BLM

# U.S. Department of the Interior

# Bureau of Land Management

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**Environmental Assessment**

**DOI-BLM-NV-B020-2013-0011-EA**

**March, 2013**

# Environmental Assessment of Corvus Gold Nevada, Inc's. Proposed North Bullfrog Exploration Plan of Operations Nye County, Nevada

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| | |
|---|---|
| ° | degree |
| amsl | above mean sea level |
| APE | Area of Potential Effect(s) |
| BAPC | Bureau of Air Pollution Control |
| BLM | Bureau of Land Management |
| BMPs | Best Management Practices |
| BMRR | Bureau of Mining Regulation and Reclamation |
| BOSP | Beatty Open Space Plan |
| CERCLA | Comprehensive Environmental Response, Compensation and Liability Act |
| CESA | Cumulative Effects Study Area |
| CEQ | Council on Environmental Quality |
| CFR | Code of Federal Regulations |
| CGN | Corvus Nevada Gold, Inc. |
| DOI | Department of the Interior |
| EA | Environmental Assessment |
| EO | Executive Order |
| ESA | Endangered Species Act of 1973, as amended |
| F | Fahrenheit |
| FLPMA | Federal Land Policy and Management Act of 1976 |
| GBBO | Great Basin Bird Observatory |
| GHG | Greenhouse Gas |
| HFRA | Healthy Forest Restoration Act |
| HMA | Herd Management Area |
| IM | Instruction Memorandum |
| IPCC | Intergovernmental Panel on Climate Change |
| LR2000 | Bureau of Land Management's Land & Mineral Legacy Rehost 2000 System |
| MBTA | Migratory Bird Treaty Act |
| MDB&M | Mount Diablo Base and Meridian |
| mg/l | milligram/liter |
| Mining Law | General Mining Law of 1872, as amended |
| MOU | Memorandum of Understanding |
| MSHA | Mine Safety and Health Administration |
| NAAQS | National Ambient Air Quality Standards |
| NAC | Nevada Administrative Code |
| NAGPRA | Native American Graves Protection and Repatriation Act |
| NCCMP | Nye County Comprehensive Master Plan |
| NDEP | Nevada Division of Environmental Protection |
| NDOT | Nevada Department of Transportation |
| NDOW | Nevada Department of Wildlife |
| NDWR | Nevada Division of Water Resources |
| NEPA | National Environmental Policy Act |
| NNHP | Nevada Natural Heritage Program |
| NRCS | Natural Resource Conservation Service |
| NRHP | National Register of Historic Places |
| NRS | Nevada Revised Statute |
| NSAAQS | Nevada State Ambient Air Quality Standard |

| | |
|---|---|
| Plan | Plan of Operations |
| PLS | pure live seed |
| Project | North Bullfrog Exploration Project |
| Protocol | State Protocol Agreement between the Bureau of Land Management, Nevada and the Nevada State Historic Preservation Office for Implementing the National Historic Preservation Act, January 2012 |
| RC | Reverse Circulation |
| RFFAs | Reasonably Foreseeable Future Actions |
| RMP | Resource Management Plan |
| ROW | right-of-way |
| SCP | Spill Contingency Plan |
| SHPO | State Historic Preservation Officer |
| SIP | State Implementation Plan |
| TCPs | Traditional Cultural Properties |
| TFO | Tonopah Field Office |
| US | United States |
| USFWS | United States Fish and Wildlife Service |
| USGS | United States Geological Survey |
| VRM | Visual Resource Management |

# CORVUS GOLD NEVADA, INC.
# NORTH BULLFROG EXPLORATION PROJECT
# ENVIRONMENTAL ASSESSMENT

# 1 INTRODUCTION / PURPOSE OF AND NEED FOR ACTION

## 1.1 Introduction

The North Bullfrog Exploration Project (Project) is located in the Bullfrog Hills, approximately eight miles northwest of Beatty, Nevada, at elevations ranging from 3,900 feet above mean sea level (amsl) to 4,600 feet amsl (Figure 1). The Project is located in all or parts of Sections 25, 26, 27, 34, 35, and 36, Township 10 South, Range 46 East (T10S, R46E), Section 31, T10S, R47E, Sections 1, 2, and 11, 12, and l3, T11S, R46E, and Sections 6 and 7, T11S, R47E, Mount Diablo Base and Meridian (MDB&M), Nye County, Nevada. The Project is accessed from United States (US) Highway 95.

The  has an active Plan of Operations NVN-83002/ Nevada Reclamation Permit No. 0290 (Plan) that was submitted by Redstar Gold USA, Inc. (Redstar) in 2007. The activities proposed under that Plan were analyzed in environmental assessment (EA) NV065-EA08-067. A decision record for that Plan was signed in 2008, approving the activities under that Plan. Corvus Gold Nevada, Inc. (CGN) subsequently took over Redstar's Plan and submitted an amended Plan to the Bureau of Land Management (BLM) Battle Mountain District, Tonopah Field Office (TFO) in accordance with the BLM's Surface Management 43 Code of Federal Regulations (CFR) 3809.400.  A joint amended reclamation permit application was also submitted to the Nevada Division of Environmental Protection (NDEP), Bureau of Mining Regulation and Reclamation (BMRR) in accordance with Nevada reclamation regulations at Nevada Administrative Code (NAC) 519A. The BLM issued a completeness letter for the amended Plan in May 2012, which initiated a federal action and the determination that an EA would be required.

The Project is located entirely on public land administered by the BLM in the Bullfrog Mining District. The original project area associated with the Redstar Plan contains approximately 3,877 acres of public land and is shown as a red line on Figure 1. Within a portion of the project Area, CGN proposes to conduct activities in an area that is shown as a blue line on Figure 1. This area, which contains approximately 1,900 acres of public land, will be referred to as the Area of Proposed Activities. Within the Area of Proposed Activities, block surveys/inventories for biological and cultural resources have been completed. The Area of Proposed Activities is the area where project activities would occur and that will be analyzed under the EA that has been completed pursuant to the National Environmental Protection Act (NEPA). The Proposed Action would disturb 93.6 acres in phases within the Area of Proposed Activities.

In addition, the Proposed Action includes the 6.43 acres that were approved in 2008 because the disturbance acres approved in the original Plan continue to be utilized for exploration and have not been reclaimed. Figure 2 shows existing and proposed disturbance. Due to the nature of mineral exploration, it is difficult to predict the exact location of project activities because future activities are dependent of the results of initial activities. In addition, since eligible or unevaluated cultural resources would be avoided, the exact location of each type of disturbance could change.

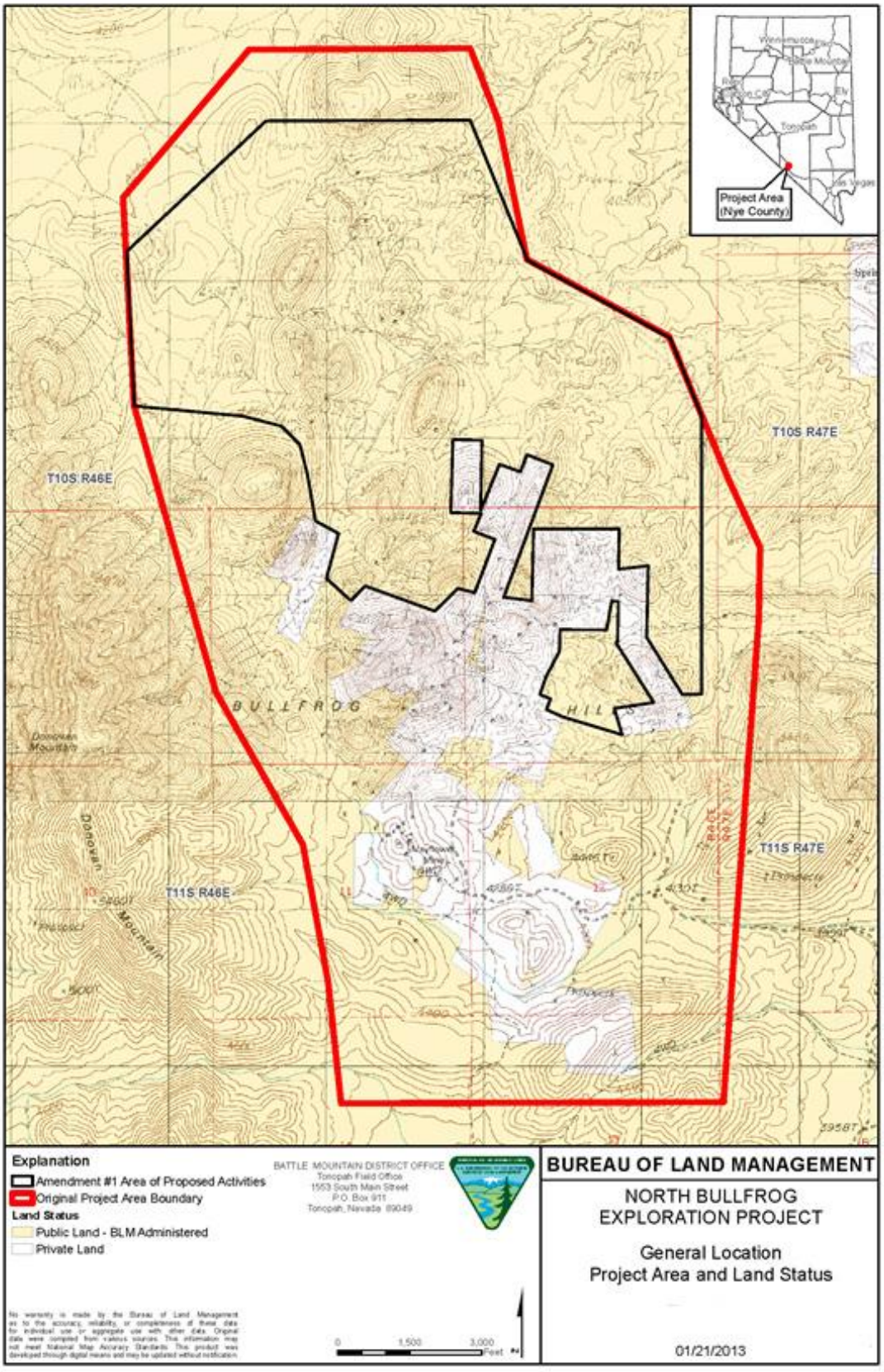


**Figure 1: General Location, Project Area, and Land Status**

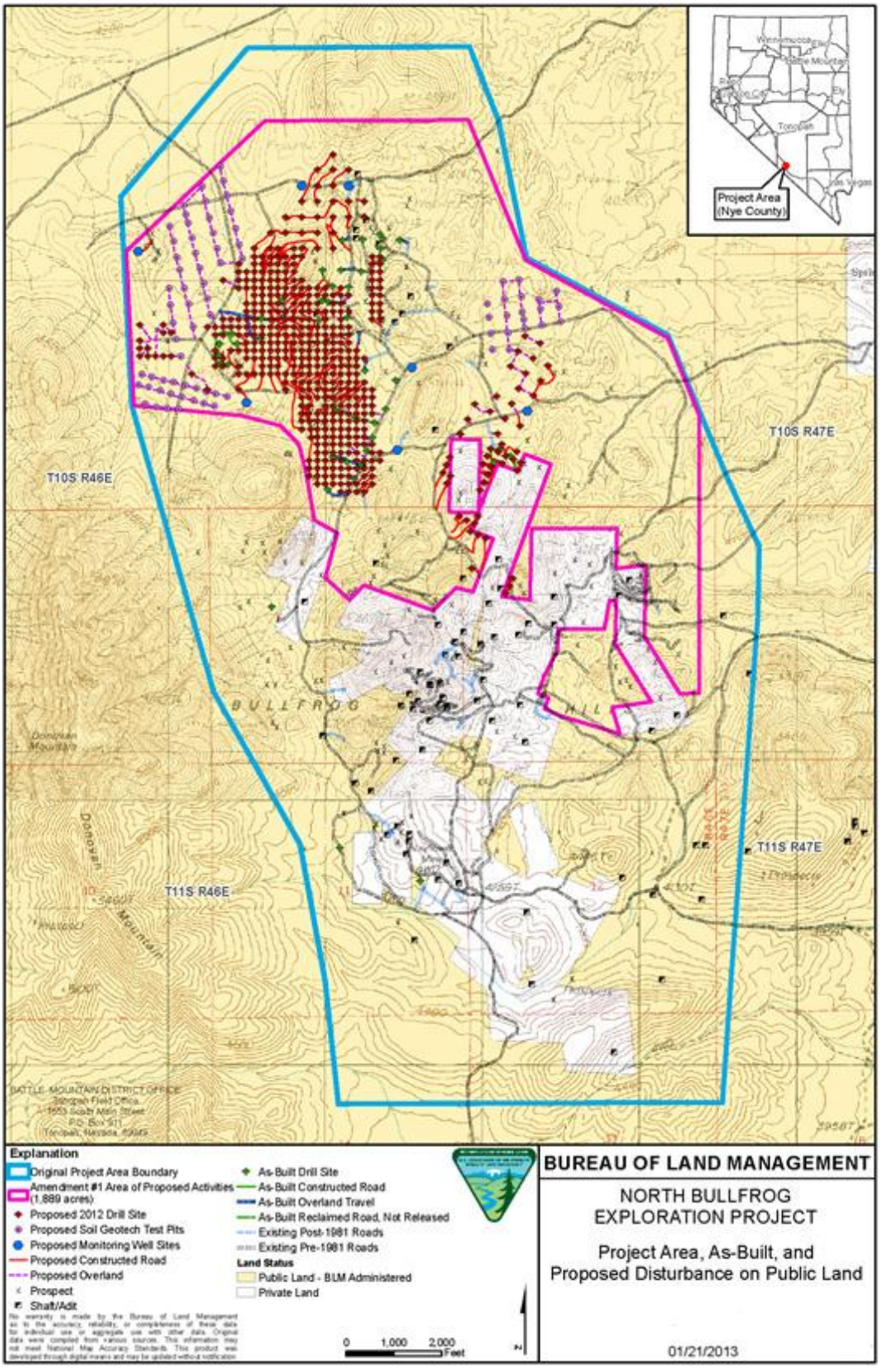


**Figure 2: Proposed and Existing Surface Disturbance**

## 1.2 Proposed Action

On lands open to location under the General Mining Law of 1872, as amended (Mining Law), the BLM administers the surface of public land and federal subsurface mineral estate under the Mining Law and the Federal Land Policy and Management Act of 1976 (FLPMA). The FLPMA also governs BLM's administration of public land not open to location under the Mining Law. The purpose of this Project is to provide CGN the opportunity to continue to explore, locate, and delineate, precious metal deposits on public land open to location under the Mining Law within the Area of Proposed Activities. The need for the action is established by the BLM's responsibility under the FLPMA and the BLM Surface Management Regulations at 43 CFR 3809, to respond to an exploration plan of operations and to take any action necessary to prevent unnecessary or undue degradation of the lands.

