



**United States Department of the Interior
Bureau of Land Management
Elko Field Office
Battle Mountain Field Office**

September 2004



Horse Canyon/Cortez Unified Exploration Project II

**Environmental Assessment
NV063-EA04-61**

Case File # NVN-066621

MISSION STATEMENT

The Bureau of Land Management is responsible for the stewardship of our public lands. It is committed to manage, protect, and improve these lands in a manner to serve the needs of the American people for all times. Management is based upon the principles of multiple use and sustained yield of our nation's resources within a framework of environmental responsibility and scientific technology. These resources include recreation, rangelands, timber, minerals, watershed, fish and wildlife, air and scenic, scientific and cultural values.

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APPENDIX A Cultural Resource Inventories in the Horse Canyon/Cortez Unified
Exploration Project Area

1.0 Introduction

1.1 INTRODUCTION

Cortez Gold Mines (CGM) currently conducts exploration projects as described in the Horse Canyon Exploration Plan of Operations (PoO) (NVN 066621) approved on December 10, 1999, and amended as the Horse Canyon/Cortez Unified Exploration Project (HC/CUEP) approved in August 2001. The incorporation of the CGM Expansion Project (PoO NVN 067261) with the Horse Canyon Exploration Project (PoO NVN 066621) into the HC/CUEP expanded the area in which up to 50 acres of exploration activities could be conducted. The amended PoO authorizes CGM to disturb 50 acres of land within the 30,548-acre HC/CUEP Area. On July 1, 2003, CGM submitted a subsequent modification to the PoO (Project) to increase the acreage of incremental disturbance by 200 acres to a total of 250 acres within the same HC/CUEP PoO boundary. Through a phased drilling program, only 50 acres of disturbance would be incrementally requested and bonded. The Bureau of Land Management (BLM) has determined this proposed action requires an environmental assessment to analyze the proposed increase in acreage.

The HC/CUEP is located approximately 35 air miles southeast of the community of Battle Mountain, Nevada as shown on **Figure 1-1**. The HC/CUEP is located in both Lander and Eureka counties (**Figure 1-2**), Nevada on private lands and public lands administered by the BLM Battle Mountain Field Office (BMFO) and Elko Field Office (ELFO). The BLM has designated BMFO as the lead office for CGM activities.

The HC/CUEP is located within portions of:

Township (T) 26 North (N), Range (R) 48 East (E), Sections 4-9, 16-22, 27-29, and 32-35;

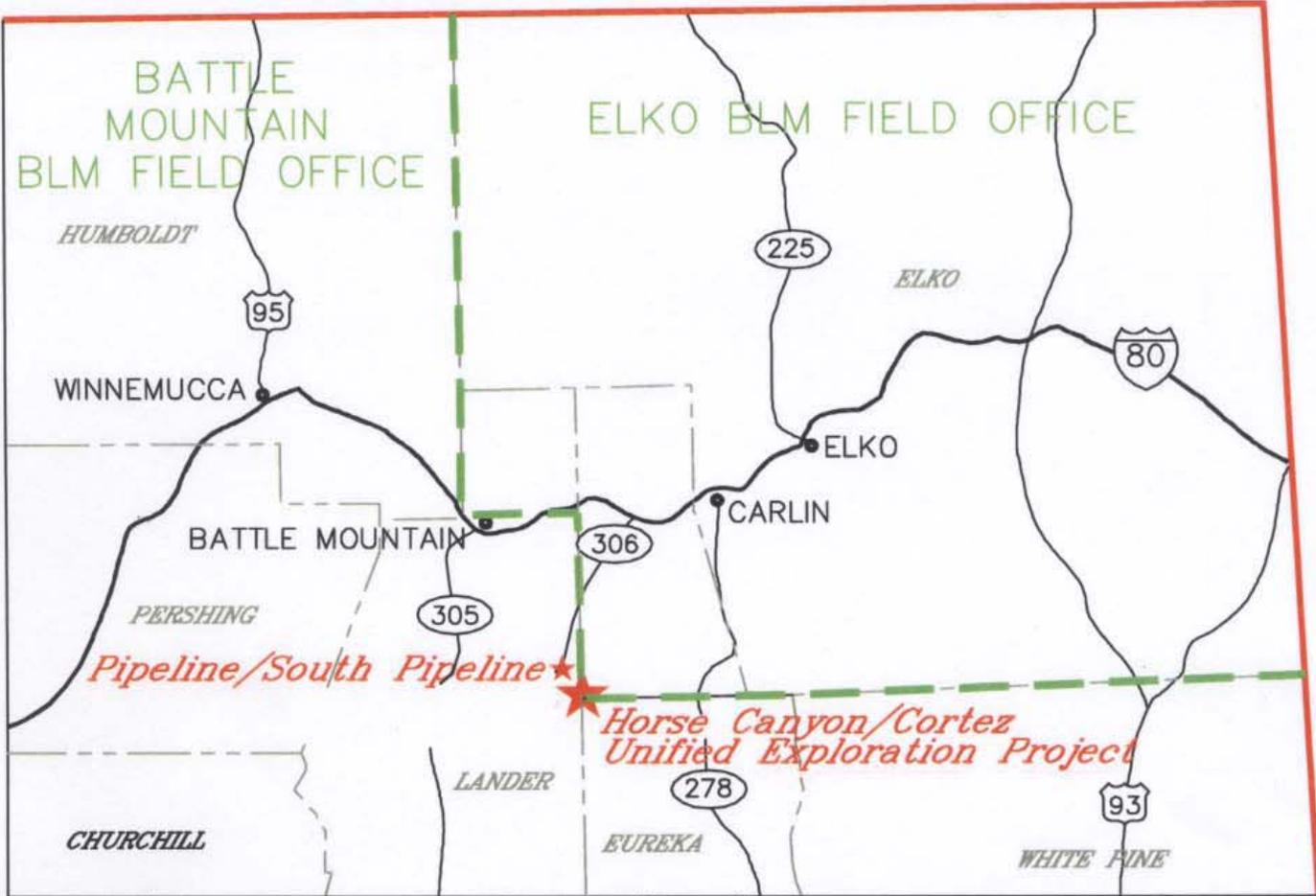
T27N, R48E, Sections 19, 20, and 29-32;

T26N, R47E, Sections 1-3, and 10-12; and

T27N, R47E, Sections 22-27 and 34-36.

The PoO amendment proposes to continue exploration activities within the Project Area to determine whether precious metals are present in economically viable quantities and to reclaim surface disturbance associated with approved exploration activities. The proposed amendment would increase the amount of acreage subject to exploration activities within the existing and approved PoO boundary.

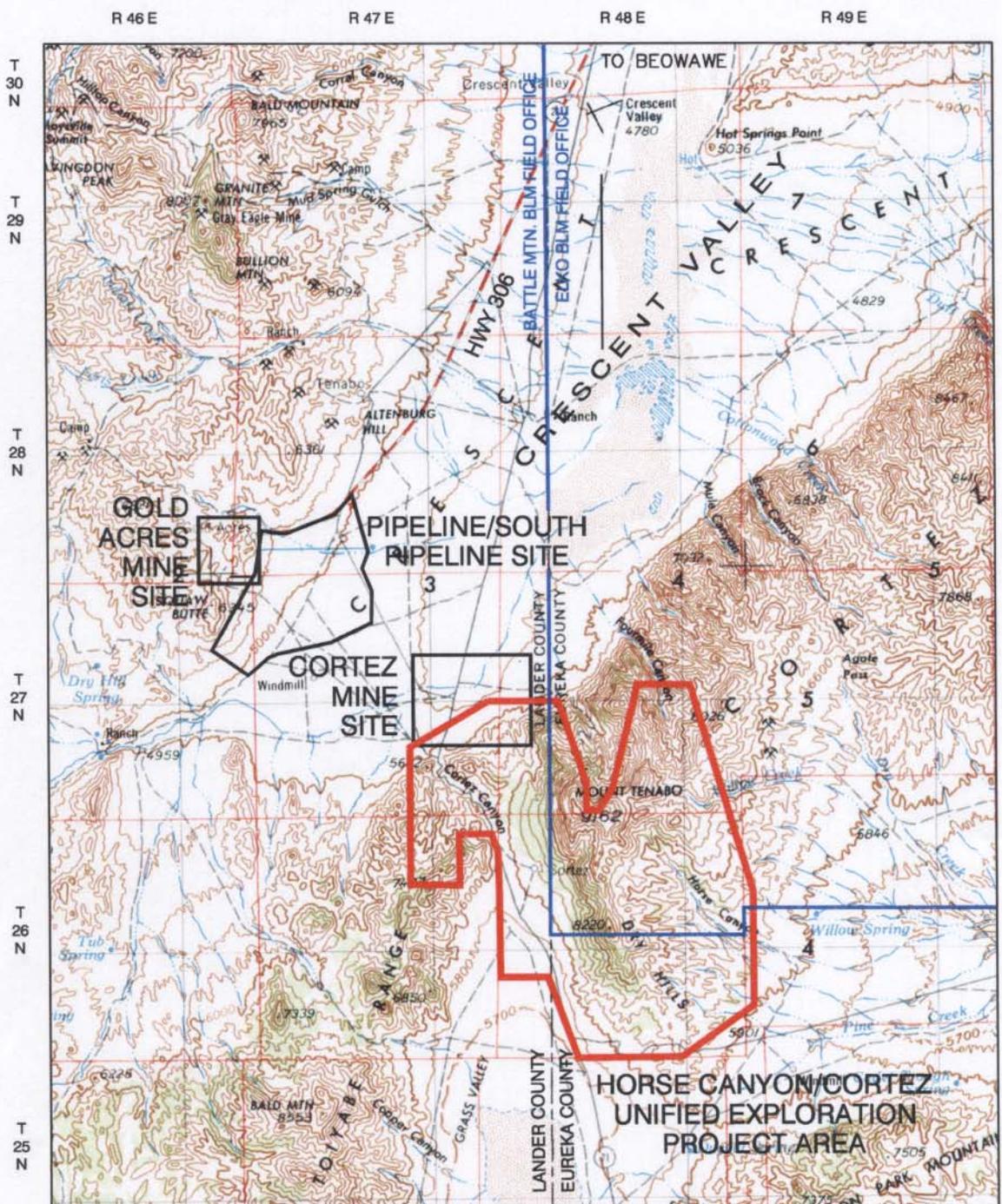
The HC/CUEP Area includes the Cortez Mining District, which has had active mining since the 1860's and the Horse Canyon area, which was mined between 1983 and 1987. The environmental resources and approved project related impacts within the HC/CUEP Area have been analyzed in the *Environmental Assessment (NV063-EA00-35) Cortez Gold Mines, Inc. Horse Canyon/Cortez Unified Exploration Project* (BLM 2001). Other related environmental analyses were conducted in the *Cortez Gold Mine Expansion Project Final Environmental Impact Statement (NV64-EIS2-36)* (BLM 1993),



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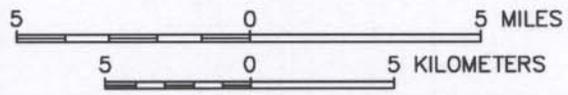
**CORTEZ GOLD MINES
HORSE CANYON/CORTEZ
UNIFIED EXPLORATION
PROJECT**

FIGURE 1-1
REGIONAL LOCATION MAP



BASE FROM USGS WESTERN UNITED STATES 1:250,000,
WINNEMUCCA, NEVADA, 1955 REVISED 1971

G:\CORTEZ\CORTEZ23-2.DWG



<p>CORTEZ GOLD MINES HORSE CANYON/CORTEZ UNIFIED EXPLORATION PROJECT</p>
<p>FIGURE 1-2 LOCATION AND ACCESS</p>

and the *Cortez Joint Venture Horse Canyon Exploration Project Environmental Assessment* (N63-EA99-39) (BLM 1999). This EA, analyzing the proposed July 1, 2003 PoO Amendment to CGM's exploration activities incorporates by reference parts of these three documents, where applicable.

In addition, this EA tiers to the *Cortez Gold Mine Expansion Project Final Environmental Impact Statement* (NV64-EIS2-36) (BLM 1993), the *Cortez Pipeline Gold Deposit Final Environmental Impact Statement* (BLM 1996), the *Cortez Joint Venture Horse Canyon Exploration Project Environmental Assessment* (N63-EA99-39) (BLM 1999), the *South Pipeline Project Final Environmental Impact Statement* (NV063-EIS98-014) (BLM 2000), and the *Environmental Assessment (NV063-EA00-35) Cortez Gold Mines, Inc. Horse Canyon/Cortez Unified Exploration Project* (BLM 2001). These documents are available for review during normal business hours at the BLM BMFO, 50 Bastian Road, Battle Mountain, Nevada 89820.

This EA was prepared in accordance with the National Environmental Policy Act (NEPA) of 1969 and in compliance with applicable regulations and laws passed subsequently, including the President's Council on Environmental Quality regulations, U.S. Department of Interior requirements, and guidelines listed in the BLM Manual Handbook H-1790-1.

1.2 HISTORIC MINING ACTIVITY

The historic mining activity is described in detail in the HC/CUEP EA (BLM 2001) on pages 2 - 4 and is incorporated herein by reference.

1.2 PURPOSE AND NEED

The purpose for the proposed HC/CUEP PoO Amendment is to increase the amount of disturbance permitted for exploration within the HC/CUEP Area. The proposed increase in exploration disturbance is needed to continue exploration to find additional mineral resources to meet the prevailing market demand for gold.

1.3 ISSUES

The following issues and concerns have been identified by BLM for the Project based on public comment on the 2000 HC/CUEP EA:

- Cultural resources – potential impacts to prehistoric and historic sites;
- Native American Religious Concerns – potential impacts to properties of cultural and religious importance;
- Wildlife – removal of vegetation during the avian breeding season could result in destruction of bird nests and/or their contents;
- Special Status Species - sage grouse nesting and brood rearing occurs in the eastern and southern portions of the project area and winter habitat may also be within the project area; ferruginous hawk nests are known to occur within two miles of the project area;

- Wildlife – mule deer summer and fall range and some winter use; pronghorn antelope summer and fall use; raptor species foraging and potential for nesting; nongame species need to be considered;
- Riparian – riparian habitat is an important component of the wildlife habitat; and
- Reclamation – should stress the use of native species in reclamation and duplicate the existing vegetative communities.

