

4.2 REDUCED FOOTPRINT ALTERNATIVE

Mining and processing rates for the Reduced Footprint Alternative would be the same as those for the Proposed Action; and initial and ongoing capital and operating costs would also be similar. The total surface area of disturbance within the Project mine expansion area would be reduced from 693 acres under the Proposed Action to 627 acres (see Table 4.2-1); however, the Project life and the amount of mined material would remain the same. The size of the East Rainbow North and South OISA would be reduced from those under the Proposed Action, while the Big Chief West OISA would be eliminated completely. Like the Proposed Action, the Reduced Footprint Alternative assumes the implementation of all of the environmental protection measures incorporated into the Proposed Action, and assumes that following the completion of mining, all of the same reclamation methods which are listed for the Proposed Action would be undertaken and completed for the Reduced Footprint Alternative.

4.2.1 Geology/Soils/Mineral Resources

The proposed mine expansion site was selected based on the distribution of gold ore as identified in exploratory investigations conducted by the Applicant. Individual facility expansion areas were identified based on structural stability of the rock that forms the pit walls and by the ability to economically mine, haul and process the ore.

Development of the Reduced Footprint Alternative would reduce impacts by 66 acres of undisturbed area to be used for OISAs. Other potential impacts (e.g., erosion) would be the same as those for the Proposed Action, as discussed in Section 4.1.1. With implementation of the mitigation measures described in Section 4.1.1, impacts would not be significant.

The proposed project would not adversely affect valuable economic mineral resources, geothermal or other leaseable mineral resources, nor would it result in significant seismicity impacts (See Section 4.1.1); therefore, the Reduced Footprint Alternative would not avoid or reduce any proposed project impacts associated with these geology issue areas.

During rain events, the proposed project would potentially increase erosion on the manufactured slopes of the OISAs and where the proposed diversion channels would redistribute storm flows into existing down gradient washes. However, these potential impacts could be fully mitigated with standard engineering practices developed by the mine, and construction/operation in accordance with a Stormwater Pollution Prevention Plan as required under the State of California NPDES general permit for stormwater (See Section 4.1). Therefore, the Reduced Footprint Alternative would not avoid any proposed project significant erosion impacts that cannot be fully mitigated with standard construction practices.

Table 4.2-1
Comparison of Areas For Each Proposed Facility, By Major Alternative

Proposed Facilities	Proposed Action			Reduced Footprint Alternative		
	Proposed Area (AC.)	Permitted Disturbance (AC.) (a)	New, Unpermitted Disturbance (Acres)	Proposed Area (AC.)	Permitted Disturbance (Acres) (a)	New, Unpermitted Disturbance (Acres)
Mine Pits						
Big Chief						
North Extension	51.2	0	51.2 (d)	51.2 (d)	0	51.2 (d)
South/Southeast Ext.	171. (b)	NA	NA	171. (b)	NA	NA
<i>Big Chief Subtotal</i>	222.3	0	51.2	222.3	0	51.2
East Rainbow Extension	126.0	100.9	25.1	126.0	100.9	25.1
OISAs						
Big Chief West	21.2	2.6	18.6	-	-	-
East Rainbow North	22.0	22.0	0	5.7	5.7	0
East Rainbow South	132.1	98.8	33.3	103.4	98.8	4.6
<i>Subtotal OISAs</i>	175.3	123.4	51.9	109.1	104.5	4.6
Heap Leach Pad 6	91.6 (c)	91.6(c)	0	91.6(c)	91.6(c)	0
Drainage Diversions						
North Extension	45.3	0	45.3	45.3	0	45.3
East Rainbow	32.8	16.8	16.0	32.8	16.8	16.0
<i>Subtotal Drainage Diversions</i>	78.1	16.8	61.3	78.1	16.8	61.3
TOTALS	693.3	332.7(e)	189.5 (e)	627.1	313.8 (f)	142.2 (f)
TOTALS (requiring biological compensation)	421.6			355.4		

Notes

- (a) permitted by BLM, prior to listing of the desert tortoise
(b) biological compensation not required; the area was disturbed prior to the listing of desert tortoise as endangered.
(c) additional biological compensation not required; the area was already compensated for in 1992.
(d) Approximately 12 acres was disturbed during permitted exploration drilling in area north of the existing Big Chief Pit; of that, 9 acres are within the proposed pit extension. 45 acres of compensation are pending; however, no permits have been issued regarding pit excavation.
(e) numbers would total 693.3 if the 171.1 acres of Big Chief South and Southeast had not been purposely excluded.
(f) numbers would total 627.1 if the 171.1 acres of Big Chief South and Southeast had not been purposely excluded.

4.2.2 Water Resources

4.2.2.1 Assumptions and Assessment Guidelines

This section assesses impacts to water resources that could potentially result from the Reduced Footprint Alternative. This assessment also identifies measures that will be taken to comply with state water quality control regulations, and control factors incorporated into the project design, which would reduce potential impacts to below the level of significance. For purposes of this analysis, significance thresholds are as defined in Section 4.1.2.1 of this EIR/EIS.

As discussed in Section 2.1.5, the primary source of water for dust control, ore processing and other needs would be obtained from the existing water supply wells. The rate and quantity of water extraction would remain within the amounts already permitted for the Mesquite Mine, and would be similar to the amounts needed for the Proposed Action. This water withdrawal was analyzed in prior CEQA/NEPA documents for the Mesquite Mine and found to have impacts that are less than significant (Environmental Solutions, Inc., 1987).

Nearly all water-related characteristics of the Reduced Footprint Alternative are the same as those of the Proposed Action, except that the Reduced Footprint Alternative would have 66 fewer acres of new OISA disturbance. This reduces impacts to Waters of the U.S. by approximately 3 acres from that of the Proposed Action.

4.2.2.2 Impacts of the Reduced Footprint Alternative

Surface Water

Certain aspects of mine area construction would have the potential to alter infiltration and runoff. These include surface compaction on site roads, filling of minor drainages, the construction of OISAs, and the capture of direct precipitation in the mine pits. Other than the new leach pad expansion which would capture direct precipitation, new impermeable surfaces (e.g., roofs, asphalt paving) are not proposed. Onsite roads would be constructed with the minimum practical extent of grading. Runoff from most precipitation events would be absorbed or evaporated. During infrequent large storms, there may be increased runoff from road surfaces but there would be no significant increase in runoff from the Mine area because roads would represent only a small fraction of the surface area, and because any increase in runoff from the roads would be offset by capture of direct precipitation in the Mine pits and infiltration into the OISAs. Upgradient diversions would preclude significant capture of runoff by the Mine pits. The OISAs are expected to have a higher than normal infiltration rate because of the porous nature of the material. A net reduction in runoff from the mine area is expected because the expanded Mine pits and OISAs would have reduced runoff and encompass more area than new compacted surfaces such as roads.

The Reduced Footprint Alternative would have smaller areas devoted to out-of-pit storage of overburden/interburden (compared to the Proposed Action), and thus disturb approximately 66 acres less additional surface area. Other Reduced Footprint Alternative Mine facilities would be identical or

similar to those of the Proposed Action. Thus, the resultant impacts to surface water issues would be similar. Like the Proposed Action, the Reduced Footprint Alternative would require construction of three new drainage diversion channels. However, based on the analysis found in Section 4.1.2, no significant erosion is projected to drainages downgradient from diversions. In addition, a hydrologic/hydraulic evaluation was completed to confirm that flow from the additional watershed area diverted by the North Extension Diversion Channel would not adversely impact SR 78 (Hanson, 1999). These results indicate that the likelihood of a 24-hour storm runoff event overtopping the swale is less than one-in-five-hundred for any given year.

The owner of the Mesquite Landfill project, Arid Operations, Inc., reviewed the plans to determine if the Mine expansion would affect the landfill project. They determined that, based on their preliminary review, the proposed expansion would not significantly affect the landfill drainage design.

Hydrocarbon fuels, ore processing reagents, and other potentially hazardous materials would be stored in aboveground tanks or other appropriate containers at the Mine site. Bulk petroleum products and reagents would be stored within containment areas to prevent uncontrolled releases. There would be the potential for minor hydrocarbon leaks/spills from equipment (e.g., trucks) that would be used for mining operations. Any such spills likely would be small, and easily excavated and removed for subsequent treatment and/or removal from the site.

As with the Proposed Action, the heap leach pad for the Reduced Footprint Alternative would be operated pursuant to WDRs from the RWQCB that would implement appropriate provisions of Title 27. These requirements include criteria for protecting ore processing facilities from run-on and for operating in a manner that protects against release of process fluids or other constituents that may adversely affect surface water quality. With these requirements in place, significant effects to surface water quality are not expected. The Mesquite Mine has operated for 15 years under this regulatory framework, and significant effects to surface water quality have not occurred.

The pit lakes under the Reduced Footprint Alternative would remain isolated from naturally occurring surface water and would have no adverse or beneficial impact to surface water resources. Potential effects of the pit lakes on ground water resources and the chemistry of water expected to occur in the pit lakes are described under the topics of Ground Water Quality and Ground Water Quantity in the following sections.

Waters of the United States

As described in Section 3.2.2.1, surveys were performed to identify "waters of the United States" including wetlands in and around the project area. (Jones & Stokes, August and September, 1999). Locations of delineated waters relative to the Proposed and Alternative expansion areas are shown in Figure 4.1.2-2. According to consultant estimates, the Reduced Footprint Alternative would affect 22.04 acres of Waters of the U.S., compared to 24.97 for the Proposed Action. Approximately 14.84 acres are within areas already permitted for Mine disturbance, while 7.2 acres have no current permits. Totals by expansion area are shown in Table 4.2.2-1.

Table 4.2.2-1

**Estimated Waters of the U.S. in Acres, by Expansion Area,
Proposed Action and Reduced Footprint Alternative, Mesquite Mine Expansion**

Proposed Action	Proposed Action			Reduced Footprint Altern.		
	Prev. Permitted	Not Permitted	TOTAL	Prev. Permitted	Not Permitted	TOTAL
North Extension, Big Chief Pit	0	1.84	1.84	0	1.84	1.84
Big Chief Pit S/SE Extensions (a)	0	0	0	0	0	0
East Rainbow Pit Extension	3.68	0.7	4.38	3.68	0.7	4.38
Big Chief West OISA	0	0	0	0	0	0
East Rainbow North OISA	1.7(b)	0	1.70	0.61	0	0.61
East Rainbow South OISA	8.25	3.48 (b)	11.90	8.25	1.64	9.89
East Rainbow Diversion Channel	2.3	0.24	2.54	2.3	0.24	2.54
North Extension Diversion Channel	0	2.78	2.78	0	2.78	2.78
Heap Leach Pad No. 6 Expansion (c)	NA	NA	NA	NA	NA	NA
TOTALS	15.93	9.04	24.97	14.84	7.20	22.04

Sources: Jones & Stokes, 1999 and 2000; NECI, 2000; BRG Consulting, 2000

(a) The area was previously disturbed by ancillary mining activities

(b) Extrapolated by BRG from Jones & Stokes data

(c) All of Section 16 was previously permitted for heap leach pad disturbance, and compensated

Impacts to Waters of the U.S. by the proposed pit expansions are unavoidable if known ore bodies at the mine site are to be accessed and processed. Surface water drainages must also be diverted around the pits in order to minimize accumulation of water in the pits. The East Rainbow Diversion is located immediately adjacent to the proposed East Rainbow Pit Extension, thus minimizing additional disturbance to Waters of the U.S. It would have been desirable, as well, to keep the North Diversion channel close to the proposed Big Chief North Extension. That, however, would require water to flow uphill in order to connect to the north end of the Vista Diversion channel through the Mine area. The North Diversion channel location that has been proposed allows for gravity flow to the Vista Diversion channel. OISA locations were chosen to minimize haul distances and the amount of additional lands requiring disturbance permits.

As with the Proposed Action, it is proposed that the listed impacts to these waters would be mitigated through the compensation process for desert tortoise habitat. It is anticipated that title to more than 1,200 acres of good tortoise habitat would be conveyed by Newmont to the BLM as compensation for impacts of the Reduced Footprint Alternative. Further provisions of this compensation provide that the lands would include and preserve microphyll woodland at a 3:1 mitigation ratio. Consistent with the Section 404 process, appropriate acreage of Waters of the U.S. would be preserved in this transaction as well. With preservation of Waters within the proposed compensation lands, impacts to Waters of the U.S. would be considered less than significant.

No additional Waters of the U.S. would be dredged or filled as a result of reclamation activities described in Section 2.1.7. Only in the areas disturbed by prior mining activities would the ground surface be prepared and then seeded with native plants. Furthermore, the relationship between planned reclamation measures and mine expansion mitigation measures was reviewed, and no impacts to mine expansion mitigation measures were identified.

Ground Water Quality

Potential impacts to ground water quality at the site could occur in two general ways:

- If sufficient infiltration were to occur, dissolved constituents could be transported downward to ground water.
- Mine pit lakes could impact the quality of water surrounding the pits.

The potential for these impacts to occur is further described in the following subsections.

Infiltration of Dissolved Constituents

Ore that is excavated under the proposed expansion would be processed at heap leach facilities that would be contiguous with existing facilities. Ore processing operations could leak or spill processing fluids if the ore processing facilities are not appropriately designed, constructed and operated. Newmont would be required to construct and operate the leach pad expansion in accordance with CCR Title 27 and WDRs approved by the RWQCB. These regulations and the requirement for WDRs to be issued are designed to

protect water quality. The RWQCB would require routine monitoring and reporting of relevant operational parameters and leak detection systems. With these requirements, significant ground water quality impacts are not expected to occur from ore processing activities related to the proposed expansion. The Mesquite Mine has operated for 15 years under this regulatory framework and impacts to ground water quality have not occurred.

Petroleum products (e.g., fuels, lube oil, hydraulic oil) used to support mining activities could impact ground water if a substantial leak were to occur. Fuel and oil storage already occur at the mine and the expansion would utilize existing facilities. The proposed expansion would not increase the potential for fuel and oil storage to impact ground water, but it would prolong the ongoing use of these products onsite. To mitigate the potential for fuel and oil to impact ground water, bulk petroleum products are stored aboveground in designated areas with appropriate secondary containment for potential spills, and these areas are monitored to assure that leakage is not occurring. With these measures, fuels and oil use at the site are not expected to impact ground water quality.

Precipitation infiltrating through OISAs could carry soluble constituents from the overburden/ interburden if high levels of soluble constituents were to be present, or if overburden/interburden were to have a net acid generating potential. Extensive geochemical testing has been performed on the Mesquite Mine overburden/interburden, as described in Section 3.1.3.4 and the Baker study, 1999. Soluble metals concentrations in these materials are generally low and the material is not acid generating. Because of these characteristics, and because of the low annual precipitation that occurs at the site, the OISAs would not have a significant impact on ground water quality.

Mine Pit Lakes

As discussed in Section 4.1.2, both the Proposed Action and currently permitted mine pits have lakes at their bottoms. The Reduced Footprint Alternative has been evaluated as very similar to the Proposed Action relative to the configuration and character of their pit lakes. Although the Reduced Footprint Alternative accommodates approximately 90 million additional tons of overburden/ interburden into the Mine pits, the materials would be placed off to the side of various pits, above pit lake elevations, and not substantially affect the characteristics of the lakes. Therefore, the pit lake discussion for the Proposed Action found in Section 4.1.2 is also applicable to this Alternative.

Modeling indicates that for the out-of-pit OISA configuration of the Proposed Action and the Reduced Footprint Alternative, there would not be ground water flow-through at the mine pits. The pit lakes would be evaporative sinks, and the ground water flow direction would be toward the pits from all directions. Because the ground water flow would be toward the pits from all directions, the build-up of dissolved constituents in the pit lakes would not affect water quality away from the mine pits.

The impact of the pit lakes on ground water quality would be less than significant because:

- The ultimate pit lake chemistry would not be substantially different under the Reduced Footprint Alternative compared to that which would occur for the currently permitted pits.

- The ground water gradient would be toward the pits from all directions, so the buildup of dissolved constituents would not affect water quality away from the mine pits.
- No current or foreseeable beneficial uses of water would be affected.

Ground Water Quantity

The Reduced Footprint Alternative is very similar to the Proposed Action regarding water quantity. See the discussion in Section 4.1.2. Due to evaporation of water from the mine pit lakes and the relatively low permeability of rock surrounding the mine pits (Table 3.2-3), the pit lake surfaces would equilibrate at an elevation that is lower than the top of the saturated zone as it occurred prior to mining. The inflow to the mine pits during mining and following mining would result in a localized drawdown of ground water surrounding the mine pits. The amount of drawdown would vary with time and distance from each pit. The maximum drawdown adjacent to the mine pits would occur at the cessation of mining, when dewatering ceases. Recovery of the ground water levels surrounding the mine pits would occur as lake levels rise, but evaporation would preclude complete recovery. No measurable ground water level impacts are expected to occur at wells not related to the Mesquite Mine. Other than mine uses, there are no known ground water users in the subbasin. In addition, the low yields characteristic of wells completed in the subbasin (Table 3.2-1) and the poor water quality (Section 3.2.3.4) limit the potential for future beneficial uses to be developed. Due to the lack of ground water users, limitations on foreseeable beneficial uses, and localized nature of drawdown, the impact of drawdown due to the mine pits would be less than significant.