## 1.3 Land Use Plan Conformance

The Proposed Action is in conformance with the Tonopah Resource Management Plan (RMP) and the Record of Decision's (ROD's) objective and direction, or determination, for locatable minerals on page 23, "To provide opportunity for exploration and development of locatable minerals such as gold, silver, copper, lead, zinc, molybdenum, etc., consistent with the preservation of fragile and unique resources in areas identified as open to the operation of the mining laws… [a] total of 6,028,948 acres (99% of the Tonopah Planning area) will be open to the operation of the mining laws…"

## 1.4 Relationship to Statutes, Regulations, Policy, Plans or Other Environmental Analysis

The relevant local Land Use plans are the Nye County Comprehensive Master Plan (NCCMP) and the Beatty Open Space Plan (BOSP).

### 1.4.1 Nye County Comprehensive Master Plan

The Nye County Comprehensive Master Plan (NCCMP) is a long-range plan relating to public lands and how best to work collaboratively with the federal and state land management agencies. This plan is intended to provide effective planning, communication and coordination between Nye County and these agencies. This plan contains goals, objectives and policies that serve to protect the health, safety and welfare of Nye County residents, enhance their economic opportunities and preserve their quality of life (NCCMP 2011). Some elements of the Proposed Action would be in conformance with Nye County plans and policies while other elements of the proposed exploration Project could prove inconsistent with these plans and policies.

### 1.4.2 Beatty Open Space Plan

The BOSP consolidates all currently available information regarding recreational, natural, scenic, and historic resources in the Beatty Taxing District in order to identify the most important areas to preserve as open space. The BOSP represents an investment in the health, well-being and long-term success of the community. The strategy outcomes will augment recent planning efforts to develop an integrated trail system by providing a map of important scenic resources

that should be connected and preserved. This plan provides the framework by which the County may pursue more specific actions to preserve public land for the benefit of the Town of Beatty and private land for the preservation of the Amargosa toad's habitat and a walking trail along the Amargosa River. This BOSP is based on a compilation of existing data from numerous sources including the Nye County Assessor, Nye County Planning Department, BLM, United States Geological Survey (USGS), National Park Service, Nevada Department of Transportation, BEC Environmental Inc., and the citizens of Beatty to develop a strategy that identifies the public land that should be retained for open space preservation within the Beatty Taxing District. The scope of work did not include researching existing mining claims or patents on public land and this information was not provided by the BLM. Therefore, some areas designated for open space preservation may have to be refined slightly if this information becomes available to Nye County.

## 1.5 Scoping

The Project was internally scoped by the BLM Interdisciplinary team at a meeting held on August 14, 2012, at the BLM office in Tonopah, Nevada. During this meeting, BLM personnel identified the elements associated with supplemental authorities and other resources and uses to be addressed in this document as outlined in Chapter 3. The following specific issues related to the Proposed Action were identified:

- How would fugitive dust generated by the project affect air quality?
- How would cultural resources be impacted by surface disturbance associated with the Proposed Action?
- How would rights-of-way (ROWs) be impacted by project activities?
- How would migratory birds be impacted by building roads and drill pads during nesting season?
- How would project activities impact the local off road race that occurs within the Project Area?
- How would the increased number of contractors at the project impact social and economic values?
- How would road and drill pad construction, or overland travel affect the erosion potential of soils?
- How would the surface disturbance impact special status animal species or their habitat?
- How would county and BLM roads be affected by vehicles accessing the area? Would the general public be precluded access to BLM-administered land?
- How much and what types of vegetation would be removed or impacted by the Proposed Action?
- How would the water quality of surface or ground water be affected?
- How would wild burros be affected by vehicles traveling through the area and noise from drilling activities?
- How would the local wildlife be affected by vehicles traveling through the area, noise from the drilling activities, and disturbance or loss of vegetation (habitat)?

# 2 ALTERNATIVES INCLUDING THE PROPOSED ACTION

## 2.1 Proposed Action

CGN would increase the total number of acres of surface disturbance within the Area of Proposed Activities from 6.4 (approved under Redstar's Plan and not reclaimed) to 100 acres (an increase of 93.6 acres). CGN would continue the same type of mineral exploration activities authorized under their original Plan. These activities include the construction of exploration roads and drill sites and the utilization of overland travel routes and drill sites. CGN would also conduct activities that would allow for the collection of baseline data (e.g., geotechnical auger holes and soil and geological test pits, water monitoring wells, water production wells, bulk sampling, and a meteorological station) for future operations should the exploration project define an economically viable mineral deposit. The entire potential disturbance for Phase I (71 acres) is shown on Figure 2. Figure 2 does not factor in any areas that would need to be avoided.

These subsequent phased activities would be included in Work Plan submittals to the BLM and would be based on the success of previously completed exploration or baseline collection activities. The Work Plans would include maps that show the location of the proposed surface disturbance to ensure that sensitive resources are avoided. The remaining 22.6 acres of disturbance identified under subsequent phases would be utilized in a phased manner over approximately ten years; however, the number of years could change due to economic conditions.

A total of 93.6 acres of disturbance are analyzed in this EA. This disturbance could occur anywhere within the 1,900-acre Area of Proposed Activities shown on Figure 1 as a blue line. Table 2.1-1 outlines the total acreage of disturbance approved, disturbance associated with proposed Phase I, and proposed subsequent phases of surface disturbance by source for the project.

### 2.1.1 Equipment and Personnel

Generally, up to ten to 12 personnel would be onsite during project activities, including one CGN geologist and three contract drill operators per drill rig. Exploration drilling equipment could include a track- or truck-mounted reverse circulation (RC) drill rig and/or a core rig (during Phase I three drill rigs could be on site at any time), four-wheel drive pickup trucks, and a combination water truck/pipe truck for drill support. Baseline data collection equipment would include small rotary drills for geotechnical testing and a backhoe or an excavator for trenching, digging test pits, and bulk sampling. Up to two personnel would be required for this work. Up to six other contractors or CGN personnel could be on-site at any time throughout the life of the project.

CGN would take steps to prevent fires by ensuring that each field vehicle carries hand tools and a fire extinguisher. Water trucks at the Area of Proposed Activities would be used in the event of a fire. All portable equipment, including drill rigs, support vehicles, and drilling supplies, would be removed from the Area of Proposed Activities during extended periods of non-operation.

**Table 2.1-1: Acreage of Approved and Proposed Project Disturbance**

| Surface Disturbing Activity | Disturbance | | | |
|---|---|---|---|---|
| | Approved[1] (acres) | Proposed Phase I (acres) | Subsequent Phases (acres) | Total Area (acres) |
| Constructed Access Roads | 0.68 | 33.24 | 10.02 | 43.94 |
| Overland Travel | 0.96 | 8.22 | 2.32 | 11.50 |
| Constructed Drill Sites[2] | 1.46 | 28.10 | 3.54 | 33.10 |
| Overland Drill Sites | 3.33 | - | 2.00 | 5.33 |
| Bulk Sample Excavations | - | - | 2.50 | 2.50 |
| Soil and Geotechnical Test Pits | - | 1.16 | 0.21 | 1.37 |
| Water Monitoring Well Sites | - | 0.26 | 0.75 | 1.01 |
| Water Production Well Sites | - | - | 1.00 | 1.00 |
| Met Station | - | - | 0.25 | 0.25 |
| **TOTAL** | **6.43 (6.4)** | **70.98 (71.0)** | **22.59 (22.6)** | **100.00** |

**[1]Acres of disturbance approved in Redstar's decision record and still being used under the Plan.**
**[2]Includes Geotechnical drill sites**.

All heavy equipment (e.g., drills, water truck, dozers, and excavators) would be washed and inspected before entering BLM-administered lands. Inspection and cleaning would concentrate on the undercarriage, with special emphasis on axles, frame, cross-members, motor mounts, underneath steps, running boards, and front bumper/brush guard assemblies. This practice would not apply to service vehicles traveling frequently in and out of the Area of Proposed Activities that would remain on the roadway.

All Project-related traffic would observe prudent speed limits to enhance public safety, protect wildlife and livestock, and minimize dust emissions. Maintenance of these roads would only be conducted as necessary.

### 2.1.2 Overland Travel and Constructed Roads

CGN would utilize overland travel access whenever possible. CGN proposes to utilize approximately 35,802 linear feet (6.8 miles) of overland travel routes. Overland travel routes would be approximately ten feet wide to accommodate the track widths on a track-mounted drill rig.

Exploration roads that require earth-moving would be located and constructed using standard construction practices for temporary mineral exploration roads to minimize surface disturbance, erosion, and visual contrast, as well as to facilitate reclamation. These standard practices would include making the road only wide enough for safe travel, building berms on roads as required by the Mine Safety and Health Administration (MSHA), building the roads along contour with no more than a ten percent grade, and storing the cutbank material at the toe of the road for ease in recontouring when the road is no longer needed.

CGN proposes to construct approximately 76,941 feet (14.6 miles) of exploration roads. The standard running width would be approximately 14 feet including a two foot safety berm as required by MSHA. The downslope side of the cut and fill would be at the angle of repose. The

actual width of the road would be dependent on topography. Steeper areas have wider road disturbance while flat areas have narrower road disturbance.

Balanced cut and fill construction would be used to the extent possible to minimize the exposed cut slopes and the volume of fill material. Since the depth of the cut would be kept to a minimum, growth media (any material such as soil or alluvium that supports vegetation) removed during construction would be stockpiled as the fill slope to be used during reclamation. Road construction within drainages would be avoided where possible. When drainages must be crossed by a road, Best Management Practices (BMPs) established by the NDEP and Nevada Division of Conservation Districts through the State Environmental Commission (1994) would be followed to minimize surface disturbance and erosion potential. Blasting or the use of a rock breaker could be necessary to construct roads in areas of outcrop. Appropriate state and federal permits would be obtained where necessary for blasting. Rocky outcrops and areas of shallow soils on bedrock would be avoided, if possible. Routine road maintenance would be required and would consist of smoothing ruts, filling holes with fill material, grading, and reestablishing waterbars when necessary. Road construction would be completed with a Caterpillar D7 or equivalent equipment.

### 2.1.3 Drill Sites and Drilling Procedures

The standard drill pad for the RC drill rig would measure approximately 30 feet wide by 50 feet long. The standard drill pad for the core drill rig would measure approximately 50 feet wide by 100 feet long. The size of the drill pads would be dependent on the topography. Flat topography would have a smaller drill pad size than those located on steep topography. Sumps would be constructed within the footprint of the drill pads to contain cuttings and manage drilling fluids and would typically measure 20 feet wide by 20 feet long and six feet deep. The size of the sump is also dependent on topography.

CGN would conduct exploration drilling with two or more drill rigs. Drill holes would be vertical or angled and drilled with a reverse circulation and/or core drill rig. Total depth of drill holes would range from approximately 500 to 1,200 feet. Drill holes would be abandoned per NAC 534.4369 through 534.4371. If ground water were encountered, the hole would be plugged pursuant to NAC 534.420. A single drill hole would remain open at any one time for each drill rig that was on site.