These issues are addressed within their respective sections of Chapter 4.

1.4 LAND USE PLAN CONFORMANCE STATEMENT

The Proposed Action and alternative described below are in conformance with the Elko Resource Management Plan (RMP), Issue: Minerals Management, Prescription 1 (BLM 1986a) and the Shoshone-Eureka RMP and Record of Decision (ROD), Management Decisions: Locatable Minerals 1 (BLM 1986b). The objectives for Minerals are to encourage development of mineral resources to meet national, regional, and local needs, assure the mineral exploration, development, and extraction are carried out in such a way as to minimize environmental and other resource damage and to provide for reclamation of the land; and develop detailed mineral resource data in areas where different resources conflict so that informed decisions may be made that result in the optimum use of the public lands. The Management Decisions related to Minerals include keeping all public lands in the planning area open for mining and prospecting unless the lands have been withdrawn or restricted from mineral entry. The Proposed Action and alternatives are also consistent with federal, state, and local laws, regulations, and plans to the maximum extent possible.

2.0 Proposed Action and Alternatives

2.1 PROPOSED ACTION

CGM proposes to increase the permitted disturbance for exploration activities associated with the HC/CUEP PoO in the southern portion of the Cortez Mountain Range located approximately 35 miles southeast of Battle Mountain, Nevada.

CGM is presently conducting exploration within the HC/CUEP Area under PoO NVN 066621, which authorizes CGM to disturb 50 acres of land within the 30,548-acre HC/CUEP Area. The Proposed Action would consist of increasing the permitted disturbance by 200 acres to a total of 250 acres of disturbance within the HC/CUEP Area (**Figure 2-1**). Only 50 acres of disturbance would be incrementally requested and bonded, not to exceed a total of 250 acres. Exploration activities would continue upon receipt of authorization from BLM. The anticipated project life is five years during which time CGM would undertake concurrent reclamation in those areas that have been drill tested and are no longer considered targets. CGM is proposing three phases of drilling; the completion of the phases is dependent on drilling results.

All mineral exploration drill holes subject to Nevada Division of Water Resources (NDWR) regulations would be abandoned (i.e., plugged) in accordance with Nevada Administrative Code (NAC) 534.425 through 534.4380.

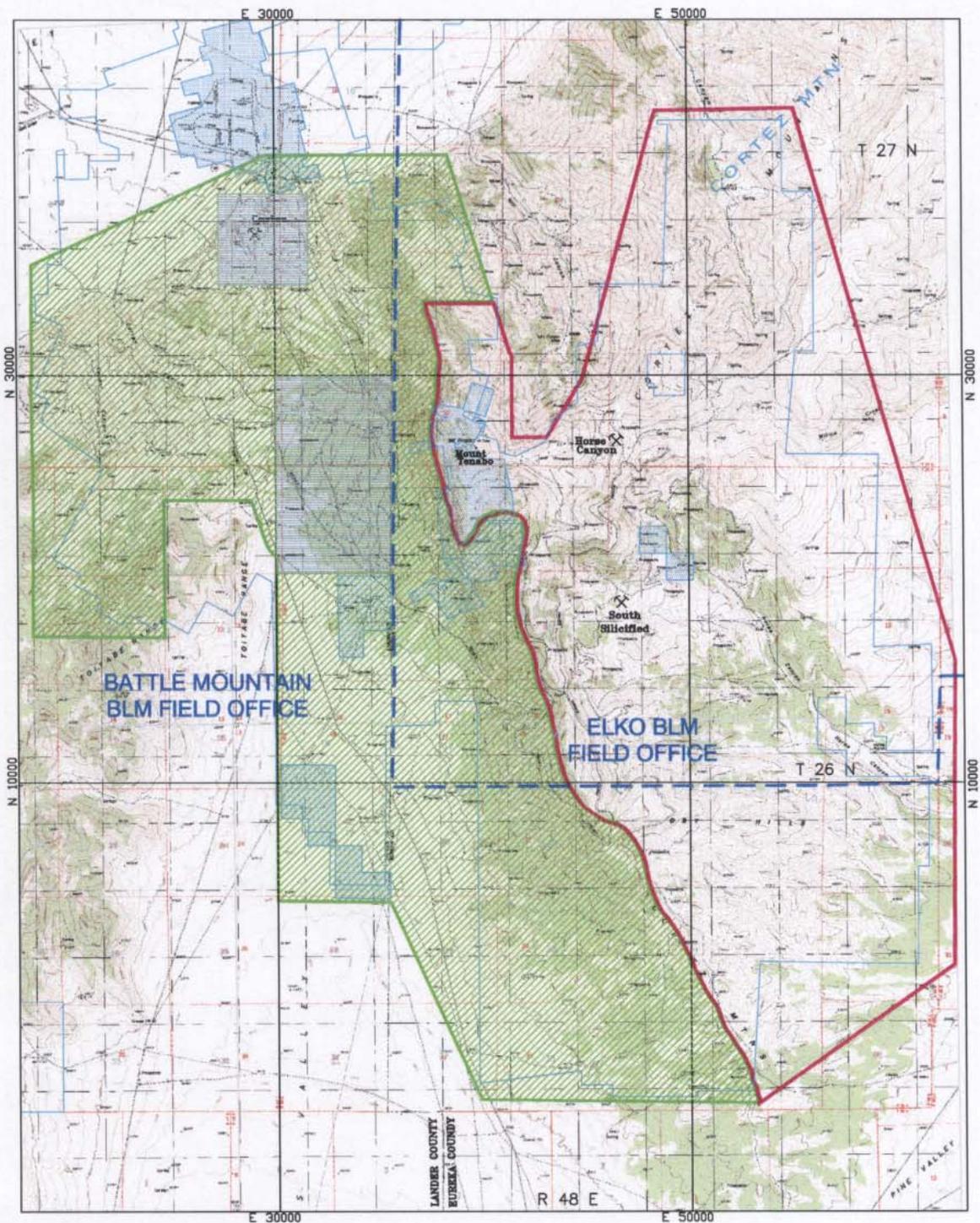
2.1.1 Project description

Disturbance Accounting

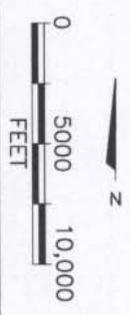
The standardization methods for determining reclamation for overland roads and pads, and cut and fill access are outlined for slopes less than 30 percent and greater than 30 percent. Through field experience and survey data, CGM has identified that overland travel disturbance corridors typically average ten feet in width; therefore, no earth-disturbing work is required for access, and the pad disturbance (0.055 acre/site) is added to the overland travel calculation. On slopes greater than 30 percent, a dozer is required to first construct access roads in order to safely traverse the terrain. Although the blade on the dozers is typically ten to 12 feet wide, a total disturbance corridor of 24 feet is utilized to account for cut and fill slope, and includes the construction of drill sites and sumps. On slopes less than 30 percent dozers are optional and if used, a total disturbance corridor of 16 feet is utilized and accounts for disturbance estimates for cut and fill, and construction of drill pads and sumps.

Phase I Drilling Program

Phase I would involve widespread exploration drilling to advance/test target areas. Two-track trails total approximately 18,500 linear feet of overland access by up to two tire-mounted or track drill rigs with the necessary support vehicles. This level of activity will include approximately 150 drill sites that may be as close as 200 ft apart, on public lands.



CORTEZ GOLD MINES
HORSE CANYON/CORTEZ
UNITED EXPLORATION
PROJECT
FIGURE 2-1
PROPOSED ACTION



- Legend**
- Approximate C/V Area of Interest Claim Boundary
 - Patented Claims/Free Ground
 - Horse Canyon Exploration Project Boundary
 - Cortez Project Boundary
 - ▨ Phase 1 Exploration: Wide Spaced Drilling Fences
 - ▩ Phase 2 Exploration: In-Fill Drilling (200' x 200')
 - ▩ Phase 3 drilling would occur as in-fill within the Phase 2 area pending favorable results. Notification would be made of any Phase 3 activity prior to the start of drilling.
 - BLM Field Office Boundary

Disclaimer

All boundary lines are approximate, and are for use only on generalized location maps. This material is furnished by Placer Dome U.S. Inc. (as manager of the Cortez Joint Venture and Cortez Gold Mines) without warranty or representation of any kind, expressed or implied, except that Placer Dome U.S. Inc. warrants that this material was correct to the best of its knowledge at the time the material was prepared. Placer Dome U.S. Inc. expressly disclaims liability for any factual or interpretive errors in this material.

Sumps measuring 10 ft x 15 ft x 6 ft (0.003 acres per sump) will be excavated at each site (i.e., this disturbance is included in the drill pad site disturbance) with a track hoe and positioned to allow cuttings to settle out of produced drill water to minimize down drainage surface flow. Certified weed free straw bales will also be implemented to filter remaining cuttings. Temporary fencing (portable panels), to control livestock and/or wild horses, will be established around the sump and remain in place until the sump is reclaimed. An average of six sumps are anticipated to be open during the phased drilling project

Overland access will account for the primary type of disturbance. Based on past experience in the area, no permanent two-track trails develop in most areas, however, some of the area is prone to soft soil conditions and some disturbance will occur as a result of overland access. Approximately 12.5 acres of disturbance is anticipated from overland access (4.25 acres; 18,500 lin. ft) and overland drill sites (8.25 acres; 0.055 acres/site at 150 sites). Cut-and-fill disturbance may be required to provide access and will involve removing vegetation and topsoil (5 acres; 13,600 lin. ft.) on <30% slopes and (5.05 acres; 9,150 lin. ft) on >30% slopes. Topsoil will be stockpiled for later use in reclamation in all cases where cut-and-fill disturbance is required. Upon completion of drilling, sumps will be reclaimed, drill holes will be abandoned per current regulations, and the site recontoured, raked, and reseeded as required by applicable state and federal regulations. The Phase I low-impact overland disturbance and cut and fill disturbance is estimated to involve up to 22.55 acres (12.5 acres overland access and pads and 10.05 acres of cut-and-fill disturbance) (**Table 2-1**).

Table 2- 1: Projected Disturbance

Phase	Number of Drill Holes (Flat Ground)	Overland Travel (acres)	Drill Pad¹ (acres)	Cut and Fill <30% (acres)²	Cut and Fill >30% (acres)	Total (acres)
Phase I	150	4.25	8.25	5.0	5.05	22.55
Phase II	125	2.50	6.90	3.1	4.20	16.70
Phase III	100	0.50	5.50	2.0	2.75	10.75
Total	375	7.25	20.65	10.1	12.0	50

¹ Includes sump and pad disturbance (overland only).

² Includes constructed sump and pad disturbance.

Phase II Drilling Program

In the event of exploration success in Phase I, Phase II activity will involve step-out drilling by tire or skid mounted core rigs, or tire mounted RC rigs, and the required tire-mounted support vehicles on no less than 200 x 200 ft grid spacing via overland access (2.5 acres; 10,900 lin. ft) and cut-and-fill access (3.1 acres; 8,400 lin. ft) on <30% slopes and (4.2 acres; 7,600 lin. ft) on >30% slopes. About 125 overland sites (6.9 acres) are anticipated at this level of activity. Sumps will be required as described above. Hole abandonment will be conducted as per section 3 (G) of the Horse Canyon/Cortez unified

exploration plan of operations. Sites will be reclaimed as described above. This level of activity may involve three or more drill rigs working in close proximity to one another. Phase II disturbance is anticipated to include 9.4 acres of overland disturbance and approximately 7.3 acres of cut-and-fill disturbance for a total of 16.7 acres (**Table 2-1**).

Phase III Drilling Program

If additional close-spaced drilling is justified, in-fill drilling would occur within the Phase II footprint. In-fill drilling may require site spacing ranging from approximately 140 ft to less than 100 ft, but no closer than 50 ft. This phase of drilling may involve three or more rigs active in close proximity to one another. Approximately 100 overland sites (5.5 acres) and overland access (0.5 acres; 2,200 lin. ft) by tire or skid mounted core rigs and tire mounted RC rigs, with the necessary support vehicles, will be required. Approximately (2 acres; 5,450 lin. ft) of <30% slope and (2.75 acres; 5,000 lin. ft) of >30% slope cut-and-fill disturbance for access are anticipated. Sumps will be required and constructed as described above. In addition to the Phase III in-fill drilling, 200 ft step-out drilling (Phase II drilling), may also be continued within the Project area. Hole abandonment will be conducted as per section 3 (G) of the Horse Canyon/Cortez unified exploration plan of operations. Phase III drilling activities will result in up to 6.0 acres of overland disturbance, from drill pads (5.5 acres) and access (0.5 acre), and an additional 4.75 acres of cut-and-fill disturbance for a total of 10.75 acres (**Table 2-1**).

This three-phase cycle would be repeated, and bonded, with a maximum of 250 acres of disturbance. Only a maximum of 50 acres of disturbance would be under active exploration at any one time. The initial 50 acres of disturbance would be reclaimed prior to initiation of exploration on the next 50 acres.

Access Roads

New exploration road construction would be constructed using a D-7 through D-9 class bulldozer or a track-mounted excavator. Topsoil would be stockpiled for reclamation, including as side cast material, which can easily be reclaimed during recontouring by a track-mounted excavator. Overland travel, without blading, would be used where practical and safe. Efforts to minimize surface disturbance would be implemented when overland travel occurs.

Reclamation

The *Horse Canyon Exploration Plan of Operations*, as amended, describes the detailed reclamation for this project. Reclamation for both public and private lands would be consistent with the requirements of Nevada Revised Statute (NRS) and NAC 519A regulations and 43 Code of Federal Regulations (CFR) 3809. CGM's long-term reclamation goal is to create a safe, stable, and productive post-exploration land use.

