U.S. Department of the Interior
Bureau of Land Management

Golden Predator Mines US Inc.
Adelaide Exploration Project

PRELIMINARY ENVIRONMENTAL ASSESSMENT
DOI-BLM-NV-W010-2011-0003-EA

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LIST OF ACRONYMS & ABBREVIATIONS

AMSL	Above Mean Sea Level
BATF	Bureau of Alcohol, Tobacco and Firearms
BLM	Bureau of Land Management
BMP	Best Management Practice
BMRR	Bureau of Mining Regulation and Reclamation
CESA	Cumulative Effects Study Area
CFR	Code of Federal Regulations
EA	Environmental Assessment
FLPMA	Federal Land Policy and Management Act
GPMI	Golden Predator Mines US Inc.
HDPE	High Density Polyethylene
MBTA	Migratory Bird Treaty Act
MOU	Memorandum of Understanding
MSHA	Mine Safety and Health Administration
NDEP	Nevada Division of Environmental Protection
NDOW	Nevada Department of Wildlife
NDWR	Nevada Division of Water Resources
NEPA	National Environmental Policy Act
NNHP	Nevada Natural Heritage Program
POO	Plan of Operations
PPH	Preliminary Priority Habitat
ROW	Right-of-Way
TES	Threatened, Endangered, and Sensitive
USFWS	United States Fish and Wildlife Service
WNV	West Nile Virus

PRELIMINARY ENVIRONMENTAL ASSESSSMENT
ADELAIDE EXPLORATION PROJECT
GOLDEN PREDATOR MINES U.S. INC.

1.0 INTRODUCTION

In September 2010, Golden Predator Mines US Inc. (GPMI) submitted a Plan of Operations (POO) to conduct an underground exploration project utilizing previous disturbance associated with the Adelaide Mine with a small amount of new disturbance. The general project area is located approximately 15 miles south of Golconda, Nevada (Figure 1) and includes sites located on public lands administered by the Bureau of Land Management (BLM), Humboldt River Field Office. Access to the Adelaide Mine area from Winnemucca, Nevada is east on Interstate 80 approximately 16 miles to the Golconda exit, south on a county road approximately 10 miles toward the Hot Springs Ranch, and west 3 miles on an unpaved road to the site.

Figure 2 shows the overall POO boundary, which includes all or portions of Sections 13 and 24, Township 34 North (T34N), and Range 39 East (R39E), and Sections 18 and 19, T34N, R40E. The POO boundary encompasses 641 acres. The existing disturbance from past exploration and development activities is shown on Figure 2.

GPMI is proposing to disturb 27.58 acres of public land under this exploration project: 16.98 acres of existing disturbance and 5.85 acres of new disturbance. The total also includes 4.75 acres previously approved under exploration Notice NVN-084229. Figure 3 shows the proposed new disturbance and Figure 4 shows the proposed facilities and disturbance associated with the Proposed Action.

GPMI acquired an interest in the Adelaide property in February 2008. Fifty-nine drill holes, proposed under Notice NVN-084229, were completed in 2008 and 2009. There was no drilling at the site in 2010.

1.1 PURPOSE AND NEED

The purpose of the Proposed Action is to provide GPMI the opportunity to conduct exploration, including drill site and sump construction, construction of an underground drift, collecting bulk samples, road construction, and well construction, necessary to verify mineral resources and establish existing conditions.

The need for action is established by the BLM's responsibility under its 2008 Energy and Mineral Policy, the Federal Land Policy and Management Act of 1976 (FLPMA), and BLM Surface Management Regulations at 43 Code of Federal Regulations (CFR) 3809, to respond to

an exploration POO and to take any action necessary to prevent unnecessary or undue degradation of the lands.

1.2 LAND USE CONFORMANCE STATEMENT

The Proposed Action described in this Environmental Assessment (EA) is in conformance with the Sonoma-Gerlach Management Framework Plan (BLM, 1982), which states that the BLM should "make all public lands and other federally owned minerals available for the exploration and development of mineral and material commodities."

1.3 RELATIONSHIP TO LAWS, REGULATIONS, AND OTHER PLANS

On lands open to location under the General Mining Law of 1872, as amended (Mining Law), the BLM administers the surface acres of public land and federal subsurface mineral estates under the Mining Law and FLPMA. FLPMA also governs the BLM's administration of public lands not open to location under the Mining Law.

The Proposed Action is consistent with federal agency, state, and local plans to the maximum extent consistent with Federal law and FLPMA provisions. The project area is located on BLM-managed land. The Humboldt County Regional Master Plan identifies the project area as being zoned M3-open space, which is consistent with the Proposed Action. Federal, state, and local permits, policies, and actions that would be required to implement the Proposed Action include Water Pollution Control Permit, Water Use Permit, an Air Quality Operating Permit, drilling permits, and permit for handling and storage of explosives.

1.4 ISSUES

An internal scoping process was conducted in order to determine the scope of this EA. The scoping process began with an interdisciplinary team meeting held at the BLM office in Winnemucca on November 18, 2010. At this meeting, the BLM staff defined issues and made an initial determination of what needed to be analyzed in this EA, data needs, possible alternatives, and public outreach needs.

This meeting was followed by external scoping under which other agencies, organizations, tribes, local governments, and the general public were offered the opportunity to provide feedback regarding issues, concerns, data needs and such things as potential alternatives. This assists the BLM in refining issues, identifying any new issues, coordination needs, and possible alternatives. A letter and map were sent to a mailing list of potentially interested public on December 14, 2010. The scoping letter and map were also posted on the BLM's Winnemucca District National Environmental Policy Act (NEPA) web page.

Based on internal and external scoping, the following issues were identified as concerns from the implementation of the Proposed Action:

- What would be the impact to night skies from the Proposed Action?
- How would the Proposed Action impact the spread of invasive, non-native species?
- How would the Proposed Action allow for maintaining access for recreation?
- Would the Proposed Action impact special status species?

2.0 ALTERNATIVES INCLUDING THE PROPOSED ACTION

2.1 PROPOSED ACTION

The former Adelaide Mine lies in the Gold Run (Adelaide) Mining District, which has been intermittently explored and mined for over a century. GPMI is proposing to conduct exploration activities for precious metals such as gold and silver within the project area. Figure 2 shows the areas disturbed by the previous operators. Except for the disturbance associated with exploration Notice NVN-084229, all of the existing disturbances are inactive.

Figures 3 and 4 show the disturbance areas and facilities proposed under the exploration project in relation to previously disturbed areas. A summary of proposed disturbance associated with the exploration project is provided in Table 1. The Proposed Action calls for underground and surface exploration activities that would result in a total of 27.58 acres of disturbance on public lands of which, 4.75 acres are associated with notice-level disturbance. Proposed activities would occur on 16.98 acres of existing disturbance and 5.85 acres of new disturbance.

Table 1 Exploration Disturbance Summary

Disturbance Type	Notice-Level Disturbance * (acres)	Proposed Disturbance on Previously Disturbed Areas (acres)	Proposed Disturbance on Undisturbed Areas (acres)	Total Proposed Disturbance (acres)
Proposed Portal Entrance and Regraded Slope	0.00	0.00	0.85	0.85
Access Haul Roads	0.00	5.42	0.00	5.42
In-Pit Haul Road	0.00	1.25	0.00	1.25
Waste Rock Disposal Area	0.00	0.55	0.00	0.55
Ore Stockpile Pad	0.00	0.67	0.00	0.67
Stormwater Evaporation Cell	0.00	0.33	0.00	0.33
Laydown Yards	0.00	8.76	0.00	8.76
Exploration Disturbance	4.75	0.00	5.00	9.75
Total Acres	**4.75**	**16.98**	**5.85**	**27.58**

Note: Ancillary support structures would be mobile and located in yard areas.
*This disturbance is associated with Notice NVN-084229 and a portion of this disturbance took place in 2009.

2.1.1 Underground Exploration Activities and Facilities

Areas of new and existing disturbance associated with proposed underground exploration are shown on Figure 4 and described in the following sections.

Portal Entrance

The existing natural slope above the proposed portal entrance would be cut back and steepened to form a flat area at the portal entrance to facilitate equipment maneuvering and staging. The slope of the cut would not exceed 2.5H:1V (Horizontal:Vertical) and would be excavated into native alluvium consisting of silty sands and gravels. A slope stability analysis of the proposed cut slope was performed using the SLIDE program. The cut slope was modeled assuming a friction angle for in-situ alluvial soils of 32 degrees with no cohesion, less than reported values for similar soils (GPMI, 2010). The results of the analysis are included in the POO (GPMI, 2010) and indicate the cut slope would be stable under both static and pseudostatic conditions. If soils other than those considered here are encountered during excavation of the cut slope, GPMI would complete additional testing and slope stability analyses to confirm the stability of the proposed slope configuration.

Underground Decline

The decline would be excavated with conventional underground equipment. The decline and all underground excavations would remain above the existing groundwater table; dewatering activities would therefore not be necessary for the Proposed Action. The entrance of the decline and vent raise would be secured for public safety and to prevent unauthorized access. Waste rock and ore material would be collected and staged in an underground muck bay(s). The material would be moved from the underground muck bay(s) to either the ore stockpile or waste rock disposal area. The material would be loaded and transported to the ore stockpile pad or waste rock disposal area via small haul trucks (10 to 12 cubic yard dump truck).

Ventilation Shaft

A ventilation raise to support the underground operation would be constructed and located in the laydown yard (Figure 4). The laydown yard is an existing pad cut into a native soil slope to form a flat area, presumably for previous exploration activities. The ventilation raise would be installed as a large-diameter drill hole drilled from the existing pad and would be constructed with a concrete collar set in a concrete pad. The ventilation raise would be fitted with a locking cap or the pad would be fenced to prevent public access.

Waste Rock Disposal Area

Waste rock would be disposed within the perimeter of the existing pit, in a small, relatively steep-sided pit area located in the northern end of the larger pit (Figure 4). The existing haul road would be extended north onto the existing elevated northern portion of the pit using cut-and-fill construction methods. Waste rock would be placed against the northern highwall of the pit. A total of 12,000 cubic yards of waste rock is currently anticipated for disposal in this location during exploration operations.

Waste rock would be transported from the decline directly to the waste rock disposal area. However, a second option would be to unload waste rock immediately outside the decline, where it can be transferred with a backhoe into a small haul truck and transported to the waste rock disposal area. This would minimize the need for underground equipment to travel to the waste rock disposal area. The waste rock would be dumped near the end of the haul road and spread up against the northern portion of the pit highwall with a bulldozer to an overall slope of 3H:1V during operations. Meteoric water would collect in the low point in the pit adjacent to the regraded haul road section. Results of background testing using the Meteoric Water Mobility Procedure (per NDEP-BMRR Regulation Branch Documentation/Forms) are available for review in the POO (GPMI, 2010).

Acid base accounting test results for total sulfate range between 0.12 to less than 0.01 percent by weight with the exception of sample GPA 004 taken from the south end of the pit with sulfate of 0.31 percent. Acid Generation Potential ranged between 4.1 to less than 0.03 tons of calcium carbonate equivalents per 1,000 tons of material, except for GPA 004, which has 15.0 tons of calcium carbonate equivalents per 1,000 tons of material. The net neutralization potential of samples (except GPA 004) was positive, and indication that the material is non-acid generating. The net neutralization potential of GPA 004 was -9.7 tons calcium carbonate equivalents per 1,000 tons of material indicating unknown acid-generating or acid-neutralizing potential. GPMI would monitor and manage waste rock as required in the Water Pollution Control Permit issued by the Nevada Division of Environmental Protection (NDEP).

Ore Stockpile Pad

A geomembrane-lined ore stockpile pad is proposed to hold up to 4,500 cubic yards (~6,000 tons) of ore obtained from the decline. The subgrade would be compacted and smooth-rolled prior to the installation of a single 80-mil smooth High Density Polyethylene (HDPE) liner. Grading would be achieved using cut-and-fill methods with a dozer (Caterpillar D9) and a backhoe (Caterpillar 420D). Additional fill, consisting of residual oxidized waste material from the former Adelaide Crown operation, would be obtained from a borrow area within the existing South Pit perimeter. As it becomes available, ore would be transported from the portal entrance to the ore stockpile pad. The ore would remain in the lined facility on a temporary basis, until it can be transported off-site for metallurgical testing. Processing of bulk samples would not occur within the POO boundary. Processing of the bulk samples would occur at GPMI's Humboldt Modular Mill near Imlay, Nevada, at a laboratory in Sparks, Nevada, or other available facilities. Bulk samples would be transported to the processing locations using 40-ton highway haul trucks. Approximately five to eight trucks per day would leave the project area.

2.1.2 Surface Exploration Activities

Based on the results of the underground exploration program, additional surface exploration activities are likely to occur, including surface trenching and/or drilling. The final location and number of trenches or drill holes/pads would be contingent on the findings of the underground exploration program described above.

GPMI anticipates up to 50 drill sites. Drill holes would be positioned within a drill pad 30 feet wide by 70 feet long, including the sump. Wherever possible, the drill pads would be confined to areas on or adjacent to existing roads. An additional 150 feet of new road, 12 feet wide is planned. Cross-country travel would be limited to 80 feet. Drilling plans and annual work plans for surface exploration activities would be submitted to the BLM and NDEP for review and approval prior to construction.

2.1.3 Facilities

Stormwater Control

This section describes structures and other measures proposed by GPMI to control stormwater runoff associated with exploration activities. Additional information on stormwater management is provided in the POO (GPMI, 2010).

Portal Entrance

Stormwater would be prevented from entering the underground portal by grading the working pad at a minimum one percent slope away from the entrance and toward a roadside ditch. Stormwater falling on the pad would sheet flow east across the access road and into the existing ditch. In addition, an 18-inch deep v-ditch would be constructed upslope from the regraded slope area around the portal pad to intercept and divert stormwater runoff. The stormwater collected in this channel would be routed around each side of the portal area to the pad and conveyed across the access road in shallow swales upslope and downslope from the portal facility. These flows would be discharged into the existing ditch alongside the access road. Both reaches of the v-ditch (north and south) and the two swales conveying storm flows across the access road to the roadside ditch were sized to accommodate flows up to 102 cubic feet per second, in excess of design requirements.