CGN would follow standard drilling procedures and would require a geologist to be on site throughout drilling activities. The geologist would sit the drill rig, log each hole according to the geologic features encountered, determine the maximum depth of each hole, and advise the drill operator as needed. The geologist would travel to and from the drill site in a separate four-wheel drive pickup truck. There are government regulatory standards through MSHA that drillers typically must follow to avoid injury. Drillers must be aware of all required safety equipment, such as protective goggles, and must wear this protective attire and carry the proper equipment at all times. Technicians must also make sure that their equipment is always in good working order so that it does not break down and result in physical injury, or cause problems with the general production processes.

Standard drill rig crews would consist of a drill operator and one or two helpers. The helpers normally remove and box the recovered core samples, the cuttings from reverse circulation rigs, mix drilling fluids in the portable mud tank, operate the water truck, assist with drilling operations, and conduct maintenance as necessary. The crew would be transported to and from the drill site in up to three four-wheel drive vehicles per drill rig. There are no specific drilling

standards for exploration other than quality assurance/quality control sampling standards for the type of information needed to determine the amount of minerals (precious or base metals) in the samples.

### 2.1.4 Monitoring and Production Wells

CGN would install up to seven monitoring wells under Phase I to track water levels and water quality. In addition, CGN could drill up to four wells prospecting for production water in subsequent phases. When possible, existing exploration drill sites would be used for the monitoring and production wells so the pad size would typically be 30 feet wide by 50 feet long. All monitoring wells and the water wells would be plugged in accordance to NAC 534.420.

### 2.1.5 Geotechnical Sampling

Geotechnical drill borings would be completed with a small auger drill to a maximum depth of 50 feet. These borings would utilize overland access and would be drilled within the footprint of existing disturbance. The borings would be backfilled with cuttings of surface material. None of the borings would intersect the water table.

### 2.1.6 Test Pits and Trenches

Test pits to study geology or soil would be constructed using a backhoe. The average size of these excavations would be 24 feet wide by 26 feet long and five feet deep. Trenches could be needed for geologic mapping and sampling, geotechnical sampling, and collection of bulk samples. Trenches could be 50 to 300 feet long, with a disturbance width of 24 feet including the spoil pile. No trenches are planned under Phase I.

### 2.1.7 Water Management Plan

Drill fluids would be managed with the use of sumps at each drill site. BMPs, established by the NDEP and Nevada Division of Conservation Districts through the State Environmental Commission (1994) would be during construction, operation, and reclamation to minimize sedimentation from disturbed areas. Sediment control structures would include fabric or certified weed-free straw bale filter fences, siltation or filter berms, mud pits, and down gradient drainage channels in order to prevent unnecessary or undue degradation to the environment. Sediment traps constructed within the drill pad disturbance, would be used to contain drill cuttings and manage drilling fluids. Proposed construction and drilling activities would avoid springs and seeps, if present. In order to facilitate drainage and prevent erosion, all bladed roads would have waterbars constructed, as needed, at BLM-recommended spacing. The spacing is dependent on the steepness of the road.

### 2.1.8 Surface Occupancy

Under 43 CFR 3715.01, occupancy means full or part-time residence on the public lands. It also means activities that involve residence; the construction, presence, or maintenance of temporary or permanent structures that may be used for such purposes; or the use of a watchman or caretaker for the purpose of monitoring activities. Residence or structures include, but are not limited to, barriers to access, fences, tents, motor homes, trailers, cabins, houses, buildings, and

storage of equipment or supplies. Surface occupancy activities under this Plan, including those activities covered under 43 CFR 3715 may include the following:

- The development of ground water monitoring wells, which would each have surface features including casing, well head cover, and protection posts as needed;
- The development of ground water piezometers, which would each have surface features including casing, electrical connections, and protection posts as needed; and
- The development of ground water production wells, which would each have surface features including casing, well head covers, electrical connections, and protection posts as needed.

The period of use would continue until either the exploration project ends or the exploration project is converted into a mine development project. If the project ends unsuccessfully, then the drill holes would be abandoned at that time in accordance with state and federal regulations. If the project moves forward, the wells would continue to operate until the mining operation is closed, in which case a closure plan would be included in the mining plan of operations.

### 2.1.9 Solid and Hazardous Materials

All non-hazardous refuse generated by the project would be disposed of off-site at an authorized landfill facility consistent with applicable regulations. No refuse would be disposed of within the Area of Proposed Activities. Solid waste and general refuse would be stored in containers at the drill site locations then transported to an off-site facility.

Regulated petroleum substances utilized within the Area of Proposed Activities would include diesel fuel, gasoline, and lubricating grease and would only include substances that are within or support the equipment and vehicles. Varying amounts of these products would be used or stored on-site depending on the number and types of equipment working on the project. No drums or containers would be stored in the Area of Proposed Activities. In the event that hazardous or regulated materials are spilled, measures would be taken to control the spill, and the BLM and NDEP would be notified as required. Any hazardous substance spills would be handled in accordance with CGN's Spill Contingency Plan (SCP) (Appendix D of the Plan of Operations document), including an immediate cleanup. Any resulting waste would be transferred off-site in accordance with all applicable local, state, and federal regulations. Spill kits would be carried by drilling personnel for use in case of a spill. If a spill of a petroleum constituent is considered to meet the reportable quantity per the NDEP's guidelines (greater than 25 gallons or greater than three cubic yards of impacted material) or a reportable quantity for hazardous waste is released based on the Federal EPA guidelines established under Title III List of Lists (40 CFR Part 302), the BLM and NDEP would be notified within 24 hours and the appropriate remedial actions and confirmation sampling would be conducted in accordance with NDEP direction.

### 2.1.10 Spill Contingency Plan

A SPC is included in Appendix D of the Plan of Operations document.

## 2.2 Reclamation

Reclamation would be completed to the standards described in 43 CFR 3809.420 and NAC 519A. Reclamation would meet the reclamation objectives as outlined in the BLM's Solid Minerals Reclamation Handbook H-3042-1 (BLM 1992), Surface Management of Mining Operations Handbook H-3809-1 (BLM 1989), and the revegetation standards per BLM/NDEP "Revised Guidelines for Successful Mining and Exploration Revegetation" (BLM 1999). Overland travel and existing roads would be utilized as much as possible, minimizing the need for road construction. All CGN drill sites, sumps, overland travel, and road construction would be recontoured and reseeded.

Reclamation would be designed to achieve post-exploration land uses consistent with the BLM's land use management plans for the area, which are outlined in the Tonopah RMP (BLM 1997). Reclamation is intended to return disturbed land to a level of productivity comparable to pre-exploration levels. Post-exploration land use includes wildlife habitat, livestock grazing, hunting, and dispersed recreation. The post-exploration land use is not expected to differ from pre-exploration land use.

During seasonal closure of the project and periods of inactivity between drilling phases, reclamation would involve filling sumps, cleaning sites, and maintaining the overall safety of the Area of Proposed Activities. The BLM and NDEP would be notified prior to any periods of inactivity greater than 120 days.

After exploration activities are completed, reclamation would involve regrading disturbed areas to their approximate original contour and seeding using the approved reclamation seed mixture and application rates furnished by the BLM (Table 2.2-1). Overland travel routes would be scarified and reseeded, if necessary. Yearly visits to the site would be conducted to monitor the success of the revegetation for a period of up to three years or until revegetation success has been achieved.

**Table 2.2-1: Proposed Seed Mix**

| Species | | Application Rate (lbs PLS[1]/acre) |
|---|---|---|
| **Common Name** | **Scientific Name** | |
| Shadscale | *Atriplex confertifolia* | 2.0 |
| Four-wing saltbrush | *Atriplex canescens* | 4.0 |
| Desert Spinach | *Atriplex polycarpa* | 3.0 |
| Quail bush | *Atriplex lentiformis* | 3.0 |
| White bursage | *Ambrosia dumosa* | 1.0 |
| Creosote | *Larrea tridentata* | 1.0 |
| Palmer's phacelia | *Phacelia palmeri* | 0.5 |
| Cheesebush | *Hymenoclea salsola* | 1.0 |
| Desert Dandelion | *Malacothrix glabrata* | 0.5 |
| **Total** | | **16.00** |

[1]Pure live seed

The post-exploration and post-reclamation topography would be essentially the same as the pre-exploration topography because only limited amounts of linear surface disturbance are planned.

Exploration activities would occur over approximately ten years; however, this could change based on economic conditions. All reclamation work, with the exception of revegetation monitoring, would be completed no later than two years after the completion of activities. CGN would conduct concurrent reclamation of disturbed areas once it is determined that the disturbance is no longer required for project activities.

Table 2.2-2 outlines the anticipated reclamation schedule on a monthly basis, which would be followed to achieve the reclamation goals set forth above. Revegetation activities are limited by the time of year during which they could be effectively implemented. Site conditions and/or yearly climatic variations could require that this schedule be modified to achieve revegetation success. Additional reclamation activities include the abandonment of the water well and the removal of all equipment, supplies, and materials brought onto public land at the end of the projects life.

**Table 2.2-2: Anticipated Exploration Reclamation Schedule**

| TECHNIQUES | Quarter | | | | |
|---|---|---|---|---|---|
| | **1st Jan.-Mar.** | **2nd April-June** | **3rd July-Sept.** | **4th Oct.-Dec.** | **Year(s)** |
| Regrading | | | | | Within 2 years of Project completion |
| Seeding | | | | | Within 2 years of disturbance no longer needed for exploration |
| Monitoring | | | | | 3 years beyond regrading and reseeding |

## 2.3 Noxious Weed Control Measures

To prevent and control the introduction and spread of noxious weeds within the Area of Proposed Activities during reclamation, CGN would implement the following prevention and control practices:

- Soil (growth media) disturbance would be minimized to the extent practicable, consistent with project objectives. Growth media would be stockpiled and used in reclamation.

- Disturbed sites would be revegetated as soon as practicable when exploration work is completed. Revegetation would include topsoil replacement, planting, seeding, fertilization, liming, and weed-free mulching as necessary.

- The seed mixture would be certified pure live seed (PLS) and weed free. Straw bales used for erosion control would also be certified as weed free.

Noxious weeds can readily invade disturbed areas associated with exploration projects. CGN would be responsible for the following: 1) identifying noxious weeds in the Area of Proposed Activities (booklets and pamphlets would be provided by the BLM); 2) excluding noxious weeds from disturbed areas until reclamation has been accepted and released; and 3) insuring that all equipment is “weed free” before traveling to and from the Area of Proposed Activities so that noxious weeds are not spread to new locations. When noxious weeds are encountered in the Area of Proposed Activities, documentation of their location and extent would be provided to the

BLM as soon as possible. CGN would obtain approval from the BLM Authorized Officer prior to any herbicide application. CGN would contact the Battle Mountain District Office's noxious weed program lead regarding any issues concerning noxious weeds.

To minimize the introduction of noxious weeds into the Area of Proposed Activities, the following preventative measures would be implemented by CGN: 1) stay on existing roads to and from the Area of Proposed Activities; 2) use a certified weed-free seed mix during reclamation; 3) conduct concurrent reclamation when feasible; and 4) implement a weed monitoring and control program. The BLM would provide CGN with a color brochure, 'Noxious Weeds of Central Nevada.' CGN would survey the Area of Proposed Activities semi-annually for invasive weed species. If a limited amount of weeds are discovered, they would be pulled, placed in a plastic bag, sealed, and disposed of properly. For more intensive infestations, CGN would consult with the BLM on containment of eradication measures.

## 2.4 Drill Hole Plugging

Drill holes would be plugged in accordance with NRS 534, NAC 534.4369 and NAC 534.4371, and guidance from the BLM. In the event that ground water is encountered, drill holes would be plugged pursuant to NAC 534.420. No drill holes would be left open at the end of the project.

If the casings are set in a borehole, either the boreholes would be completed as wells and plugged pursuant to NRS 534.420 or the casings would be completely removed from the boreholes when they are plugged pursuant to Section 31. The upper portion of the borehole would be permanently cased if the annulus is completely sealed from the casing shoe to surface pursuant to NAC 534.380. Geotechnical auger holes would be backfilled with drill cuttings and surface material.

## 2.5 Regrading and Reshaping

Regrading and reshaping of all constructed drill sites, including sumps, water well sites, monitoring well sites, constructed roads, and test pits would be completed to approximate the surrounding topography. Fill material would be pulled onto the roadbeds to fill the road cuts and restore the slope to natural contours. Roads and drill sites would be regraded and reshaped with an excavator. Overland travel routes are estimated to have a ten-foot travel width (the width of two tracks). For overland travel routes and overland pads, tire tracks (e.g., trails created by overland travel and track rigs) would be lightly scarified and left in a rough state as necessary to relieve compaction, inhibit soil loss from runoff, and prepare the seed bed.

Should any drainage be disturbed, it would be reshaped to approach the pre-construction contours. The resulting channels would be of the same capacity as up and downstream reaches and would be made to prevent erosion and ultimately revegetated. Following completion of earthwork, all disturbed areas would be broadcast seeded.

## 2.6 Handling of Topsoil/Growth Media

The depth of cut for newly constructed exploration roads would be minimal. Soils or alluvium capable of serving as growth media would be salvaged and stockpiled as the fill slope. In addition to the soils, as much of the soil organic matter as possible would be salvaged to minimize compaction and promote aeration. Soil amendments are not considered necessary in those areas where sufficient growth media are available.

