,826                              | 62 881 225                            |
| Total (+20% margin)  |              |                 | Tier 1 or 2 | 1               | 705.65           | 42,991,398                              | 02,001,220                            |

Source: Cedar Creek, 2017a

 $ft^3$  = cubic feet <sup>1</sup> Surface acres accounts for slopes of facilities.

| Table 2.2-16 | Growth | Media | Salvage | Summary |
|--------------|--------|-------|---------|---------|
|--------------|--------|-------|---------|---------|

| Туре                       | Acreage (2D) | Acre Feet | Total Volume (ft <sup>3</sup> ) |
|----------------------------|--------------|-----------|---------------------------------|
| Tier 1                     | 396.70       | 1,145.30  | 49,889,457                      |
| Tier 2                     | 84.17        | 346.46    | 15,091,589                      |
| Growth Media Salvage Total | 480.87       | 1,491.76  | 64,981,046                      |

Source: Cedar Creek, 2017a ft<sup>3</sup> = cubic feet

#### Revegetation

The reclamation plan is designed with the goals of stabilizing mine features, revegetating to reduce runoff and erosion, providing forage for wildlife, wild horses, and livestock, controlling invasive weeds, and reducing overall long-term visual impacts. As such, the revegetation plan for the Project is aligned with these goals, as well as the potential post-reclamation land use(s) of livestock grazing, wildlife, greater sage-grouse habitat, and wild horses. Specifically, the revegetation plan is designed to return disturbed areas to conditions that would support a beneficial and ecologically appropriate vegetation community. The primary effort would emphasize re-establishment of the native species within the soil seed bank and revegetation seed mixtures. A high altitude seed mix would be developed with the BLM based on a review and evaluation of existing vegetation and revegetation success at similar elevations and slope aspects Vegetation monitoring is described in the Project area. in the Conceptual Reclamation/Revegetation Plan for the Gold Bar Project Waste Rock Dumps, which proposes that a program of experimentation and monitoring using test plots or concurrent reclamation be instituted to track, evaluate, and modify reclamation metrics given available growth media (Cedar Creek, 2016).

The initial seed mixture and seeding rates are provided in **Table 2.2-17**. Seed mixes would be refined with the BLM and NDEP using the results of the vegetation community monitoring described in the Conceptual Reclamation/Revegetation Plan for the Gold Bar Project Waste Rock Dumps (Cedar Creek, 2016). The application rates listed are for broadcast seeding after regrading and reshaping activities. Where safe to do so, reclaimed areas would be broadcast seeded with a cyclone-type bucket spreader or a mechanical blower. On flat surfaces, which are accessible to heavy equipment, reseeded areas would be mechanically raked or hand-raked where practicable to provide seed cover and enhance germination. Steeper areas where it would be unsafe to use mechanical seeding equipment would be hydroseeded as described in the Conceptual Reclamation/Revegetation Plan for the Gold Bar Project Waste Rock Dumps (Cedar Creek, 2016). Interim reclamation efforts would emphasize erosion control, weed management, and sustaining soil productivity. Interim reclamation would occur on growth media stockpiles and cut-and-fill.

| Plant Code                           | Common Name           | Seeding Rate<br>(Ibs pure live seed per acre) |
|--------------------------------------|-----------------------|---|
| Achillea millefolium                 | Western yarrow        | 0.25  |
| Sphaeralcea coccinea                 | Scarlet globemallow   | 0.25  |
| Artemisia tridentata ssp. tridentata | Basin big sagebrush   | 4   |
| Pseudoroegneria spicata              | Bluebunch wheatgrass  | 3   |
| Achnatherum thurberianum             | Thurber's needlegrass | 3   |

 Table 2.2-17
 Proposed Reclamation Seed Mix

The seed mixture would be certified weed-free. Seeds would be also certified for purity and percent live seed. Mulch or erosion-control fabric would be applied to erosion prone areas, as necessary. The proposed seed mixture and application rates are subject to modification by the BLM. The actual seed mixture, application rates and locations would be determined prior to

seeding based on the results of interim and concurrent reclamation conducted during operations, or BLM recommendations at the time of final reclamation. The seed mix would be locally sourced, when available.

## Isolation, Removal, and/or Control of Acid Forming, Toxic, or Deleterious Materials

Process components would be designed, constructed, operated, and closed in accordance with state regulatory requirements under NAC 445A. The proposed process facilities would be zerodischarge (i.e., no release of process waters to the environment), and the HLP would have engineered liner and leak detection systems in accordance with NAC 445A design criteria. A Waste Rock Management Plan has been prepared and is included in the Plan. This plan describes the methods to manage and monitor waste rock generated during mining at the Project. Hazardous materials would be transported, stored, and used in accordance with federal, state, and local regulations. Relevant employees would be trained in the Plan. MMI would have trained personnel at the site 24 hours a day, seven days a week to manage potential spills of regulated materials.

## Removal or Stabilization of Buildings, Structures, and Support Facilities

During final reclamation, all surface facilities and structures would be removed. Facilities to be removed include runoff and sediment control structures, as well as all buildings and ancillary facilities that would no longer be used after operations cease. Runoff and sediment control structures would remain, as needed, until reclamation of other disturbances is completed. Any facilities or corridors that could serve a beneficial future use on public lands may remain in place following mining, upon approval by the appropriate regulatory agency. However, proposed reclamation includes dismantling and removal of all facilities, including fences.

## Post-Closure Management

Post-closure management would commence on any reclaimed area following completion of the reclamation work for that area. Post-closure management would extend until the reclamation of the site or component has been accepted by both the BLM and NDEP. For sites reclaimed early in the Project schedule, management of the reclaimed sites would occur concurrently with operational site management. Annual reports showing reclamation progress would be submitted to the BLM and NDEP. Post-closure management of long-term draindown from the HLP is discussed under Reclamation of the Heap Leach Facility section below.

## Access Roads

Roads within the Project area would be reclaimed during the closure period unless the agencies request that some or all remain. Roads that are needed for site monitoring and maintenance during the post-closure period would remain until final bond release is attained. MMI would work with the BLM to determine if any road should be left permanently post-closure. Roads to be reclaimed would be deep ripped to reduce compaction. Roads with significant cut or fill would have their side slopes rounded and would be regraded to blend into the surrounding topography. Where roads are constructed on hill slope side-cuts, the edge berm would be pulled back against the inside cut of the road. Where necessary, roads would be regraded to re-establish the existing

drainage patterns. Culverts would be removed and drainage crossings would be reshaped to approximate the original drainage. Riprap or other armoring methods would be used if drainage stabilization is necessary to limit scouring of re-established channels. Regraded road surfaces, berms, cut/fill slopes, and associated disturbance would be reseeded using the seed mix developed from the revegetation monitoring program. The seeding would preferably be carried out in the fall before the winter precipitation. If seeding is not carried out immediately after regrading, then the regraded surfaces would be scarified prior to seeding. Reclamation of in-pit haul roads is not proposed. During the growth media evaluation, it was observed that much of the road fill slope materials were serving as growth media and native vegetation has invaded these slopes. During reclamation, these fill slope materials would be directly revegetated and no additional growth media would need to be placed on the reclaimed road side slope surfaces.

## Reclamation of Waste Rock, Ore, and Other Stockpiles

One of MMI's primary reclamation objectives is to minimize the overall disturbance associated with the Project. Based on this objective, along with the lack of available growth media and the results of the WRDA slope stability study (included as an appendix to the Plan), the WRDA slopes were designed to be constructed, regraded, and reclaimed to be consistent with the surrounding topography with final average regraded slopes ranging from 2H:1V to 3.8:1V as shown on **Figure 2.2-16**. The final surfaces of the WRDAs would be constructed to create natural appearing topography. On sloped terrain, where safe and practicable, some weathered geologic materials may be pushed downhill below the growth media to construct toe berms and prevent rocks from scattering on the hillsides below the toes of the WRDAs. These rock zones are described in the Conceptual Reclamation/Revegetation Plan for the Gold Bar Project Waste Rock Dumps (Cedar Creek, 2016) and would be constructed to provide similar habitat to natural talus areas.

## Closure of the Class III-Waivered Landfill

Because the Class III-Waivered Landfill would exist within the Pick East Upper WRDA, the two facilities would be closed and reclaimed simultaneously (**Figure 2.2-1**). During closure of these facilities, a layer of native cover material compacted to a minimum uniform depth of 24 inches would be placed on the surface of the Class III Waivered Landfill. The cover would be placed on any surface that represents the final grade of the landfill and WRDA, and would be graded to provide proper drainage of surface runoff. A final cover of a minimum of six inches of growth media would be applied to the closed landfill.

## **Reclamation of the Heap Leach Facility**

The HLP would be decommissioned in accordance with NDEP regulations and guidelines for closure. In compliance with NAC 445A.447, a FPPC for the HLP would be prepared and submitted to the NDEP and the BLM two years prior to the anticipated final termination of the HLP operation. It is anticipated that the draindown period would be 12 to 18 months for active water management. E-Cell construction, heap regrading, cover placement, and revegetation activities would take another 12 months following the initial draindown period. Total HLP closure is anticipated to take approximately 7.5 years (including the two years of residual heap leaching), as detailed in the Plan.

Chemical stabilization of the HLP is required to meet the permanent closure requirements. MMI anticipates that the spent heap would be allowed to drain with no fresh water rinsing. Final details of heap neutralization and closure would be developed in the FPPC at least two years prior to Project closure pursuant to the requirements of NAC 445A.446 and NAC 445A.447.

Operational monitoring data for draindown flows and chemistry would be used to confirm modeled flows and form the basis of the FPPC. In the interim, MMI has developed the following conceptual plan for process fluid stabilization:

- Heap construction would occur in two phases, Phase 1A and Phase 1B. During the Phase 1A construction, the process and event ponds have been designed with sufficient storage capacity and surface area to manage draindown flows from the Phase 1A and 1B pad areas and to also facilitate future conversion to an E- or ET-cell. Construction of the event pond with sufficient evaporation area to accommodate predicted long-term draindown flow rates at closure would have the operational advantage of providing increased emergency storage capacity in the event of greater than design precipitation. The detailed ET-cell design would be presented in the FPPC at least two years prior to the closure of the heap leach facility;
- Following cessation of leaching, process solution would be recirculated from the process solution pond and event pond to the HLP to promote evaporation until draindown volume has been reduced sufficiently to allow for conversion to a passive management system;
- The HLP would be regraded;
- Growth media material would be placed on the HLP with the aim of reducing contact of meteoric water with spent ore and limiting infiltration of meteoric waters, thus reducing long-term flow from the HLP to a *de minimus* quantity; and
- The process pond and event pond would be converted to E- or ET-cells to store and remove post-closure heap draindown without release to the environment.

After the HLP solution inventory is sufficiently reduced, the heap would be regraded, compacted, covered with three feet of growth media, and revegetated. MMI has evaluated topsoil, alluvium, and geologic materials within the Project boundary to potentially increase the volumes of topsoil and various alternate growth media available for reclamation (Cedar Creek, 2017a). The heap would be constructed in lifts with benches designed to allow side-slope regrading to 3H:1V slopes without the spent ore being pushed off the containment liner. The heap top surface would be graded with a minimum five percent slope to promote runoff. The regraded top surface would be compacted to reduce permeability and limit stormwater infiltration. Grading would incorporate rounding of the heap corners to blend with natural topography. The side-slopes would be graded to a minimum 3H:1V slope. The regraded heap geometry would approximate the surrounding natural topography and would mitigate visual impacts, provide stability, promote runoff, and reduce infiltration.

Regraded surfaces would be covered with the growth media salvaged from within the HLP footprint during construction of the HLP. Growth media would be stockpiled near the HLP in order

to facilitate reclamation. The material would be evenly distributed with approximately three feet of growth media over the regraded surfaces. The growth media cover would allow for retention of water in the cover material during snow melt and precipitation and support establishment of vegetation. By retaining the water in the soil cover for plant uptake and evapotranspiration, the amount of water infiltrating into the underlying spent ore would be reduced, thus minimizing the draindown solution and seepage from the HLP. The final surface of the HLP cover would be uneven to provide a more suitable environment for plant growth by allowing some water storage on the uneven surfaces and reducing sediment yield.

Piping from the Solution Recovery System around the perimeter of the HLP would be left in place to facilitate conveyance of draindown solutions. Additional perforated piping and gravel would be installed along the regraded HLP perimeter and within the exposed solution collection channels and would connect to the proposed pregnant solution conveyance pipeline. This piping and gravel would be used for long-term draindown management to collect and convey infiltrating meteoric water that passes through the HLP cover to the E- or ET- cell. The perforated piping and gravel would be covered with three feet of growth media and revegetated. Cover and draindown modeling is discussed further in the Technical Memorandum for Cover and Draindown Modeling (SRK, 2015c). Revegetation of the HLP would be carried out following the growth media placement.