Stormwater Evaporation Cell

A stormwater evaporation cell would be constructed adjacent to the ore stockpile pad. This stormwater evaporation cell would be approximately 70 feet by 20 feet. The subgrade would be compacted and smooth-rolled prior to the installation of a double liner system consisting of a 60-mil Agru Drain Liner® secondary liner over overlain by an 80-mil smooth HDPE primary liner. Leakage collection and recovery would be accomplished between the liners through a leakage collection and recovery system access port (6-inch diameter PVC riser pipe) situated in one

corner of the pond. Grading would be achieved using cut-and-fill methods. The sides of the evaporation cell would be graded at a 1.5H:1V slope. The facility would be constructed with an impermeable liner to the engineer's specifications and would serve to contain and manage stormwater generated from the ore stockpile pad through evaporation. A six-foot chain-link fence would also be installed around the stormwater evaporation pond to minimize access by humans and animals to the pond.

Access Roads

All existing roads within the POO boundary (access as well as haul roads) were constructed by previous operators. The existing road infrastructure, and roads that would be used as part of the Proposed Action, as well as roads that would provide access for the public to the surrounding areas, are shown on Figure 5. Several of these roads would be used by GPMI as part of this current exploration program. All roads proposed for use under the proposed project are currently in good condition. Only general maintenance would be necessary to maintain road safety and stability for the Proposed Action. General maintenance would include grading the roads when necessary, maintaining existing stormwater swales and safety berms, and cleaning out existing ditches. Road maintenance would be conducted with a grader and a backhoe. Dust suppression would be conducted with a water truck when necessary. Traffic on these roads is anticipated to be light, with an estimated four trucks per hour traveling between the portal and the ore stockpile and waste rock disposal area during operations. It is estimated that 13 to 16 vehicles per day would be traveling to the site including crew vans, supervisor pickups, and bulk sample tucks. Supply, equipment, and fuel deliveries would take place on an as needed basis.

Where drainages are crossed, BLM Best Management Practices (BMPs) would be employed to minimize the surface disturbance and erosion potential. Up to 150 feet of new roads would be constructed associated with the surface exploration program.

Ancillary and Support Facilities

The GPMI POO also anticipates the following ancillary and support facilities for the exploration activities:

- Internal secondary containment consisting of a geomembrane-lined equipment maintenance, lubrication, and fueling area would be established within the South Pit to service equipment. This internal secondary containment would hold 110 percent of the total tank volume. Fuel and lubricant deliveries would be on an as needed basis.

- All hazardous materials, including fuels and lubricants, would be located within a one-foot-high earthen containment bermed and HDPE-lined area; a spill kit would be located at the containment area.

- Mobile self-contained generators and a parts van or truck would support site-wide activities. The primary and backup generators would be operated from a bermed and HDPE-lined pad sized to contain 110 percent of the contents of the generator.

- Mobile office and support trailers would be transported to the site by an outside contractor.

- Chemicals used for the advancement of the underground or site operations and/or equipment maintenance (e.g., degreasers, solvents, etc.) would be contained within the fuel area or stored underground throughout the duration of the project.

- Water used for the advancement of the underground drift would be collected in shallow underground sumps and re-used when possible. To manage any petroleum products mixed with the operations water, oil absorbing materials would be used. All used absorbent pads would be temporarily stored in properly labeled 55-gallon drums in a designated hazardous material storage area, then removed from the site for proper disposal.

- Blasting supplies and explosives would be stored aboveground until the decline has been driven far enough to store them underground. These materials would be stored in a temporary surface bunker that meets all Mine Safety and Health Administration (MSHA) regulations (30 CFR §57.6000 *et seq.)* and United States Bureau of Alcohol, Tobacco, and Firearms (27 CFR §555 *et seq.)* (BATF) regulations for construction, proximity to work areas, and public safety. Once the location of the temporary storage bunker has been determined it would be submitted to BLM and NDEP for approval. Storage of blasting supplies and explosives on the surface would take place for 30 to 60 days. If surface storage is required for longer the BLM would be notified. Storage of these materials underground would take place as soon as possible at which time the temporary surface bunker would be removed and would meet all MSHA requirements for underground storage.

- It is currently anticipated that two office trailers would be required for support of exploration operations. In addition, one or two Change Room trailers would be required for personnel lockers, showers, and bathroom facilities.

- A fully self-contained dry facility would be used. Maintenance of this facility would be managed by the contract mining company. A certified contractor would be used to dispose of gray water associated with this facility.

- Up to two portable toilets would be located near the portal entrance.

2.1.4 Other Project Elements

Equipment

In addition to the aforementioned ancillary and support facilities, GPMI anticipates use of the equipment listed in Table 2 as part of the overall exploration program. The list of equipment may be modified once a mining contractor has been selected for the project.

Table 2 Proposed Exploration Equipment

Underground Equipment	Surface Equipment
Loaders (2 & 6 cubic yard capacities)	Backhoe (1)
Truck (15-30 ton capacity) (1)	Articulated Rear Dump Trucks (2)
Drill Jumbos (1)	Dozer
Slushers	Motor Grader
Transmixer/Cement Truck (1)	Crane (1)
Underground Grader (1)	Fork Lift (1)
Personnel Tractor (1)	Front End Loader (7-8 cubic yards) (1)
Rock Bolter (1)	Water Truck (1)
Jackleg Drills (hand-held pneumatic drills)	Supply Truck (flatbed truck) (1)
Longhole Drills	Crew Vans (2)
Portable Electric Substations (1)	Light Vehicles (pickups) (4)
Fork Lift (1)	Generators @ 1,000 Hp each (1 + Backup)
Flatbed Truck (1)	Up to 4 Portable Light Plants
Lube Truck (1)	
Powder (Explosive-Delivery)Truck (1)	
Pumps	
Underground Refuge Stations	

Surface drilling activities would be accomplished using a track-mounted, or rubber-tire buggy-mounted drill rigs. The drill sites would require construction of sumps for drilling fluids, as well as a small level drill pad. Sumps would be provided with temporary plastic snow fencing to prevent animal entry. A four-wheel drive water truck and support vehicle would be utilized to transport water to the drill sites. Four wheel drive service trucks would also be used to transport fuel and crews to the drill sites.

The portal entrance would be constructed with conventional equipment. This equipment may include a bulldozer (Caterpillar D9), vibratory compactors, and/or vibrating rollers.

Water Use

As much as 250-acre feet a year of water may be required during exploration drilling. This also includes water that would be used on a daily basis for dust suppression during site preparation and operations. All water for exploration activities would be pumped from a Nevada Division of Water Resources (NDWR)-permitted well located on the project site (Figure 4). GPMI is in the process of obtaining water rights for that well.

Hazardous Materials/Waste

Hazardous and or petroleum products used at the site would include diesel fuel and various lubricants. All fuel and lubricants would be temporarily stored in a secondary containment area

located in the South Pit laydown yard. All fuel and lubricant tanks and containers would total less than 10,000-gallon liquid capacity. All tanks and containers used to store hazardous/toxic materials, wastes, lubricants and/or fuels would be removed from the project area either before or during reclamation activities for proper disposal. A lubricant truck would be stationed in the large laydown yard when not in use.

Work Force

GPMI anticipates operating three, eight-hour shifts per day. Table 3 provides the current estimate of the anticipated workforce for the project.

Table 3 Proposed Personnel Per Working Shift

	Day Shift	Swing Shift	Graveyard Shift	24-Hour Total
Total Hourly Personnel	17	9	9	35
Total Salary Personnel	5	1	1	7
Total Personnel	**22**	**10**	**10**	**42**

Surface Occupancy

Under CFR 3715.01, occupancy means full- or part-time residence on public lands. It also refers to activities that involve residence; the construction, presence, or maintenance of temporary or permanent structures that may be used for such purposes; or the use of a watchman or caretaker for the purpose of monitoring activities. Residences or structures include, but are not limited to, barriers to access, fences, tents, motor homes, trailers, cabins, houses, buildings, and storage of equipment or supplies. In addition to the ancillary facilities mentioned in Section 2.1.3, other items that fall under the surface occupancy regulations include a portable storage trailer approximately 20 feet long and eight feet wide to temporarily store drilling supplies and samples. Fencing would be used to protect open sumps or other small excavations that pose a hazard or nuisance to the public, wildlife, or livestock. Ancillary facilities as well as the portable trailer and all fencing would be removed during final reclamation activities.

Site Security

GPMI would install a perimeter four-strand barbed-wire fence around the top edge of the portal slope cut. The barbed-wire fence would connect to a six-foot chain-link fence around the portal entrance pad. Access to the exploration decline would be controlled by the installation of two locking 12-foot gate panels. Blasting supplies and explosives would be stored in a temporary secured bunker aboveground until the drift has been driven far enough to facilitate underground storage. Materials would be stored in accordance with MSHA regulations (30 CFR 57.6000 *et seq*.) and United States BATF regulations (27 CFR 555 *et seq*.).

Quality Assurance Plan

GPMI would provide site inspection of all exploration operations as well as facility and road improvements and maintenance. This includes on-site inspections of the operation as well as cell phone or radio contact with the operations and construction crews to determine if any problems are encountered. For site monitoring, including environmental sampling, GPMI has prepared a Quality Assurance Plan (GPMI, 2010).

2.1.5 Reclamation

Reclamation of disturbed areas resulting from project activities would be completed in accordance with BLM and NDEP regulations. The purpose of Subpart 43 CFR 3809 – Surface Management, is to prevent unnecessary or undue degradation of public lands by operators authorized by the mining laws. Anyone intending to develop mineral resources on public lands must prevent unnecessary or undue degradation 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 unnecessary or undue degradation. In addition, the State of Nevada requires that a reclamation plan be developed for any new mineral exploration or mining projects (NRS 519A). Proposed reclamation measures focus on both underground and surface exploration activities.

2.1.5.1 Reclamation Disturbances, Facilities, and Roads

Access within the POO boundary has been maintained, prior to GPMI's acquisition of the property. It is the intent of GPMI to leave these access roads (including the designated haul/access roads) in the same or better condition than what currently exist. Once exploration operations have terminated, the in-pit haul road would be ripped with a dozer and seeded with a BLM-approved seed mix using a broadcast seeder. The extent of reclamation required for pre-disturbed pre-1981 roads would be determined by the BLM and Bureau of Mining Regulation and Reclamation (BMRR) in consultation with GPMI.

Ore Stockpile Pad

It is anticipated that at the end of exploration operations, all ore stored on the ore stockpile pad would be transported to an off-site location for testing and/or processing. Once all ore has been removed from the pad, the liner would be removed and disposed of at an approved location off-site. The embankments would be pushed and graded back to approximate the original topography. The area would be ripped with a dozer and seeded with a broadcast seeder. If residual ore remains after exploration operations, it would be managed in the waste rock disposal area.

Waste Rock Disposal Area

Waste rock would be stacked with a dump truck and graded with a dozer during operation. As the facility is constructed, the dozer would slope the sides to 3H:1V. For final reclamation, the facility would be ripped with a dozer and seeded with a broadcast seeder. If residual ore is placed in the waste rock disposal area, GPMI would apply a one-foot lift of fine to medium grained cover over the surface of the waste rock disposal area where ore was placed. Cover material would be obtained from the first bench of the existing South Pit. Scarification would not be necessary for seedbed preparation, if cover material is necessary. Likewise, the covered area would be seeded with a broadcast seeder at the end of exploration operations.

Stormwater Control Structures

Existing stormwater control structures would remain in place. At the end of operations, once all stockpiled ore has been removed from the ore stockpile pad, the liner of the stormwater evaporation cell would be removed and disposed of at an approved off-site location. The embankments would be pushed and graded back to the previous topography (flat). The area would be ripped with a dozer and seeded with a broadcast seeder.

Laydown Yards and Portal Entrance and Regraded Slope

Approximately one-foot of salvaged growth medium would be placed at the portal entrance area with a small haul truck and graded with a dozer to match the existing topography once the portal entrance has been plugged or backfilled. The portal entrance and regraded slope and laydown yards would be ripped with a dozer and seeded with a broadcast seeder once exploration operations have terminated. No regrading is proposed for laydown yard areas. All revegetation would be conducted with a BLM-approved seed mix and application rate.

2.1.5.2 Closure of Underground Operation and Drill Holes

Closure of the proposed exploration decline and vent raise would require a minimum of a 10-foot thick foam/cement backfill plug to be placed at the portal entrance and vent raise opening. After plugging the decline, the area would be shaped to match the existing topography. Boreholes and wells would be closed in accordance with NRS 534. Closure would be verified by the project geologist and driller's reports.

2.1.5.3 Surface Exploration Activities

Mineral exploration boreholes and trenches, subject to NDWR regulations, would be abandoned in accordance with applicable rules and regulations (NRS 534).

2.1.5.4 Disposition of Buildings, Equipment, Piping, Scrap, Chemicals, and Other Materials

All facilities, including ancillary operation support structures, offices, portable toilets, fuel and lubrication tanks, containers, and the existing water tank from the previous operator, would be

dismantled and removed from the site during reclamation activities. Diesel fuel and lubricants would be returned to vendors or used by GPMI at other facilities. Any chemicals classified as hazardous or regulated wastes would be transported off-site and disposed of in accordance with applicable federal and state regulations. When underground operations are completed, all underground equipment would be removed from the site when contractors demobilize.

2.1.5.5 Revegetation, Seeding, and Planting

Generally, seeding would take place after regrading and seedbed preparation of disturbed areas described above. Reclaimed areas would be broadcast seeded with a cyclone-type bucket spreader or a mechanical blower mounted on an all-terrain vehicle. Broadcast seed would be covered by harrowing, raking, or other site-specific appropriate methods as necessary to provide seed cover and enhance germination. Reclaimed surfaces would be left in a textured or rough condition (small humps, pits, etc.) to enhance moisture retention and revegetation success while minimizing erosion potential.

The upland seed mix is provided in Table 4. The mix is designed to provide species that can exist in the north-central Nevada environment, are proven species for revegetation, and/or are native species found in the existing plant communities prior to disturbance. Broadcast seeding for the upland seed mix would be at a rate of 17.0 pounds per acre.