4.2.2.4 Mitigation Measures

Incorporated by Regulation

The Applicant shall incorporate the following water protection features into the proposed construction, operation, and closure of the Reduced Footprint Alternative expansion as required by CCR Title 27 mining regulations administered by the RWQCB:

- Design and construct diversion and drainage facilities to accommodate precipitation conditions associated with the 100-year precipitation event.
- The heap leach pad expansion shall not be located on a Holocene Fault. (No Holocene faults exist onsite).
- The heap leach pad expansion shall be constructed with a low permeability liner system to contain process fluids.
- Containment structures shall be designed by a Registered Civil Engineer, and construction shall be supervised and certified by a Registered Civil Engineer or a Certified Engineering Geologist.

- The heap leach pad expansion shall be operated with monitoring systems to allow detection of potential process fluid leakage in the subsurface.
- The leach pad expansion shall be closed in a manner such that, after closure, it no longer poses a threat to water quality.
- The OISAs shall be closed in a manner that will minimize erosion and the threat of water quality degradation from sedimentation.
- The Applicant shall construct and operate the proposed expansion facilities in accordance with their existing State of California General Permit for Stormwater. These requirements include implementing a Stormwater Pollution Prevention Program incorporating BMPs.
- The Applicant shall preserve Waters of the U.S. per Corps requirements as part of the proposed compensation for loss of desert tortoise habitat.

Incorporated Into the Project Design

The Applicant shall incorporate the following additional water protection features into the proposed landfill design, construction, and operation.

- Design and construct the East Rainbow and Vista diversion channels to discharge flows at approximately the same locations and flow rates that occur presently or which historically occurred prior to the development of the mine diversion system.
- Repair abnormal erosion and take steps to prevent further occurrence in a timely manner during mining and reclamation.
- Store fuels and other bulk liquids with the potential to contaminate ground water in aboveground containers within containment areas.

Incorporated to Avoid Significant Impacts

There would be no potential for significant water resources impacts after mitigation measures required by regulations or incorporated into the project design are implemented. Therefore, no additional mitigation measures are recommended.

4.2.2.5 Level of Significance After Mitigation

With mitigation, impacts would not be significant.

4.2.3 Biological Resources

This section is based on a biological resource report prepared by Nevada Environmental Consultants Inc. (NECI) for the proposed expansion (June, 2000), and on Section 4.1.3 of this EIR/EIS.

4.2.3.1 Assumptions and Assessment Guidelines

The same assumptions and assessment guidelines that were described in Section 4.1.3.1 for the Proposed Project/Action are applicable to the Reduced Footprint Alternative. The only biological difference between the Proposed Project and the Reduced Footprint alternative is that the latter avoids disturbance to approximately 66 acres of lands within the proposed Big Chief West OISA site, the East Rainbow North OISA, and the East Rainbow South OISA.

4.2.3.2 Thresholds of Significance

Based upon NEPA and CEQA guidelines and commonly accepted criteria, an impact would be determined significant if it could:

- Substantially diminish habitat for a plant or animal species.
- Substantially affect a threatened, or endangered, species, special-interest species, or its habitat.
- Interfere substantially with the movement of a resident or migratory wildlife species.

These thresholds are the same as those used to evaluate impacts of the Proposed Action. Biological impacts are not considered significant if the resource is not considered important or sensitive according to the above criteria, or if the extent of impact on the species or its habitat is limited.

4.2.3.3 Impacts of the Reduced Footprint Alternative

The proposed Reduced Footprint Alternative mine expansion is located immediately adjacent to an area that has been heavily affected by mining activities from the existing Mesquite Mine. As detailed in Table 4.2-1, proposed modified facilities total approximately 627 acres. Of this, 171 acres were previously disturbed by prior ancillary activities, leaving a balance of 462 acres. However, only 142 acres of this are unpermitted, while 355 acres comprise uncompensated desert tortoise habitat and are therefore the subject of this analysis. The impacts of these expansions are considered in the discussion of on-site impacts.

Vegetation

The three native plant communities in the project area, desert microphyll woodland, upland succulent and creosote bush scrub, are the habitat types that would be directly impacted (see Figure 3.3-1). The Reduced Project Alternative expansion would result in a direct loss of approximately 335 acres of creosote/desert pavement habitat, approximately 67 acres of microphyll woodland habitat, and approximately 24 acres of upland succulent habitat. Another 15 acres of microphyll woodland would be cut off from upstream water sources south of the proposed North Diversion Channel. Blue palo verde (*Cercidium floridum*) and desert ironwood (*Olneya tesota*), associated with

these three plant communities would also be impacted. Suitable habitat for ribbed cryptantha and winged cryptantha was observed throughout the proposed project area, though no individuals for these species were observed. Of these three habitat communities, microphyll woodland is considered the most sensitive because it provides potential habitat for several sensitive bird, reptile and mammal species.

Based on the revegetation approach described in Sec. 2.1.7 that utilizes no supplemental irrigation except for transplanted trees or shrubs, no significant problem with growth of invasive exotic plant species in reclaimed areas is anticipated. It is possible that tamarisk trees may persist for some time in areas having high moisture. If this occurs, selective spraying of the tamarisks with an approved herbicide such as Roundup and/or Garlon will be considered, if necessary, subject all applicable regulations and to BLM approval.

Microphyll Woodland

To characterize impacts to this habitat, microphyll woodland was defined as the consisting of one or more individuals of desert ironwood, blue palo verde, and or smoke tree. Within the areas proposed for mine expansion under the Reduced Footprint Alternative, a total of approximately 80 acres of microphyll woodland are present.

Of the approximately 80 acres of proposed impact to microphyll woodland, approximately 23 acres (heap leach pad expansion, Section 16) are already permitted and compensated for in accordance with previous environmental mitigation. Therefore, the proposed action will result in a net impact of approximately 57 acres (net) acres of microphyll woodland (42 acres direct impact, 15 acres indirect). Impacts to this 57 acres of microphyll woodland habitat would be significant. Table 4.2.3-1 shows impacts to microphyll woodland for each proposed expansion areas.

Microphyll woodland is considered by CDFG to be one indicator of CDFG jurisdictional streambeds under Section 1600 of the Fish and Game Code. The other indicator on-site is desert washes, which are considered jurisdictional waters by the U. S. Army Corps of Engineers (See Section 3.2, Water). The total area of CDFG jurisdictional streambeds (microphyll woodland + desert washes less the overlap) within the unpermitted expansion areas is approximately 23.4 acres, while there are approximately 37.8 acres in areas previously permitted for Mine disturbance. Figure 4.1.2-3 shows the proposed Plan of Operations boundary and mapped microphyll woodland areas and waters of the U.S. Table 4.2.3-2 details CDFG jurisdictional components by expansion area.

The vegetated areas that would be disturbed by the project represent a very small percentage of similar vegetation communities that occur in the project vicinity and in the Colorado Desert as a whole. As such, the project area is not considered a significant portion of the available plant community. Undisturbed adjacent areas throughout the region provide similar habitat for plant species. Because the proposed project would be located in plant communities that are widely distributed, it would not significantly reduce the overall species diversity or population of any plant species within the Colorado Desert.

Table 4.2.3-1

Reduced Footprint Alternative Impacts to
Microphyll Woodland, by Expansion Area

Proposed Expansion Area	Impacts to Microphyll Woodland (Acres)	
	Direct	Indirect
North Extension (unpermitted)	8 acres	0 acres
North Drainage Diversion (unpermitted)	7 acres	15 acres cut off from upstream water due to diversion
East Rainbow North Overburden/Interburden		
Previously Permitted by BLM/Imperial Co.	0 acres	0
Not Permitted	0 acres	0
Total	0 acres	0
East Rainbow Drainage Diversion		
Previously Permitted by BLM/Imperial Co.	6 acres	0
Not Permitted	1 acres	0
Total	7 acres	0
East Rainbow Extension		
Previously Permitted by BLM/Imperial Co.	5 acres	0
Not Permitted	4 acres	0
Total	9 acres	0
East Rainbow South Overburden/Interburden		
Previously Permitted by BLM/Imperial Co.	12 acres	0
Not Permitted	0 acres	0
Total	12 acres	0
Leach Expansion (Previously Permitted by BLM/Imperial Co.)	23 acres (a)	0
Total Impacts, by type	66 acres	15 acres
Total Direct and Indirect Impacts	81 acres	
Acreage not prev. compensated for, by type	43 acres	15 acres
Total acreage not previously compensated for	58 acres	
Acreage requiring mitigation, per BLM (b)	20 acres	15 acres
Total acreage requiring mitigation, per BLM	35 acres	

Sources: NECI, 2000; BRG Consulting, 2000.

Notes: All values rounded to nearest integer.

(a) All of Section 16 was permitted, and impacts were compensated.

(b) BLM has determined that only impacts to microphyll woodland that were not previously permitted will be required to be mitigated.

Blue palo verde and desert ironwood would also incur impacts from the Proposed Action. These plants are classified as regulated state plants and are protected by state law. However, this law was designed to regulate harvest of plants for nursery and other purposes and does not apply to land clearing or other development activities (CDFG, 1993). Individual plants that are suitable for transplantation will be removed and transplanted prior to surface disturbance; as described in Section 2.1.7. Therefore, impacts would not be significant.

Based upon the types of vegetation communities and species represented, and the location of the project site in the context of the Colorado Desert, proposed activities at the mine would not result in significant impacts to: (1) vegetative communities restricted in distribution, (2) core habitats, or (3) buffer zones. However, the loss of 80 acres of microphyll woodland from the proposed expansion would reduce available habitat for protected or sensitive desert species, most notably resident and migrant bird species and mule deer.

Wildlife

Construction would affect the habitat of many common species of desert animals that are found in this region, as well as a few sensitive or protected species that use the area. Resident reptiles, including the desert tortoise, would be displaced from the site. On-site habitat would be lost or reduced for resident birds. On-site unpermitted and uncompensated microphyll woodland habitat (57 acres (net)) used by wintering and migrating birds for cover, forage, and nesting sites would be lost or reduced. The loss of habitat for migrant birds in the lower Colorado River Valley has created a need to maintain peripheral habitats for bird breeding and wintering. The habitat in the project area is a small part of a large but lesser-quality, bird-breeding and wintering habitat resource provided by the Colorado Desert. Because vegetation in the project area is sparse and the surrounding area is virtually undeveloped and has similar habitat, the loss of 57 acres of microphyll woodland habitat as a bird-breeding and wintering area would not be considered a significant impact.

Mammals, such as the mule deer (*Odocoileus hemionus*) visit the site to browse. The proposed mine expansion would decrease available foraging area for these mammal species on a regional basis. However, the surrounding area is virtually undeveloped and would not be affected by the proposed mine expansion. Therefore, there would be no overall effect on the ecological systems that support mammals that are indigenous to the area and impacts would not be significant. Smaller mammals, reptiles, and amphibians (i.e. wildlife with small home ranges and reduced mobility) would be affected the most due to their inability to relocate off site. Because these species are regionally abundant, their displacement would not significantly impact the regional ecosystem.

Equipment operation and human presence would be expected to further affect wildlife. Direct mortality could occur to resident animals in burrows or nests destroyed by heavy equipment. Animals that would move (or be moved) off the site could indirectly affect animals in adjoining habitat by inducing temporary population stress. Daily operations could impact species sensitive to high noise levels. Noise and the presence of humans associated with project operations may discourage the

presence of the larger mammals such as the mule deer and bighorn sheep, as well as the larger predators such as the coyote (*Canis latrans*).

Surface disturbances and habitat loss as a result of project construction would not be expected to significantly affect wildlife populations due to the availability of adjacent large habitat areas. In addition, compensation lands primarily provided to offset loss of desert tortoise habitat, would also benefit other species.

The proposed expansion would not be expected to significantly interrupt wildlife movement patterns or result in additional habitat fragmentation (the local habitat is already fragmented by the existing Mesquite Mine and SR 78) because wildlife would be able to move around the proposed project area to get to the other side. The project site is not known to provide significant habitat for animal species of restricted distribution, or to provide core habitat for any species. Impacts would not be significant.

Ecological Risk Assessment

An ecological risk assessment was conducted by Samuel Bamberg and Shepherd-Miller, Inc. (2000) relative to current and predicted future pit lake water quality at the Mesquite Mine site. The two proposed alternatives examined were that of open pits (the Proposed Project/Action or Reduced Footprint Alternative) or that of total backfill, where all the new overburden/interburden would be placed in the pits (the IOISA Option Alternative). Risks from the Reduced Footprint Alternative were evaluated as equivalent to those from the Proposed Project/Action. Detailed discussion of the issues and analysis are provided in Section 4.1.3.3. The results are summarized below.

In summary, four COCs (boron, selenium, silver and fluoride) present potential future risk to site receptors from the drinking water exposure pathway, particularly with the total backfill option. However, due to predicted high salinity of the lakes as a result of evaporation, only limited use of the waters for drinking is expected. The more critical potential exposure pathway is through dietary exposure from vegetation that could colonize the edges of the lakes.

Since the principal route of exposure and potential risk to site biota is through the dietary pathway, limiting the development of vegetation within the pit lake basins would minimize the potential for risk, since it would largely preclude uptake of COCs into vegetation, and thus the subsequent transfers to site receptors. In addition, preventing the development of any substantial vegetation communities along the pit lake edges would also reduce the available habitat for terrestrial biota, further limiting the risk potential. An effective mitigation of potential risk could be accomplished by constructing the pits such that the pit walls at, immediately above, and immediately below the permanent water line are too steep to allow for successful colonization of plants.

Threatened and Endangered Species

This section discusses impacts to the desert tortoise, the only federal or state listed endangered or threatened wildlife species observed or expected to occur on-site. There are no federal or state listed endangered or threatened plant species observed or expected to occur on-site.

Desert Tortoise (USFWS: Threatened; CDFG: Threatened; BLM Sensitive Species)

Desert Tortoise surveys were conducted on April 14-16, 1999 and June 1, 2000 within all of the proposed expansion areas (See Section 3.3). Based on the field surveys, a total of 4 tortoises, 8 pallets and 59 burrows were observed throughout the proposed expansion areas (See Figure 3.3-2).

Another survey was conducted on April 16 and September 2, 1999 along SR 78, where it runs adjacent to and parallel with the mine property line, indicated no signs of tortoises, whether individuals or signs of burrowing under the fence, were observed during the surveys. The majority of the fence has a protective berm of soil heaped along the inside, which appears to serve as a deterrent to burrowing. Also, no sensitive plant species were observed during the survey. During the interim months, no signs of tortoise fatalities or activity were observed along this section of SR 78 by NECI or Mesquite Mine personnel. However, an adult tortoise has been repeatedly sighted by mine personnel in the area of the proposed North Extension. This individual was not observed during the tortoise surveys but may still be utilizing this area as part of its home range.

Approximately 627 acres of desert tortoise habitat (BLM Category II and III) will be disturbed as a result of the proposed expansion. The loss of this 627 acres of potential habitat from the proposed mine expansion would represent a significant direct impact on the desert tortoise. However, approximately 272 acres are currently compensated for, or were disturbed prior to the listing of the desert tortoise. All of the acres in Section 16 are permitted and have been compensated for under Biological Opinion (1-6-92-F-22). Therefore all of the acreage in Section 16 have already been compensated for and no additional impacts are anticipated. A total of 355.4 acres of impacts to tortoise have not been compensated, and would be new impacts associated with implementation of the Proposed Project/Action. Biologists from NECI conducted tortoise surveys on all of the proposed expansion areas utilizing methodologies currently acceptable to USFWS. The results of the Tortoise Surveys of April 14 -16 1999 and June 1, 2000 are found in the NECI Biological Report (2000).

Impacts to desert tortoises and desert tortoise habitat on the property are considered to be low since population density is low; however, some "take" may occur from the loss of potential habitat. Because the desert tortoise is a Federally threatened, as well as state listed species, any potential take would require consultation with USFWS under Section 7 of the Federal Endangered Species Act, and contact with CDFG under CESA.

Mitigation measures typically require relocating desert tortoises inhabiting impact zones. Secondary impacts to the relocated tortoises could occur as a result of potential stresses associated with

relocation (mostly, but not limited to, lack of knowledge of cover sites, nest sites, and foraging areas). Established tortoises in the recipient population could potentially be affected by competition for foraging land and increased antagonistic social interactions. The degree to which these factors would occur and affect the success of relocation are not well understood. Impacts would also include temporary disruption of the vertebrate community structure, including predator/prey relationships, adjacent to the site.

The project design incorporates several mitigation measures designed to reduce impacts to the tortoise. Specific mitigation measures to be utilized will be determined as part of the Section 7 consultation process. While some impacts (such as habitat loss) would be unavoidable at the site, the established mitigation measure of compensating for such habitat loss through the acquisition and transfer to federal ownership of higher quality habitat would be implemented. The level of such habitat compensation would be determined by the BLM in consultation with the USFWS. For the mine expansion to be constructed, these agencies would have to be satisfied that the mitigation measures for the tortoise were adequate so as to prevent the project from jeopardizing the continued existence of the tortoise.

Other Special-Interest Species

Species recognized as sensitive by scientists, conservationists or agencies do occur on or near the project site. As described above, special-interest plant or animal species include: animals designated as “Species of Concern” by the USFWS (FSOC); BLM Sensitive Species (BLM SS); plants occurring on Lists 1A, 1B, 2, 3, and 4 of the *California Native Plant Society's Inventory of Rare and Endangered Vascular Plants of California (CNPS)*; animals designated as “Species of Concern”(CSOC) or "Species of Special Concern" (CSOSC) by the CDFG and listed on the Natural Diversity Data Base (NDDDB); and, California game species (CGS), because of their economic and recreational value.