## 2.7 Revegetation

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

The seed list, provided by the BLM (Table 2.2-1), is based on known soil and climatic conditions and was selected to establish a plant community that would support the post-exploration land use. The mix is designed to promote plant species that can exist in the environment of southwestern Nevada, are proven species for revegetation, or are native species found in the plant communities prior to disturbance. Broadcast seeding would be at a rate of approximately 16 pounds per acre. Changes or adjustments to the reclamation plant list or application rate would be completed in consultation with and approval by the BLM and BMRR. The seed mixture would be certified PLS and weed free. Straw bales used for erosion control would also be certified as weed free.

Timing of revegetation activities is critically important to the overall success of the program. Seeding activities would be timed to take advantage of optimal climatic periods and would be coordinated with other reclamation activities. In general, earthwork and drainage control would be completed in the summer or early fall. Seedbed preparation would generally be completed in the fall, either concurrently with or immediately prior to seeding. Seeds would be sown in late fall to take advantage of winter and spring precipitation and optimum spring germination. Early spring seeding would be utilized for areas not seeded in the fall. In either case, seeding would not be completed when the ground is frozen or snow covered.

## 2.8 Removal or Stabilization of Building, Structures, and Support Facilities

No buildings or temporary structures would be built. All equipment and supplies would be removed following completion of the Project. Materials, including scrap, trash, and unusable equipment, would be removed on a daily or weekly basis and disposed of in accordance with federal and state regulations and laws.

## 2.9 Post-Closure Management

Post-closure management would commence on any reclaimed area following completion of the reclamation work for the area. Post-closure management would extend until the reclamation of the site or component has been accepted by both the BLM and BMRR. For bonding purposes, a three-year post-closure management period is assumed following completion of reclamation construction on any site. For sites reclaimed early in the operations, management of the reclaimed sites would occur concurrently with operational site management. Annual reports showing reclamation progress would be submitted to the BLM and BMRR.

## 2.10 General Schedule of Operations from Start through Closure

Pending the approval of the Plan, CGN anticipates initiating proposed exploration and geotechnical baseline activities during the 2012 field season. Activities would continue in phases over a ten year period and would depend on economic conditions.

## 2.11 Monitoring Plan

Monitoring of the drill sumps includes periodic visual inspections during drilling operations to ensure that the drill cuttings are contained. Should the observed condition indicate that the sump containment is inadequate, additional sump capacity would be built and/or incorporated into the drilling fluid management system.

The BLM and CGN would cooperate to inventory and monitor noxious weeds within areas of disturbance related to exploration activities within the Area of Proposed Activities. Noxious weed infestations within the Area of Proposed Activities resulting from CGN's ground disturbing activities would be promptly reported to the BLM. The extent of the infestation would be recorded and plotted on a map. CGN would treat any noxious weed infestations that result from ground disturbing activities within the Area of Proposed Activities for at least a three-year period following the completion of the Project. Treatments would be applied and recorded per BLM policy. The BLM and CGN would cooperate to monitor the effectiveness of treatments on noxious weeds.

## 2.12 Provide Early Detection of Potential Problems

Monitoring would include periodic visual inspections during road and drill site construction, drill operations, and reclamation. In order to facilitate drainage and prevent erosion, all bladed roads would have waterbars constructed as specified in the BLM roads manual. BMPs, established by the NDEP and Nevada Division of Conservation Districts through the State Environmental Commission (1994), for sediment control would be utilized to minimize sedimentation from disturbed areas. Sediment control structures would include, but not be limited to, fabric and/or weed-free straw bale filter fences, siltation or filter berms, mud sumps, and down gradient drainage channels in order to prevent unnecessary or undue degradation to the environment. Sediment traps would be constructed as necessary to ensure that the drill cuttings are contained and fluids are managed. Should the observed condition indicate that the sump containment is inadequate, additional sump capacity would be built and/or incorporated into the drilling fluid management system.

## 2.13 Measures to Isolate or Control Toxic or Deleterious Materials

All refuse generated by the Project would be disposed of at an authorized landfill facility off site, consistent with applicable regulations. No refuse would be disposed of on site. Water and/or nontoxic drill hole abandonment materials, including abantonite, Alcomer 120L, bentonite, EZ-mud, polyplus, and super plug, would be utilized as necessary during drilling and would be stored at the Area of Proposed Activities.

Hazardous and regulated materials utilized at the Area of Proposed Activities would include diesel fuel, gasoline, and lubricating grease. Approximately 500 gallons of diesel fuel would be stored in fuel delivery systems on vehicles and drill rigs. Approximately 100 gallons of gasoline would be stored in fuel delivery systems for light vehicles. Approximately 100 pounds of lubricating grease would be stored on the drill rigs or transported by drill trucks. All containers

of hazardous substances would be labeled and handled in accordance with Nevada Department of Transportation (NDOT) and MSHA (Appendix D of the Plan of Operations document contains Material Safety Data Sheets). In the event hazardous or regulated materials, such as diesel fuel, were spilled, measures would be taken to control the spill, and the BLM, NDEP, and/or the Emergency Response Hotline would be notified, as required. If any oil, hazardous material, or chemicals are spilled during operations, they would be cleaned up in a timely manner. After clean up, the oil, toxic fluids, or chemicals and any contaminated material would be removed from the site and disposed of at an approved disposal facility. No hazardous materials would be left on site. Self-contained, portable, chemical toilets would be used for human waste. The human waste and toilet chemicals would not be buried on site.

## 2.14 Measures to Maintain the Area of Proposed Activities in a Safe and Clean Condition

The Area of Proposed Activities would remain trash free and open sumps would be backfilled or left in a safe condition. Routine road maintenance could be required and would consist of smoothing ruts, filling holes with fill material, grading, and re-establishing waterbars when necessary.

Periods of non-operation are not anticipated; however, if temporary closures are required the drill rig would vacate the Area of Proposed Activities and sumps would be marked by stakes and flags. Once the sumps have dried out, they would be backfilled.

## 2.15 Plans for Monitoring Site Conditions during Periods of Non-operation

The reclamation measures outlined in Section 2.2 would be conducted during periods of non-operation, except as limited by weather and ground conditions. Should periods of temporary closure or non-operation occur, CGN would notify the BLM and NDEP verbally and in writing. Periods of temporary closure or non-operation could be caused by severe winter weather conditions, such as significant precipitation.

The BLM and NDEP would be notified in writing within 90 days after work is suspended at the operation for more than 120 days. The Notice would state the nature and the reason for the suspension of work, the anticipated duration of the suspension, and any event that would reasonably be expected to result in either the resumption of activities or the abandonment of the operation. CGN would not be required to notify the BLM or NDEP of a temporary closure caused by weather conditions.

No other issues related to periods of non-operation are evident. As a matter of normal practice, all trash would be hauled off site and there would be no exploration materials left on site. All drill sites would be patrolled with hand rake and shovel after Project completion to scatter and cover any cuttings piles, fill ruts, and to perform general clean up. No core samples would be left on site during periods of non-operation or after the completion of Project activities.

## 2.16 Environmental Protection Measures

CGN, as the proponent of the Project, will commit to the following environmental protection measures to prevent unnecessary or undue degradation during construction, operation, and reclamation of the Project. The measures are derived from the general requirements established

in the BLM's Surface Management Regulations at 43 CFR 3809 and BMRR mining reclamation regulations, as well as water, air quality, and other environmental protection regulations.

*Water Quality*

- All drill holes would be surveyed and plugged as an operational procedure immediately after completion of drilling in accordance with NAC 534.421 and 534.425 with the exception of three open holes. Drill holes would be plugged accordance with NRS 534, NAC 534.4369 and NAC 534.4371.

- Storm water BMPs, established by the NDEP and Nevada Division of Conservation Districts through the State Environmental Commission (1994), would be used at construction sites to minimize storm water erosion.

- Drill cuttings would be contained on site and fluids managed utilizing appropriate control measures. Sediment traps would be used as necessary and filled at the end of the drill program.

- CGN would follow the SPC included in Appendix D of the Plan of Operations document.

- Only nontoxic fluids would be used in the drilling process.

*Cultural and Paleontological Resources*

- Pursuant to the Native American Graves Protection and Repatriation Act (25 U.S.C. 3001 et seq.) and its implementing regulations (43 CFR 10), CGN would notify the BLM authorized officer, by telephone, and with written confirmation, immediately upon the discovery of human remains, funerary objects, sacred objects, or objects of cultural patrimony (as defined in 43 CFR 10.2). Further, pursuant to 43 CFR 10.4 and the "Policy for the Discovery of Human Remains on Public Land within the Battle Mountain District", CGN would immediately stop all activities within a 100-meter (328-foot) radius of the remains and the area will be protected by posting a monitor or construction worker to ensure that no additional disturbance occurs. If the discovery occurs at the end of the work day or during a weekend, CGN will assure the area is secured by posting a guard until the BLM officer provides specific protection and treatment guidance. Activities in the vicinity will not commence again until a notice to proceed is issued by the BLM Authorized Officer. Additional procedures are specified in the "Policy for the Discovery of Human Remains on Public Land within the Battle Mountain District", which CGN has will ensure that a copy is kept onsite.

- In accordance with 36 CFR 800.13 (post-review discoveries), subpart b and c, any previously unrecorded cultural resource discovered by CGN, or any person working on their behalf, during the course of activities on federal land would be immediately reported to the authorized officer by telephone, with written confirmation to follow. The permit holder would suspend all operations within 100 feet of such discovery and protect it until an evaluation of the discovery can be made by the authorized officer. This evaluation would determine the significance of the discovery and what mitigation measures are

necessary to allow activities to proceed. The evaluation may also be conducted in consultation with the Nevada SHPO and/or Native Americans depending on the nature of the discovery. CGN would be responsible for the cost of evaluation and mitigation. Operations would resume only upon written authorization to proceed from the authorized officer.

- In accordance with 43 CFR 3809.420, the Archaeological Resources Protection Act (ARPA; 43 CFR Part 7) and the Paleontological Resources Preservation Act (123 Stat. 1172, 16 U.S.C. 470aaa et seq), CGN would not knowingly disturb, alter, injure, or destroy any scientifically important paleontological deposits. In the event that previously undiscovered paleontological resources are discovered by CGN in the performance of any surface disturbing activities, the item(s) or condition(s) would be left intact and immediately brought to the attention of the authorized officer of the BLM. If paleontological resources are discovered and are determined by a qualified Paleontologist to be significant, then avoidance, recordation, and/or data recovery would be required.

*Migratory Birds*

- Land clearing or other surface disturbance associated with the Project would be conducted outside of the avian breeding season, whenever feasible, to avoid potential destruction of active bird nests or young birds in the area. When surface disturbance must be created during the avian breeding season (March 1 through July 31), a qualified biologist would survey the area prior to land clearing activities. If active nests are located, or if other evidence of nesting (i.e., mated pairs, territorial defense, carrying nest material, transporting food) is observed, a protective buffer (the size depending on the habitat requirements of the species) would be delineated and the entire buffer area avoided to prevent destruction or disturbance to nests until they are no longer active. The start and end dates of the seasonal restriction would be based on site-specific information, such as elevation and winter weather patterns, which affect breeding chronology.

*Wildlife*

- All trenches, sumps, test pits, and other small excavations that pose a hazard or nuisance to the public, wildlife, or livestock would be adequately fenced to preclude access or constructed with a sloped end for easy egress.

*Public Safety and Access*

- Public safety would be maintained throughout the life of the Project. All equipment and other facilities would be maintained in a safe and orderly manner.

- Drill sites, sumps, and excavations would be reclaimed as soon as practicable after completion of sampling and logging.

- Any survey monuments, witness corners, or reference monuments would be protected, avoided, or reestablished.

- Pursuant to 43 CFR 8365.1-1(b) (3) and 43 CFR 3809.420(b) (5) and (6), no sewage, petroleum products, or refuse would be dumped from any trailer or vehicle.

- All regulated wastes would be removed from the Area of Proposed Activities and disposed of in a state, federal, or local designated area.

- Pursuant to regulations promulgated under Section 102 of CERCLA, as amended, release of a reportable quantity of a hazardous substance to the environment in a 24-hour period will be reported to the National Response Center (40 CFR Part 302) and the BLM.

- All applicable state and federal fire laws and regulations would be complied with and all reasonable measures would be taken to prevent and suppress fires in the Area of Proposed Activities.

- Final reclamation of overland travel routes, sumps, and drill sites would consist of, if required, scarifying and reseeding in the fall season (after a measurable precipitation event) following completion of exploration activities.

- CGN would return all existing roads impacted by CGN activities to their original condition.

*Vegetation*

- Reseeding would be consistent with all BLM recommendations for seed mix constituents, application rate, and seeding methods. Seeding would occur following a measurable precipitation event.

*Air Quality*

- Emissions of fugitive dust from disturbed surfaces would be minimized by the application of water from a water truck as a method of dust control. A Surface Area Disturbance (SAD) Permit would be required because the proposed surface disturbance exceeds 20 acres. A Dust Control Plan would be included in the SAD Permit.

