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

Environmental Assessment
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June 2009

Simplot Silica Mine

Simplot Silica Mine Expansion Project - Environmental Assessment

U.S. Department of the Interior
Bureau of Land Management
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1.0 INTRODUCTION/PURPOSE AND NEED

1.1 INTRODUCTION

Simplot Silica Products (Simplot), a division of J. R. Simplot Company, proposes the expansion and continuing operation of its Silica Products Mine and associated surface facilities (Project Area) on public land administered by the U.S. Department of the Interior, Bureau of Land Management (USDOI-BLM), Southern Nevada District. The Simplot Mine produces sand for foundry castings and the glass industry. Mining in some fashion has been active in the general Project Area since 1929.

Simplot submitted a Major Modification to the Plan of Operations (POO)/Reclamation Plan and Reclamation Bond Estimate to the BLM Southern Nevada District and the Nevada Division of Environmental Protection (NDEP) for the Project (JBR Environmental Inc. [JBR] 2008). Acceptance of the Major Modification to the POO was received on December 8, 2008 and initiated the environmental review process.

The Proposed Project would involve the following:

- Expansion of the existing mine pit;
- Construction of access roads; and,
- Raising of the existing tailings dam (permit already exists for dam raise).

1.2 PROJECT AREA

The Project is located in northeast Clark County, approximately 50 miles northeast of Las Vegas, Nevada and 5 miles south of Overton, Nevada (**Figure 1**). The Project Area lies to the north and east of the Valley of Fire State Park and immediately southwest of Overton Ridge in Sections 11 and 12, Township 17 South, Range 67 East (T17S, R67E) (**Figure 2**). Although proposed total disturbance within the expansion area would comprise approximately 187 acres, the proposed expansion Project Area, as identified in the POO encompasses 426 acres and includes most of the existing active pit, mining claims proposed for expansion of the mine under the Proposed Action, and a 200-foot buffer of the claim area as well as a 200-foot buffer of the existing active pit.

1.3 PURPOSE AND NEED

The purpose of the action is to provide public land for the continuance of mining activities by allowing for the expansion of an existing silica mine on public lands managed by the BLM. The multiple-use mission of the BLM includes authorizing and managing activities such as mineral development, energy production, recreation, and grazing, while conserving natural, historical, cultural, and other resources on public lands. The BLM's objective is to meet public needs for use authorizations such as right-of-ways (ROWs), permits, leases, and easements while avoiding or minimizing adverse impacts to other resource values. The proposal to expand the existing Simplot Mine on public lands would be in accordance with this objective.

The need for BLM action, established by BLM regulations for mining activities on public lands under the General Mining Law of 1872, subject to compliance with the Federal Land Policy and Management Act (FLPMA), is to respond to a request by Simplot to allow for a mine expansion to meet long-term foundry and glass industry market demands for high quality sand, in addition to continuing mining operations in the most efficient and economically feasible methods. The BLM is required to evaluate and make a decision regarding the Major Modification to the POO as submitted by Simplot.

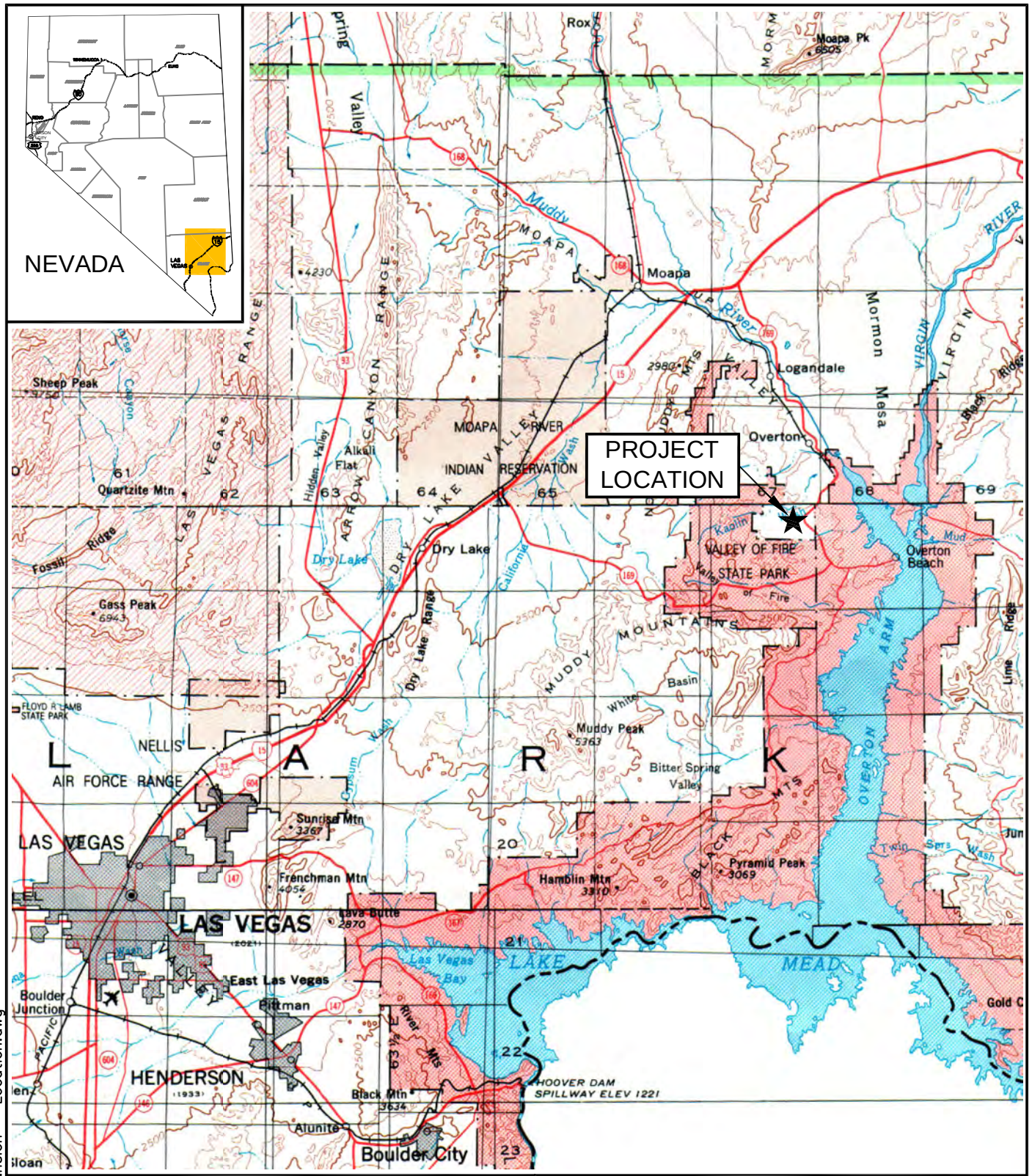

IMAGE SCANNED FROM USGS 1:500,000–SCALE NEVADA STATE MAP

10 0 10 MILES

10 0 10 KILOMETERS

N

SIMPLOT

SILICA MINE EXPANSION PROJECT

FIGURE 1
PROJECT LOCATION MAP

jbr environmental consultants, inc.

Salt Lake City, Utah | Cedar City, Utah | Reno, Nevada | Elko, Nevada | Boise, Idaho

DESIGN BY	DRAWN BY	CH'D BY	SCALE	DATE DRAWN	REVISION
GB	CP		1:1,000,000	1/02/08	

drawings\simplot-09\Fig1 Expansion – Location.dwg

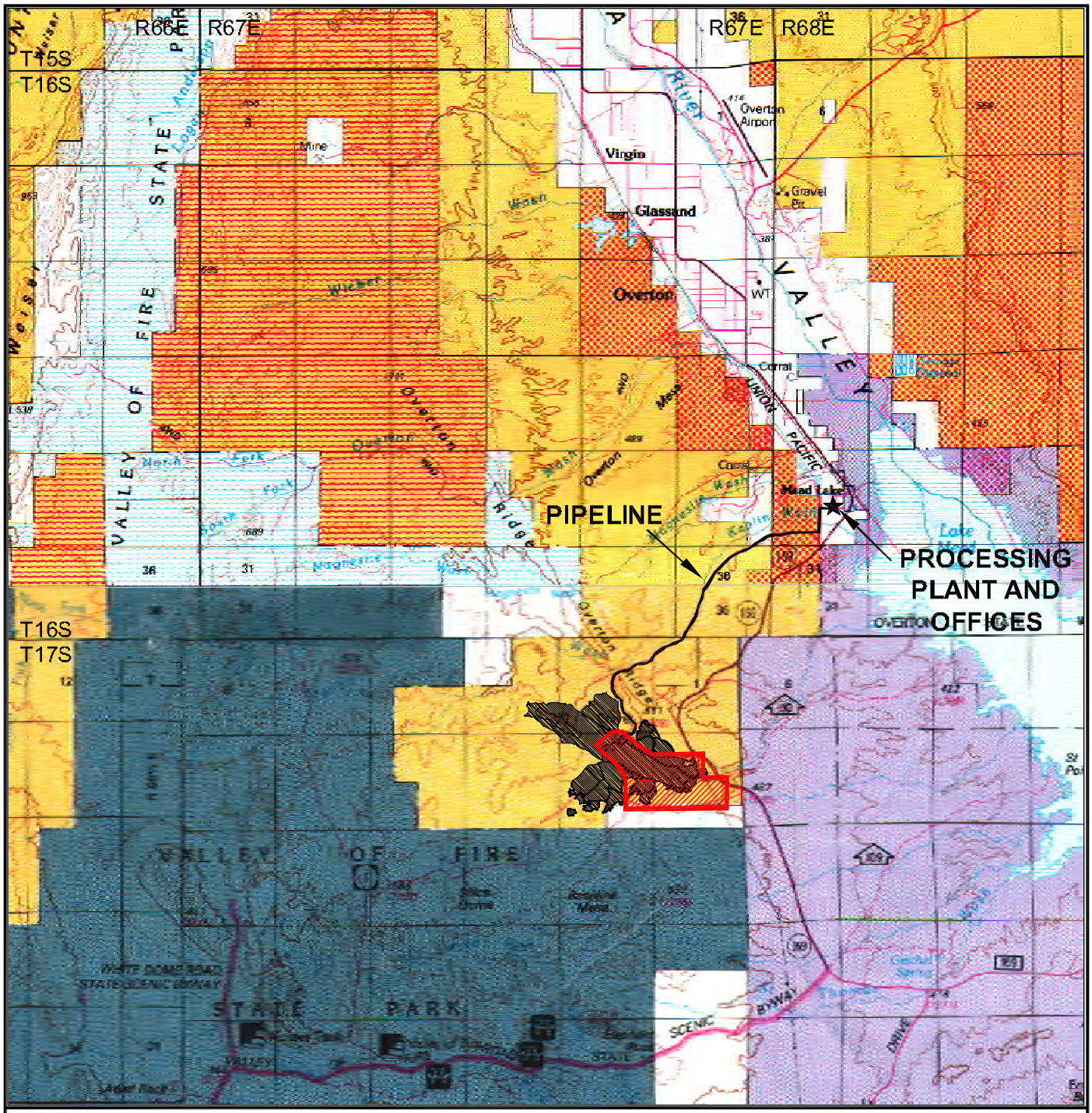

IMAGE SCANNED FROM 1:100,000–SCALE TOPOGRAPHIC MAPS, BLM EDITION: LAKE MEADE, NEVADA, 2000 AND OVERTON, NEVADA, 1989.

EXPLANATION

- EXISTING & PERMITTED DISTURBANCE AREAS
- EXPANSION PROJECT AREA

LANDSTATUS

- PUBLIC LANDS (ADMINISTERED BY BLM)
- NATIONAL PARKS AND MONUMENTS
- PATENTED LANDS
- BUREAU OF RECLAMATION
- FEDERAL AGENCY PROTECTIVE WITHDRAWALS
- STATE, COUNTY, CITY, WILDLIFE, PARK AND OUTDOOR RECREATION AREAS

1 0 1 2 3 4 KILOMETERS

1 0 1 2 MILES

N

SIMPLOT

SILICA MINE EXPANSION PROJECT

FIGURE 2
LAND STATUS MAP

jbr environmental consultants, inc.
Salt Lake City, Utah Cedar City, Utah Reno, Nevada Elko, Nevada Boise, Idaho

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CG	CP		1:100,000	1/02/07	

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Silica resources within the current direction of active mining are projected to be exhausted in approximately 6 months. Exploratory drilling of approximately 20 bore holes was conducted subsequent to completion of EA number NV-054-2006-369, to identify areas for potential mine expansion. Expansion under the Proposed Action would target high-quality material with the least amount of overburden, enabling mining operations to continue for approximately an additional 30-40 years.

1.4 SCOPING ISSUES/CONCERNS

Internal scoping was conducted within the BLM Southern Nevada District in December 2008/January 2009. Resources and animal/plant species of particular concern were identified through the interdisciplinary planning process. BLM resource specialists identified resources to be carried forward for analysis in this EA. Site visits were conducted and specific field surveys included: cultural resources inventory, special status plant and wildlife surveys, wetland/waters of the U.S. determination, and visual resources evaluation.

Issues/concerns identified from internal scoping:

- Impacts to native vegetation
- Impacts to a potential jurisdictional (Section 404 of the Clean Water Act) unnamed wash
- Impacts to the desert tortoise, including habitat
- Inventory and evaluation of cultural resources and potential impacts
- Impacts to visual resources

2.0 PROPOSED ACTION AND ALTERNATIVES

Refer to **Figure 3** for the existing disturbance limits and the proposed expansion area.

2.1 EXISTING OPERATIONS

The silica mine presently consists of an open pit; overburden stockpiles; a mill; a tailings facility; slurry and reclaim water pipelines; power distribution systems; access/haul roads; mine and mill maintenance shops; administration and office buildings; and ancillary and support facilities.

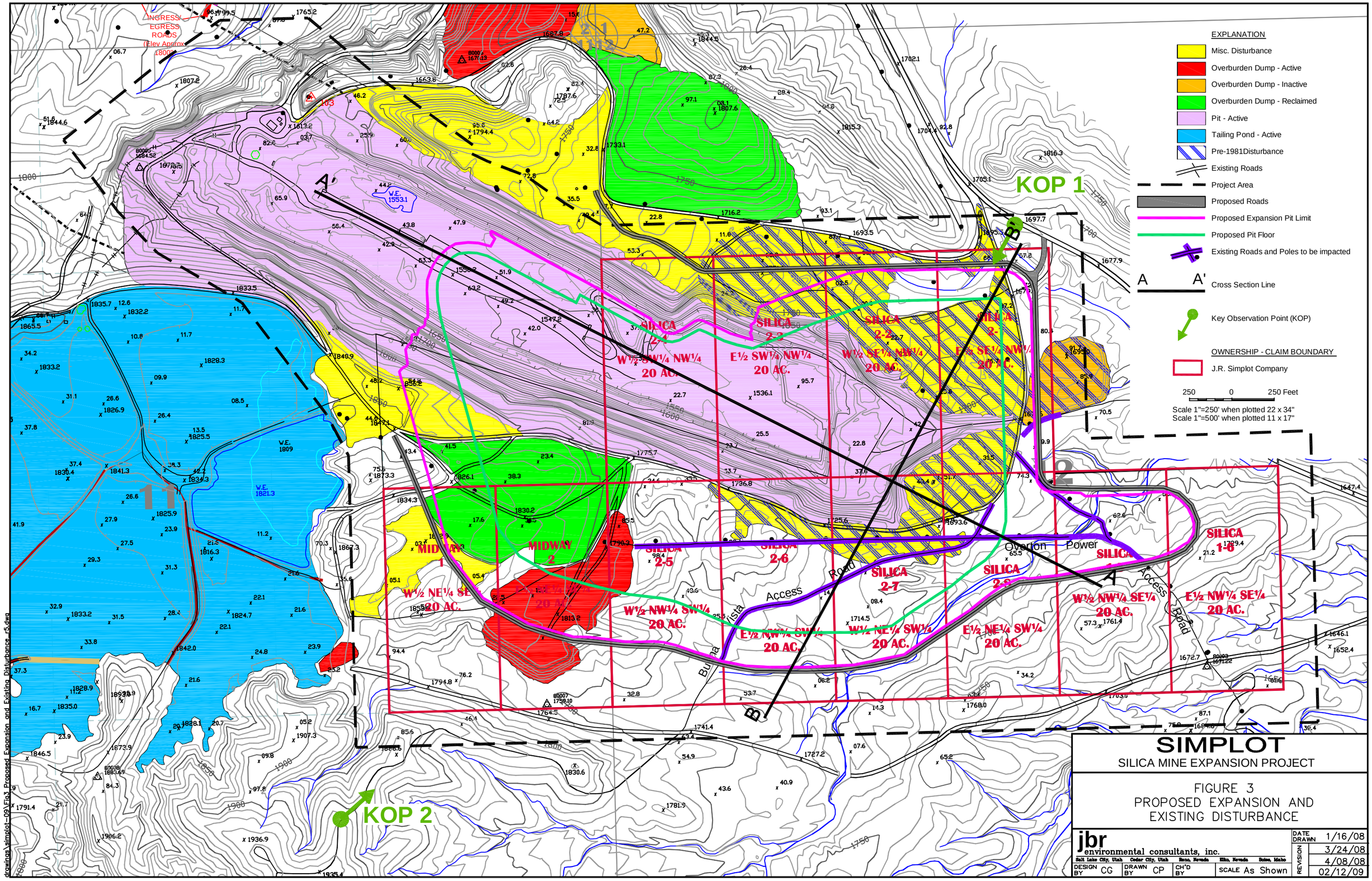
All past and existing disturbances are permitted under previously approved POOs (original POO [1984] and subsequent amended POOs [1990, 1993, 2003, 2007]). The most current NEPA documentation was produced in 2007 (POO-N56-85-004P and EA No. NV-054-2006-369 [USDOI-BLM 2007]).