Plants

Fairy Duster CDFG NDDB; CNPS #2

The fairy duster (*Calliandra eriophylla*) was found on three of the proposed expansion. Fewer than 20 individuals were found in the proposed “East Rainbow North Overburden/Interburden Area” within three washes, 5-10 individuals were observed within the proposed “East Rainbow Extension”, and fewer than 23 individuals were observed within the proposed “Leach Expansion Area”. Impacts to fairy dusters in the proposed expansion areas would be significant.

Slender-lobed 4 O'clock flower; CNPS#4

No individuals of slender-lobed 4 o'clock flower (*Mirabilis tenuiloba*) were observed during the survey period. However, suitable habitat does exist within the proposed “East Rainbow South Overburden/Interburden Area” in the large sandy wash that follows the base of the existing waste piles (approximately 10 acres). The loss of potential habitat for this species from the proposed mine expansion would be significant.

Winged Cryptantha; CNPS#4

No individuals of winged cryptantha (*Cryptantha holoptera*) were observed during the survey period. However, suitable habitat was observed throughout the proposed project area. The loss of potential habitat for this species from the proposed mine expansion would be significant.

Ribbed Cryptantha; CNPS#4

No individuals of ribbed cryptantha (*Cryptantha costata*) for this species were observed during the survey period. However, suitable habitat was observed throughout the proposed project area. The loss of potential habitat for this species from the proposed mine expansion would be significant.

Mammals

Mule Deer; CGS

Scat and tracks from mule deer (*Odocoileus hemionus*) were observed within all of the washes in the proposed project area. Approximately 80 acres of microphyll woodland will be disturbed as a result of the Reduced Footprint Alternative. However, the proposed expansion areas do not contain any unique or abundant resources as compared to adjacent lands. The development of the proposed mine expansion would decrease available foraging area on a regional basis. However, the surrounding area is virtually undeveloped and would not be affected by the proposed mine expansion. Therefore, there would be no overall effect on the ecological systems that support mule deer and impacts would not be significant.

During mine operations, there is no open water that may attract wildlife. All solution ponds and channels are covered. No water is allowed to accumulate in the mine pits. Such water would interfere with the mining operation. An uncovered and dry “overflow pond” is part of the mine facilities, designed to capture runoff from precipitation events that exceed the 100-year storm. Such events are by definition rare, and animals would have alternative water sources available if such an event occurred. Therefore, there is no impact. Possible impacts associated with mine lakes following completion of mining are addressed in the ecological risk assessment, by Bamberg and Shepherd-Miller, Inc. (2000).

Bighorn Sheep; BLM Sensitive Species; CDFG Game Species

Bighorn sheep (*Ovis canadensis*) have not been observed within the area of the mine but have been observed in the vicinity. Approximately 57 acres (net) acres of microphyll woodland will be disturbed by the proposed expansion. However, the proposed expansion areas do not contain any unique or abundant resources as compared to adjacent lands. The development of the proposed mine expansion would decrease available foraging area on a regional basis. However, the surrounding area is virtually undeveloped and would not be affected by the proposed mine expansion. In addition, no individuals or signs were observed on the proposed expansion areas, and no bighorn sheep have been observed on the property by mine personnel since the opening of the Mine in 1985. Therefore,

there would be no overall effect on the ecological systems that support bighorn sheep and impacts would not be significant.

Bat Species

Suitable roosting habitat was not present within any of the proposed expansion areas, however all of the areas are considered to be suitable as foraging habitat. Three known/potential roosting sites were identified in the region.

There is microphyll woodland between bat-occupied mines and Mesquite Mine, and these woodlands are probably used more heavily than the woodlands on the Mesquite Mine property. According to Dr. Brown-Berry (Personal Communication, 1999) the bats would use a closer source of food than a further one to save energy and time. No potential bat impacts associated with the Proposed Action or the Reduced Footprint Alternative were found to be significant. The reader is referred to Section 4.1.3.3 for details regarding the analysis.

Birds

Avian species of special concern are also known to occur on-site or in the project area. These species include Le Conte's thrasher, the burrowing owl and the prairie falcon. The loss of 456 acres of habitat (190 acres unpermitted) for these species would not be significant given the availability of large-quantities of similar habitat in the Colorado Desert and the exchange and compensation that would occur to obtain the on-site BLM-managed lands.

Burrowing Owl; CSOSC

Suitable habitat for the burrowing owl (*Athene cunicularia*) is present within the proposed expansion areas. However, no individuals or burrows were observed within the proposed expansion areas. Based on the fact that the habitat found within the proposed expansion areas does not exhibit any unique characteristics and is a small percentage of the available habitat surrounding the Mesquite Mine, no impacts to burrowing owls are anticipated.

LaConte's Thrasher; CSOSC

Surveys for LeConte's thrasher (*Toxostoma lecontei*) were conducted on April 10th, 13th and 16th 1999 along the proposed East Rainbow Extension (See NECI Biological Report, June 2000). The washes within the proposed project area were only marginally suitable for LeConte's thrasher (*Toxostoma lecontei*). Only marginal habitat was identified along the northeast portion of the mine expansion, and no individuals were observed during the field surveys. No impacts to LaConte's thrasher are expected.

Prairie Falcon; CSOC

The entire project area was identified as potential foraging habitat for the Prairie Falcon (*Falco mexicanus*) because there are nests in the Chocolate Mountains. These nests or aeries are less than 50 miles away, putting the mine within the known foraging range of nesting pairs. However, no

potential roost sites were observed within the proposed expansion areas. Impacts to this species would be less than significant.

Amphibians

Couch's Spadefoot Toad; FSOC/CSOS/ BLM SS

A population of Couch's spadefoot toad (*Scaphiopus couchii*) lives in an area adjacent to the Algodones Dunes and along SR 78. The Couch's spadefoot toad was not observed within the proposed expansion areas. During surveys for tortoise and thrashers (April 12 - 16, 1999) no areas exhibiting characteristics associated with pooling or ponding of water for 7 to 10 days were observed in the proposed expansion areas. Characteristics evaluated included soil staining, build up of organic material, and desiccation cracks in soil within depressions along the washes. In addition, working mine areas would be bermed to prevent surface flows from increasing downstream sediment flows. For these reasons, impacts to the referenced Couch's spadefoot toad population at the Algodones Dunes would not be significant.

Reptiles

Western Chuckwalla; FSOC/BLM SS

Less than 3 acres of habitat for the western chuckwalla (*Sauromalus obesus*) was observed within the proposed "North Extension" and the proposed East Rainbow North Overburden/Interburden Extension" area. No individuals were observed during the survey but, based on past observations of chuckwalla in the vicinity, it is possible that a population exists within the proposed project area. Impacts to this species would not be significant, based on the thousands of acres of such habitat that is available in the general vicinity of the Mesquite Mine.

Proposed Expansion Areas

Table 4.2.3-2 qualitatively summarizes impacts for each proposed expansion area. Both significant and non-significant impacts are listed.

4.2.3.4 Mitigation Measures

The Reduced Footprint Alternative would utilize the same mitigation measures as the Proposed Action. However, slightly less desert tortoise habitat compensation land would be required. Approximately 246 acres of Category II desert tortoise habitat is anticipated to be affected by development of the Reduced Footprint Alternative. At a 4.5:1 mitigation ratio, this would require 1,107 acres of compensation land. With the addition of 109 acres of land for mitigation of 109 acres of Category III habitat (1:1 ratio), compensation land required would total 1,216 acres. Impacts to Waters of the U.S. and CDFG jurisdictional lands would be mitigated within the compensation lands, at ratios to be determined by ACOE and CDFG, respectively.

Table 4.2.3-2

Estimated Waters of the U.S. and Microphyll Woodland, in Acres, by Expansion Area, Proposed Action and Reduced Footprint Alternatives, Mesquite Mine Expansion

Proposed Action	Est. Waters of the U.S.		Microphyll Woodland		Overlap (a)		Est. Total CDFG Jurisdiction (b)	
	Prev. Permitted	Not Permitted	Prev. Permitted	Not Permitted	Prev. Permitted	Not Permitted	Prev. Permitted	Not Permitted
Expansion Area								
North Extension, Big Chief Pit	0	1.84	0	8	0	1.68	0	8.14
Big Chief Pit S/SE Extensions (c)	0	0	0	0	0	0	0	0
East Rainbow Pit Extension	3.68	0.7	5	4	0.02	0.08	8.66	4.62
Big Chief West OISA	0	0	0	0	0	0	0	0
East Rainbow North OISA	1.7(d)	0	1	0	0	0	2.7	0
East Rainbow South OISA	8.25	3.48 (d)	12	0	0	0	20.25	3.48
East Rainbow Diversion Channel	2.3	0.24	6	1	0.04	0.04	8.26	1.2
No. Extension Diversion Channel	0	2.78	0	7	0	2	0	7.78
Heap Leach Pad No. 6 Expan. (e)	NA	NA	NA	NA	NA	NA	NA	NA
TOTALS	15.93	9.04	24	20	0.06	3.8	39.87	25.24
TOTALS	24.97		44		3.86		65.11	
Reduced Footprint Alternative								
North Extension, Big Chief Pit	0	1.84	0	8	0	1.68	0	8.14
Big Chief Pit S/SE Extensions (c)	0	0	0	0	0	0	0	0
East Rainbow Pit Extension	3.68	0.7	5	4	0.02	0.08	8.66	4.62
Big Chief West OISA	0	0	0	0	0	0	0	0
East Rainbow North OISA	0.61	0	0	0	0	0	0.61	0
East Rainbow South OISA	8.25	1.64	12	0	0	0	20.25	1.64
East Rainbow Diversion Channel	2.3	0.24	6	1	0.04	0.04	8.26	1.2
No. Extension Diversion Channel	0	2.78	0	7	0	2	0	7.78
Heap Leach Pad No. 6 Expan. (e)	NA	NA	NA	NA	NA	NA	NA	NA
TOTALS	14.84	7.20	23	20	0.06	3.8	37.78	23.40
TOTALS	22.04		43		3.86		61.18	

Sources: Jones & Stokes, 1999 and 2000; NECI, 2000; BRG Consulting, 2000

(a) Areas where microphyll woodland is found in drainages meeting ACOE definitions for jurisdictional waters

(b) The sum of estimated acres of waters of the U.S. plus microphyll woodland acres, less the area of overlap.

(c) The area was previously disturbed by ancillary mining activities

(d) Extrapolated by BRG from Jones & Stokes data

(e) All of Section 16 was previously permitted for heap leach pad disturbance, and compensated

4.2.3.5 Level of Significance After Mitigation

The mitigation measures identified in Section 4.1.3. 4 would mitigate the potential impacts of the Reduced Footprint Alternative, such that impacts would not be significant.

4.2.4 Cultural Resources

This section is based on the technical report by Mooney & Associates (February 2000).

4.2.4.1 Assumptions and Assessment Guidelines

The Reduced Footprint Alternative would affect approximately 66 fewer acres of undisturbed lands than would the Proposed Action. Expansion areas not part of the Reduced Footprint Alternative include the Big Chief West OISA (21.2 acres), East Rainbow North OISA (16.3 acres smaller than the Proposed Action), and East Rainbow South OISA (28.7 acres smaller). The assessment guidelines for this alternative are the same as described in Section 4.1.4 for the Proposed Action. The Section 106 process has been completed regarding the Proposed Action. BLM, ~~in consultation with SHPO~~, has determined that no historic properties would be adversely affected by the Proposed Action, nor the Reduced Footprint Alternative.

4.2.4.2 Significance Criteria

As for the Proposed Action, significance criteria for the Reduced Footprint Alternative were determined based on 36 CFR 800.5, National Environmental Policy Act (NEPA) and California Environmental Quality Act (CEQA) Guidelines, Appendix G, Environmental Checklist Form (approved January 1, 1999) and on performance standards or thresholds adopted by responsible agencies.

4.2.4.3 Impacts of the Reduced Footprint Alternative

During a Class III survey and limited testing of the areas of mine expansion for the Proposed Action conducted during March, April, July, and August 1999, a total of 27 sites were identified and evaluated. The Quechan Cultural Committee was consulted extensively throughout the identification and evaluation phases. Based on the evaluation and consultation, the finding was made that no historic properties will be affected by the Proposed Action. Of the sites evaluated, at least 13 of them are located in expansion areas not proposed in the Reduced Footprint Alternative. Although the Reduced Footprint Alternative would disturb only half the sites identified for the Proposed Action, since none of the sites identified were considered significant from a cultural resources perspective, there is no substantive difference in impact associated with the Reduced Footprint Alternative. Neither of the two Mine expansion alternatives would result in a significant impact to cultural resources.

4.2.4.4 Mitigation Measures

Implementation of the Reduced Footprint Alternative Mesquite Mine expansion would not result in significant impacts to cultural resources. As a result, no mitigation measures are necessary.

4.2.4.5 Level of Significance After Mitigation

No mitigation is necessary. Significant impacts would not occur.

4.2.5 Paleontological Resources

4.2.5.1 Impacts of the Reduced Footprint Alternative

No paleontological resources exist at the site. Therefore, no impacts to paleontology would occur as a result of the Reduced Footprint Alternative mine expansion.

4.2.5.2 Mitigation Measures

Development of the Reduced Footprint Alternative would not result in paleontological resource impacts. Therefore, no mitigation would be required.

4.2.6 Transportation

The Reduced Footprint Alternative would be operationally the same as the Proposed Action, including the same daily commuter traffic. The Reduced Footprint Alternative would continue to require an additional 20 to 30 permanent employees. This increase would not be substantial and would not change existing traffic levels associated with the Mesquite Mine. Any temporary construction personnel would only be needed for a short-time period (e.g., days to weeks) and would not impact traffic conditions (See Section 4.1.6). Therefore, the potential transportation impacts of this alternative would be the same as those for the Proposed Action (discussed in Section 4.1.6).

4.2.7 Noise

The Reduced Footprint Alternative would be operationally the same as the Proposed Action. Therefore, the potential noise impacts of this alternative would be similar to those for the Proposed Action (discussed in Section 4.1.7). With implementation of the mitigation measures described in Section 4.1.7, impacts would not be significant.

As described in Section 4.7, the Reduced Footprint Alternative would produce the same noise events on-site as are occurring now, which are related to removal and handling of ore and overburden (drilling, blasting, ore transport and crushing) and construction of haul roads and structures. Off-site noise would not be significant due to the distance between the proposed project activities and off-site receptors. Noise that would occur would be similar to that of the existing mine and similar to that normally experienced with earth-moving activities. Therefore, the Reduced Footprint Alternative would not avoid any significant on-site or off-site noise impacts.

The Reduced Footprint Alternative would reduce temporary noise impacts to traffic along SR 78 in connection with the East Rainbow South OISA construction along the eastern site boundary. However, because proposed project construction activities for the East Rainbow South OISA would be temporary and would only be associated with normal earth-moving equipment, any related noise would likely be inaudible because of driving-related noise. Therefore, the Reduced Footprint Alternative would not substantially avoid any significant construction noise impact.

In addition, the proposed project would not substantially change noise levels from the mine interpretive trail compared to noise levels associated with the existing mining activities. Because noise levels from the interpretive trail would remain the same with or without the Proposed Action, the Reduced Footprint Alternative would not avoid any significant noise impact to sensitive receptors.

4.2.8 Air Quality

Impacts of the Reduced Footprint Alternative are expected to be no greater than those of the Proposed Action because of the following reasons:

- The locations of the key activity areas where diesel fuel would be consumed in the greatest amounts (e.g., shovel digging) are the same in both alternatives.
- The intensity of the activities, such as shoveling, loading and hauling is identical in both alternatives, hence emission rates are identical.
- The distance from those activities to the Mine boundary are the same in both alternatives.

Details regarding air quality impacts of the Proposed Action are found in Section 4.1.8.

4.2.9 Land Use

4.1.9.1 Assumptions and Assessment Guidelines

The Reduced Footprint Alternative would exclude the 20-acre Big Chief West OISA, 16 acres of the East Rainbow North OISA, and 33 acres of the East Rainbow South OISA. All other facilities of this alternative would be identical to those of the Proposed Action. This land use impact analysis considers the potential effects of the Reduced Footprint Alternative on existing and planned land uses in the vicinity of the mine site. The Proposed Action's effect on surrounding land uses would be significant if the proposed expansion would be incompatible with existing land uses. The Proposed Action's effect on planned land uses would be considered significant if the proposed expansion would be not in conformance with the applicable land use plans and policies described in Section 3.1.9 of this EIR/EIS. Other potential impacts of the proposed expansion include aesthetics, noise, traffic, air and ground water quality, and other issues that are analyzed in more detail in Chapter 4 in this EIR/EIS.

4.1.9.2 Impacts of the Reduced Footprint Alternative

The following discussion considers the effects of all proposed and optional facilities on the proposed expansion site, and nearby lands. The use of the Reduced Footprint Alternative would be in conformance with all adopted plans and policies, as described in the Noise, Transportation, and Public Health and Safety sections, and with existing land uses.

Compatibility with Existing and Surrounding Land Uses

Mesquite Mine

The Reduced Footprint Alternative, as for the Proposed Action, is within a designated mine site except for the two north half sections that were once part of the Chocolate Mountains Aerial Gunnery Range (CMAGR). The previous EIR found that the operation (as implemented) would not create land uses incompatible with those on the surrounding lands. Existing mining and recreation uses were not projected to be significantly affected by the mining operation. The Proposed Action would result in expansion and a longer period of mining activities on the existing site, which essentially postpones future non-mining use of the mine pit, overburden disposal areas and the heap leach area. The physical characteristics of remaining primary project facilities would permanently alter the area's value for visually-sensitive recreation activities. Reclamation of the site would mitigate the visual intrusion of the mine and therefore, its impact on related recreation activities. Changes associated with the Reduced Footprint Alternative are essentially the same as for the Proposed Action, but with 66 acres less surface disturbance.