## Reclamation of the Process Solution Pond and Event Pond

The process solution pond and event pond would be converted to E- or ET-cells to store and remove (by evaporation) post-closure heap draindown. Prior to being converted to E- or ET-cells, the pond solids would be analyzed through the MWMP. Depending on the test results, the solids would be stabilized in place or removed to the top of the HLP before the cover is placed on the heap. Draindown to the E-or ET-cells from the HLP is discussed further in the Technical Memorandum for Cover and Draindown Modeling (SRK, 2015c).

# Reclamation of Open Pits

MMI would close its open pits in a manner that is protective of the public safety, consistent with NAC 519A.250.5 and Nevada Assembly Bill 346 (State of Nevada, 2013). During operations, the existing south pit at Gold Ridge would be backfilled with the waste from the upper benches of the new Gold Ridge north pit (**Figure 2.2-9**). Additionally, MMI may also backfill portions of the Gold Pick pit and Cabin Creek pits.

Physical barriers (berms) would be constructed of non-acid-generating native soil and rock to restrict access to the remaining pits. These berms would be placed along a 50-foot set-back distance from the final pit perimeters and constructed to a minimum height of four feet with 2H:1V side slopes. Where potential instability of pit walls may compromise the effectiveness of a berm segment, the berm would be located in a stable area with a set-back distance from the edge of the pit that may be greater than 50 feet. The berms would be revegetated to further stabilize berm slopes and minimize erosion. Warning signs would be posted as appropriate around the perimeter of the pits to further discourage human traffic.

The formation of pit lakes at the Project is not anticipated. As such, the closed open pits at the Project would not be subject to the proposed reclamation regulation changes in response to passage of Assembly Bill 346, which would require mining operations to provide for at least one point of public, non-motorized access to the water of a pit lake that would have a predicted filled surface area of more than 200 acres.

In accordance with NAC 519A.250, MMI would request in writing that the NDEP-BMRR grant an exemption to the requirement for reclamation of open pits which are not backfilled during operations, and rock faces which may not be feasible to reclaim. If the NDEP-BMRR determines that reclamation is not feasible for specific open pits and/or rock faces, then the NDEP-BMRR shall exempt these features from the requirement for reclamation as per NAC 519A.010 to 519A.415.

## Measures to Minimize Sediment Loading to Surface Waters

Precipitation and snowmelt would result in runoff from the WRDAs and roads. Surface water management and erosion control measures discussed in Section 2.2.8 would continue to be implemented during construction, operations, and reclamation to control run-on from up-gradient areas to the extent necessary, and control runoff and sedimentation from WRDAs and slopes where such controls may be necessary. BMPs would include, but would not be limited to:

- Erosion and sediment control structures such as diversions (e.g., runoff interceptor trenches, check dams, or swales), siltation or filter berms, filter or silt fences, filter strips, sediment barriers, and/or sediment basins;
- Collection and conveyance structures, such as rock-lined ditches and/or swales;
- Vegetative soil stabilization practices such as seeding, mulching, and/or brush layering and matting;
- Non-vegetative soil stabilization practices such as rock and gravel mulches, jute, and/or synthetic netting;
- Slope stabilization practices such as slope shaping, and the use of retaining structures and riprap; and
- Infiltration systems such as infiltration trenches and/or basins.

MMI would evaluate and customize stormwater and erosion and sediment control measures, as appropriate, based on site-specific conditions encountered during mining and concurrent reclamation.

## Disposition of Structures and Material

Buildings and support facilities would be reclaimed during the closure period. Buildings and support structures necessary for the reclamation of the HLP and processing facilities would remain until these facilities are closed and reclaimed. The main procedures for facility and building

decommissioning, site demolition and equipment, and material salvage are briefly summarized below:

- Mine facilities, conveyors, crushers, offices, shops, and other infrastructure would be demolished (disassembled), removed (salvaged) or hauled to solid or hazardous waste landfills, as appropriate;
- Equipment, tanks, and ponds in contact with process reagents would be properly rinsed. The rinse water would be added to the HLP process circuit for final volume reduction and disposal;
- Following decontamination, demolition, and salvage of facilities, soil and fill materials would be visually inspected for spills and sampled, as necessary, to determine the type and extent of petroleum and/or solvent contamination. If present, and based on the type and extent of petroleum and/or other contamination, remedial plans would be developed in coordination with the BLM and NDEP. Material that cannot be treated in situ (i.e., in its original place) would be excavated to the extent of soil contamination and disposed of in an off-site solid or hazardous waste landfill, as appropriate;
- Concrete foundations would be broken up to allow water drainage and covered with a minimum of three feet of rock fill;
- Pond liners would be cut and folded into the pond prior to regrading;
- Reagents and explosives would be removed for use as product at other operations, or appropriately disposed of;
- Surface pipelines would be removed and salvaged. Culverts and pipelines located more than three feet below the ground surface would have their openings plugged with concrete or other suitable materials and buried in place;
- Materials removed from the site would be recycled, reused, or disposed of in a manner consistent with local, state, and federal regulations;
- Power lines associated with the plant, mine, and well field would be removed once power is no longer needed during closure and reclamation activities; and
- Fences excluding wildlife, wild horses, and livestock that would not be required after operations and would be removed.

#### **Reclamation Schedule**

The estimated time to complete reclamation assumes average precipitation occurs during the years following reseeding. Periods of drought could delay revegetation, while excessive precipitation could increase draindown time for the HLP. With the exception of monitoring, reclamation activities are expected to be completed within approximately six years following cessation of mining and residual leaching on the HLP.

#### Monitoring and Maintenance

During operations, annual qualitative monitoring of key indicators of site stability of concurrently reclaimed areas would be conducted. These key stability indicators may include vegetation,

surface erosion, sedimentation, and slope stability parameters. If specified performance guidelines are not satisfied, then appropriate maintenance activities would be implemented. Following completion of concurrent reclamation activities, and until such time that a final bond release is attained, maintenance activities would occur as necessary to satisfy performance guidelines. Maintenance activities may include one or more of the following:

- Sediment removal from sediment ponds, stormwater drainage channels, and diversions as necessary to maintain their design capacity until no longer required;
- The function of temporary erosion control BMPs such as silt fences and straw bales would be maintained. These BMPs would be removed when no longer essential for erosion control;
- Diverting surface water away from reclaimed areas where erosion jeopardizes attainment of reclamation standards;
- Stabilization of rills, gullies, other erosion features or slope failures that have exposed mine waste;
- Noxious weed control; and
- Reseeding or re-application of reclamation treatments would occur in areas where determined through monitoring and agency consultation that reclamation has not yet met reclamation standards.

Quantitative reclamation monitoring to measure compliance with the revegetation success criteria would begin prior to construction to first establish reference areas and existing vegetation communities and then during the first growing season after concurrent and/or final reclamation has been completed and would continue for a minimum of three years or until the reclamation success criteria are achieved. Qualitative monitoring of key indicators of site stability would continue, and the reclamation performance management guidelines would apply during this time. The bond release criteria, which is described in the Conceptual Reclamation/Revegetation Plan for the Gold Bar Project Waste Rock Dumps (Cedar Creek, 2016), would be applied to the data collected in the third year following reclamation. Data from previous years would be used to determine the management needs. Revegetation success would be determined based on monitoring and through coordination with the BLM.

MMI would submit an annual report on or before April 15 of each year to the BLM and NDEP for the preceding calendar year. The annual report would contain descriptions of the reclamation activities completed during the previous year. The annual report would also include a summary of areas reclaimed and a discussion of the general vegetation performance, surface erosion status, slope stability status, and corrective actions completed and/or proposed. The annual report would also serve as documentation for release of reclaimed acreage that meets the bond release criteria.

### **Post-Closure Monitoring and Maintenance**

The BLM would create a Long-Term Funding Mechanism (LTFM) to assure completion of longterm post-closure monitoring and mitigation obligations (after reclamation and financial guarantee release) of MMI for the Project. The LTFM would be reviewed annually during the operation phase of the Project and potentially increased to meet the monitoring and mitigation needs associated with the Project. There is a potential for additional monitoring and maintenance tasks to be required beyond the 13-year post-closure timeline that is currently not included in the reclamation cost estimate. Financial assurance for these tasks would be provided outside of the reclamation financial guarantee by means of the LTFM. Based on future monitoring and evaluation, additional mitigation measures and funding requirements can be implemented at any time if conditions warrant. MMI would remain financially responsible for any additional mitigation that might be required.

#### Areas Not Subject to Reclamation

Surface features not subject to reclamation include some of the pits and stormwater diversions around the HLP. Additional details (including the draindown curve) are in the WPCP, Appendix I (MMI, 2016b). The process pond and event ponds would be converted to E- or ET-cells and would remain on the landscape as these features. Access roads would remain until reclamation has been released at which time the BLM would determine if access roads are necessary to provide public access consistent with post mining land use. Surface facilities and roads that would remain as post-reclamation features within the Project area are shown on **Figure 2.2-16**. **Table 2.2-18** provides details on the facilities that would remain as post-reclamation features. **Table 2.2-19** provides a comparison of existing and proposed disturbance within the Plan boundary.

| Facilities Not Reclaimed                   | Unreclaimed Disturbance (acres) |
|--|---------------------------------|
| Pits                                       | 139                             |
| Ponds                                      | 3                               |
| Roads <sup>1</sup>                         | 10                              |
| Stormwater Diversion Channels <sup>2</sup> | 2                               |
| Total                                      | 154                             |

 Table 2.2-18
 Facilities Remaining as Post-Reclamation Features

<sup>1</sup> Road would be reclaimed to 12-foot running surface.

<sup>2</sup> Stormwater Diversion Channels would be approximately 12 feet in width, including slopes.

| Table 2.2-19 | Existing and | Proposed | <b>Mining D</b> | isturbance | Comparison |
|--------------|--------------|----------|-----------------|------------|------------|
|--------------|--------------|----------|-----------------|------------|------------|

| Existing<br>Disturbance<br>within the<br>Plan<br>Boundary<br>(Public and<br>Private Acres) | Existing<br>Disturbance<br>within the Plan<br>Boundary<br>Incorporated<br>into the<br>Proposed Mine<br>Disturbance<br>(Public and<br>Private Acres) | Existing<br>Authorized<br>Exploration<br>Operations<br>(Public<br>Acres) | Proposed<br>Disturbance<br>(Public and<br>Private<br>Acres) | Existing<br>Disturbance<br>within the Plan<br>Boundary Not<br>Incorporated<br>into Project<br>Operations<br>(Public and<br>Private Acres) | Additional<br>Existing Non-<br>MMI<br>Disturbance<br>within Plan<br>Boundary to<br>be Reclaimed<br>by MMI (Public<br>and Private<br>Acres) |
|--|---|--|---|---|--|
| 654  | 395   | 16   | 718   | 259   | 25   |

## 2.2.20 Applicant Committed Environmental Protection Measures

MMI would commit to the following EPMs along with those previously identified as part of the Proposed Action to prevent UUD during the life of the Project. These practices, described below, are derived from the general requirements established in the BLM's surface management regulations at 43 CFR 3809 and NDEP-BMRR mining reclamation regulations, as well as other water regulations and BLM guidance documents. These measures are to be considered part of the Plan.

#### General Applicant Committed Environmental Protection Measures

- Speed limits would be posted at 35 miles per hour (mph) on haul roads and 45 mph on access roads.
- Speed limits within the open pits and inside fenced process areas would be based on sitespecific safety requirements and would be set based on factors such as ramp slopes, ramp widths, and curve radius.
- New hire and annual refresher training for all employees and contractors would include wildlife protection training that specifically addresses the commitment of MMI to implement the faunal protection program. MMI would work with NDOW in the development of training materials.
- Site-specific training would also include internal contact numbers for reporting sick or injured animals in the Project area, as well as reporting procedures to the BLM and NDOW for any wildlife and wild horse mortalities. NDOW Industrial Artificial Pond Permit requirements would include reporting by the next business day any mortalities of wildlife species protected under the Migratory Bird Treaty Act, all game animals, game birds, sensitive, threatened or endangered species, and which are associated with chemicalcontaining tanks or impoundments.
- MMI would install an eight-foot-tall, wildlife exclusion perimeter fence around all open waters to prevent access by larger terrestrial wildlife, wild horses, and other ungulates. The minimum standard fence would be eight feet high, the bottom four feet of which would be composed of woven or mesh wire should be no greater than two-inch mesh on the bottom two feet and a maximum of eight-inch mesh on the top. The bottom would be placed tight to the ground level to prevent animals from securing access under the fence. The remainder of the fence above the woven or mesh wire would be smooth or barbed wire with a spacing of 10 inches, 12 inches, 12 inches and 14 inches beginning from the top of the woven or mesh wire. If cyclone or chain-link fence is to be used then the only conditions to be met are the eight-foot height and tight to the ground. These fences would be inspected and maintained to preclude wildlife access.
- Fences in the process area would be continuous, with no breaks, except for gates, that would be kept closed; and smooth or barbed wire would be used above the top horizontal portion of fencing to discourage perching.
- All lined ponds would be constructed with escape ramps consisting of textured liner to assist in a safe footing during egress, should any wildlife manage to gain access and inadvertently fall into one of the ponds.