- Speed limits on access roads would be observed and travel on roads within the Area of Proposed Activities would be conducted at prudent speeds.

*Noxious Weeds*

- Noxious weeds would be controlled through implementation of preventative BMPs and eradication measures if noxious weeds were found.

*Recreation*

- CGN will suspend activities during The Best in the Desert off-road race.

## 2.17 No Action Alternative

In accordance with BLM NEPA guidelines H-1790-1, Chapter V (BLM 2008), this EA evaluates the No Action Alternative, which is a reasonable alternative to the Proposed Action. The objective of the No Action Alternative is to describe the environmental consequences that would result if the Proposed Action were not implemented. The No Action Alternative forms the baseline from which the impacts of all other alternatives can be measured.

Under the No Action Alternative, the Proposed Action would not be approved by the BLM; however, the area would remain available for other multiple use activities as approved by the BLM. Activities approved under the original plan of operations would continue (6.4 acres of surface disturbance).

# 3 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

## 3.1 Introduction

The purpose of this section of the EA is to describe the existing environment of the Area of Proposed Activities affected by the Proposed Action or alternatives under consideration. The BLM has used environmental data collected in the Area of Proposed Activities to predict environmental effects that could result from the Proposed Action and alternatives. This information serves as a baseline from which to identify and evaluate environmental changes resulting from the Project. A level of uncertainty is associated with any set of data in terms of predicting outcomes, especially when natural systems are involved. The predictions described in this analysis are intended to allow comparison of alternatives to the Proposed Action, as well as to provide a method to determine whether activities proposed by the applicant would be expected to comply with applicable regulations.

Supplemental Authorities that are subject to requirements specified by statute or Executive Order (EO) must be considered in all BLM environmental documents. The elements associated with the supplemental authorities listed in the NEPA Handbook (BLM 2008, Appendix 1) and in the Nevada Instruction Memorandum (IM) 2009-030, Change 1, are listed in Table 3.1-1. The table lists the elements and their status in the Area of Proposed Activities, shown on Figure 1 as a blue line, as well as the rationale to determine whether the element is present in the Area of Proposed Activities, and if the element would be affected by the Proposed Action. Supplemental Authority Elements that are affected by the Proposed Action are analyzed in Section 3.3. Those elements listed under the supplemental authorities that do not occur in the Area of Proposed Activities and would not be affected are not discussed further in this EA. The elimination of non-relevant issues follows Council on Environmental Quality policy, as stated at CFR 1500.4.

**Table 3.1-1: Supplemental Authorities**

| Supplemental Authority Element | Not Present | Present/ Not Affected | Present/ Potentially Affected | Rationale/Reference Section |
|---|---|---|---|---|
| Air Quality | | | X | CGN's committed practices Section 2.17 include the acquisition of a SAD permit, which includes a dust control plan that would minimize impacts from fugitive dust through the use of a water truck and prudent speeds on the roads. See impact analysis in Section 3.3.1. |
| Areas of Critical Environmental Concern | X | | | This element is not present within the Area of Proposed Activities or vicinity and is not further analyzed in the EA. |
| Cultural Resources | | X | | A Class III cultural resources inventory report was prepared for the 1,900-acre Area of Proposed Activities (APA). An approximate 100-acre APE was developed to take into account the areas that would be directly impacted by the 93.6-acre Proposed Action in addition to a 15-meter buffer. The |

| Supplemental Authority Element | Not Present | Present/ Not Affected | Present/ Potentially Affected | Rationale/Reference Section |
|---|---|---|---|---|
| | | | | Proposed Action was designed to avoid all cultural resources determined eligible for listing in the National Register of Historic Places, in addition to all cultural resources that were not subjected to evaluation; as such, no Historic Properties would be affected by the project. |
| Environmental Justice | X | | | Neither the Proposed Action nor the No Action alternative would disproportionally impact any low income or minority populations as described in Environmental Justice Executive Order 12898. |
| Farmlands (Prime or Unique) | X | | | This element is not present within the Area of Proposed Activities or vicinity and is not further analyzed in the EA. |
| Fish Habitat | X | | | There is no fish habitat present within the Area of Proposed Activities. |
| Floodplains | X | | | There are no floodplains present within the Area of Proposed Activities. |
| Forest and Rangelands (Healthy Forest Restoration Act [HFRA] projects only) | X | | | This Project does not meet the requirements to qualify as an HFRA project. |
| Human Health and Safety (herbicide projects) | X | | | The Project is not proposing to use herbicides; therefore, EO 13045 does not apply. |
| Migratory Birds | | | X | Migratory birds are located within the Area of Proposed Activities and potential effects are discussed in Section 3.3.2. |
| Native American Religious Concerns | | | X | Section 3.3.3 discusses Native American Religious Concerns. |
| Noxious Weeds, Invasive, and Non-native Species | X | | | No noxious weeds were identified in the Area of Proposed Activities. CGN's committed practices (Section 2.17) would treat any weed infestations resulting from project activities. |
| Special Status Species | | | X | Impacts to Special Status Species are discussed in Section 3.3.6 |
| Wastes, Hazardous or Solid | | | X | Solid waste created during exploration activities would be collected and disposed of off-site at an approved landfill. Control measures are in place for oil and hazardous spills. See Section 3.3.8. |
| Water Quality - Ground | | | X | The project is expected to require water for drilling activities and dust suppression; that water would be acquired from existing sources. No new water developments or water rights applications are anticipated. See Section 3.3.9. |
| Water Quality - Surface | X | | | There are no surface waters present within the Area of Proposed Activities or vicinity. |
| Wetlands and Riparian Zones | X | | | There are no wetlands or riparian areas within or near the Area of Proposed |

| Supplemental Authority Element | Not Present | Present/ Not Affected | Present/ Potentially Affected | Rationale/Reference Section |
|---|---|---|---|---|
| | | | | Activities. |
| Wild and Scenic Rivers | X | | | There are no wild and scenic rivers within or near the Area of Proposed Activities. |
| Wilderness | X | | | The nearest Wilderness Study Area (WSA) is the Grapevine Mountains WSA approximately 12 miles northwest of the project. Given this distance, the project would have no impact on the WSA. |

In addition to the elements listed under supplemental authorities, the BLM considers additional resources and uses that occur on public lands and the issues that would result from the implementation of the Proposed Action. These additional resources that have been considered for this EA are listed in Table 3.1-2 below, and are analyzed in Section 3.3.

**Table 3.1-2: Additional Resources Considered in the Analysis.**

| Other Resources or Uses | Not Present | Present/ Not Affected | Present/ Potentially Affected | Rationale/Reference Section |
|---|---|---|---|---|
| Fire Management | X | | | No fuel reduction or habitat management projects have been conducted or are proposed within the Area of Proposed Activities. Fire prevention is a committed practice for the Project (Section 2.17). Fire Management is not further analyzed in the EA. |
| Geology and Mineral Resources | | X | | Only small amounts of material are removed during exploration activities that do not affect mineral resources. Geology and Minerals are not further analyzed in the EA. |
| Land Use and Realty | | X | | The Project is accessed off US Highway 95 on Nye County Road 274 or Springdale Road. No change in land use or access routes would result from the project and no real estate transactions are proposed. The project activities would not affect the radio facility in the east center of Section 2, T11S, R46E or the powerline ROW that serves the facility. |
| Paleontological Resources | X | | | Paleontological resources are unlikely to occur in hydrothermally altered volcanic rocks, therefore, this resource is not further analyzed in the EA. |

| Other Resources or Uses | Not Present | Present/ Not Affected | Present/ Potentially Affected | Rationale/Reference Section |
|---|---|---|---|---|
| Rangeland Management/Livestock Grazing | X | | | No livestock are authorized in the Area of Proposed Activities; however, livestock could wander into the area seeking water associated with sumps. However, Section 2.17 states that all trenches/test pits, sumps, and other small excavations that pose a hazard or nuisance to the public, wildlife, or livestock would be adequately fenced to preclude access or constructed with a sloped end for easy egress. |
| Recreation | | | X | Impacts to recreation are discussed in Section 3.3.4. |
| Social and Economic Values | | X | | The Proposed Action would temporarily require a small number of individuals to complete exploration activities. Local businesses would be supported and income would be provided to the Beatty community through purchase of goods and services. There would be no long-term impacts to social and economic values from the Proposed Action since the benefit would be very short-term in nature. |
| Soils | | | X | The Proposed Action would temporarily impact soils. These impacts are discussed in Section 3.3.5. |
| Vegetation | | | X | Impacts to vegetation are discussed in Section 3.3.7. |
| Visual Resources | | X | | The effects of the project on visual resources would be consistent with BLM prescribed Visual Resource Inventory Class IV objectives. |
| Wild Horses and Burros | | X | | There are no wild horses located in the Area of Proposed Activities. Wild Burros are discussed in Section 3.3.10. |
| Wildlife | | | X | Impacts to wildlife are discussed in Section 3.3.11. |

## 3.2 General Setting

The project is located in the northern end of the Amargosa Desert in Nye County, Nevada. The project is within the Basin and Range Physiographic Province, which is characterized by linear mountain ranges and intervening valleys arranged generally in a north-south parallel pattern. The Mojave Desert is characterized by hot dry summers and cool dry winters. Average precipitation of 3.5 inches occurs sporadically from either winter rains or summer thundershowers.

The soil types in the Area of Proposed Activities are typical of those found throughout the Northern Basin and Range Province of Southern Nevada. These soils form alluvial fans, fan

remnants, partial ballenas, hills, and consist of very gravelly sandy loam, extremely gravelly loam, gravelly coarse sand, and extremely cobbly loamy sand (NRCS 2012). The topographic features in the lower elevations of the Area of Proposed Activities are characterized by alluvial fans, fan remnants, and partial ballenas. These soils are shallow to deep and are derived from mixed alluvium and residuum from volcanic rocks. The remaining portion is characterized by hilly landscape with components of fragmented material. Erosion by wind and water ranges from very low to moderate.

Geologically, the project is located within the Walker Lane structural province and the Southwestern Nevada Volcanic Field; approximately six miles west of the western structural margin of the middle Miocene Timber Mountain caldera complex. Many of the volcanic units exposed originated from the caldera complex, some of which were locally reworked. The region is underlain by Paleozoic sedimentary rocks and older volcanic rocks, which are the basement for the mid-Miocene tuffs and related rocks that are the hosts for most of the mineralization in the Bullfrog Mining District. The region was subjected to extensional faulting related to the development of the Great Basin, which started about the time of major volcanism. Most of the major fault zones have northerly strikes with normal displacement to the west. Numerous cross faults are present between the principal northerly striking faults.

The BLM manages paleontological resources under a number of federal laws including the following: FLPMA Sections 310 and 302(b), which direct the BLM to manage public lands to protect the quality of scientific and other values; 43 CFR 8365.1-5, which prohibits the willful disturbance, removal, and destruction of scientific resources or natural objects; 43 CFR 3622, which regulates the amount of petrified wood that can be collected for personal, noncommercial purposes without a permit; and 43 CFR 3809.420 (b)(8), which stipulates that a mining operator "shall not knowingly disturb, alter, injure, or destroy any scientifically important paleontological remains or any historical or archaeological site, structure, building or object on Federal lands." In addition, the Paleontological Resources Preservation Act, or Title VI of the Omnibus Public Land Management Act of 2009 (Public Law [P.L.] 111-11), establishes stronger penalties than previously required for the non-permitted removal of scientifically significant fossils from federal lands. The primary target of the project is hydrothermally altered volcanic rocks, intrusive rocks, and volcaniclastic sediments, precluding the likelihood that scientifically important fossils would be located in the area. There are some outcrops of the Wood Canyon Formation near the eastern edge of the Area of Proposed Activities; however, no disturbance is proposed in this lithologic unit that contains index invertebrate fossils in Death Valley.

## 3.3 Effects of the Proposed Action

### 3.3.1 Air Quality

#### 3.3.1.1 Affected Environment

*Air Quality*

The Bureau of Air Pollution Control (BAPC) is the agency in the State of Nevada that has been delegated with the responsibility for the preparation of a State Implementation Plan (SIP) (excluding Washoe and Clark Counties, which have their own SIP). Included in a SIP are the State of Nevada air quality permit programs (NAC 445B.001 through 445B.3791, inclusive). Also included in a SIP is the Nevada State Ambient Air Quality Standards (NSAAQS). The

NSAAQS are generally identical to the National Ambient Air Quality Standards (NAAQS), with the exception of the following: (a) an additional standard for carbon monoxide in areas with an elevation in excess of 5,000 feet amsl; (b) a hydrogen sulfide standard; (c) no implementation of new short term (one-hour) standards for nitrogen dioxide and sulfur dioxide and (d) a violation of state standard occurs with the first annual exceedance of an ambient standard, while federal standards are generally not violated until the second annual exceedance. In addition to establishing the NSAAQS, the BAPC is responsible for permit and enforcement activities throughout the State of Nevada (except Clark and Washoe Counties).