The mining operation consists of breaking up the material by blasting and then removing this material either for processing or as waste. Simplot drills and blasts individual benches approximately eight to ten times a year. Blasting sufficiently fragments the relatively soft sandstone. Following the blasting activities, a dozer moves sandstone material to a front-end loader, which trams directly to the grizzly, a 6 by 11 inch grate. A conveyor then transports the material to the rod deck screen (1/4-inch screen size), which removes the oversized high-clay, coarse fractions. The minus 1/4-inch material goes to a wet screen set at 30-mesh and the oversize material, which consists of clay and pebbles, is removed. The oversize material fraction is removed from the sand in the screen plant and placed as backfill in mined-out portions of the pit. The wet 30-mesh material is then pumped to the washing plant, located in the northwestern portion of the existing pit. The material is then separated through two hydrocyclones with the coarse underflow going into dense media classifiers. The overflow fines and water are pumped to the existing tailings impoundment.

Two existing pipelines, one 8-inch slurry pipeline and one 10-inch water line transfer mined silica and water between the existing mill in the mine site and the existing processing plant and separation facilities approximately five miles northeast of the Project Area (see **Figure 2**). The pipelines are located in Sections 1, 2, and 11 of T17S, R67E; Sections 25 and 36 of T16S, R67E; and Section 30 of T16S, R68E.The separated minus 30-mesh plus the 270-mesh sand is slurried and pumped through the slurry pipeline to the processing plant south of Overton, Nevada.

At the processing plant, the material is mixed with fresh water and washed in various mechanical separation steps to remove fine impurities from the sand grains. The washed sand is pumped in a slurry line to the loadout facilities. Tailing fines and water are pumped back to the tailings impoundment to the south of the pit. Clarified water from the tailings pond is recycled to the mill for reuse. Separations at the processing plant take place for foundry and glass sand. The sand is screen-dewatered and dried through natural solar drying to a moisture content of approximately 5 percent and then run through a coal-fired drier, cooled on slabs, and stored for shipping. Loading facilities accommodate shipping by either rail and/or truck.

The availability and use of water in the operations and processing of the silica is extremely important. Simplot currently obtains their water from two sources: a water-well situated adjacent to the washing plant in the existing pit and from common shares of irrigation water sent via ditches to the processing plant. Simplot attempts to limit the loss of available water and recycles it through the use of a reclaim pond situated at the tailings impoundment and four water storage ponds located at the processing plant. The water pipeline situated immediately adjacent to the slurry line transports water back to the pit washing facility from the processing plant.


EXPLANATION
Misc. Disturbance
Overburden Dump - Active
Overburden Dump - Inactive
Overburden Dump - Reclaimed
Pit - Active
Tailing Pond - Active
Pre-1981Disturbance
Existing Roads
Project Area
Proposed Roads
Proposed Expansion Pit Limit
Proposed Pit Floor
Existing Roads and Poles to be impacted
A A'
Cross Section Line
Key Observation Point (KOP)
OWNERSHIP - CLAIM BOUNDARY
J.R. Simplot Company
250 0 250 Feet
Scale 1"=250' when plotted 22 x 34"
Scale 1"=500' when plotted 11 x 17"
KOP 1
KOP 2
INGRESS/ EGRESS ROADS (Elev Approx 1800')
SILICA 2-1
SILICA 2-2
SILICA 2-3
SILICA 2-4
SILICA 2-5
SILICA 2-6
SILICA 2-7
SILICA 2-8
SILICA 1-6
MIDWAY 1
MIDWAY 2
W½ SW¼ NW¼ 20 AC.
E½ SW¼ NW¼ 20 AC.
W½ SE¼ NW¼ 20 AC.
E½ SE¼ NW¼ 20 AC.
W½ NE¼ SE¼ 20 AC.
W½ NW¼ SW¼ 20 AC.
E½ NW¼ SW¼ 20 AC.
W½ NE¼ SW¼ 20 AC.
E½ NE¼ SW¼ 20 AC.
W½ NW¼ SE¼ 20 AC.
E½ NW¼ SE¼ 20 AC.
Buena Vista Access Road
Overton Power Access Road
A
A'
B
B'
SIMPLOT
SILICA MINE EXPANSION PROJECT
FIGURE 3
PROPOSED EXPANSION AND EXISTING DISTURBANCE
jbr environmental consultants, inc.
Salt Lake City, Utah Cedar City, Utah Reno, Nevada Elko, Nevada Boise, Idaho
DESIGN BY CG
DRAWN BY CP
CH'D BY
SCALE As Shown
DATE DRAWN 1/16/08
REVISION 3/24/08
4/08/08
02/12/09
drawings\simplot-09\Fig3_Proposed Expansion and Existing Disturbance_r5.dwg

Simplot is currently permitted to expand the silica mine by 167 acres northwest of the existing active pit, encompassing an inactive pit and overburden dump, pursuant to EA No. NV-054-2003-382 (USDOI BLM 2004). However, the overburden is much thicker in this area and thus, the company desires to expand to the southeast where the overburden is either non-existent or very thin, resulting in lower mine operation costs.

2.2 PROPOSED ACTION

Simplot proposes to expand their mine into the recently evaluated exploration area. Total additional surface disturbance within the expansion Project Area comprises approximately 187 acres, of which 127 acres were previously disturbed. Disturbance associated with the project is discussed in detail in **Section 2.2.3**. Production levels and water use at the mine would remain at current levels until production of silica products ceases (approximately 30-40 years) and site reclamation begins. No dewatering activities presently occur or are planned in the Proposed Action.

The proposed activities include expanding the existing, active open pit into the exploration area. An access road with an associated internal safety berm would be constructed around the expanded pit area. During the operational phase, overburden from the planned pit area would be used to construct the road and internal safety berm and to raise the tailings dam facility south and west of the proposed pit to accommodate additional tailings disposal. During reclamation, the interior safety berm would be built up from 3.3 feet to approximately 7.5 feet using material from the proposed pit perimeter access road.

A maximum of approximately 10,973 feet (2.08 miles) of new access roads around the proposed pit would be constructed. Haul road access into the proposed pit expansion would be from the existing pit. No new haul roads would be constructed. In addition, no new buildings, piping, or other permanent structures are proposed in the expansion area. Both load-and-haul and load-and-carry mining methods would be used for pit expansion activities. No additional overburden or waste rock stockpiles would be developed, nor would any existing stockpiles be modified. All equipment would be removed from the expansion area when activities are complete.

Signing, gates on access roads, and a 4-strand range type fence built to BLM standards likely consisting of t-posts and metal strands constructed along roads in the expansion area would be used to restrict public access to the existing Simplot Mine site and the proposed expansion area. The proposed Project would meet all USDOI-BLM, state, and local laws.

While Simplot is currently permitted to expand the silica mine in a northwesterly direction, expansion of the mine through the Proposed Action is economically preferable as the volume of overburden in the exploration area would be less than the volume of overburden in the previously permitted area.

Sections 2.2.1 through **2.2.4** detail components of the Proposed Action.

2.2.1 Mine Expansion and Supporting Infrastructure

2.2.1.1 Silica Products Mine Pit Development and Production

Simplot proposes to expand the existing active open pit in a southeasterly direction (see **Figure 3**) into the exploration area. The overburden in the area would be ripped with dozers. During the operational phase, overburden from the planned pit area would be used to construct the berms and to raise the tailings dam to accommodate additional tailings disposal.

Once sufficient overburden stripping has taken place, expansion into the new pit area would begin. Mining would take place down to approximately the 1,500-foot elevation level. Refer to **Figure 4** for conceptual cross sections of the proposed pit. Benches would be approximately 20 feet wide by 50 feet high. Material would be separated using screens and suitable material would be conveyed to the washing plant and ultimately slurried to the processing plant (see **Section 2.1**). The loading hopper and conveyors would eventually be moved in a southeasterly direction as the pit expands.

After active mining in the new expansion area has been initiated and the initial overburden removed, all future overburden waste and waste sand would be backfilled into the northern end of the existing pit. Open pits may also be used for disposal of tailings.

2.2.1.2 Surface Support Facilities

No construction of new surface support facilities would be required for the proposed mine expansion because of the current infrastructure of existing facilities that would be used for the proposed expansion project. Power lines that currently traverse the expansion area are either currently being removed and/or several poles would need to be relocated to the outside of the external berm by Overton Power.

2.2.1.3 Access Roads

A maximum of approximately 10,973 feet (2.08 miles) of new access roads around the proposed pit would be constructed. Access roads would be situated within the proposed pit expansion disturbance and/or existing overburden dump limits (see **Figure 3**). An access road with an associated safety berm (internal berm) would be constructed around the pit. The internal berm would be constructed to a height of 3.3 feet between the road and proposed pit. Material from the proposed pit perimeter access road would be used to fortify the internal safety berm. The proposed access road would cross an unnamed wash in two locations, requiring deposit of fill material in the wash in those locations for road construction.

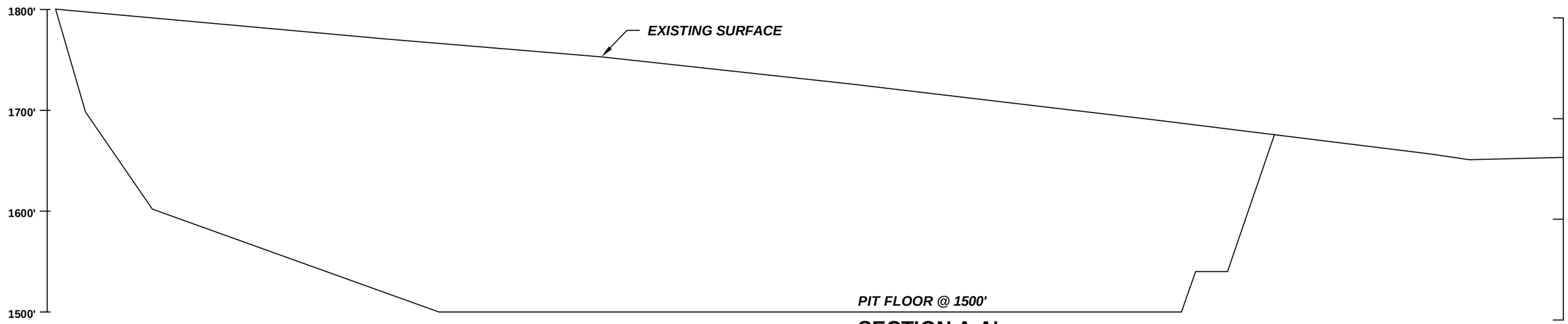
The width of the access roads would be approximately 20 feet and would be constructed with a minimum cross slope of 1 to 2 percent to accommodate runoff. Hillside cuts would be sloped from outside to inside at 4 to 5 percent with an inside ditch line to reduce erosion damage to road surfaces. Haul road access into the proposed pit expansion would be from the existing pit. No new haul roads would be constructed.

During the operational phase, the existing access road off of SR 169 would be decommissioned and either closed with a gate, bermed, and or re-contoured to blend with the surrounding topography to deny public access. Another existing 20-foot wide road (access road spur) would be improved and used as the main access to the pit perimeter area. A gate would be installed to control access to the pit area from this road.

2.2.1.4 Tailings

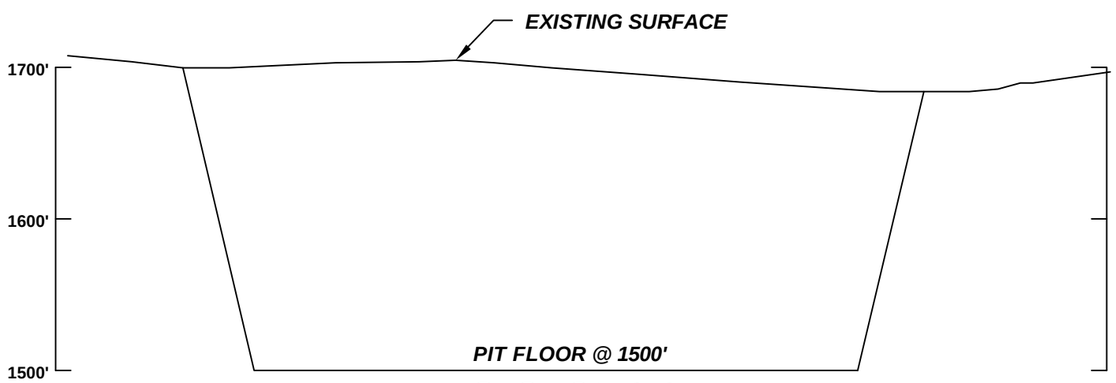
Simplot has bonded for reclamation of all existing 139 acres (141 acres corrected for slope) of the active tailings impoundment (JBR 2007). Simplot has an existing permit for a 10-foot lift on the existing tailings dam. Overburden from the stripping of the pit expansion or material from the nearest active overburden dump would be used to raise the dams.

The actual disturbance footprint of the tailings ponds would not be affected by the proposed expansion project. Because project activities would not result in any new disturbance associated with tailings, they were not included in the Project Area.



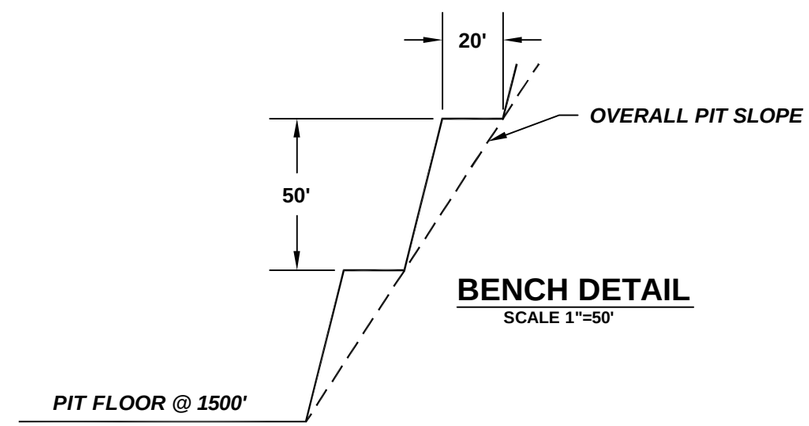
SECTION A-A'

HORZONTAL SCALE 1"=500'
VERTICAL SCALE 1"=100'



SECTION B-B'

HORZONTAL SCALE 1"=500'
VERTICAL SCALE 1"=100'



BENCH DETAIL

SCALE 1"=50'

SIMPLOT

SILICA MINE EXPANSION PROJECT

FIGURE 4
PIT CROSS SECTIONS AND BENCH DETAIL

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Salt Lake City, Utah | Cedar City, Utah | Reno, Nevada | Elko, Nevada | Boise, Idaho

DESIGN BY	DRAWN BY	CH'D BY	SCALE	DATE DRAWN	REVISION
WF	CP		As Shown	12/26/07	03/27/08

drawings\simplot-09\Fig4 Expansion - PitXsec_r1.dwg

2.2.1.5 Overburden Dump and Stockpiles

Overburden waste rock would be generated during the initial stripping for the proposed pit expansion. No additional overburden or waste rock stockpiles would be developed, nor would any existing stockpiles be modified. Rather, stripped overburden would be used to construct safety berms during the operational phase, used in raising existing dikes and the tailings dam, placed in existing and active overburden dumps (not resulting in any additional new surface disturbance), and/or would be backfilled into the northern portion of the existing pit.

2.2.2 Land Management and Mining Claims

Surface ownership within the proposed expansion area is public land administered by the BLM, Southern Nevada District. The mine site is subject to the stipulations outlined in the Las Vegas Resource Management Plan and Final Environmental Impact Statement (USDOI-BLM 1998) and the Clark County Management Framework Plan.

Simplot either controls all the mining claims within the proposed expansion area entirely or in cooperation with the Gustafson Family Trust. Mining claims that would be affected by the proposed Project are:

- NMC-943589, Midway 1
- NMC-943590, Midway 2
- NMC-943591, Silica 1-5
- NMC-943592, Silica 1-6
- NMC-943594, Silica 2-1
- NMC-943594, Silica 2-2
- NMC-943595, Silica 2-3
- NMC-943596, Silica 2-4
- NMC-943597, Silica 2-5
- NMC-943598, Silica 2-6
- NMC-943599, Silica 2-7
- NMC-943600, Silica 2-8
- NMC-943611, Florence 1-7
- NMC-943612, Florence 1-8

2.2.3 Disturbance Area

The proposed expansion Project Area encompasses 426 acres (**Table 2-1**) and consists of a large portion of the existing active pit, miscellaneous past and existing disturbances, and a 200-foot buffer of the claim area as well as a 200-foot buffer of the existing active pit. The proposed activities would result in the incremental surface disturbance of approximately 187 acres of public land as detailed in **Tables 2-1** and **2.2** below. Approximately 127 acres of proposed expansion disturbance would occur over existing disturbance. Approximately 60 acres of the project would occur on previously undisturbed areas, for a total project disturbance area of approximately 187 acres.