- Leach lines on the HLP would be managed to preclude surface ponding on the heap surface that could attract avian or terrestrial resources to potentially toxic leach solutions.
- Hazardous material storage would include secondary containment to preclude contamination of surface or groundwater resources that animals could access.
- Drill pad siting would provide for topography to help shield noise within the "maximum footprint area" for a given site.
- MMI would consider obtaining a Raven Depredation Permit from United States Fish and Wildlife Service (USFWS) or submit for coverage under an NDOW permit.
- During all phases of the Project, all food, waste, and other trash would be placed in closed containers.
- MMI would prohibit employees, contractors, and sub-contractors from feeding wildlife or wild horses, or making food available for scavenging wildlife.

#### Air Quality

- A fugitive dust control program would provide for water application on haul roads and other disturbed areas; chemical dust suppressant application (such as Lignin sulfate or magnesium chloride) where appropriate; and other dust control measures.
- Disturbed areas would be seeded with an interim seed mix to minimize fugitive dust emissions from unvegetated surfaces where appropriate.
- Dust generated from the use of roads and excavation activities would be minimized to the
  extent reasonable and practicable by using BMPs such as minimizing vehicular traffic, and
  using prudent vehicle speeds. Fugitive emissions in the process area would be controlled
  at the crusher, and conveyor drop points through the use of bag houses and/or water
  sprays, where necessary. Other process areas requiring dust and/or emission controls
  would include the cement/lime silos, ADR Plant, the various ancillary screening and sizing
  processes, agglomerator, refinery, generators, and the laboratory. Appropriate emission
  control equipment would be installed and operated in accordance with an NDEP-issued
  Air Quality Operating Permit.
- Equipment and machinery would be maintained in good working condition to minimize emissions.

#### Water Resources

- Process components would be designed, constructed, and operated in accordance with NDEP regulations and include engineered liner systems.
- The proposed process facilities would be zero-discharge, and the heap leach ponds would have an engineered liner and leak detection systems in accordance with NAC 445A design criteria.
- MMI would follow the Waste Rock Management Plan that documents the procedures for the handling and management of Designated Waste to minimize potential oxidation and solute generation along with monitoring and reporting procedures.

- MMI would implement the Water Management Plan in compliance with 43 CFR 3809.401(b)(2)(iii) (included in the Plan). This plan identifies more specific control measures and monitoring requirements. MMI would sample groundwater on a quarterly basis from three monitoring wells located within the perimeter of the site's process facilities. Groundwater sampling would be conducted using NDEP and EPA approved sampling methodologies. Water purged from the well during sampling would be managed at the well head. All groundwater purged from wells within the process area would be managed within the process area.
- All artificial or man-made bodies of water that contain any chemical in solution at levels lethal to wildlife (e.g., barren and pregnant solution ponds) would be covered or contained in a manner that would prevent access by birds and bats. All covers or containers would be maintained in a manner that would continue to preclude access by wildlife for as long as the pond or container can hold water. Any chemical-laden fluids that are the result of any process and that are impounded in a pond that is too large to cover or contain (e.g., mill tailings ponds) would be rendered non-lethal to wildlife. The chemical concentration would be measured at a non-lethal level at the point where the fluid flows from a pipe into the pond or open conveyance system. Chemical neutralization and dilution are among methods that could be used to reduce chemical concentration.

#### **Erosion and Sediment Control**

BMPs would be used to limit erosion and reduce sediment in precipitation runoff from Project facilities and disturbed areas during construction, operations, and initial stages of reclamation.

Because there are no waters of the U.S. (WOUS) in or around the Project area (JBR, 2012a), MMI would not be specifically required to manage stormwater discharges in accordance with provisions set forth in the NDEP Stormwater General Permit NVR300000, nor would MMI be required to submit a Stormwater Pollution Prevention Plan to the NDEP. However, MMI would adhere to the policies and guidelines set forth in NVR300000 to ensure that appropriate stormwater BMPs are employed at the Project site. As per NVR300000, BMPs for the Project would include "erosion and sediment controls, conveyance, stormwater diversions, and treatment structures, and any procedure or faculty used to minimize the exposure of pollutants to stormwater or to remove pollutants from stormwater." Specific BMPs would include, but would not be limited to:

- Erosion and sediment control structures such as diversions (e.g., runoff interceptor trenches, check dams, or swales), siltation or filter berms, filter or silt fences, filter strips, sediment barriers, and/or sediment basins.
- Collection and conveyance structures, such as rock-lined ditches and/or swales.
- Vegetative soil stabilization practices such as seeding, mulching, and/or brush layering and matting.
- Non-vegetative soil stabilization practices such as rock and gravel mulches, jute, and/or synthetic netting.
- Slope stabilization practices such as slope shaping, and the use of retaining structures and riprap.
- Infiltration systems such as infiltration trenches and/or basins.

Following construction activities, areas such as cut and fill slopes and embankments and growth media/cover stockpiles would be seeded as soon as practicable and safe. Concurrent reclamation would be maximized to the extent practicable to accelerate revegetation of disturbed areas. All sediment and erosion control measures would be inspected, and maintenance/repairs performed, as needed.

## **Migratory Birds and Raptors**

- To comply with the Migratory Bird Treaty Act (MBTA), no new surface disturbance would occur during the migratory bird breeding season (March 1 through July 31 for raptors, and April 1 through July 31 for other avian species). If surface disturbing activities are unavoidable during the migratory bird breeding season, a nest survey would be conducted by a BLM-approved, qualified avian biologist prior to any surface disturbing activities in order to avoid potential impacts to breeding migratory birds. Pre-disturbance surveys for migratory birds are only valid for 14 days. If the disturbance for the specific location does not occur within 14 days of the survey, another survey would be conducted. If active nests or burrows are located around the Project area, or if other evidence of nesting (i.e., mated pairs, territorial defense, carrying nest material, transporting food) is observed, a protective buffer (the size depending on the habitat requirements of the species) would be delineated and the buffer area avoided to prevent destruction or disturbance to nests or birds until they are no longer actively breeding or rearing young. The site characteristics to be used to determine the size of the buffer area are: 1) topographic screening; 2) distance from disturbance to nest; 3) the size and quality of foraging habitat surrounding the nest; 4) sensitivity of the species to nest disturbances; and 5) the protection status of the species.
- Annual raptor surveys would be conducted for the Plan boundary and a two-mile buffer. The survey would be performed in accordance with the USFWS Interim Golden Eagle Technical Guidance: Inventory and Monitoring Protocols; and Other Recommendations in Support of Golden Eagle Management and Permit Issuance (Pagel et al., 2010). This guidance states that a project should be surveyed at least twice for nesting raptors during the breeding season and that surveys should be conducted at least 30 days apart. If nesting building activities or behavior or nesting raptors are identified, MMI would coordinate with the BLM biologist on appropriate avoidance distances, as determined by the species identified. The avoidance areas would be in place until a qualified biologist has determined the young have fledged.

#### **Greater Sage-Grouse**

- Flight diverters would be installed on any fencing within 3.1 miles of a lek using the Natural Resources Conservation Service (NRCS) Fence Collision Risk Tool, or other appropriate analysis to determine best locations for diverters.
- Generators would include enhanced generator silencing packages which includes high ambient and sound-attenuated enclosures, use of noise absorbent materials, and an internal exhaust silencer system.
- Berms would be constructed along the haul roads in conformance with MSHA requirements that would also assist in the attenuation of noise along the haul roads.
- A blasting plan has been developed and included in the Plan to specifically limit blasting during atmospheric conditions (inversions) that could propagate blasting noise beyond the mine area.

- A Noxious Weed Plan has been developed and included in the Plan to prescribe methods to prevent and control the spread of noxious weeds during and following construction of the Gold Bar Mine Project.
- A reclamation/revegetation plan has been developed and included in the Plan for the Project high elevation waste rock dumps to specifically address the unique challenges resulting from the edaphic, geologic, and physiographic conditions of the area. The revegetation plan is specifically focused on the development of sage grouse habitat in areas that were either previously disturbed and unreclaimed or woodland dominated.
- New hire and annual refresher training for all employees and contractors would include greater sage-grouse specific protection training that specifically addresses the commitment of MMI to implement the protection program and the need for all employees to avoid harassment and disturbance of greater sage-grouse, especially during the breeding season. MMI would work with NDOW in the development of training materials.
- Any overhead power lines within four miles of active and pending active leks would be constructed with anti-perching devices, where applicable. Actions would be completed in consideration of the latest Avian Power Line Interaction Committee guidelines with assistance of BLM and NDOW for the appropriate predatory bird anti-perching devices.
- Hazardous material storage would include secondary containment to prevent contamination of surface water or groundwater resources that animals could access.
- Travel timing restrictions would be implemented during lekking season (March 1 May 15) on Three Bars Road and Roberts Creek Road, from 6:00 AM to 10:00 AM and from 6:00 PM to 4:30 AM. Emergency and local traffic would be exempt from these restrictions.
- Access road work, road maintenance-related work, gravel pit work conducted by MMI within four miles of an active or pending lek are subject to timing restrictions during lekking season (March 1 May 15) from 6:00 AM to 10:00 AM and from 6:00 PM to 4:30 AM.
- MMI would conduct lek attendance monitoring, following NDOW monitoring protocols, for all leks within a two-mile distance of Three Bars and Roberts Creek access roads. Specific triggers would be developed with the BLM and NDOW tied to declining numbers that cannot be accounted for by normal variation and action items to further prevent impacts to sage-grouse populations. Leks found to be unoccupied after three successive years of monitoring would be proposed to the BLM and NDOW to be designated as inactive, and monitoring of those leks would be suspended. If no adverse impact to active leks is demonstrated after five years of monitoring, MMI would be able to request suspension of all lek monitoring.

#### **Burrowing Owls**

 If surface disturbance is to occur during the raptor nesting season, burrowing owl preconstruction surveys would be conducted prior to ground disturbing activities. If occupied burrows are encountered, an avoidance buffer would be placed around the burrow to avoid adverse impacts. MMI would coordinate with the BLM to determine the appropriate avoidance buffer and the appropriate additional measures if removal of the burrow is necessary.

#### Pygmy Rabbits

 Pygmy rabbit pre-construction surveys would be conducted prior to ground disturbing activities. If occupied burrows/colonies are encountered, consultation with the BLM to determine the appropriate avoidance buffer. If removal of the burrow/colony is required, other measures would take place, MMI would coordinate with the BLM to determine the appropriate measures.

#### General Wildlife

• Established mule deer trails would be identified by a BLM qualified biologists, and warning signs would be posted at appropriate locations along the haul roads to warn drivers of crossing points.

#### Wild Horses

- New hire and annual refresher training for all employees and contractors would include wild horse protection training that specifically addresses the commitment of MMI to implement the protection program. MMI would work with BLM in the development of training materials.
- Site-specific training for the mining and processing areas would include the protection measures specifically developed for each work area that would also include internal contact numbers for reporting wild horse sightings in the Project area as well as reporting procedures to BLM for wild horse mortalities or injuries, should they occur.
- Established wild horse trails would be identified by a BLM-qualified specialist or biologist, and warning signs would be posted at appropriate locations along haul roads, pit, and waste rock dump access roads to warn drivers of crossing points and the potential presence of horses.
- Reflectors specifically designed to reduce wild horse collisions would be placed along haul roads and access roads where necessary. Reflectors would be mounted on posts near the side of the road; when a car passes, light from the headlights would be directed at right-angles and would be seen by the horses as a series of sequential flashing lights, thus startling the horses and causing them to wait until the vehicle passes. Similarly, reflectors may also be placed along the perimeter of active mine areas as necessary to deter access by horses.
- Berms, fencing or other physical barriers would be placed to limit or deter wild horse access to haul roads and open pits in areas of high risk.
- Berms constructed along haul roads would include openings at major trails to encourage road crossing at these locations where signage can warn drivers. Berms would be constructed per MSHA regulations.
- The BLM MLFO Wild Horse Specialist (775-635-4000) would be contacted if any wild horses are observed to be lame or sick, or if foals appear to be orphaned, if any vehicle/wild horse collisions occur, or if dead animals are discovered/observed.
- Wild horse movement through the Project area, when observed by MMI and other site personnel, would be recorded by the Environmental Manager for use in the refinement of engineering and management protection measures during operations.

## Livestock

- New hire and annual refresher training for all employees and contractors would include livestock protection training that specifically addresses the commitment of MMI to implement the protection program.
- Site-specific training would also include internal contact numbers for reporting sick or injured animals in the Project area as well as reporting procedures to the local rancher and/or Eureka County Sheriff's office.
- Any siting of livestock in the active mine area would be reported internally, and a notification of the local ranch to move the livestock from the active mine areas would be made.
- Established livestock crossing locations would be identified by a BLM-qualified specialist
  or biologist, and warning signs would be posted at appropriate locations along haul roads,
  pit, and waste rock dump access roads to warn drivers of crossing points and the potential
  presence of livestock.