The Area of Proposed Activities is located in the Oasis Valley and Sarcobatus Flat Hydrographic Basins, which are considered in attainment relative to the federal air quality standards for all regulated pollutants. The existing air quality is typical of largely undeveloped regions of the western United States with limited sources of pollutants.

*Climate and Meteorology*

The Area of Proposed Activities is located east of the Amargosa Mountain Range. The climate in is typical of southern Nevada with bright sunshine, low humidity, low annual precipitation with moderate fluctuations in seasonal temperatures. The average annual precipitation is 3.5 inches and tends to peak in January. Temperatures during the winter are cool with periods of cold weather with the lowest average monthly temperature occurring in January of 27.2 degrees (°) Fahrenheit (F). The summers are hot and dry with the highest average monthly temperature occurring in July of 99.8° F. The average annual maximum and minimum temperatures in Beatty, Nevada, approximately fifteen miles southeast of Area of Proposed Activities, are 76.9 and 44.0° F, respectively (WRCC 2012). Elevations range from 4,100 to 4,500 feet amsl.

*Climate Change*

Ongoing scientific research has identified the potential impacts of anthropogenic (man-made) greenhouse gas (GHG) emissions and changes in biological carbon sequestration due to land management activities on global climate. Through complex interactions on a regional and global scale, these GHG emissions and net losses of biological carbon sinks cause a net warming effect of the atmosphere, primarily by decreasing the amount of heat energy radiated by the earth back into space. Although GHG levels have varied for millennia, recent industrialization and burning of fossil carbon sources have caused carbon dioxide equivalent concentrations to increase dramatically, and are likely to contribute to overall global climatic changes. The Intergovernmental Panel on Climate Change (IPCC) recently concluded that "warming of the climate system is unequivocal" and "most of the observed increase in globally average temperatures since the mid-20th century is very likely due to the observed increase in anthropogenic greenhouse gas concentrations" (IPCC 2007).

Several activities contribute to the phenomena of climate change, including the following: emissions of GHGs (especially carbon dioxide and methane) from fossil fuel development; large wildfires and activities using combustion engines; changes to the natural carbon cycle; and changes to radioactive forces and reflectivity (albedo). It is important to note that GHGs would have a sustained climatic impact over different temporal scales. For example, recent emissions of carbon dioxide can influence climate for 100 years.

Current emissions within the vicinity Area of Proposed Activities include vehicle combustion activities, fugitive dust from travel on unimproved roads, ranch activities, and wildland fires. Emissions of all pollutants are generally expected to be low due to the extremely limited number of sources in the vicinity. Existing climate predictive models are global in nature; therefore, they are not at the appropriate scale to estimate potential impacts of climate change within the Oasis Valley and Sarcobatus Flat Hydrographic Basins in which the project is located. Due to the nature and scale of the project, effects on climate change are not further analyzed in this EA.

#### 3.3.1.2 Environmental Consequences

The project has the potential to disturb up to 93.6 acres. Travel on dirt access roads and drilling activities within the Area of Proposed Activities have the potential to create fugitive dust and vehicle emissions, causing a minor impact to air resources. All Project-related activities with greater than 20 acres of surface disturbance would be operated under a required SAD permit from the BAPC. Environmental protection measures outlined in Section 2.17 indicate that speed limits on access roads would be observed and travel on roads within the Area of Proposed Activities would be conducted at prudent speeds. Fugitive dust would be controlled by using water trucks for dust suppression, if required. Reclamation of surface disturbance would gradually eliminate any potential for long-term impacts to air resources. Any potential temporary impacts to air resources would cease once activities and reclamation are completed, and would not exceed the applicable NSAAQS and NAAQS.

### 3.3.2 Migratory Birds

#### 3.3.2.1 Affected Environment

Table 3.3-1 lists the species that have been observed in the Area of Proposed Activities as identified by the Nevada Division of Wildlife (NDOW), observed during the May 2011 migratory bird survey (Enviroscientists 2011), or during the 2012 biological survey (Enviroscientists 2012).

**Table 3.3-1: Migratory Bird Species Identified in the Area of Proposed Activities**

| Common Name | Scientific Name |
|---|---|
| American kestrel | *Falco sparverius* |
| Black throated sparrow | *Amphispiza bilineata* |
| Common raven | *Corvus corax* |
| Cooper's hawk | *Accipiter cooperii* |
| **Golden eagle** | *Aquila chrysaetos* |
| Great horned owl | *Bubo virginianus* |
| Mourning dove | *Zenaida macroura* |
| Northern harrier | *Circus cyaneus* |
| Northern saw-whet owl | *Aegolius acadicus* |
| Prairie falcon | *Falco mexicanus* |
| Red-tailed hawk | *Buteo jamaicensis* |
| Rock wren | *Salpinctes obsoletus* |
| Rough-legged hawk | *Buteo lagopus* |

| Common Name | Scientific Name |
|---|---|
| Short-eared owl | *Asio flammeus* |
| Western kingbird | *Tyrannus verticalis* |

**Bold** – denotes BLM Sensitive Species

In addition to the observed species, the NDOW identified that the following species which have distribution ranges that include the Area of Proposed Activities and three-mile buffer area: barn owl (*Tyto alba*); western burrowing owl (*Athene cunicularia*); ferruginous hawk (*Buteo regalis*); long-eared owl (*Asio otus*); marlin (*Falco columbarius*); osprey (*Pandion haliaetus*); peregrine falcon (*Falco peregrines*); sharp-shinned hawk (*Accipiter striatus*); Swainson's hawk (*Buteo swainsoni*); and turkey vulture (*Cathartes aura*). In addition, potential habitat has also been identified for horned lark (*Eremophila alpestris*), Brewer's sparrow (*Spizella breweri*), sage sparrow (*Amphispiza belli*), loggerhead strike (*Anius ludovicianus*), and common poorwill (*Phalaenoptilus nuttallii*).

No active raptor nests were observed within the Area of Proposed Activities. A total of nine raptor nests were observed within a four-mile buffer of the Area of Proposed Activities as summarized in the July 13, 2012, Baseline Biological Survey Memo (Enviroscientists 2012). The other nest locations identified by the NDOW were visited, but no nests were observed. The entire Area of Proposed Activities and vicinity represent raptor foraging habitat.

#### 3.3.2.2 Environmental Consequences

The Proposed Action would create surface disturbance and associated removal of vegetation, which could potentially result in the destruction of active nests or disturb the breeding behavior of migratory bird species. As outlined in the environmental protection measures in Section 2.17, CGN has committed to provide a qualified biologist to conduct nest surveys prior to any surface disturbance activities associated with exploration activities during the avian breeding season. This measure would ensure that no direct impacts to migratory birds are likely to occur under the Proposed Action.

Project-related surface disturbance would result in the temporary loss of habitat for migratory birds in the Area of Proposed Activities. Approximately 93.6 acres of migratory bird and raptor foraging habitat would be disturbed over the ten-year project life as a result of implementation of the Proposed Action. This acreage would not all be disturbed at one time due to phased nature of exploration. Reclamation activities would be conducted following the completion of the proposed project. Table 2.2-2 outlines the reclamation schedule for the project. Reclamation will be initiated as soon as it is determined the surface disturbance is no longer needed.

The Proposed Action would result in temporary disturbance of potential habitat, but would not contribute to a loss of viability for any migratory bird species because most activities would be concentrated near areas already disturbed from past activities and extensive similar habitat is available adjacent to the Area of Proposed Activities. It is unlikely that implementing the Proposed Action would result in a decline in local or regional migratory bird populations. Therefore, the Proposed Action is not likely to have any long-term impacts to migratory bird habitat or direct impacts on migratory bird species.

### 3.3.3 Native American Religious Concerns

#### 3.3.3.1 Affected Environment

Located within the traditional territory of the Western Shoshone, the TFO administrative boundary contains spiritual, traditional, and cultural resources, sites, and social practices that aid in maintaining and strengthening social, cultural, and spiritual integrity. Recognized tribes with known interests near the Area of Proposed Activities include the Timbisha Shoshone Tribe. In addition, various other community members and individuals are known to have interests in the general area of the Monte Cristo Range.

Social activities that continue to define the culture take place across lands currently administered by the BLM. Some Western Shoshone maintain certain cultural, spiritual, and traditional activities, visit their sacred sites, hunt game, and gather available medicinal and edible plants. Through oral history (the practice of handing down knowledge from the elders to the younger generations), some Western Shoshone continue to maintain a world view similar to that of their ancestors.

Cultural, traditional, and spiritual sites and activities of importance to tribes include, but are not limited to the following: existing antelope traps; certain mountain tops used for vision questing and prayer; medicinal and edible plant gathering locations; prehistoric and historic village sites and gravesites; sites associated with creation stories; hot and cold springs; collection of materials used for basketry and cradle board making; locations of stone tools such as points and grinding stones (mono and matate); chert and obsidian quarries; hunting sites; sweat lodge locations; locations of pine nut ceremonies, traditional gathering, and camping; rocks used for offerings and medicine gathering; tribally identified Traditional Cultural Properties (TCPs); TCPs found eligible to the NRHP; rock shelters; rock art locations; lands or resources that are near, within, or bordering current reservation boundaries, and actions that conflict with tribal land acquisition efforts.

In accordance with the National Historic Preservation Act (NHPA) (P.L. 89-665), the NEPA, the FLPMA (P.L. 94-579), the American Indian Religious Freedom Act (P.L. 95-341), the Native American Graves Protection and Repatriation Act (NAGPRA) (P.L. 101-601) and EO 13007, the BLM must provide affected tribes an opportunity to comment and consult on the proposed Project. The BLM must attempt to limit, reduce, or possibly eliminate any negative impacts to Native American traditional/cultural/spiritual sites, activities, and resources.

On April 12, 2012, during a regularly scheduled tribal meeting, the BLM discussed the project with the tribal members. On May 31, 2012, at a subsequent meeting, the project was once again discussed with the Chairman. The Chairman explained the interest of the Death Valley members and the BLM representative indicated that a site visit could be arranged. On July 25, 2012, consultation initiation/invitation letters were mailed from the BLM TFO administrative area to the Timbisha Shoshone Tribe. On August 13, 2012, another discussion was held with the tribe and it was recommended that a site visit be discussed with the members from Death Valley. No request was received from the tribe. The BLM continues to provide opportunities for participation and input. To date, no issues of concern have been identified.

#### 3.3.3.2 Environmental Consequences

The Proposed Action would avoid eligible and unevaluated archaeological sites discovered and documented during cultural resources inventories. If any TCPs, tribal resources, sacred sites, etc. are identified within or in close proximity to the Project boundary, a protective "buffer zone" could be acceptable, if doing so satisfies the needs of the BLM, the proponent, and affected Tribe. The size of any "buffer zone" would be determined through coordination and communication between all participating entities.

BLM Cultural Resource Specialists, accompanied by designated tribal observers, may periodically visit identified cultural resources sites within or near the exploration activity boundary. Native American Consultation and monitoring by the BLM and Tribal Cultural Resource Specialists can occur throughout the life of a project to ensure that any identified TCPs are not impacted.

During the Project's activities, if any cultural properties, items, or artifacts (i.e., stone tools, projectile points, etc.) are encountered, it must be stressed to those involved in the proposed Project activities that such items are not to be collected (Section 2.17). Cultural and archaeological resources are protected under the Archaeological Resources Protection Act (16 United States Code 470ii) and the FLPMA.

Although the possibility of disturbing Native American gravesites within most project areas is extremely low, inadvertent discovery procedures must be noted. Under the NAGPRA, Section (3) (d) (1), it states that the discovering individual must notify the land manager in writing of such a discovery. If the discovery occurs in connection with an authorized use, the activity, which caused the discovery, is to cease and the materials are to be protected until the land manager can respond to the situation.

### 3.3.4 Recreation

#### 3.3.4.1 Affected Environment

Recreational uses of the public land in the vicinity of the Area of Proposed Activities consist of dispersed recreational activities such as motorcycle and OHV riding, horseback riding, hunting, fishing, mountain biking, camping, collecting and harvesting, driving for pleasure, hiking, and star gazing (Nye County 2011). A small portion of the Death Valley National Park is located in Nye County, just 13 miles from the Town of Beatty. There are a wide variety of recreational opportunities including sightseeing, bicycling, hiking, backpacking, camping, four-wheel driving, stargazing, bird watching, photography and guided tours (e.g., Scotty's Castle, historic mining sites, and flora and fauna) (Nye County 2011).

In addition, the annual Best in the Desert off-road Vegas to Reno race, which occurs in mid-August, races through the middle of the Bullfrog Mining District near the historic town of Pioneer, approximately five miles north of Beatty. The race occurs on both private and public land. The BLM has specified that the race stays in washes and preexisting roads. The BOSP identifies two existing four-wheel drive or all-terrain vehicle routes that occur within the Area of Proposed Activities boundary (BOSP 2009). The race is in and out of the Area of Proposed Activities in one day.

#### 3.3.4.2 Environmental Consequences

Impacts to recreation from the Proposed Action would result in a temporary loss within the Area of Proposed Activities for dispersed recreational opportunities; however, similar recreational opportunities exist outside of the area. The Best in the Desert off-road race is one day in duration and CGN would continue to suspend activities for that day as required by the BLM. Therefore, impacts to recreation that would result from the Proposed Action would be minimized.