Table 4 Proposed Revegetation Seed Mix

Scientific Name	Common Name	Application Rate (pounds per live seed per acre)
Leymus cinereus	Basin wildrye	4.0
Pseudoroegneria spicata	Bluebunch wheatgrass	3.2
Secale cereale	Cereal rye	2.4
Atriplex canescens	Fourwing saltbush	2.4
Agropyron cristatum	Crested wheatgrass	2.4
Artemisia tridentata ssp. *wyomingensis*	Wyoming big sagebrush	0.8
Ericameria nauseosa	Rubber rabbitbrush	1.0
Penstemon palmeri	Palmer's penstemon	0.8
	TOTAL	**17.0**

GPMI would monitor revegetation success and the presence of invasive, non-native species on an annual basis. Visual observations and photographs would be collected at pre-established monitoring locations. Weed control would be performed by GPMI during the appropriate season to eradicate infestations. At a minimum, GPMI would return the proposed areas of disturbance to current conditions to demonstrate revegetation success. Seeding would take place within the seeding window for northern Nevada from September to the end of January.

2.1.5.6 Growth Medium and Regrading

GPMI would salvage growth media where possible. Suitable growth media material may be available along the first bench in the South Pit. This material has been field-verified as containing fine- to medium- grain size aggregate and may be suitable as growth media or cover material if necessary. The quantity of the material available has been roughly estimated to be greater than 1,000 cubic yards, which would, if necessary, provide up to one-foot of cover over the proposed waste rock disposal area (only if residual ore is worked into the final grade). GPMI proposes to salvage native soil from the construction of the portal entrance regrade area. The native soil would be pushed uphill or transported and stored in an inactive area, or used for berm construction above the proposed regrade slope. This material can be easily pushed back downhill during reclamation of the facility. GPMI does not propose grading of yard areas and, therefore, growth media is not proposed to be salvaged from these areas.

2.1.5.7 Survey Monuments

GPMI would protect survey monuments, witness corners, reference monuments, bearing trees, and line trees against unnecessary or undue destruction or damage. If, in the course of operations, any monuments, corners, or accessories are destroyed, GPMI would immediately report the matter to the authorized officer. Prior to destruction or damage during surface disturbing activities, GPMI would contact the BLM to develop a plan for any necessary restoration or re-establishment activity of the affected monument in accordance with Nevada Instruction Memorandum No. NV-2007-003 and the Nevada Revised Statues. GPMI would bear the cost for the restoration or re-establishment activities.

2.1.5.8 Interim Management Plan

GPMI does not anticipate temporary closure during the exploration activities. Inclement weather may cause a short-term suspension of activities for several days. In the event of an unplanned temporary closure of more than 30 days, GPMI would undertake the following measures:

- Equipment and supplies would either be removed from the site or secured from theft and vandalism;
- Underground openings would be gated and locked to block entry;
- Monitoring would continue as required; and
- GPMI would notify BLM and NDEP if the unplanned closure is expected to extend past 30 days.

2.1.5.9 Measures to be Taken During Extended Periods of Non-Operation

In the event that exploration operations are interrupted due to economic considerations or unforeseen circumstances, temporary closure may be initiated. Temporary closure is outlined below:

- Roads: the main access road would receive maintenance, as necessary;
- Erosion Control Measures: all erosion control structures and BMPs would be regularly inspected and maintained; and
- Buildings: all buildings, equipment, and support facilities would be protected from public access and maintained as necessary.

2.1.5.10 Concurrent Reclamation

Concurrent reclamation of exploration disturbances would be undertaken during the design, construction, operation, and closure of the mining operation. Specifically, waste rock generated from the advancement of the proposed exploration decline would be transported and stockpiled at the waste rock disposal areas. This material would be graded to 3H:1V and sloped to drain to the low point in the existing pit (to post reclamation topography) as it is being stockpiled.

2.1.5.11 Proposed Time Schedule for Project Reclamation

The advancement of the exploration decline is anticipated to require one to two years; the timing of surface exploration activities is currently unknown. If potential reserves are located, disturbance would remain pending mine permitting. If the gold deposit is considered not economically feasible to develop, reclamation would occur within two years after the completion of the proposed activities.

Earthwork and revegetation activities are limited by the time of year during which they can be effectively implemented. Table 5 outlines the anticipated reclamation schedule on a quarterly basis. Site conditions and/or yearly climatic variations may require that this schedule be modified to achieve revegetation success. Reclamation would be coordinated with NDEP BMRR. The proposed reclamation duration is expected to be up to four years from the time of commencement of final reclamation. Revegetation is anticipated to take three years after the time of seeding to achieve success. Revegetation success would be determined by the BLM and the NDEP.

Table 5 Anticipated Reclamation Schedule

Activity	Quarter				Year(s)
	1st	2nd	3rd	4th	
Regrading	X	X	X	X	Within 2 years of project completion
Seeding				X	Within 2 years of project completion
Monitoring		X	X		3 years beyond regarding and reseeding

2.1.5.12 Constraints on Reclamation Schedule

The estimated time to complete reclamation assumes average precipitation occurs during the year following reseeding. Periods of drought could delay revegetation. Generally, the time to complete reclamation and closure activities is assumed to be staged in a manner that allows completion within a single calendar year. However, neither planning nor bond cost estimation is critically dependent on whether the reclamation is initiated in one or two years.

2.1.5.13 Anticipated Post-Exploration Land Use

If gold resources are not located, exploration activities would cease. The post-exploration land use would revert back to the original land uses. Major land uses occurring in the POO boundary include, livestock grazing, wildlife habitat, and recreation. Following closure, the POO area would support those land uses. Post-closure land uses are in conformance with the Sonoma-Gerlach Management Framework Plan. The objectives of the reclamation program include:

- Minimize erosion damage and protect water resources through careful control of water runoff;
- Establish surface growth media conditions conducive to the regeneration of a stable plant community through managing growth media;
- Revegetate proposed disturbed areas with an approved mix of plant species in order to establish long-term productive plant communities compatible with existing land uses; and
- Employ existing site-specific resources that would enhance wildlife habitat and encourage desirable plant species.

If gold resources are located, then GPMI would likely propose to increase development within the project boundary. At the end of mining and completion of reclamation, the area would revert back to the original post-mining land uses identified above.

2.1.5.14 Post Reclamation Management

Post-closure management would commence on any reclaimed area following completion of the prescribed reclamation work for the area, and would include continued noxious weed control and erosion control, as well as vegetation monitoring. Post-closure management would extend until

the reclamation of the site or component has been accepted by both the BLM and NDEP-BMRR in accordance with the provisions of the Nevada Guidelines for Successful Revegetation (NDEP, 1998). For bonding purposes, a three-year post-closure management period is assumed following completion of reclamation construction and seeding on the site. For sites reclaimed early in the operations, management of the reclaimed sites would occur concurrently with operational site management. Annual reports including as-built drawings and reclamation progress would be submitted to the BLM and NDEP by April 15th of the following year.

2.1.6 Environmental Protection Measures

GPMI has committed to the following environmental protection measures to prevent unnecessary or undue environmental degradation during construction, operation, and reclamation activities of the Proposed Action. GPMI would train employees, contractors, and other personnel as to the environmental and cultural resources responsibilities required by state and federal law.

Air Quality

Project-related traffic would observe posted speed limits to enhance public safety, protect wildlife and livestock, and minimize dust (particulate) emissions. A water truck would be used as necessary to manage fugitive dust.

Cultural Resources

The cultural resources identified in the POO boundary would not be affected by the Proposed Action. The following environmental protection measures would be put in place to protect any unknown resources.

- GPMI would not remove, disturb, alter, injure, or destroy any scientifically important paleontological remains or any historical or archaeological site, structure, building, object or artifact that qualify for listing on the National Register of Historic Places or have not been evaluated for listing on the National Register.

- GPMI would be responsible for ensuring that employees, contractors, or any others associated with the project do not damage, destroy, or vandalize archaeological, historical sites, or the artifacts found within the POO boundary.

- Should damage to cultural resources occur within or near the POO boundary during the period of construction, operation, or rehabilitation due to the unauthorized, negligent, or inadvertent actions of GPMI or any other project personnel, GPMI would be responsible for rehabilitation or mitigation costs. Individuals involved in illegal activities could be subject to penalties under the Archaeological Resources Protection Act (16 U.S.C 470ii), FLPMA (43 U.S.C 1701), the Native American Graves and Repatriation Act (16 U.S.C. 1170) and other applicable statutes.

- Should human remains/burials or any previously unidentified cultural (archaeological or historical) resources be discovered during the exploration related activities, GPMI will immediately cease all activities within 300 feet of the discovery, ensure that the discovery is appropriately protected, and immediately notify the authorized officer. Pursuant to 43 CFR §10.4(g), GPMI shall notify the authorized officer, by telephone, with written confirmation, immediately upon the discovery of human remains, funerary items, sacred objects, or objects of cultural patrimony. Further, pursuant to 43 CFR §10.4(c) and (d), GPMI shall stop activities in the immediate vicinity of the discovery and protect it from additional activity for 30 days or until notified to proceed by the authorized officer.

- A cultural inspection may occur at any time by the authorized officer without notice.

Erosion and Sediment Control

Existing stormwater control structures would be maintained or improved. Haul and access roads would receive periodic inspections for maintenance issues. Stormwater generated in the waste rock disposal area would be managed and contained in the low point of the existing pit. Stormwater generated from the ore stockpile pad would be conveyed and contained in a lined stormwater evaporation cell located adjacent to the ore stockpile pad. This stormwater evaporation cell would be constructed as approved by NDEP and/or BLM.

BLM-specified BMPs would be utilized to minimize the surface disturbance and erosion potential. Sediment control structures include, but are not limited to, fabric and/or certified weed-free straw bale filter fences, siltation or filter berms, and downgradient drainage ditches. Maintenance of the access and haul roads may include limited scraping or blading and re-establishment of safety berms, plus stormwater swale and ditch upkeep when necessary. GPMI would conduct erosion control monitoring during the spring and fall and opportunistically during major precipitation events to monitor the effectiveness of the erosion controls. The controls would be modified in areas where deemed inefficient and as approved by BLM and/or NDEP.

GPMI would observe drainages to ensure that sedimentation resulting from the proposed activities is minimized. Drainages would be observed after heavy precipitation and during snowmelt. During winter months, snow would be removed and piled over the side of the safety berms on the access and haul roads or would be stacked in wide, flat areas near the access roads, drill pads, and laydown yards. Snow would not be stacked or piled in areas where spring runoff could cause sediment loading in nearby streams, ephemeral drainages, or result in damage to access and haul roads. If necessary, snow removal equipment would be utilized to remove snow from areas where spring runoff could potentially contribute to sediment loading in nearby streams and ephemeral drainages.

Once the project has been completed, disturbed surfaces would be scarified and seeded. The waste rock disposal area would be recontoured and seeded with the seed mix provided in Table 4.

Fire Protection

The following precautionary measures shall be taken to prevent wildland fires. In the event that operations should start a wildland fire, GPMI recognizes that it could be held liable for all suppression costs under 43 CFR 9212.4. These are in addition to any requirements imposed by MSHA or other governing agencies for work-area fire protection:

- All vehicles shall carry, at a minimum, a shovel, five gallons of water, and a conventional fire extinguisher;
- Adequate fire-fighting equipment (a shovel, a Pulaski, standard fire extinguisher(s), and an ample supply of water) shall be kept readily-available at each active surface drill site;
- Vehicle catalytic converters shall be regularly inspected and cleaned of all flammable debris;
- All cutting/welding torch use, electric-arc welding, and grinding operations shall be conducted in an area free, or mostly free, from vegetation. An ample supply of water and a shovel shall be on hand to extinguish any fires created from sparks. At least one person, in addition to the cutter/welder/grinder, shall be at the work site to promptly detect fires created by sparks;
- Any fire restrictions or closures issued by the BLM Winnemucca District Office would be publicized in the local media, and notices would be posted at various sites throughout the district. GPMI personnel shall be responsible for being aware of and complying with requirements of these orders; and
- Any wildland fire observed shall be reported immediately to the BLM Central Nevada Interagency Dispatch Center at (775) 623-3444.

Invasive, Non-Native Species

GPMI would be responsible for controlling all noxious weeds and other undesirable invading plant species in the reclaimed area until revegetation activities have been determined to be successful by the BLM authorized officer. GPMI shall be responsible for contacting the BLM for concurrence with any proposed weed control program prior to application of any chemical treatments for weeds on public lands.

Employees and contractors would be educated to identify noxious weeds that could occur in the area. GPMI would report occurrence of noxious weeds to the BLM authorized officer and take appropriate measures to prevent the spread of noxious weeds. BMPs include the following:

- Flagging areas of concern to prevent employees and contractors from driving through a stand of noxious weeds;

- Seeding growth media stockpiles as soon as practical with an interim seed mix;

- Using certified weed-free straw;

- Using an approved seed mix to reduce invasive, non-native species over time by developing and maintaining desired plant communities; and

- Washing down construction equipment in accordance with BLM standard operating procedures to prevent the transfer of noxious weed seeds from other areas. Equipment would be washed down by the contractor before it is brought on-site.

Migratory Birds

The Migratory Bird Treaty Act (MBTA) prohibits the destruction of nests (nests with eggs or young) of migratory birds. Most of the "songbirds" that occur in this area are migratory birds and are protected by this provision. Prior to any surface disturbance in potential migratory bird nesting habitat from March 1 to July 31 (the approximate nesting season for the majority of migratory birds in the Winnemucca District), a field survey for migratory birds, their nests, eggs, or young would be performed, in order to prevent violation of the MBTA. Raptor nest surveys would be conducted between February 1 and August 31, to identify any active raptor nests prior to surface disturbance during that period. Based on the results of a survey, a buffer (distance would be determined by the BLM) would be established around the active raptor nest. All surface disturbing activities would be restricted around active nests until a survey determines that the raptor young have fledged. All surveys would be conducted by a qualified biologist, and specific survey protocol would be received from the BLM prior to initiating surveys. A summary memorandum of each survey would be provided to the BLM within seven working days of each survey.

Paleontology

- GPMI would be responsible for ensuring that employees, contractors, or any others associated with the project do not damage, destroy, or vandalize vertebrate paleontological sites or the fossils found within the POO boundary.

- Should damage to paleontological resources occur within or near the POO boundary during the period of construction, operation, or rehabilitation due to the unauthorized, negligent, or inadvertent actions of the GPMI or any other project personnel, the proponent would be responsible for rehabilitation or mitigation costs.