#### **Cultural Resources**

When possible, MMI would practice avoidance of eligible cultural resources or unevaluated cultural resources. If avoidance is not possible, or is not adequate to prevent adverse effects, MMI would undertake prescribed data recovery from such sites. Development of a Historic Properties Treatment Plan (HPTP), data recovery, archeological documentation, and report preparation would be based on the Secretary of the Interior's "Standards and Guidelines for Archeology and Historic Preservation," 48 CFR 44716 (September 29, 1983), as amended or replaced. If an unevaluated site could not be avoided, additional information would be gathered and the site would be evaluated. If the site does not meet eligibility criteria, as defined by the Nevada State Historic Preservation Office, no further cultural work would be performed. If a site meets eligibility criteria, a data recovery plan or appropriate mitigation would be completed.

If previously unidentified cultural resources are discovered or an unanticipated impact situation occurs, all project-related activities within 100 meters (or approximately 328 feet) of the discovery/impact would cease immediately and MMI would secure the location to prevent vandalism or other damage, and would notify the BLM Authorized Officer immediately. Activity at the location would be suspended until after the discovery has been evaluated, any necessary EPMs are completed and the BLM Authorized Officer has issued a written Notice to Proceed.

## Paleontological Resources

Paleontological resources constitute a fragile and non-renewable scientific record of the history of life on earth. Although no paleontological resources are known or identified in the immediate area, this Project may have an unintended adverse effect on such resources. MMI notes that fossils are not part of the mineral estate. Paleontological resources are protected by the Paleontological Resources Protection Act (OPLA-PRP: Omnibus Public Land Management Act of 2009 Paleontological Resources Preservation Subtitle 123 Stat. 1172, 16 U.S.C. 470aaa et seq.) which establishes criminal and civil penalties. MMI is aware that if paleontological resources are subject to

Archaeological Resource Protection Act (ARPA: 43 CFR 7.4, 7.14, 7.15, 7.16) provisions. The Paleontological Resources Protection Act requires that the nature and location of paleontological resources on public lands be kept confidential. If paleontological resources are discovered, MMI would cease operations in the vicinity of the discovery and ensure adequate protection to the discovery, then notify the BLM immediately, by telephone, with written confirmation to follow. Notification should be made to Authorized Officer, MLFO, 50 Bastian Road, Battle Mountain, NV, 89820, (775–635–4000). No activity in the vicinity of the discovery would resume until MMI has been issued a Notice to Proceed by the BLM Authorized Officer.

If vertebrate fossils are encountered during any phase and any area of the Plan, work would immediately stop within 50 feet of the locality and the BLM would be immediately notified. Work would not resume until a Notice to Proceed is issued by the BLM Authorized Officer.

If MMI submits an amended Plan that proposes to disturb the un-inventoried area which contains the Devils Gate geological formation (which is known to host invertebrate fossils), a paleontological inventory would be conducted by a qualified individual and the report provided to MMI and the BLM for review.

## Public Safety and Accessibility

Public safety would be maintained throughout the life of the Project and all equipment and facilities would be maintained in a safe and orderly manner. To protect public safety, all activities would be conducted in conformance with applicable federal and state health and safety requirements.

## Visual Resources

To protect visual resources, MMI would apply the following measures throughout the life of the Project:

- Light fixtures would be placed at the lowest practical height and would be directed to the ground and/or work areas to avoid being cast skyward or over long distances.
- Light fixtures would incorporate shields and/or louvers, where possible, and be full cut-off type.
- Buildings would be painted or stained to produce flat-toned, non-reflective surfaces using the BLM color chart for color selection.
- The use of dimmers, timers, and motion sensors would be installed where appropriate.
- Fugitive dust would be minimized in order to reduce "sky glow," by reducing the light reflectance from the dust particles.

## Protection of Survey Monuments

To the extent practicable, MMI would protect all survey monuments, witness corners, reference monuments, bearing trees, and line trees against UUD or damage. If, in the course of operations, any monuments, corners, or accessories are destroyed, MMI would immediately report the matter to the Authorized Officer. Prior to destruction or damage during surface disturbing activities, MMI

would contact the BLM to develop a plan for any necessary restoration or re-establishment activity of the affected monument.

## Human Health and Safety

Within the mine and process areas, vehicular traffic and human activities would comply with all applicable MSHA requirements and BMPs.

## **Fire Protection**

As specified by MSHA, MMI would institute a fire protection training program and would have a rehearsed fire suppression plan. A fire protection system would be installed that would incorporate Eureka County and State of Nevada code requirements in the administration and warehouse complexes, truck shop, crushing plant, and process plant. A 250,000-gallon fresh water/fire water tank would be located above the ADR plant, on the south side of the HLP to provide adequate water pressure for the operations and fire suppression system. A rangeland fuel break would be constructed around the facilities. Water trucks, used for dust suppression, would be available in the event of a fire. MMI would promptly comply with any emergency directives and requirements of Eureka County and the BLM pertaining to industrial operations during the fire season.

Light vehicles traveling outside of the main mining areas and along roads that traverse vegetated rangeland during fire season would carry a small water supply in order to control sparks that may be generated by exhaust. Vehicle catalytic converters would be inspected often and cleaned of all brush and grass debris.

When conducting welding operations, they would be conducted in an area free of or mostly free of vegetation. A minimum of 10 gallons of water and a shovel would be on hand to extinguish any fires created from the sparks. Extra personnel would be at the welding site to watch for fires created by welding sparks.

## Invasive, Non-native Species

MMI recognizes the economic and environmental impact that may result from the establishment of noxious weeds and has committed to a proactive approach to weed control. The following weed control measures would be implemented.

- A noxious weed survey would be completed prior to any earth moving disturbance. Areas of concern for noxious weeds would be flagged by a weed specialist or qualified biologist to alert all personnel to avoid those areas, as practicable.
- Information and training regarding noxious weeds management and identification would be provided to all personnel affiliated with the implementation and maintenance of the Project.
- The Adaptive Noxious Weed Plan for the Project (included in the Plan) would be implemented during construction and operations. The plan contains a risk assessment, management strategies, provisions for annual monitoring and treatment evaluation, and provisions for treatment. The results from annual monitoring would be the basis for updating the plan and developing annual treatment programs.

- All vehicle and heavy equipment that may have been exposed to noxious weeds would be cleaned with a power or high-pressure washer prior to entering or leaving the Project mine boundary. Vehicle cleaning would minimize the transport of vehicle-borne weed seed, roots, or rhizomes.
- To minimize the transport of soil-borne noxious weed seeds, roots or rhizomes infested soils or material would be stockpiled adjacent to the areas from which they were stripped. Appropriate measures would be taken to avoid wind or water erosion of the affected stockpile.
- All interim and final seed mixes, hay, and straw products would be certified weed-free.
- Weed monitoring would be conducted for the life of the operation or until the site is released and the reclamation financial surety is released. If the spread of noxious weeds is noted, weed control procedures would be determined in consultation with BLM personnel and would be in compliance with BLM handbooks and applicable laws and regulations.
- Mixing of herbicides and rinsing of herbicide containers and spray equipment would be conducted only in areas that are a safe distance from environmentally sensitive areas and points of entry to bodies of water (storm drains, irrigation ditches, streams, lakes, or wells).

## Solid and Hazardous Waste Management

Employee training would be implemented to include appropriate disposal practices such as the allowable wastes that can be disposed of in the on-site landfill, management of used filters, oily rags, fluorescent light bulbs, aerosol cans, and other regulated substances. MMI would maintain the disposal site and leave it in a clean and safe condition. MMI would not allow burning at the site without prior approval. Used solvent, liquids drained from aerosol cans, accumulations of mercury lights and used antifreeze would be handled pursuant to the Resource Conservation and Recovery Act (RCRA).

MMI would take measures to isolate, control, and properly dispose of toxic and hazardous materials, and not drain oil or lubricants onto the ground surface. Hazardous materials would be stored in separate containers to prevent mixing, drainage, or accidents. Petroleum products such as gasoline, diesel fuel, and lubricants would be stored in approved containers.

Fuel and oil for diesel and gas powered equipment would be stored in above-ground, sealed tanks generally in the processing facilities area. The tanks would be installed in lined secondary containments designed to hold 110 percent of the contents of the largest vessel in case of rupture. Surface piping would lead from each tank to the fuel dispensing area. The refueling hoses would be equipped with overflow prevention devices and secondary containment. Hazardous wastes would be managed in a designated storage area prior to their shipment to an off-site licensed disposal facility (per federal, state, and local RCRA regulations).

Regarding spills, MMI would ensure that spills under 25 gallons are immediately cleaned up, and spills over 25 gallons are cleaned up as soon as possible and reported to the BLM and NDEP. Spills would be cleaned up in accordance with NDEP guidelines.

Potential reagent spills would be controlled with secondary containment in the reagent mixing and storage areas. The ADR building would have a sealed concrete secondary containment foundation. A floor sump pump would be used to return any spilled material either to the appropriate storage tank or into the leach circuit, as appropriate. Safety Data Sheets (SDS) for the reagents would be readily available, in accordance with MSHA's Hazard Communication for the Mining Industry (30 CFR 47).

## Soil Erosion

- The surfaces of the growth media stockpiles would be shaped after construction with overall slopes of 3H:1V to reduce erosion.
- To further minimize wind and water erosion, the growth media stockpiles would be seeded after shaping with an interim seed mix developed in conjunction with the BLM.
- Diversion channels and/or berms would be constructed around the growth media stockpiles, as needed, to prevent erosion from overland runoff.
- BMPs such as straw wattles or staked straw bales would be used as necessary to contain sediment liberated from direct precipitation.

# 2.3 Alternatives to the Proposed Action

The need for a wide, objective review of potential alternatives stems from 40 CFR 1500.2(e), which states that the NEPA process must, "identify and asses the reasonable alternatives to proposed actions that would avoid or minimize adverse effects of these actions upon the quality of the human environment," and also as directed under 40 CFR 1501.2(c) which states that agencies need to, "study, develop, and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved resource conflicts concerning alternative uses of available resources...".

The alternatives proposed for detailed analysis in this EIS meet the following criteria of a "reasonable alternative".

- Consistent with the Purpose and Need and is needed to address one or more issues;
- Technically and economically practical and feasible using common sense; and
- Environmentally reasonable, i.e., would not be obviously environmentally inferior to other action alternatives.

Based on the criteria for reasonable alternatives, through internal scoping discussions, and the input from public scoping comments, four alternatives to the Proposed Action were identified for evaluation in this EIS. The four alternatives discussed further in this EIS include the following: 1) No Action Alternative; 2) 25 kilovolt (kV) Overhead Distribution Line Alternative; 3) Three Bars Road/Atlas Haul Road as Only Access; and 4) Mount Hope and North Roberts Creek Road for Light Vehicle Traffic Alternative. Alternatives considered but eliminated from detailed analysis with the reason for their elimination, are described in Section 2.4. All the alternatives considered are summarized in **Table 2.3-1**.

| Alternative   | Consistent with<br>Purpose and Need | Technically Practical<br>and Feasible | Economically<br>Practical and Feasible | Environmentally<br>Reasonable | Carry Through for Full<br>Analysis in the EIS |  |  |  |
|---|-------------------------------------|---------------------------------------|--|-------------------------------|---|--|--|--|
| No Action Alternative   | N/A <sup>1</sup>                    | Yes                                   | Yes                                    | Yes                           | Yes   |  |  |  |
| Proposed Action   | Yes                                 | Yes                                   | Yes                                    | Yes                           | Yes   |  |  |  |
| Power Supply Alternat   | Power Supply Alternatives           |                                       |  |                               |   |  |  |  |
| 25 kV Overhead<br>Distribution Line   | Yes                                 | Yes                                   | Yes                                    | Yes <sup>2</sup>              | Yes   |  |  |  |
| Diamond Valley<br>Substation  | Yes                                 | Yes                                   | Yes                                    | No                            | No  |  |  |  |
| Diamond Valley West<br>Substation   | Yes                                 | Yes                                   | Yes                                    | No                            | No  |  |  |  |
| Access Alternatives   |                                     |                                       |  |                               |   |  |  |  |
| Roberts Creek Road<br>as Only Access  | Yes                                 | Yes                                   | No                                     | No                            | No  |  |  |  |
| Three Bars Road/Atlas<br>Haul Road as Only<br>Access                              | Yes                                 | Yes                                   | Yes                                    | Yes                           | Yes   |  |  |  |
| Mount Hope and North<br>Roberts Creek for<br>Light Vehicle Traffic<br>Alternative | Yes                                 | Yes                                   | Yes                                    | Yes                           | Yes   |  |  |  |
| Mine Features Facilities Alternatives   |                                     |                                       |  |                               |   |  |  |  |
| Pick South Upper and Lower WRDAs  | Yes                                 | No                                    | Yes                                    | No                            | No  |  |  |  |
| Additional Process<br>Pond  | Yes                                 | No                                    | Yes                                    | No                            | No  |  |  |  |

#### Table 2.3-1 Alternatives Considered and Screening Criteria

<sup>1</sup> The No Action Alternative is required to be evaluated by CEQ regulations (40 CFR 1502.14(d)). <sup>2</sup> This alternative is environmentally reasonable compared to the other transmission line alignments that were dismissed from full analysis. The EIS analysis would fully evaluate whether this alternative is environmentally reasonable.