### 3.3.5 Soils

#### 3.3.5.1 Affected Environment

The soil types in the Area of Proposed Activities are typical of those found throughout the Northern Basin and Range Province of Southern Nevada. These soils form alluvial fans, fan remnants, partial ballenas, hills, and consist of very gravelly sandy loam, extremely gravelly loam, gravelly coarse sand, and extremely cobbly loamy sand (NRCS 2012).

The topographic features in the lower elevations of the Area of Proposed Activities are characterized by alluvial fans, fan remnants, and partial ballenas. These soils are shallow to deep and are derived from mixed alluvium and residuum from volcanic rocks. The remaining portion is characterized by hilly landscape with components of fragmented material.

According to the NRCS, a total of six soil associations occur within the Area of Proposed Activities (Table 3.3-2). The dominant soil association is the Gabbvally-Upspring-Rubble land, which occurs in 1,501 acres (79 percent) of the Area of Proposed Activities. Soil associations within the Area of Proposed Activities are listed in Table 3.3-2 and shown on Figure 3. These soils are shallow to deep over lithic bedrock and derived from residuum and colluviums from volcanic rocks.

**Table 3.3-2: Soils Associations in the Area of Proposed Activities**

| Association | Soil Series | Depth to Bedrock | Landscape position/ % Slope | Profile Soil Texture | Permeability | Erosion Hazard by Water | Erosion Hazard by Wind |
|---|---|---|---|---|---|---|---|
| Yemo-Greyeagle (2215) | Yemo | 80+ inches | Alluvial fans; 2 to 4% | Very gravelly sandy loam to extremely gravelly loam | High | Low | Low |
| | Greyeagle | 14 inches | Fan remnants; 2 to 4% | Very gravelly sandy loam to extremely cobbly loamy sand | Moderate to High | Low | Low |
| Gabbvally-Upspring-Rubble land (2290) | Gabbvally | 14 inches | Hills; 15-50% | Very gravelly sandy loam to unweathered bedrock | Moderate to High | Moderate | Low |
| | Upspring | 14 inches | Hills; 30-75% | Very gravelly sandy loam | Moderate to High | Low to Moderate | Low |

| Association | Soil Series | Depth to Bedrock | Landscape position/ % Slope | Profile Soil Texture | Permeability | Erosion Hazard by Water | Erosion Hazard by Wind |
|---|---|---|---|---|---|---|---|
| | Rubble land | N/A | Hills; N/A | Fragmented Material | High | Low to Moderate | Low |
| Gabbvally-Rock outcrop (2291) | Gabbvally | 14 inches | Hills; 15-50% | Very gravelly sandy loam to unweathered bedrock | Moderate to High | Moderate | Low |
| | Rock outcrop | N/A | Hills; N/A | N/A | Very Low | Very Low | Very Low |
| Zalda-Rubble land-Skelon (2373) | Zalda | 20 inches | Hills; 8 to 30% | Gravelly sandy loam to unweathered bedrock | Moderate | Moderate | Moderate |
| | Rubble land | N/A | Hills; N/A | Fragmented Material | High | Low to Moderate | Low |
| | Skelon | 20+ inches | Fan remnants; 8-15% | Very gravelly sandy loam to extremely gravelly coarse sand | Moderate | Moderate | Moderate |
| Bacho-Greyeagle (2481) | Bacho | 14 inches | Partial ballenas; 4-8% | Very gravelly sandy loam to very gravelly clay | Moderate | Moderate | Moderate |
| | Greyeagle | 14 inches | Fan remnants; 2 to 4% | Very gravelly sandy loam to extremely cobbly loamy sand | Moderate to High | Moderate | Moderate |
| Upspring very gravelly sandy loam (2971) | | 14 inches | Hills; 8 to 15% | Very gravelly sandy loam to unweathered bedrock | Moderate | Low to Moderate | Moderate |

### 3.3.5.2 Environmental Consequences

Surface disturbance associated with the Proposed Action would impact up to 93.6 acres of soils, or approximately five percent of the Area of Proposed Activities. Disturbance to the Area of Proposed Activities would be temporary and not all disturbed concurrently. The disturbance would be reclaimed when no longer needed for exploration activities and all disturbance would be reclaimed upon completion of the Project. The soil associations in the Area of Proposed Activities vary from low to high for erosion hazards by water and wind.

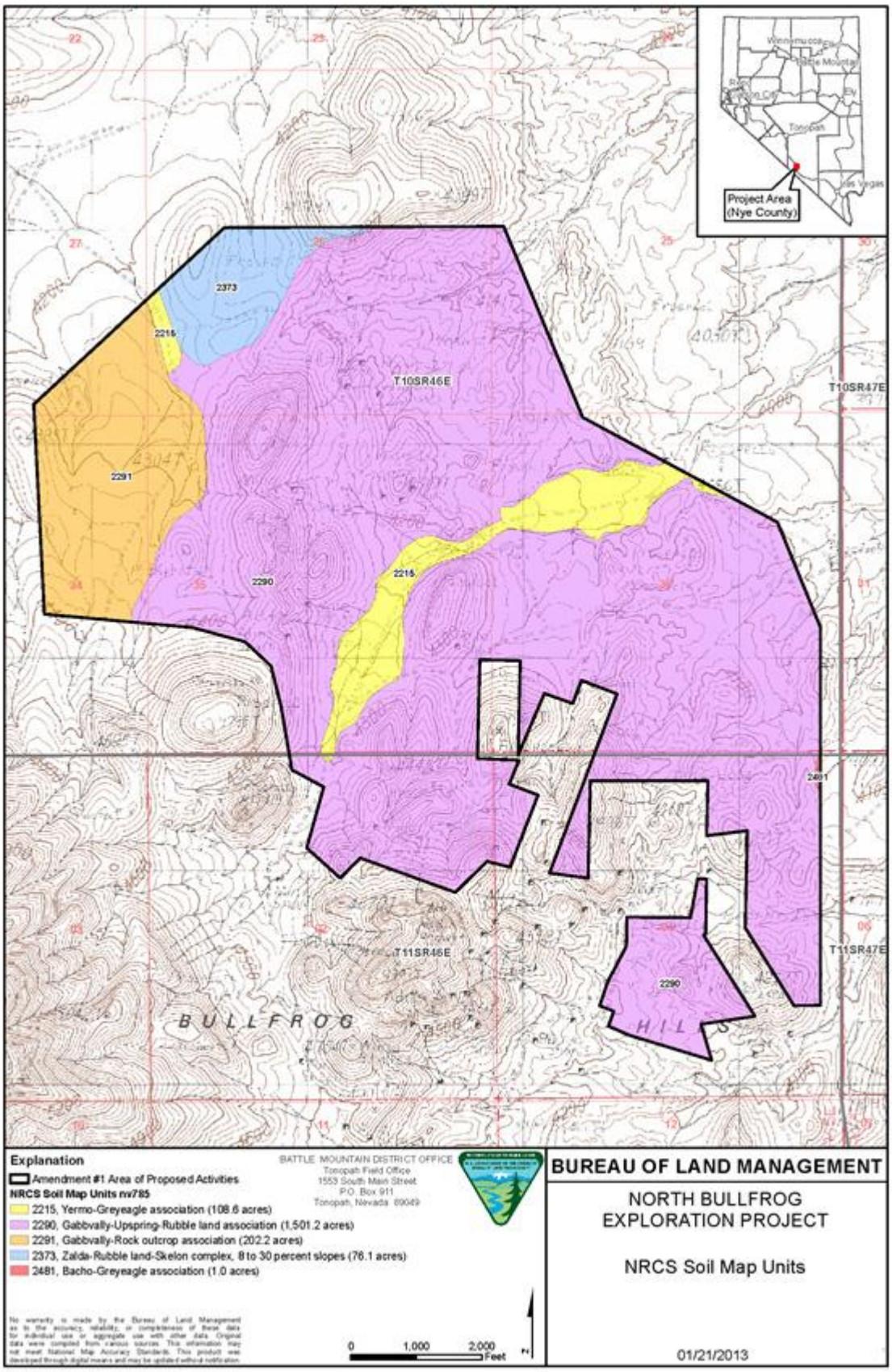


**Figure 3: NRCS Soil Map Units**

Disturbance associated with exploration activities under the Proposed Action would increase the wind and water erosion potential of disturbed soils until reclamation was successfully completed.

The potential impacts to soils would be reduced by the environmental protection measures incorporated in the Project design as described in Section 2.16 and includes reseeding for erosion and sediment control.

### 3.3.6 Special Status Species

The BLM's policy for management of special status species is in the BLM Manual Section 6840. Special status species include the following:

- Federally Threatened or Endangered Species: Any species that the USFWS has listed as an endangered or threatened species under the Endangered Species Act (ESA) of 1973, as amended throughout all or a significant portion of its range.

- Proposed Threatened or Endangered Species: Any species that the USFWS has proposed for listing as a federally endangered or threatened species under the ESA.

- Candidate Species: Plant and animal taxa that are under consideration for possible listing as threatened or endangered under the ESA.

- BLM Sensitive Species: 1) Species that are currently under status review by the USFWS; 2) Species whose numbers are declining so rapidly that federal listing may become necessary; 3) Species with typically small and widely dispersed populations; or 4) Species that inhabit ecological refugia or other specialized or unique habitats.

- State of Nevada Listed Species: State-protected animals that have been determined to meet BLM's Manual 6840 policy definition.

Nevada BLM policy is to provide State of Nevada listed species and Nevada BLM sensitive species with the same level of protection as is provided to candidate species in BLM Manual 6840.06C. Per the wording in Table IIa in BLM Information Bulletin NV-2003-097, Nevada protected animals that meet BLM's 6840 policy definition are those species of animals occurring on BLM-managed lands in Nevada that are: 1) 'protected' under authority of the NAC; 2) have been determined to meet BLM's policy definition of "listing by a state in a category implying potential endangerment or extinction;" and 3) are not already included as federally listed, proposed, or candidate species.

The USFWS, Nevada Natural Heritage Program (NNHP), and NDOW were contacted to obtain a list of threatened and endangered and sensitive species that have the potential to occur within the Area of Proposed Activities. In addition, the Nevada BLM Sensitive Species List and Special Status Species (threatened and endangered) lists for the Battle Mountain District were evaluated. The special status wildlife and plant species that have potential to occur within the Area of Proposed Activities are discussed below.

The required baseline surveys were identified by the BLM, during a meeting held on March 27, 2012. Previous biological surveys were completed in the Area of Proposed Activities

to support the original Plan submitted in 2007. Therefore, the BLM determined that conducting focused surveys for nesting raptors, bats, and special status plant species would be sufficient to update the baseline biological dataset.

#### 3.3.6.1 Affected Environment

*Federally Listed Species*

Desert Tortoise

The desert tortoise is found throughout the Mojave, Sonoran, and Colorado Deserts of southern California, southern Nevada, southwestern Utah, and Arizona. Two distinct populations are recognized. The Sonoran and Mojave populations are separated by the Grand Canyon-Colorado river system and differ both genetically and morphologically. The Mojave population was listed as endangered by the USFWS in August 1989. Desert tortoise on the Beaver Dam Slope in southwestern Utah was federally listed as threatened in 1980. In October 1989, the Mojave population was officially proposed for listing and was federally listed as threatened on April 2, 1990 (USFWS 1990). Desert tortoises found in southern Nevada and near the Project are part of the federally listed Mojave population and can be further designated as the eastern Mojave subpopulation.

Mojave desert tortoises are most active during the spring months, when temperatures range between 65 and 105$^{o}$ F. Desert tortoises begin to emerge from their burrows on warm days in early March and activity remains high through mid-May and begins to decline in early June. Desert tortoises are relatively inactive through the summer, except during cool periods (i.e., during rainstorms). Access to water is a limiting factor for desert tortoise activity.

Compared to females, adult males are larger in size, have longer gular horns (located under the head), enlarged chin glands on the lower jaw, and a concave rather than flat plastron (located on the tortoise's underside). Males have broader and thicker tails and thick toenails (NatureServe 2006).

Mating occurs during the spring and may occur immediately following emergence from hibernation in March and continue until the beginning of hibernation in late October. Females lay an average of 4.5 eggs per clutch inside the burrow or nearby shrub and have an average of 1.9 clutches per year (Berry 1984). Eggs incubate for up to 120 days with hatching occurring from mid-August through October. Eggs and young are unattended by parents and mortality is high, with only two percent of young reaching sexual maturity. Their variable reproductive success is correlated with environmental conditions (USFWS 1994). Desert tortoise growth is slow in the wild. Desert tortoises may live to be 60 to 100 years old (Desert Tortoise Preserve Committee 2006) while not reaching sexual maturity for ten to 15 years (USFWS 1990).