Surrounding Community

Land uses surrounding the proposed project site include residential and commercial uses at the Boardmanville and Glamis Beach Store areas, the ISDRA, North Algodones Dunes Wilderness Area and ACEC, and large open space areas used for OHV riding, target shooting, hunting, and prospecting. The mine is located at least three miles from these uses. Due to the distances between the mine and residential, commercial, and recreational uses, the mine expansion would not be an incompatible land use, and impacts would not be significant. This is the same as that of the Proposed Action.

BLM Public Lands

The Reduced Footprint Alternative would add approximately 41 acres of federal land presently outside mine permit areas and managed by the BLM. This is 52 acres less than the Proposed Action (18.6 acres at Big Chief West OISA plus 33.3 acres at the south end of the East Rainbow South OISA). Although this is a decrease from that of the Proposed Action, since that change was not deemed a significant impact, neither will this.

For the mine to be expanded to the north of the existing mine as proposed, BLM agreed in 1996 to exchange state school lands pursuant to the California Desert Protection Act for BLM owned lands (the two north half sections) located in the CMAGR. The purpose for this exchange is for their likely mineral value and the potential value of future revenues to the State Teachers Retirement Fund. This issue, and all others related to BLM public lands, is identical to that of the Proposed Project / Action. There would be no impact to the Singer Geoglyphs ACEC.

Chocolate Mountains Aerial Gunnery Range

The proposed expansion would be compatible with the CMAGR. Existing uses of the CMAGR include military aircraft training and testing. As with the Proposed Action, the only issue is that of

lighting and its potential interference with pilot's NVDs (Night Vision Devices). Potential lighting impacts to the CMAGR are discussed in Section 4.1.11, Visual Resources, of this EIR/EIS.

Compatibility with Adopted Land Use Plans and Policies

There is no substantial difference between the Reduced Footprint Alternative and the Proposed Action relative to conformance with the Imperial County General Plan, Imperial County Zoning Regulations, California Desert Protection Act and the BLM CDCA Plan. Both alternatives are in conformance with these plans or policies, as discussed in Section 4.1.9. No significant impact would occur.

4.2.9.4 Mitigation Measures

Since land use impacts from the Reduced Footprint Alternative would not be significant, no mitigation is required.

4.2.9.5 Level of Significance After Mitigation

No mitigation would be required, and land use impacts would not be significant.

4.2.10 Recreational Resources

4.2.10.1 Assumptions and Assessment Guidelines

The Reduced Footprint Alternative would exclude the 20-acre Big Chief West OISA, 16 acres of the East Rainbow North OISA, and 33 acres of the East Rainbow South OISA. This alternative would also store 91.6 million tons of waste rock in the existing mine pits, versus 12.6 million tons for the Proposed Action. All other facilities of this alternative would be identical to those of the Proposed Action. The following impact analysis considers the effects of the Reduced Footprint Alternative on recreational resources in the vicinity of the Mesquite Mine. Potential impacts of this alternative include aesthetics, noise, traffic, air and ground water quality, and other issues that are analyzed in more detail elsewhere in Chapter 4 in this EIS/EIR.

For this analysis, recreational resource impacts would be considered significant if the Proposed Action would substantially degrade or reduce the quality or quantity of the area available for existing or future recreational opportunities. An unmitigated loss of a unique recreational resource would be a significant impact. Non-conformance with the Wilderness Act of 1964, the California Desert Protection Act (CDPA) or the BLM Interim Management Policy would be a significant impact.

4.2.10.2 Impacts of the Reduced Footprint Alternative

Mesquite Mine Site

The only recreational resource on the mine site itself is the Mesquite Mine Overlook Trail. The trail was a voluntary project undertaken by the Mine and the BLM. The joint BLM/Gold Fields agreement that created this unique recreational resource allows either party to "walk away" from the agreement with 30-days notice. The self-guided trail would not be affected by the mine expansion. The Reduced Project Alternative would introduce additional overburden piles, as described in Section 4.1.11, Visual Resources. The Mesquite Mine Overlook Trail is the only recreational resource provided on-site. This trail is provided specifically for viewing the mine. Visual impacts to the Overlook Trail would not be significant because the trail would continue to provide views of the mine. This is the same impact level discussed for the Proposed Action.

The area surrounding the Mesquite Mine is used by approximately 4,000 visitors a year. However, the majority of recreational users counted in this survey used lands located closer to Glamis than to the proposed site. There are approximately 280,000 acres of BLM Class M and Class I desert lands available for recreation in the CDCA in Imperial County. The Proposed Project would not result in any disturbance of federally-owned land that has not already been committed to mining, and the northern expansion would not result in any loss of BLM Class M nor Class I land available for recreation. There would be no loss to recreational lands, and therefore the neither the Reduced Footprint Alternative nor the Proposed Action would significantly affect existing or future recreational opportunities.

The mine and associated facilities are located a sufficient distance from the ISDRA that it would not significantly impact recreational uses at the sand dunes. The Mesquite Mine is far enough away that on-site noises would not be heard in the ISDRA or the more heavily used camping areas. Impacts associated with project-related traffic on SR 78 would not be significant.

Wilderness Areas

The wilderness areas identified in Section 3.1.10 are located far enough away from the mine that impacts would not be significant. This result is identical to that of the Proposed Action.

4.2.10.4 Mitigation Measures

The Applicant shall implement the mitigation measures described in the Transportation (4.1.6), Noise (4.1.7), and Environmental Health and Public Safety (4.1.12) sections of this EIR/EIS to mitigate impacts from the Reduced Footprint Alternative to recreational resources.

Mesquite Mine Site

Incorporated by Regulation

There would be no additional mitigation measures required by regulation to mitigate recreational resource impacts besides those described in Sections 4.1.6, 4.1.7, 4.1.8, and 4.1.12.

Incorporated by Project Design

Although the project area does not have a high rating for scenic recreation, reclamation of the site and implementation of visual mitigation measures would partially mitigate the visual intrusion of the project and therefore, its impact on related recreation activities. Mitigation measures incorporated by project design are described in Sections 4.1.6, 4.1.7, 4.1.8, and 4.1.12.

Incorporated to Avoid Potentially Significant Impacts

The above mitigation measures would fully mitigate impacts associated with on-site activities to recreational resources. Therefore, additional mitigation would not be required.

4.2.10.5 Level of Significance After Mitigation

Impacts to recreational resources by the Reduced Project Alternative would be fully mitigated by the measures described above. With mitigation, impacts would not be significant.

4.2.11 Visual Resources

4.2.11.1 Assumptions and Assessment Guidelines

As for the analysis of the Proposed Action, for the purposes of this analysis, a significant visual impact is defined as project-related change that would be considered substantial in a VRM Class III area as follows:

- A strong degree of contrast (i.e., where the project-related element contrast demands attention, would not be overlooked, and is dominant in the landscape).
- Light and glare conditions that would adversely and substantially affect a sensitive receptor.

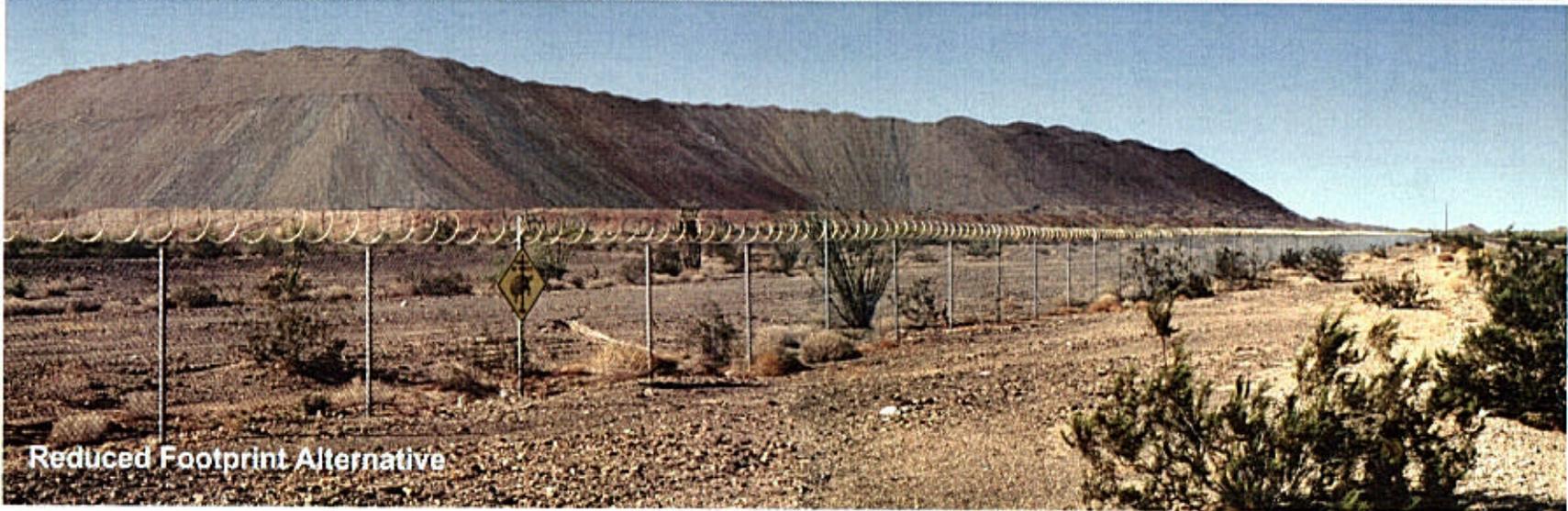
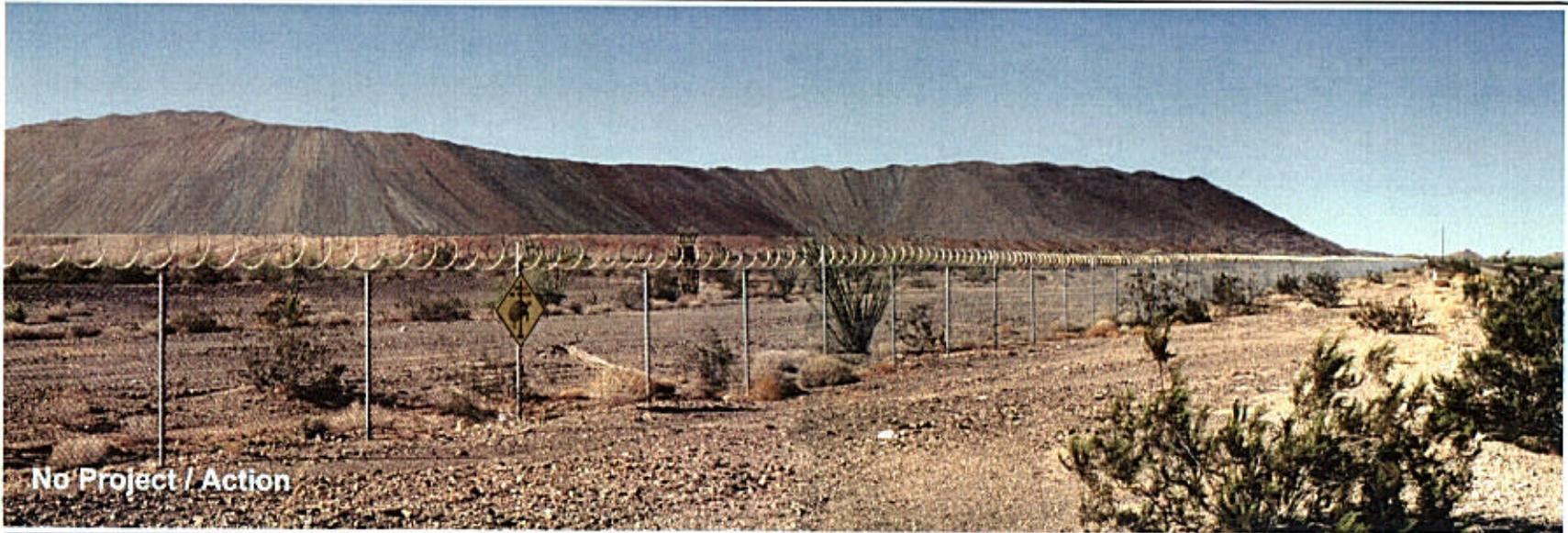
4.2.11.2 Impacts of the Reduced Footprint Alternative

Locations of proposed physical mounds of materials that would be visible from outside the Mine site are shown in Figure 3.11-1. Of the four areas, the northernmost (East Rainbow North OISA) and the westernmost (Big Chief West OISA) would not be visible from the selected viewpoints along SR 78. While they would be visible from other locations, their relatively small size, their proximity to other, larger material piles, and the lack of a nearby viewpoint from which many persons could see them indicate that they will result in no significant visual impact. The proposed heap leach pad expansion located at the southern side of the Mine site will be the same design and size for both the Proposed Action and the Reduced Footprint Alternative. Visual impact issues associated with this proposed facility expansion are discussed in Section 4.1.11, and illustrated in Figure 4.1.11-1. No significant visual impact was identified for the heap leach pad expansion, because Reduced Footprint Alternative would result in only an incremental change from Mine development is already permitted.

Consequently, only the visual changes associated with the easternmost proposed facility expansion (East Rainbow South OISA) remain to be addressed. The Reduced Footprint Alternative differs from the Proposed Action for this proposed facility in that the southern end of the facility would not come as close to SR 78 as would the design in the Proposed Project. The key visual issue for analysis of the Reduced Project Alternative, as it was for the Proposed Action, is the degree of visual change anticipated from currently permitted Mine development. This is graphically illustrated in the visual simulations shown in Figure 4.2.11-1. While the OISA resulting from the Reduced Footprint Alternative is more visible than the one that is currently permitted, the visual change is also clearly incremental.

As noted in the analysis for the Proposed Action, the VRM Class III standard allows a moderate degree of visual change. Because the proposed OISA expansion would result in an incremental change, short-term impacts would be low to moderate and would conform to these VRM Class III guidelines. Therefore, visual impacts would not be significant.

Figure 4.2.11-2 on the next page compares the view of the Proposed Action with that of the Reduced Footprint Alternative. While there are differences, either would be highly visible from



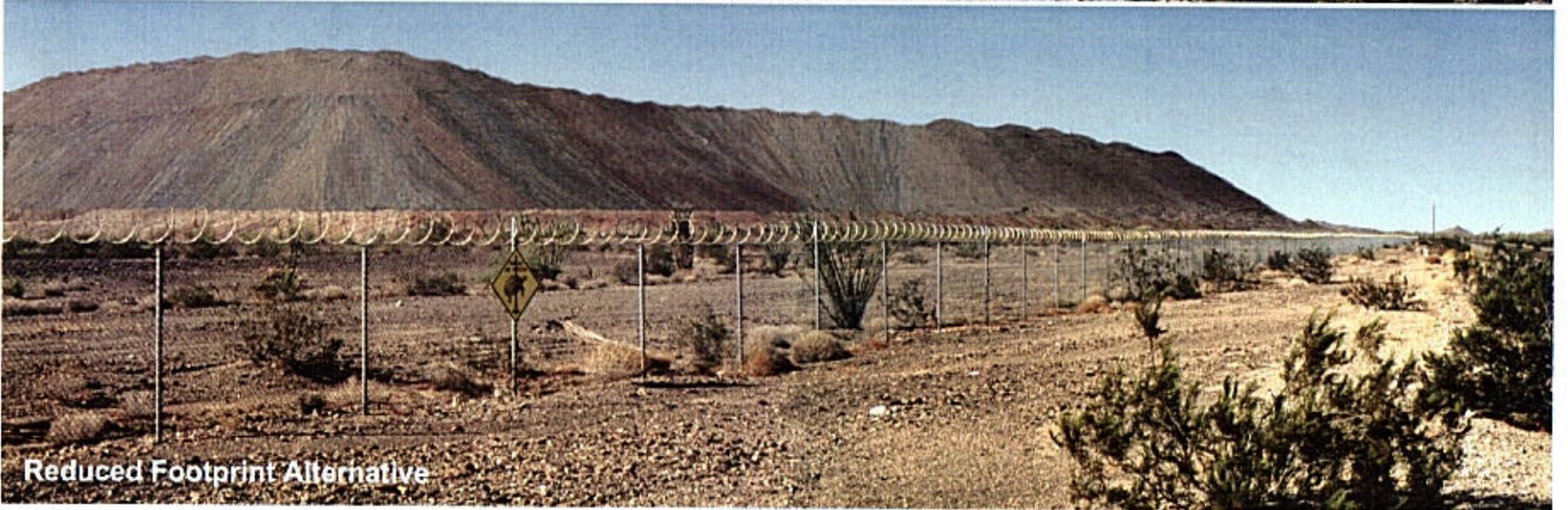
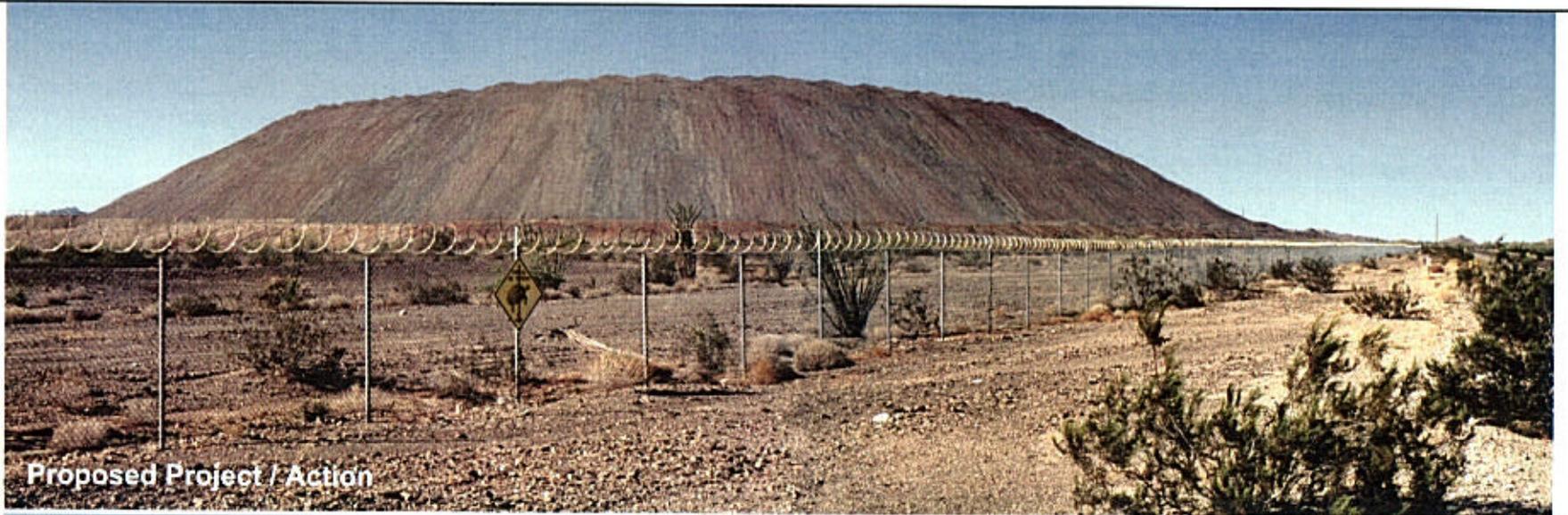
SOURCE: BRG Consulting, Inc., 2000.