## 2.3.1 No Action Alternative

Under the No Action Alternative, the MMI Plan would not be authorized by BLM and the activities described in the Proposed Action would not occur. Mineral resources would remain undeveloped and the construction and operation of the proposed mining and mineral beneficiation facilities would not occur. The 654 acres of existing disturbance from past operations within the Project mine boundary would remain unreclaimed. The reclamation plan associated with the Proposed Action would not be implemented, and no revegetation or recontouring of existing disturbances to match the natural topography would occur. MMI may continue exploration efforts that are already approved.

BLM's lack of approval of the Plan would not directly affect further mineral development on private land and private mineral rights. However, due to the nature of the area and the locations of public lands, development of the private mineral rights would not be feasible without the use of public lands.

Selection of the No Action Alternative would not preclude a future filing of a different Plan of Operations by MMI or any other authorized mineral rights holder to mine these minerals. Any future plans of operations would need to be reviewed by the BLM and addressed in an environmental review (NEPA).

# 2.3.2 25 kV Overhead Distribution Line Alternative

A 25 kV power distribution line was considered as an alternative means to supply power to the Project, as opposed to the on-site LNG/CNG generators proposed in the Plan (Figure 2.2-17). The proposed distribution line would consist of the construction and operation of approximately 24.5 miles of new 25 kV overhead distribution line to supply the needed power for Project operations. The power would be supplied by Mt. Wheeler Power, Inc. (Mt. Wheeler) to whom the necessary BLM right-of-way (ROW) would be granted. The proposed power distribution line would take power delivery at the existing Machacek Substation located 0.2 mile east of U.S. Highway 50 near the town of Eureka, Nevada. The new overhead distribution line would extend from the existing Machacek Substation located on BLM managed lands west, then north adjacent to the existing Falcon-Gonder 345 kV transmission line to the existing Atlas 25 kV overhead distribution line. At this intersection, the proposed new 25 kV overhead distribution line would tap the existing Atlas 25 kV overhead line. From there, the existing line would be utilized for approximately 4.75 miles west to a tap point on North Roberts Creek Road. At this location, a new segment of 25 kV overhead distribution line would extend northwest along North Roberts Creek Road approximately 7.5 miles to the mine site. For the purposes of this EIS, the power distribution line would be a total of approximately 30 miles in length, with five miles of existing power distribution line (Atlas 25 kV line) and approximately 25 miles (approximately 24 miles on public land administered by the BLM and approximately one mile on private land) of new power distribution line. The new overhead distribution line would require minimal facility upgrades at the Machacek Substation, and no additional surface disturbance would be required there. The proposed power distribution line would take approximately six months to construct, and would require an 80-foot wide temporary construction ROW, and a 40-foot wide permanent operation and maintenance ROW.



No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.

Access to the power distribution line corridor would be through existing roads along the corridor and through existing roads by the Machacek Substation. A centerline access road is proposed in the permanent ROW to provide access during construction and maintenance. Proposed disturbance associated with the power distribution line and access road would occur within the 40-foot permanent ROW and would avoid any impacts to sensitive resources. The typical width for temporary disturbance for new access roads would be 15 feet, and would require 1.82 acres of disturbance per mile of new access road. In areas of steep terrain, the centerline of the road would be staked, and the road built so that there would be approximately 12 feet of travel-way with two to three feet of berm generally on the outer side. Access roads remaining for permanent operation and maintenance of the line would be 10 feet in width, and would require approximately 1.21 acres of disturbance per mile of new access road. Since it is not practical to determine exact pole locations before final design of the distribution line, throughout this EIS it is assumed the entire ROW would be disturbed. This is a conservative estimate of disturbance acreages associated with the distribution line, but would provide a conservative scenario for impacts to resources. Both the 80-foot temporary construction ROW and the 40-foot permanent operation and maintenance ROW include a cultural avoidance area. The 80-foot temporary construction ROW includes approximately 40 acres of cultural avoidance area that would not be disturbed, and the 40-foot permanent operation and maintenance ROW includes approximately 14 acres of cultural avoidance area that would not be disturbed. Total disturbance associated with the 40-foot permanent operation and maintenance ROW (not including the cultural avoidance area) would be 130 acres, with 124 acres of disturbance on BLM administered public land and six acres on private land. Total disturbance associated with the 80-foot temporary construction ROW (not including the cultural avoidance area) would be 246 acres, with 235 acres on BLM administered public land and 11 acres on private land.

This alternative would meet the Purpose and Need but it could not be completed in time to meeting the Project start up schedule. In addition, this alternative would result in additional environmental impacts to sensitive resources since this alternative would disturb 130 additional acres within the 40-foot permanent ROW and 246 acres within the 80-foot temporary ROW, all of which is within greater sage-grouse habitat. According to the Management Direction for Lands and Realty (MD LR 1) in the ARMPA, the first priority is to avoid new disturbance and where this is not feasible the second priority would be to minimize and mitigate any new disturbance. The 25 kV distribution line was originally part of the Proposed Action. However, in order to reduce potential environmental impacts from the distribution line, MMI amended the Proposed Action to provide power at the site using LNG/CNG generators. In order to evaluate whether the alternative is environmentally reasonable, and to fully analyze and compare environmental impacts resulting from power being supplied by LNG/CNG generators versus the overhead distribution line alternative was carried through for analysis in the EIS.

# 2.3.3 Three Bars Road/Atlas Haul Road as Only Access Alternative

An alternative to the Plan was considered to use Three Bars Road and Atlas Haul Road as the only means of access for both heavy and light vehicle traffic to the Plan boundary (**Figure 2.2-18**). Under this alternative, Three Bars Road and Atlas Haul Road would be the only route used to

access the Project area and mine facilities. There would be no other access. Mine-related traffic under this alternative would be subject to the same seasonal timing restrictions as specified for the Proposed Action, which would consist of seasonal timing restrictions from 6:00 AM to 10:00 AM and from 6:00 PM to 4:30 AM from March 1 to May 15 to reduce impacts to nearby greater sage-grouse leks. Three Bars Road and Atlas Haul Road would be maintained by MMI. MMI would enter into a cooperative agreement with Eureka County for maintenance activities. No improvements would be made to Three Bars Road or Atlas Haul Road to implement this alternative, and the proposed disturbance would remain the same as the Proposed Action. Under this alternative, North Roberts Creek Road would still be improved to allow for all-weather access along the water pipeline to the wells. This alternative was considered to reduce environmental impacts resulting from using two access routes, particularly impacts to greater sage-grouse leks within four miles of the proposed Roberts Creek Road access route even though the travel distance for light vehicle traffic would increase by 20 miles. There is no change in the amount of surface disturbance compared to the Proposed Action.

This alternative would meet the Purpose and Need of the Project, would be technically feasible, and would be an environmentally reasonable alternative. This alternative was carried through for detailed analysis in the EIS.

# 2.3.4 Mount Hope and North Roberts Creek Road for Light Vehicle Traffic Alternative

An alternative to accessing the mine facilities was considered for light vehicle traffic to use the authorized Mount Hope Access Road and well field road as access to the Plan boundary (Figure 2.2-19). This alternative would require light vehicle traffic to use State Route 278 to the Mount Hope Access Road, and then use the Mount Hope well field road to access Roberts Creek Road. The Bypass Road [NVN-91566] and North Roberts Creek Road would be used from that point to access the Plan boundary. Heavy vehicle traffic would use Three Bars Road and the Atlas Haul Road, the same as the Proposed Action. Mine-related traffic under this alternative would be subject to the same seasonal timing restrictions as specified for the Proposed Action, including the Mount Hope access road and well field road, which would consist of seasonal timing restrictions from 6:00 AM to 10:00 AM and from 6:00 PM to 4:30 AM from March 1 to May 15 to reduce impacts to nearby greater sage-grouse leks. Proposed disturbance for this alternative would be the same as the Proposed Action. All improvements to the Mount Hope Access Road would be within the previously authorized disturbance area for the Mount Hope project. This alternative was considered to reduce environmental impacts resulting from using a longer stretch of Roberts Creek Road for light vehicle traffic, particularly impacts to greater sage-grouse leks within four miles of the proposed Roberts Creek Road access route.



No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.



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**FIGURE 2.2-19** 

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This alternative would meet the Purpose and Need of the Project, it would be technically and economically feasible; however, the NDOW identified potential adverse impacts from this alternative to the Henderson Pass Lek, which is an active lek approximately 0.12 mile from the Mount Hope well field road. In order to evaluate whether this alternative is environmentally reasonable, this alternative was carried through for detailed analysis in the EIS.

# 2.4 Alternatives Considered but Eliminated from Detailed Analysis

The following alternatives were considered but were eliminated from further analysis in the EIS because they failed to meet one or more of the alternative screening criteria.

# 2.4.1 Diamond Valley Substation Alternative

Mt. Wheeler has multiple existing 25 kV overhead distribution lines that converge immediately east of Highway 278 in Section 18, T21 North, R53 East, Mount Diablo Base and Meridian. Mt. Wheeler considered the installation of a Diamond Valley Substation on a parcel of land administered by the BLM within Section 18 (**Figure 2.2-20**). The proposed substation would be fed by a new 69 kV overhead transmission line extending north from the Machacek Substation. This substation location would have provided additional service connection availability to each of these existing overhead distribution lines. This would have increased overall system reliability in addition to providing a location of interconnection for the load service to the Project's proposed 25 kV overhead distribution line.

Using the screening criteria mentioned above, this alternative is consistent with the Purpose and Need for the Project and is technically practical and feasible. However, it was determined the alternative resulted in additional environmental impacts to sensitive resources compared to the Proposed Action. There were concerns to sensitive resources from additional linear overhead transmission facilities outside of the existing utility corridor along the Falcon to Gonder 345 kV transmission line. Elimination of this alternative addresses significant concerns regarding overhead transmission lines through greater sage-grouse habitat in close proximity to active greater sage-grouse leks. Therefore, the Diamond Valley Substation Alternative was not considered for detailed analysis in the EIS.

# 2.4.2 Diamond Valley West Substation Alternative

An alternative location of the Diamond Valley Substation was considered at the intersection of the existing Atlas 25 kV overhead distribution line and the existing Falcon to Gonder 345 kV transmission line in Section 18, T21 North, R52 East, Mount Diablo Base and Meridian (**Figure 2.2-21**). This would allow a proposed 69 kV overhead transmission line to parallel the existing Falcon to Gonder 345 kV facility for the entire length before reaching the new substation site. This substation location would require that each of the other existing 25 kV overhead distribution lines converging in Section 18, T21 North, R53 East be extended west to reach this alternate substation location. This would have resulted in an extension of approximately six miles per line, or (three lines multiplied by six miles) approximately 18 miles of additional overhead distribution line construction.

Using the screening criteria mentioned above, this alternative is consistent with the Purpose and Need for the Project and is technically practical and feasible. However, it would require extensive ancillary facility improvements including construction of additional overhead distribution lines. This extensive facility expansion and associated surface disturbance resulted in this alternative not being economically practical or feasible, and not environmentally reasonable compared to the Proposed Action. Elimination of this alternative addresses significant concerns regarding overhead transmission lines through greater sage-grouse habitat in close proximity to active greater sage-grouse leks. Therefore, the Diamond Valley West Substation Alternative was not considered for detailed analysis in this EIS.

# 2.4.3 Roberts Creek Road as Only Access

An alternative access to the Plan was considered to use North Roberts Creek Road as the sole means of Project access with no secondary access (**Figure 2.2-22**). This alternative was considered to reduce environmental impacts from the use of two access roads (i.e., a primary access route and a secondary access route). This alternative would access the Project via U.S. Highway 50 to Roberts Creek Road, then North Roberts Creek Road, then Gold Bar Process Road, then into the Plan boundary. With this alternative there would still be a maintenance road for the distribution line and water pipeline that is proposed to follow the access road. This alternative would require a 70-foot corridor from U.S. Highway 50 to the Plan boundary. The existing running surface of Roberts Creek Road would need to be widened to 70 feet from U.S. Highway 50 to North Roberts Creek Road. North Roberts Creek Road would also need to be widened to 70 feet to accommodate haul trucks. This alternative was developed to address concerns regarding impacts from the use of two access roads.

This alternative would meet the Purpose and Need of the Project, it would be technically and economically feasible, but it was determined the alternative would not be environmentally reasonable because it would result in additional environmental impacts to sensitive resources compared to the Proposed Action. This alternative would create approximately 78 additional acres of disturbance as a result of upgrading Roberts Creek Road and North Roberts Creek Road to a haul road within greater sage-grouse habitat where an alternate access road (Atlas Haul Road) already exists. Elimination of this alternative addresses significant concerns regarding impacts to greater sage-grouse habitat in close proximity to active greater sage-grouse leks. Therefore, the Roberts Creek Road Alternative was not considered for detailed analysis in the EIS.






No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.

## 2.4.4 Pick South Upper and Lower WRDAs Alternative

An alternative to the Plan was considered to construct two additional WRDAs. The Pick South Upper WRDA and the Pick South Lower WRDA would be constructed south of the Pick Pit. The volume of the Pick South Upper WRDA would be 17,100,000 cubic yards and would result in 62 acres of disturbance on BLM administered land. The volume of the Pick South Lower WRDA would be 12,200,000 cubic yards and would result in approximately 67 acres of surface disturbance on BLM administered land.