Temporary roads, drill pads, and sumps could be either entirely or partially constructed without generating side-cast material. Topsoil would be stockpiled for reclamation where cut-and-fill disturbance is required. Overland travel routes disturb even less vegetation, resulting in equipment tracks which would be scarified or ripped prior to re-seeding, as necessary. Recontouring and

scarifying constructed temporary roads, drill pads, sumps, and compacted overland travel routes would be the primary means by which seedbeds would be prepared. Where topsoil has been salvaged and stockpiled, it would be bladed as a final layer onto the roughened surface prior to seeding. Overland travel routes not requiring scarification or ripping would be re-seeded during reclamation.

The reclamation plant list would be the same as approved for the HC/CUEP (page 17, Table 2-3 and 2-4, BLM 2001). The approved list of species to be used in reclamation is based on site potential as determined from existing soils surveys and BLM recommendations. Species would be selected from the reclamation plant list based upon their price and availability.

Temporary roads and drill sites would be reclaimed as soon as practical after the cessation of drilling activities in the area. Seeding would occur during the late fall or early spring to take advantage of winter moisture. Revegetation would be conducted by broadcasting and harrowing. The seeded areas would also be fertilized at the time of seeding with a commercial fertilizer should specific soil tests indicate the need.

If drainage structures have been installed, CGM would remove the structures during reclamation and reshape and fill material in drainages to reestablish preexisting seasonal flow channels.

Water

Water for the drilling programs would be sourced from Willow Spring well (water rights associated with the Dean Ranch and owned by Cortez), Horse Ranch and/or temporary storage tanks filled by water trucks hauling water from CGM Mill #1.

Work Force

CGM would hire contract drillers to staff each phase of the proposed project. Up to 20 drillers/support crews, and an average of six rigs, would be in the proposed Project Area at any given time, particularly the early stages of the project. The drill rigs would be supported with contract water trucks and fuel/lube trucks. CGM geologists and field supervisors would oversee the contractors. Contracted water trucks would fill temporary storage tanks and water roads for dust control.

2.1.2 Standard Operating Procedures/Environmental Protection Measures

Throughout this project, CGM would initiate best management practices (BMPs) to prevent unnecessary and undue degradation to the environment to the greatest possible extent.

Air Quality

CGM, in compliance with the Nevada Division of Environmental Protection (NDEP) Surface Disturbance Permit, proposes to protect air quality during the proposed project by undertaking road maintenance activities to reduce fugitive dust emissions. Application of water and/or a dust suppression chemical such as magnesium chloride by water trucks would be done, as needed, in areas of close-spaced drilling and related activity. Wet drilling is the preferred method of drilling and is generally necessary for cutting removal.

Cultural and Paleontological Resources

Portions of the HC/CUEP Area have been inventoried at the Class III level for cultural resources (BLM 2001). CGM would conduct exploration activities in accordance with all applicable state and federal regulations as administered by the BLM and in accordance with the Programmatic Agreement among BLM, State Historic Preservation Office (SHPO), the Advisory Council on Historic Properties and CGM (BLM 1992a). Prior to earth disturbing activities, CGM would submit 1:24,000 maps showing the locations of the proposed drill pads and access roads. The BLM would then determine the Area of Potential Effect (APE) and whether a cultural resources survey is necessary. If a survey is required, then CGM would hire a qualified archaeologist to complete the inventory at the level the BLM determines to be most appropriate (Class III, Class II etc.). The archaeologist would submit a report that adheres to the BLM's Cultural Resources Inventory Guidelines documenting the results of the inventory. All sites encountered would be fully recorded and documented in the report. If sites are encountered that could be affected by the proposed disturbance, the preferred course of action would consist of moving the locations of roads and drill pads to avoid them. At the discretion of the BLM, CGM would hire a qualified archaeologist to monitor earth disturbance in order to ensure that historic and pre-historic properties are not impacted. In the event that proposed earth disturbance cannot avoid sites eligible for the National Register, then CGM would contract to have a data recovery plan submitted to the BLM. The BLM would approve such plans in consultation with the State Historic Preservation Officer (SHPO). Following implementation of the plan (e.g., completed fieldwork) the BLM may approve the proposed disturbance before the results of the data recovery efforts are approved by BLM and the Nevada SHPO.

CGM's employees and contractors would be informed of the potential for cultural resources and would be required to avoid disturbing, altering, or destroying any scientifically important remains or any historical or archaeological site, structure, building or object on federal land. If exploration activities uncover human remains, CGM would cease all earth disturbing activities within 30 meters of the discovery, and call the BLM Field Office Manager and county law enforcement as soon as the discovery is made.

Additionally, CGM would, within 24 hours, notify proper authorities and the BLM if subsurface cultural resources are discovered during construction, operation, or reclamation activities. CGM would immediately cease earth-disturbing activities within 100 meters of the discovery, until the discovery can be examined by the proper authorities and/or a BLM-approved archeologist. All applicable state and federal regulations related to such an event would be adhered to by CGM, and earth-disturbing activities would only resume once cleared by the BLM or other appropriate authority.

In the event that significant fossiliferous deposit(s), specifically vertebrate fossil deposits, are located during construction, operation, or reclamation activities, the BLM would be notified, and measures would be taken to avoid the fossil(s).

Native American Resources and Concerns

In accordance with the National Historic Preservation Act (P.L. 89-665), the National Environmental Policy Act (P.L. 91-190), the Federal Land Policy and Management Act (P. L.94-579), the American Indian Religious Freedom Act (P.L. 95-341), the Native American Graves Protection and Repatriation Act (P.L. 101-601) and Executive Order 13007, BLM must provide tribes opportunities to actively participate in the decision making process. After more than ten years of ethnographic work and consultation in the Crescent Valley/Cortez/Grass Valley areas, which included interviews with knowledgeable individuals and groups, compilations of ethnographic research and field tours, it has recently been determined that portions of the Mount Tenabo/Horse Canyon area are eligible to the National Register of Historic Places as Properties of Cultural and Religious Importance.

Cortez has conducted extensive ethnographic studies associates with the original HC/CUEP PoO and EA, and has continued this effort as part of the work being done on the Pediment Project PoO. The BLM has reviewed this background information, and made a determination for areas that may be present within the 30,548-acre project area. Cortez has made every effort to assist the BLM in the determination of any specific features or areas that may have spiritual or cultural concerns to the Native American community through the recognized Tribal entities. Cortez would adhere to the regulatory restrictions required when operating within an area designated by such a formal determination.

Water (Surface/Ground)

Drilling activity would be kept to a minimum distance of 100 feet from any drainage, seep or spring that is actively flowing. Access across drainages, seeps, and springs would be avoided where possible. If required, culverts, rolling dips, armoring, and/or straw bales would be utilized to protect drainages. Exploration activities would be conducted in such a manner that sediments or drilling additives would not enter any ephemeral or flowing drainage. Roadway erosion controls, including waterbars and ditches, would be installed to protect existing water quality.

The drill hole abandonment procedures conducted in accordance to NAC 534.425 through 534.438, would prevent cross-contamination of aquifers or contamination by surface waters.

Wildlife

Land clearing and surface disturbance would be timed to prevent destruction of active bird nests or young of birds during the avian breeding season (March through July, annually) to comply with the Migratory Bird Treaty Act (MBTA). If surface disturbing activities are unavoidable, CGM would have a qualified biologist survey areas proposed for immediate disturbance for the presence of active nests.

If active nests are located, or if other evidence of nesting is observed (mating pairs, territorial defense, carrying nesting material, transporting of food), the area would be avoided to prevent destruction or disturbance of nests until the birds are no longer present. Avian surveys are proposed to be conducted only during the avian breeding season and immediately prior to CGM conducting exploration activities that result in disturbance. After such surveys are performed, and disturbance created (i.e., road construction and drill pad development), CGM would not conduct any additional disturbance

during the avian breeding season without first conducting another avian survey. After August 31, exploration activities would continue; no further avian surveys, in compliance with MBTA, would be conducted until the next year.

Reasonable efforts would be made to avoid disturbing shrubs and trees that could provide wildlife habitat. In particular, avoidance of pinyon-juniper, mountain mahogany, chokecherry, serviceberry, elderberry, and bitterbrush stands would be practiced to reduce habitat fragmentation and habitat reduction of plant communities that include these species. However, some drill sites may be located within the pinyon-juniper woodlands, necessitating some tree removal.

CGM would report any wildlife mortalities that result from the exploration activity to the Nevada Department of Wildlife (NDOW).

Range Resources

Any range monitoring key areas in the Project Area would also be avoided.

Special Status Species

To minimize impacts to sage grouse, CGM proposes to avoid known leks/strutting grounds. CGM would not conduct exploration activities (i.e., road building, sump construction, drilling) within two miles, or other appropriate distance, based on site-specific conditions, of any known sage grouse leks/strutting ground between the periods of March 1 through May 15.

Impacts to nesting ferruginous hawks would be avoided by limiting road construction and drilling activities, including vegetation removal, from March 15 to July 15 within 0.5 miles of known, active ferruginous hawk nesting sites. Other raptor nests identified in the field as being active would be avoided.

CGM would avoid, where possible, road construction and drilling activities within 50 feet of historic mine adit openings to minimize potential impacts to bat species, which may occupy these historic sites. In the event that it is necessary to drill within 50 feet of a mine adit opening, a survey for bats would be conducted prior to site construction and drilling to determine if bats occupy the site.

In the event that special status plant or wildlife species are identified in the Project Area, CGM would avoid the habitat where possible, and work with a BLM and NDOW specialist to evaluate possible impacts and devise an alternative plan.

Fire Management

CGM would comply with all applicable federal and state fire laws and regulations, and shall take all reasonable measures to prevent and suppress fires in the area of operations. CGM and contractors are required to carry fire extinguishers, hand tools, and/or backpack-type water pumps in their vehicles to suppress small fires.

Solid and Hazardous Waste

The Project would not generate, use or dispose of any hazardous waste. Petroleum products would be used on-site. Petroleum products are excluded as hazardous substances under the Comprehensive Environmental Response, Compensation, and Liability act (CERCLA), Section 101 (14). Diesel, oil, and lubricants would be transported to the site in portable containers (e.g., tanks in the pickup trucks for diesel fuel), but would not be stored on-site. If regulated materials (petroleum products) are spilled, measures would be taken under CGM spill response guidelines to control the extent of the spill, and the appropriate agencies would be notified in accordance with the applicable federal and state regulations.

Forestry

Drilling would occur within areas that host stands of pinyon pine and juniper trees. To the extent practicable, roads would be located to avoid trees. However, some trees may be removed for construction of access roads and drill sites. Trees that must be removed for access or drill pad construction would be removed by cutting when practicable, rather than being pushed over with heavy equipment, to allow for salvage of the wood as firewood.

Invasive Non-Native Species

CGM would be responsible for controlling all noxious weeds in newly disturbed areas until the reclamation activities have been determined to be successful and released by the BLM authorized officer. A *Noxious Weed Monitoring and Control Plan* (JBR 2000) was developed for CGM and would be incorporated into the environmental protection measures for the proposed project. This plan provides management strategies and provisions for annual monitoring and treatment of noxious weeds. As part of weed control measures, CGM would require that the undercarriage of all contractor vehicles be cleaned prior to entering the Project Area.

BLM would provide a State of Nevada invasive, non-native weed list and a list of chemicals approved for use on public land. CGM would obtain approval from the appropriate BLM officer for any and all herbicide applications, including types and quantities.

During 2003, Cortez provided matching funds for the BMFO to conduct a noxious weed survey in the area of all Cortez's mining and exploration activities, as well as a significant portion of the Dean Ranch. This information is on file with the BMFO.

Quality Assurance Plan

CGM would provide site inspection of all drilling operations and road construction on a daily basis. This includes on the site inspections of the operation as well as phone or radio contact with the drilling crews to determine if any problems are encountered. Sites would be examined to ensure that cultural sites, wetlands, springs, seeps, and drainages are avoided. In addition, any stipulations, such as seasonal restrictions, would be strictly enforced by CGM.

CGM would provide an activity update to the BLM and (NDEP), which would include road and pad construction, drilling and reclamation, on an annual basis. The report would be submitted to BLM and NDEP by March 1st of each year.

2.2 ALTERNATIVE TO THE PROPOSED ACTION

This section identifies alternatives to the Proposed Action. Alternatives include an alternative Project location and the No Action Alternative.

2.2.1 No Action Alternative

Under the No Action Alternative, the Proposed Action would not be approved by the BLM. CGM would continue exploration activities under the previously approved HC/CUEP PoO. Under the No Action Alternative, exploration activities could continue, representing a maximum of 50 acres of disturbance, within the original HC/CUEP Area.

2.2.2 Alternative Location

There are no feasible alternative locations for the proposed exploration activity because the Project location is determined by the specific favorable geologic conditions. Therefore, this is not a viable alternative and is not evaluated further in this EA. The location of individual drill holes is subject to relocation due to environmental constraints, but these alternative drill hole locations are not considered an alternative to the Proposed Action.

3.0 Affected Environment

3.1 INTRODUCTION

This chapter describes the affected environment in the vicinity of the HC/CUEP Area. The Project Area lies in the southern Cortez Mountain Range, with drainage to the east into Pine Valley, drainage to the south into Grass Valley, and drainage to the west and north into Crescent Valley. Climatic conditions vary due to topographic variation, but in general the area is arid (approximately 9.25 inches annual precipitation (BLM 2000)). Mean monthly temperatures range from 23 °F to 75 °F. The topography in the area is typical of that found in the Basin and Range Physiographic Province of the western United States.

Resources listed in the following table, including the sixteen “critical elements” whose review is mandated by law or regulation, have been reviewed for the proposed action and alternatives. In addition to the Critical Elements of the Human Environment, the BLM must consider other resources that occur on public lands, or issues that may result from the implementation of the Proposed Action. Those marked as not affected would not be impacted by or cause impacts to the proposed action, or are not present in the area of the proposed action. Discussion of expected impacts to affected resources follows the table.