Table 2-1 Existing and Proposed Disturbance within the Project Area

	Acres		
	Undisturbed	**Disturbed**	**TOTAL**
Existing Conditions within Project Area	184	243	426
Proposed Expansion Disturbance	60	127	187

Table 2-2 Proposed Surface Disturbance on Public Lands

Proposed Facilities	Surface Disturbance (Acres)
Pit	179
Access Roads (includes 3.3-foot high berm on one side)	8
Total Incremental Surface Disturbance	**187**

2.2.4 Reclamation

Reclamation activities for the disturbance associated with the Proposed Action are described in detail in the Major Modification to the Plan of Operations/Reclamation Plan and Reclamation Bond Estimate (JBR 2008). The mine would be operated and reclaimed to the standards listed at 43 CFR 3809.420. During reclamation, the interior safety berm would be built up from 3.3 feet to approximately 7.5 feet with a base width of 22 feet. Roads would be ripped and recontoured. Berms and reclaimed roads would be reseeded. No reclamation of the pit is planned at this time; however, Simplot is planning on backfilling portions of the pit as long as future economic and environmental conditions indicate this as a preferred method to dispose of excess overburden and tailings, or to stabilize pit walls. Simplot has applied to the NDEP for authorization to obtain or modify, as necessary, a reclamation permit, water pollution control permit, air quality operating permit, and stormwater discharge permit.

2.2.5 Environmental Protection/Mitigation Measures

Environmental resources in the Project Area have been evaluated to determine the need for Environmental Protection Measures (EPMs)/Mitigation Measures. The EPMs developed for the proposed Project are described in the following sections.

2.2.5.1 Air Resources

Simplot holds an Authority to Construct/Operating Permit (source 138-mod7 rev.1) issued by Clark County, which includes provisions for control of fugitive dust. Current permit provisions would be examined and modifications to the permit would be requested (if required) prior to initiation of expansion activities. The generation of fugitive dust from surface activities, including material handling and hauling, would be controlled by BMPs (NSCC 1994) in accordance with the Permit. Examples include direct water application and the revegetation of disturbed areas concurrent with operations. All permit conditions and stipulations would be in compliance for the duration of the project.

2.2.5.2 Water Resources

Simplot currently maintains a stormwater discharge permit from the NDEP. Should the proposed mine expansion require updated permits from NDEP, all modifications would be made and up-to-date permits would be in place prior to initiation of new operations. BMPs developed by the NSCC, would be used to control stormwater discharges and the Stormwater Pollution Prevention Plan (SWPPP) would be implemented and followed. These BMPs include: material handling practices that minimize the exposure of pollutants to stormwater; spill prevention and response; sediment and erosion control; and physical stormwater controls. Runoff water from proposed mining operations would be controlled by check dams and catch basins situated immediately below all areas of influence.

A U.S. Army Corps of Engineers 404 permit would be obtained for work in the unnamed dry wash that transverses the proposed expansion area; all stipulations of the permit would be adhered to.

2.2.5.3 Vegetation

During mining activities, all species of cactus that would be impacted would be transplanted (using approved methods to increase survival success) to adjacent areas not planned for disturbance. Should plant material require stockpiling for later replanting, Simplot would coordinate with BLM biologists to employ nursery techniques to maximize plant survival.

Approximately 145 acacia trees (*Acacia greggi*) would be removed and impacted during mining activities, thus Simplot would coordinate with the BLM botanist to identify areas where acacia trees could be planted at a rate of two trees for each acacia tree lost adjacent to the Project Area or in other areas of public land deemed feasible by the BLM.

2.2.5.4 Noxious Weeds

To minimize the potential for the spread of noxious/invasive weeds, the Southern Nevada District Office has provided project-specific stipulations regarding noxious weeds. To summarize, these stipulations include using weed free seed and organic products, coordination with the BLM Weed Coordinator especially regarding any proposed herbicide treatment, and ensuring that all exploration related equipment be cleaned of soils, seeds, vegetation matter, or other debris or matter that could contain or hold noxious/invasive species' seeds prior to entering the Project Area if not previously on site. The equipment would again be cleaned any time the equipment were to leave the Project Area, be used on another Project, and reenter the Project Area. The specific stipulations are further detailed in **Appendix A**.

2.2.5.5 Special Status Species, including Migratory Birds

Desert Tortoise

The federally listed desert tortoise (*Gopherus agassizii*) is present within the Project Area. A programmatic Biological Opinion (BO-File No. 1-5-97-F-251) for the desert tortoise is already in place for this type of expansion activity. Simplot would be required to pay remuneration fees of $46,748 based on the current year's rate of $754 per acre of disturbance. This rate is subject to change as described in *Term and Condition 3.g*. In addition to voluntary pre-construction clearance surveys and animal relocation efforts (to be conducted by qualified desert tortoise biologists according to approved protocols and agency consultation), all applicable Terms and Conditions in the BO (**Appendix B**) would be implemented and followed prior to and during expansion activities. No fencing is proposed for this Project.

Burrowing Owl

If possible, habitat-altering projects or portions of projects are scheduled outside the bird breeding season to prevent undue harm. However, ground disturbing activities associated with this proposed Project may occur during the breeding season (i.e. - in upland desert habitats and ephemeral washes containing upland species, the season generally occurs between March 15th and July 30th), based upon approval timeframes. If so, a qualified biologist would survey the area for nests prior to commencement of construction activities. This would include burrowing and ground nesting species in addition to those nesting in vegetation. If any active nests (containing eggs or young) are found, an appropriately-sized buffer area would be avoided until the young birds fledge.

Migratory Birds

In order to avoid or minimize potential impacts to migratory birds, surface disturbing activities would either be limited during the migratory bird nesting period (late April through mid-July) or a migratory bird nesting survey would be completed in areas proposed for disturbance during this time period. If an active nest is discovered, the BLM biologist would be notified and an appropriate buffer area around the active nest would be identified to prevent nest abandonment until after the migratory bird nesting period is over and/or young have fledged.

2.2.5.6 Hazardous Materials and Hazardous Waste

Hazardous materials are defined in 49 CFR 172.101; hazardous substances are defined in 49 CFR 302.4 and the Superfund Amendments and Reauthorization Act Title III. Any hazardous materials would be transported to the Project Area by U.S. Department of Transportation (DOT) regulated transporters and stored on-site in DOT approved containers. Spill containment structures would be provided for liquid hazardous materials. No hazardous waste would be generated by the Project.

Diesel fuel and engine oil products are the only hazardous material liquids used on site. A 15,000-gallon above ground diesel storage tank is located at the mill in the bottom of the current pit and is double-walled to prevent spillage or leaks. The U.S. Environmental Protection Agency (USEPA) accepts double-wall petroleum tanks as meeting the Spill Prevention Control and Countermeasures (SPCC) Plan requirement for secondary containment. Any leaks from the primary tank shell would be fully contained within the outer tank shell. The only other significant source of potential petroleum spills is from mobile equipment. As part of the normal work practice, any spills from mobile equipment are promptly reported internally and Simplot actively cleans up any such spills and disposes of them appropriately according to applicable NDEP and federal regulations.

2.2.5.7 Closure and Reclamation

In compliance with the BLM and NDEP regulations, Simplot has prepared and submitted a Reclamation Plan (JBR 2008) that encompasses disturbances associated with this proposed Project. Various reclamation techniques would be utilized to stabilize the reclaimed areas from erosion and create biodiversity in the post mining ecosystem. The objectives for reclamation are to support post-mining land uses of wildlife habitat, domestic grazing, and dispersed recreation. Reclamation planning has been developed to achieve public safety; minimize adverse visual effects; re-establish surfaces that would support a self-sustaining vegetation community; control erosion and sedimentation; and employ reclamation methods that are technically effective, cost efficient, and do not require ongoing maintenance to ensure performance. Rock faces associated with the open pits would not be reclaimed. The rock faces would be designed to remain in a stable condition following closure.

An informal interim management plan is in place and would be implemented during extended periods of mining operations shutdown. This plan includes: removing mobile equipment from BLM land to Simplot's private/secured processing facility and office area; installing closure signs and gates that would be closed and locked during the shutdown; shutting down the existing pump for the water well in the existing pit; and conducting routine monitoring of the site to ensure site safety and security. As discussed in **Section 2.2.5.1**, fugitive dust would be controlled during temporary shutdowns and closure using direct water application.

2.2.5.8 Cultural and Paleontological Resources

If cultural resources are encountered during ground disturbing activities, the BLM would be notified and work in the area would stop until inspected by a qualified archeologist. If necessary, a mitigation plan would be developed. In the event vertebrate paleontological resources are discovered, the BLM authorized officer would be notified.

One historic road, the Buena Vista Access Road, which is currently unevaluated for eligibility on the NRHP, would be impacted by the proposed Project. An agency approved Historic Properties Treatment Plan would be developed and implemented prior to any surface disturbing activities. Simplot would coordinate with the BLM, Nevada SHPO, and any affected parties (see **Section 2.2.1.3**).

2.2.5.9 Human Health and Safety

The operation would be subject to the federal Mine Safety and Health Act (MSHA) of 1977, which sets forth mandatory safety and health standards for mining operations. The purpose of the standards is protection of life, promotion of health and safety, and prevention of accidents. Regulations issued under MSHA are codified under 30 CFR Subchapter N, Part 56. All employees would be required to receive the training outlined in the rules.

2.3 NO ACTION ALTERNATIVE

In accordance with BLM guidelines (H-1790-1, Chapter V), this EA evaluates the No Action Alternative. The objective of the No Action Alternative is to describe the environmental consequences that would result if the need for the project was not met. The No Action Alternative forms the baseline environmental data from which the impacts of all other alternatives can be measured.

The selection of the No Action Alternative would be inconsistent with the BLM mission of multiple use and the BLM policy of making public lands available for a variety of uses as long as these uses are conducted in an environmentally sound manner. Under the No Action Alternative, Simplot would not be allowed to implement the proposed Project and thus would not expand the existing mining operation as proposed. As previously approved, Simplot may continue operations at the Silica Products Mine through expansion previously permitted subsequent to EA No. NV-054-2003-382. Simplot may not be able to maintain the current level of employment at the Silica Products Mine should the cost of the existing permitted expansion prove to not be economically viable based upon the larger amount of existing overburden in this area.

2.4 LAND USE PLAN CONFORMANCE STATEMENT

This Environmental Assessment (EA) was written to comply with BLM regulations for mining activities on public lands under the General Mining Law of 1872, subject to compliance with the Federal Land Policy and Management Act (FLPMA), which is implemented through surface management regulations (43 Code of Federal Regulations [CFR] 3809) as mandated by the Council of Environmental Quality Regulations (40 CFR 1500-1508) and the BLM NEPA Handbook (USDOI-BLM 2008).

The proposed Project and Alternatives are in conformance with the Las Vegas Resource Management Plan, approved by the Record of Decision dated October 5, 1998, and are consistent with federal, state, and local laws, regulations, and plans. Objectives of the Minerals Management Program are as follows:

1) Provide for the orderly exploration and development of valuable minerals on federally owned estates, whether or not the surface estate is in federal ownership, where lands remain open to entry; and

2) Use of appropriate environmental safeguards to allow for the preservation and enhancement of fragile or unique resources.

3.0 AFFECTED ENVIRONMENT

The Affected Environment provides the baseline for comparison of impacts/consequences of the proposed Project and No Action Alternative. Information on the affected environment was obtained and summarized from previous mine field visits and existing documents that included the following:

- Original Plan of Operations (Simplot 1984) and subsequent amendments (1990, 1993, 2003, and 2007);
- Reclamation and Operating Plan for the Simplot Silica Mine Simplot Silica Products (Broadbent and Associates 1994), updated August 2003, and revised February 2004 and December 2008;
- 2004 Environmental Assessment for the Simplot Silica Mine Expansion Project (EA No. NV-054-2003-382);
- 1998 Draft Las Vegas Resource Management Plan and Final Impact Statement (USDOI-BLM 1998);
- 2007 Environmental Assessment for the Simplot Silica Exploration Project (EA No. NV-054-2006-369).
- 2008 Major Modification to the plan of Operations / Reclamation Plan & Reclamation Bond Estimate for the Simplot Silica Mine Expansion Project.

Table 3-1 lists the Supplemental Authorities to be Considered (formerly referred to as Critical Elements) per NEPA Handbook H-1790-1 and indicates whether these would be affected by the proposed Project. In addition, those elements and/or natural resources of the human environment that are present in the Project Area or could be potentially affected are discussed throughout **Sections 3** and **4**.

Other resources of the human environment that have been considered for this EA are listed **Table 3-2**. Elements that may be affected are further described in the EA. Rationale for those elements that would not be affected by the proposed action and alternative is listed in the table below.

Table 3-1 BLM Supplemental Authorities to be Considered

Supplemental Authority[1]	Not Present[2]	Present/Not Affected	Present/May be Affected[3]	Rationale
Air Quality			✓	An increase in hydrocarbon and particulate emissions (PM_{10}) may result from heavy equipment involved in mining activities and associated dust. **Section 3.1** describes the current air quality in the area and potential impacts are assessed in **Section 4.1.1.**
Area of Critical Environmental Concern (ACEC)	✓			Resource is not present.
Cultural/Historical			✓	One NRHP-eligible prehistoric lithic procurement site would be avoided through the development of design features; although the Buena Vista Access Road historic site would be impacted. **Section 3.2** describes the results of the cultural inventory, along with the affected environment and **Section 4.1.2** describes the potential impacts to those resources.
Environmental Justice	✓			No minority or low-income groups would be disproportionately affected by health or environmental effects.
Farmlands Prime or Unique	✓			Resource is not present.
Native American Religious Concerns		✓		All applicable tribal consultation requirements have been complied with and no issues were identified.
Noxious Weeds/Invasive Non-native Species			✓	The only known noxious weed in the Project Area is tamarisk. To minimize the potential for the spread of noxious/invasive weeds, the Southern Nevada District Office has provided project-specific stipulations regarding noxious weeds (**Appendix A**). **Section 3.3** describes the affected environment and **Section 4.1.3** assesses potential impacts.
Floodplains	✓			Resource is not present. There are no mapped special flood hazard areas located within the Project Area.
Riparian/Wetlands			✓	One existing, unnamed wash with acacia trees would be impacted by the mine expansion, resulting in a disturbance (0.191 acres) to jurisdictional Waters of the United States. Simplot would obtain U.S. Army Corps of Engineers Nationwide permit compliance for the project (see **Sections 2.2.5.2, 3.4, and 4.1.4**).

[1] See H-1790-1 (January 2008) Appendix 1 Supplemental Authorities to be Considered.
[2] Supplemental Authorities determined to be Not Present or Present/Not Affected need not be carried forward for analysis or discussed further in the document based on the rationale provided.
[3] Supplemental Authorities determined to be present/May be Affected *must* be carried forward for analysis in the document.

Supplemental Authority[1]	Not Present[2]	Present/Not Affected	Present/May be Affected[3]	Rationale
Threatened, Endangered, and Special Status Species			✓	Historical survey data indicate that the Project Area occurs within an Area C, low density tortoise habitat and desert tortoises have been observed in the area. Impacts to the desert tortoise would be allowable under the existing Programmatic Biological Opinion (BO) number (BO-File No. 1-5-97-F-251); Section 7 Consultation for this Project has been satisfied. See **Sections 3.5, 4.1.5.1**, and mitigation in **Section 2.2.5.5**.
Migratory Birds			✓	Migratory birds occur and use habitat in the Project Area. EPM listed in **Section 2.2.5.5** would be implemented to avoid and/or minimize impacts to migratory birds. **Section 3.6** describes the affected environment and **Section 4.1.6** assesses potential impacts.
Waste – Hazardous/Solid		✓		None of the alternatives would result in creation of hazardous wastes.
Water Quality			✓	No perennial water sources, besides the tailings pond occur in the Project Area and groundwater is approximately 60 feet below the current, deepest excavation. EPM's (**Section 2.2.5.2**) would be used to control any adverse affects to Water Quality. Other measures would ensure that longer term affects would be minimized compliant with NRS 534 and applicable regulations. See **Sections 3.7** and **4.1.7**.
Wild & Scenic Rivers	✓			Resource is not present.
Wilderness (Study Area)	✓			Resource is not present.
Forests and Rangelands (HFRA only)	✓			Project does not meet HFRA criteria.
Human Health and Safety		✓		Safety codes and regulations would be strictly adhered to during all mining activities.

Table 3-2 Other Resources to be Considered

Other Resources	Not Present[4]	Present/Not Affected	Present/May be Affected	Rationale
Grazing Management			✓	All claims to graze livestock in this allotment have been relinquished. Current BLM plans include the development of a Proposed Decision to close this grazing allotment to livestock grazing. **Section 3.8** describes the affected environment and **Section 4.1.8** assesses potential impacts.
Land Use Authorization			✓	The Project would require the conversion of 187 acres, or .1 percent, of the existing 3.3 million acres of land currently administered by the BLM Southern Nevada District, Las Vegas Field Office. **Section 3.9** describes the affected environment and **Section 4.1.9** assesses potential impacts.
Minerals			✓	Impacts to mineral resources due to the proposed Project would include the removal of overburden and silica sands. **Section 3.10** describes the affected environment and **Section 4.1.10** assesses potential impacts.
Paleontological Resources	✓			Resource is not present.
Recreation			✓	Off highway vehicle use is permitting in the area surrounding the Project Area. Access to the historic Buena Vista rest stop would still be maintained. **Section 3.11** describes the affected environment and **Section 4.1.11** assesses potential impacts.
Socio-Economic Values			✓	Socioeconomic resources would not be impacted since the workforce would not change with implementation of the proposed Project. **Section 3.12** describes the affected environment and **Section 4.1.12** assesses potential impacts.
Soils			✓	Soils would be directly impacted as the proposed Project Area would total 187 acres of surface distrubance. This represents .1 percent of the total land area managed by BLM Southern Nevada District, Las Vegas Field Office. Additionally EPMs would be implemented to limit erosion. **Section 3.13** describes the affected environment and **Section 4.1.13** assesses potential impacts.
Vegetation			✓	The Project would result in direct, short-term, and intermediate to long-term impacts to the existing southern desert shrub vegetation community. EPMs would implement reclamation and monitoring procedures sufficient to mitigate long-term effects. **Section 3.14** describes the affected environment and **Section 4.1.14** assesses

[4] Other Resources determined to be Not Present or Present/Not Affected need not be carried forward for analysis or discussed further in the document based on the rational provided.