5/4/00

Mesquite Mine Expansion EIR/EIS

**Visual Simulations of No Project/ Action and
Reduced Footprint Alternative, View Point No. 2**

**FIGURE
4.2.11-1**



SOURCE: BRG Consulting, Inc., 2000.

54/00

Mesquite Mine Expansion EIR/EIS

**Visual Simulations of Proposed Action and
Reduced Footprint Alternative, View Point No. 2**

**FIGURE
4.2.11-2**

vehicles travelling on SR 78. The Reduced Footprint Alternative, from Viewpoint No. 2 at least, does not appear to result in a reduction in visual impact from that of the Proposed Action. Neither does it appear to result in substantially more impact.

Light and Glare

Night lighting would be provided at the mine to facilitate up to 24-hour operations. There would be no substantive difference between the night lighting associated with the Reduced Project Alternative versus that of the Proposed Action. No significant unmitigated lighting impact was identified for the Proposed Action (see Section 4.1.11), and none would occur with the Reduced Project Alternative.

Site Reclamation

Newmont has developed conceptual final reclamation configurations for the OISAs that include minor regrading. The configurations have been developed to provide a more aesthetically pleasing landscape, creating a terrain that is conducive to the native surrounding area. The same site reclamation, regrading and revegetation measures will be utilized for the Reduced Footprint Alternative as for the Proposed Action. See Section 2.1.7 of this EIR/EIS. As with the Proposed Action, long-term visual impacts from the OISAs and heap leach pads would be reduced by the proposed reclamation activities. Long-term visual impacts would be in conformance with the VRM Class III Guidelines and would be insignificant.

4.2.11.4 Mitigation Measures

Measures Incorporated by Regulation

There would be no mitigation measures required by regulation.

Measures Incorporated by Project Design

Following completion of Project mining activities, all buildings, equipment, supplies, and debris shall be removed to improve the visual appearance of the Project area.

The applicant shall ensure that project-related lighting is pointed toward the ground and not at sensitive receptors such as drivers on SR 78 and concentrations of campers in the Glamis and Boardmanville areas.

The Applicant shall minimize the presence of reflective material on-site at night that could reflect downward pointed light up or toward sensitive receptors.

The Applicant shall construct the proposed mine expansion so that it resembles a natural landform to the extent practicable. The tops and sides of all OISAs would be contoured.

In conformance with the Reclamation Plan as approved by the BLM and Imperial County, all disturbed areas shall be recontoured and reseeded or revegetated with native or indigenous species complementary to vegetation found in the surrounding area.

Mitigation Measures Proposed to Avoid Potentially Significant Impacts

The potentially significant impact of night lighting on NVDs shall be mitigated by providing the U.S. Marine Corps Air Station, Yuma, Arizona, with a map identifying the project site and specific locations of all potential light sources. This would enable the U.S. Marine Corps Air Station to identify the site as a light source so that pilots using NVDs can avoid the lighted area.

4.2.11.5 Level of Significance After Mitigation

The potential for impacts to NVDs would not be significant with incorporation of the proposed mitigation.

4.2.12 Potential Environmental Health and Safety Impacts

4.2.12.1 Assumptions and Assessment Guidelines

This section evaluates the potential public health and safety impacts that could be associated with the proposed expansion of the Mesquite Mine (Mine) as described in the Reduced Footprint Alternative. As discussed previously, this alternative is the same as the Proposed Action, except that the areas of three proposed OISAs would be less by approximately 66 acres. All other operational and closure activities would be the same as for the Proposed Action (as discussed in Section 4.1.12).

A potential impact is considered significant if it would create a substantial increase in risk to public health or safety. Potential impacts to ground water, transportation and other elements of the human environment are considered in other sections of the EIR/EIS. Reference to those analyses are made, where appropriate, when they also involve issues associated with public health and safety.

4.2.12.2 Impacts Of The Reduced Footprint Alternative

Mining Activities

The process of mining raw ore material involves activities that could generate potential health and safety impacts to the public and Mine employees. Blasting and the use of heavy construction equipment typical of mining operations that are utilized during Mine operations. These methods have been employed by Mine staff from the beginning of mining activities in 1984. These activities would be the same for the Reduced Footprint Alternative as for the Proposed Action.

Given the remote location of the Mine, potential for significant health and safety impacts to the public resulting from mining operations is not expected. The closest residence to the Mine is approximately one mile away. Noise from blasting activities would be the only potential impact to the area surrounding the Mine. Further discussion of noise impacts is provided in Section 4.1.7 of this EIR/EIS.

Measures for mitigating potential health and safety impacts to Mine employees resulting from mining activities were established at the beginning of Mine operations in 1984. Procedures for handling and discharge of explosives are delineated by the Mine Safety and Health Administration (MSHA) and the Newmont Safety manual. Explosives are stored in a secured powder magazine constructed and maintained in accordance with Federal and local permit requirements.

Guidelines for operating heavy construction equipment involved in transportation of overburden and ore to storage and agglomeration facilities are set forth in the Newmont Safety manual. No significant potential health and safety impacts to Mine employees resulting from mining operations are expected.

Processing Activities

Heap Leaching

Heap leaching removes gold from the ore. The heap leach system consists of heap leach pads, where ore is leached, and solution ponds where the dilute sodium cyanide solution is contained. The heap leach facilities are constructed over an impervious liner. These liners are designed to meet requirements of the Regional Water Quality Control Board (RWQCB), which establishes specific standards on liner permeability. The sodium cyanide solution application system is contained within closed piped to prevent potential release of the solution. Solution containment ponds are designed to accommodate additional run-off from the heap leach pads and direct precipitation that could result from large rainstorm events. These activities would be the same for the Reduced Project Alternative as for the Proposed Action.

Potential health and safety impacts to the public and Mine employees resulting from the heap leach process exist through exposure to the dilute sodium cyanide solution. Cyanide has been used in various processing methods to extract gold from ore for over 100 years. The technology of using a dilute sodium cyanide solution to heap leach gold from relatively low grades of ore was initially developed in the early 1970s. Commercial applications of the technology started in the late 1970s and have grown rapidly because it is the only economically feasible method to recover gold from disseminated ore bodies where the gold exists at low concentrations.

Consequently, health and safety impacts to the public and Mine employees resulting from the heap leach process are not expected. Although Mine employees work in close proximity to the process solutions, there are no known cases of accident or severe illness directly due to sodium cyanide solution exposure. Guidelines and handling procedures for application and management of the leaching solution are provided in the Newmont Safety manual. Federal and state regulations for use of cyanide solution in leaching processes are also enforced by MSHA and RWQCB.

Impervious liners under the heap leach pads, pregnant solution conveyance channels and associated facility components minimize the potential for exposure of the sodium cyanide solution to surface soils. The chosen solution application method significantly reduces potential for airborne distribution of the sodium cyanide solution. In addition to the facilities engineered for containment, protection of water quality is also provided by the reactivity of cyanide, which results in its volatilization into the atmosphere, its natural degradation to nontoxic carbon and nitrogen compounds and its fixation with the trace metals in the environment to form less toxic complexes over time.

Gold Recovery Process

Pregnant solution is transferred from the solution collection ponds of the heap leaching facilities to the gold recovery facilities. A carbon adsorption process is performed to retrieve gold from the pregnant sodium cyanide solution. Gold is desorbed from the carbon using stripping solution and then pumped to electrowinning cells for formation of the final material that undergoes benefaction. These activities would be the same for the Reduced Project Alternative as for the Proposed Action.

Potential health and safety impacts to the public and Mine employees exist through exposure to reagents used in the gold recovery process (i.e., sodium cyanide solution and carbon stripping solutions). As with the processes used in heap leaching, those utilized for the gold recovery process are well established in gold extraction operations. The Mine incorporated these methods as part of daily operational activities at the beginning of operations in 1984.

Potential health and safety impacts to the public and Mine employees resulting from exposure to reagents used in the gold recovery process are not expected. Additions to existing facilities are not proposed as part of the Mine expansion. Design features of the gold recovery facilities and process previously discussed provide mitigation of potential release or exposure. The Newmont safety manual provides internal guidelines and regulations for proper execution of gold recovery. Specific step-by-step instructions for controlling spills are also provided.

Domestic And Industrial Waste

Domestic and industrial wastes generated during Mine operations are disposed of according to County and State of California (State) regulations. These activities would be the same for the Reduced Footprint Alternative as for the Proposed Action.

Impacts to the public and Mine employees resulting from generation of domestic and industrial wastes are not expected. Regulations and guidelines for proper disposal, handling and management of domestic and industrial wastes are set forth by County and State agencies. The Newmont safety manual also provides internal procedures for generation of domestic and industrial wastes. These regulations and guidelines have been observed by the Mine since operations began in 1984.

Transport Of Chemical Reagents And Explosives

Mining and gold recovery operations at the Mine require the use of select chemical reagents, explosives and fuels. These materials will be stored on site in appropriate facilities. Explosives and chemical reagents require specific storage enclosures and conditions as mandated by OSHA, Cal-OSHA, MSHA and the Newmont safety manual. These activities would be the same for the Reduced Footprint Alternative as for the Proposed Action.

Explosives and detonators are stored in two secure magazines on-site. No change in magazine location on procedures would result from the Proposed Action. As previously mentioned explosives storage facilities are constructed according to guidelines provided by OSHA, Cal-OSHA and MSHA.

Impacts to the public and Mine employees resulting from the transportation and storage of chemical reagents and explosives are not expected. Licensed contractors will transport the previously discussed materials to the Mine. Federal and State guidelines for highway transportation of these goods will be observed. Upon reaching the Mine all chemical reagents and explosives will be stored according to OSHA, Cal-OSHA and MSHA guidelines. As an additional safety management measure, emergency response agencies (i.e., fire department and police department) will be provided with a list of materials being transported to the Mine and the routes used by the licensed contractors.

Security and Safety

Security and safety measures would be employed to minimize the risks of accidental or injury to unauthorized or untrained persons. These activities would be the same for the Reduced Footprint Alternative as for the Proposed Action. With continuation of existing security and safety procedures, impacts to the public due to potentially dangerous mining activities are not expected.

Mine Traffic

Mine operations require the use of various pieces of heavy construction equipment. Transportation of ore from the open pit mines to the heap leach gold recovery areas requires the use of haul trucks and other vehicles necessary for operation of the Mine. Haul trucks are capable of transporting 150 tons of mined ore per load and require more operational space than most Mine vehicles. These activities would be the same for the Reduced Footprint Alternative as for the Proposed Action.

Potential health and safety impacts to the public and Mine employees resulting from on site traffic are not expected. Vehicular traffic generated during mining, heap leach and gold recovery activities is retained within the boundary of the Mine. Mine employees required to operate vehicles on site are trained in correct operating procedures. The Newmont Safety manual provides specific vehicle operating procedures.

Mine Reclamation

Reclamation would occur for decommissioned facilities during ongoing Mine operation, and for remaining facilities following project completion. Safety measures such as restricting access to pit mines, heap leach pad neutralizing and decommissioning, and storage pond neutralizing would be accomplished. Closure will result in the removal of surface structures associated with ancillary facilities. Some access roads may remain following mine closure to provide access for monitoring and for continuing access to Newmont private lands. As discussed in Sec. 2.1.7, the mine area cannot be returned to its original contours. Limited regrading and surface scarification will be used to create and enhance a self-supporting desert ecosystem. Post closure monitoring will assess surface and ground water for closure of heap leach pads, and determine erosion control and revegetation success for reclamation. These activities would be the same for the Reduced Footprint Alternative as for the Proposed Action.

Potential health and safety impacts to the public and Mine employees could result from reclamation activities. Improper or inadequate closure and reclamation of the mining, heap leach and gold recovery facilities could result in such impacts.

Potential health and safety impacts to the public and Mine employees resulting from Proposed Action reclamation activities are not expected. Newmont has created a detailed, encompassing site Closure Plan for the Mine. The Closure Plan has been prepared to satisfy requirements of Section 2574, Article 7 of the CCR (Shepherd Miller, Inc., 1998). A complete Closure Plan can be found in the Consolidated Plan of Operations. As previously mentioned, the Closure Plan addresses reclamation of the various operational aspects of Mine operations. Concurrent reclamation of the

Mine began in 1998 and will continue until closure. Reclamation activities concentrate on those areas that are no longer active.

4.2.12.4 Mitigation Measures

Incorporated by Regulation

The Applicant shall incorporate environmental health and public safety protection measures required by local, State, or federal regulations into the proposed mine expansion, design and operation, specifically, appropriate OSHA and Cal OSHA worker environmental health and public safety regulations and continuance of established public safety measures and programs existing at the Mine.

Incorporated to Avoid Significant Impacts

Since environmental health and safety impacts will not be significant and will not change from existing conditions at the Mine, no mitigation measures to avoid significant impacts are required.

4.2.12.5 Level of Significance After Mitigation

Based upon regulatory requirements and safe operating practices used at the Mine since 1984, no significant impact to health and safety would occur from this Reduced Footprint Alternative.

4.2.13 Socioeconomics

4.2.13.1 Assumptions and Assessment Guidelines

Socioeconomic impacts derive primarily from changes in the existing makeup of a community. Changes in the age, ethnicity, or income distribution of an area may affect the community either negatively or positively. For the purposes of this EIR/EIS, an adverse significant socioeconomic impact is defined as follows:

- A substantial decrease in employment within the County.
- A substantial decrease in the wage and salary earnings in the County.
- A substantial decrease in the average wage and salary earnings per job in the County.

From a socioeconomic perspective, the Reduced Footprint Alternative is identical to the Proposed Action. The same number of persons will be employed, the work will occur at the same general location, the same payrolls and royalty payments will be generated, and the work will occur over the same time periods.

4.2.13.2 Impacts of the Reduced Footprint Alternative

Employment and Income

Impacts to employment and income from the Proposed Action were found to be beneficial, and those of the Reduced Footprint Alternative would be identical.

Government Revenues

Impacts to government revenues from the Proposed Action were found to be beneficial, and impacts from the Reduced Footprint Alternative would be identical.

4.2.13.3 Mitigation Measures

Mitigation Measures Incorporated by Regulation

The Applicant shall, as required by Title 23, CCR, Section 2574(f), prepare an initial estimate of the closure and post-closure maintenance and corrective action costs. A trust fund or equivalent financial surety that is acceptable to the RWQCB shall then be established and maintained.

The Applicant shall pay for all required environmental monitoring activities as provided by law.

No post-closure maintenance or other corrective actions are anticipated to be needed. The closure bond estimate has been prepared, and is incorporated into the Reclamation Plan portion of the POO. The bond will be established prior to disturbance of proposed expansion areas.

Mitigation Measures Incorporated by Design

No design mitigation measures are required.

4.2.13.4 Level of Significance After Mitigation

Implementation of the Reduced Footprint Alternative would result in no significant adverse socioeconomic impacts.

4.2.14 Public Services and Utilities

4.2.14.1 Assumptions and Assessment Guidelines

The following impact analysis considers the effects the Reduced Footprint Alternative would have on the existing Imperial County public services and the currently available utilities at the Mesquite Mine. Public service and utilities impacts would be considered significant if existing or proposed facilities would be insufficient to provide for the needs of the proposed project.

4.2.14.2 Impacts of the Reduced Footprint Alternative

Mesquite Mine is a permitted, open functioning mine. As discussed under the Proposed Action, the public services and utilities are already in place and impacts of that expansion were not considered significant. The same analysis applies to the Reduced Footprint Alternative, because while the amount of new surface disturbance would be reduced, the activities of excavating and processing the ore are the same as for the Proposed Action.