Table 3- 1: Critical Elements of the Human Environment and Other Resources, and Rationale for Detailed Analysis for the Amended HC/CUEP Exploration Program

Critical Element	No Effect	May Affect	Not Present	Rationale
Air Quality		X		Road and drill pad construction would create fugitive dust
Areas of Critical Environmental Concern (ACEC)			X	None present
Cultural Resources		X		Portions of the area have not yet been surveyed for cultural properties.
Environmental Justice	X			No minority or low income groups would be affected by disproportionately high and adverse health or environmental effects because this action would avoid to the extent possible, removal of trees and wildlife habitat.
Farm Lands (prime or unique)			X	Resource is not present.
Flood Plains			X	Resource is not present.
Native American Religious Concerns		X		Issues have been raised in previous NEPA analysis.
Non-native, Invasive Species		X		Noxious weeds are documented within the Project Area.
Threatened and Endangered Species	X			Populations of species afforded protection under the Endangered Species Act (ESA) either do not occur in the Project Area or would not be adversely affected.
Wastes (hazardous or solid)	X			No hazardous waste generated by the project. Solid waste would be removed by project personnel.
Water Resources		X		Springs and drainages occur within the Project Area
Wetlands/		X		Riparian areas associated with springs and drainages.

Riparian				
Wild and Scenic Rivers			X	Resource is not present.
Wilderness			X	The Proposed Action does not occur within any Wilderness Area, Wilderness Study Area, and Wilderness Inventory Area.
Resource or Issue				
Land Use and Access		X		Access and land status.
Soils		X		Surface disturbance for drill pads and access roads.
Geology/ Minerals	X			Exploration does not change the mineralogy or the location of the minerals.
Paleontological Resources	X			Exploration drilling could cause impacts, but these would be undetermined and not identifiable.
Vegetation		X		Surface disturbance for drill pads and access roads.
Livestock Grazing/Range	X			Project would not measurable reduce forage or restrict access to forage.
Wildlife		X		Potential for habitat impacts.
Special Status Species		X		Potential for Sensitive Species to occur.
Wild Horses and Burros	X			Proposed Action is not within a Herd Management Area
Recreation		X		Potential for impacts.
Visual Resource Management		X		Potential for impacts.
Forestry		X		Potential for impacts to woodland resources.
Socioeconomics	X			BLM specialists have determined that this resource would not be affected by the Proposed Action or alternatives.

3.2 PROPOSED ACTION AND ALTERNATIVES

The description of the affected environment for the *No Action* alternative would be the same as that for the Proposed Action.

3.2.1 Land Use and Access

The HC/CUEP Area is located in Eureka and Lander counties and consists of about 30,548 acres of private lands and public lands administered in part by the BLM ELFO and in part by the BLM BMFO. The project is accessed via Nevada State Route 306 that traverses Crescent Valley from north to south and Nevada State Route 278 that traverses Pine Valley from north to south. The only transportation routes within the HC/CUEP Area are unimproved gravel roads and the Horse Canyon Mine haul road.

The major land uses within the area surrounding and including the HC/CUEP Area are livestock grazing, wildlife habitat, dispersed recreation, and mining.

The closest power line belongs to Sierra Pacific Power Company (SPPCo) and is located between the Horse Canyon haul road and the unimproved gravel road through Cortez Canyon. There are no proposed power lines or planning corridors for future development within the Project Area.

There are no BLM Wilderness Study Areas (WSAs) within the proposed Project Area. The nearest WSA is the Roberts Mountains WSA, NV060-541, located approximately 20 miles south of the Project Area. The Simpson Park WSA, NV060-428, is located approximately 20 miles from the area. Both WSAs are under the jurisdiction of the BLM BMFO.

Portions of the HC/CUEP Area, in the Cortez Mountains, overlap a designated Christmas Tree Harvest Area and Fuel & Posts Harvest Area (BLM 1986a). An area designated for the noncommercial harvest of pine nuts is located in the wooded portions of the HC/CUEP Area. However, there are no designated commercial pine nut harvest areas within the Project Area.

The HC/CUEP Area lies within portions of three grazing allotments, South Buckhorn, Carico Lake, and Grass Valley allotments.

Two wild horse herd management areas (HMAs) are located near, but outside of, the HC/CUEP Area. The Rocky Hills HMA is located southeast of the HC/CUEP Area and the Bald Mountain HMA is located southwest of the HC/CUEP Area.

3.2.2 Air Quality

The HC/CUEP Area is located within three hydrographic basins:

- Crescent Valley Hydrographic Basin (#54);
- Grass Valley Hydrographic Basin (#138); and
- Pine Valley Hydrographic Basin (#53).

The boundaries of these basins also serve as air basins for the purposes of monitoring air quality. The HC/CUEP Area is currently unclassified for all pollutants having an air quality standard (40 CFR 81.329). No NO₂ or lead non-attainment areas are located within the State of Nevada. The existing air quality is typical of the largely undeveloped regions of western United States.

At present, ambient air quality monitoring by the Bureau of Air Quality (BAQ) is not conducted in the HC/CUEP Area. However, CGM monitors ambient particulate matter of aerodynamic diameter less than 10 micrometers (PM₁₀) at two sites within Crescent Valley.

3.2.3 Water Resources

Three springs are located within the Cortez Canyon portion of the HC/CUEP Area (JBR 1993, BLM 2001). Intermittent flow occurs within the drainages fed by these springs (BLM 2001). Ephemeral drainages are common and flow in response to precipitation events and runoff events. Perennial flows occur in some reaches of streams draining the east side of the Cortez Range. The quantity of surface water in the Project Area is relatively limited due to the low annual precipitation and the dry climate that promotes evaporation. The average annual precipitation varies widely and precipitation data for the area indicate the average annual precipitation ranges is 11.25 inches per year at Gold Acres (4,700 feet) and the Cortez Gold Mines mill site (4,950 feet). Net evaporation in the area exceeds three feet (BLM 2000).

Drainages from the west side of the Cortez Range flow to Crescent Valley and into the alluvium. A survey of the drainages into Crescent Valley indicated that all of the drainages were identified as being isolated waters (JBR 2002). Similarly, the drainages from the southern end of the Cortez Range flow to Grass Valley. This is a closed basin with no jurisdictional waters (JBR 2002). Horse Creek channel

drains the southeast side of the Cortez Range. The portion of this creek within the HC/CUEP Area was identified as being isolated water, losing definition east of the HC/CUEP Area (JBR 2002).

Groundwater in the Cortez Mountains occurs mainly in joints and fractures within the bedrock. Groundwater occurs in variable amounts depending upon the geological unit of the aquifer, with flows generally following the topography. Geological structures (faults, dikes, etc.) play a significant role in controlling the groundwater flow system. No water quality information is available for the Project Area. Drilling indicates that groundwater occurs at approximately 700 feet below ground surface.

3.2.4 Soils

Soils were previously mapped and described in the HC/CUEP EA (BLM 2001, page 21, Figure 3-1, and Appendix B; and BLM 1999). In general, soils in the HC/CUEP Area form on three geomorphic positions including, alluvial flats, fan piedmonts, and mountain slopes. Soils formed in lower elevations, such as alluvial flats, tend to be deep and level, contain high quantities of alkali and salts, and are poorly drained. Soils formed on gentle or moderate slopes of fan piedmonts, tend to be moderately deep and well drained. Most of the soils are loams containing various degrees of stones or cobbles. Runoff rates range from very slow to rapid depending on slope. Those soils formed on steep slopes tend to have rapid runoff while soils formed on gentle slopes have very slow to medium runoff. The steep slopes contribute to rapid runoff, but the coarse texture of the soils results in typically slight to moderate erosion hazard. Permeability of the soils is typically in the moderate range. The potential for wind erosion hazard is slight.

3.2.5 Vegetation

Four major plant communities have been identified for the HC/CUEP Area (BLM 1992b, BLM 1996, BLM 1999, BLM 2000, BLM 2001). Sagebrush/grass occurs on upper elevation sites, mid-elevation sites not occupied by pinyon-juniper, and the alluvial fans. Pinyon-juniper/sagebrush occurs primarily at mid-elevations, but extends from the low elevation alluvial fans to the high elevation sites, interspersed with the sagebrush/grass community. The two low-elevation communities are the shadscale/bud sagebrush and shadscale/black greasewood communities. In addition to these plant communities, approximately 20 percent of the HC/CUEP Area has been subject to wildfires and the vegetation communities have been altered. Cheatgrass dominates portions of these burns, but perennial grasses and forbs are common in other portions.

3.2.6 Wetlands/Riparian

Perennial and long-seasonal creeks are not abundant in the vicinity of the HC/CUEP Area (JBR 2000). There is a limited amount of riparian/wetland habitat, estimated to be less than five percent of the total area, associated with scattered seeps and springs and stringer or fringe wetlands associated with channels within the HC/CUEP Area. The riparian areas support a variety of species including Nebraska sedge, Baltic rush, meadow barley, alkali bluegrass, sandbar willow, coyote willow, and yellow willow.

3.2.7 Forestry

The HC/CUEP Area includes approximately 3,500 acres pinyon pine and approximately 4,700 acres of pinyon-juniper woodland. Mountain mahogany occurs in pure stands at higher elevations, and mixed with the pinyon-juniper in transitional zones at mid-level elevations. Aspen trees occur in small pockets associated with the riparian areas in the Horse Canyon area, some of which were burned during the wildfires. During the late 1800s and early 1900s, the majority of the pinyon-juniper stands in the region were removed to support mining and ranching operations. A majority of the current pinyon-juniper community is considered a second growth stand (Hall 1994). Pinyon pine tends to be dominant in some areas of second growth, a common occurrence in areas where the stands were clear cut in the early part of the 20th century.

3.2.8 Non-Native, Invasive Species

Noxious weed and invasive species which have been observed within the HC/CUEP Area include Mexican thistle (*Cirsium neomexicana*) and bull thistle (*C. vulgare*). In addition, the BLM has documented musk thistle (*Carduus nutans*), Scotch thistle (*Onoprodum acanthium*), and hoary cress (*Cardaria draba*) within the HC/CUEP Area (BLM 1999).

In addition to the noxious weeds identified above, other non-native, invasive species, such as Russian thistle (*Salsola iberica*) and cheatgrass (*Bromus tectorum*) are present on undisturbed and reclaimed sites in small quantities (BLM 1996). Stinging nettle (*Urtica dioica*) has been observed in some riparian areas (BLM 2001).

3.2.9 Wildlife

The HC/CUEP Area lies within either mule deer fall/winter range and pronghorn antelope summer range. Sections of the HC/CUEP Area in Cortez Mountains overlap a mule deer yearlong range (BLM 1986a). There is no crucial deer habitat identified within the HC/CUEP Area. Mule deer seasonal movements are elevational with deer moving to lower elevations in the fall and winter and to higher elevations again in the summer. The mountain lions in the area generally follow the seasonal movements of mule deer in the range. Antelope populations are low in the region and when present they are there for only part of the year, primarily on the east half of the HC/CUEP Area. Crucial antelope summer range occurs in the southeast corner of the HC/CUEP Area.

The HC/CUEP Area also supports several species of game birds, including primarily sage grouse, chukar, and mourning doves, and occasional Hungarian partridge. The sage grouse, a Special Status Species, occur in varying numbers throughout the region with the greatest concentration in the Simpson Park Range and Roberts Mountain to the south of the HC/CUEP Area. The sage grouse is discussed in more detail in Section 3.2.10.

Waterfowl and shorebird habitats in the area are limited. Livestock watering ponds and meadows in nearby Pine Valley attract migrating waterfowl and shorebirds. Migrating mountain plovers may be found in the HC/CUEP Area.

Common raptor species occurring in the area include resident golden eagles and red-tailed hawks, and wintering rough-legged hawks. Other likely nesting spring and summer residents are Coopers and sharp-shinned hawks, Swainson's hawks, and ferruginous hawks, turkey vultures, northern harriers, prairie falcons, and American kestrels (Herron et al. 1985). Coopers, red-tailed hawks, golden eagle and American kestrels have been observed foraging in the vicinity and could be expected to nest in the woodland habitat found in the HC/CUEP Area. Great horned owls and burrowing owls may occur throughout the area. Most raptors utilize cliffs, outcrops, and larger trees as nest sites. The bald eagle is a winter resident in Northern Nevada and may forage in the area. The golden eagle, Swainson's hawk, ferruginous hawk, goshawk, and burrowing owl are all considered Special Status Species and as such are discussed in further detail in Section 3.2.10.

The greatest diversities of non-game wildlife occur in spring and summer, when a variety of migratory birds breed throughout the area. These and resident avian species, as well as small mammals, support the area's raptor populations and several mammalian predator species. Riparian habitats support the greatest diversity of wildlife. The Shoshone-Eureka RMP (BLM 1986B) notes that during a 1980 wildlife habitat inventory, "106 of 129 species observed in the field were associated with wetland or riparian habitat". As such, the diversity of wildlife is limited by the minor occurrence of riparian habitat within the HC/CUEP Area.

Furbearers occurring in the HC/CUEP Area include kit fox at lower elevations, gray fox in mountainous areas, and coyote, bobcat, badger, and other mustelids throughout the area. NDOW emphasizes the importance of streamside riparian habitats for many furbearer species (NDOW 1982; NDOW 1983).

There are no fisheries in the HC/CUEP Area.

3.2.10 Special Status Species

The U.S. Fish and Wildlife Service (USFWS), the Nevada Natural Heritage Program (NNHP), and BLM were consulted to identify Special Status Species that may occur in the HC/CUEP Area (BLM 2001).

The USFWS identified the bald eagle (*Haliaeetus leucocephalus*), and peregrine falcon (*Falco peregrinus*), as listed species under the Endangered Species Act (ESA) as having potential to occur in the HC/CUEP Area (BLM 2001). The bald eagle, a threatened species, is an occasional migrant through the area and would not be expected to remain in the Project area for any extended length of time. Bald eagles winter in Nevada in association with open water that provides the preferred habitat and food requirements for survival (Herron et al. 1985). These features are not abundant in the HC/CUEP Area; however, it is possible that this species may occasionally pass through the area while hunting and/or migrating.

The peregrine falcon is considered a rare nesting inhabitant in Nevada due to the arid landscape. This species prefers to nest in cliffs overlooking water. This species preys primarily on birds, including waterfowl, from perches. The lack of water in the HC/CUEP Area and low populations of this species in Nevada, make it unlikely that this species would be present in the HC/CUEP Area.