Other Resources	Not Present[4]	Present/Not Affected	Present/May be Affected	Rationale
				potential impacts.
Visual Resources			✓	The existing mine site and proposed expansion area are located entirely within a VRM Class III area. Proposed mining activities and associated construction would remain noticeable but would be in compliance with the Class III VRM Class requirements. Section 3.15 describes the affected environment and Section 4.1.15 assesses potential impacts.
Wild Horses and Burros	✓			Resource is not present.
Wildlife			✓	Small mammals, birds, amphibians, and reptiles inhabit the area. No game species regularly occur within three miles of the Project Area. Some less mobile and stationary wildlife in the Project Area would be directly impacted by mining activities. **Section 3.16** describes the affected environment and **Section 4.1.16** assesses potential impacts.

3.1 AIR QUALITY

As required by the Clean Air Act, National Ambient Air Quality Standards (NAAQS) were developed to identify levels of air quality with a margin of safety to protect public health (primary standards) and to protect public welfare from any known or anticipated adverse effects of a pollutant (secondary standards). The NAAQS were adopted by both the State of Nevada and Clark County. The Clark County Department of Air Quality Management enforces the Clean Air Act in Clark County.

The Project Area is located in a remote location with minimal road traffic and no cities or towns with major industries. Based on recent AirData from the USEPA, air quality in the region is good with all measured NAAQS primary standards within acceptable limits (USEPA 2007). The primary pollutant of concern in the Project Area is fugitive dust (a primary contributor of PM_{10}).

Simplot currently holds an Authority to Construct/Operating Permit issued by the Clark County Department of Air Quality Management, provisions of which are to control fugitive dust created from mining operations. Simplot also maintains a Title V Air Quality Permit for the processing operations portion of the mine.

3.2 CULTURAL/HISTORICAL

Cultural resources are defined as any definite location of past human activity identifiable through field survey, historical documentation, and/or oral evidence. Cultural resources include archaeological or architectural sites, structures, or places, and places of traditional cultural or religious importance to specified groups whether or not represented by physical remains.

The National Historic Preservation Act (NHPA) of 1969, as amended, and its implementing regulations (36 CFR 60 and 800) require that federal agencies take into account the effects of their undertakings on cultural resources that are listed or eligible for listing to the NRHP; eligible or listed resources are identified as "historic properties."

Section 106 of the NHPA requires consultations among federal agencies, like BLM, the state SHPO, culturally affiliated Native American Tribes, and other affected parties, including private land owners, to develop and evaluate alternatives or modifications to proposed undertakings, in order to avoid, minimize, or mitigate adverse effects on historic properties. Federal regulations at 36 CFR 800.5 and 800.6 detail the process by which the consulting parties determine whether undertakings would adversely affect historic properties and how the agencies consult to avoid, minimize, or mitigate the adverse effects in order to meet Section 106 requirements.

As required by NHPA, an intensive archeological field investigation was conducted within the proposed Project Area for EA No. NV-054-2006-369 (Gourley and Jones 2006 in USDOI BLM 2007), which also includes the proposed Project Area for the mine expansion. Five cultural resource sites and four isolated finds were identified. Isolates are considered ineligible for the NRHP according to the Nevada State Protocol Agreement (USDOI, BLM and Nevada State Historic Preservation Office 1999). The cultural resource sites include two historic trash scatters, two historic roads (the Buena Vista Access Road and SR 169), and a prehistoric lithic procurement area.

The two trash scatters date from the early to mid-1900s. Both are possibly associated with the construction and/or use of the historic roads in the area. These trash scatters do not meet the NRHP criteria and were recommended ineligible for the NRHP.

One of the historic roads, the Buena Vista Access Road, is the road to the Buena Vista picnic area and cabins built by the Civilian Conservation Corps (CCC) in the 1930s. It was likely built in conjunction with the designation of the Valley of Fire as a State Park for tourists/travelers to access the cabins and picnic areas. The road has intact retaining walls within the Project Area. Although maintained to some degree and still in-use, the road retains integrity and possibly meets two of the NRHP criteria; however, an adequate historic context needs to be developed to evaluate this site and therefore, it is recommended unevaluated for the NRHP pending further research.

The other road is the Overton-Lake Mead Road (currently known as SR 169) and a previous recording was fairly extensive although it did not include this segment. This road runs outside the Project Area along the eastern edge and has been extensively improved (paved) and regularly maintained. However, stone culvert features along the road are intact and maintain integrity. This site has been recommended eligible for the NRHP.

The prehistoric lithic procurement area contains numerous artifacts and represents all stages of lithic reduction, although primary reduction dominates the assemblage. When originally recorded in 1967, a number of tools were collected. No diagnostic artifacts were noted. The site possesses further research potential regarding lithic procurement strategies and was recommended eligible for the NRHP.

Subsequent to the field inventory (Gourley and Jones 2006), the BLM determined that two sites (Overton-Lake Mead Road and the lithic procurement site) were eligible for nomination to the NRHP, and one site

would be left unevaluated pending further research (the Buena Vista Access Road). The Nevada SHPO concurred with the BLM in a letter dated July 6, 2007.

3.3 NOXIOUS WEEDS/INVASIVE NON-NATIVE SPECIES

The only known noxious weed in the Project Area is tamarisk. This species has recently invaded the wet areas in and around the tailing ponds. To minimize the potential for the spread of noxious/invasive weeds, the Southern Nevada District Office has provided project specific stipulations regarding noxious weeds. These stipulations are summarized in **Section 2.2.5.3** and are further detailed in **Appendix A**.

3.4 RIPARIAN/WETLANDS

One unnamed dry wash that contains mesquite and acacia woodlands traverses the proposed expansion pit (JBR 2008). In Nevada's Mojave Desert, mesquite and acacia woodlands are distributed as isolated patches of woodland associated with perennial groundwater, or where drainage patterns allow for greater soil moisture content than that which is typical of the Mojave Desert. Acacia woodlands are of significant biological importance, providing habitat to many wildlife species in southern Nevada, and are considered to represent riparian areas. More than 40 plant and animal species have been identified as being associated with or dependent on mesquite and/or acacia woodlands for foraging, breeding, resting, and refuge (USDOI BLM 2006).

Clark County implemented the Clark County Desert Conservation Program to provide mitigation for the desert tortoise in lieu of continued development in the County subsequent to the listing of the desert tortoise as an endangered species (Clark County 2009). In 2000, the County developed a Multiple Species habitat Conservation Plan (MSHCP) as an extension of the effort begun with the Clark County Desert Conservation Plan. The key purpose of the MSHCP is to achieve a balance between:

- Long-term conservation and recovery of the diversity of natural habitats and native species of plants and animals that make up an important part of the natural heritage of Clark County; and
- The orderly and beneficial use of land in order to promote the economy, health, well-being, and custom and culture of the growing population of Clark County. (Clark County 2000)

The development of a Mesquite-Acacia Conservation Management Strategy (CMS) was mandated in the MSCHP, with the goal of bringing the best available scientific information to bear on the protection and management of these woodlands and their associated species in Clark County. The intent of the CMS is to review the literature pertinent to the ecology and management of mesquite and acacia woodlands; describe the distribution, management status and condition of mesquite and acacia woodlands in Clark County; and recommend and prioritize conservation actions for those woodlands. (USDOI BLM 2006)

The U.S. Army Corps of Engineers determined that the unnamed, dry wash meets the definition of a jurisdictional waters of the United States after a site visit on January 15, 2009. The average width of the jurisdictional portion of the wash averaged 4.2 feet, resulting in a total of 0.191 acres of jurisdictional area within the proposed expansion area. In the stretch of the wash that would be filled for access road construction and excavated, the adjacent land southeast of the wash is floodplain. The slope of landscape around the floodplain slightly increases in a northeasterly direction.

3.5 THREATENED, ENDANGERED, AND SPECIAL STATUS SPECIES

3.5.1 Plants

No federally listed or BLM sensitive plant species are known to occur within the Project Area based upon consultation with Cristina Nelson, BLM botanist and surveys conducted by JBR biologists in August 2006. However, the Nevada Natural Heritage Program (NNHP) states that habitat may be available for several BLM sensitive and Critically Imperiled plant species in the area (USDOI BLM 2007, Appendix D), although none of these species have been discovered within the proposed expansion area.

3.5.2 Animals

Of the federally-listed animal species expected to occur on BLM lands in the Southern Nevada District (**Appendix C** and USFWS Clark County Species List), within the Project Area there is suitable habitat present only for the desert tortoise (for reproduction). Historical survey data indicate that the Project Area occurs within an Area C, low density tortoise habitat, as defined in the Programmatic BO for Implementation of Multiple Use Activities within the Las Vegas Field Office (File No. 1-5-97-F-251). Tortoises have been observed within the proposed expansion area.

Appendix C also lists the BLM (Southern Nevada District) sensitive animal species that occur or have the potential to occur in Clark County, Nevada. Sensitive species that may occur specifically in the Project Area include burrowing owl (*Athene cunicularia*), chuckwalla (*Sauromalus obesus*), Gila monster (*Heloderma suspectum*), Phainopepla (*Phainopepla nitens*), and various species of bats.

The Phainopepla forages almost exclusively on the berries of the desert mistletoe (*Phoradendron californicum*); this mistletoe grows only on mesquites and acacias in Nevada (USDOI BLM 2006). Phainopeplas have been observed near the Processing Plant and chuckwallas have been observed in and around the existing mine site area. Bats are also commonly observed at the mine site area, although there are no caves or abandoned mine tunnels in the Project Area. No burrowing owls have been observed during field visits and surveys in the area. The Nevada Department of Wildlife also lists three species of concern, desert bighorn sheep (*Ovis canadensis nelsoni*), mule deer (*Odocoileus hemionus*), and Gambel's quail (*Callipepla gambelii*). Desert bighorn sheep have been observed in previously permitted and disturbed areas of the existing Simplot mine.

3.6 MIGRATORY BIRDS

Migratory birds are found in the vicinity of the proposed project area as either seasonal residents or as migrants. Provisions of the Migratory Bird Treaty Act (16 USC 701-718h) prohibit the taking, killing, or possession of any migratory birds, including the taking of any nest or egg. All native birds commonly found in the United States are protected under the Migratory Bird Treaty Act, except for resident native and introduced game birds and some corvids (crows, jays, and their relatives). There are numerous species of migratory birds that have the potential to use habitat in the Project Area.

3.7 WATER RESOURCES, INCLUDING WATER QUALITY

3.7.1 Surface Water

The man-made tailings pond and catch basins provide permanent and ephemeral surface water, respectively, on the existing mine site. The ephemeral Kaolin Wash is a tributary to Lake Mead. Water flow in this drainage occurs in the spring or after extreme rain events. Flow associated with operations from the existing mine site is controlled by catchment basins and no operational water from the site flows to Lake Mead.

Simplot currently has the following surface water rights obtained from the Muddy River diversion upstream that is used primarily to slurry the sand down to the plant:

235 preferred shares	8.43 acre feet/share
315 common shares	0.7664 acre feet/share

3.7.2 Ground Water

Currently ground water is approximately 60 feet below the deepest excavation of the existing pit. The water well that provides water for the mining operations is currently located in the northwest corner of the open pit, but is currently inactive. Simplot has water appropriation permits for this well from the Nevada Division of Water Resources. No dewatering occurs at the mining operations.
The mine operation has the following ground water right for that well:

Permit # 114499	Certificate # 3389	0.78 CFS, not to exceed 184 million gallons annually

3.8 GRAZING MANAGEMENT

The Project Area is within the 97,454-acre White Basin cattle grazing allotment. Clark County purchased the base properties associated with the grazing privileges for the White Basin grazing allotment in October 2000. The previous permittee has relinquished all claims associated with the permit to graze livestock in this allotment. In accordance with the Management Direction (Decisions) identified in the Las Vegas Resource Management Plan Final Environmental Impact Statement Record of Decision (1998), BLM would prepare a Proposed Decision to close this grazing allotment to livestock grazing. Livestock Grazing Management Direction LG-1-g states: "Close all allotments to livestock within the planning unit, with the following exceptions: …White Basin." Livestock Grazing Management Direction LG-1-i states: "Additional allotment closures could be approved based on voluntary relinquishment of grazing privileges, permits, or leases." After the Proposed Decision to close the allotment to livestock grazing becomes a Final Decision, livestock grazing in the White Basin allotment would not be permitted unless the Approved Las Vegas Resource Management Plan is formally amended in accordance with BLM regulations 43 CFR 1610.5-5.

3.9 LAND USE AUTHORIZATION

The majority of the proposed mining expansion operation is on unpatented mining claims controlled by Simplot. The existing processing facilities, part of the pipeline, and portions of access roads are on privately owned land as shown on **Figure 2**. Mining related operations on BLM administered lands include: access and haul roads; portions of the pipeline; the open pit, overburden and waste piles; tailings ponds; and other associated mine related disturbances.

The Project Area is within 3.3 million acres of land administered by the Las Vegas and Pahrump Field Offices of the BLM Southern Nevada District (USDOI-BLM 1998) and adjacent to the Valley of Fire State Park to the south and west. Lake Mead National Recreational Area is located approximately two miles to the east of the Project Area. Access to the entrance of the mine site is via SR 169 and/or the pipeline access road.

3.10 MINERALS

The Project Area is located immediately southwest of the Overton Ridge with the Valley of Fire to the southwest and Moapa Valley to the northeast. The general area is part of the Basin and Range Province. The topography in the region is characterized by generally north-south trending basins and ranges.

The area is characterized by steep slopes, incised washes, mesas, ridges, and isolated spires of sandstone. The Simplot mine is in an area of erosional topography developed in tilted sandstone strata. Upper Cretaceous beds of the Baseline Sandstone strike to the northeast. The formation consists of poorly cemented white to gray sandstone several hundred feet thick and grades upward into red sandstone and beds of conglomerate. This formation is largely reworked sand from the red Aztec Sandstone of the Jurassic age. Overlying the Baseline Sandstone are nearly flat lying beds of the Muddy Creek Formation, probably of the Miocene age. The open pit trends northwest-southeast along the outcrop of a pure sand unit within the Baseline Sandstone. The Baseline Sandstone and adjoining formations dip to the northeast at 30 degrees and form the eastern flank of the North Muddy Mountains. The general area has moderate potential for valuable oil and gas deposits; low potential for sodium deposits; and low potential for valuable mineral material.

3.11 RECREATION

Off highway vehicle use is permitted in the area surrounding the Project Area, but is restricted to designated roads and trails. No recreational use is allowed within the active mining area, which is posted with signs. The primary nearby recreation sites are the Lake Mead National Recreational Area and the Valley of Fire State Park.

Approximately 1,000 feet of the Buena Vista Access Road, a historic road associated with the Buena Vista rest stop, is located within the proposed mine expansion area. An existing road in the Project Area that also provides access to the Buena Vista picnic area is located to the south, outside the proposed expansion area.

3.12 SOCIO-ECONOMIC VALUES

The Project Area and most of the adjoining area is uninhabited. The nearest small town, approximately 5 miles northeast of the Project Area, is Overton, with an estimated population of 4,000. The population of the entire Moapa Valley is approximately 10,000 (Moapa Valley, Nevada Chamber of Commerce 2003). The Simplot Mine currently employs 35 full-time employees. The majority of these employees reside in Overton.

3.13 SOILS

Soils in the proposed expansion area are silty sand and are derived from the Baseline Sandstone. The generalized soils are classified as shallow-very shallow and gravelly, and course textured. The erosion susceptibility class is designated as moderate and the condition class is designated as critical (USDOI-BLM 1998; Maps 3-2 and 3-3). Because most of the Project Area has been disturbed by previous mining operations, it is impossible to identify original soil characteristics in these areas. The undisturbed areas consist of two soil types: the Mesabase-Azsand association and the Cheme-Huevi association.

The Mesabase-Azsand association is found in the southern section of the Project Area. This soil association is composed of the following mapping units and their composition percentage: Mesabase extremely gravelly sandy loam (65%); Azsand fine sand (25%); Rositas fine sand (5%); rock outcrop (3%); and Carrizo extremely gravelly sand (2%) (USDA NRCS 2006). These soils are typically found at elevations ranging from 1,390 to 2,790 feet.

The parent material of Mesabase and similar soils consists of alluvium derived from sandstone (USDA-NRCS 2006). The runoff potential is very high for these soils. A restrictive feature, paralithic bedrock, is found at 20 to 39 inches. The natural drainage class is somewhat excessively drained. The parent material

of the Azsand and similar soils is Eolian sands over alluvium derived from sandstone. The runoff potential is very low and the natural drainage class is somewhat excessively drained. The depth to a restrictive layer was not identified by the NRCS.

The Cheme-Huevi association is found in the northeastern corner of the Project Area. This association is composed of the following mapping units: Cheme extremely gravelly sandy loam (50%); Huevi extremely gravelly sandy loam (20%); Huevi very gravelly sandy loam (15%); Riverbend extremely gravelly coarse sandy loam (8%); Carrizo very cobbly coarse sand (3%); Hiller extremely gravelly sandy loam (3%); and rock outcrop (1%) (USDA-NRCS 2006). These soils are typically found at elevations ranging from 1,200 to 2,310 feet.

The parent material of the Cheme and similar soils consists of alluvium derived from fanglomerate (USDA-NRCS 2006). The runoff potential is very high. Two restrictive features occur within the association. One is Paralithic bedrock that occurs at 30 to 50 inches and the other is a duripan that occurs at 7 to 20 inches. The natural drainage class is well drained. The parent material of the Huevi and similar soils is mixed gravelly alluvium. The runoff potential is low and the natural drainage class is well drained. The depth to a restrictive layer was not identified by the NRCS.