- Should any previously-unidentified vertebrate paleontological resources be discovered during the exploration related activities, GPMI would immediately cease all activities

within 300 feet of the discovery and ensure that the discovery is appropriately protected and immediately notify the authorized officer.

- GPMI would abide by the Paleontological Resources Protection Act.

Public Safety and Access

The following steps would be taken to ensure public safety and access around the project area:

- The public shall be notified via public announcement when GPMI intends to perform any blasting or other hazardous mining activities;
- Blasting areas shall be well marked with the appropriate warning signage and a blasting schedule;
- Access roads to hazardous areas shall be barricaded and security personnel shall be in place to mitigate any safety hazards associated with blasting; and
- Signage directing recreation traffic to alternate access around the project would be put in place during the project.
- Roads that would allow for public accesses around the Proposed Action and still allow for access into the surrounding area are shown on Figure 5.
- Sumps would be surrounded by construction fencing to ensure public safety.

Special Status Species

The following environmental protection measures would be incorporated into the Proposed Action to avoid impacts to special status species:

- GPMI shall avoid disturbing sagebrush to the greatest possible extent. This may be accomplished by using existing roads and trails, bare ground, burned areas, or other areas devoid of sagebrush. GPMI shall also avoid disturbing meadows and riparian areas, as these provide habitat for sage-grouse; and
- Additional special status species surveys would be conducted within the 5.85 acres of proposed surface exploration prior to disturbance in order to avoid impacts to special status species. Once the locations of the exploration roads and pads have been determined, the BLM would be notified and surveys for species that are determined to have potential habitat within the area would be conducted prior to disturbance.

Visual Resources

The following environmental protection measures would be incorporated into the Proposed Action to avoid impacts to visual resources including night skies:

- If lighting is necessary, portable light plants would be used in place of facility-wide overhead lighting;

- If it would not interfere with safety, directional lighting would be used. This would include aiming lights downward or towards existing highwalls to avoid directing light to adjacent land. Hooding and shielding of the lights would also be used; and

- If exploration activities take place at night, zoned lighting would be used to only light areas where it is necessary for operation and safety.

Waste, Hazardous or Solid

No hazardous or toxic materials or wastes, fuels, waste oil, lubricants or similar materials would be disposed of on public lands. Trash and other debris would be contained in a BLM-approved manner on the work site and then hauled to an approved off-site landfill facility. Burial and/or burning of trash and other debris on public lands would not be performed without specific authorization and permits from the BLM and other appropriate agencies.

GPMI has prepared an Emergency Response and Spill Control Plan (GPMI, 2010) intended to provide adequate on-site control and clean-up materials, and instruct on-site personnel in spill prevention and clean-up methods. Any hazardous or toxic materials or wastes, fuels, waste oil, lubricants, chemicals or similar materials spilled or leaked onto the ground or water would be cleaned up immediately. After clean-up, hazardous or toxic materials or wastes, fuels, waste oil, lubricants, chemicals or similar materials and any impacted materials would be removed from the site and properly disposed of at an approved disposal facility.

In the event hazardous or regulated material, such as diesel fuel and/or lubricants, is spilled, GPMI would take measures to control the spill, and NDEP and BLM would be notified as per NDEP regulations. Petroleum-contaminated soils resulting from fuel and lubricant spills in the fueling area would be removed and disposed of at an approved off-site location. Once the Proposed Action is complete, GPMI intends to remove and manage any residual impacted materials overlaying impermeable secondary containment liners on-site. At this time, the liners would be removed and disposed of at an approved off-site location.

Wildlife

- Sumps would be constructed with slopes of 2H:1V or flatter to allow for wildlife egress should they enter the sumps.

2.2 NO ACTION ALTERNATIVE

Under the No Action Alternative, the BLM would not approve the POO and would not authorize the Proposed Action. The area would remain available for other multiple use activities, as approved by the BLM. Under the No Action Alternative, up to 4.75 acres under the existing

Notice NVN-084229 would be disturbed. Additional exploration activities such as drilling and road construction under the existing Notice would occur throughout the project area. Drill pads would be 30 feet by 70 feet and access roads would be less than 14 feet wide. Up to 33 new drill sites would be constructed on previously disturbed and undisturbed ground and a maximum of 4,325 feet of access road would be constructed. Drill site construction and drilling has or will occur on at least 11 sites during 2011. Additional drilling would take place in 2012 based upon the results of the 2011 holes. The drilling activities under the Notice are expected to take place 24 hours a day. Reclamation of authorized Notice-level activities includes backfilling, recontouring, and reseeding. Environmental protection measures in the Notice include using existing roads whenever possible, constructing sumps to contain drill cuttings and fluids, the use of non-toxic fluids in the drilling processes, and stockpiling topsoil to be used during reclamation.

2.3 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED STUDY

No additional project alternatives have been identified for further study.

3.0 AFFECTED ENVIRONMENT

Public lands administrated by the BLM comprise all of the land within the project area. Public lands within the project area are managed for multiple uses such as watershed, rangeland, mineral exploration and development, recreation, and wildlife habitat.

The project area receives an average of 7.8 inches of rain annually which falls mainly as snow in the winter and locally intense summer thunderstorms (WRCC, 2010). Most precipitation in northern Nevada is from frontal storms mainly from the north during the winter months and convectional storms during the summer months. Frontal storms are generally low intensity, short duration events covering large areas. Convective storms are generally high-intensity thunderstorms, and are brief and have limited aerial extent.

The project area is located approximately 25 miles east-southeast of Winnemucca, Nevada. This area is within the Gold Run Mining District, which has been intermittently explored and mined for more than 100 years. Gold and silver were initially discovered in 1866; however, mining activity was short-lived. In 1897, copper was discovered approximately two miles east of the project area and mining resumed until approximately 1910. Gold, silver, and copper production was recorded starting in 1907. Copper mining at the Adelaide Mine ceased around 1915. A cyanide mill, known as the Adelaide Mill, was erected in 1938. Production ceased around 1942 due to World War II. However, between 1940 and 1942, 211,026 tons of material grading 0.06 ounces per ton of gold and 1.4 ounces per ton of silver were treated. The property was dormant until 1976. Between 1976 and 1987, extensive exploration was carried out by numerous mining and exploration companies. In 1988, the Adelaide property was put into production; however, operations were closed later that year due to lack of operating capital. In 1989, mining resumed and continued until 1991 when mining once again ceased.

The project area is cross-cut by a number of pre-existing roads as well as historic mining facilities such as pits, prospects, and pads. The area is currently used for livestock grazing, wildlife habitat, and mineral exploration. Recreational uses of the public land in the vicinity of the project area consist of dispersed activities such as hunting, biking, primitive camping, rock hounding, and off-road vehicle travel.

The project area is underlain by folded sediments of the Lower Paleozoic, Preble and Valmy Formations. The contact between the Preble and Valmy formation is a west dipping, normal fault of regional extent which along with some of its splays is the loci for significant epithermal mineralization along the Getchell Trend.

Within the project area, the bulk of the previous work has been concentrated on a linear, north-trending zone some 800 feet east of and paralleling the Getchell Fault. This zone can be traced intermittently for about 7,000 feet and varies from 15 to 400 feet in width. It consists of one to three major veins with varying amounts of intervening quartz stockwork. The vein systems consist of typical epithermal silica with accompanying gold and silver values. The mineralized zones are largely oxidized at least to a depth of about 300 feet.

The southern portion of the project area falls within the Pumpernickel Valley hydrographic basin (NDWR groundwater basin #65) and the northern portion falls within the Winnemucca Segment hydrographic basin (NDWR groundwater basin #70). The proposed disturbance within the project area falls entirely within the Pumpernickel Valley hydrographic basin. A shallow alluvial aquifer as well as a deeper non-basalt bedrock aquifer is likely associated with the project area. Natural recharge of groundwater resources is by infiltration and precipitation that falls on the surface, by runoff generated from the Sonoma Mountains, by movement of groundwater from consolidated rocks into the alluvial basin-fill deposits, and from surface water sources such as streams and rivers.

During precipitation and snowmelt, runoff from the slopes of the Sonoma Mountains flows across the alluvial fan where much of it infiltrates the soil into the alluvial aquifers within the valley. Some surface water may percolate into a deeper bedrock aquifer. The presence of groundwater in the project area is evident from the existence of flooding in underground mine workings, water standing in the North Pit (old Crown Pit), and water in the condemnation drill holes in the leach pad area.

Surface water in the project area is in general intermittent. There are three perennial creeks near the project area including Robber Creek, Layson Creek, and Cumberland Creek. The sources of these creeks are generally perennial springs. Small ephemeral drainages are located within the project area.

The project area coincides with middle to late Cambrian aged shale and limestone. Cambrian fossils typical of Nevada include trilobites, brachiopods, archaeocyaths, and helicoplacoids. These are common paleontological resources that provide no new data or information on the age of Nevada or formation of geologic history, and are generally scientifically insignificant. The project area is not expected to be sited on, or impact, any significant paleontological resources.

Two wildland fires have burned within the project area. The first was called the Adelaide Fire (J384). This fire burned approximately 65 acres within the project area and occurred in August 2001. The second fire was also called the Adelaide Fire (EHF8). This fire burned approximately two acres within the project area in August 2008.

Tables 6 and 7 outline the supplemental authorities (formerly referred to as critical elements of the human environment) and additional affected resources for the project, respectively.

This section describes the affected environment in the area associated with the Proposed Action. To comply with NEPA, the BLM is required to consider specific elements of the environment subject to requirements specified in statute or regulations or by executive order (BLM, 2008). Table 6 identifies these resources that must be considered in all environmental analyses and denotes if the Proposed Action or the No Action Alternative affects those resources.

Other resources of the human environment that have been considered for this EA are listed in Table 7. The additional affected resources that are present and may be affected are also analyzed in this EA. Rationale for those elements that would not be affected by the Proposed Action and the No Action Alternative is listed in the tables below.

Table 6 Supplemental Authorities

Supplemental Authority	Not Present	Present/Not Affected	Present/May Be Affected	Section Found in EA
Air Quality		X		
Areas of Critical Environmental Concern	X			
Cultural Resources			X	3.1.1, 4.1.1, 5.3.1
Environmental Justice	X			
Floodplains	X			
Invasive, Non-Native Species			X	3.1.2, 4.1.2, 5.3.2
Migratory Birds			X	2.1.6, 3.1.3, 4.1.3
Native American Religious Concerns			X	3.1.4, 4.1.4
Prime or Unique Farm Lands	X			
Threatened or Endangered Species		X		
Wastes, Hazardous or Solid			X	3.1.5, 4.1.5
Water Quality (Surface/Ground)	X			
Wetlands/Riparian Zones		X		
Wild and Scenic Rivers	X			
Wilderness	X			

Table 7 Additional Affected Resources

Resource or Issue	Present/Not Affected	Present/May Be Affected	Section Found in EA
Lands and Reality		X	3.1.6, 4.1.6
Minerals	X		
Paleontology	X		
Public Safety and Access		X	3.1.7, 4.1.7
Rangeland Management	X		

Resource or Issue	Present/Not Affected	Present/May Be Affected	Section Found in EA
Social and Economic Values	X		
Soils	X		
Special Status Species		X	3.1.8, 4.1.8, 5.3.3
Vegetation	X		
Visual Resource Management		X	3.1.9, 4.1.9
Wildlife		X	3.1.10, 4.1.10, 5.3.4

The project area has been reviewed for Lands with Wilderness Characteristics and it has been determined that they are not present.

3.1 PROPOSED ACTION

Supplemental Authorities

3.1.1 Cultural Resources

The project area sits adjacent to and includes portions of the historic Gold Run, Cumberland, and Adelaide mines and associated town sites. These sites represent 19th and 20th century gold and silver mining activity (Kautz, 2010).

Cultural surveys in the project area were completed by a previous operator. In 1987, Mariah Associates, Inc. conducted a cultural resource survey titled *A Class III Cultural Resource Inventory of the Adelaide Crown Project Areas, Humboldt County, Nevada* (CR2-2207(P)). The archeological sites identified within the project boundary are all of historic nature likely related to gold and silver mining in the Adelaide district during the 19th and 20th century. Historic sites identified include debris scatter, mine shafts, foundations, mineral exploration features, open pits, and other indications of historic mining (Kautz, 2010).

No further cultural resource surveys were deemed necessary for this exploration project by the BLM.

3.1.2 Invasive, Non-Native Species

An "invasive species" is defined as a species that is non-native to the ecosystem under consideration and whose introduction causes or is likely to cause economic or environmental harm or harm to human health (Executive Order 13112). Invasive, non-native species are species that are highly competitive, highly aggressive, and spread easily. They include plants designated as "noxious" and animals designated as "pests" by federal or state law.

The Nevada Department of Agriculture maintains a Nevada Noxious Weed List. BLM defines "noxious weed" as "a plant that interferes with management objectives for a given area of land at a given point in time." The strategy for noxious weed management is to "prevent and control the

spread of noxious weeds through local and regional cooperative efforts...to ensure maintenance and restoration of healthy ecosystems on BLM-managed lands." Noxious weed control would be based on a program of "...prevention, education, detection, and quick control of small infestations." Animal and plant species designated as "pests" are generally species that are injurious to agricultural and nursery interests or vectors of diseases, which may be transmissible and injurious to humans. There are no known invasive, non-native animal species (pests) that are mandated for control in the project area; therefore, pests are not addressed in this EA.

The Nevada Department of Agriculture classifies weeds into three categories (NAC 555.010). Category A weeds are defined as "weeds not found or limited in distribution throughout the state; actively excluded from the state and actively eradicated wherever found; actively eradicated from nursery stock dealer premises; control required by the state in all infestations." Category B weeds are defined as "weeds, established in scattered populations in some counties of the state; actively excluded where possible, actively eradicated from nursery stock dealer premises; control required by the state in areas where populations are not well established or previously unknown to occur." Category C noxious weeds are defined as "weeds currently established and generally widespread in many counties of the state; actively eradicated from nursery stock dealer premises; abatement at the discretion of the state quarantine officer" (Nevada Department of Agriculture, 2011).