The pygmy rabbit, a sensitive species, occurs throughout much of the Great Basin and is primarily associated with areas of tall dense sagebrush and friable soils suitable for establishing a burrow system (Jameson and Peters 1988). Potential habitat for this species occurs at lower elevations within the HC/CUEP Area, but no records of this species are known for the area.

The HC/CUEP Area also provides suitable foraging and nesting habitat for the ferruginous hawk (*Buteo regalis*), Swainson's hawk (*Buteo swainsoni*), and western burrowing owl (*Athene cunicularia hypugea*). Ferruginous hawks nest in juniper trees that extend into the sagebrush-bunchgrass community. This condition is found primarily on the west side of the HC/CUEP Area, but scattered junipers are also found in the eastern portion of the HC/CUEP Area. No active nests have been recorded in recent years, but ferruginous hawks have been observed foraging in the area. However, four nesting territories are located within two miles of the HC/CUEP Area.

The sagebrush habitat along the southern foothills of the Cortez Range in northern Grass Valley provides habitat for sage grouse. Sage grouse utilize mountainous areas as both winter and brood rearing areas, with the Simpson Park Range south of the study area supporting a large grouse population. Sage grouse typically nest and brood in upland areas and meadows in proximity to water. Two leks occur in the HC/CUEP Area, the Horse Creek #1 lek at T26N, R49E, Sections 32 and 33, and Horse Creek #2 in Sections 18 and 19.

The juniper woodland on the west portion of the HC/CUEP Area is suitable foraging habitat for the pale Townsend's big-eared bat (*Corynorhinus townsendii pallscens*), western (Pacific) Townsend's big-eared bat (*Corynorhinus townsendii townsendii*). However, no roosting habitat or hibernacula for this species are known to occur within the HC/CUEP Area. Similarly, the small-footed myotis (*Myotis ciliabrum*), long-eared myotis (*M. evotis*), fringed myotis (*M. thysanodes*), and long-legged myotis (*M. volans*) may occur within the HC/CUEP Area, but suitable roosting and winter hibernacula, such as historic mining features or natural caves, have not been identified. Potential roosting habitat for these species includes talus slopes, rock crevices in cliff faces, and trees.

A sizable portion of the HC/CUEP Area was burned in August 1999. This fire is likely to affect the assessment of impacts to certain wildlife species. The fire may have increased the quality of nesting habitat for burrowing owls, while reducing the quality of nesting habitat for ferruginous hawks. Sage grouse habitat was also lost in the burned area.

Five sensitive plant species were identified as having potential to occur within the HC/CUEP Area, but habitat for these species was subsequently found to be lacking in the HC/CUEP Area (BLM 2001). In addition, the NNHP identified one rare plant species, Beatley buckwheat (*Erigonum beatleyae*), as being recorded near the HC/CUEP Area. The Beatley buckwheat record was from 1937. The Beatley buckwheat is known to occur on weathered slopes and ridges on clay soils in association with Utah juniper ranging from 5,600 to 7,600 feet above mean sea level (amsl). Potential habitat within the HC/CUEP Area includes ridge tops and open exposed soils in the higher elevations of the study area at approximately 6,000 feet. The Beatley buckwheat is not considered a special status species by the BLM or USFWS. Since the species is not considered by the BLM or USFWS as a species of concern, it was not addressed further in this EA.

3.2.11 Cultural Resources

There have been numerous cultural inventories within the HC/CUEP Area (BLM 2001, Appendix A). Most of these inventories, along with discussions of the prehistory and history of the area were summarized in previous documents (BLM 1992a, BLM 1992b, BLM 1993, BLM 1996, BLM 1999, BLM 2000, BLM 2001, and BLM 2003). The Class III surveys conducted to date include approximately 13,115 acres or 43 percent of the HC/CUEP Area.

Only about three percent of the 13,115 acres surveyed actually include cultural sites (BLM 2001), and the majority of the historic sites tend to be clustered in the Cortez Historic District, which is entirely within the HC/CUEP area. However, prehistoric and other mining and non-mining related historic sites are distributed throughout the HC/CUEP Area (BLM 2001, pages 29 and 30).

The Cortez Historic Mining District (District) is within the HC/CUEP Area. Cultural sites or properties within the District include Shoshone Wells, several historic settlements, mills, mines, and a variety of other sites. This District has been determined eligible for the National Register of Historic Places (NRHP) (Zeier 1993). Although the District boundary was designed to enclose most of the known historic mining activities, additional mining-related activities, such as woodcutting, charcoal production, and salt mining extend outside of the District boundary and can be expected in outlying portions of the HC/CUEP Area.

CGM currently operates under the existing approved 1992 Programmatic Agreement (PA) between BLM, SHPO, and the Advisory Council, which is in compliance with all applicable state and federal regulations. This PA is in full force and effect unless superceded by a future PA

3.2.12 Native American Resources and Concerns

Before making decisions or approving actions affecting public lands, the BLM must determine whether Native American interests would be affected, observe pertinent information gathering and consultation requirements, and document how this was done. Native American consultation is the process of 1) identifying and seeking input from appropriate Native American governing bodies, community groups, and individuals, and 2) considering their interests as a necessary and integral part of the BLM's decision making process (BLM 1994).

Consultation for the original HC/CUEP was initiated in January 2000 when BLM mailed letters to Tribal Offices to inform Native Americans that a project had been proposed to the BLM (BLM 2001, pages 30 and 31). Additional letters were sent in February 2000. A professional ethnographer worked with the Native American groups and individuals between January 2000 and June 2000 to identify any concerns and facilitate communications regarding the HC/CUEP. Site visits were conducted and a second professional ethnographer conducted additional field visits and interviews (Rucks 2000). BLM also held meetings with various individuals and Tribal governments during the period January 2001 and May 2001. Additional letters were sent on June 29, 2001 requesting additional information by July 27, 2001, which was the official closure of consultation.

Ethnographic studies performed to date (Rusco 2000; Rucks 2000) within Crescent Valley and Grass Valley in conjunction with previous projects have indicated that portions of the region have been historically used by Native Americans and may have cultural importance. Past ethnographic studies of the area have indicated that Crescent Valley and the surrounding area was utilized by Native American groups for seed and root collecting and small game hunting (Rusco 2000; BLM 1993). Additional ethnographic studies have been performed in an effort to gather documentation regarding the presence or absence of possible properties with the region that may be eligible for listing on the NRHP and are summarized in two separate and confidential reports prepared for the BLM (Rusco 2000; Rucks 2000).

In 2004, BLM determined that portions of the Mount Tenabo and Horse Canyon area are eligible to the National Register of Historic Places as Properties of Cultural and Religious Importance (PCRI). The details of the determination were mailed to the Tribal entities on April 27, 2004. All information related to Native American Religious resources is considered confidential and is on file at the BLM BM Field Office and Elko Field Office.

The BLM has given the tribes an opportunity to provide any unknown and specific information regarding traditional/cultural sites and activities in the Mount Tenabo area (in addition to information that the BLM already has acquired) in a letter dated July 28, 2004, which was mailed out of the Battle Mountain BLM Field Office. If new, significant, information is provided, it will be accepted, reviewed, and considered appropriate to further refine BLM management of properties of cultural and religious importance in the area

3.2.13 Visual Resources

The HC/CUEP Area is located in the northern Great Basin section of the Basin and Range Physiographic Province. The Great Basin is characterized by a rhythmic pattern of isolated mountain ranges and broad sweeping basins. Clear skies and broad open vistas characterize this landscape (BLM 2001). The HC/CUEP Area includes rolling to angular hills and ridges with steep side slopes. The area is covered with a homogeneous pattern of sagebrush-grasses and greasewood at lower elevations and juniper and mixed shrubs at higher elevations. Vegetation colors include tawny gray, brown, dark green, gray-green, and green. Soil colors range from beige to a chalky off-white which, when exposed, contrast highly with the surrounding vegetation. Rock colors vary from light to dark brown to burnt orange. The Horse Canyon haul road adds a strong linear element and a tan to tawny gray color element to the flanks of the Cortez Mountain Range.

Man-made features are mostly linear and predominately consist of roads, fences and power lines. Other visual intrusions in the area include mining developments and impacts from the Buckhorn Mine and previous disturbances from exploratory drilling in the Horse Canyon area. The strong horizontal lines of the existing roads, power lines, fences and Buckhorn Mine developments in the area create weak to moderate contrasts with the gentle sloping lines of the Cortez Mountains.

The HC/CUEP Area is within Visual Resource Management (VRM) Class IV, except for that portion of the HC/CUEP that is located within the Cortez Historic Mining District, which is in a Class III VRM area. Class IV allows for activities that involve major modification of the existing character of

the landscape. The level of contrast can be high, dominating the landscape and the focus of view attention. However, every attempt would be made to minimize the impact of these activities through careful location, minimal disturbance, and repeating the basic elements of the characteristic landscape. The objective of a Class III area is to partially retain the existing character of the landscape. The level of change to the landscape should be moderate.

3.2.14 Recreation

The HC/CUEP Area is generally isolated and undeveloped with no recreational facilities. Developed recreational opportunities are relatively sparse in this part of Nevada and it is assumed that users would travel to remote areas of the general region, particularly on weekends to recreate. General public recreation in the area of the exploration activities primarily includes off-highway vehicle (OHV) use, dirt bike riding, hunting, and camping. Other recreational activities include mountain biking, horseback riding, sightseeing, outdoor photography, nature study, wildlife viewing, bird watching, and rock collecting. Under the Elko Resource Management Plan (BLM 1986a) a portion of the HC/CUEP Area is located in an area “open” to off-road vehicle use.

3.3 NO ACTION ALTERNATIVE

The affected environment described for the Proposed Action would be the same for the No Action alternative.

4.0 Environmental Consequences

4.1 PROPOSED ACTION

CGM has incorporated environmental protection measures into the proposed PoO to reduce potential impacts to the environment. Proposed environmental protection and reclamation measures are presented in Section 2.1.3. This section describes the impacts (direct, indirect, and residual) and mitigation measures associated with the proposed amendment to the HC/CUEP.

4.1.1 Land Use and Access

The Proposed Action would involve a maximum of 250 acres of surface disturbance within the 30,548-acre HC/CUEP area, 50 acres previously approved and an additional proposed 200 acres. Based on an average carrying capacity of 15 acres per animal unit month (AUM), an additional 13 AUMs would be unavailable to livestock for the short-term. This loss of AUMs represents less than 0.003 percent of the total AUMs available on the South Buckhorn, Carico Lake, or Grass Valley allotments. No range improvements would be affected by the Proposed Action. The short-term nature of the exploration activities combined with the planned reclamation activities would re-establish the vegetation on the disturbed sites in less than five years. Therefore, no reduction in the permittees' allotted AUMs would be necessary.

The exploration activities would not interfere with other land uses or prevent existing access to public lands. Reclamation of the access roads created as part of the exploration program would return access to the pre-exploration extent.

4.1.2 Air Quality

The disturbance resulting from exploration activities would produce minor fugitive dust and combustion emissions associated with the disturbance and drilling activities. Where needed, roads would be watered, graveled, or chemically treated to reduce fugitive dust emissions. Vehicle speeds would be reduced in areas of disturbance to minimize the potential for fugitive dust. Drilling would be by wet-drilling methods, further reducing the potential for fugitive dust.

4.1.3 Water Resources

Direct impacts to surface waters are not anticipated. Natural drainage patterns would not be altered. Drill site construction within drainages would be avoided unless prior approval from the BLM is obtained. When drainages must be crossed with a road, the surface disturbance and erosion potential would be minimized by using temporary culverts and/or straw bales to protect drainages. Smaller drainage patterns that could be affected by trench or pad construction would be restored, and all culverts and pipes removed upon completion of the exploration program.

The proposed exploration program could potentially result in direct impacts to groundwater resources where groundwater is encountered in the drill holes. Such impacts could occur due to vertical

movement of groundwater between distinct isolated perched aquifers, and then only if one of the intercepted aquifers is naturally impacted. Such cross-contamination between aquifers would be temporary until the drilling was completed and the hole plugged. Impacts to groundwater resources would be minimized or eliminated through the implementation of protective measures. CGM would plug all drill holes in accordance with Nevada Administrative Code (NAC) 534.4371 as administered by the Nevada Division of Water Resources, State Engineers Office. Plugging procedures include filling the total length of the drill hole with drill cuttings where an aquifer is not encountered or use of cement grout, concrete grout, neat cement or bentonite where an aquifer is encountered. The surface of each drill hole would be sealed with a cement grout, concrete grout or a neat cement plug. These procedures represent practices to ensure that groundwater impacts are reduced or eliminated.

If ground water is encountered, the potential overland surface flows could erode previously disturbed or undisturbed surfaces and increase silt loading with adverse effects in areas where silt is deposited. Adverse impacts to surface water resources would occur if increased erosion rates and generation of sediment during project activities result in channel or watershed instability. CGM would use a variety of environmental protection measures to prevent or reduce erosion associated with project activities including the construction of sumps where significant quantities of water are encountered during drilling. As necessary, erosion and sediment control measures would be utilized to minimize sediment generation. By following the environmental protection measures that have been incorporated into the Proposed Action, both the direct and indirect impacts to surface water resources would be minimized.

Direct, indirect, cumulative and residual impacts to water resources would be eliminated or minimized through the implementation of protective measures. Any direct impacts would be temporary, as drill holes are generally completed and abandoned in a few days. No residual impacts would remain if operating procedures and environmental protections measures are applied.

4.1.4 Soils

In general, soils within the HC/CUEP Area would be impacted by exploration activities. With removal of vegetation and surface soil disturbance, soils would experience increased potential for wind and water erosion. Disturbance would result in loss of soil structure therefore decreasing water holding capacity and infiltration in the surface horizons. Soil microbial activity and soil productivity will also decrease. However, the total acreage of disturbance and distribution of the disturbance would limit the amount of soil loss. Disturbance would be incremental and not occur at one time.