Public Services

Mining operations would involve the handling and use of heavy equipment and hazardous materials (e.g., motor oil and gasoline), and create the potential for occasional work-related injuries requiring medical attention. The Applicant currently has procedures that provide employees with a safe workplace. The Applicant provides a security force, and fire fighting systems that adequately meet the requirements of this alternative. As described in Section 4.1.13, Environmental Health and Public Safety, fires would be extinguished using on-site equipment and personnel. Imperial County fire fighting equipment personnel would not be affected.

Additional services would be available in Brawley, about 35 miles west of the site, and could be called upon in unusual emergencies (e.g., ambulance transport services). Consequently, the potential impacts related to availability of police, fire, and medical services would not be significant.

Community Facilities

Neither the Proposed Action nor the Reduced Footprint Alternative is expected to generate significant population growth, and therefore any significant demand for local community facilities, in the communities in which any Project employees and/or contractors, and their respective families, who may relocate for their job with the mine.

Mesquite Mine employees and their families use the schools, recreational facilities and libraries located within the vicinity of their residences. The mine expansion would potentially create only 20 to 30 new jobs at the site, so there would be no significant increase in the demand for schools, parks, recreational facilities, and libraries.

Utilities

Utilities would be the same for the Reduced Footprint Alternative as for the Proposed Action. As with the Proposed Action, no substantive increases in utility usage are projected, and no new utility infrastructure would be required. Impacts to utilities would not be significant.

As described in the Water Resources section of this EIR/EIS (Section 4.1.2), storm water diverted around the mine, and runoff directly from the facility, is directed to the three existing SR 78 wash crossings. Proposed drainage facilities would not increase the risk of downstream flooding or cause flood velocities or volumes that would cause the washout of downstream facilities or infrastructure. Therefore, impacts would not be significant.

4.2.14.4 Mitigation Measures

Incorporated by Regulation

- The Applicant shall supply all MSHA- and Cal MSHA-required training, supplies, and equipment.
- The Applicant shall provide precipitation drainage facilities as described in Sections 4.1.2 and 4.2.2 of this EIR/EIS.

Incorporated Into Project Design

- The Applicant shall provide on-site security, fire protection services, and medical services.
- The Applicant shall construct a six- to eight-foot-high industrial fence, except where existing fencing can be utilized. All proposed expansion areas would be fenced where necessary for security and to avoid unauthorized entry. All new fencing surrounding the proposed mine expansion site would be constructed according to BLM specifications for tortoise fencing. Existing fencing has been improved in places to exclude desert tortoises from entering the Mesquite Mine. The existing fences would be further improved if required to successfully conclude consultation under Section 7 of the Endangered Species Act.

4.2.14.5 Level of Significance After Mitigation

With the implementation of required mitigation measures, impacts of the Reduced Footprint Alternative would not be significant.

4.2.15 Conclusion

The Reduced Footprint Alternative is environmentally superior to the proposed project because it would avoid some Proposed Project significant impacts to biological resources, including the threatened desert tortoise, Department of Fish and Game jurisdictional streambed, and Army Corps of Engineers jurisdictional waters of the United States.

4.3 NO PROJECT ALTERNATIVE

4.3.1 Geology/Soils/Mineral Resources

The proposed mine expansion site was selected based on the distribution of gold ore as identified by exploratory investigations conducted by the Mine. Individual facility expansion areas were identified based on structural stability of the rock that forms the pit walls and by the ability to economically mine, haul and process the ore. Under the No Project Alternative, the Proposed Action would not be constructed. All mining would occur within already permitted areas as defined under existing approvals, and mine reclamation would occur in accordance with the existing reclamation plans. Consequently, the No Project Alternative would result in completion of mining no later than the middle of the year 2001. This would reduce conformance with the basic objectives of the Proposed Action; which is to profitably recover as much of the precious metals within the Mine site as possible, in conformance with the 1872 Mining Act.

The Proposed Action would not adversely affect valuable economic mineral resources, geothermal or other leaseable mineral resources, nor would it result in a significant seismicity impacts (See Section 4.1); therefore, the No Project Alternative would not avoid or reduce any Proposed Action impacts associated with these geology issue areas.

During rain events, the Proposed Action would potentially increase erosion on the manufactured slopes of the OISAs and where the proposed diversion channels would redistribute storm flows into existing down gradient washes. However, these potential impacts could be fully mitigated with standard engineering practices developed by the mine, and construction/operation in accordance with a Stormwater Pollution Prevention Plan as required under the State of California NPDES general permit for stormwater (See Section 4.1). Therefore, the No Project Alternative would not avoid any Proposed Action significant erosion impacts that cannot be fully mitigated with standard construction practices.

4.3.2 Water Resources

The No Project Alternative would avoid six additional years of groundwater use by the mine. For the No Project Alternative, the additional well water needed for dust control, ore processing and other needs associated with the Proposed Action would not be used. However, the rate and quantity of water extraction required for the Proposed Action would remain within the amounts already permitted for the Mesquite Mine, and has been analyzed in prior CEQA/NEPA documents for the Mesquite Mine (See Section 4.1.2). These previous documents found the permitted mining area to have impacts that are less than significant (Environmental Solutions, Inc., 1987); therefore, the No Project Alternative would not avoid or reduce any significant impacts to water resources from currently permitted activities.

However, because the No Project would not result in an expansion of an additional 142-189 acres beyond that which is already permitted, it would avoid impacts to an additional 22-25 acres of Army Corps of Engineers jurisdictional waters and up to 61-65 acres of Department of Fish and Game jurisdictional streambed.

As discussed in Section 3.2.3.5, the existing pits have lakes in the bottoms. Due to evapoconcentration, the long-term water quality of these existing lakes under the No Project Alternative would be similar to the long-term water quality that would occur for the pit lakes under the Proposed Action or the Reduced Footprint Alternative. The pit water quality would not have a significant impact on ground water or surface water due to factors described in previous sections. Therefore the No Project Alternative would not reduce or eliminate any significant impacts related to lakes in the in the mine pits.

The No Project Alternative would reduce the term of fuel and reagent use by the Mine by approximately six years. However, because of protective measures implemented by the Mine in conformance with governmental regulations, as described in previous sections, impacts of fuel and reagent use under the Proposed Action or the Reduced Footprint Alternative would be less than significant. Therefore the No Project Alternative would not reduce or eliminate any foreseeable significant impacts related to fuel or reagent use.

Under the No Project Alternative, there would be no need for further modifications to surface water drainage through the Mine site. However, as described in previous sections, engineering measures will result in drainage modifications for the Proposed Action or the Reduced Footprint Alternative with impacts that are less than significant. Therefore the No Project Alternative would not reduce or eliminate any significant impacts related to surface water drainage modifications.

4.3.3 Biological Resources

The No Project Alternative would avoid additional impacts to vegetation or wildlife at the proposed mine expansion area. It would avoid the direct loss of approximately 380 acres of creosote/desert pavement habitat, approximately 67 acres of microphyll woodland habitat, and approximately 45 acres of upland succulent habitat. Direct significant impacts to desert tortoise and fairy duster would also be avoided.

In addition, the No Project Alternative may avoid impacts to an additional 22 acres of Army Corps of Engineers jurisdictional waters and Department of Fish and Game jurisdictional streambed within the proposed expansion area. **However, under this alternative**, compensation for biology impacts from the Proposed Action (which consists of - Category II and III desert tortoise habitat) with higher quality habitat would not occur because impacts to desert tortoise habitat from the No Project Alternative have already been compensated. As such, BLM would not gain ownership of additional higher quality desert tortoise habitat.

4.3.4 Cultural Resources

The No Project Alternative would not disturb unpermitted land within the Proposed Action boundary. The Proposed Action would not have an adverse effect on any historic properties because, based on field work and testing, all of the sites identified sites within the Proposed Action area are ineligible for nomination to the National Register of Historic Places (See Section 4.1.4). Therefore, the No Project Alternative would not avoid or reduce any significant cultural resource impacts.

4.3.5 Paleontological Resources

If the No Project Alternative were implemented, unpermitted land within the Proposed Action boundary would not be disturbed. The Proposed Action would not have an adverse effect on paleontological resource because there are no fossil-bearing geologic formations underlying the Proposed Action site. Therefore, the No Project Alternative would not avoid any significant paleontological resource impacts.

4.3.6 Transportation

The No Project Alternative would avoid six additional years of mine-related trips on local roads. The planned mine expansion may require an additional 20 to 30 permanent employees. This increase would not be substantial and would not change existing traffic levels associated with the Mesquite Mine. Any temporary construction personnel would only be needed for a short-time period (e.g., days to weeks) and would not impact traffic conditions (See Section 4.1.6). Therefore, the No Project Alternative would not avoid any significant traffic impacts.

As described in Section 4.1.6, during the winter-spring season (from October to May) weekend traffic along the segment of SR78 near the existing mine reaches LOS F. Existing mine-related traffic already contributes to overcrowding on this highway during these months. Because the Proposed Action would not change existing traffic levels, cumulative impacts to SR78 during this period would be the same with or without the Proposed Action. Therefore, the No Project Alternative would not avoid any significant cumulative traffic impacts.

4.3.7 Noise

The No Project Alternative would avoid six years of mine-related noise. As described in Section 4.1.7, the Proposed Action would produce the same noise events on-site as are occurring now, which are related to removal and handling of ore and overburden (drilling, blasting, ore transport and crushing) and construction of haul roads and structures. Off-site noise would not be significant due to the distance between the Proposed Action activities and off-site receptors. Noise that would occur would be similar to that of the existing mine and similar to that normally experienced with earthmoving activities. Therefore, the No Project Alternative would not avoid any significant on-site or off-site noise impacts.

The No Project Alternative would avoid temporary noise impacts to traffic along SR 78 in connection with the drainage system construction along the eastern site boundary. However, because Proposed Action construction activities for the drainage system would generally be one or more miles from mine activities, would be temporary, and would only be associated with normal earth moving equipment, any related noise would likely be inaudible because of driving related noise. Therefore, the No Project Alternative would not substantially avoid any significant construction noise impact.

In addition, the Proposed Action would not substantially change noise levels from the mine interpretive trail compared to noise levels associated with the existing mining activities. Because noise levels from the interpretive trail would remain the same with or without the Proposed Action, the No Project Alternative would not avoid any significant noise impact to sensitive receptors.

4.3.8 Air Quality

The air quality analysis conclusions were based on the current production level because production is not anticipated to increase with the Proposed Action. The No Project Alternative is limited to a total annual production of 60 million tons of overburden/interburden and ore. Therefore, impacts of the No Project Alternative would be similar to those impacts of the Proposed Action as described in Chapter 4.1.8.5. Existing mine operations emit the same type of mobile, point and fugitive emission sources as described for the Proposed Action. The No Project Alternative would terminate existing mine operations no later than the middle of the year 2001 and have twenty to thirty less permanent employees, which would mean less adverse air quality impacts from mining operations than the Proposed Action. Although air quality impacts would be similar to the Proposed Action, the No Project Alternative would marginally contribute to the attainment of air quality standards by terminating operations in the year 2001 instead of 2006.

4.3.9 Land Use

Similar to the Proposed Action described in Section 4.1.9.2, the No Project Alternative would be compatible with the surrounding uses and consistent with adopted land use plans and policies. Current mining activities would continue as permitted until Mine closure in 2001. Actions pertaining to the Mine Expansion would not occur.

Both the Proposed Action and No Project Alternative are consistent with Land Use Objectives specified in Section 4.1.9.2, and consistent with the California Desert Conservation Area Plan. Therefore, the No Project Alternative would not avoid any significant land use impacts.

4.3.10 Recreational Resources

Similar to the Proposed Action described in Section 4.1.10, the existing mining operations do not significantly impact recreational resources within the project vicinity. Therefore, the No Project Alternative would not avoid any significant impacts to recreational resources.

4.3.11 Visual Resources

The No Project Alternative would result in overburden/interburden and heap leach piles as shown in Section 4.1.11. Visual impacts of the No Project Alternative would not be significant, as described in Environmental Solutions, 1987. As described in Section 4.1.11, the Proposed Action would not result in a significant impact. Therefore, the No Project Alternative would not avoid any significant visual quality impacts.

4.3.12 Environmental Health and Public Safety

The discussion for environmental health and public safety for the No Project Alternative is similar to the Proposed Action discussed in Section 4.1.12. The No Project Alternative would continue mining operations no longer than through the middle of the year 2001. Measures for mitigating potential health and safety impacts to Mine employees resulting from mining activities were established at the beginning of Mine operations in 1984. Procedures for handling and discharge of explosives are delineated by the Mine Safety and Health Administration (MSHA) and the Newmont Safety manual. Explosives are stored in a secured powder magazine constructed and maintained in accordance with Federal and local permit requirements. Impacts to the public and Mine employees resulting from generation of domestic and industrial wastes are not expected. Regulations and guidelines for proper disposal, handling and management of domestic and industrial wastes are set forth by County and State agencies. The Newmont Safety manual also provides internal procedures for generation of domestic and industrial wastes. These regulations and guidelines have been observed by the Mine since operations began in 1984.

Potential health and safety impacts to the public and Mine employees resulting from reclamation activities are not expected. Newmont has created a detailed, encompassing site Closure Plan for the Mine. The Closure Plan has been prepared to satisfy requirements of Section 2574, Article 7 of the CCR (Shepherd Miller, Inc., 1998). A complete Closure Plan can be found in the Consolidated Plan of Operations. Therefore, the No Project Alternative would not avoid any significant environmental health and public safety impacts.

4.3.13 Socioeconomics

As described in Section 4.1.13, the Proposed Action would result in the addition of approximately 20 to 30 full-time positions and the continuation of mining operations until the year 2006. This provision of employment and extension of mining operations would contribute to the local economy through personal income, sales tax, and other governmental revenues. Additionally, the Proposed Action would maximize the extraction of mineral resources that would contribute to the County's economic strength through royalties and tax revenues. The No Project Alternative would result in earlier closure of the existing Mesquite Mine, resulting in the loss of potential economic benefits including employment, income, and government revenues.

4.3.14 Public Services and Utilities

Mesquite Mine is a permitted, open functioning mine with adequate public services and facilities in place to serve the existing mine operations. As described in Section 4.1.14, the Proposed Action would result in no significant impacts to public services and utilities. Therefore, the No Project Alternative would not avoid any significant public services and utilities impacts.

4.3.15 Conclusion

The No Project Alternative is environmentally superior to the Proposed Action because it would avoid significant impacts to biological resources, including the threatened desert tortoise, fairy duster, Department of Fish and Game jurisdictional streambed, and any Army Corps of Engineers jurisdictional Waters of the United States. However, the No Project Alternative would conflict with the basic objectives of the Proposed Action; which is to profitably recover as much of the precious metals within the project mine area as possible, in conformance with the 1872 Mining Act. Not only would the No Project Alternative reduce conformance with the 1872 Mining Act, but it would result in premature termination of mining activities when recoverable, economically viable ore deposits have been identified adjacent to the existing mine boundaries. This would result in associated loss of mine-related employment and revenue to the County of Imperial, State of California, and BLM (e.g., leases, permits, royalties, sales taxes, etc.) that would otherwise occur with the Proposed Action.

4.4 CUMULATIVE EFFECTS

4.4.1 Scope of Cumulative Impacts

Pursuant to CEQA and NEPA, this chapter addresses the potential for cumulatively significant effects on environmental resources that could result from the implementation of the Proposed Action and other past, present and reasonably foreseeable future projects in the general vicinity of the project site.

The State of California CEQA guidelines define cumulative impacts as:

“two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts. The individual effects may be changes resulting from a single project or a number of separate projects. The cumulative impact from several projects is the change in the environment which results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time.” (14 CCR 15355)

A cumulative impact is defined under federal regulations as:

“the impact on the environment which results from the incremental impact of the action when added to other past, present and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individual minor but collectively significant actions taken place over a period of time.” (40 CFR 1508.7)

The following elements of the human environment could be potentially subject to cumulatively significant impacts, based upon the analysis of the environmental resources discussed in Chapter 4 of this EIR/EIS and identification of the cumulative projects described in Section 4.4.2,

- Water Resources
- Biological Resources (primarily associated with desert tortoise habitat),
- Transportation
- Air Quality, and
- Visual Quality

These potential cumulatively significant effects are each analyzed in Section 4.4.3. Although project-specific impacts may occur from each of these projects to other environmental resources (geology/soils/minerals, noise, cultural, paleontology, land use, recreation, and public services and

utilities), impacts would not be cumulatively significant and therefore are not further discussed in this chapter. Some project-specific impacts were not considered to be significant on an individual basis, but may contribute to a cumulatively significant effect. These topics are further discussed in Section 4.4.3.

As noted in Section 1.6.2.2, the California State Land Commission (CSLC) is concurrently processing a lease application for mineral extraction on the 657.85 acres of land under CSLC jurisdiction located north of existing Big Chief Pit. This area is frequently referred to as the “two north half-sections.” According to CSLC representatives, mining or ancillary disturbance would only be allowed on the 97 acres that are part of the Proposed Action and the Reduced Footprint Alternative. Impacts to resources on those 97 acres are discussed in this EIR/EIS.

Section 4.4.4 of this EIR/EIS briefly describes the environmental resources on the 561 acres of the two north half-sections that are the subject of the CSLC mineral extraction lease but are not proposed for mining or exploration activities at this time. Approval of the mineral extraction lease by CLSC would not allow disturbance of any resources on the remaining 561 acres of the two north half-sections with future permits being issued by Imperial County. Issuance of these permits would be a discretionary action subject to the environmental review requirements of CEQA. In the event that federal actions are required, such as impacts to jurisdictional Waters of the United States, or the federally-listed desert tortoise, federal permits would also be required. Issuance of federal permits would be federal actions subject to the environmental review requirements of NEPA.