Invasive, non-native species observed in the project area include cheatgrass (*Bromus tectorum*), saltlover (*Halogeton glomeratus*), Russian thistle (*Salsola tragus*), and Poison hemlock (*Conium maculatum*). Cheatgrass, saltlover, and Russian thistle were noted along the access road to the project area. Poison hemlock was found along Layson Creek. Poison hemlock is listed as a Category C noxious species by the State of Nevada (Nevada Department of Agriculture, 2011). A review of the BLM weeds database indicated there are no BLM-mapped weeds infestations within the project boundary.

3.1.3 Migratory Birds

"Migratory bird" means any bird listed in 50 CFR 10.13. All native birds commonly found in the United States, with the exception of native resident game birds, are protected under the MBTA. The MBTA prohibits taking of migratory birds, their parts, nests, eggs, and nestlings without a permit. Executive Order 13186, signed January 10, 2001, directs federal agencies to protect migratory birds by integrating bird conservation principles, measures, and practices.

Additional direction comes from the Memorandum of Understanding (MOU) between the BLM and the United States Fish and Wildlife Service (USFWS), signed April 12, 2010. The purpose of the MOU is to strengthen migratory bird conservation through enhanced collaboration between the BLM and USFWS, in coordination with state, tribal, and local governments. The

MOU aims to protect habitats of migratory birds by implementing management practices that minimize or avoid adverse impacts on migratory bird populations, and their nesting, migration, or over-wintering habitats.

Sagebrush species and small riparian area characterize the vegetation communities associated with the project area. Migratory birds associated with these vegetation communities may include sage thrasher (*Oreoscoptes montanus*), Brewer's sparrow (*Spizella breweri*), and sage sparrow (*Amphispiza belli*) as they depend heavily on the shrub component for nesting. Black throated sparrows (*Amphispiza bilineata*), loggerhead shrikes (*Lanius ludovicianus*), and gray fly catchers (*Empidonax wrightii*) also nest in the mature shrub component and would be expected to occur (WAPT, 2006). Migratory bird species such as horned lark (*Eremophila alpestris*), western meadowlark (*Sturnella neglecta*), rock wren (*Salpinctes obsoletus*), canyon wren (*Catherpes mexicanus*), Brewer's blackbird (*Euphagus cyanocephalus*), green-tailed towhee (*Pipilo chlorurus*), and lark sparrow (*Chondestes grammacus*) may also occur. Special status wildlife species such as greater sage-grouse (*Centrocercus urophasianus*), vesper sparrow (*Pooecetes gramineus*), loggerhead shrike, yellow breasted chat (*Icteria virens)*, and sensitive raptor species may also occur in the project area and are discussed in Section 3.1.8.2.

According to the Nevada Department of Wildlife (NDOW) in a letter dated February 22, 2011 (Appendix A), the following migratory bird raptor species have habitat and distribution that overlaps the project area and vicinity: short-eared owl (*Asio flammeus*), red-tailed hawk (*Buteo jamaicensis*), great horned owl (*Bubo virginianus*), golden eagle (*Aquila chrysaetos*), Cooper's hawk (*Accipiter cooperii*), and American kestrel (*Falco sparverius*). Both the short-eared owl and the golden eagle are sensitive species and are discussed below in Section 3.1.8.2.

The USFWS requested that a raptor survey focusing on eagles be completed for a two-mile radius from the proposed project infrastructure and associated access roads (JBR, 2010). An aerial (roto-wing) raptor nest location survey was performed on February 1, 2011. During the survey, nest locations were documented within a two-mile radius of the proposed project infrastructure and access roads. Follow-up ground-truthing was completed April 3 through April 5, 2011. The follow-up surveys were aimed at documenting nesting species, nest activity, and nest success. A known red-tailed hawk nest adjacent to the project area was identified by NDOW during agency consultation. This nest was incorporated into the aerial survey and ground surveys.

The aerial and ground surveys were aimed at locating eagle nests; however, all raptor nests located were documented. During the aerial and ground surveys, 45 nests were identified within two miles of the project infrastructure (Figure 6). Of these, 14 were determined non-raptor nests, 23 were determined inactive potential raptor nests, three were determined inactive golden eagle

nests, three were confirmed as active golden eagle nests, and two were confirmed as active red-tail hawk nests (JBR, 2011). Restriction dates for golden eagle nesting are February 1 through August 31.

A burrowing owl survey was conducted in the areas of specifically identified proposed surface disturbance. Areas associated with surface exploration activities, which are not specifically identified in the POO, within the project area were not surveyed. No burrowing owls or burrows that appeared to be used by burrowing owls were identified during the survey, although habitat for burrowing owls is present in the project area.

3.1.4 Native American Religious Concerns

On December 14, 2010, letters providing information relating to the Proposed Action were sent to the Winnemucca Indian Colony, Battle Mountain Band, Fort McDermitt Paiute and Shoshone tribe, and the Shoshone-Paiute tribes of the Duck Valley Indian Reservation. Additionally, follow-up phone calls were conducted to identify if the Tribes had any concerns about the Proposed Action, effects it may have on a traditional cultural place or sacred sites, or if the Tribe would like to have formal government to government consultation relating to the Proposed Action. From the letters and phone contacts made, it was determined that none of the Tribes contacted had any concerns regarding the Proposed Action.

3.1.5 Waste, Hazardous or Solid

No hazardous waste or materials are known to currently exist in the project area. Hazardous materials would be hauled to and from the site on Interstate 80 from Winnemucca or Battle Mountain. The material would then be hauled south on the county road to the project area. In accordance with existing standard operating procedures, no hazardous or toxic materials or wastes, fuels, waste oil, lubricants or similar materials would be disposed of on public lands. Trash and other debris shall be contained in a BLM-approved manner on the work site and then hauled to an approved off-site landfill facility. Burial and/or burning of trash and other debris on public lands would not be performed without specific authorization and permits from the BLM and other appropriate agencies.

Additional Affected Resources

3.1.6 Lands and Realty

The project area is located entirely on public land managed by the BLM. Land uses within the project area include mining, rangeland, wildlife habitat, and recreation. There are three existing BLM rights-of-ways (ROWs) that run through the northern portion of the POO boundary. These ROWs are for a transmission line, a ditch right (RS 2339), and a BLM grazing pasture fence. The locations of these ROWs are shown on Figure 5.

3.1.7 Public Safety and Access

The project area consists of many public roads currently used for access to the Sonoma Range for recreational purposes. There are also several roads associated with past mining operations in the area and current exploration. The area also contains several pits and dumps from past mining operations. Figure 5 shows the existing access into the project area as well as access restrictions that would take place with the implementation of the Proposed Action. Where access would be restricted by the Proposed Action, GPMI would post signage to ensure that access through the project area is maintained. Access would only be restricted in areas where public safety is a concern.

3.1.8 Special Status Species

In addition to federally listed species, the BLM also protects other special status species by policy. These include certain species designated by the State of Nevada, as well as those designated as "sensitive" by the Nevada BLM State Director. Sensitive species are taxa that are not already included as BLM Special Status Species under (1) Federally listed, proposed, or candidate species, or (2) State of Nevada listed species. BLM policy in BLM manual 6840.06 states, "Actions authorized by the BLM shall further the conservation and/or recovery of federally listed species and conservation of Bureau sensitive species. Bureau sensitive species will be managed consistent with species and habitat management objectives in land use and implementation plans to promote their conservation and to minimize the likelihood and need for listing under the ESA."

Habitat for special status species has been impacted through wildfire and various multiple uses such as exploration and mining activities, livestock grazing, roads, railroads, ROWs, and recreation. Human activities have also increased the introduction and spread of weeds. Projects, such as fences and water developments, associated with livestock grazing management have been installed over the last several decades and would continue to be maintained.

Sensitive Species

The following sensitive species are discussed because they have been observed in the project area or habitat characteristics indicate they may be present in the project area.

3.1.8.1 Special Status Plant Species

Windloving Buckwheat (*Eriogonum anemophilum*)

This species is classified as sensitive by the BLM and Nevada Natural Heritage Program (NNHP). Windloving buckwheat is known to occur in Churchill, Humboldt, Lander, Pershing, and Washoe counties. This species occurs at elevations up to 9,836 feet above mean sea level (AMSL) on dry exposed, barren slopes, undisturbed gravelly, limestone or volcanic ridges and knolls, and on outcrops of shallow rocky soils over bedrock with low sagebrush (*Artemisia*

arbuscula), rabbitbrush (*Ericameria* sp.), Sandberg's bluegrass (*Poa secunda*), bottlebrush squirreltail (*Elymus elymoides*), and other species. This species also occurs at elevations as low as 4,750 feet AMSL on dry undisturbed knolls and slopes of light colored volcanic tuff weathered to form stiff clay soils on all aspects. At these lower elevations, it occurs with gray horsebrush (*Tetradymia canescens*), rubber rabbitbrush, green rabbitbrush, shadscale (*Atriplex confertifolia*), basin wildrye, and Calycose milkvetch (*Astragalus calycosus*). It flowers from late spring to summer and is normally surveyed for from June through July (NNHP, 2010). It is a low perennial herb with leafless flowering stalks rising 6.5 centimeters above clumps of white-hairy leaves. Stalks bear a terminal, globular cluster of white flowers.

The project area was identified by NNHP as containing potential habitat for windloving buckwheat (Appendix A). No documented occurrences of this species lie within or adjacent to the project area. Field surveys for potential habitat were conducted for the proposed disturbance areas associated with the underground exploration as described in Section 2.1.1, and habitat for this species was not found within these areas. Future surveys would be conducted for special status species associated with surface exploration as described in Section 2.1.2.

3.1.8.2 Special Status Wildlife Species

Greater Sage-Grouse (*Centrocercus urophasianus*)

The greater sage-grouse is currently listed as a candidate species, by USFWS and a BLM sensitive species. On March 5, 2010, USFWS announced Proposed Rules in the Federal Register for the notice of 12-month findings for petitions to list the greater sage-grouse as a threatened or endangered species. The Proposed Rules were formally announced in the Federal Register on March 23, 2010 under the following reference: 13910 Federal Register / Vol. 75, No. 55 / Tuesday, March 23, 2010 / Proposed Rules.

The project area falls within the Sonoma Sage Grouse Population Management Unit and within an area identified as Preliminary Priority Habitat (PPH). These PPH areas have been identified as having the highest conservation value to maintaining suitable greater sage-grouse (from here on referred to as sage-grouse) populations. Instructional Memorandum No. 2012-043 and No. 2012-044, released on December 27, 2011, provide interim management policies for sage-grouse until land use plans can be amended to address sage-grouse. According to NDOW in a letter dated January 27, 2011 (Appendix A), the project area includes the following sage-grouse habitat types: core breeding, nesting/early brood rearing, summer and winter habitats (Figure 6). The southern half of the project area is within sage-grouse summer habitat and distribution and the northern part of the project area is within nesting habitat. Ten leks occur within three miles of the project area, nine of these locations are located out of visual range of the project area. One lek occurs within approximately 100 yards of the project area boundary (NDOW, 2011a). This lek was last documented as active during 2011. During winter field surveys on January 11,

2011, sage-grouse scat and tracks were observed within the project area. Sage-grouse lek surveys were conducted on April 4, 12, 20, and 25, 2011. During the April 12 survey, two male birds were observed and during the April 20 survey, one bird of unknown sex was observed at the lek. No sage-grouse were observed at the lek on the other 2011 survey dates.

Bats

Scattered rock outcrop features and mine shafts/adits within the project area may provide bat roosting sites and foraging areas. Along the existing access road, there are two historic shafts that provide potential bat habitat. Two other shafts are located at least 200 yards from areas proposed for disturbance. No bat species were indicated as having potential habitat within the project area through consultation with NDOW, NNHP, or USFWS. The BLM sensitive species list was reviewed for bats that have the potential to use habitat within the project area. Table 8 describes the bats from the BLM sensitive species list with the potential to occur within the project area.

Table 8 Sensitive Bat Species with Potential Habitat in Project Area

Common Name	Scientific Name	Preferred Habitat
Pallid bat	*Antrozous pallidus*	Abandoned mines and buildings, caves, tree cavities, and rock crevices in desert shrubland, juniper woodlands, and grasslands near water.
Townsend's big-eared bat	*Corynorhinus townsendii*	Abandoned mines and buildings, caves, and rock crevices near lower montane woodlands.
Big brown bat	*Eptesicus fuscus*	Abandoned mines and buildings, caves, bridges, and rock crevices near tree canopies, meadows, and water courses.
Spotted bat	*Euderma maculatum*	Rocky cliffs and caves in desert scrub, open pastureland, juniper woodland, conifer forest, and riparian zones.
Silver-haired bat	*Lasionycteris noctivagans*	Primarily inhabits forested areas, but will also roost in abandoned mines and caves near open canopy, meadows, and riparian zones along water courses.
Hoary bat	*Lasiurus cinereus*	Primarily inhabits forested areas, but will also roost in abandoned mines and caves near open canopy, meadows, and riparian zones along water courses.
Small-footed myotis	*Myotis ciliolabrum*	Abandoned mines and buildings, caves, and rock crevices in desert shrubland, riparian zones, and pinyon-juniper woodland.
Long-eared myotis	*Myotis evotis*	Abandoned mines, caves, hollow trees, sinkholes, and rock crevices near desert shrubland.
Little brown myotis	*Myotis lucifugus*	Abandoned mines and buildings, tree cavities, and caves in temperate climates of North America.
Fringed myotis	*Myotis thysanodes*	Abandoned mines and buildings, caves, bridges, tree and rock crevices in desert scrub, mesic coniferous forest, and grassland.
Long-legged myotis	*Myotis volans*	Abandoned mines and buildings, caves, hollow trees, and rock crevices in desert shrubland, coniferous forest, and riparian corridors.

Common Name	Scientific Name	Preferred Habitat
Western pipistrelle	*Parastrellus hesperus*	Rocky canyons and outcrop crevices as well as abandoned mines and caves.

Western Bat Working Group, 2011

Birds

The project area provides suitable nesting and foraging habitat for sensitive bird species. Sensitive bird species identified through consultation and the review of the BLM sensitive species list with the potential to use the project area are listed in Table 9.