Using incremental disturbance, direct impacts of up to 200 acres of surface soils would result from the construction of proposed drill pads and sumps, and from the development of access roads during Phase I and up to a total of 250 acres within the HC/CUEP Area. Up to 624,779 cubic yards of soil would be impacted as a direct result of the implementation of exploration activities.

CGM would implement reasonable measures that are deemed necessary to minimize adverse impacts and prevent unnecessary surface disturbance within the designated target areas, during the proposed exploration activities. Erosion and runoff control measures, such as water bars, ditching, and other water control structures would be implemented in areas of surface disturbance. After areas of surface

disturbance are regraded, contoured, and available topsoil/growth medium replaced, the area would be seeded with an appropriate and approved seed mixture in order to establish a ground cover and minimize potential erosion effects. Revegetation activities would be commenced at the earliest feasible time following reclamation activities.

Residual impacts to soils would be reduced following implementation of operating procedures and proposed environmental protection measures. Residual impacts would remain until the soil horizons develop following soil redistribution.

4.1.5 Vegetation

The direct impact to vegetation would be the removal of up to 200 acres of vegetation, representing approximately 0.7 percent of the total HC/CUEP Area. The maximum of 250 (50 previously approved and 200 proposed) acres of disturbance would occur only if Phase I and Phase II results warrant Phase III drilling. Vegetation types that may be disturbed include pinyon-juniper/sagebrush, sagebrush/grass, shadscale/bud sagebrush, and shadscale/black greasewood communities. Where practicable, roads will be located to avoid pinyon-juniper stands and isolated trees. However, some trees may be removed for construction of access roads, drill pads and sumps. Measures would be taken to avoid any prickly pear cacti encountered during the drilling program. In the event of cacti disturbance, CGM would proceed in accordance with NAC 527 regulations.

Some of the proposed exploration drilling activities would occur within previously/recently burned areas. CGM would implement regularly practiced reclamation procedures including concurrent reseeding and reclamation in these areas.

The reclaimed areas would have different plant composition than the existing plant communities and the structural complexity of the reclaimed plant communities is likely to be less complex than the adjacent undisturbed vegetation. These impacts are likely to occur over a period of years or decades, depending on the site. However, the additional plant species and early seral stages created by the reclamation would increase the overall regional plant diversity and community structure. Indirect impacts due to vegetation removal may include the establishment of non-native, invasive species or other undesirable species. CGM has a noxious weed control plan that would be implemented to control noxious weeds during exploration and following reclamation of the proposed disturbance.

Concurrent reclamation will be used to maintain the 250-acre maximum active disturbance. Because CGM would use BMPs and implement concurrent reclamation, no additional mitigation measures are necessary.

Residual impacts to vegetation would be reduced or eliminated after the implementation of operating procedures described and the establishment of vegetation.

4.1.6 Wetland/Riparian

CGM's environmental protection measures include avoidance of riparian zones and wetland zones, and of flowing drainages by at least 100 feet, except from June 1 through August 15 when avoidance zones would be one-half mile for wildlife protection. In the event that a drill site is located near an

identified riparian zone or wetland, impacts would be minimized by using BMPs, reclaiming disturbance, and disturbing only the area necessary for safe access and operation. Due to the limited amount of wetland and riparian habitat within the HC/CUEP Area (less than two percent of the Project Area), avoidance should not be an issue, and no impacts to wetlands or riparian zones from the Proposed Action are anticipated.

4.1.7 Forestry

Direct impacts to woodlands may include removal of some trees from construction of the access roads, drill pads, and sumps in woodland areas. Where practicable, exploration roads would be routed to avoid impacts to pinyon and juniper trees. Portions of the pinyon-juniper woodland were burned during 1999, reducing the amount of area for avoidance. CGM would avoid to the extent possible aspen and mountain mahogany species if found to occur within the exploration areas; therefore, no impacts to these species are anticipated.

The dispersed nature of the disturbance and the minimal acreage of disturbance relative to the acreage of woodland area would result in minimal impacts. Successful reclamation and soil stabilization will promote woodland reestablishment on disturbed areas over time. No indirect or residual impacts are projected.

4.1.8 Non-Native, Invasive Species

The proposed exploration disturbance has the potential to create conditions favorable for the invasion of invasive, non-native weeds and other undesirable plants. The use of suitable seed mixes with only certified and tested seed, combined with implementation of prompt and appropriate revegetation techniques would reduce the potential for invasive, non-native weed invasion. The BMPs (NDEP 1994) of actively treating invasive, non-native weed upon discovery would also prevent these weed species from spreading and dominating the site.

The Noxious Weed Monitoring and Control Plan (JBR 2000) that was developed for CGM would be implemented for the proposed HC/CUEP Area to ensure exploration activities follow proper BLM protocol regarding invasive, non-native weed (such as the washing of the undercarriage of vehicles prior to entering exploration areas to remove seeds from invasive, non-native weeds that may be attached to equipment that had been working outside of northeastern Nevada).

4.1.9 Wildlife

The majority of the impact to wildlife as a result of the proposed disturbance would occur within either mule deer fall/winter range and antelope summer range. The disturbance would be dispersed both spatially and temporally, thereby minimizing the impact to wildlife.

There would be no measurable impacts to mammalian predators, including mountain lions and coyotes. Some reduction in small mammal populations would occur that could result in indirect effect to predators through reduction of the prey base, but this impact is likely to be negligible.

Impacts to birds including chukar, Hungarian partridge, and mourning dove are not anticipated due to the dispersed nature of the disturbance.

The HC/CUEP Area has the potential to provide habitat for migratory birds. The USFWS has determined that disturbance to vegetation during the nesting season may result in the destruction of eggs or young in nests of migratory birds, and that this may represent a violation of the MBTA. As a condition of exploration and to avoid potential impacts, CGM would not conduct land clearing during the avian breeding season (March through July annually), except under the direction of a qualified biologist. Prior to vegetation disturbance during the breeding season, CGM would have a qualified biologist survey all areas proposed for immediate disturbance for the presence of active nests. Such surveys are recommendations of the BLM, USFWS, and NDOW. If active nests are located, or if other evidence of nesting is observed (mating pairs, territorial defense, carrying nesting material, transporting of food), a protective buffer around these nests would be delineated, and the area would be avoided to prevent destruction or disturbance of nests until the birds are no longer present. After August 31, exploration activities would commence as normal and no further avian survey, in compliance with the MBTA, would be conducted until the next year. Implementation of such conditions would reduce potential impacts to species protected under the MBTA.

Raptors should not be directly impacted by the Proposed Action. Indirect impacts would occur through potential reductions in prey populations, although this impact is likely to be negligible. The dispersed nature of the disturbance is not likely to result in impacts to nesting habitat or elimination of hunting perches. Active nests would be avoided.

The direct impacts to small mammals and reptiles would be removal of up to 250 acres of habitat during exploration activities. However, the impact to any individual territory or home range is likely to be small, and direct mortalities are not anticipated.

Indirect impacts would include habitat disturbance (vegetation removal) and possible wildlife avoidance of the Project Area due to increase human activities and the operation of drilling equipment. These indirect impacts would occur as long as exploration activities take place. However, the limited amount of disturbance associated with each drill site and the distribution of the disturbance over a large area should result in minimal impacts to wildlife. No residual impacts to wildlife would result from the Proposed Action following reclamation and reestablishment of the vegetation.

4.1.10 Threatened or Endangered Species/Special Status Species

No endangered or threatened plant species are known to occur on or near the HC/CUEP Area; therefore no impacts to special status plant species would be expected to occur from the Proposed Action. Of the special status plant species identified by BLM, USFWS, and NNHP as having the potential to occur in the vicinity of the HC/CUEP Area, the area only provides suitable habitat for non-listed Beatley buckwheat. The Beatley buckwheat is known to occur on dry volcanic outcrops ranging from 4,500 to 7,500 feet amsl (Hickman 1993). Exploration activities are not proposed to occur in areas exhibiting potential habitat for this species.

The bald eagle and peregrine falcon may be occasional visitors to the area, but are not known to reside within the HC/CUEP Area. Therefore, impacts to any species listed under the Endangered Species Act, as amended are not anticipated.

Potential impacts to other special status species (e.g. BLM sensitive species) will depend on site-specific activities, but the temporary drill pads, sumps, and access roads represent minimal impact to habitat and will be dispersed throughout the area such that impacts to individuals, but not populations, may occur. Seasonal restrictions near sage grouse leks/strutting grounds and brood habitat may be implemented, especially for Phase II or Phase III exploration. Active raptor nests would be avoided, reducing the potential impact to these species.

In the event that special status plant or wildlife species are identified in the HC/CUEP Area, CGM will avoid the area and work with a BLM specialist to evaluate possible impacts and devise an alternative plan.

No residual impacts to special status species would result from the Proposed Action following reclamation and reestablishment of the vegetation.

4.1.11 Cultural Resources

CGM would conduct all exploration activities in accordance with applicable federal and state regulations as administered by the BLM and the State of Nevada. Prior to earth disturbing activities, CGM would submit 1:24,000 maps showing the locations of the proposed drill pads and access roads. The BLM would then determine the Area of Potential Effect (APE) and whether a cultural resources survey is necessary. If a survey is required, then CGM would hire a qualified archaeologist to complete the inventory at the level the BLM determines to be most appropriate (Class III, Class II etc.). The archaeologist would submit a report that adheres to the BLM's Cultural Resources Inventory Guidelines documenting the results of the inventory. All sites encountered would be fully recorded and documented in the report. If a site is encountered that could be affected by the proposed disturbance, the preferred course of action would consist of moving the locations of roads and drill pads to avoid cultural resources. At the discretion of the BLM, CGM would hire a qualified archaeologist to monitor earth disturbance in order to ensure that historic and pre-historic properties are not impacted. In the event that proposed earth disturbance cannot avoid sites eligible for the National Register, then CGM would contract to have a data recovery plan submitted to the BLM. The BLM would approve such plans in consultation with the State Historic Preservation Officer (SHPO). Following implementation of the plan (e.g., completed fieldwork) the BLM may approve the proposed disturbance before the results of the data recovery efforts are approved by BLM and the Nevada SHPO. Because all sites eligible for the National Register would either be avoided or mitigated, the proposed HC/CUEP would have no adverse effect on historic and pre-historic properties.

4.1.12 Native American Resources and Concerns

Of the three possible exploration drilling phases, it is highly unlikely that Phase I exploration would cause any permanent or adverse impacts to the elements of the PCRI and other cultural resources in

the area. Traditional, cultural, and spiritual activities could continue during Phase I of the Proposed Action. Access to the area would be maintained and passage through the area would continue. During Phase I drilling, surface disturbance would be considered a local impact to the areas of cultural and spiritual concern. However, as mineral resources are more accurately defined in Phases II and III, adverse impacts to cultural resources and activities are more likely to occur.

4.1.13 Visual Resources

The proposed exploration disturbance would result in short-term visual impacts principally affecting the elements of line and color (BLM 1986c). Horizontal and shallow diagonal lines from the drill roads and exploration trails would create moderate line contrasts with the characteristic landscape. Vegetation removal associated with road and drill pad construction would result in moderate color contrasts, particularly in tree areas. Form and texture contrasts would be weak to none. Visual contrast would be greater where exploration drill pads or access roads occur on slopes that allow more visibility than on lower gradient areas where visibility is obstructed by vegetation. With successful reclamation and revegetation of the exploration roads, long-term visual impacts would be minimized and the Class IV and Class III objectives would be met.

Residual impacts on visual resources may last for years following end of operations and reclamation until native vegetation is completely reestablished. Unsuccessful reclamation efforts would continue to contrast with visual resources. Any evidence of reclaimed roads may invite continued use by the general public, thereby perpetuating linear intrusions in the characteristic landscape.

4.1.14 Recreation

The exploration disturbance areas associated with the project would result in a short-term, temporary reduction of recreation opportunities for hunters, OHV users, hikers and rock collectors. In the long-term, the overland drill roads would be reclaimed and wildlife would be expected to return to the area at the conclusion of exploration activities.

Drilling activities would create disturbances that may temporarily interfere with recreational pursuits in this area. Construction of access routes, drill pads, etc., could affect the abundance of wildlife species available in the area for viewing and/or hunting. Also the sight and sound of exploration activities would diminish the solitude, naturalness and primitive and unconfined recreation opportunities desired by many outdoor enthusiasts. The proposed exploration program would not change existing access to public lands within the HC/CUEP Area for recreational uses. Construction of new roads could temporarily improve access for some types of recreational activities. However, all recreationists would not necessarily benefit and some would temporarily cease using certain areas during drilling activities.

No annual commercial or competitive Special Recreation Permit events occur within this area, so there would be no conflicts between organized recreation events and drilling activities.

The access roads to the areas of the proposed drill sites are open to the public, and individuals have been able to visit the area for recreational purposes. The proposed drilling would not involve restrictions on access to these existing roads.

Indirect impacts may occur as a result of the drilling activity due to an increased noise level during drilling activity that may decrease the quality of the recreational activity. Residual impacts to recreational land use are not anticipated.

4.2 ALTERNATIVES

4.2.1 No Action Alternative

The environmental consequences described in Section 4 would be as described in Section 4.0 (pages 35 – 42, and incorporated by reference) of *Environmental Assessment NV063-EA00-35 Cortez Gold Mines, Inc. Horse Canyon/Cortez Unified Exploration Project* (BLM 2001). This EA analyzed the impacts of the 50 acres of exploration activity within the same project boundary. The impacts under the No Action Alternative are the same as discussed above for the Proposed Action; only the magnitude of the impacts would be less (a maximum of 50 acres as compared to a maximum of 250 acres) within the 30,548-acre HC/CUEP boundary.

5.0 Cumulative Impact Assessment

This section analyzes the potential cumulative impacts from past, present, and reasonably foreseeable future projects combined with the Proposed Action within cumulative assessment areas specific to the resources for which cumulative impacts may be anticipated. A cumulative impact has been defined as “the impact, which results from the incremental impact of the action, decision, or project when added to other past, present, and reasonably foreseeable future actions, regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time” (BLM 1990).