3.14 VEGETATION

The plant community in the Project Area is characterized as southern desert shrub. Important shrubs include bursage (*Ambrosia dumosa*), winterfat (*Krascheninnikovia lanata*), creosote bush (*Larrea tridentata*), and catclaw acacia (*Acacia greggii*) in the washes. Important grass species in the area include Indian ricegrass (*Achnatherum hymenoides*), big galleta (*Pleuraphis rigida*), and mesa dropseed (*Sporobolus flexuosus*). Desert globemallow (*Spheralcea ambigua*) is an important forb in the area. A list of species observed during site visits is included in Appendix C to EA No. NV-054-2006-369 (USDOI BLM 2007).

3.15 VISUAL RESOURCES

Visual resource management (VRM) classes are established through the resource management planning process for all BLM-administered lands. The mine site and proposed expansion area are located entirely within a VRM Class III area. According to the BLM Manual Handbook 8410-1, the management objectives for Class III areas are:

> "…to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. Management activities may attract attention but should not dominate the view of the casual observer. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape."

To assist in the description of the existing visual environment and in the assessment of potential project impacts, representative viewing areas called Key Observations Points (KOPs) are selected. KOPs are points on a public travel route or from a public use area where the view of the proposed activity would be most revealing. For this analysis, two KOPs were selected. The KOPs and existing visual condition of the landscape seen from each KOP are described below. Visual Contrast Rating Worksheets were completed at each KOP (**Appendix D**).

KOP 1 (Along SR 169)

KOP 1 (**Figure 5**) is located along SR 169 looking south across the open pit and proposed pit expansion area (see **Figure 3** for KOP location). Highway 168, earthen berms, power poles and lines are the most obvious

visible disturbances. Less obvious is the pit rim near the center right of the view, and haul roads behind the rim.

Figure 5. KOP 1 – View south-southwest from SR 169

KOP 2 (North of Buena Vista)

KOP 2 (**Figure 6**) is located just north of the Buena Vista picnic area and rest stop looking north to northeast along the access road (see **Figure 3** for KOP location). The most obvious visible disturbance is the Buena Vista Access Road winding into the undulating landscape. The existing pit is near the center left of the view, identifiable by the lighter colored soils. The proposed pit expansion area would be near the center of the view. SR 169 is visible along the center right edge of the view.

Figure 6. KOP 2 – View north-northeast from Buena Vista Access Road

3.16 WILDLIFE

Small mammals, birds, amphibians, and reptiles inhabit the area. No game species (mule deer, quail, chukar, pheasant, or turkey) regularly occur within three miles of the Project Area. The area does not contain crucial habitat for these game species. The Project Area does not contain suitable habitat for bighorn sheep, although crucial habitat is located approximately six miles to the south, winter range more than six miles to the west, and bighorn sheep have been observed in the Project Area. Raptor species likely use the area for foraging opportunities, but no nests or nesting activities were observed in the Project Area during the numerous field visits. Animals observed during site visits conducted in conjunction with previous environmental analysis include antelope ground squirrel (*Ammospermophilus leucurus*), mourning dove (*Zenaida macroura*), turkey vulture (*Cathartes aura*), common raven (*Corvus corax*), common side-blotched lizard (*Uta stansburiana*), western whiptail (*Cnemidophorus tigris*), and zebra tail (*Callisaurus draconoides*).

4.0 ENVIRONMENTAL CONSEQUENCES AND CUMULATIVE IMPACTS

4.1 ENVIRONMENTAL CONSEQUENCES-PROPOSED ACTION

Potential impacts discussed in this section are described in terms of duration (short- or long-term) and intensity. The thresholds of change for the intensity of a potential impact are defined as follows:

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 of exceptional benefit.

4.1.1 Air Quality

Short- and long-term impacts would occur to air quality from activities associated with implementation of the proposed Project. An increase in hydrocarbon and particulate emissions (PM_{10}) may result from heavy equipment involved in mining activities and associated dust. This increase in emissions would be minor because of the relatively small scale of activities, and long-term, lasting for the duration of mining and reclamation activities involving earth moving. Any additional permits or modifications to existing permits required would be obtained, all stipulations would be adhered to, and EPMs would be employed during project activities to decrease impacts to air resources (see **Section 2.2.5.1**).

4.1.2 Cultural/Historical

The proposed Project would avoid impacts to the NRHP-eligible prehistoric lithic procurement site through design. If necessary, the site area could be flagged for avoidance during construction activities and monitored intermittently as deemed necessary. The eligible pre-historic site would be avoided by all proposed mine expansion activities.

The use of Overton-Lake Mead Road (SR 169) for access to the Project Area would not adversely affect this NRHP-eligible property. There would be no impacts to this site.

The Buena Vista Access Road would be impacted by the Proposed Project. The site is currently unevaluated but is likely eligible for the National Register under criteria (a) and (d); however, the lack of an adequate historic context with which to evaluate it precludes a NRHP eligibility determination. As the road could not be avoided by the proposed Project and would be obliterated by the pit expansion, a historic properties treatment plan (HPTP) would be prepared. The HPTP would prescribe documentation of the road according to the standards set in Appendix H of the State Protocol Agreement with the SHPO. The BLM would need to approve the HPTP and consult with the SHPO on the adequacy of the treatment. The HPTP would be implemented prior to any surface disturbing activities.

The EPMs, as discussed in **Section 2.2.5.8**, would be implemented. Mining activities would be restricted to areas that have been cleared.

4.1.3 Noxious Weeds/Invasive Non-Native Species

Proposed Project activities would present opportunities and pathways for the expansion of current populations of noxious weeds and other invasive non-native species. Weed management activities would be guided by the implementation of the BLM Las Vegas Field Office Noxious Weed Stipulations (See **Appendix A**) and by the Las Vegas Resource Management Plan. EPMs described in **Section 2.2.5.4** would also be implemented. These Plans and EPMs provide guidance for an active, integrated weed management program using best management practices (BMP) and would mitigate project impacts related to noxious weeds and invasive non-native species to a negligible level.

4.1.4 Riparian/Wetlands

Implementation of the proposed Project would result in loss of acacia within the Project Area, adversely impacting sensitive vegetation communities. Increase in moisture in the floodplain from the diversion of storm water may have beneficial impacts on vegetation, including sensitive communities. Mitigation measures to address this loss and the protection of acacia-mesquite communities as described in the CMS are described in **Section 2.2.5.3**. With mitigation, the proposed Project would result in negligible short-term or long-term impacts to vegetation communities in the Project Area in terms of the amount of undisturbed southern desert shrub vegetation communities throughout adjacent areas.

An existing unnamed wash would be impacted by the mine expansion, resulting in approximately 2,000 linear feet by 4.2 feet average width disturbance (0.191 acres) to jurisdictional Waters of the United States. Simplot would obtain a U.S. Army Corps of Engineers Nationwide permit for the project (see **Section 2.2.5.2**).

4.1.5 Threatened, Endangered, and Special Status Species

Impacts to burrowing owls, chuckwallas, Gila monsters, bighorn sheep, and bats, if present in the area during actual mining activities, could occur through either direct mortality (i.e., in the case of chuckwallas or Gila monsters being crushed or run over during construction activities) or displacement from noise and equipment. Mitigation measures to reduce potential impacts to burrowing owls are included in **Section 2.2.5.5**.

Desert Tortoise

As previously described, the desert tortoise is the only special status species known to actually occur in the Project Area on a routine basis. All burrows and direct impacts to desert tortoises would be avoided to the extent possible. The Proposed Action would have a “may affect” determination for the desert tortoise. Impacts to the desert tortoise would be allowed to occur under the existing Programmatic BO (BO-File No. 1-5-97-F-251); Section 7 Consultation for this Project is covered. The Proposed Action would result in new surface disturbance to approximately 62 acres of tortoise habitat. Compliance with the Terms and Conditions of the BO (**Appendix B**) and implementation of the mitigation measures described in **Section 2.2.5.5** would be required. These measures should assist in limiting any major short- and/or long-term impacts to the desert tortoise. See **Appendix B** for the details of measures to be implemented in order to protect the desert tortoise.

4.1.6 Migratory Birds

EPMs listed in **Section 2.2.5.5** would be implemented to avoid and/or minimize impacts to migratory birds. Impacts on the southern desert wildlife communities in the Project Area would be negligible to minor in the short-term or long-term within or adjacent to the Project Area because less than 0.1 percent of this habitat type (187 acres of the 1,900,700 acres) would be disturbed with implementation of the Proposed Project.

4.1.7 Water Resources, including Water Quality

No impacts to water resources are anticipated because of the EPMs that would be used to control any adverse affects to water resources within and adjacent to the Project Area (see **Section 2.2.5.2**) from implementation of the proposed Project. In the distant long-term during reclamation (>40 years), the existing water well onsite would be abandoned per the Nevada regulations for Water Well and Related Drilling; NRS 534 and water in the tailings impoundment would be allowed to evaporate as outlined in the Major Modification to the Plan of Operations/Reclamation Plan and Reclamation Bond Estimate (JBR 2008).

Filling of the unnamed wash for access road construction would result in diversion of storm event drainage into and across the adjacent floodplain. Because the land slopes slightly, storm water would pool in this area and would not continue downstream. No downstream impacts to water resources would be anticipated.

No dewatering occurs presently or would be necessary as a result of the mine expansion.

4.1.8 Grazing Management

As discussed in Section 3.8, all claims to graze livestock in this allotment have been relinquished. The BLM plans to prepare a Proposed Decision to close this grazing allotment to livestock grazing. If that Proposed Decision is approved, the proposed Project would not impact livestock grazing. If the area were to remain open to grazing, the Proposed Project would impact approximately 60 acres of currently undisturbed grazing land available for grazing opportunities for the short term.

4.1.9 Land Use Authorization

The conversion of 187 acres of public land (60 undisturbed and 127 previously disturbed) for mine expansion would decrease the land available for public use in the short-term (<5 years) and long-term (5 to 40 years), but since it represents less than 0.1 percent of the 3.3 million acres of land administered by the BLM Southern Nevada District (USDOI-BLM 1998), it would be a negligible to minor impact. In the future (>40 years), all disturbed land would be reclaimed (see Section 2.2.4) with the exception of the pit and again available for public use.

During the operational phase, the existing mine access road off of SR 169 would be decommissioned and either closed with a gate, bermed, or recontoured to blend with the adjacent topography to deny public access. Another existing 20-foot wide road (access road spur) would be improved and used as the main access to the pit perimeter area. A gate would be installed to control access to the pit area. One portion of the existing Buena Vista Access Road, a historic road, would be impacted by the proposed Project. Impacts to cultural resources are addressed in **Section 4.1.2**.

In the short-term, access to the project site and adjacent areas would be modified slightly by the proposed Project. A four-strand range fence would be installed around the proposed expansion area to restrict public access to the active mining area. Even though the access road off of SR 169 would be closed, access to the Project Area would be maintained by the improved access road spur, although no general public access to the active mining area is authorized. No other new access routes off of SR 169 would be needed. In the long-term, all access roads and haul roads into the mining area would be reclaimed and closed to the public, in terms of vehicular access. The impacts to the approximately 1,000 feet of the Buena Vista Access Road should not adversely affect access to the Buena Vista rest stop as an existing road south of the expansion area that also provides access to the Buena Vista picnic area would not be impacted.

4.1.10 Minerals

Geologic and mineral resources in the Project Area would be directly impacted by the mining and removal of the overburden and silica sand from implementation of the proposed mine expansion Project. Although the northern portions of the existing open pit would be backfilled with overburden and oversized waste material generated from the proposed pit expansion, large portions of the open pit would remain unreclaimed. Overall, impacts to geology and mineral resources would be minor, but long-term.

4.1.11 Recreation

Implementation of the proposed Project would not be expected to impact recreational resources as the expansion area is not currently utilized for these purposes due to associated mining activities in the area. Current recreational uses in the nearby Lake Mead National Recreational Area and Valley of Fire State Park would be unaffected.

Approximately 1,000 feet of the Buena Vista Access Road, a historic road associated with the Buena Vista rest stop, would be impacted by the mine expansion and an existing road to the south of the Project Area would provide continued access to this area. Implementation of the proposed Project should not adversely impact the use of the rest stop because this existing road would provide access to the Buena Vista picnic area.

4.1.12 Socio-Economic Values

Socioeconomic resources would not be impacted since the workforce would not change with implementation of the proposed Project. The implementation of the proposed Project would have no change in the following: population; employment; housing demand; school enrollment; demand for health services; law enforcement and fire protection needs; and the demand for water/sewer or electric services.

4.1.13 Soils

Soils in the Project Area would be directly impacted by the expansion of the mine and associated construction of supporting infrastructure due to mixing of subsurface soil horizons and loss of soil structure. The incremental disturbance to surface soils would total 187 acres and occur over the next 5 to 40 years. After mining has been completed, closure and reclamation would be used to stabilize and prepare soils for revegetation. Short-term and long-term impacts to soils in the region are minor because of the small area impacted relative to the acreage of lands administered by the BLM Southern Nevada District (187 acres would be impacted, of which 127 acres have been previously disturbed; BLM Southern Nevada District administers 3.3 million acres). The EPMs that would be initiated during and after completion of the proposed Project (see **Section 2.2.5**) would help minimize sedimentation and control and reduce erosion.

Filling of the unnamed wash for access road construction would result in diversion of storm event drainage into and across the adjacent floodplain. Storm water would disperse, pool, and eventually evaporate or be absorbed in this area due to the slight increase in slope. No erosion would be anticipated, thus any adverse impacts to soils would be negligible.

4.1.14 Vegetation

Vegetation in the Project Area would be directly impacted by mining activities. The incremental short-term and intermediate long-term disturbance to the southern desert shrub vegetation community would total approximately 187 acres, of which 127 acres has been previously disturbed. The disturbance of 187 acres of the 1,900,700 acres of southern desert shrub vegetation (BLM 1998) would be negligible to minor resulting in a short-term loss of less than 0.1 percent of this community type in the BLM Southern Nevada District. In the long-term (at the end of mining activities), all disturbed land would be reclaimed (see **Section 2.2.4**).

Reclamation would re-establish surfaces that would support a self-sustaining vegetation community. Reclamation would include monitoring to ensure successful revegetation of disturbed areas as outlined in the Major Modification to the Plan of Operations/Reclamation Plan and Reclamation Bond Estimate (JBR 2008).

4.1.15 Visual Resources

Proposed mining activities would likely be visible to visitors to the Fire Canyon/Silica Dome area of Valley of Fire State Park, approximately two miles away to the southwest. Evaluation of project KOPs, documented through completion of Visual Contrast Rating Sheets (Appendix D), determined that excavation and access road construction within the proposed expansion area would introduce weak form contrast into the surrounding landscape visible from both KOPs. Proposed mining activities and associated construction would remain noticeable but would be in compliance with the Class III VRM Class requirements; therefore minor impacts to visual resources would occur by implementation of the proposed Project.

4.1.16 Wildlife

Some wildlife in the Project Area would be directly impacted by mining activities. Slower animals (reptiles) and any small mammals in burrows may be run over or buried during mining activities. More mobile animals, such as birds and larger mammals, would likely be displaced into similar and adjacent habitats. Impacts on the southern desert wildlife communities in the Project Area would be negligible to minor in the short-term or long-term within or adjacent to the Project Area because less than 0.1 percent of this habitat type (187 acres of the 1,900,700 acres) would be disturbed with implementation of the proposed Project.

4.2 ENVIRONMENTAL CONSEQUENCES – NO ACTION

If the No Action Alternative were selected, the proposed Project and associated environmental impacts identified previously would not occur. The Silica Products Mine would continue operations as previously permitted by BLM. Operations would continue until the silica in the existing pits is mined (6 months). Expansion to the west-northwest may be undertaken as previously permitted if economically feasible allowing operations to continue an additional 15-20 years. After mining is completed the site would undergo closure and reclamation. Impacts to all environmental resources would be identical to those described in the previous operational EA approved by the BLM (EA No. NV-054-2003-382).

Selection of the No Action Alternative would be inconsistent with the BLM mission of multiple use and BLM policy of making public lands available for a variety of uses as long as these uses are conducted in an environmentally sound manner.

4.3 CUMULATIVE EFFECTS

4.3.1 Past Actions

The Simplot Silica mine has been in operation in some form since W.R. "Tex" Cozart discovered the pure silica deposit in 1928. The Nunn Company mined the deposit until the operation was taken over by Simplot. Simplot acquired rights to the original claims in 1955 and began extracting and processing silica products. Glass sand has been produced continuously from the mine site since 1938. In 1981, a major upgrade and expansion of the facilities occurred that included a new tailings impoundment (constructed in Kaolin Wash) and a 22,380-foot slurry line that transported silica material from the mill in the open pit to a new processing facility (situated on private land). This upgrade and expansion increased production from 380,000 tons per year to over 1,000,000 tons per year.

Then in 1994, Simplot expanded their open pit mining operations by opening the ground in a southeasterly direction between their existing pit and the old No. 2 Pit to create a single excavation (JBR 2003). In 2004, the total incremental surface disturbance of the mine was approximately 480 acres. This included the large open pit (127 acres), the active tailings pond (139 acres), reclaimed, inactive, and active overburden dumps (approximately 68 acres), and various miscellaneous disturbances. As a result of EA No. NV-054-2003-382, Simplot was permitted to expand operations by an additional 167 acres to the northwest of the existing pit (JBR 2004). This permitted action allows the expansion (approximately 109 acres of new pit disturbance) of the existing pit to join the approximately 68 acres of past mining disturbance (31 acres of an old pit and 27 acres of old overburden material). It also approves an approximately 58-acre overburden dump, situated north of the approved pit expansion. To date, this expansion has not yet occurred although it is fully approve and bonded for. All past disturbances were permitted by the BLM under previously approved POOs.