Table 9 Sensitive Bird Species with Potential Habitat in Project Area

Common Name	Scientific Name	Preferred Habitat
Western burrowing owl	*Athene cunicularia hypugaea*	Open areas with loose soils for burrowing and abandoned small mammal burrows in grassland and shrubland.
Greater sage-grouse	*Centrocercus urophasianus*	Sagebrush habitats near wet meadow and riparian corridors in valley floors, benches, mountains, and mountain meadows.
Golden eagle	*Aquila chrysaetos*	Cliffs and large trees (will occasionally nest on power poles) for nesting in proximity to open prairie, sagebrush/grassland, and woodlands.
Short-eared owl	*Asio flammeus*	Open grasslands, plains, and agricultural areas.
Long-eared owl	*Asio otus*	Hedgerows, woody draws, and juniper thickets along forested edges.
Ferruginous hawk	*Buteo regalis*	Pinyon-juniper woodland adjacent shrubland.
Swainson's hawk	*Buteo swainsoni*	Grassland, shrubland, and agricultural areas bordering wetlands and abandoned farms containing large trees.
Prairie falcon	*Falco mexicanus*	Tall cliffs located near grassland and prairie.
Yellow-breasted chat	*Icteria virens*	Dense, shrubby vegetation along stream and pond margins, forest edges, thickets, and regenerating burned woodlands.
Loggerhead shrike	*Lanius ludovicianus*	Sagebrush shrubland and desert scrub.
Vesper sparrow	*Pooecetes gramineus*	This species is a ground-nester associated with sagebrush grasslands. The area provides potential nesting and foraging habitat

Pygmy Rabbit (*Brachylagus idahoensis*)

No pygmy rabbit habitat is available within the areas that would be disturbed by the proposed underground exploration activities as described in Section 2.1.1. Surveys would be conducted to for special status species (including pygmy rabbit) prior to surface exploration as described in Section 2.1.2.

Desert Bighorn Sheep *(Ovis canadensis nelsoni)*

The southwestern two thirds of the project area is considered potential desert bighorn sheep habitat. Desert bighorn sheep occupy habitats of the Sonoma Mountains from the top of the rim

to the valley floor year-round. Currently, no known bighorn sheep herds are known to occur within or adjacent to the project area; however, they have been documented as far north in the Sonoma Mountain Range as Water Canyon.

3.1.9 Visual Resource Management

The project area is located in the northern Great Basin section of the Basin and Range Physiographic Province. The Great Basin is characterized by a pattern of isolated mountain ranges and broad sweeping basins, clear skies, and broad open vistas. Generally, the area is covered with a homogeneous pattern of sagebrush and grasses. Vegetation colors include tawny gray, brown, dark green, gray-green, and green. Soil colors range from beige to a chalky off-white, which when exposed, contrast highly with the surrounding vegetation. Rock colors vary from light to dark brown.

Existing man-made features in the overall project area include both block and linear forms and predominately consist of open pits, waste rock dumps, and roads. The strong angular lines of the open pits and waste rock dumps create moderate contrasts with the gentle sloping and angular lines of the Sonoma Mountain Range while the horizontal lines of existing roads and mining activities in the area create weak to moderate contrasts. Moderate color contrasts have resulted from the vegetation removal associated with these activities.

The project is within Visual Resource Management Class IV (BLM, 1986). Class IV allows for activities that involve high changes of the existing landscape. The level of contrast can be high, and the activity can dominate the view and be the major focus of the viewer. However, every attempt should be made to reduce the impact of these activities through careful location, minimal disturbance, and repeating the basic elements of the characteristic landscape (BLM, 1986). Little to no impact is expected with regard to form, line, color, and contrast relative to the Class IV classification. Therefore, these elements will not be carried through this analysis.

Night skies is a concern for visual impacts from lighting associated with projects located in areas that would otherwise have no lighting present in the vicinity of the project. The project area sits at the base of the Sonoma Range within areas that have been previously disturbed including previously excavated pits. Currently, there are no existing light sources in the project area, existing light sources in the vicinity comes from use on the county roads and the ranch located to the north of the project area.

3.1.10 Wildlife

Terrestrial wildlife resources in the project area are typical of the northern Great Basin. A wide variety of wildlife species common to the Great Basin ecosystem may be found in the project area. Some of the large mammal species would include mule deer (*Odocoileus hemionus*),

pronghorn (*Antilocapra americana*), mountain lion (*Felis concolor)*, bobcat (*Lynx rufus),* black-tailed jackrabbit (*Lepus californicus*), coyote (*Canis latrans*), and badger (*Taxidea taxus*). Various small common mammals, primarily rodents, and common reptiles may also be found in this area.

The entire project area is located within crucial mule deer winter range habitat (NDOW, 2011a). During surveys conducted in January 2011, mule deer scat and tracks were observed. The Sonoma Mountain Range, located one mile west of the project area, is summer habitat for mule deer (Figure 7).

The project area is located within year-long habitat for pronghorn antelope (*Antilocapra americana*). The Sonoma Mountain Range has been identified as year round habitat for pronghorn antelope.

4.0 ENVIRONMENTAL CONSEQUENCES (DIRECT AND INDIRECT)

This section analyzes the potential and likely direct and indirect impacts of the Proposed Action and the No Action Alternative. The thresholds of change for the intensity of a potential impact are defined as follows:

No Impact – There is no detectable impact.
Negligible – The impact is at the lowest level of detection.
Minor – The impact is slight, but detectable.
Moderate – The impact is readily apparent.
Major – The impact is a severe or adverse impact or benefit.

The duration of the impacts are either defined as short-term or long-term. Short-term refers to the life of the project and the three years associated with reclamation of the project area; long-term impacts are those that would still be evident after reclamation has been completed.

4.1 PROPOSED ACTION

The following sections describe impacts from the implementation of the Proposed Action.

Supplemental Authorities

4.1.1 Cultural Resources

The proposed disturbance would take place on previously disturbed ground with the exception of 5.85 acres on previously undisturbed ground. The proposed disturbance would not impact any National Register of Historic Places sites. Therefore, the implementation of the Proposed Action with the environmental protection measures discussed in Section 2.1.6 would have no impact to any known cultural resources. If any newly discovered cultural resources are encountered the environmental protection measures discussed in Section 2.1.6 would be followed.

4.1.2 Invasive, Non-Native Species

The proposed disturbance has the potential to create conditions favorable for invasive, non-native species. Proposed disturbance would directly impact 5.85 acres of previously undisturbed land leaving this area susceptible to invasive, non-native species infestation from the surrounding area. With the implementation of the environmental protection measures discussed in Section 2.1.6 and successful reclamation (as determined through the Nevada Guidelines for Successful Revegetation), impacts from invasive, non-native species is expected to be short-term and negligible.

4.1.3 Migratory Birds

The Proposed Action would disturb 5.85 acres of previously undisturbed land. With the limited amount of new disturbance proposed, indirect impacts from the loss of foraging habitat would be minor in the short-term; in the long-term, impacts to foraging habitat would be expected to be negligible due to reclamation efforts.

Suitable nesting habitat near the proposed exploration activities would be avoided by some birds due to noise and human activity. Increased traffic from the proposed action could result in an increase of injury or death to migratory birds from collisions with vehicles. Direct impacts to breeding and nesting of migratory birds would be avoided through the implementation of the environmental protection measures discussed in Section 2.1.6. Impacts are expected to be short-term and minor.

Birds and other wildlife may be attracted to water in sumps and may be injured or killed if they become stuck or drown. The proposed stormwater evaporation cell could also attract migratory birds and other wildlife. Under the Proposed Action (see Section 2.1.3), it would be fenced with a six-foot chain-link fence and would prevent entry by most wildlife species. The evaporation cell would also be graded to allow egress of wildlife species that may enter. These measures would be expected to reduce risk to species that cannot get through the chain-link fence but the potential for impacts to birds and small non-avian species would still exist.

4.1.4 Native American Religious Concerns

Based upon on-going consultation with the Tribes, no impacts to Native American religious concerns have been identified from the implementation of the Proposed Action.

4.1.5 Waste, Hazardous or Solid

A lubricant and fueling area with secondary containment would be established to service equipment in the South Pit laydown yard. Fuel and lubricant deliveries would be on an as needed basis. At this time, it is anticipated that the following fuels and lubricants would be stored on-site in tanks or drums and would include diesel, lubrication oil, antifreeze, solvents, and propane. All hazardous materials and petroleum products would be located within a one-foot high, geotextile-lined earthen containment berm; a spill kit would be located at the containment area. Mobile self-contained generators and a parts van or truck would support site-wide activities. Chemicals used for the advancement of the underground or site operations and/or equipment maintenance (e.g., degreasers, solvents, etc.) would be contained within the fuel area or stored underground throughout the duration of the project. Blasting supplies and explosives would be stored in a temporary secured bunker aboveground until the drift has been driven far enough to facilitate underground storage. Materials would be stored in accordance with MHSA regulations (30 CFR 57.6000) and United States BATF regulations.

Any solid waste generated would be disposed of properly in an appropriate landfill facility. Other waste generated such as used oil and used antifreeze would be returned to a licensed handler for recycling. Up to two portable toilets would be located near the portal entrance. These portable toilets would be serviced by a certified contractor.

An Emergency Response and Spill Control Plan for the Adelaide Exploration Project was prepared by GPMI and is available as part of the POO (GPMI, 2010). This plan provides measures to prevent spills, actions to be taken in the event of a spill, reporting procedures, and remedial action procedures. Materials covered under this plan include petroleum products used on-site.

Spills of materials to native soils are not anticipated because of the secondary containment of the material. Since there is currently no waste, hazardous or solid, in the project area there would be no impacts to existing wastes. Impacts from hauling hazardous materials to the project area are not expected. The implementation of the Proposed Action, with the environmental protection measures discussed in Section 2.1.6, is expected to have no impact on waste, hazardous or solid.

Additional Affected Resources

4.1.6 Lands and Realty

The Proposed Action would disturb land entirely on public land managed by the BLM Winnemucca District Office. The existing ROWs within the POO boundary would not be impacted by disturbance associated with the Proposed Action; therefore, no impacts to lands and realty from the implementation of the Proposed Action are expected.

4.1.7 Public Safety and Access

The project area is used on a regular basis for recreation access to the Sonoma Range. There are several roads within the project area that may be used to access the Sonoma Range for recreation purposes. With the implementation of the environmental protection measures discussed in Section 2.1,6, such as signage for safe access around exploration activity and public notices of blasting activity, no impacts to public safety and access are expected from the implementation of the Proposed Action.

4.1.8 Special Status Species

Sensitive Plant Species

No suitable habitat for sensitive plant species was located in the areas to be disturbed by underground exploration facilities associated with the implementation of the Proposed Action. As discussed in the environmental protection measures in Section 2.1.6 additional surveys for threatened, endangered, and sensitive (TES) plant species would be conducted prior to surface exploration.

Sensitive Wildlife Species

Impacts to sensitive species would result from the disturbance of 5.85 acres of previously undisturbed ground. These impacts may include death or injury due to collisions with vehicles or avoidance due to increased noise and activity and decreased reproductive success. Impacts to sensitive species from the Proposed Action are expected to vary depending on the species. Birds and other wildlife may be attracted to the water in sumps and the stormwater evaporation cell and may be injured or killed if they become stuck or drown.

Sage-Grouse

As discussed in Section 3.1.8.2, the project area is within habitat identified as PPH for sage-grouse. A sage-grouse lek is located within approximately 100 yards from the project boundary at approximately 6,150 feet AMSL. This lek was active in 2011. The remaining leks that were identified by NDOW (Appendix A) within three miles of the project area are located to the west of the project area in a ridge-top basin at approximately 6,550 to 6,850 feet in elevation. The lek located within approximately 100 yards of the project area boundary has a high potential of being impacted by increased noise and activity from surface exploration activities. The remaining leks may also be impacted. Disturbance to leks from March 1 to May 15 may result in disruption of breeding activities.

The project area is also within other habitat types necessary for sage-grouse to meet their annual lifecycle requirements including nesting, summer, and winter habitats; therefore, exploration activities would likely impact sage-grouse year-round. Disturbance due to equipment, noise and human presence could result in reduced nest success and chick survival in nesting and summer habitats. Impacts could also occur in winter habitats but would be expected to be to a lesser degree.

The introduction of additional standing water (sumps) that would occur with drilling may increase the potential for exposure of sage-grouse to West Nile Virus (WNV). According to Walker and Naugle (2011), WNV emerged as a potential threat to sage-grouse populations in 2002 and has been a continued source of mortality in low- and mid-elevation populations (highest confirmed elevation at which WNV occurs is 2,300 meters). The dominant vector of WNV in sagebrush habitats is the mosquito (*Culex tarsalis*), which breeds in warm, standing water with submerged vegetation. Both natural and artificial water sources can serve as mosquito breeding habitat and include ephemeral puddles, vegetated pond edges, hoof prints, overflowing stock tanks, stock ponds, seep and overflow areas below earthen dams, and irrigated agricultural fields.

To reduce potential impacts to sage-grouse, the following mitigation is recommended:

- Timing restrictions should be put into place every year in order to protect sage-grouse lekking habitat and courting behaviors. Surface exploration activities should not be authorized any time of day from March 1 through May 15. Additionally, haulage of material associated with the underground operation should not be authorized between 6:00 p.m. and 9:00 a.m. from March 1 through May 15. Other underground operations (drilling, staging, etc.) would be authorized; and

- Fencing around sumps containing drilling fluid should be sage grouse-safe (i.e. highly visible, prevent entanglement, etc.).

Bats

Bat foraging habitat is present within the project area. Although four shafts were noted in the vicinity of the proposed disturbance, two of them are more than 200 yards from project activity and would not be impacted by the Proposed Action and the other two shafts are located adjacent to an existing access road that would be used as part of the Proposed Action. The access road would not be improved or widened; therefore, no further impact to the shafts adjacent to the access road would be realized from the implementation of the Proposed Action. There would be no direct impacts to adits that may provide habitat to bats. Bats may be indirectly impacted by increased noise and activity levels associated with the implementation of the Proposed Action.

Birds

Raptors currently use the project area for foraging and nesting activities. GPMI would monitor the activity at raptor nests and would not conduct exploration activities within the appropriate radius around active nests until young have fledged (Section 2.1.6); therefore, impacts to raptors from the implementation of the Proposed Action are expected to be minor.