As related to the Proposed Action, cumulative impacts are possible for soils, vegetation, invasive, non-native species, woodland resources, water resources, wildlife, special status species, visual resources, land use authorizations, and recreation. The cumulative assessment area for the majority of resources encompasses approximately 361,400 acres and generally includes the area of Crescent Valley, the northern portions of Grass Valley, the southern portion of the Cortez Mountain Range, and portions of the Shoshone and Toiyabe Mountain Ranges, as shown in **Figure 5-1**. The cumulative assessment area for cultural resources encompasses approximately 186,400 acres and is also shown in **Figure 5-1**. The reasonably foreseeable time frame for the cumulative assessment analysis assumes five years the life of the Proposed Action.

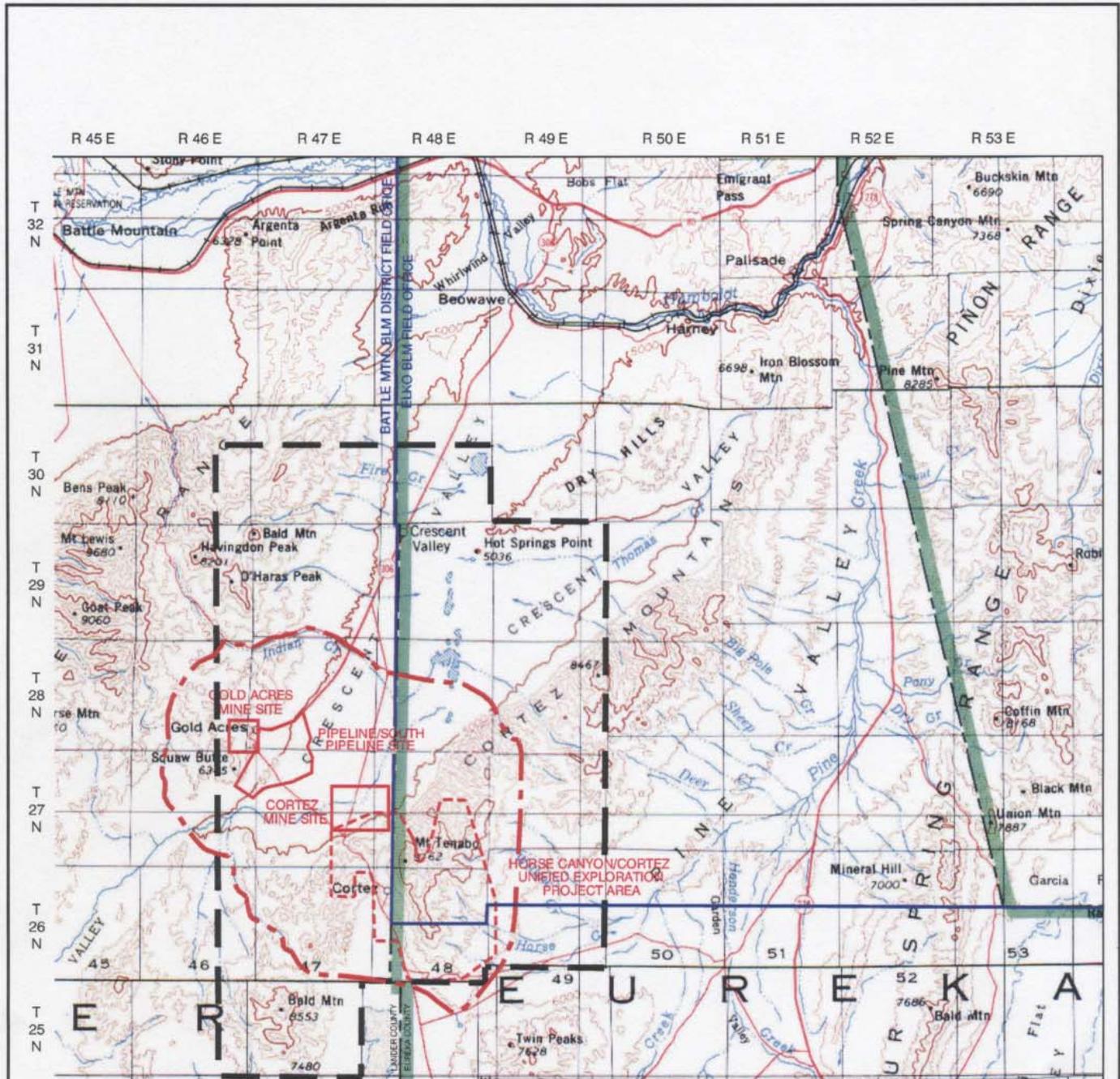
The following sections contain a description of interrelated activities that have occurred and may reasonably occur in the foreseeable future within the cumulative assessment areas, and an analysis of the impacts of these interrelated activities within a regional context.

5.1 DESCRIPTION OF INTERRELATED PROJECTS

The primary activities, which would contribute to cumulative impacts would include past, present, proposed, and reasonably foreseeable future recreation, livestock grazing, fires and fire rehabilitation, and other land use including mineral exploration and development activities combined with the proposed HC/CUEP. Past, present, proposed, and reasonably foreseeable future projects are described in this section and in **Table 5-1**, with respect to the cumulative assessment area.

5.2 PAST AND PRESENT ACTIVITIES

Historic and present mining and exploration activities within the cumulative assessment area total an estimated 13,624 acres on both private and public land. Historic and present-day mining activities include exploration activities occurring near Horse Canyon, exploration occurring in the Crescent Valley region, and mining at Cortez, Gold Acres, Pipeline, and South Pipeline areas and throughout the valley.



BASE FROM USGS 1:500,000 STATE OF NEVADA MAP

EXPLANATION

- CUMULATIVE ASSESSMENT AREA FOR ALL OTHER RESOURCES
- CULTURAL RESOURCES CUMULATIVE ASSESSMENT AREA



8 0 8 MILES

**CORTEZ GOLD MINES
HORSE CANYON/CORTEZ
UNIFIED EXPLORATION
PROJECT**

**FIGURE 5-1
CUMULATIVE ASSESSMENT AREA**

Table 5- 1: Past, Present, Proposed, and Foreseeable Future Surface Disturbance for the HC/CUEP Cumulative Impact Area

Activity	Surface Disturbance (acres)
Past, Present, and Proposed Disturbance	
<i>Mining-Related</i>	
West Pine Valley Exploration	150
West Side Exploration	150
Horse Canyon/Cortez Unified Exploration Project Area (includes 200-acre Proposed Action and existing mining disturbance)	1,056
Proposed Pediment/Cortez Hills Mine Project	Approx. 1,870
Cortez Silver Mining District	93
Cortez – Outside Project Area	866
Pipeline/South Pipeline	7,688
Gold Acres	881
Robertson	285
Mill Canyon	18
Hot Springs Point	5
Mud Springs	10
Uhalde Placer	100
Fox Mine	4
Toiyabe Mine	218
Fire Creek Mine	230
Pipeline/South Pipeline Pit Expansion	0
Subtotal	13,624
<i>Non-Mining Related</i>	
Highway (assumes 100-foot right-of-way)	230
County Roads (assumes 25-foot right-of-way)	175
Crescent Valley Town Site	642
Crescent Valley Airport	15
Power lines	63
Agriculture Development	6,700
Crescent Valley Wildland/Urban Interface	850
Subtotal	8,675

Activity	Surface Disturbance (acres)
Reasonably Foreseeable Disturbance	
<i>Mining-Related</i>	
Exploration Notices/Mining Plans of Operations (estimate)	1,000
Subtotal	1,000
TOTAL CUMULATIVE SURFACE DISTURBANCE	23,299

Source: BLM 2001, Cortez – various PoOs.

Non-mining disturbance within the cumulative assessment area totals an estimated 8,670 acres and includes paved highways, county paved and dirt roads, Crescent Valley town site, airport and water well, power lines, agricultural development, and a wildland/urban interface project. In addition to this disturbance, there are numerous prospect pits, two-track dirt roads, scattered private dwellings and abandoned irrigation ditches that are not included in this estimate.

Approximately 6,110 acres (20 percent) of the HC/CUEP Area burned in August 1999 as a result of wildfires. According to maps recently produced by the BLM, a total of approximately 145,000 acres has been burned within the cumulative assessment area as a result of recent wildfires, representing approximately 40 percent of the total cumulative assessment area. The BLM BMFO has conducted rehabilitation of areas impacted by the 1999 fires, including aerial seeding and chaining of the burned areas. A general discussion regarding wild fires occurring within the cumulative effects study area has been included in this analysis; however, the burned acreage is not included in the calculation for cumulative surface disturbance.

These burned areas represent large areas of vegetation removal and the vegetation requires time to become well-established, especially in areas of severe burning. Invasion of invasive, non-native weeds and unfavorable species could be especially problematic in some burned areas. The effects of fire could influence the assessment of impacts to certain wildlife species. Until rehabilitated, fire is likely to adversely affect wildlife habitat along the eastern borders of the HC/CUEP Area, reducing the amount of suitable habitat. Wildlife may become more dependent upon remaining suitable habitats in the HC/CUEP Area.

5.3 PROPOSED ACTIVITIES

Disturbance for the Proposed Action encompasses an additional 200 acres and would occur during phases I, II, and III of the Project for a cumulative total of 250 acres. A detailed description of the Proposed Action is presented in Chapter 2.0 of this EA.

5.4 REASONABLY FORESEEABLE ACTIVITIES

CGM submitted a Plan of Operations for the Pipeline/South Pipeline Pit expansion in January 2001. The Plan of Operations includes deepening and expanding the existing South Pipeline open pit with no additional surface disturbance, only an extension in time. On January 8, 2001, CGM submitted a Plan of Operations to the BLM proposing the development of the Pediment Deposit. Exploration has identified targets in the immediate vicinity of the proposed Pediment Project referred to as Cortez Hills. Development of this area is a reasonably foreseeable activity. Additional exploration work is needed to define these resources, and the Pediment Project PoO would be modified to reflect the findings of this work.

Current livestock grazing and ranching activities would continue to occur in the reasonably foreseeable future within the cumulative assessment area, subject to allotment management strategies of the BLM field offices.

5.5 CUMULATIVE IMPACTS

The following sections discuss the cumulative impacts of the Proposed Action when combined with past, present, and foreseeable future activities (i.e., exploration and mineral development, livestock grazing and ranching, administrative land uses, etc.) within the respective cumulative assessment areas.

Activities outlined under the Proposed Action are consistent with the cumulative analysis and reasonably foreseeable future actions in the *Horse Canyon/Cortez Unified Exploration Project Environmental Assessment* (BLM 2001). Therefore, this EA incorporates by reference the cumulative impact assessment for each resource (BLM 2001).

5.5.1 Water Resources

Past, present, proposed, and reasonably foreseeable activities may result in impacts to water resources. Impacts to water resources from current and proposed mining operations have been addressed in recent EIS documents (BLM 2001). Impacts to water resources resulting from the Proposed Action and reasonably foreseeable activities may include increased sedimentation and potential for erosion. Past, present, proposed, and reasonably foreseeable activities that result in increased sedimentation or erosion would be required to comply with regulations set forth by the BLM and the NDEP.

5.5.2 Soils

Approximately 23,400 acres of soils would be disturbed within the cumulative assessment area, representing six percent of the total cumulative assessment area. This disturbance consists of past, present, proposed, and reasonably foreseeable operations consisting of old mining operations, exploration activities, mine development, and non-mining related actions. Since the average salvageable soil depth varies with each soil type throughout the cumulative assessment area, and the quantity of salvaged soil for each type of activity also varies considerably, the cumulative impact to soil resources is an approximation. Assuming an average salvageable soil depth of 12 inches,

approximately 38 million cubic yards of growth media may be disturbed by all activities within the cumulative assessment area. The 200 acres associated with the Proposed Action would be 0.9 percent of the total cumulative impact to soils.

Cumulative impacts to soil resources would not occur all at once, nor would they occur at one location, but would occur sporadically throughout the foreseeable future time period (five years) and would be dispersed over the cumulative assessment area. For current and proposed mining and mineral exploration activity, available growth medium would be relocated from the immediate area of activities and returned immediately after operations cease, thus minimizing cumulative impacts to this resource. Non-mining activities, specifically disturbance associated with roadways, airports, and the development of structures in the town of Crescent Valley would likely remain as permanent disturbance.

Livestock grazing has had and would continue to have, direct and indirect impacts on soils, although grazing impacts are not quantified as part of this analysis. Range improvement and wildfire suppression activities would also be expected to cause soil disturbance. Administrative land use activities represent approximately 35.8 percent of total cumulative impacts to soils.

5.5.3 Vegetation

The combined past, present, proposed, and reasonably foreseeable surface disturbance within the cumulative assessment area has or would impact vegetation resources. A total of approximately 23,400 acres of vegetation could be disturbed within the cumulative assessment area over the next five years, representing approximately six percent of the entire cumulative effects study area.

Reclamation of disturbed areas would reduce the long-term impact to vegetation. The use of the proposed reclamation seed mixes and the spread of desirable plant species from surrounding undisturbed lands through natural colonization would enhance the revegetation of disturbed areas. Some areas may remain barren until vegetation becomes established, thus temporarily impacting wildlife and livestock forage. Approximately 8,670 acres of non-mining related activities (i.e., roadways, airport, and development near the town of Crescent Valley) would remain developed and unreclaimed (non-vegetated). The 200 acres associated with the Proposed Action would represent 0.9 percent of the total cumulative impact to vegetation.

5.5.4 Forestry

The greatest impact to woodland products from the past, present, proposed, and reasonably foreseeable activities would be the loss of woodland products from public lands due to land clearing activities and losses to wildfires. During the late 1800's, the majority of the pinyon-juniper stands within this area were removed to support mining and ranching operations at the time. The existing pinyon-juniper community is considered predominantly a second growth stand (BLM 2001).

The current and future demand for woodland products would continue to be met on the remaining public lands that are available and/or designated for woodland harvest and pine nut gathering. The majority of vegetation communities with woodland resources are outside of areas identified as having

cumulative disturbance (Table 5-1). Approximately 3,700 acres, representing one percent of the cumulative assessment area, of past, proposed, and reasonably foreseeable cumulative disturbance is within a woodland vegetation community. Approximately 35,930 acres within the cumulative assessment area consists of a pinyon/pinyon-juniper vegetation community, and represents approximately ten percent of the total cumulative assessment area. As presently proposed, disturbances to woodland resources would be avoided by CGM or minimized to the greatest extent possible.