A road was constructed through the Project Area in the 1930s by the CCC in order for tourists and travelers to access the Buena Vista picnic area and cabins from the then newly designated Valley of Fire State Park. In addition, there are several power lines, associated access roads, and disturbances associated with past mining activities that extend through and occur within the Project Area.

4.3.2 Present Actions

The existing open single pit mine created in 1994, when two smaller pits were breached and formed one large pit, is still being mined today. Production levels are similar to those in the 1980s. Ongoing mining activities are and would continue according to approved POOs/Plans. Other actions include maintenance and upgrade of the existing power lines by Overton Power. Work on raising dikes and berms in the tailings pond occurs on a routine basis as does dumping oversize material onto active overburden dumps.

4.3.3 Reasonably Foreseeable Future Actions

Besides this proposed expansion and the current, already permitted expansion to the northwest, no additional proposed exploration or mine expansion activities are deemed reasonably foreseeable. This proposed expansion and the already permitted expansion to the northwest of the existing pit represent more than 40 years of continuous mining at current production levels. Once these resources are exhausted and mined out, closure and reclamation of mining activities would occur. At some unknown time in the future, Simplot could potentially begin to explore adjacent areas to their mining claims to determine if suitable reserves exist. However, at this time there are no known exploration or future mine expansion plans proposed by Simplot. Continued maintenance of, or upgrades to the existing power lines is also expected. No other nearby future developments have been identified.

4.3.4 Cumulative Impacts

Cumulative effects are those impacts to the environment that result from the incremental impact of an action when added to other past, present, and reasonably foreseeable future actions (see 40 CFR 1508.7). The intent of cumulative effects is to identify potential impacts that might not otherwise be identified, to the resources within the Cumulative Effects Area (CEA) defined for the action, while considering what impacts other actions have had, are having, or will have on those same resources. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. The CEA for this Project has generally been defined as the six sections (1, 2 ,3, 10, 11, and 12; T 17S, R67E, see **Figure 1**) that are affected by or are immediately adjacent to inactive and active mining activities associated with the Simplot Silica Mine, a total CEA of 3,840 acres. The majority of the CEA is public land, administered by the BLM, with some private land occurring in sections 3, 11, and 12. This CEA was selected for this Project since it encompassed all of the inactive, active, and proposed mine expansion area and the majority of direct and indirect impacts from the proposed Project would occur within this area. As listed in Chapter 2, 14 mining claims (280 acres) controlled directly by Simplot or in cooperation with the Gustafson Family Trust would be affected by the expansion. As shown on **Figure 3** and described below, past disturbances and the proposed expansion footprint would leave approximately 50 to 60 acres of these mining claims undisturbed, likely for the life of the mine based upon recent exploration results.

Past and present mining activities in the CEA include approximately 480 acres of past disturbance (JBR 2003 and 2008), already permitted areas not yet disturbed to the northwest of the existing pit (approximately 167 acres, BLM 2004 and JBR 2003), and the proposed new surface disturbance for this mine expansion (approximately 60 acres). Past and present disturbances include the existing and active open pit and tailings pond, the past and currently inactive pit to the northwest, active and inactive (closed) overburden dumps, and miscellaneous disturbances in and around these areas. Past mining activities have removed more than 38 million tons of sand since 1928. The proposed expansion would increase the overall past, present, and proposed mine disturbance to approximately 707 acres (**Table 4-1**).

Table 4-1 Past, Present, and Reasonably Foreseeable Disturbances

Activity	Disturbance in Acres (Approximate)
Existing and Historic Mine	480
Currently Permitted Expansion	167
Proposed Mine Expansion (new surface disturbance only)	60
Total	**707**

During the 30 to 40 year life of the proposed Project, approximately 30 million tons of sand would be removed. The previously permitted expansion could result in an additional approximately 15 million tons of sand being removed, for a total of approximately 45 million tons. When added to the past mining activities this would equate to 83 million tons of sand removed, resulting in a cumulative impact to the geologic and soil resources of the area. The 707 acres of past, present, and reasonably foreseeable disturbances represent approximately 18 percent of the CEA. In addition, within the CEA, cumulative impacts from this surface disturbance would occur to the following resources directly or indirectly impacted by the proposed Project: land use, air quality, water resources, vegetation, wildlife, special status species, livestock grazing, visual resources, recreation, socioeconomics, and cultural resources.

Many of these impacts would be long-term and minor to moderate as a result of the mining activities creating new surface disturbance. Impacts to natural drainage patterns, water usage, vegetation

communities, wildlife and special status species habitat, displacement of wildlife species from noise and mining activities, loss of livestock grazing allotments, impacts to visual resources, cultural resources, recreation opportunities, and beneficial socioeconomic impacts would all occur from implementation of the proposed Project. Air quality impacts are generally short-term and occur only during the actual mining activities.

These cumulative impacts would be reduced to some degree, since after mining activities are completed, reclamation activities would be implemented to stabilize the reclaimed areas from erosion and create biodiversity in the post-mining ecosystem. The objectives for reclamation are to support post mining land uses for wildlife habitat, domestic grazing, and dispersed recreation. Reclamation planning has been developed to achieve public safety; minimize adverse visual effects; re-establish surfaces that would support a self-sustaining vegetation community; and control erosion and sedimentation. However, rock faces associated with the open pit would not be reclaimed and thus long term visual impacts would remain. The rock faces would be designed to remain in a stable condition following closure.

5.0 CONSULTATION, COORDINATION, AND LIST OF PREPARERS

This EA was prepared by the BLM Southern Nevada District, Las Vegas, Nevada. Technical assistance for the preparation of the EA was provided by JBR Environmental Consultants, Inc. The following individuals either provided consultation and coordination during the preparation of this EA or were responsible for the preparation of the document.

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APPENDIX A
LAS VEGAS BLM FIELD OFFICE
NOXIOUS WEED STIPULATIONS

Noxious Weeds

Southern Nevada rangelands are being impacted by the presence of invasive, non-native vegetation (weeds). The Las Vegas Field Office (LVFO) of the Bureau of Land Management (BLM) has prepared the LVFO Weed plan that provides guidance for an active integrated weed management program using best management practices (BMP). The BMPs originated from a cooperative effort between BLM and other Federal agencies which produced the document, Partners Against Weeds. The Las Vegas Field Office Noxious Weed Plan will narrow that focus as it dovetails into the Partners Against Weeds action plan. Weeds are seen as a major threat to ecosystem health in southern Nevada. The presence of weeds in any landscape increases the inter-specific competition for resources. In most situations weeds out-compete native plants and displace them.

The management of weeds is further guided by the Las Vegas Resource Management Plan which identifies two objectives for resource management involving weeds. 1) RP-1-f., which states; "Use integrated weed management techniques to control and eradicate tamarisk, such as burning, chemical, biological or mechanical treatments, where potential for treatment is good. Rehabilitate the area with native species to help reduce the potential for tamarisk re-establishment and improve ecosystem health." 2) VG1, which states; "Maintain or improve the condition of the vegetation on public lands to a Desired Plant Community or to a Potential Natural Community." The LVFO Noxious Weed Plan was approved on December 18, 2006.

The following are project specific stipulations that will attempt to control NV listed noxious weeds on this project.

1. The operator/permittee shall be responsible for controlling all undesirable invading plant species (including listed noxious weeds and other invasive plants identified as undesirable by federal, state or local authorities) within the boundaries of their authorization area and Bureau-authorized ancillary facilities (e.g. access and utility corridors), including all operating and reclaimed areas, until revegetation activities have been deemed successful and responsibility released by the authorized officer. Control standards and measures proposed must conform to applicable state and federal regulations.

2. The operator shall use weed free seed for reclamation and for other organic products for erosion control, stabilization, or revegetation (e.g. straw bales, organic mulch) must be certified weed free. According to Nevada law (NRS 587.111), "all seed shipped to or sold within Nevada is to be free of noxious weed seeds".

3. Prior to any application of herbicide on public lands the operator shall have a current Pesticide Use Permit that outlines application methods, rates, weather constraints and the specific dates of applications. Stipulation 3 - The project proponent will coordinate project activities with the BLM Weed Coordinator (702-515-5000) regarding any proposed herbicide treatment. The project proponent will prepare, submit, obtain and maintain a pesticide use proposal (PUP) for the proposed action. Weed treatments may include the use of herbicides, and only those herbicides approved for use on Public lands by the BLM.

4. The operator/permittee is responsible for ensuring that all project related vehicles and equipment arriving at the site (including, but not limited to, drill rigs, dozers, support vehicles, pickups and passenger vehicles, including those of the operator, any contractor or subcontractor and invited visitors) do not transport noxious weeds onto the project site. The operator shall ensure that all such vehicles and equipment that will be traveling off constructed and maintained roads or parking areas within the Project Area have been power washed, including the undercarriage, since their last off road use and prior to off road use on the project. When beginning off road use on the project, such vehicles and equipment shall not harbor soil, mud or plant parts from another locale. Depending on the site setting such as remoteness, or other site condition, the operator may be required to have an on-site wash area identified and readily available. If a noxious weed infestation is known or later discovered on the project site, project related vehicles or equipment that have traveled through such an infestation shall be power washed including the undercarriage prior to leaving the site, at an established, identified wash area. Wash water and sediment shall be contained in an adjacent settling basin. Should any vegetation emerge in the wash area or settling basin, it will be promptly identified and appropriately controlled if found to be an undesirable invasive plant.

5. Should undesirable invasive plants become established on developed areas prior to reclamation reshaping; appropriate measures will be taken to ensure that the invasive plants are eradicated prior to reclamation earthwork. Should undesirable invasive plants become established on reshaped areas prior to reclamation seeding; appropriate measures will be taken to ensure that invasive plants are eradicated prior to seeding the site.

APPENDIX B
USFWS DESERT TORTOISE
BIOLOGICAL OPINION TERMS/CONDITIONS

instructed in the tortoise education program in Terms and Conditions **1.a.** above and **1.m.** below. All workers will also be instructed to check underneath all vehicles before moving such vehicles. Tortoises often take cover under vehicles.

d. **Within Area B:** Projects shall require a tortoise biologist onsite during construction activities unless determined by the Bureau and Service that an onsite biologist is not necessary. Unless fenced and cleared, projects will require an onsite biologist during construction of the project during the tortoise active period (March 1 through October 31), and a biologist on call during the tortoise inactive period (November 1 through February 28/29), unless exempted by mutual concurrence from the Bureau and Service.

Within Area C: A tortoise biologist shall not be required onsite during construction activities unless determined by the Bureau, or Bureau and Service, that an onsite biologist is necessary.

e. **Within Areas B and C:** The Bureau must approve the selected consulting firm/biologist to be used by the applicant to implement the terms and conditions of this biological opinion or permit issued by the Bureau. Any biologist and/or firm not previously approved must submit a curriculum vitae and be approved by the Bureau before authorized to represent the Bureau in meeting compliance with the terms and conditions of this biological opinion. Other personnel may assist with implementing mitigation measures, but must be under direct field supervision by the approved qualified biologist.

In accordance with *Procedures for Endangered Species Act Compliance for the Mojave Desert Tortoise* (Service 1992), a qualified desert tortoise biologist should possess a bachelor's degree in biology, ecology, wildlife biology, herpetology, or closely related fields as determined by the Bureau. The biologist must have demonstrated prior field experience using accepted resource agency techniques to survey for desert tortoises and tortoise sign, which should include a minimum of 60 days field experience. All tortoise biologists shall comply with the Service-approved handling protocol (Desert Tortoise Council 1994, revised 1996) prior to conducting tasks in association with terms and conditions of this biological opinion. In addition, the biologist shall have the ability to recognize and accurately record survey results.

f. **Within Area B (always) and Area C (when required or voluntarily implemented):** All project areas including construction sites, access routes, staging areas, and fencelines, will be cleared by a qualified biologist before the start of construction or ground disturbance. The parcel shall be surveyed for desert tortoise using survey techniques which provide 100-percent coverage. During the tortoise active season, the preconstruction clearance shall be no more than 3 days before initiation of construction. During the tortoise inactive season, the preconstruction clearance shall be within 5 days before work begins.

Within Area C, search for, and removal of, tortoises (i.e., clearance) is voluntary, unless required by the Bureau, or Bureau and Service. If tortoise clearance is not required, applicants or project proponents may voluntarily choose to search for and remove tortoises from lands to be disturbed within the project area. However, applicants/project proponents that voluntarily choose to clear project areas of desert tortoises, shall follow measures required in Terms and Conditions **1.e., 1.g., 1.h., 1.i., and 1.j.**, in addition to other terms and conditions required for **Area C** in this biological opinion.

g. **Within Areas B and C:** Desert tortoises encountered experiencing heat stress will be placed in a tub, by a qualified tortoise biologist, with one inch of water in an environment with a temperature between 76 degrees F and 95 degrees F for several hours, until heat stress symptoms are no longer evident.

h. **Within Areas B and C:** Tortoises and nests found shall be relocated by a qualified tortoise biologist in accordance with Service-approved protocol (Desert Tortoise Council 1994, revised 1996). Burrows containing tortoises or nests will be excavated by hand, with hand tools, to allow removal of the tortoise or eggs.

i. **Within Areas B and C:** Tortoises that are moved offsite and released into undisturbed habitat on public land, must be placed in the shade of a shrub, in a natural unoccupied burrow similar to the hibernaculum in which it was found, or in an artificially constructed burrow in accordance with Desert Tortoise Council (1994, revised 1996).

j. **Within Areas B and C:** Desert tortoises moved during the tortoise inactive season or those in hibernation, regardless of date, must be placed into an adequate burrow; if one is not available, one will be constructed in accordance with Desert

Tortoise Council (1994, revised 1996). During mild temperature periods in the spring and early fall, tortoises removed from the site will not necessarily be placed in a burrow.

k. **Within Area B:** Projects will require fencing, unless determined by the Bureau and Service that the project should not be fenced (e.g., some powerlines, pipelines, and roads). The fence may be permanent or temporary, as determined on a case by case basis. Fenced projects will require an initial tortoise clearance of the fenceline prior to fence construction, and a tortoise clearance following fence construction. Project sites to be fenced with permanent tortoise-proof fencing must be fenced prior to the commencement of surface disturbance activities within the project site. Fencing will consist of 1-inch horizontal by 2-inch vertical mesh. The mesh will extend at least 18 inches above ground and, where feasible, 6 inches below ground. In situations where it is not feasible to bury the fence, the lower 6-12 inches of the fence shall be bent at a 90-degree angle towards the potential direction of encounter with tortoise and covered with cobble or other suitable material to ensure that tortoise or other animals cannot dig underneath, thus creating gaps through which tortoises may traverse. The height of tortoise-proof fencing will be a minimum of 18 inches above ground. The fence shall be inspected, and zero clearance maintained between the bottom of the fence and the ground as stated in Terms and Conditions **1.l.** and **1.n.** below.

l. **Within Areas B and C (where tortoise-proof fencing is installed):** If fence construction occurs during the tortoise active season, a qualified tortoise biologist shall be onsite during construction of the tortoise-proof fence to ensure that no tortoises are harmed. If the fence is constructed during the tortoise inactive season, a biologist will thoroughly examine the proposed fenceline and burrows for the presence of tortoises no more than 5 days before construction. Any desert tortoises or eggs found in the fenceline will be relocated offsite by a qualified tortoise biologist in accordance with approved protocol. Tortoise burrows that occur immediately outside of the fence alignment that can be avoided by fence construction activities shall be clearly marked to prevent crushing.

Following Fence Construction: Prior to the commencement of project activities, all desert tortoises shall be removed from the site. A qualified biologist shall oversee the survey for and removal of tortoises using techniques providing 100-percent coverage of all areas. Two complete passes of 100-percent coverage will be accomplished. All desert tortoise burrows, and other species burrows

which may be used by tortoises, will be examined to determine occupancy of each burrow by desert tortoises. Tortoise burrows shall be cleared of tortoises and eggs, and collapsed. Any desert tortoises or eggs found in the fenced area will be removed under the supervision of a qualified tortoise biologist in accordance with Service protocol.

m. **Within Areas B and C (where tortoise-proof fencing is installed):** After a project has been fenced and a tortoise clearance completed, if the operator encounters a desert tortoise in imminent danger, the operator shall move the tortoise out of harm's way and on to adjacent Bureau land. If the tortoise cannot be avoided or moved out of harm's way onto Bureau land, it shall be placed in a cardboard box or other suitable container and held in a shaded area until the Clark County pickup service or Bureau personnel can retrieve the tortoise.

On phased development projects, the operator will have the option of initially fencing less than the total project acreage. The fenced area will be enlarged as the disturbance expands. To ensure that no tortoises are harmed, each new segment of fence will be constructed under the provision described in Terms and Conditions **1.k.** and **1.l.** above. Payment of the mitigation fee identified in Term and Condition 3 below, will be required prior to surface disturbance of each phase.

n. **Within Areas B and C (where tortoise-proof fencing is installed):** The operator shall inspect the fencing at least on a quarterly basis, to insure that it is in compliance with the standards described in Term and Condition **1.k.** above, and shall perform maintenance when needed including removing trash, sediment accumulation, and other debris. Temporary fencing shall be removed at the end of the construction activity. Permanent fencing may be removed upon termination and reclamation of the project, or when it is determined by the Bureau and Service that the fence is no longer necessary. Monitoring and maintenance shall include regular removal of trash and sediment accumulation and restoration of zero ground clearance between the ground and the bottom of the fence, including re-covering the bent portion of the fence if not buried.

o. **Within Areas B and C (where tortoise-proof fencing is installed):** Where the Bureau allows or requires the installation of a temporary tortoise-proof fence, the fence shall include as much of the proposed construction site as feasible. This may in some cases require the installation of temporary fencing along access routes.