4.4.2 Description of Cumulative Projects

The individual projects described below comprise of the past, present, and reasonably foreseeable future projects with a potential to contribute to cumulatively significant environmental effects. Where appropriate, the cumulative projects have been grouped into land use categories such as mining, transportation and water conservation. Locations of the cumulative projects are shown in Figure 4.4-1. Cumulative projects addressed in this EIR/EIS include the following:

- Mesquite Regional Landfill (approved but unbuilt)
- Imperial Project Mine
- Existing American Girl Mining Complex and Oro Cruz Project
- Picacho Mine (to be closed and reclaimed)
- State Route 7 (Caltrans)
- State Route 111 and 111 North (Caltrans)
- All American Canal Lining Project
- Military Uses (ongoing)
- Recreational Uses (ongoing)

Environmental documents for the cumulative projects that were used in preparing this cumulative analysis are available for review at the Imperial County Planning/Building Department, 939 Main Street, El Centro, CA 92243, or the El Centro Area Office of BLM, 1661 South 4th Street, El

Centro, California, 92243. The Imperial Project Draft EIR/EIS, November 1997 (EMA, Inc.) was used as a source for information about many of the cumulative projects.

4.4.2.1 Mesquite Regional Landfill

The Mesquite Regional Landfill is an approved but unbuilt regional Class III sanitary landfill to be located adjacent to and on some property of the existing Mesquite Mine (Figure 4.4-2). The landfill would accommodate up to a total of 600 million tons of municipal solid waste residue and would have a life span of approximately 100 years. The municipal solid waste residue would be transported to the landfill from various Southern California communities via the existing Southern Pacific Transportation Company main line rail track and a short new railroad spur extending from the main line rail track to the landfill site. The landfill would be constructed on land recently exchanged with the BLM for other land in the Santa Rosa Mountains Natural Scenic Area and near the Chuckwalla Bench ACEC. The landfill property covers approximately 4,245 acres, although the actual landfill footprint is expected to occupy approximately 2,290 acres. Approximately 588 acres of the landfill site have been extensively disturbed by previous on-site activities. Approximately 3,657 acres of undisturbed vegetation would be affected by the landfill project.

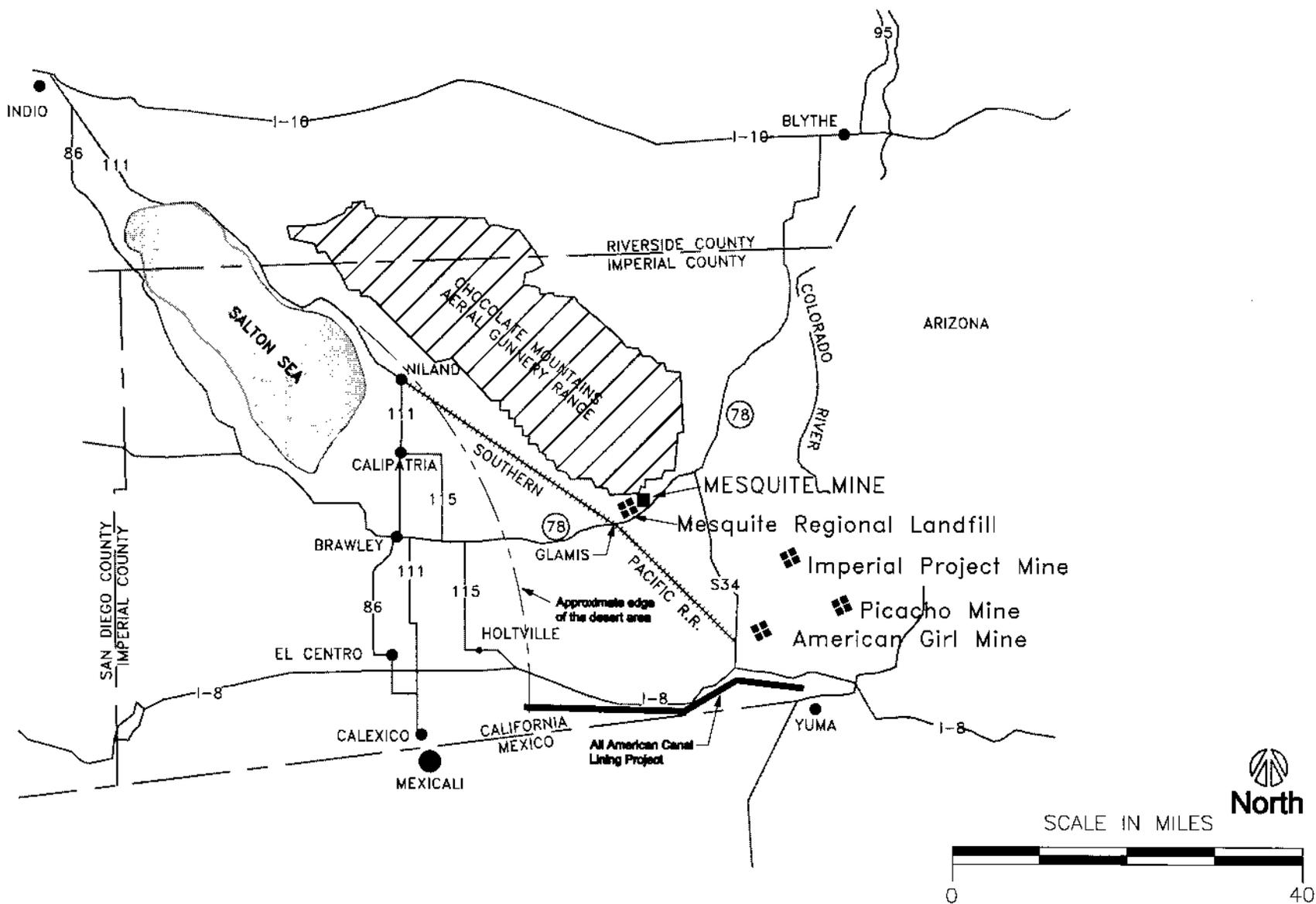
The approved but unbuilt landfill anticipates the use of water supplied from the existing Mesquite Mine ground water well field, located approximately three miles south of Mesquite Mine. This is the same well field that serves the Mesquite Mine. The three wells each have estimated maximum yields of 2,500 gallons per minute (gpm). The average annual water usage associated with the landfill operations is expected to be less than 1,000 acre-feet per year.

4.4.2.3 Mining Activities

Imperial Project

The proposed Imperial Project includes an open pit, heap leach, precious metal mine and the “overbuilding” of an existing utility electrical transmission line to deliver the necessary electrical power to the Imperial Project. The Imperial Project would be constructed on unpatented mining claims located on public lands administered by the U.S. Bureau of Land Management (BLM), El Centro Resource Area Office, of the California Desert District. The proposed site is approximately 12 miles southeast of the existing Mesquite Mine. The 1,571-acre Project mine and process area, to be operated by Glamis Imperial Corporation, would be completely fenced. It would contain three open pits, two waste rock stockpiles, two soil stockpiles, five drainage diversion channels, an administration office and maintenance shop facility area, a heap leach facility (consisting of a heap leach pad and process ponds), a precious metal recovery plant, an electric substation and emergency generator, and internal haul and maintenance roads and electrical distribution lines. These facilities would result in approximately 1,302 acres of surface disturbance. Up to four ground water production wells would be drilled and completed to provide average water requirements of approximately 1,200 acre feet per year (afy). These wells would be located within the Amos-Ogilby Basin. The produced ground water would be pumped to the Project mine and process area via a buried pipeline.

4.4-4



SOURCE: Newmont Mining Corporation, 2000

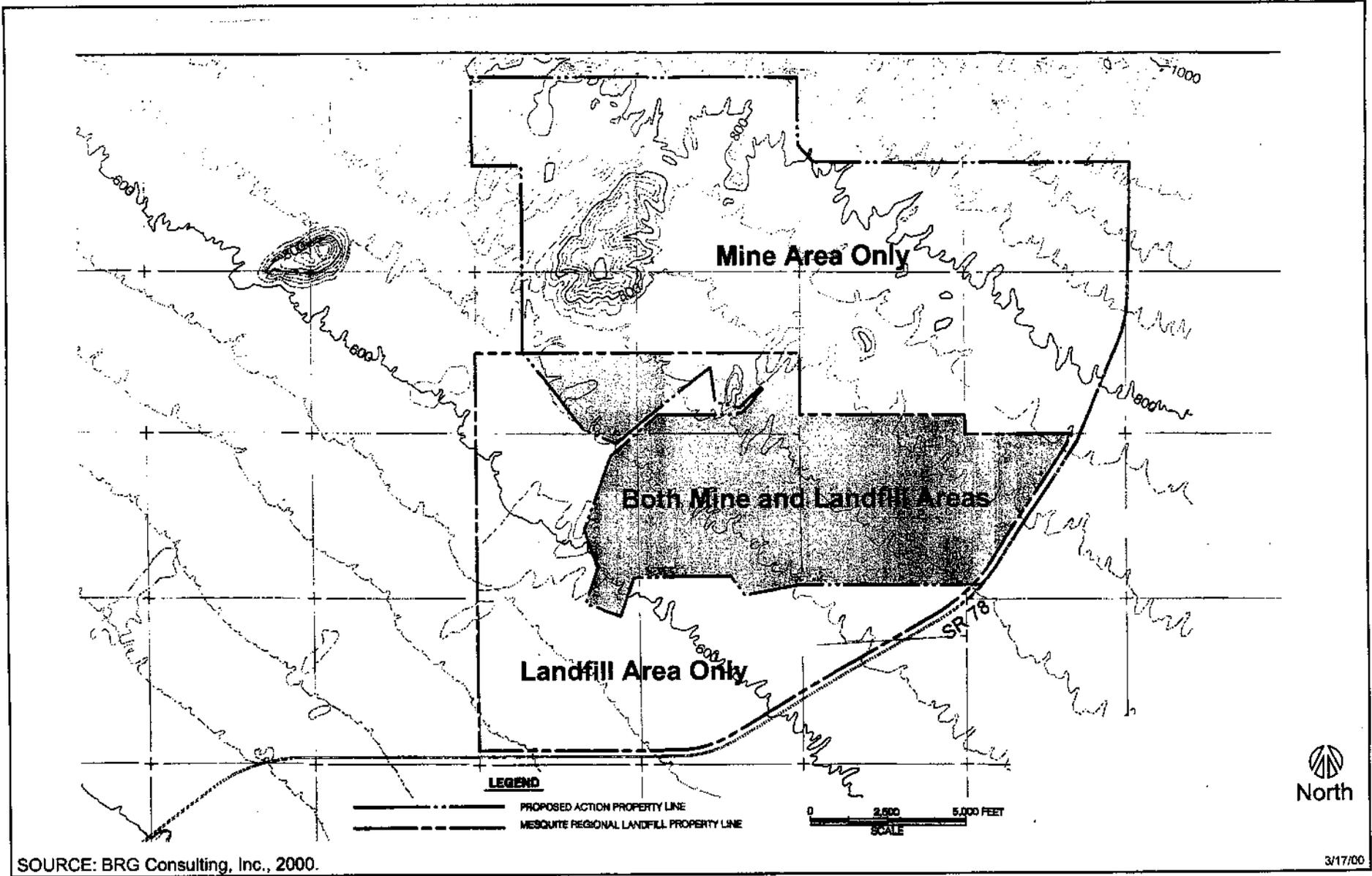
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Mesquite Mine Expansion EIR/EIS

Locations of Cumulative Projects

FIGURE

4.4-1



Mesquite Mine Expansion EIR/EIS

Property Boundaries of Proposed Action and Mesquite Regional Landfill

FIGURE

4.4-2

American Girl Mining Complex - Oro Cruz Project

The American Girl Mining Complex (AGMC) consists of two active mines (American Girl and Padre Madre) and the Oro Cruz Mine, which is now closed. All of these mines are located in the Cargo Muchacho Mountains, about 20 miles southeast of the Mesquite Mine. A Plan of Operations was submitted to the El Centro Office of the BLM, describing the Oro Cruz Gold Mine (BLM, 1993). The location of the AGMC is depicted on Figure 4.4-1. The AGMC obtains its water supply from the perimeter of the Amos-Ogilby Basin.

Picacho Mine

Chemgold, Inc. operates the Picacho Mine, which is located in easternmost Imperial County, California, approximately eighteen (18) miles north of Yuma, Arizona (Figure 4.4-1). The Picacho Mine property consists of 600 acres of fee lands and 1,650 acres of unpatented lode mining claims. The total disturbed area at the Picacho Mine amounts to approximately 330 acres.

Since 1980, open-pit, run-of-mine, heap leach gold mining and processing has occurred at the Picacho Mine. Four (4) open pit deposits have been developed, with current total annual mining averaging approximately 1.5 million tons of ore and 7.0 million tons of waste. Development of an additional 3.6 million tons of ore reserves is now nearly completed, which is projected to be the final phase of mining at Picacho Mine. The completed pits and heaps are currently undergoing reclamation. Mining has been terminated, although rinsing and reclamation activities are ongoing.

Water is supplied by pipeline to the mine from a shallow well located adjacent to the Colorado River aquifer. No local ground water is used at the Picacho Mine due to the lack of a sufficient aquifer in this location.

4.4.2.3 Transportation Projects

Three transportation-related projects are proposed, which could potentially result in significant cumulative impacts and for which sufficient environmental impact data is available to allow cumulative impacts to be addressed.

State Route 7

The California Department of Transportation (Caltrans) estimated \$53.8 million State Route 7 project, would be a four-lane highway, connecting the new United States/Mexico international port of entry, located in the heart of the Gateway of Americas SPA, to Interstate 8. Environmental review has been completed, and Caltrans is currently acquiring the needed land. The construction time frame is scheduled for 2002 to 2003.

State Route 111 and 111 North

The estimated \$98 million State Route 111 four-lane highway project, located east of the existing two-lane highway, would run approximately 15 miles from Interstate 8, north to Highway 78. The existing two-lane State Route 111 would become a frontage road. Environmental review has been

completed and Caltrans is currently acquiring the needed land. The construction time frame is scheduled for 2000 to 2003.

In addition, the State Route 111 expansion is expected to continue north of Highway 78. This estimated \$75 million four-lane expansion commonly known as the Brawley-Bypass would bypass the City of Brawley and connect back to the existing State Route 111, to the north of Brawley and Highway 78, to the northwest of Brawley. This stage of the project is currently midway through the environmental review. Once completed, there would be a major four-lane transportation corridor between Interstate 8 and Interstate 10, which would improve the existing transportation network between Imperial County and Los Angeles, Riverside and Phoenix.

4.4.2.4 Water Conservation Projects

All American Canal Lining Project

The U.S. Bureau of Reclamation (USBR) and the Imperial Irrigation District (IID) have proposed to line the All American Canal to conserve water that is being lost through seepage. It is estimated that approximately 67,700 acre-feet per year of water would be conserved by the preferred Parallel Canal Alternative. The USBR and IID jointly released a Final EIR/EIS for the All American Canal Lining Project in March 1994. In all, 23 miles of lined canal would be constructed, reducing water loss. This project has been approved, but construction is pending the approval of funding.

4.4.2.5 Recreational Uses

Dispersed recreational activities, including OHV uses, hunting, rock hounding, and camping, are conducted in the El Centro Resource Area. These activities have the continuing potential to contribute to cumulatively significant environmental impacts.

4.4.2.6 Military Uses

Chocolate Mountain Aerial Gunnery Range

The USMC maintains the Chocolate Mountain Aerial Gunnery Range (CMAGR) which abuts the Project area. The closest training that occurs is located approximately ten (10) miles northwest of the project area. The CMAGR is actively used by various branches of the U.S. Armed Forces for military aircraft training and testing and for live ordnance delivery practice.

Other Military Uses

The USMC conducts both daytime and nighttime helicopter flight training on public lands in and around the Project area and vicinity. These training exercises are conducted at low-levels, sometimes including touch downs. The nighttime training includes the use of night vision goggles (NVG) and other night vision devices (NVD).

Two (2) military Visual Flight Rule (VFR), low-level flying routes for fixed wing aircraft are also located in the vicinity of the Project. VFR-299 (445th Military Airlift Wing-March Air Force Base) and VFR-1266, -1267, and -1268 (Marine Air Group-13-MCAS Yuma) each consist of six (6) ±-mile wide flight corridors, which are used by fixed-wing military aircraft during training or travel.

4.4.3 Cumulative Impacts

4.4.3.1 Water Resources

The Proposed Action, the Mesquite Regional Landfill, the Imperial Project, and the lining of the All American Canal have the potential to contribute to cumulatively significant water resources impacts, based on their potential effects on water supply in the Amos-Ogilby Basin. The annual consumption of ground water by all of the cumulative project wells together is a relatively small percentage (less than twenty percent) of the gross estimated recharge to the Amos-Ogilby-East Mesa Basin. The All American Canal Lining Project, if constructed, would probably result in an estimated reduction in recharge to the basin of 6,770 afy (two-thirds) of the 10,000 afy assumed to seep into the Amos-Ogilby-East Mesa Basin). However, even with this reduction, the net recharge to the Amos-Ogilby-East Mesa Basin would still exceed the cumulative ground water consumption from the identified projects and uses. The All American Canal Lining Project is currently on hold and has no schedule for implementation. The maximum total estimated cumulative annual consumption of ground water by the cumulative projects within the Amos-Ogilby-East Mesa Basin represents approximately 0.003 percent of the estimated ground water stored in the Amos-Ogilby-East Mesa Basin (or approximately 0.005 percent of the estimated ground water stored in the Amos-Ogilby Basin alone). Based upon ground water drawdown estimates observed for the Mesquite Mine well field wells alone (see Section 4.1.2), and because these cumulative projects are widely scattered and the ground water consumption distributed, there should be no significant interference between the projects from their individual uses of the ground water resources. Cumulative effects would not be significant, and no mitigation measures are recommended. This discussion includes cumulative impacts to water usage, infiltration and runoff, and water quality.