Using the screening criteria mentioned above, this alternative is consistent with the Purpose and Need for the Project and is technically practical and feasible. This alternative would allow for additional area to store waste rock material. However, this alternative would increase Project disturbance by 129 acres, thus increasing the environmental impacts. After a thorough review and re-engineering design of the facility, it was determined that these two waste rock dumps were not necessary for production. As a result, this alternative was determined to not be economically practical or environmentally reasonable. Elimination of the alternative would address the concerns regarding using the most current design and processes to reduce impacts from the Project. In addition, elimination of this alternative would reduce disturbance and address concerns brought up during the public scoping period regarding Project related disturbance and how it would impact various resources.

## 2.4.5 Additional Process Pond Alternative

An alternative to the Plan was considered to construct an additional process pond for a total of three process ponds to be used during facility production. This process pond would have added an additional 3.2 acres of surface disturbance to the Project disturbance footprint. Using the screening criteria mentioned above, this alternative is consistent with the Purpose and Need for the Project and is technically practical and feasible. This alternative would allow for an additional pond for process water storage. However, it would increase the surface disturbance by approximately 3.2 acres, thus increasing the environmental impacts at the facility, and is not economically optimal. After a thorough review and engineering design of the facility. As a result, this alternative was determined to not be environmentally reasonable or economically practical. Elimination of the alternative would address the concerns brought up at the alternative screening meeting regarding using the most current design and processes to reduce impacts from the Project. In addition, elimination of this alternative would reduce disturbance and address concerns regarding Project-related disturbance and how it would impact various resources.

## 2.5 Comparison of Effects for the Alternatives

**Table 2.5-1** compares the anticipated effects from each alternative on the resources analyzed in this EIS. Chapter 4 provides more detail, including analysis methods and rationale for the effects conclusions.

| Potential Impact   | Proposed Action   | 25 kV Overhead<br>Distribution Line<br>Alternative   | Three Bars<br>Road/Atlas Haul<br>Road as Only<br>Access, Alternative  | Mount Hope and<br>North Roberts<br>Creek Road for<br>Light Vehicle<br>Traffic Alternative   | No Action<br>Alternative  |
|--|---|--|---|---|---|
| Air Quality  |   |  |   |   |   |
| Impacts to air quality<br>from mining, dust,<br>and vehicle<br>emissions | Mining activities would<br>increase emissions for<br>the life of the project.<br>Modeling has<br>determined that<br>impacts would be<br>below the applicable<br>National Ambient Air<br>Quality Standards<br>(NAAQS) for all the<br>pollutants and<br>averaging periods. Air<br>emissions including<br>point and fugitive<br>sources, would be<br>controlled in<br>accordance with the<br>air quality permit. | No emissions from<br>generators would<br>occur under this<br>alternative. However,<br>fugitive and tailpipe<br>emissions from the<br>access road for<br>distribution line<br>construction and<br>maintenance could<br>occur. These impacts<br>are expected to be<br>minimal. Overall,<br>emissions are<br>expected to be lower<br>than for the Proposed<br>Action. | Impacts would be<br>similar to the<br>Proposed Action,<br>except fugitive dust<br>and tailpipe<br>emissions would be<br>concentrated on<br>Three Bars<br>Road/Atlas Haul<br>Road. | Impacts would be<br>similar to the<br>Proposed Action,<br>except fugitive dust<br>and tailpipe<br>emissions would<br>occur at the Mount<br>Hope well field road<br>rather than Roberts<br>Creek Road. | Minimal impacts<br>from fugitive dust<br>and emissions<br>would occur from 16<br>acres of Notice-level<br>activities.                               |
| Cultural Resources   |   |  |   |   |   |
| Disturbance to cultural sites  | 49 eligible cultural<br>sites would be<br>impacted by the<br>Project. The<br>Memorandum of<br>Agreement (MOA),<br>Historic Properties<br>Treatment Plan<br>(HPTP), EPMs, and<br>mitigation would<br>minimize these<br>impacts.  | Three additional<br>eligible cultural sites<br>would be impacted by<br>the Project (52 sites<br>total). The MOA,<br>HPTP, EPMs, and<br>mitigation would<br>minimize these<br>impacts.  | Same as the<br>Proposed Action.   | Same as the<br>Proposed Action.   | No impacts would<br>occur to the 19<br>eligible cultural sites<br>within the area of<br>the Notice-level<br>activities as a result<br>of avoidance. |

| Potential Impact  | Proposed Action  | 25 kV Overhead<br>Distribution Line<br>Alternative  | Three Bars<br>Road/Atlas Haul<br>Road as Only<br>Access, Alternative | Mount Hope and<br>North Roberts<br>Creek Road for<br>Light Vehicle<br>Traffic Alternative | No Action<br>Alternative  |
|---|--|---|--|---|---|
| Environmental Justic  | e  |   |  |   |   |
| Disproportionate<br>effects on minority or<br>low income<br>populations | The Proposed Action<br>would not result in a<br>disproportionate effect<br>on a minority<br>population or low<br>income population.                | Same as the<br>Proposed Action.   | Same as the<br>Proposed Action.                                      | Same as the<br>Proposed Action.   | Same as the<br>Proposed Action.   |
| Forest Products   |  |   |  |   |   |
| Loss of woodland communities  | The Proposed Action<br>would result in<br>removal of 649 acres<br>of woodland<br>communities. None of<br>the communities are<br>considered unique. | Impacts would be<br>similar to the<br>Proposed Action,<br>except there would<br>be an additional 16<br>acres of woodland<br>communities<br>removed under this<br>alternative for a total<br>of 665 acres. | Same as the<br>Proposed Action.                                      | Same as the<br>Proposed Action.   | Up to 16 acres of<br>woodland<br>communities could<br>be removed;<br>however, under this<br>alternative<br>approximately 420<br>acres of existing<br>disturbance would<br>not be reclaimed. |
| Geology and Minerals  | S  |   |  |   |   |
| Ore extraction and waste rock placement                                 | The Proposed Action<br>would mine 72.5<br>million tons of waste<br>rock and 13 million<br>tons of ore reserves.                                    | Same as the<br>Proposed Action.   | Same as the<br>Proposed Action.                                      | Same as the<br>Proposed Action.   | Minimal rock would<br>be collected from<br>drill holes under<br>Notice-level<br>activities.   |

| Potential Impact                                       | Proposed Action   | 25 kV Overhead<br>Distribution Line<br>Alternative   | Three Bars<br>Road/Atlas Haul<br>Road as Only<br>Access, Alternative | Mount Hope and<br>North Roberts<br>Creek Road for<br>Light Vehicle<br>Traffic Alternative   | No Action<br>Alternative  |
|--|---|--|--|---|---|
| Grazing Management                                     |   |  |  |   |   |
| Reduction of Animal<br>Unit Months (AUMs)              | The Proposed Action<br>would result in the<br>permanent loss of 10<br>AUMs and the long-<br>term loss of 69 AUMs.<br>Effects would be<br>reduced by<br>reclamation and<br>EPMs.   | Impacts would be<br>similar to the<br>Proposed Action<br>except there would<br>be additional long-<br>term reduction of 7.5<br>active AUMs due a<br>loss of forage<br>availability along the<br>distribution line for a<br>total long-term loss of<br>76.5 AUMs. | Same as the<br>Proposed Action.                                      | Same as the<br>Proposed Action,<br>except vehicle-<br>livestock collisions<br>may be reduced<br>because the Mount<br>Hope boundary<br>would be fenced and<br>exclude livestock. | No reduction of<br>AUMs would occur;<br>however, under this<br>alternative<br>approximately 420<br>acres of existing<br>disturbance would<br>not be reclaimed.                                  |
| Impacts to range<br>improvements                       | MMI would<br>maintain/replace any<br>cattle guards impacted<br>by the Project as<br>needed. Gates would<br>be added where roads<br>would cross existing<br>fencelines. Also,<br>fences constructed<br>during the Project<br>would be removed<br>during reclamation. | Same as the<br>Proposed Action.  | Same as the<br>Proposed Action.                                      | Same as the<br>Proposed Action.   | No impacts to range<br>improvements would<br>occur from Notice-<br>level activities.  |
| Hazardous Materials                                    |   |  |  |   |   |
| Accidental<br>spills/releases during<br>transportation | Chemical spills during<br>transportation could<br>occur but the<br>probability of a spill is<br>expected to be very<br>low. The commercial<br>transportation<br>company would be<br>responsible for first<br>response and cleanup.                                  | Same as the<br>Proposed Action.  | Same as the<br>Proposed Action.                                      | Same as the<br>Proposed Action.   | Spill or release of<br>hazardous materials<br>associated with<br>Notice-level<br>activities could<br>occur; however,<br>fewer types of<br>chemicals would be<br>used under this<br>alternative. |

| Potential Impact  | Proposed Action  | 25 kV Overhead<br>Distribution Line<br>Alternative   | Three Bars<br>Road/Atlas Haul<br>Road as Only<br>Access, Alternative  | Mount Hope and<br>North Roberts<br>Creek Road for<br>Light Vehicle<br>Traffic Alternative   | No Action<br>Alternative  |
|---|--|--|---|---|---|
|   | Local and regional law<br>enforcement and fire<br>protection agencies<br>also may be involved<br>to secure the site and<br>protect public safety.  |  |   |   |   |
| Accidental<br>spills/releases during<br>storage or use      | Some spills of<br>chemicals and fuel<br>could occur during<br>operations. In the<br>event of such a spill,<br>the spill would be<br>handled in accordance<br>with the Spill<br>Contingency<br>Plan/Emergency<br>Response Plan.   | Same as the<br>Proposed Action.  | Same as the<br>Proposed Action.   | Same as the<br>Proposed Action.   | No hazardous<br>materials would be<br>stored at the site<br>under this<br>alternative.  |
| Historic Trails   | 1  |  | 1   |   |   |
| Impacts to Pony<br>Express National<br>Historic Trail (NHT) | I here would be effects<br>to the visual setting of<br>the National Trail<br>study corridor from<br>mining and processing<br>facilities. Other effects<br>would be increased<br>traffic from the Project<br>where the Pony<br>Express NHT crosses<br>the mine access<br>roads; the<br>improvements to North<br>Roberts Creek road<br>which would change<br>the appearance of the<br>road within the NHT<br>trail corridor; and | Impacts would be<br>similar to the<br>Proposed Action, but<br>there would be<br>additional visual<br>impacts to the setting<br>of the trail from the<br>overhead distribution<br>line. | Same as the<br>Proposed Action,<br>except the visual,<br>noise, and traffic<br>impacts described<br>under the Proposed<br>Action associated<br>with the use of<br>Roberts Creek Road<br>would not occur | Impacts would be<br>similar to the<br>Proposed Action,<br>and there would<br>additional traffic and<br>noise impacts to the<br>Pony Express Trail<br>along the Mount<br>Hope well field road. | Effects include<br>visual impacts from<br>the approved 16<br>acres of Notice-level<br>activities.<br>Additionally, under<br>this alternative<br>approximately 420<br>acres of existing<br>disturbance would<br>not be reclaimed<br>which may reduce<br>existing visual<br>impacts to the Pony<br>Express Trail. |

| Potential Impact                         | Proposed Action  | 25 kV Overhead<br>Distribution Line<br>Alternative   | Three Bars<br>Road/Atlas Haul<br>Road as Only<br>Access, Alternative | Mount Hope and<br>North Roberts<br>Creek Road for<br>Light Vehicle<br>Traffic Alternative | No Action<br>Alternative  |
|--|--|--|--|---|---|
|  | Project-related noise  |  |  |   |   |
|  | associated with use of<br>Roberts Creek Road   |  |  |   |   |
| Land Use, Access, Re                     | ealty, and Transportatio   | n  |  |   |   |
| Loss of public land<br>for multiple uses | Project disturbance on<br>BLM-administered<br>public land would<br>result in the short-<br>term, loss of<br>approximately 946<br>acres of public land for<br>multiple use<br>authorizations for the<br>life of the mine.<br>Reclamation of<br>approximately 975<br>acres of Project<br>related disturbance as<br>well as an additional<br>approximately 25<br>acres of non-MMI<br>disturbance would<br>provide a post-mining<br>surface condition<br>consistent with the<br>expected long-term | Impacts would be<br>similar to the<br>Proposed Action, and<br>include an additional<br>direct loss of 124<br>acres of public land<br>for multiple use<br>authorizations from<br>the distribution line. | Same as the<br>Proposed Action.                                      | Same as the<br>Proposed Action.   | Up to 16 acres could<br>be disturbed;<br>however, under this<br>alternative<br>approximately 420<br>acres of existing<br>disturbance would<br>not be reclaimed. |
| Loss of access within fenced boundary    | Approximately 127<br>acres of mining and<br>processing facilities<br>would be fenced at the<br>administration and<br>process area, and at<br>the generator and<br>water storage area by<br>GBPW-210.   | Same as the<br>Proposed Action.  | Same as the<br>Proposed Action.                                      | Same as the<br>Proposed Action.   | No impacts from<br>fencing would occur<br>under this<br>alternative.  |