Typical fence design should consist of 1-inch mesh or 1-inch horizontal by 2-inch vertical mesh (hardware cloth or plastic) and be installed flush with ground and extend at least 18 inches above ground. Temporary tortoise-proof fencing should not be buried.

2. To implement Reasonable and Prudent Measure Number 2, the Bureau shall fully implement the following measure in **Areas B and C**:

   A litter-control program shall be implemented, by the applicant, to minimize predation on tortoises by ravens drawn to the project site. This program will include the use of covered, raven-proof trash receptacles, removal of trash from the construction site to the trash receptacles following the close of each work day, and proper disposal of trash in a designated solid waste disposal facility. Vehicles hauling trash to the landfill and leaving the landfill must be secured to prevent litter from blowing out along the road.

3. To implement Reasonable and Prudent Measure Number 3, the Bureau shall fully implement the following measures:

   a. **Within Areas B and C:** If possible, overnight parking and storage of equipment and materials, including stockpiling, shall be in previously disturbed areas or areas to be disturbed which have been cleared by a tortoise biologist. If not possible, areas for overnight parking and storage of equipment shall be designated by the tortoise biologist which will minimize habitat disturbance.

   b. **Within Areas B and C:** All vehicle traffic will be restricted to existing access roads where possible. New access roads will be created only when absolutely necessary and only when approved by the Bureau. In **Area B**, routes for new access roads will be flagged by the tortoise biologist prior to surface disturbance.

   c. **Within Areas B and C:** Project activity areas will be clearly marked or flagged at the outer boundaries before the onset of construction. All activities shall be confined to designated areas. Blading of vegetation will occur only to the extent necessary and shall be limited to areas designated for that purpose by the Bureau or tortoise biologist.

d. **Within Areas B and C:** Remuneration fees only apply to future disturbance in tortoise habitat. Past disturbance or disturbance on land not considered to be tortoise habitat are not assessed a tortoise remuneration fee. Remuneration fees will be used to fund management actions which are expected to benefit the desert tortoise. Actions may involve: Habitat acquisition; population or habitat enhancement or protection; research that increases our knowledge of desert tortoise biology, habitat requirements, or factors affecting habitat attributes; reducing loss of individual animals, documenting the species' current status and trend, and preserving distinct population attributes or any other action described in the Management Oversight Group's report titled *Compensation for the Desert Tortoise* (Hastey, et al. 1991) or Recovery Plan.

e. **Within Areas B and C:** Payment of a remuneration fee, currently set at $568.00 per acre, will be required for all projects prior to issuance of the lease, permit, notice to proceed, or other Bureau authorization, with the following exceptions:

(1) R&PP leases may be issued prior to payment of remuneration fees. Payment of fees on R&PP leases may be deferred until immediately prior to surface disturbance. If the R&PP project consists of phased development of the lease area, fees will be paid for each phase immediately prior to surface disturbance.

(2) Because many mining plans of operation are phased in over a number of years, remuneration fees may be collected prior to the beginning of each phase.

(3) Other projects, such as parks, that are built in phases will be assessed the remuneration fee at the beginning of each phase.

(4) Projects impacting less than 0.25-acres will not be assessed a remuneration fee. The 0.25-acres refers to the total project area and does not apply to each phase of a project.

(5) Mineral material sales and leases will be charged a fee of 25 cents per yard up to the equivalent of $568.00 per acre of disturbance, or will be assessed $568.00 per acre for each phase of disturbance, at the discretion of the Bureau.

(6) Range and wildlife projects impacting less than 0.25-acres per allotment will be exempt from fees. The Bureau and Service shall decide on appropriate offsite habitat enhancement activities on a case-by-case basis for projects impacting more than 0.25-acres. All activities on an allotment count toward the cumulative acreage total for the allotment or wildlife project. Range projects will include fences, pipelines, water hauls, and spring developments.

(7) Unless the Bureau determines that lands proposed for disposal are exempt from mitigation fees under the CCDCP, remuneration fees for land disposal actions will not be required under this biological opinion; consequently, no incidental take will be authorized in association with such actions. Once transferred out of Federal ownership, the owner must comply with the terms of the CCDCP in order to be covered under the incidental take permit issued to Clark County (PRT-801045), or apply for their own incidental take permit under section 10(a)(1)(B) of the Act. Consistent with Bureau policy, the legal title of lands leased under the R&PP Act shall not be transferred out of Federal ownership until appropriate remuneration fees have been collected as specified in Terms and Conditions **3.f.** and **3.g.** below.

The current rate of $568.00 per acre will be indexed for inflation as described in Term and Condition **3.g.** below.

f. **Within Areas B and C:** <u>For Community Sand And Gravel Sales</u>: Fees will be assessed on the basis of cubic yards of material removed from project site. A fee of 25 cents per cubic yard will be applied until such time as the fees collected are equal to $568.00 per acre for each acre of surface disturbance, or the equivalent rate as indexed for inflation. The fee shall be paid directly to the Bureau while purchasing mineral materials at the Las Vegas District Office. The fee shall be deposited directly into the Bureau's 5320 account.

g. **Within Areas B and C:** <u>For Projects Other Than Community Sand And Gravel Pits</u> (including mineral material sales): Prior to issuance of the permit, right-of-way grant, lease (except R&PP leases), notice to proceed, or approval of any action to be covered under this biological opinion, and prior to any surface-disturbing activity associated with the proposed project, including R&PP leases, the project proponent shall pay a remuneration fee of $568.00 for each acre of

surface disturbance. For phased projects (e.g., mineral material sales), fees will be paid prior to surface disturbance associated with each phase. This rate will be indexed for inflation based on the Bureau of Labor Statistics Consumer Price Index for All Urban Consumers (CPI-U) on January 31 of each year, beginning January 31, 1998. Fees assessed or collected for projects covered under this biological opinion after January 31st of each year will be adjusted based on the CPI-U. Information on the CPI-U can be found on the Internet at: *http://stats.bls.gov/news.release/cpi.nws.htm*. The CPI-U for 1996 was 3.3 percent, which was used to adjust fees assessed and collected in 1997. The rate of $568.00 per acre of disturbance has been indexed for inflation for 1997 by increasing the previous rate of $550.00 per acre, 3.3 percent ($18).

This fee will be paid directly to the Desert Tortoise Public Lands Conservation Fund Number 730-9999-2315, administered by Clark County or any other administrator approved by the Bureau and Service. The administrator serves as the banker of these funds and receives no benefit from administering these funds. These funds are independent of any other fees collected by Clark County for desert tortoise conservation planning.

The payment shall be accompanied by the **Section 7 Fee Payment Form**, (Attachment B) and completed by the payee. The project proponent or applicant may receive credit for payment of such fees and deduct such costs from desert tortoise impact fees charged by local government entities. Payment shall be by certified check or money order payable to Clark County (or other administrator named by the Bureau and Service), and delivered to:

Clark County
Department of Administrative Services
500 South Grand Central Parkway, Sixth Floor
Las Vegas, Nevada 89155-1712

In addition, the form will be accompanied by a payment verification and delivered to:

The Bureau of Land Management
Las Vegas Field Office
4765 West Vegas Drive
Las Vegas, Nevada 89108
Attn: Assistant District Manager, Non-Renewable Resources

h. **Within Area B:** Projects resulting in residual impacts will require the submission of a Bureau-approved reclamation plan, unless determined by the Bureau and Service that reclamation rehabilitation is not necessary. The reclamation plan will describe objectives and methods to be used, species of plants and/or seed mixture to be used, time of planting, success standards, and follow-up monitoring. Depending upon the size and location of the project, reclamation could simply involve recontouring, if necessary, and rehabilitation and restriction of access points or could involve reclamation over the entire area of surface disturbance. Reclamation will be addressed on a case-by-case basis.

i. **Within Area C:** Habitat reclamation will only be required if identified through the NEPA process or determined to be appropriate by Bureau wildlife staff in accordance with Term and Condition **4.e.** below.

4. To implement Reasonable and Prudent Measure Number 4, the Bureau shall fully implement the following measures within **Areas B and C**:

a. The project applicant shall notify the Bureau at least 10 days before initiation of the project. Notification shall be made to the Bureau's wildlife staff at (702) 647-5000.

b. The Bureau wildlife staff (702/647-5000) and Service (702/646-3499) must be notified of any desert tortoise death or injury due to the project implementation by close of business on the following work day.

c. All appropriate NDOW permits or letters of authorization shall be acquired prior to handling desert tortoises and their parts, prior to initiation of any activity which may require handling tortoise.

d. The project proponent must submit a document to the Bureau within 30 days of completion of the project showing the number of acres disturbed; remuneration fees paid; and number of tortoises taken, which includes capture and displacement, killed, injured, and harassed by other means, during implementation of programmatic actions.

e. All projects to be covered under this biological opinion shall be reviewed by the Bureau's wildlife staff to ensure that appropriate measures have been incorporated into the Bureau authorization (e.g., right-of-way, lease, or sale) to minimize the potential take of desert tortoise and loss of habitat. If determined appropriate by the wildlife staff, the Bureau shall impose additional minimization measures beyond those required in other terms and conditions of this biological opinion, prior to approval or authorization of the proposed action.

f. For tortoise removals in Clark County, the applicant shall make prior arrangements with Clark County's tortoise pickup service (702/593-9027) at least 10 days prior to the commencement of tortoise collection. Outside Clark County, initial notification shall be made to the Bureau as stated in Term and Condition **4.b.** above.

g. The Bureau will keep an up-to-date log of all actions taken under this consultation; number of acres affected; results of tortoise survey and removal activities (including reported number of desert tortoises injured, killed, or removed from the project site); and date, rate (per acre adjusted for inflation) and amount of fees paid for each project. The Bureau will provide the above information to the Service's Las Vegas Office quarterly for the first year and annually thereafter, beginning 1 year from the date of this biological opinion. Annual reports will be due on February 1st, for the previous calendar year in which actions were covered under this biological opinion. Information will be cumulative throughout the life of this consultation.

h. For those actions identified in this biological opinion that require concurrence between the Bureau and Service, written notification of proposed changes or actions will be made a minimum of 30 days in advance. Both agencies will coordinate to the maximum extent practicable to achieve resolution. This may include informal meetings to discuss proposed actions and reach concurrence, or written correspondence. With the exception of mitigation, if concurrence is not reached, no change will take effect.

APPENDIX C
BLM 2002 SENSTIVE SPECIES LIST

.EVADA BLM SPECIAL STATUS SPECIES (Updated 8/5/02 to reflect all changes in Federal status since 2/27/98)

I. FEDERALLY LISTED, PROPOSED, AND CANDIDATE SPECIES

Ia. FEDERALLY LISTED SPECIES (38 total)

Scientific Name	Common Name	Status*
Astragalus phoenix	Ash Meadows milkvetch	FT,SL
Centaurium namophilum	spring-loving centaury	FT,SL
Enceliopsis nudicaulis var. *corrugata*	Ash Meadows sunray	FT,SL
Eriogonum ovalifolium var. *williamsiae*	Steamboat buckwheat	FE,SL
Grindelia fraxino-pratensis	Ash Meadows gumplant	FT,SL
Ivesia kingii var. *eremica*	Ash Meadows ivesia	FT,SL
Mentzelia leucophylla	Ash Meadows blazingstar	FT,SL
Nitrophila mohavensis	Amargosa niterwort	FE,SL
~~*Spiranthes diluvialis*~~	~~Ute lady's tresses; plateau l. t.~~	~~FT,SL~~
Ambrysus amargosus	Ash Meadows naucorid bug	FTFT
Catostomus warnerensis	Warner sucker	FT
Chasmistes cujus	cui-ui	FE,SL
Crenichthys baileyi baileyi	White River springfish	FE,SL
Crenichthys baileyi grandis	Hiko White River springfish	FE
Crenichthys nevadae	Railroad Valley springfish	FT,SL
Cyprinodon diabolis	Devil's Hole pupfish	FE,SL
Cyprinodon nevadensis mionectes	Ash Meadows Amargosa pupfish	FE,SL
Cyprinodon nevadensis pectoralis	Warm Springs Amargosa pupfish	FE,SL
Empetrichthys latos	Pahrump poolfish; Pahrump killifish	FE,SL
Empidonax traillii extimus	Southwest willow flycatcher	FE
Eremichthys acros	desert dace	FT,SL
[redacted]	[redacted]	[redacted]
Gila elegans	bonytail chub	FE,SL
Gila robusta jordani	Pahranagat roundtail chub	FE,SL
Gila robusta seminuda	Virgin River chub	FE,SL
Gopherus agassizii	desert tortoise	FT,SL
~~*Lepidomeda albivallis*~~	~~White River spinedace~~	~~FE,SL~~
Lepidomeda mollispinis pratensis	Big Spring spinedace	FT,SL
Moapa coriacea	Moapa dace	FE,SL
~~*Oncorhynchus clarki henshawi*~~	~~Lahontan cutthroat trout~~	~~FT~~
Plagopterus argentissimus	woundfin	FE,SL
Pseudocopaeodes eunus obscurus	Carson wandering skipper	FE
Rallus longirostris yumanensis	Yuma clapper rail	FE

NEVADA BLM SPECIAL STATUS SPECIES (CONTINUED)

Ia. FEDERALLY LISTED SPECIES (CONTINUED)

Rhinichthys osculus lethoporus	Independence Valley speckled dace	FE,SL
Rhinichthys osculus nevadensis	Nevada speckled dace; Ash Meadows speckled dace	FE,SL
Rhinichthys osculus oligoporus	Clover Valley speckled dace	FE,SL
Salvelinus confluentis	bull trout	FE
Xyrauchen texanus	razorback sucker	FE

Ib. FEDERALLY PROPOSED SPECIES (1 total)

Charadrius montanus	Mountain Plover	PT

Ic. FEDERAL CANDIDATE SPECIES (4 total)

Policy (BLM Manual section 6840.06 C states: "BLM shall carry out management, consistent with the principles of multiple use, for the conservation of candidate species and their habitats and shall ensure that actions authorized, funded, or carried out do not contribute to the need to list any of these species as threatened or endangered."

Coccyzus americanus	Yellow-billed cuckoo	C
Ivesia webberi	Webber ivesia	C
Opuntia whipplei var. *multigeniculata*	Blue Diamond cholla	SL
Potentilla basaltica	Soldier Meadow cinquefoil	C
Pyrgulopsis notidicola	elongate mud meadows pyrg	C
Rana luteiventris	Columbia spotted frog	C
Rana onca	relict leopard frog	C
Rorippa subumbulata	Tahoe yellow-cress	C,SL

***Status**

FE-Federally endangered
FT-Federally threatened
PT-Proposed threatened
C-Candidate
SL-Listed by the State of Nevada in a category implying potential endangerment or extinction

IIa. NEVADA STATE PROTECTED ANIMALS (25 total) THAT MEET BLM'S 6840 POLICY DEFINITION

Species of animals occurring on BLM-managed lands in Nevada that are: (1) "protected" under authority of NAC 501.100 - 503.104; (2) also have been determined to meet BLM's policy definition of "listing by a State in a category implying potential endangerment or extinction"; and (3) are not already included as BLM Special Status Species under federally listed, proposed, or candidate species. Nevada BLM policy is to provide these species with the same level of protection as is provided for candidate species in BLM Manual 6840.06 C.

NEVADA STATE PROTECTED ANIMALS (25 total) THAT MEET BLM'S 6840 POLICY DEFINITION

Scientific Name	Common Name
Mammals (1 total)	
Euderma maculatum	spotted bat
Birds (8 total)	
Aquila chrysaetos	Golden Eagle
Accipiter gentilis	Goshawk
Buteo regalis	Ferruginous Hawk
Buteo swainsoni	Swainson's Hawk
Pandion haliaetus	Osprey
Pelecanus erythrorhynchos	White Pelican
Plegadis chihi	White-faced ibis
Athene cunicularia hypugea	Burrowing Owl
Reptiles (1 total)	
Heloderma suspectum	Gila monster
Fishes (15 total)	
Catostomus clarki intermedius	White River desert sucker
Catostomus clarki ssp.	Meadow Valley Wash desert sucker .
Crenichthys baileyi albivallis	Preston White River springfish
Gila bicolor euchila	Fish Creek Springs tui chub
Gila bicolor newarkensis	Newark Valley tui chub
Gila bicolor ssp.	Big Smoky Valley tui chub
Gila bicolor ssp.	Fish Lake Valley tui chub
Gila bicolor ssp.	Railroad Valley tui chub
Gila seminuda (Moapa River population only)	Virgin River chub
Lepidomeda mollispinis mollispinis	Virgin River spinedace
Relictus solitarius	relict dace

NEVADA BLM SPECIAL STATUS SPECIES (CONTINUED)

IIa. NEVADA STATE PROTECTED ANIMALS THAT MEET BLM'S 6840 POLICY DEFINITION (CONTINUED)

Fishes(continued)

Rhinichthys osculus lariversi	Big Smoky Valley speckled dace
Rhinichthys osculus moapae	Moapa speckled dace
Rhinichthys osculus velifer	Pahranagat speckled dace
Rhinichthys osculus ssp.	Monitor Valley speckled dace

IIb. NEVADA STATE PROTECTED PLANTS (13 total)

Species of plants occurring on BLM-managed lands that are protected under authority of NRS 527.270 - .300 because of potential endangerment or extinction, but are not already included as BLM Special Status Species under Federally listed, proposed, or candidate species. Nevada BLM policy is to provide these species with the same level of protection as is provided for candidate species in BLM Manual 6840.06 C.