The combined water use from the Mesquite Mine and landfill projects would not exceed the currently permitted maximum withdrawal rate from the well field. In addition, the Amos-Ogilby Basin would continue to experience a net recharge, even with reduced recharge due to the All American Canal Lining Project. Cumulative impacts to water resource usage would not be significant.

The mine and landfill projects, when combined together, would not negatively alter infiltration or runoff patterns because they do not substantially increase the amount of impermeable surfaces in the area. Impacts to flows of surface water would not be significant.

Cumulative impacts to water quality would also be minimal. After approximately 15 years of the mining operations and the use of cyanide at Mesquite Mine, there has been no spill or accidental leak from the project. No change in mine operations that would adversely affect water quality is planned

or anticipated. Thus the Proposed Action would have no effect on cumulative water quality. Cumulative impacts to water quality therefore are not significant.

4.4.3.2 Biological Resources

Plant and wildlife habitat would be incur cumulative effects from the identified projects. Surface disturbance within the respective project areas would result in a direct loss of habitat. In addition, the quality of habitat in neighboring areas would be indirectly impacted by project noise, surface disturbance, dust, and other off-site intrusions. Direct habitat loss impacts can be quantified, but indirect biological impacts are much more difficult to assess as they vary with site-specific conditions and the sensitivity of the species that occur in the respective habitat types impacted. A distinction can also be made between the cumulative temporary losses of habitat that is removed over the active life of project activities but that can be reclaimed after project activities have been completed, and permanent losses of habitat that remain indefinitely at the end of project activities and after the respective project sites are closed and reclaimed. Direct and indirect, temporary and permanent, and cumulative impacts result from the existing and reasonably foreseeable projects identified.

The cumulative surface disturbance from all of the identified mine projects would total approximately 7,859 acres. The approximate areas of surface disturbance from the Regional Landfill is 3,657 acres. The combined concentrated areas of surface disturbance total approximately 11,516 acres of desert vegetation and wildlife habitat that is or would be unavailable over the respective lives of these projects. However, these individual projects in the cumulative impact analysis are dispersed over a regional area at least 35 miles long by 25 miles wide (approximately 900 square miles, or nearly 600,000 acres) in which large vacant tracts of land, with similar vegetation and wildlife habitat remain.

Dispersed recreation and military uses of the area put added pressure on wildlife species, in particular on game species and on wildlife intolerant of human activities. Dispersed recreation and military uses of the area also adversely impact vegetation and habitat over wide, unconcentrated areas. However, most of these dispersed activities are intermittent and/or temporary.

Microphyll Woodland Habitat

Concern exists over the continuing loss of wildlife habitat, in particular the loss of microphyll woodland habitat which exists in the desert washes that cross much of the desert area. Because of the limited forage and cover available in the alluvial flats and uplands between the wash systems, the microphyll woodland habitat is necessary for the success of many species that occur in the area. Microphyll woodland habitat is considered important by the CDFG and a necessary component of the ecosystem for the continuing success of deer and other sensitive species that utilize the habitat.

Cumulative impacts to other on-site habitat areas and sensitive species would occur, but would not be significant because the potentially-affected habitats (desert microphyll woodland and creosote brush scrub) and the associated foraging areas provided by these habitat areas are relatively small when compared to the total quantity of such habitat and foraging area in the cumulative area.

Aerial photographs of the general area were used to grossly estimate the amount of microphyll woodland habitat within the local desert area. It was found that approximately four to eight percent of the 600,000 acres (i.e., about 23,000 to 46,000 acres) evaluated in this cumulative impact analysis may be microphyll woodland habitat. Assuming that, on average, a comparable proportion (i.e., four to eight percent) of the microphyll woodland habitat is directly impacted by surface disturbance within the areas of the combined cumulative projects, then a total of approximately 460 to 520 acres of microphyll woodland has been or would be lost to the cumulative projects. Because each individual cumulative project would be required to implement appropriate mitigation and compensation measures (such as those contained within a CDFG Stream Alteration Agreement), this cumulative impact on microphyll woodland habitat is considered below a level of significance.

The cumulative indirect impacts resulting from the identified cumulative projects are expected to be proportionately the same as those described for the Project, and would also be expected to be similar regarding the temporary loss of habitat occurring over the life of the cumulative projects and the permanent loss of habitat after each of the cumulative projects had been closed and the area reclaimed.

Existing higher-quality desert habitat would be preserved off-site, through compensation for the loss of desert tortoise habitat. This would benefit not only desert tortoise, but other native wildlife/plant species as well. Furthermore, the listed projects are far enough apart that the cumulative impacts would not occur to one localized population.

Wildlife

Threatened and Endangered Species

Desert Tortoise

The Proposed Action, the Mesquite Landfill and the American Girl Mine are all located in a BLM Category III desert tortoise habitat area. The Proposed Action also affects Category II habitat. Category III areas are not considered essential to maintenance of viable populations (i.e., critical habitat), have relatively low tortoise densities, and have unresolvable conflicts between habitat and land uses (U.S. DOI, 1988). The total acreage of Category III habitat potentially disturbed by the projects cannot be determined at this time because the area of impact from the AGMC are unknown. Approximately 355-421 acres of potential desert tortoise habitat (BLM Category II and III) would be disturbed as a result of the unpermitted proposed mine expansion. This project-related loss would potentially contribute to a significant cumulative impact when considered with the Mesquite Landfill and AGMC projects. Because the desert tortoise is a federally threatened, as well as state-listed species, any potential take would require consultation with USFWS under Section 7 of the Federal Endangered Species Act, and contact with CDFG under CESA. The established mitigation measure for impacts to desert tortoise habitat is compensation through the acquisition and transfer to federal ownership of higher quality habitat. The mitigation measures implemented would include at a minimum various combinations of the following types of activities:

- Initial site clearance and relocation of desert tortoise by a trained person;
- Fencing to preclude reentry;
- Construction and operations worker and visitor training;
- Provisions to minimize the attraction of tortoise predators (e.g., ravens);
- Off-site compensation by transferring ownership of privately-owned Critical or Category I habitat land to federal ownership and protection based on a ratio formula designated by the BLM in consultation with the USFWS; and/or
- Speed controls for unfenced access roads.

These measures are all being required for the proposed Mine expansion. Mitigation through the Section 7 process would ensure that project-related cumulative impacts to desert tortoise habitat would be reduced to below a level of significance.

Other Special Interest Species

Mammals

MULE DEER

Although the Proposed Action would decrease available acreage of forage for mule deer (and other animals) in the region, the amount lost (52 acres) is considered *de minimus* in relation to the estimated acreage of microphyll woodland habitat in the region, from 23,000 to 46,000 acres. Thus, cumulative impacts to mule deer habitat are considered less than significant.

BIGHORN SHEEP

The discussion above on mule deer is applicable to bighorn sheep as well. Cumulative impacts to bighorn sheep habitat are considered less than significant.

Bats

The area is suitable for foraging by numerous bat species. Roosts of sensitive bats were located nearby. High-quality microphyll woodland occurs between these roosts and Mesquite Mine, and the bats would be expected to use habitat closer to their roost sites much more often. Cumulative impacts to bats are considered less than significant.

Birds

PRAIRIE FALCON

Project area habitats are considered potential foraging areas for prairie falcon. Only a small fraction of open desert habitats will be disturbed by the cumulative projects. This level of disturbance is *de minimus*, and is not considered to be cumulatively significant.

BURROWING OWL

Suitable habitat for the burrowing owl (*Athene cunicularia*) is present within the proposed expansion areas. Based on the fact that the habitat found within the proposed expansion areas does not exhibit any unique characteristics and is a small percentage of the available habitat surrounding the Mesquite Mine, this level of disturbance is de minimus and is not considered to be cumulatively significant.

Amphibians – Couch’s Spadefoot Toad

No direct or indirect impacts to nearby populations of Couch’s spadefoot toad are expected as a result of the Proposed Action. Therefore, the Proposed Action will not contribute to cumulative impacts to this species.

Reptiles – Western Chuckwalla

Less than 3 acres of potential habitat for the western chuckwalla exists within the Mine expansion area. No significant direct impact was identified. Existing higher-quality desert habitat would be preserved off-site through compensation for loss of desert tortoise habitat. It is expected that the compensation lands for the Proposed Action and cumulative projects will contain chuckwalla habitat. Impacts to the western chuckwalla would be less than significant, on both direct and cumulative bases.

Plants

The proposed mine expansion would result in loss of up to 50 plants of one known sensitive plant species (fairy duster) from CNPS List #2, and loss of potential habitat for three other species from CNPS List #4 (slender lobed 4 o’clock flower, winged cryptantha, and ribbed cryptantha). The potentially-significant direct impacts would be reduced to less than significant, through application of the following mitigation measures:

- installation of microcatchment areas to aid in seed germination;
- scarification of applicable disturbed areas to facilitate natural plant propagation;
- collection and use of seeds from plants on and adjacent to Mesquite Mine property;
- salvage and transplantation of mature fairy duster plants into reclaimed areas;
- use of cuttings from local fairy duster plants to increase plant numbers; and
- preservation of compensation lands containing fairy duster plans.

The other cumulative projects are required to implement similar mitigation measures. Cumulative impacts are considered less than significant, with implementation of the mitigation measures required for the Proposed Action and cumulative projects.

For these reasons, the Proposed Action would not result in a significant cumulative impact to biological resources.

4.4.3.3 Transportation

The analysis of cumulative highway impacts was limited to SR 78 west of the Imperial Sand Dunes Recreation Area (ISDRA). Very little project-related traffic would travel east on SR 78. Therefore, cumulatively significant impacts would not occur east of the project area. Project-related traffic west of Glamis would travel to various communities in western Imperial County, Riverside County, and beyond. Project traffic west of Glamis is expected to disperse quickly (i.e., turn off onto other roads heading for varying destinations). The Proposed Action would generate a negligible amount of additional traffic over what is currently existing, because the Proposed Action would extend current levels of Mine traffic for an additional six years. Additionally, traffic generated from the other cumulative projects would not be concentrated on any given road. Therefore, cumulative transportation impacts would not be significant.

4.4.3.4 Air Quality

Direct air quality impacts of the Proposed Action were found to be less than significant, and the projected emissions would meet all applicable federal, state, and ICAPCD rules and criteria.

Potential cumulative air quality effects depend on the spatial distribution of the projects listed in Section 4.4.2, and the periods of time over which these projects would be constructed and operated. The only project that is close enough to the Proposed Action to possibly cause significant cumulative effects is the proposed Mesquite Regional Landfill (Landfill), which is described briefly in Section 4.4.2.1 and in detail in its Final EIR/EIS (BRG, 1995).

The sites of the Landfill and Proposed Action physically overlap, as shown in Figure 4.4-2. However, the time periods for construction and operation of these two projects would probably not overlap. The Proposed Action is planned to continue operation of the Mine through the year 2006. In contrast, construction of the Landfill will not begin until contracts are obtained by Arid Operations, Inc. for disposal of municipal solid waste (MSW). It is anticipated that landfill operations would increase over several years, taking years to reach full operational level.

The most likely source of MSW for potential disposal at the Landfill is the County Sanitation Districts of Los Angeles County (Sanitation Districts). Three factors account for the expectation that operations at the two projects will not overlap to cause simultaneous air emissions. The first factor is that the Sanitation Districts forecast that they do not expect to send MSW to the Landfill before the period 2007-2013 because they have their own landfills with sufficient capacity for several years. The second factor is that other landfills in Orange and Riverside Counties are expected to offer lower cost disposal for many years. During this period of alternative low cost disposal, the Sanitation Districts are unlikely to ship MSW to the Landfill. The third factor is that the rate at which the Sanitation Districts might contract to ship MSW to the Landfill would increase much slower than the increase shown in the Final EIR/EIS. Instead of 4,000 tons per day (tpd) in the first year increasing to 8,000 tpd in the second, and 12,000 tpd in the third, it is expected that the first few years would be a constant disposal rate of 3,400 tpd.

Because of these factors, it is unlikely that air emissions from operating the Landfill will occur before air emissions from the Proposed Action have ceased. Hence, cumulative effects on air quality are not expected to occur.

4.4.3.5 Visual Resources

Each of the identified cumulative projects are located, at least in part, on or adjacent to public lands administered by the BLM within the CDCA. However, except for the immediately adjacent Mesquite Regional Landfill, no more than one of the cumulative projects is visible from any important viewing location at any one time. Direct visual quality impacts from the Proposed Action have been determined to not be significant (See Section 4.1.11).

When considered with the Mesquite Landfill development, impacts to visual quality would increase. The proposed landfill would encroach on to the existing heap leach pads in Area 16 as shown in Figure 2.1-1 in Chapter 2. The heap leach pads in that area would be used as soil cover for the landfill. The heap leach pads would thus become smaller, but would be superseded by adjacent mounds of Municipal Solid Waste, covered with material from the heap leach pads. There would be no change to the Mine OISAs. The proposed landfill would be directly adjacent to the southeastern edge of the Mesquite Mine project boundary, which lies within a few feet of SR-78. The proposed landfill would extend to heights of approximately 375 to 475 feet. The resultant form would be that of a large, contoured hill somewhat similar in texture but lighter in color than natural topographic features in the project vicinity. The landfill would cover an area of approximately three miles by one and one-half miles and would be a long-term, permanent change to the local visual environment. In addition, the landfill would not be consistent with BLM's Visual Resource Management System Guidelines because it would demand attention, would not be overlooked, and would be dominant in the landscape. Visual changes associated with the Proposed Action would add to these impacts. Cumulative impacts to visual resources are considered significant and unmitigable.

4.4.4 Environmental Resources Located on 561 Acres of the Two North Half-Sections

4.4.4.1 Introduction

This section briefly describes the environmental resources located on 561 acres of the two north half-sections that are not proposed for development as part of the Proposed Action. It is not possible to identify future environmental impacts to these resources because there is no proposal to disturb these lands at this time.

4.4.4.2 Environmental Resources

Geology/Soils/Seismic Issues – as with the Proposed Action, additional mine development in the two northern half-sections could potentially result in additional erosion or seismic impacts; however, like the proposed Mine expansion, it is anticipated that all such issues could be mitigated.

Water Resources – development of additional north half-section lands would not require that additional water resources be developed – the existing Mine well field would be adequate. No additional impacts to offsite groundwater quality or quantity are likely – there are no nearby beneficial uses or wells. Stream alignments meeting the ACOE definitions of “Waters of the U.S.” were mapped in this area, and additional Mine development would likely result in impacts to ACOE and CDFG jurisdictional lands.

Biological Resources – most of the remaining area not incurring impacts from the proposed Mine expansion consists of creosote/desert pavement and upland succulent plant communities; however, there are some microphyll woodland areas in Section 6, and in the northeast part of Sec. 5, north of the proposed northern diversion channel. Two desert tortoise burrows or pallets were identified in a portion of Section 6 that was surveyed, but more than 250 acres were not surveyed for endangered species as part of the proposed Mine expansion. Given that situation, discussion of specific biological impacts of later Mine expansion would be speculative. However, as effective mitigation was identified for the Mine expansion proposed in this EIR/EIS, it is anticipated that biological impacts to additional expansion in the north half-sections could be mitigated as well.

Cultural Resources – based on 1987 studies, 8 sites in this area were recommended as eligible for inclusion in the National Register of Historic Places, and 3 other sites would require additional testing. Whether the National-Register eligible sites could be avoided, and if not, whether appropriate mitigation would be available, is considered highly speculative at this time, given that there is no plan for Mine development.

Paleontological Resources – no fossils were identified in the proposed Mine expansion areas, and none are anticipated in the balance of the two north half-sections. These areas contain the same geologic materials as the site of the Proposed Action: recent alluviums, conglomerates, granites and gneisses, none of them likely to contain fossils.

Transportation – impacts from any substantial additions to the current workforce would be considered highly speculative at this time, given that there is no plan or schedule for any such Mine expansion.

Noise – no additional noise impacts anticipated. Any possible future Mine expansion would have noise characteristics similar to the Proposed Action, and this area is far from sensitive receptors.

Air Quality – no changes to Mine operations and air quality mitigation measures are anticipated. However, as for the Proposed Action, cumulative PM₁₀ (fugitive dust) impacts are considered likely.

Land Use – no additional land use impacts are anticipated. There are no nearby sensitive uses.

Visual – predicting the appearance of any rock mounds would be highly speculative; however, it can be stated that this area is located far from possible sensitive view points. As with the Proposed Action, cumulative visual impacts are possible.

Environmental Health and Safety – no changes in safety procedures would be likely. Current Mine operations comply with applicable laws and regulations. No impacts are anticipated.

Socioeconomics – development of any ore deposits outside the proposed Mine expansion would have social and economic benefits to personal income, taxes, and governmental revenues.

Public Services and Utilities – As with the Proposed Action, no new public investments would be required to provide such services. Therefore, no impacts are anticipated