5.5.5 Invasive, Non-Native Species

The combined past, present, proposed, and reasonably foreseeable surface disturbance within the cumulative assessment area has the potential to create conditions favorable for the invasion of invasive, non-native weeds, and other undesirable plants. The use of suitable reclamation seed mixes with only certified and tested seed, combined with implementation of prompt and appropriate revegetation techniques would reduce the potential for invasive, non-native weed invasion. The Proposed Action would result in 200 acres of surface disturbance. This represents 0.9 percent of total surface disturbance within the cumulative effects study area having the potential to create conditions favorable for the invasion of invasive, non-native weeds.

The BMPs (NDEP 1994) of actively treating invasive, non-native weeds upon discovery would also prevent these weed species from spreading and dominating the site. CGM would ensure exploration activities follow proper BLM protocol regarding invasive, non-native weeds (i.e., cleaning the undercarriage of vehicles prior to entering exploration areas to remove potentially attached vegetative parts and seeds from invasive, non-native weeds). CGM has an ongoing noxious weed control program to address this issue.

5.5.6 Wetlands and Riparian Zones

There may be minor impacts to wetlands and riparian zones as a result of past, present, proposed, and reasonably foreseeable activities. No modification or sedimentation of wetland or riparian resources has occurred and is not expected to occur as a result of future exploration or mining activities. Livestock grazing would continue in proximity to and within wetland and riparian areas.

5.5.7 Wildlife

Past, present, proposed, and reasonably foreseeable activities would result in approximately 23,400 acres of disturbance in wildlife habitat over the five-year period within the cumulative assessment area. Although the cumulatively impacted acreage would be approximately six percent of the cumulative assessment area, some of the impacts would occur within key deer use areas. However, direct and indirect impacts to wildlife would be short-term for the duration of each mining and exploration project. In addition, the impact would be dispersed throughout the cumulative assessment area since all mining operations and exploration activities would not occur in the same location nor during the same time period. The cumulative impact to wildlife would occur as long as mining or exploration was active in any immediate area. Wildlife may avoid immediate areas of active mining

and exploration. It is likely that wildlife mortality may result to smaller less mobile species as mining equipment clears land and travels on exploration roads. Such mortality is likely to affect common and abundant species such as ground squirrels, rabbits, snakes, and lizards that frequently cross roadways and/or are less mobile. However, the few individuals that may be killed each year will not affect populations of these species over the project area. Once all mining activities cease, wildlife species typical of the area are likely to re-inhabit the reclaimed areas as the vegetation returns to pre-mining composition and structure. The 200 acres associated with the Proposed Action would represent 0.9 percent of the total cumulative impact to wildlife.

5.5.8 Threatened or Endangered Species/Special Status Species

Seep, springs, and riparian areas are important habitat to Special Status Species potentially occurring within the cumulative effects study area. Exploration and mining activities occurring in the reasonably foreseeable future would be coordinated as to avoid impacts to seep, spring, and riparian areas and when possible, Special Status Species habitat. Since the proposed exploration activities would be coordinated to avoid impacts to seep, spring, and riparian areas, as well as, habitat for the sensitive species, implementation of the proposed project would not contribute cumulatively to an effect on any Special Status Species.

5.5.9 Land Use and Access

Past, existing, proposed, and reasonably foreseeable land use authorizations include exploration and mining projects, highways, county roads, power line, and range improvements. Previous and existing non-mining land uses on both private and public land have resulted in approximately 8,670 acres of disturbance. Reasonably foreseeable land uses include a wildland/urban interface project to reduce the fire hazard near the community of Crescent Valley. This project may include up to 850 acres of vegetation modification within the cumulative effects study area. The 200-acre Proposed Action represents 0.9 percent of the area covered by past, present, and reasonably foreseeable future land use authorizations within the 361,400-acre cumulative effects study area.

5.5.10 Livestock

Past, present, and reasonably foreseeable activities may result in impacts to livestock and grazing. Impacts to livestock/grazing from the Proposed Action and reasonably foreseeable activities may include a short-term reduction in AUMs. Reasonably foreseeable mining activities could result in a long-term reduction of AUMs and a loss of AUMs in those areas, such as pits, would not be revegetated.

5.5.11 Cultural Resources

The cumulative effects study area for cultural resources includes an area of about 170,000 acres. This study area was previously analyzed in the HC/CUEP EA (BLM 2001, Section 5.2.9, pages 56-58). Cultural resource surveys are ongoing in the Project area.

CGM operates under applicable laws and regulations relative to cultural resources, and pursuant to the terms of the 1992 PA. Exploration targets would be identified and the BLM would then determine the Area of Potential Effect (APE) and the level of inventory that the BLM determines to be most appropriate (Class III, Class II etc.) for any new access roads and drill pads. Should any cultural resources be identified, CGM would shift the access/drill pad a safe distance to avoid potential impacts to the site. As such, no direct, indirect, or residual impacts are predicted. In the event that an eligible site cannot be avoided, the site would be mitigated as described in Sections 2.1.2 and 4.1.11.

A short-term effect is the possibility of artifact collection by workers or other individuals using exploration roads as access. Contractor and employee site specific training emphasizes disciplinary action if such collection takes place. An indirect cumulative effect is the removal of artifacts by non-Cortez individuals using an expanded road system to access previously inaccessible areas. This kind of effect can be reduced by reclamation of roads following exploration.

The existing, proposed, and reasonably foreseeable projects presented in Table 5-1 have been or would be approved by the BLM prior to project initiation. The approval process would include stipulations to avoid or mitigate adverse effects on identified cultural sites, thereby limiting impacts to cultural resources. If cultural resources are discovered during activities related to the Proposed Action, the resources would be left undisturbed and their presence brought to the attention of the BLM authorized officer and SHPO. Existing, proposed, and reasonably foreseeable activities would avoid or mitigate all known and discovered resources. No incremental cumulative effects would occur to cultural resources as a result of the proposed project.

5.5.12 Native American Religious Concerns

Before issuing a decision or approving actions, the BLM must determine whether Native American interests would be affected, comply with federal requirements for appropriate information gathering and, if necessary, consultation. Ethnographic studies (Rusco 2000; Rucks 2000), consultation, and information gathering efforts performed in conjunction with other CGM and BLM projects have indicated that the HC/CUEP Area has historically and prehistorically been used by Native Americans.

Recently, BLM has determined that portions of the Mount Tenabo/Horse Canyon area are eligible to the National Register of Historic Places as Properties of Cultural and Religious Importance. The effects of the activities to be conducted under the Proposed Action within the cumulative effects study area are expected to be minimal and relatively short-term due to the nature of the Phased I proposed exploration activities and the special environmental protection measures to be used by CGM. However, Phase II and III exploration may increase the likelihood of an adverse impact to cultural resources in the area and elements of the PCRI. BLM would have to determine whether specific actions may have a negative impact to the cultural resources in the cumulative impact study area or the components of the eligible PCRI. If it is determined that there may be a negative impact(s) to cultural resources in the area or the PCRI during any one of the three proposed phases (site specific activities), consultation would begin with the Nevada State Historic Preservation Office (NVSHPO). BLM would determine, in consultation with the NVSHPO, what mitigation measures, if any, would be

implemented prior to site-specific project approval. Determinations of effect may require further site-specific consultation with the Tribes and NVSHPO.

If, as a result of exploration drilling (Phases I through III), a mining plan of operations is submitted to BLM, direct and/or indirect impacts to Properties of Cultural and Religious Importance could occur.

5.5.13 Visual Resources

The past, present, proposed, and reasonably foreseeable surface disturbance within the cumulative assessment area has the potential to result in short- and long-term visual impacts, representing approximately 23,400 acres (six percent of the cumulative assessment area) principally affecting the elements of line and color. Horizontal and shallow diagonal lines from the drill roads, exploration trails, highways, and power lines would create moderate line contrasts with the characteristic landscape. Moderate color contrasts would result from the vegetation removal associated with these linear activities. The presence of drill rigs would also result in a minor contrast in color in relation to the natural environment. Form and texture contrasts would be weak to none. Interim reclamation and revegetation efforts of the exploration roads and drill sites may result in short-term visual impacts until vegetation becomes established.

Mine development would remain the major factor impacting visual resources. The mine facilities (e.g., heap leach pads, waste rock storage facilities, and pits) generally would have longer-term impacts (i.e., 10 or more years, depending on the life of the facility). These facilities would add contrast to line, color, form, and texture, depending on the location of the facility and the reclamation activities.

The construction of non-mining related highways, county roads, airports, and structures in the town of Crescent Valley has resulted in permanent, non-reclaimable disturbance equating to approximately 8,675 acres (37 percent of all disturbances within the cumulative effects study area). The 200 acres associated with the Proposed Action would represent 0.9 percent of the total visual disturbance within the cumulative effects study area.

5.5.14 Recreation

Exploration and mining activities at the Gold Acres, Cortez, Pipeline, South Pipeline, HCCUEP, and proposed West Pine Valley sites would generate new disturbance. These disturbances, along with reasonably foreseeable future mining operations, would continue to decrease the amount of land and access available for dispersed recreation (such as hunting) within the area.

The closure of individual facilities and entire operations, with associated reclamation, would open some of the acreage to recreational uses. Open pit areas would remain as a long-term cumulative impact with respect to recreation. The Proposed Action represents 0.9 percent of the total disturbance within the cumulative effects study area that would result in decreased recreational accessibility to public lands.

6.0 CONSULTATION AND COORDINATION

6.1 LIST OF PREPARERS

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Gail Givens	Assistant Field Manager, Nonrenewable Resources
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Gary Back	Project Manager
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6.2 PERSONS, GROUPS, OR AGENCIES CONSULTED

Other Reviewers

The following persons, groups, and agencies were contacted during the preparation of this document.

Cortez Gold Mines

Jim Collord, Environmental and Land Superintendent
Stephanie Hallinan, Senior Environmental Engineer
Bob Hays, Exploration and Development Superintendent

6.3 NATIVE AMERICAN CONSULTATION

Native American consultation for the original HC/CUEP was initiated on January 21, 2000 via letters sent to Tribal Offices. Consultation continued through July 27, 2001 (BLM 2001). Notification of the current amendment to the PoO was sent on July 28, 2004 when the Battle Mountain BLM Field Office sent certified letters to the various tribal entities requesting that they provide any unknown information to BLM to be included in the decision making process. BLM Elko and Battle Mountain Field Offices have on file extensive documentation of traditional/cultural/spiritual activity and sites. Any new and significant information, not currently existing in BLM cultural resource files, will be considered when identifying any alternatives, recommendations, or mitigation measures. The consultation process is summarized in Section 3.2.12 of this document.

The boundaries of the HC/CUEP Area for the July 2003 amendment are not being modified; therefore, no additional issues are anticipated.

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Appendix A

Cultural Resource Inventories in the Horse Canyon/Cortez Unified Exploration Project Area

**Table A-1: Cultural Resources Inventories in the Horse Canyon/Cortez Unified
Exploration Project Area**

Agency Report No.		Contractor Report No.	Lead Agency	Fieldwork Date	Inventory Type		
Lead	Secondary				Class 1	Class 2	Class 3
1-0684		BLM 1-684	BLM Elko	1983			X
1-1460		ARS 673	BLM Elko	1991			X
1-1483		DLZ 91-42	BLM Elko				X
1-1540		ARS 686	BLM Elko	1992			X
1-1967		ARS 819	BLM Elko	1995			X
1-2025		ARS 879	BLM Elko	1996			X
6-0167		Pat Welch	BLM Battle Mtn.	1978			X
6-0349-0		BLM	BLM Battle Mtn.	1981		X	
6-0462-0		UNR	BLM Battle Mtn.	1982			X
6-1122-0		ARS 4298	BLM Battle Mtn.	1988			X
6-1122-1		ARS 501	BLM Battle Mtn.	1988			X
6-1335		BLM 6-1335	BLM Battle Mtn.	1990			X
6-1341		Retro 89-189	BLM Battle Mtn.	1990			X
6-1357	1-1647	MAI 522	BLM Battle Mtn.	1990			X
6-1368	1-1488	ARS 639	BLM Battle Mtn.	1990			X
6-1381-0		FWARG	BLM Battle Mtn.	1990	X		
6-1381-1	1-1489	FWARG	BLM Battle Mtn.	1991		X	
6-1507-0		ARS	BLM Battle Mtn.	1992			X
6-1507-1	1-1621	ARS 707	BLM Battle Mtn.	1992			X
6-1507-2	1-1460	ARS	BLM Battle Mtn.	1992			X
6-1544-0		RCI	BLM Elko	1993	Hist.	Context	
6-1753		ARS 812	BLM Battle Mtn.	1994			X
6-1756-0		Sagebrush	BLM Battle Mtn.	1995	X		
6-1911	1-2007	ARS 853	BLM Battle Mtn.	1995			X
6-2101-0		ARS 966	BLM Battle Mtn.	1998			X
6-2131-0	1-1973	Summit 1282	BLM Battle Mtn.	1999			X

6-2153		WCRM	BLM Battle Mtn.	1992			X
6-2185		KEC 201	BLM Battle Mtn.	2000			X
6-2341-0		Summit	BLM Battle Mtn.	2001			X
6-2351-0		Summit	BLM Battle Mtn.	2002			X
6-2369(P)		Summit 1376-032	BLM Battle Mtn.	2002			X
6-2369-0		Summit	BLM Battle Mtn.	2003			X
6-2369-1		Summit 1376-032RV	BLM Battle Mtn.	2002-2003			Site Eval.
6-2369-2(P)		Summit 1376-032	BLM Battle Mtn.	2003			X
6-2369(P)		Summit 1376-013	BLM Battle Mtn	2003			X
6-2375-0		Summit	BLM Battle Mtn	2002			X
6-2377-0		Summit	BLM Battle Mtn	2002			X
6-2392-0		Summit	BLM Battle Mtn	2002			X