| Potential Impact                                  | Proposed Action  | 25 kV Overhead<br>Distribution Line<br>Alternative   | Three Bars<br>Road/Atlas Haul<br>Road as Only<br>Access, Alternative   | Mount Hope and<br>North Roberts<br>Creek Road for<br>Light Vehicle<br>Traffic Alternative   | No Action<br>Alternative   |
|---|--|--|--|---|--|
| Transportation and traffic effects                | Under the Proposed<br>Action, maximum trip<br>generation on Three<br>Bars Road would be<br>10 trips per day and<br>40 van trips per day<br>on Roberts Creek<br>Road for the life of<br>mining operations.  | Same as the<br>Proposed Action, with<br>the addition of 14<br>trips per day along<br>U.S. 50 for the six<br>months of distribution<br>line construction. | Impacts would be<br>similar to the<br>Proposed Action,<br>except the light<br>vehicle traffic (40<br>trips per day)<br>associated with<br>mining would not use<br>Roberts Creek Road<br>and all vehicle traffic<br>would use Three<br>Bars Road. | Impacts would be<br>similar to the<br>Proposed Action,<br>except the light<br>vehicle traffic (40<br>trips per day)<br>associated within<br>mining would use<br>the Mount Hope<br>access road and<br>well field road<br>instead of Roberts<br>Creek Road. | Impacts to<br>transportation would<br>not change from<br>existing conditions<br>under this<br>alternative. |
| Impacts to ROWs<br>and land use<br>authorizations | The Proposed Action<br>would not result in<br>impacts or changes to<br>land ownership.<br>Mining and processing<br>facilities would not<br>result in conflicts,<br>substantial<br>modifications or<br>termination of the<br>ROWs or land use<br>authorizations. No<br>ROW relocations<br>would be required as a<br>result of the Proposed<br>Action. | Same as the<br>Proposed Action.  | Same as the<br>Proposed Action.  | Same as the<br>Proposed Action  | No impacts to<br>ROWs or land use<br>authorizations<br>expected from<br>Notice-level<br>activities.        |

| Potential Impact   | Proposed Action   | 25 kV Overhead<br>Distribution Line<br>Alternative   | Three Bars<br>Road/Atlas Haul<br>Road as Only<br>Access, Alternative  | Mount Hope and<br>North Roberts<br>Creek Road for<br>Light Vehicle<br>Traffic Alternative  | No Action<br>Alternative  |
|--|---|--|---|--|---|
| Native American Con  | cerns   |  |   |  |   |
| Disturbance to<br>traditional cultural<br>properties (TCPs),<br>properties of<br>traditional religious<br>and cultural<br>importance, or<br>sacred sites | None identified.<br>Consultation is<br>ongoing.   | Same as the<br>Proposed Action.  | Same as the<br>Proposed Action.   | Same as the<br>Proposed Action.  | None identified.  |
| Noise  |   |  |   |  |   |
| Impacts to noise<br>levels   | Impacts to noise levels<br>from mining, blasting,<br>and travel would not<br>exceed EPA exterior<br>noise criteria. The<br>blasting plan identifies<br>how impacts would be<br>monitored to ensure<br>proper sound and<br>vibration levels are<br>maintained. | Impacts would be<br>similar to the<br>Proposed Action,<br>except there would<br>be some short-term<br>noise during<br>construction of the<br>distribution line.<br>Noise from<br>construction is not<br>expected to be<br>detected at Three<br>Bars or Roberts<br>Creek Ranches. | Impacts would be<br>similar to the<br>Proposed Action for<br>mine construction,<br>operation, and<br>blasting. There would<br>be no noise<br>generated from<br>Project-related travel<br>along Roberts Creek<br>Road under this<br>alternative, but these<br>impacts were<br>minimal. | Impacts would be<br>similar to the<br>Proposed Action for<br>mine construction,<br>operation, and<br>blasting. Noise from<br>light vehicle traffic<br>would occur along<br>Mount Hope well<br>field road rather than<br>Roberts Creek Road<br>which is not<br>expected to<br>detected at the<br>ranches. | Noise impacts from<br>Notice-level<br>activities would<br>occur, and no noise<br>impacts from mining<br>or blasting would<br>occur. |
| Paleontological Reso   | ources  |  |   |  |   |
| Loss of<br>paleontological<br>resources  | One geologic unit in<br>the Project area is<br>known to host<br>invertebrate fossils.<br>No vertebrate fossils<br>are known to occur in<br>the formation and no<br>Project disturbance is<br>expected in this<br>formation.                                   | Same as the<br>Proposed Action.  | Same as the<br>Proposed Action.   | Same as the<br>Proposed Action.  | None identified.  |

| Potential Impact  | Proposed Action  | 25 kV Overhead<br>Distribution Line<br>Alternative   | Three Bars<br>Road/Atlas Haul<br>Road as Only<br>Access, Alternative | Mount Hope and<br>North Roberts<br>Creek Road for<br>Light Vehicle<br>Traffic Alternative | No Action<br>Alternative  |
|---|--|--|--|---|---|
| Recreation  |  |  |  |   |   |
| Change in access to<br>existing recreation<br>opportunities or<br>areas | In areas of active<br>mining (including<br>around the open pits<br>and WRDAs),<br>recreational activities<br>would be restricted,<br>and in the 127-acre<br>fenced area. The<br>Project does not offer<br>unique recreational<br>opportunities, and<br>recreationists are<br>likely to use nearby<br>areas. Under the<br>Proposed Action<br>approximately 420<br>acres of existing<br>disturbance would be<br>reclaimed. | Impacts would be<br>similar to the<br>Proposed Action,<br>except potential<br>impacts to dispersed<br>recreation may occur<br>to an additional 124<br>acres of public land<br>during construction of<br>the ROW.   | Same as the<br>Proposed Action.                                      | Same as the<br>Proposed Action.   | Up to 16 acres could<br>be disturbed under<br>this alternative;<br>however, not all<br>disturbance would<br>occur at once and<br>not expected to<br>impact recreational<br>opportunities. |
| Socioeconomics Value  | ues  |  |  | ·   | ·   |
| Income and<br>employment  | The work force is<br>expected to include<br>100 workers during<br>construction, and<br>between 120 and 135<br>workers during<br>operation. This would<br>be a 1.9 percent<br>increase over 2015<br>employment levels.<br>The work force during<br>construction is<br>anticipated to come<br>from outside of the<br>local area, whereas   | Impacts would be<br>similar to the<br>Proposed Action,<br>except there would<br>be an additional six to<br>10 contract workers<br>for up to six months<br>during construction of<br>the distribution line,<br>and there would be a<br>reduction in capital<br>cost expenditures. | Same as the<br>Proposed Action.                                      | Same as the<br>Proposed Action.   | There would be no<br>detectable impacts<br>to income and<br>employment from<br>Notice-level<br>activities since the<br>work force is<br>temporary and<br>small.                           |

| Potential Impact                      | Proposed Action   | 25 kV Overhead<br>Distribution Line<br>Alternative   | Three Bars<br>Road/Atlas Haul<br>Road as Only<br>Access, Alternative | Mount Hope and<br>North Roberts<br>Creek Road for<br>Light Vehicle<br>Traffic Alternative | No Action<br>Alternative  |
|---------------------------------------|---|--|--|---|---|
|                                       | the work force during<br>operations is expected<br>to come from the local<br>area. The increased<br>opportunity of<br>employment would be<br>considered beneficial<br>to the local<br>community.  |  |  |   |   |
| Population and housing                | is expected that the<br>work force would<br>occupy 66 percent of<br>the total motel rooms<br>in the Eureka area,<br>and could result in<br>competition for<br>temporary housing.<br>This impact is<br>anticipated to last<br>during the construction<br>of the facility, which is<br>anticipated to last<br>approximately one<br>year. During<br>operations, vacant<br>housing in the Eureka<br>area is expected to be<br>sufficient to meet the<br>demand for an<br>estimated 57 housing<br>units. | Impacts would be<br>similar to the<br>Proposed Action,<br>except there would<br>be an additional six to<br>10 contract workers<br>for up to six months<br>during construction of<br>the distribution line. | Same as the<br>Proposed Action.                                      | Same as the<br>Proposed Action.   | There would be no<br>detectable impacts<br>since the work force<br>is small and<br>temporary. |
| Infrastructure and community services | The Proposed Action<br>is not expected to<br>have an appreciable<br>effect on   | Impacts would be<br>similar to the<br>Proposed Action,<br>except there would   | Same as the<br>Proposed Action.                                      | Same as the Proposed Action.  | There would be no<br>detectable impacts<br>since the work force                               |

| Potential Impact                                   | Proposed Action   | 25 kV Overhead<br>Distribution Line<br>Alternative   | Three Bars<br>Road/Atlas Haul<br>Road as Only<br>Access, Alternative | Mount Hope and<br>North Roberts<br>Creek Road for<br>Light Vehicle<br>Traffic Alternative | No Action<br>Alternative  |
|--|---|--|--|---|---|
|  | infrastructure, but it<br>may slightly increase<br>calls to law<br>enforcement and<br>emergency services.   | be an additional six to<br>10 contract workers<br>for up to six months<br>during construction of<br>the distribution line.   |  |   | is small and temporary.   |
| Soils  |   |  |  | Γ   |   |
| Disturbance and<br>degradation of soil<br>function | New disturbance to<br>undisturbed soils<br>would include<br>approximately 718<br>acres of long-term<br>disturbance with<br>implementation of the<br>Project. The majority<br>of disturbance would<br>be reclaimed, except<br>for approximately 154<br>acres that would not<br>be reclaimed. | Impacts would be<br>similar to the<br>Proposed Action,<br>except an additional<br>130 acres (including<br>public and private<br>lands), for a total of<br>848 acres of soils<br>that would be<br>disturbed for the<br>construction and<br>maintenance of the<br>distribution line. | Same as the<br>Proposed Action.                                      | Same as the<br>Proposed Action.   | Up to 16 acres could<br>be disturbed;<br>however, under this<br>alternative<br>approximately 420<br>acres of existing<br>disturbance would<br>not be reclaimed. |
| Increased erosion                                  | Effects to disturbed<br>soils from the 718<br>acres of new surface<br>disturbance would be<br>minimized through<br>implementation of<br>EPMs, mitigation, and<br>reclamation.   | Impacts would be<br>similar to the<br>Proposed Action,<br>except an additional<br>130 acres, for a total<br>of 848 acres of soils<br>would be disturbed<br>for the construction<br>and maintenance of<br>the distribution line.  | Same as the<br>Proposed Action.                                      | Same as the<br>Proposed Action.   | Up to 16 acres could<br>be disturbed;<br>however, under this<br>alternative<br>approximately 420<br>acres of existing<br>disturbance would<br>not be reclaimed. |
| Contamination of soils from chemical spills        | Spill or release of<br>hazardous materials<br>may occur, but<br>impacts to soils from a<br>potential spill of<br>hydrocarbons or<br>reagents would be   | Same as the<br>Proposed Action.  | Same as the<br>Proposed Action.                                      | Same as the<br>Proposed Action.   | Spill or release of<br>hazardous materials<br>associated with<br>Notice-level<br>activities could<br>occur; however,<br>fewer types of                          |

| Potential Impact  | Proposed Action   | 25 kV Overhead<br>Distribution Line<br>Alternative  | Three Bars<br>Road/Atlas Haul<br>Road as Only<br>Access, Alternative  | Mount Hope and<br>North Roberts<br>Creek Road for<br>Light Vehicle<br>Traffic Alternative   | No Action<br>Alternative   |
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|   | minimized through<br>implementation of<br>EPMs and<br>reclamation.  |   |   |   | reagents would be<br>used under this<br>alternative.   |
| Vegetation (including   | Invasive, Non-native S  | pecies and Noxious We   | eds)  |   | -  |
| Removal of<br>vegetation  | Approximately<br>718acres of previously<br>undisturbed vegetation<br>would be removed by<br>the Proposed Action.<br>Reclamation would<br>minimize these<br>effects, except on<br>permanent<br>disturbance located on<br>an additional 154<br>acres. | Impacts would be<br>similar to the<br>Proposed Action,<br>except an additional<br>130 acres (including<br>private and public<br>lands) for a total of<br>848 acres of<br>vegetation would be<br>disturbed for the<br>construction and<br>maintenance of the<br>distribution line.     | Same as the<br>Proposed Action.   | Same as the<br>Proposed Action.   | Up to 16 acres of<br>vegetation could be<br>disturbed; however,<br>under this<br>alternative<br>approximately 420<br>acres of existing<br>disturbance would<br>not be reclaimed. |
| Establishment and<br>spread of invasive,<br>non-native species<br>and noxious weeds | Areas where<br>vegetation is removed<br>would be susceptible<br>to weed invasion.<br>EPMs, the Noxious<br>Weed Plan, and<br>reclamation would<br>minimize these<br>effects.   | Impacts would be<br>similar to the<br>Proposed Action,<br>except an additional<br>130 acres (including<br>public and private<br>land) of vegetation<br>would be disturbed<br>for the construction<br>and maintenance of<br>the distribution line<br>where weeds may be<br>introduced. | Impacts would be<br>similar to the<br>Proposed Action,<br>except the potential<br>for the spread of<br>weeds would not<br>occur along Roberts<br>Creek Road as a<br>result of the Project,<br>and there may be an<br>increased potential<br>for the spread of<br>weeds on Three Bars<br>Road. | Impacts would be<br>similar to the<br>Proposed Action,<br>except that the<br>potential for the<br>spread of weeds<br>would occur along<br>Mount Hope roads<br>rather than along<br>Roberts Creek<br>Road. | Up to 16 acres of<br>vegetation could be<br>disturbed; however,<br>under this<br>alternative<br>approximately 420<br>acres of existing<br>disturbance would<br>not be reclaimed. |
| Impacts to special status plant species   | Impacts would occur<br>to approximately 669<br>acres of vegetation<br>communities that  | Impacts would be<br>similar to the<br>Proposed Action,<br>except an additional  | Same as the<br>Proposed Action.   | Same as the<br>Proposed Action.   | No impacts to<br>special status plant<br>species were  |