Scientific Name	Common Name
Arctomecon californica	Las Vegas bearpoppy; bearclaw poppy
Astragalus geyeri var. *triquetrus*	threecorner milkvetch
Astragalus mohavensis var. *hemigyrus*	halfring milkvetch; curvepod Mojave m.; Darwin Mesa m.
Astragalus yoder-williamsii	Osgood Mountains milkvetch; Yoder-Williams m.
Castilleja salsuginosa	Monte Neva paintbrush
Cryptantha insolita	unusual catseye; Las Vegas cryptantha
Eriogonum argophyllum	Sulphur Springs buckwheat; Ruby Valley b.; silverleaf b.
Eriogonum viscidulum	sticky buckwheat; clammy b.
Frasera gypsicola	Sunnyside green gentian; S. elkweed
Phacelia inconspicua	obscure scorpion plant
Polyctenium williamsiae	Williams combleaf

III. NEVADA BLM SENSITIVE SPECIES LIST---Species designated by the State Director, in cooperation with the State of Nevada Department of Conservation and Natural

NEVADA BLM SPECIAL STATUS SPECIES (CONTINUED)

BLM SENSITIVE SPECIES (CONTINUED)

Resources, 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 is to provide these species with the same level of protection as is provided for candidate species in BLM Manual 6840.06 C.

Scientific Name	Common Name
Mammals (17 total)	
Eumops perotis californicus	greater western mastiff bat
Idionycteris phyllotis (=Plecotus p.)	Allen's big-eared bat
Macrotus californicus	California leaf-nosed bat
Microtus montanus fucosus	Pahranagat Valley montane vole
Microtus montanus nevadensis	Ash Meadows montane vole
Myotis ciliolabrum	small-footed myotis
Myotis evotis	long-eared myotis
Myotis thysanodes	fringed myotis
Myotis velifer	cave myotis
Myotis volans	long-legged myotis
Myotis yumanensis	Yuma myotis
Nyctinomops macrotis (=*Tadarida m., T. molossa*)	big free-tailed bat
Corynorhinus townsendii	pale Townsend's big-eared bat
Plecotus townsendii townsendii	Pacific Townsend's big-eared bat
Sorex preblei	Preble's shrew
Thomomys umbrinus abstrusus	Fish Spring pocket gopher
Thomomys umbrinus curtatus	San Antonio pocket gopher
Birds (5 total)	
Chlidonias niger	Black Tern
Charadrius alexandrinus nivosus	Western Snowy Plover
Centrocercus urophasianus	Western Sage Grouse (NTTR only)
Oreortyx pictus	Mountain quail
Phainopepla nitens	Phainopepla
Reptiles (1 total)	
Sauromalus ater	Chuckwalla

NEVADA BLM SPECIAL STATUS SPECIES (CONTINUED)

BLM SENSITIVE SPECIES (CONTINUED)

Amphibians (2 total)

Bufo microscaphus microscaphus	Arizona toad
Bufo nelsoni	Amargosa toad

Fishes (10 total)

Catostomus latipinnis	flannelmouth sucker
Catostomus sp.	Wall Canyon sucker
Crenichthys baileyi thermophilus	Moorman White River springfish
Gila bicolor ssp.	Hot Creek Valley tui chub
Gila bicolor isolata was on State list	Independence Valley tui chub
Oncorhyncus clarki utah	Bonneville cutthroat trout
Oncorhyncus mykiss gibbsi	interior redband trout
Rhinichthys osculus ssp.	Meadow Valley Wash speckled dace
Rhinichthys osculus ssp	Oasis Valley speckled dace

Snails (7 total)

Fluminicola merriami	Pahranagat pebblesnail
Oreohelix nevadensis	Schell Creek mountainsnail
Pyrgulopsis micrococcus	Oasis Valley springsnail
Pyrgulopsis wongi	Wongs springsnail
Pyrgulopsis deaconi	Spring Mtns. springsnail
Pyrgulopsis sp.	Red Rocks springsnail #2
Pyrgulopsis turbatrix	Southwestern Nevada springsnail
Tryonia clathrata	grated tryonia

Clams & Mussels (1 total)

Anodonta californiensis	California floater

True Bugs (1 total)

Pelocoris shoshone shoshone	Pahranagat naucorid bug

Beetles (12 total)

Aegialia crescenta	Crescent Dune aegialian scarab
Aegialia hardyi	Hardy's aegialian scarab
Aegialia magnifica	large aegialian scarab
Aphodius sp.	Crescent Dune aphodius scarab
Aphodius sp	Big Dune aphodius scarab
Aphodius sp.	Sand Mountain aphodius scarab

NEVADA BLM SPECIAL STATUS SPECIES (CONTINUED)

BLM SENSITIVE SPECIES (CONTINUED)

Miloderes sp.	Rulien's miloderes weevil
Pseudocotalpa giulianii	Giuliani's dune scarab
Serica sp.	Sand Mountain serican scarab
Serica sp.	Crescent Dune serican scarab
Stenelmis calida calida	Devils Hole warm spring riffle beetle
Stenelmis calida moapa	Moapa warm spring riffle beetle

Butterflies & Moths (18 total)

Cercyonis pegala	Carson Valley wood nymph
Cercyonis pegala ssp.	White River wood nymph
Chlosyne acastus robusta	Spring Mountains acastus checkerspot
Euphilotes battoides ssp.	Baking Powder Flat blue; Bret's blue
*Euphilotes*ancilla purpura	Spring Mountains dark blue
Euphilotes palliscens ssp.	Sand Mountain blue
Euphilotes rita mattonii	Mattoni's blue
Euphydryas editha monoensis	Mono checkerspot
Hesperiacolorado mojavensis	Spring Mountains comma skipper
Hesperia uncas ssp.	Railroad Valley skipper
Hesperopsis gracielae	MacNeill sooty wing skipper
Icaricia icarioides austinorum	Spring Mountains icarioides blue
Limenitis archippus lahontani	Nevada viceroy
Limenitis weidemeyerii nevadae	Nevada admiral
Phyciodes pascoensis ssp.	Steptoe Valley crescentspot
Polites sabuleti sinemaculata	Denio sandhill skipper
Speyeria atlantis greyi	Grey's silverspot
Speyeria nokomis ssp.	Carson Valley silverspot

Plants (98 total)

Angelica scabrida	rough angelica
Antennaria arcuata	meadow pussytoes
Arabis bodiensis	Bodie Hills rockcress
Arabis falcatoria	Grouse Creek rockcress
Arabis falcifructa	Elko rockcress
Arabis ophira	Ophir rockcress
Arctomecon merriamii	white bearpoppy; merriam b.
Asclepias eastwoodiana	Eastwood milkweed
Astragalus aequalis	Clokey milkvetch; equal m.

NEVADA BLM SPECIAL STATUS SPECIES (CONTINUED)

BLM SENSITIVE SPECIES (CONTINUED)

Astragalus amphioxys var. *musimonum*	Sheep Mountain milkvetch; crescent m.
Astragalus anserinus	Goose Creek milkvetch
Astragalus eurylobus	Needle Mountains milkvetch; Peck Station m.
Astragalus funereus	black woollypod; Funeral milkvetch; black m.; Rhyolite m.
Astragalus gilmanii	Gilman milkvetch
Astragalus inyoensis	Inyo milkvetch
Astragalus mokiacensis	Mokiak milkvetch
Astragalus oophorus var. *lavinii*	Lavin eggvetch
Astragalus oophorus var. *lonchocalyx*	long-calyx eggvetch; pink e.
Astragalus remotus	Spring Mountain milkvetch
Astragalus robbinsii var. *occidentalis*	Lamoille Canyon milkvetch; Ruby m.; Robbin's western m.
Astragalus solitarius	lonesome milkvetch; weak m.
Astragalus tiehmii	Tiehm milkvetch
Astragalus toquimanus	Toquima milkvetch
Astragalus uncialis	Currant milkvetch
Botrychium crenulatum	dainty moonwort; crenulate m.
Calochortus striatus	alkali mariposa lily; striped m. l.
Camissonia megalantha	Cane Spring evening-primrose
Chrysothamnus eremobius	remote rabbitbrush; Pintwater r.
Collomia renacta	Barren Valley collomia
Cordylanthus tecopensis	Tecopa birdsbeak
Cryptantha schoolcraftii	Schoolcraft catseye
Cryptantha welshii	White River catseye; Welsh c.
Cusickiella quadricostata	Bodie Hills draba; four-rib whitlowgrass
Cymopterus goodrichii	Goodrich biscuitroot; G. parsley
Cymopterus ripleyi var. *saniculoides*	sanicle biscuitroot; Ripley b.
Didymodon nevadensis	Gold Butte moss
Enceliopsis argophylla	silver leaf sunray
Epilobium nevadense	Nevada willowherb
Erigeron latus	broad fleabane
Erigeron ovinus	sheep fleabane
Eriogonum anemophilum	windloving buckwheat
Eriogonum bifurcatum	Pahrump Valley buckwheat; forked b.
Eriogonum corymbosum var. *glutinosum*	Las Vegas buckwheat
Eriogonum crosbyae	Crosby buckwheat

NEVADA BLM SPECIAL STATUS SPECIES (CONTINUED)

BLM SENSITIVE SPECIES (CONTINUED)

Eriogonum hermannii var. *clokeyi*	Clokey buckwheat
Eriogonum lewisii	Lewis buckwheat
Eriogonum prociduum	prostrate buckwheat; Austin b.
Eriogonum robustum	altered andesite buckwheat; Lobb b.
Eriogonum tiehmii	Tiehm buckwheat
Frasera pahutensis	Pahute green gentian; P. elkweed
Galium hilendiae ssp. *kingstonense*	Kingston bedstraw
Glossopetalon pungens var. *glabrum*	smooth dwarf greasebush
Glossopetalon pungens var. *pungens*	dwarf greasebush
Haplopappus graniticus	Lone Mountain tonestus
Ionactis caelestis	Red Rock Canyon aster
Ivesia aperta var. *aperta*	Sierra Valley ivesia
Ivesia arizonica var. *saxosa*	rock purpusia
Ivesia jaegeri	Jaeger ivesia
Ivesia pityocharis	Pine Nut Mountains ivesia; P.N.M.
mousetails	
Ivesia rhypara var. *rhypara*	grimy ivesia
Ivesia webberi	Webber ivesia
Jamesia tetrapetala	waxflower
Lathyrus grimesii	Grimes vetchling
Leptodactylon glabrum	Bruneau River prickly phlox; Owyhee p.p.
Lomatium graveolens var. *clarkii*	Clark parsley
Lupinus holmgrenanus	Holmgren lupine
Mentzelia mollis	smooth stickleaf
Mentzelia packardiae	Packard stickleaf
Oryctes nevadensis	oryctes
Penstemon albomarginatus	white-margined beardtongue
Penstemon arenarius	Nevada dune beardtongue
Penstemon bicolor ssp. *bicolor*	yellow twotone beardtongue
Penstemon concinnus	Tunnel Springs beardtongue
Penstemon floribundus	Cordelia beardtongue
Penstemon fruticiformis ssp. *amargosae*	Death Valley beardtongue; *Penstemon*
pahutensis	Pahute Mesa beardtongue
Penstemon pudicus	bashful beardtongue
Phacelia beatleyae	Beatley scorpion plant
Phacelia minutissima	least phacelia; dwarf phacelia

NEVADA BLM SPECIAL STATUS SPECIES (CONTINUED)

BLM SENSITIVE SPECIES (CONTINUED)

Phacelia monoensis	Mono phacelia
Phacelia parishii	Parish phacelia; playa p.
Pinus washoensis	Washoe pine
Polyctenium fremontii var. *confertum*	crowded combleaf
Porophyllum pygmaeum	pygmy poreleaf
Potentilla basaltica	Soldier Meadows cinquefoil; basalt cinquefoil
~~*Potentilla cottamii*~~	~~Cottam cinquefoil~~
Salvia dorrii var. *clokeyi*	Clokey mountain sage; C. purple sage
Sclerocactus blainei	Blaine pincushion; B. fishhook cactus
Sclerocactus nyensis	Nye pincushion
Sclerocactus schlesseri	Schlesser pincushion; S. fishhook cactus
Silene nachlingerae	Jan's catchfly; Nachlinger catchfly
Sphaeralcea caespitosa	Jones globemallow
Streptanthus oliganthus	Masonic Mountain jewelflower; M. M. twistflower
Stroganowia tiehmii	Tiehm stroganowia
Townsendia jonesii var. *tumulosa*	Charleston grounddaisy
Trifolium andinum var. *podocephalum*	Currant Summit clover
Trifolium leibergii	Leiberg clover
Viola lithion	rock violet

APPENDIX D
VISUAL RESOURCES
CONTRAST RATING FORMS

Form 8400-4
(September 1985)

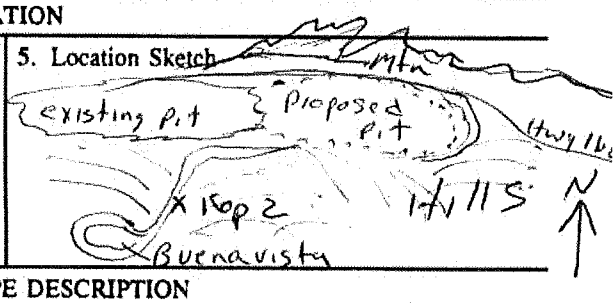
UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date: 1-31-09
District: Las Vegas Field Office
Resource Area: Buena Vista
Activity (program): Mining

SECTION A. PROJECT INFORMATION

1. Project Name: Simplot Silica Mine Expansion
2. Key Observation Point: #2 Down hill from Buena Vista
3. VRM Class: III
4. Location
   Township: 17 S
   Range: 67 E
   Section: 11, 12
5. Location Sketch



SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Flat, rolling terrain with jagged mtns in background	simple & irregular	~~[illegible]~~ simple linear from existing roads
LINE	irregular, horizontal, diagonal	weak and broken from sparse vegetation	Curving & Diagonal roads Diagonal & broken from existing pit
COLOR	reds, tans, white	Shades of green	tans, whites
TEXTURE	rough	Course	directional & smooth from existing rd. Course from existing pit

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	rolling terrain & flat around pit	simple & irregular around pit.	simple linear from rd
LINE	irregular, horizontal diagonal	weak & broken	diagonal & broken from proposed pit.
COLOR	reds, tans, whites	shades of green	tans, whites
TEXTURE	rough	Course	Course from proposed pit

SECTION D. CONTRAST RATING ☐ SHORT TERM ☐ LONG TERM

1. DEGREE OF CONTRAST

ELEMENTS	FEATURES: LAND/WATER BODY (1) Strong	Moderate	Weak	None	VEGETATION (2) Strong	Moderate	Weak	None	STRUCTURES (3) Strong	Moderate	Weak	None
Form			✓					✓				✓
Line				✓				✓				✓
Color				✓				✓				✓
Texture				✓				✓				✓

2. Does project design meet visual resource management objectives? ☑ Yes ☐ No (Explain on reverse side)

3. Additional mitigating measures recommended ☐ Yes ☑ No (Explain on reverse side)

Evaluator's Names: Greg Shaw
Date: 1-31-09

Form 8400-4
(September 1985)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date 1-31-09

District Las Vegas Field Office

Resource Area ~~Las~~ Buena Vista

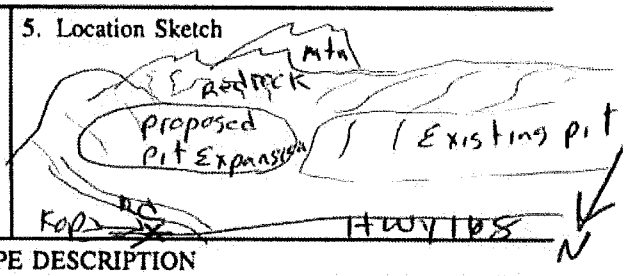
Activity (program) Mining

SECTION A. PROJECT INFORMATION

1. Project Name: SIMPLOT Silica Mine Expansion
2. Key Observation Point: #1 along Hwy 168
3. VRM Class: III

4. Location
Township 17S
Range 67E
Section 11, 12

5. Location Sketch



SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Rolling terrain with mountains in background Rugged flat in middle	Simple irregular	linear - powerlines & roads
LINE	Broken horizontal, vertical, & diagonal	weak, broken from sparse vegetation	Diagonal & vertical
COLOR	reds, tans	Shades of green	tans & browns that blend
TEXTURE	rough	Course & random	Directional & smooth

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	rugged & rolling terrain in pit. Flat around top.	simple & irregular	linear - powerlines & roads
LINE	Broken horizontal, vertical, & diagonal	weak & broken around edges	Diagonal & vertical
COLOR	reds & tan	Shades of green	tans & browns
TEXTURE	rough	Course & random	Directional, smooth

SECTION D. CONTRAST RATING ☐ SHORT TERM ☐ LONG TERM

1. DEGREE OF CONTRAST

ELEMENTS	FEATURES: LAND/WATER BODY (1) Strong	Moderate	Weak	None	VEGETATION (2) Strong	Moderate	Weak	None	STRUCTURES (3) Strong	Moderate	Weak	None
Form			✓					✓				✓
Line				✓				✓				✓
Color				✓				✓				✓
Texture				✓				✓				✓

2. Does project design meet visual resource management objectives? ☑ Yes ☐ No (Explain on reverse side)

3. Additional mitigating measures recommended ☐ Yes ☑ No (Explain on reverse side)

Evaluator's Names: Greg Shaw

Date: 1-31-09