Pygmy Rabbits

Since no pygmy rabbit habitat is proposed to be disturbed at the proposed portal entrance, no impacts due to habitat loss or alteration would occur in this area. If pygmy rabbits are present adjacent to the project area, there may be negligible short-term impacts from increased noise and human activity associated with the Proposed Action. Surveys for pygmy rabbits would be conducted prior to the proposed surface exploration. If pygmy rabbits are found, avoidance or mitigation would be implemented.

Desert Bighorn Sheep

Although there are no recorded occurrences of desert bighorn sheep in the project area, a portion of the project area is identified as potential habitat. Bighorn sheep have been documented as far north as Water Canyon and may utilize the project area. Exploration activities may prevent

bighorn sheep from expanding their range into the vicinity of the Proposed Action due to increased human activity from mineral exploration.

4.1.9 Visual Resource Management

Lighting for the Proposed Action would consist of portable light plants in areas where activity is taking place, including the waste rock disposal facility and the portal entrance. Portable lighting may also be used during surface exploration at night. This portable lighting would be directed towards the areas needed to be illuminated for safety. Because the majority of the project area is located within existing pits, the surface exploration activities outside of the pit would be temporary, and with the implementation of the environmental protection measures outlined in Section 2.1.6, there would be negligible short-term impacts to night skies from the Proposed Action.

4.1.10 Wildlife

Impacts to wildlife would result from the disturbance of 5.85 acres of previously undisturbed ground and increased activity in the project area. These impacts may include death or injury due to collisions with vehicles, avoidance due to increased noise and activity and decreased reproductive success. In addition, some direct mortality of small wildlife species in the area of disturbance may occur. Wildlife may be attracted to the water in sumps and may be injured or killed if they become stuck or drown.

The entire project area is within habitat identified as crucial winter range for mule deer. Animals become physiologically stressed when energy expenditures increase due to alarm or behavioral avoidance. These responses are generally attributed to interactions with humans or activities associated with human presence such as traffic, noise, pets, and etc. Physiological stress diverts time and energy away from critical activities, such as foraging and resting, important to maintain or improve fitness. This seems especially critical to wintering deer whose nutritional condition is closely associated with survival. During winter months, additional stress can be particularly harmful because a deer's energy balance is already operating at a deficit (Lutz et al., 2011).

The BLM Winnemucca District Office general guidelines for seasonal restrictions in mule deer crucial winter habitat are to avoid activities from November 15 through April 30. Specific to this Proposed Action and through consultation with NDOW, it has been determined that the recommended mitigation for sage-grouse would also minimize impacts to mule deer to an acceptable level.

To reduce potential impacts to mule deer, the following mitigation is recommended:

- Timing restrictions should be put in place each year in order to protect mule deer in crucial winter habitat. Surface exploration activities should not be authorized any time of day from March 1 through May 15. Additionally, haulage of material associated with the underground operation should not be authorized between 6:00 p.m. and 9:00 a.m. from March 1 through May 15. Other underground operations (drilling, staging, etc.) would be authorized.

4.2 NO ACTION ALTERNATIVE

The following sections describe impacts from the No Action Alternative.

Supplemental Authorities

4.2.1 Cultural Resources

The No Action Alternative could include disturbance of up to five acres on public land related to notice-level activity. This activity would include the construction of exploration roads and drill sites. No impacts to cultural resources are anticipated because all impacts to National Register of Historic Places eligible sites or their contributing elements would be avoided.

4.2.2 Invasive, Non-Native Species

The No Action Alternative could include disturbance of up to five acres on public land related to notice-level activity. This activity would include the construction of exploration roads and drill sites, which may introduce invasive and non-native species to the project area. Reclamation of surface disturbance, including reseeding, would gradually decrease the potential impacts from invasive, non-native species. Impacts from invasive, non-native species as a result of the No Action Alternative would be similar, but proportionally less than the Proposed Action.

4.2.3 Migratory Birds

The No Action Alternative could include disturbance of up to five acres on public land related to notice-level activity. This activity would include the construction of exploration roads and drill sites, which would result in the temporary loss of migratory bird habitat. Reclamation of surface disturbance would gradually eliminate potential impacts to migratory birds, due to habitat loss, as vegetation becomes reestablished. Suitable nesting habitat near the proposed exploration activities would be avoided by some birds due to noise and human activity. Increased traffic could result in an increase of injury or death to migratory birds from collisions with vehicles. Direct impacts to breeding and nesting of migratory birds would be avoided through implementation of the migratory bird stipulation as applied to existing notice.

Birds and other wildlife may be attracted to water in sumps and may be injured or killed if they become stuck or drown. These potential impacts would be reduced by the stipulations as applied to existing notice.

The No Action Alternative would be notice-level activity subject to fewer mitigation measures to reduce impacts; therefore, impacts are expected to be similar to those discussed in Section 4.1.3 but to a greater extent.

4.2.4 Native American Religious Concerns

No concerns have been identified during Tribal consultation for the Proposed Action; therefore, it is anticipated that there would be no impact on Native American Religious Concerns under the No Action alternative.

4.2.5 Waste, Hazardous or Solid

The No Action Alternative could include disturbance of up to five acres on public land related to notice-level activity. This activity would include the construction of exploration roads and drill sites, which may result in impacts from waste, hazardous or solid, in the event of a spill. With the use of non-toxic drilling fluids and the temporary nature of notice-level activity, no long-term impacts from waste, hazardous or solid, are anticipated with the implementation of the No Action Alternative.

Additional Affected Resources

4.2.6 Lands and Realty

The No Action Alternative could include disturbance of up to five acres on public land related to notice-level activity. This activity would include the construction of exploration roads and drill sites, which would not result in impacts to lands and realty. Therefore, no impacts to lands and realty are anticipated from the implementation of the No Action Alternative.

4.2.7 Public Safety and Access

The No Action Alternative could include disturbance of up to five acres on public land related to notice-level activity. This activity would include the construction of exploration roads and drill sites, which would not result in impacts to public safety and access. Therefore, no impacts to public safety and access are anticipated from the implementation of the No Action Alternative.

4.2.8 Special Status Species

The No Action Alternative would be a notice level activity and could include disturbance of up to five acres on public land. This activity would include the construction of exploration roads and drill sites. This alternative would be subject to fewer mitigation measures to reduce impacts;

therefore, impacts are expected to be similar to those discussed in Section 4.1.8 but to a greater extent. Potential impacts would be reduced by the stipulations as applied to existing notice.

4.2.9 Visual Resource Management

The No Action Alternative could include the construction of exploration roads and drill sites, and the drilling would be conducted on a 24-hour basis. Potential impacts may include additional roads and drill sites that would be temporarily constructed in the landscape, along with visibility of the drill rigs during nighttime hours. Any constructed roads and drill sites would be reclaimed, including revegetation. With the temporary nature of notice-level activity, no long-term impacts to visual resources are anticipated with the implementation of the No Action Alternative.

4.2.10 Wildlife

The No Action Alternative would be a notice level activity and could include disturbance of up to five acres on public land. This activity would include the construction of exploration roads and drill sites. This alternative would be subject to fewer mitigation measures to reduce impacts; therefore, impacts are expected to be similar to those discussed in Section 4.1.8 but to a greater extent. Potential impacts would be reduced by the stipulations as applied to existing notice.

5.0 CUMULATIVE IMPACTS

This section analyzes the potential cumulative impacts to the resources from past, present, and reasonably foreseeable future projects combined with the Proposed Action within the project area. A cumulative impact has been defined as the impact which results from the incremental impact of the action, decision, or project when added to other past, present, and reasonably foreseeable future actions, regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

Cumulative impacts are addressed for resources in which the Proposed Action would impact. For these resources, cumulative effects study areas (CESAs) have been determined. The area defined by each CESA is specific to the resource analyzed.

Resources analyzed for cumulative impacts in this section include cultural resources, invasive, non-native species; special status species; and wildlife. The CESAs for these resources are defined in Table 10 and shown on Figure 8.

Table 10 Cumulative Effects Study Areas

Resource	Cumulative Effects Study Area	Size (acres)
Cultural Resources	The two watersheds that the POO boundary falls within, the Pumpernickel Valley and Winnemucca Segment watersheds.	266,307
Invasive Non-Native Species	The two watersheds that the POO boundary falls within, the Pumpernickel Valley and Winnemucca Segment watersheds.	266,307
Special Status Species	The Sonoma Sage-grouse Population Management Unit	541,597
Wildlife	The Sonoma Sage-grouse Population Management Unit	541,597

5.1 PAST AND PRESENT ACTIONS

Past and present actions within the CESAs include exploration and mining activities, livestock grazing, wildland fires, roads, railroads, ROWs, and recreation. The past and present actions associated with the CESAs are described further below.

5.1.1 Exploration and Mining Activity

Existing disturbance consists of roads, pits, waste rock disposal areas, shafts, adits, rapid infiltration basins, and exploration. Existing disturbance is associated with the following projects within the CESAs: Adelaide Mine, Adelaide Crown Mine, Cumberland Mine, Eureka Mine, Mt. Tobin Mine, Gold Summit Mine, Midway Group Mine, Black Diablo Mine, and Lone Tree. Disturbance acres associated with the past and present disturbance from exploration and mining activities, which was determined from aerial photograph interpretation, include 437.7

acres within the invasive, non-native CESA and 589.3 acres within the special status species and wildlife CESA.

5.1.2 Livestock Grazing

There are currently portions of 14 allotments within the invasive, non-native species CESA, and portions of 13 allotments within the special status and wildlife CESA. The allotments are listed in Table 11 along with the associated CESA.

Table 11 Allotments within the CESAs

Allotment Name	Invasive, Non-Native Species CESA (acres within CESA)	Special Status Species and Wildlife CESA (acres within CESA)
Osgood	158	0
Sand Dunes	2,179	0
Eden Valley	2,346	0
Sand Pass	1,365	0
Golconda Butte	2,331	0
Diamond S	0	28,341
Harmony	8,466	6,477
Melody	3,274	586
Iron Point	1,329	0
Thomas Creek	50	16,853
Pumpernickel	0	115,251
Rock Creek	0	40,954
Sonoma	18	18,898
North Buffalo	57	13,438
Clear Creek	471	42,930
South Buffalo	938	159,111
Goldbanks	62	24,319
Pleasant Valley	0	73,736
Jersey Valley	0	302

5.1.3 Wildland Fires

There have been several reported wildland fires within the CESAs from 1990 through 2008. The fires and the acreage burned within the associated CESA are listed in Table 12.

Table 12 Wildland Fires within the CESAs

Fire Year	Invasive, Non-Native CESA (acres)	Special Status Species and Wildlife CESA (acres)
1996	7,373	2,025
1998	549	566

Fire Year	Invasive, Non-Native CESA (acres)	Special Status Species and Wildlife CESA (acres)
1999	2,588	1,200
2000	5,094	4,618
2001	6,300	4,944
2005	82	0
2006	5,551	4,542
2007	3,050	19,802
2008	404	2
Total	**30,991**	**37,699**

5.1.4 Roads

There are several roads both paved and unpaved within the CESAs. Roads and associated lengths of the roads within the CESAs are provided in Table 13. There is approximately 1,751 acres of disturbance associated with roads within the invasive, non-native species CESA and approximately 2,028 acres within the special status species and wildlife CESA.

Table 13 Roads within the CESAs

Road	Invasive, Non-Native CESA		Special Status Species and Wildlife CESA	
	Length in Feet	Acres*	Length in Feet	Acres*
Interstate 80 (including ramps)	52,002	239.0	20,733	95
Highways	53,607	61.5	0	0
Federal- and County-Maintained Roads	115,020	132.0	78,250	89.8
Unmaintained Roads	2,872,634	1,318.9	4,016,009	1,843.9
Total	**3,093,263**	**1,751.4**	**4,114,992**	**2,028.7**

*Assuming a 200-foot disturbance width for Interstate 80 and a 50-foot disturbance width for the highways and maintained county roads, and a 20 foot disturbance width for the unmaintained the roads (USGS, 2011a)

5.1.5 Railroads

There are 90,151 feet of Southern Pacific Railroad line and 87,160 feet of Union Pacific Railroad line (814 acres) within the invasive, non-native species CESA. There are no railroad lines within the special status species and wildlife CESA. The ROW authorization for each railroad line allows for a disturbance width of up to 200 feet.

5.1.6 Utility Rights-of-Way

There are several utility ROWs within both CESAs; these include transmission lines, telephone lines, and gas lines. The existing ROWs within the CESA boundaries were approved by the BLM and are monitored for weeds and successful revegetation reducing impacts from these utility ROWs on the resources analyzed in this section.

5.1.7 Recreation

Past and present recreation within the CESA consists of activities such as hunting, hiking, camping, shooting, all-terrain vehicle use, rockhounding, and other dispersed recreation. The wildlife and special status species CESA is within a portion of the Water Canyon Recreation Area boundary. There are no established recreation facilities within the cultural or invasive, non-native CESAs.

5.2 REASONABLY FORESEEABLE FUTURE ACTIONS

Reasonably foreseeable future actions within the CESAs include exploration and mining activities, livestock grazing, wildland fires, roads, ROWs, and recreation. The reasonably foreseeable future actions associated with the CESAs are described further below.

5.2.1 Exploration and Mining Activity

There would be continued exploration and mining activity with the CESAs. These activities are anticipated to consist of surface and underground exploration activities which would include the development of drilling pads and roads, trenching, stockpiling of materials, and potential mine development.

5.2.2 Livestock Grazing

There would be continued livestock grazing associated with both CESAs. The amount and timing of grazing within the existing allotments is not anticipated to change for these allotments within the reasonably foreseeable future.

5.2.3 Wildland Fires

The potential exists for future wildland fires to burn within the CESA boundary. It is unknown how many would occur or the extent of these fires.

5.2.4 Rights-of-Way

There are currently numerous pending land use authorization projects within the invasive, non-native species CESA, and special status species and wildlife CESA boundaries, varying in uses from acquisitions, and exchanges, land sales, roads, a wind energy project, and water conveyance proposals (BLM, 2011; McKinnon, 2011).

5.2.5 Recreation

Continued recreation would take place within the CESA boundary. This would include hunting, off-road vehicle use, hiking, and other dispersed uses.