| Potential Impact                           | Proposed Action  | 25 kV Overhead<br>Distribution Line<br>Alternative   | Three Bars<br>Road/Atlas Haul<br>Road as Only<br>Access, Alternative | Mount Hope and<br>North Roberts<br>Creek Road for<br>Light Vehicle<br>Traffic Alternative | No Action<br>Alternative  |  |
|--|--|--|--|---|---|--|
|  | provide potential<br>habitat for least<br>phacelia, Beatley<br>buckwheat, and Monte<br>Neva paintbrush.  | disturbance of 130<br>acres of potential<br>habitat for least<br>phacelia, Beatley<br>buckwheat, and<br>Monte Neva<br>paintbrush could<br>occur. |  |   | identified from this alternative.   |  |
| Visual Resources                           |  |  |  |   |   |  |
| Contrasting visual<br>elements             | Project features would<br>be visible from Key<br>Observation Points<br>(KOPs) 1 and 3. The<br>Proposed Action does<br>not conflict with Visual<br>Resource<br>Management (VRM)<br>Class IV objectives.<br>There is a portion of<br>the Project within VRM<br>Class II, which would<br>conflict with VRM<br>Class II objectives.<br>Reclamation would<br>minimize these<br>effects. | Impacts would be<br>similar to the<br>Proposed Action, and<br>the distribution line<br>would be visible from<br>KOPs 1 and 2.                    | Same as the<br>Proposed Action.                                      | Same as the<br>Proposed Action.   | Up to 16 acres could<br>be disturbed;<br>however, under this<br>alternative<br>approximately 420<br>acres of existing<br>disturbance would<br>not be reclaimed. |  |
| Water (Quality and Quantity)               |  |  |  |   |   |  |
| Impacts to existing wells (water quantity) | Modeling for an<br>average of 380 gpm of<br>alluvial groundwater<br>for 10 years, indicates<br>that the 10-foot<br>drawdown would<br>extend up to 1.4 miles<br>from the Project<br>pumping wells.  | Same as the<br>Proposed Action.  | Same as the<br>Proposed Action.                                      | Same as the<br>Proposed Action.   | No impacts to<br>existing wells are<br>expected from<br>Notice-level<br>activities.   |  |

| Potential Impact                                       | Proposed Action  | 25 kV Overhead<br>Distribution Line<br>Alternative   | Three Bars<br>Road/Atlas Haul<br>Road as Only<br>Access, Alternative | Mount Hope and<br>North Roberts<br>Creek Road for<br>Light Vehicle<br>Traffic Alternative | No Action<br>Alternative  |
|--|--|--|--|---|---|
|  | Drawdown near the<br>Roberts Creek Ranch<br>well would be around<br>15 to 20 feet. No<br>springs or seeps<br>would be impacted<br>from the pumping<br>wells.   |  |  |   |   |
| Increase in<br>sedimentation and<br>erosion            | New Surface<br>disturbance of 718<br>acres may increase<br>erosion and<br>sedimentation during<br>construction and<br>operation.<br>Implementation of<br>EPMs and BMPs<br>would reduce or<br>minimize this impact. | Impacts would be<br>similar to the<br>Proposed Action,<br>except an additional<br>130 acres of soils<br>would be disturbed<br>for the construction<br>and maintenance of<br>the distribution line. | Same as the<br>Proposed Action.                                      | Same as the<br>Proposed Action.   | Up to 16 acres could<br>be disturbed;<br>however, under this<br>alternative<br>approximately 420<br>acres of existing<br>disturbance would<br>not be reclaimed.                                 |
| Potential<br>contamination of<br>surface water         | Accidental release of<br>hydrocarbons from<br>mobile sources during<br>construction may<br>occur. Implementation<br>of BMPs in<br>compliance with the<br>SCP would reduce the<br>impacts.                          | Same as the<br>Proposed Action.  | Same as the<br>Proposed Action.                                      | Same as the<br>Proposed Action.   | Spill or release of<br>hazardous materials<br>associated with<br>Notice-level<br>activities could<br>occur; however,<br>fewer types of<br>chemicals would be<br>used under this<br>alternative. |
| Changes in<br>groundwater quality<br>during operations | The acidic conditions<br>created by the<br>Potentially Acid<br>Generating (PAG)<br>rock may result in the<br>release of sulfate and<br>metals into the   | Same as the<br>Proposed Action.  | Same as the<br>Proposed Action.                                      | Same as the<br>Proposed Action.   | No impacts to<br>groundwater quality<br>are expected from<br>Notice-level<br>activities.  |

| Potential Impact                                 | Proposed Action  | 25 kV Overhead<br>Distribution Line<br>Alternative   | Three Bars<br>Road/Atlas Haul<br>Road as Only<br>Access, Alternative | Mount Hope and<br>North Roberts<br>Creek Road for<br>Light Vehicle<br>Traffic Alternative | No Action<br>Alternative  |
|--|--|--|--|---|---|
|  | groundwater. To<br>prevent impacts, the<br>WRDAs and HLPs<br>would be designed<br>and operated as a<br>zero-discharge<br>facilities to prevent<br>release to the<br>environment.   |  |  |   |   |
| Wetlands   |  |  |  |   |   |
| Removal of wetlands<br>and riparian<br>resources | No direct or indirect<br>impacts to wetlands or<br>riparian areas would<br>occur under this<br>alternative.  | Same as the<br>Proposed Action.  | Same as the<br>Proposed Action.                                      | Same as the<br>Proposed Action.   | No impacts to<br>wetlands are<br>expected from<br>Notice-level<br>activities.   |
| Wildlife (including Mi                           | gratory Birds)   |  | -  |   |   |
| Loss of habitat                                  | 718 acres of new<br>surface disturbance<br>would occur under this<br>alternative and<br>remove existing<br>wildlife habitat.<br>Reclamation would<br>minimize these<br>effects, except on<br>permanent<br>disturbance located on<br>154 acres. | Impacts would be<br>similar to the<br>Proposed Action,<br>except an additional<br>130 acres of habitat<br>would be disturbed<br>for the construction<br>and maintenance of<br>the distribution line. | Same as the<br>Proposed Action.                                      | Same as the<br>Proposed Action.   | Up to 16 acres could<br>be disturbed;<br>however, under this<br>alternative<br>approximately 420<br>acres of existing<br>disturbance would<br>not be reclaimed. |
| Displacement of wildlife                         | Human activity and<br>presence would create<br>noise that would result<br>in wildlife avoiding the<br>area and being<br>displaced by the<br>Proposed Action.   | Same as the<br>Proposed Action.  | Same as the<br>Proposed Action.                                      | Same as the<br>Proposed Action.   | Notice-level<br>activities would<br>result in short-term<br>displacement of<br>wildlife.  |

| Potential Impact  | Proposed Action   | 25 kV Overhead<br>Distribution Line<br>Alternative  | Three Bars<br>Road/Atlas Haul<br>Road as Only<br>Access, Alternative   | Mount Hope and<br>North Roberts<br>Creek Road for<br>Light Vehicle<br>Traffic Alternative   | No Action<br>Alternative  |
|---|---|---|--|---|---|
| Impacts to greater<br>sage-grouse                                     | According to<br>December 2015<br>mapping, surface<br>disturbance would<br>occur in 297 acres of<br>Priority Habitat<br>Management Areas<br>(PHMA) and 767<br>acres of General<br>Habitat Management<br>Areas (GHMA).<br>Indirect effects of<br>noise to greater sage-<br>grouse is not expected<br>to exceed 10 dBA.  | Effects would be<br>similar to the<br>Proposed Action,<br>except according to<br>SEP December 2015<br>mapping,<br>construction of the<br>distribution line would<br>disturb approximately<br>79 acres of PHMA,<br>33 acres of GHMA,<br>and 13 acres of Other<br>Habitat Management<br>Areas (OHMA).                 | Same as the<br>Proposed Action,<br>except to Roberts<br>Creek Road would<br>not be used, which<br>would reduce noise<br>and traffic impacts<br>from the Project on<br>that road. | Impacts would be<br>similar to the<br>Proposed Action,<br>except travel and<br>associated noise<br>along the Mount<br>Hope well field road<br>would result in<br>adverse impacts to<br>the Henderson Pass<br>lek. | Minimal impacts to<br>greater sage-grouse<br>are expected from<br>Notice-level<br>activities.   |
| Wild Horses   |   |   |  |   |   |
| Loss of wild horse<br>habitat and reduction<br>in forage availability | 718 acres of existing<br>vegetation<br>communities within the<br>Plan boundary would<br>be removed (which<br>includes 11 acres of<br>disturbance in the<br>Roberts Mountain<br>Herd Management<br>Area [HMA]).<br>Disturbance would<br>reduce wild horse<br>habitat and forage<br>area. However, the<br>habitat within the Plan<br>boundary is not highly<br>valuable for wild<br>horses. | This alternative would<br>result in an additional<br>62 acres of<br>disturbance within the<br>Roberts Mountain<br>Complex; would<br>result in 16 acres of<br>disturbance within the<br>Fish Creek South<br>HMA. This would<br>result in decreased<br>potential forage<br>availability until<br>revegetation occurs. | Same as the<br>Proposed Action.  | Same as the<br>Proposed Action.   | Authorized Notice-<br>level activities would<br>continue to impact<br>wild horse habitat<br>and forage<br>availability within<br>approved Notice-<br>level areas. |

| Potential Impact  | Proposed Action  | 25 kV Overhead<br>Distribution Line<br>Alternative   | Three Bars<br>Road/Atlas Haul<br>Road as Only<br>Access, Alternative   | Mount Hope and<br>North Roberts<br>Creek Road for<br>Light Vehicle<br>Traffic Alternative   | No Action<br>Alternative   |
|---|--|--|--|---|--|
| Wild horse mortality<br>or injury from vehicle<br>collision | Increased traffic on<br>Project access roads<br>may increase risks of<br>injury or mortality to<br>wild horses from<br>vehicle collisions.<br>Mortalities and injuries<br>would be reduced by<br>the speed limit<br>restrictions within the<br>Plan boundary, new<br>employee awareness<br>training, signage at<br>wild horse trails and<br>the use of reflectors. | Increased wild horse<br>mortality or injury<br>may occur during<br>construction due to<br>use of access roads<br>to the distribution<br>line.  | The potential for<br>vehicle collisions with<br>wild horses may be<br>increased along the<br>Atlas Haul Road<br>between the Three<br>Bars road and the<br>Project boundary. A<br>reduction in vehicle<br>collisions may occur<br>on Roberts Creek<br>Road. | Potential impacts<br>from vehicle-wild<br>horse collisions may<br>be reduced because<br>the Mount Hope<br>Project boundary<br>would be fenced,<br>excluding wild<br>horses. However,<br>this access road is<br>not as straight as<br>Roberts Creek or<br>Three Bars Road,<br>increasing<br>opportunity for<br>collisions due to<br>reduced visual<br>distance on corners. | Authorized Notice-<br>level activities would<br>continue to result in<br>potential vehicle<br>collisions with wild<br>horses along access<br>roads to the Notice-<br>level activities.                                     |
| Wild horse<br>displacement                                  | Increased vehicle<br>traffic, noise levels,<br>mining activities, and<br>presence of humans<br>may result in<br>displacement of wild<br>horses to surrounding<br>areas, or changes in<br>use patterns.   | Additional<br>displacement or wild<br>horse avoidance of<br>the area may occur<br>during construction of<br>the distribution line.<br>Slight reductions in<br>noise would occur<br>during mining<br>operations because<br>fewer generators<br>would be used at the<br>processing facility. | Same as the<br>Proposed Action.  | Same as the<br>Proposed Action.   | Authorized Notice-<br>level activities,<br>including noise and<br>presence of<br>humans, would<br>continue to result in<br>potential<br>displacement or wild<br>horses in the area of<br>active exploration<br>activities. |

## 2.6 Agency-Preferred Alternative

To be completed once BLM preferred alternative has been determined.