5.3 CUMULATIVE IMPACTS WITH THE IMPLEMENTATION OF THE PROPOSED ACTION

Cumulative impacts are discussed in the following section by resource. If there was no impact or negligible impacts to the resource from the Proposed Action, a cumulative impact analysis was not completed, as the cumulative analysis includes the impact from the Proposed Action along with the past, present, and reasonably foreseeable future actions. Since the Proposed Action was determined to have no impacts or negligible impacts to migratory birds, Native American Religious Concerns, waste hazardous or solid, lands and realty, public safety, and visual resource management, a cumulative analysis has not been completed for these resources. This section of the EA considers the cumulative effect and analyzes the degree to which the Proposed Action contributes to the collective impact.

5.3.1 Cultural Resources

Impacts associated with past, present, and reasonably foreseeable future actions are generally created by ground disturbance activities that affect natural and cultural resources in various ways.

Impacts from Past and Present Actions

Since many Great Basin cultural sites are surface or near surface sites, any ground-disturbing activities destroy site integrity, spatial patterning, and site function. Datable organic features are either destroyed or contaminated. Previous localized mining, grazing, road construction/maintenance, wildland fire, and recreation has caused these types of impacts to cultural resources.

Impacts from Reasonably Foreseeable Future Actions

Proposals for ROWs, exploration, mineral operations, and other activities would be surveyed for cultural resources and NEPA compliance before an agency decision is rendered to proceed with the request. Through this process, located cultural resources that are found to be significant would be identified and avoided to the extent possible or mitigated.

Recreational use is expected to increase and these activities may impact sensitive cultural resources by causing displacement and mixing of deposits of prehistoric/historic and modern debris.

Cumulative Impact

The new disturbance associated with the Proposed Action would impact less than one tenth of a percent of the CESA. The incremental increase in impacts from the implementation of the Proposed Action and environmental protection measures (Section 2.1.6) within the CESA would have a minimal impact to cultural resources. These impacts combined with the past, present, and reasonably foreseeable future projects in the CESA would have a minor cumulative impact.

5.3.2 Invasive, Non-Native Species

Ground disturbance within the CESA is the main concern for the spread of invasive, non-native species. BLM has mapped several invasive, non-native species within this CESA. These species include the invasive species perennial pepperweed (*Lepidium latifolium*) and several species listed on the State of Nevada Noxious Species list such as poison hemlock, Scotch thistle (*Onopordum acanthium*), saltcedar (*Tamarix ssp.*), whitetop (*Cardaria draba*), and Russian knapweed (*Centaurea repens*).

Impacts from Past and Present Actions

The past and present actions within the invasive, non-native species CESA have increased the potential for invasive, non-native species to spread. Although impacts to invasive, non-native species may be realized from all the actions discussed in Section 5.1, the major contributor to impacts within the invasive, non-native species CESA is wildland fire. As discussed in Section 5.1, wildland fires have impacted approximately 30,990 acres or 7.3 percent of the CESA between 1996 and 2008. Impacts to invasive, non-native species from wildland fire on public land are minimized by reclamation seeding and spraying after the wildland fire.

Impacts from Reasonably Foreseeable Future Actions

Proposals for ROWs, exploration, mineral operations, and other activities would be surveyed for invasive, non-native species prior to approval. Through this knowledge, project design, and mitigation measures, the spread of these species would be reduced within the CESA.

Cumulative Impact

The new disturbance associated with the Proposed Action would impact less than one tenth of a percent of the CESA. The incremental increase in impacts from the implementation of the Proposed Action and environmental protection measures (Section 2.1.6) within the CESA would have a minimal impact to invasive, non-native species. These impacts combined with the past, present, and reasonably foreseeable future projects in the CESA would have a minor cumulative impact.

5.3.3 Migratory Birds

Impacts from Past and Present Actions

The past and present actions within the special status species and wildlife CESA that have the potential to impact habitat for migratory birds include all the actions discussed in Sections 5.1. Other past and present actions include human activities that have increased the introduction and spread of weeds thereby decreasing foraging habitat; and installation of fences and water developments associated with livestock grazing management have been installed over the last several decades.

Impacts have been realized from ground-disturbing activities, and increased activity associated with past and present projects. Impacts from these activities included fragmentation of existing habitat, increased noise and activity causing avoidance of the area, and potential loss of species.

Impacts from Reasonably Foreseeable Future Actions

Proposals for ROWs, exploration, mineral operations, and other activities would be surveyed for the presence of migratory bird species and habitat for these species. Through the knowledge gained from these surveys, special status species and habitat can be avoided or mitigated and cumulative future impacts would be reduced.

Cumulative Impact

The new surface disturbance associated with the Proposed Action is expected to impact less than one-tenth of a percent of the CESA. Although the proposed surface disturbance is relatively small, the cumulative impacts are expected to vary in severity depending on species' vulnerability or sensitivity to mineral exploration activities. The environmental protection measures (Section 2.1.6) would help to reduce impacts. Impacts to migratory birds could be moderate.

5.3.4 Special Status Species

Impacts from Past and Present Actions

The past and present actions within the special status species and wildlife CESA that have the potential to impact special status species include all the actions discussed in Sections 5.1. Impacts have been realized from ground-disturbing activities, and increased activity associated with past and present projects. Impacts from these activities may have included fragmentation of existing habitat, increased noise and activity causing avoidance of the area, and potential loss of species.

Impacts from Reasonably Foreseeable Future Actions

Proposals for ROWs, exploration, mineral operations, and other activities would be surveyed for the presence of special status species and habitat for these species. Through the knowledge gained from these surveys, special status species and habitat can be avoided or mitigated and cumulative future impacts would be reduced.

Cumulative Impact

The new surface disturbance associated with the Proposed Action is expected to impact less than a one-tenth of a percent of the CESA. Although the proposed surface disturbance is relatively small, the cumulative impacts are expected to vary in severity depending on species' vulnerability or sensitivity to mineral exploration activities. The environmental protection measures (Section 2.1.6) would help to reduce impacts. The greatest cumulative impact is

expected to be to sage-grouse, since the proposed action is within PPH and sage-grouse have been identified as a species in need of protection from extinction under the Endangered Species Act. With the implementation of the recommended mitigation (Section 4.1.8), cumulative impacts to sage-grouse are expected to be moderate. Without implementation of the recommended mitigation, cumulative impacts to sage-grouse could range from moderate to severe. The remainder of special status species are expected to experience cumulative impacts that range from no impact to minor.

5.3.5 Wildlife

Impacts from Past and Present Actions

The past and present actions within the special status species and wildlife CESA that have potential impacts to wildlife include all the actions discussed in Section 5.1. Impacts have been realized from ground-disturbing activities, and increased activity associated with past and present projects. Impacts from these activities include fragmentation of existing habitat, increased noise and activity causing avoidance of the area, and potential loss of species.

Impacts from Reasonably Foreseeable Future Actions

Proposals for ROWs, exploration, mineral operations, and other activities would be surveyed for wildlife habitat and species present. Through the knowledge gained from these surveys, critical wildlife habitat can be avoided or mitigated and cumulative future impacts would be reduced.

Cumulative Impact

New disturbance associated with the Proposed Action are expected to impact less than one-tenth of a percent of the CESA. Although the proposed surface disturbance is relatively small, the cumulative impacts are expected to vary in severity depending on species' vulnerability or sensitivity to mineral exploration activities. The environmental protection measures (Section 2.1.6) would help to reduce impacts. The greatest cumulative impact is expected to be to mule deer, since the Proposed Action is within their crucial winter habitat. With the implementation of the recommended mitigation (Section 4.1.10), cumulative impacts are expected to be minor. Without implementation of the recommended mitigation, impacts to mule deer could be moderate. The remainder of wildlife species are expected to experience cumulative impacts that range from negligible to minor.

5.4 CUMULATIVE IMPACTS WITH THE IMPLEMENTATION OF THE NO ACTION ALTERNATIVE

Cumulative impacts are addressed for resources that would be affected by the No Action Alternative. Resources analyzed for cumulative impacts from the No Action Alternative include invasive, non-native species; migratory birds; special status species; and wildlife. For these resources, the CESA boundaries are the same as those used for the analysis of the Proposed

Action, and are defined in Table 10 and shown on Figure 8. Cultural resources; Native American religious concerns; wastes, hazardous or solid; lands and realty; public safety and access; and visual resource management are not addressed because there would be no cumulative impacts to these resources from the implementation of the No Action Alternative.

5.4.1 Invasive, Non-Native Species

Cumulative Impact

Impacts from invasive, non-native species would result from past, present, and reasonably foreseeable future actions following the removal of native vegetation. These impacts would be localized to areas immediately affected by surface disturbing activity. Incremental increases in impacts from the implementation of the No Action Alternative would have a minimal cumulative impact from invasive, non-native species within the CESA.

5.4.2 Migratory Birds

Cumulative Impact

Migratory birds would be impacted by the loss of habitat due to the implementation of past, present, and reasonably foreseeable future actions. The impacts from habitat loss would be localized to areas immediately affected by surface disturbing activity, and under the No Action Alternative, revegetation would be completed to restore habitat. Incremental increases in impacts from the implementation of the No Action Alternative would have a minimal cumulative impact to migratory birds within the CESA.

5.4.3 Special Status Species

Cumulative Impact

Special status species would be impacted by the loss of habitat due to the implementation of past, present, and reasonably foreseeable future actions. The impacts from habitat loss would be localized to areas immediately affected by surface disturbing activity, and under the No Action Alternative, revegetation would be completed to restore habitat. Incremental increases in impacts from the implementation of the No Action Alternative would have a minimal cumulative impact to special status species within the CESA.

5.4.4 Wildlife

Cumulative Impact

Wildlife would be impacted by the loss of habitat due to the implementation of past, present, and reasonably foreseeable future actions. The impacts from habitat loss would be localized to areas immediately affected by surface disturbing activity, and under the No Action Alternative, revegetation would be completed to restore habitat. Incremental increases in impacts from the implementation of the No Action Alternative would have a minimal cumulative impact to wildlife within the CESA.

6.0 MITIGATION AND MONITORING

6.1 PROPOSED ACTION

With the implementation of the Proposed Action, including the environmental protection measures discussed in Section 2.1.6, the following mitigation has been recommended:

6.1.1 Sage-Grouse

To reduce potential impacts to sage-grouse, the following mitigation is recommended:

- Timing restrictions should be put into place every year in order to protect sage-grouse lekking habitat and courting behaviors. Surface exploration activities should not be authorized any time of day from March 1 through May 15. Additionally, haulage of material associated with the underground operation should not be authorized between 6:00 p.m. and 9:00 a.m. from March 1 through May 15. Other underground operations (drilling, staging, etc.) would be authorized; and

- Fencing around sumps containing drilling fluids should be sage grouse-safe (i.e. highly visible, prevent entanglement, etc.).

6.1.2 Wildlife

To reduce potential impacts to wildlife, the following mitigation is recommended:

- Timing restrictions should be put in place each year in order to protect mule deer in crucial winter habitat. Surface exploration activities should not be authorized any time of day from March 1 through May 15. Additionally, haulage of material associated with the underground operation should not be authorized between 6:00 p.m. and 9:00 a.m. from March 1 through May 15. Other underground operations (drilling, staging, etc.) would be authorized.

The monitoring plan in the POO includes monitoring soil resources, revegetation success monitoring, surface water monitoring, and groundwater monitoring (GPMI, 2010). Additional information for each of these monitoring tasks is listed below.

- Growth medium stockpiles would be inspected to ensure that erosion is not occurring;

- Revegetation success and the presence of invasive, non-native species would be monitored on an annual basis until reclamation release has been achieved;

- Drainages would be observed to ensure that sediment is not resulting from activities associated with the Proposed Action; and

- Groundwater monitoring would take place at the existing water well on-site for the duration of the project until reclamation release has been achieved. NDEP will oversee the results of this monitoring through the Water Pollution Control Permit.

6.2 NO ACTION ALTERNATIVE

There are no mitigation measures or monitoring under the No Action Alternative.

7.0 LIST OF PREPARERS

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Kendra Olcott	Environmental Analyst Vegetation, Special Status Species, Wildlife, Invasive, Non-Native Species	B.A., Integral Professional Studies, Natural Resource Management – 2006
Josh Vittori	Environmental Analyst Wildlife, Migratory Birds, SpecialStatus Species	B.S., Forest and Rangeland Management – 2006
Richard Weber	Division Manager NEPA Compliance, Quality Control	M.S., Biology – 1990 B.S., Biology – 1986

8.0 CONSULTATION AND COORDINATION

Nevada Natural Heritage Program

Eric S. Miskow	Biologist III/Data Manager

United States Fish and Wildlife Service

Steve Abele	Wildlife Biologist
Robert D. Williams	State Supervisor

Nevada Department of Wildlife

Kenny Pirkle	Biologist, Habitat Division

Native American Consultation

On December 14, 2010, letters providing information relating to the Proposed Action were sent to the Winnemucca Indian Colony, Battle Mountain Band, Fort McDermitt Paiute and Shoshone tribe, and the Shoshone-Paiute tribes of the Duck Valley Indian Reservation. Additionally, follow-up phone calls were conducted to identify if the Tribes had any concerns about the Proposed Action, effects it may have on a traditional cultural place or sacred sites, or if the Tribe would like to have formal government to government consultation relating to the Proposed Action. From the letters and phone contacts made, it was determined that none of the Tribes contacted had any concerns regarding the Proposed Action.

9.0 PUBLIC INVOLVEMENT

Internal scoping was conducted for this project in order to determine the scope of this EA. The scoping process began with an interdisciplinary team meeting held at the BLM office in Winnemucca on November 18, 2010. At this meeting, BLM staff defined issues and made an initial determination of what needed to be analyzed in this EA, data needs, possible alternatives, and public outreach needs.

This meeting was followed by external scoping under which other agencies, organizations, tribes, local governments, and the public were offered the opportunity to provide feedback regarding issues, concerns, data needs and such things as potential alternatives. This assists the BLM in refining issues, identifying any new issues, coordination needs, possible alternatives and so forth. A letter and map were sent to a mailing list of potentially interested public on December 14, 2010. The scoping letter and map were also posted on the BLM's Winnemucca District NEPA web page. Refer to Section 1.4 for a list of issues and concerns identified through scoping for this analysis.

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FIGURES

APPENDIX A

Agency Consultation