The preferred habitat for desert tortoises in southern Nevada appears to be dominated by creosote-bursage and the BLM reports that 81 percent of desert tortoise sign found during previous surveys was associated with this plant community (BLM 1999). Vegetation cover is usually scattered shrubs and abundant inter-shrub space suitable for growth of herbaceous plants. Primarily herbivores, desert tortoises forage on grasses, forbs, cacti, and the flowers of annual plants. Throughout the Mojave Region, desert tortoises occur most commonly on gently sloping

terrain with soils ranging from sand to sandy-gravel and with scattered shrubs. Desert tortoises can also be found in steeper, rockier areas (USFWS 1994). In combination, the soils which support the creosote-bursage community and the herbaceous plants associated with this community are generally suitable for desert tortoise burrow construction and dietary requirements (BLM 1999).

Desert tortoises are associated with home ranges, as opposed to defended territories. Home ranges are defined as the area in which desert tortoises travel, feed, sleep, mate, and burrow. Large desert tortoises have larger home ranges than small desert tortoises. In southern Nevada, home range estimates usually are less than 125 acres. Estimates for home range sizes cluster between the following two size classes: 15 to 40 acres and 90 to 125 acres (NatureServe 2006).

In 2007 a previous operator was requested by the BLM to conduct a desert tortoise survey in the area of proposed disturbance located on public land administered by the BLM because the Project was located on the border of the mapped range of the desert tortoise (*Gopherus agassizii*). This survey covered the majority of the Area of Proposed Activities in the Area of Proposed Activities and no desert tortoise or their sign was documented. In addition, the habitat quality for desert tortoise is poor.

In response to a request for federally-listed and candidate species in the Area of Proposed Activities, the USFWS memorandum of March 27, 2012, stated that no listed or proposed species occur in the Area of Proposed Activities.

*BLM Sensitive Species*

The following BLM Sensitive Species are known or have the potential to occur in the vicinity of the Area of Proposed Activities: golden eagle; western burrowing owl (*Athene cunicularia hypugaea*); ferruginous hawk; Swainson's hawk; peregrine falcon; loggerhead shrike; and Brewer's sparrow.

Golden Eagle

The USFWS has issued an interim guidance on the management of golden eagles to further aid in impact analysis and mitigation identification during the NEPA process (USFWS 2010).

Golden eagles are protected by the MBTA and the Bald and Golden Eagle Protection Act, both of which prohibit take, and is a Nevada BLM sensitive species. The USFWS overall management objective for golden eagle populations is to ensure no declines in breeding populations (USFWS 2012). Golden eagle nest in high densities in open and semi-open habitat, but may also nest at lower densities in coniferous habitat when open space is available. Golden eagles currently breed in and near much of the available open habitat in North America west of the 100$^{th}$ meridian. Golden eagles avoid nesting near urban habitats. In the Great Basin, golden eagles nest on cliffs and in scrub forest habitat. Golden eagles forage both close to and far from their nests (up to 5.6 miles from the center of their territory). Foraging distances may be greater in xeric habitats (USFWS 2010).

Twenty-six golden eagle nests were identified by the NDOW within ten miles of the Area of Proposed Activities. During the 2012 Biological Survey, no active raptor nests were observed in within the area.

Western Burrowing Owl

Western burrowing owls breed throughout the western United States in open grassland areas. In northern Nevada, the burrowing owl occurs as a summer breeder and migrates south during the winter (Herron et al. 1985). Burrowing owl breeding sites are strongly dependent on the presence of burrows constructed by prairie dogs, ground squirrels, or badgers but may also create their own burrows. Prime burrowing owl habitat must be open, have short vegetation, and contain an abundance of burrows. No burrowing owls were observed in the Area of Proposed Activities; however, suitable burrowing habitat does exist.

Ferruginous Hawk

Ferruginous hawk uses sagebrush, piñon-juniper woodlands, and salt desert scrub habitats year round in northern Nevada. Ferruginous hawks in Nevada reportedly prefer landscapes where human presence is minimal and they are generally more sensitive to nest disturbances than most other raptors (Great Basin Bird Observatory [GBBO] 2010). No ferruginous hawks were observed in the Area of Proposed Activities; however, suitable foraging habitat is present. The species would likely only occur on a transient basis.

Swainson's Hawk

Swainson's hawks can be associated with Great Basin and Mojave lowland riparian, agriculture, sagebrush and wet meadow habitats. Ideal habitat features include large riparian nesting trees, agricultural fields, and open shrublands within relatively close proximity. Nesting habitat often consists of platforms in old large trees, cliff ledges, juniper, and old raptor or heron nests (GBBO 2010). No Swainson's hawks or nests were observed within the Area of Proposed Activities; however, suitable foraging habitat is present.

Peregrine Falcon

Peregrine falcon habitat ranges throughout North America and they typically nest on high remote cliff ledges. Nests consist of shallow depressions in the rocks and soil, sometimes surrounded by twigs and grass (USFWS 2011a). No peregrine falcons were observed within the Area of Proposed Activities; however, suitable foraging habitat is present.

Loggerhead Shrike

Loggerhead shrikes are typically associated with greasewood and sagebrush communities. They also frequent open country in valleys and foothills, juniper or piñon-juniper woodlands. Dense stands of trees and shrubs are used for nesting and roosting sites, as well as for hunting perches. No loggerhead shrikes were observed in the Area of Proposed Activities.

Brewer's Sparrow

The Brewer's sparrow is typically associated with montane shrubland, sagebrush, and salt desert scrub habitats. This species prefers high shrub density and relatively large habitat patches and mosaics of varying shrub densities. Nesting habitat often consists of dense crown tall shrubs (GBBO 2010). Brewer's sparrow was not observed within the Area of Proposed Activities or vicinity during surveys.

Bats

Multiple adits and shafts are present in the Area of Proposed Activities from past mining activities and represent potential roosting habitat for BLM sensitive bat species. The biological surveys of June 2012 for the Area of Proposed Activities detected the following Nevada BLM sensitive bat species: little brown bat (*Myotis lucifugus*); Townsend's big-eared bat (*Corynorhinos townsendii*); western pipistrelle (*Pipistrellus hesperus*); small-footed myotis (*Myotis ciliolabrum*); fringed myotis (*Myotis thysanodes*); big brown bat (*Epescus fuscus*); and Brazilian free-tailed bat (*Tadarida brasiliensis*).

Plants

In a letter dated March 13, 2012, the NNHP stated that no at risk taxa have been recorded within the Area of Proposed Activities or within a three-mile radius (NNHP 2010). No BLM sensitive species were found within the Area of Proposed Activities during focused surveys. The USFWS did not report known occurrences of any threatened or endangered plant species. There are no BLM sensitive species within the Area of Proposed Activities and vicinity.

The survey did detect two state-protected and regulated cacti species (NRS 527.060 - .120 and Administrative Code Chapter 527), beavertail pricklypear (*Opuntia basilaris* var. *basilaris*) and hedgehog cactus (*Echinocereus triglochidiatus*) interspersed throughout the Area of Proposed Activities. One individual barrel cactus (*Echinocactus acanthoides*) was observed within the Area of Proposed Activities.

### 3.3.6.2 Environmental Consequences

*Federally Listed Species*

No federally threatened or endangered species are known to occur in the Area of Proposed Activities or were observed during biological surveys; therefore, no impacts to federally listed species would result from the Proposed Action.

*BLM Sensitive Species*

Several BLM sensitive raptor, bird, and bat species have been observed or are likely to occur in the Area of Proposed Activities. No active golden eagle nests were detected in the Area of Proposed Activities; therefore, no direct impacts to golden eagle would result from the Proposed Action. The implementation of the environmental protection measure outlined in 2.16 would prevent the direct impact to other BLM sensitive bird and raptor species with the potential to use

the site for nesting, including golden eagles. The locations of the exploration activities would not directly impact the adits and shafts at the site that may support roosting bats.

Approximately 93.6 acres of habitat would be disturbed over the ten-year project life as a result of implementation of the Proposed Action. Vegetation removal and ground disturbance would result in a temporary reduction of breeding habitat, temporary displacement due to increased activity, and temporary loss of foraging habitat for sensitive birds in the Area of Proposed Activities. This acreage would not all be disturbed at one time due to the phased nature of exploration. Similar adjacent habitat is available surrounding the Area of Proposed Activities. Reestablishment of vegetation would take place within three years of project reclamation and therefore, no long term impacts to potential sensitive species habitat would result from the Proposed Action.

### 3.3.7 Vegetation

#### 3.3.7.1 Affected Environment

Mojave Desert Scrub is the dominant vegetation community within the Area of Proposed Activities. Vegetation in the upland, mountainous portions of the Area of Proposed Activities is dominated by several shrub species including broom snakeweed (*Gutierrezia sarothrae),* spiny menodora (*Menodora spinescens*), paperbag bush (*Salazaria mexicana*), Eastern Mojave buckwheat (*Eriogonum fasciculata*), spiny hopsage (*Grayia spinosa*), Cooper's golderbush (*Ericameria cooperi*), four-wing saltbush (*Atriplex confertifolia*), burrobrush (*Hymenoclea salsola*), spiny menodora (*Menodora spinescens*), redstem stork's bill (*Erodium cicutarium*), Cushion cryptantha (*Cryptantha circumscissa*), greasewood (*Sarcobatus vermiculatus*), desert dandelion (*Malacothrix glabrata*), rubber rabbitbrush (*Ericameria nauseosa*), Nevada jointfir (*Ephedra nevadensis*), blackbrush (*Coleogyne ramosissima*), goldenhead (*Acamptopappus sphaerocephalus*), California buckwheat (*Eriogonum fasciulatum* var. *polifolium*), spiny hopsage (*Grayia spinosa*), desert trumpet (*Eriogonum inflatum*), desert pincushion (*Coryphantha chlorantha*), creosote bush (*Larrea tridentata*), white-margin sandmat (*Chamaesyce sphaerociphalus*), and shadscale. The understory consisted of typical weedy annual grassland vegetation that persists throughout the site. The dominant species observed included cheatgrass (*Bromus tectorum*), red brome (*Bromus madritensis* ssp. *rubens*) and bristly fiddleneck (*Amsinckia tessellata*). Vegetation in the lower elevation and washes in the Area of Proposed Activities is dominated by creosote bush, Stansbury cliffrose (*Purshia stansburiana*), and Indian ricegrass (*Achnatherum hymenoides*) (Enviroscientists 2009; 2012).

The soils found in the Area of Proposed Activities have been mapped and described by the Natural Resource Conservation Service (NRCS) in the Soil Survey of Nye County, Nevada, Southwest Part. Soils within the Area of Proposed Activities are typical of alluvial fans, fan remnants, and hills. The soils consist of Yermo-Greyeagle, Gabbvally-Upspring-Rubble, Gabbvally-Rock outcrop, and Zalda-Ruble land-Skelon complex associations. Soils consist of gravelly sandy loams, very gravelly sandy loams, and fragmented material with two to 75 percent slopes. Soils in the Area of Proposed Activities generally have a low erosion potential from surface water runoff and a low to moderate potential from wind erosion (NRCS 2012).

#### 3.3.7.2 Environmental Consequences

Disturbance to the Mojave Desert Scrub community would result in a temporary disturbance of approximately 93.6 acres. Reclamation measures outlined in Section 2.2 would take place after the completion of the project or when disturbed areas were no longer needed. All reclaimed areas would be reseeded with a BLM approved seed-mix (Table 2.2-1). The BLM-approved seed mixture would be similar to pre-disturbance vegetation conditions. The mix is designed to provide species that can exist in the environment of southern Nevada, are proven species for revegetation, or are native species found in the plant communities prior to disturbance.

### 3.3.8 Wastes, Solid or Hazardous

#### 3.3.8.1 Affected Environment

Federal and State of Nevada hazardous material and waste laws and regulations are applicable to hazardous substances used, stored, or generated by the Project. Applicable federal laws would include the following: the Resource Conservation and Recovery Act; Hazardous and Solid Waste Amendments; Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA [aka Superfund]); and the Superfund Amendments and Reauthorization Act. Pursuant to regulations promulgated under Section 102 of CERCLA, as amended, release of a reportable quantity of a hazardous substance to the environment in a 24-hour period must be reported to the National Response Center (40 CFR Part 302). A release of a reportable quantity on public land must also be reported to the BLM.

Similarly, Nevada hazardous material and waste laws and regulations are applicable to hazardous substances used, stored, and generated by the operation of the Project. NAC 445A.240 requires immediate reporting of a release of a reportable quantity of a hazardous substance to the NDEP.

The Nye County Comprehensive/Master Plan under Public Land Management Goal -7 specifies the following: To implement appropriate mitigation measures for the storage, use and/or disposal of hazardous waste in Nye County. A number of objectives under this goal include establishment of criteria for the evaluation of nuclear or hazardous waste storage, use and/or disposal facilities, which explicitly weigh the tradeoffs between environmental cost, the creation of jobs and other appropriate benefits to the county (NCCMP 2011 – page 12).

Potential sources of pollution from Project activities include drill rigs, service vehicles, and other equipment that uses oil, fuel and lubricating grease. Additional sources of pollutants include drilling fluids, borehole plugging materials, solvents, trash and other debris.

All Project-related waste would be disposed off site. Appropriate environmental protection measures are outlined in the SCP (Appendix D of the Plan of Operation document) should any hazardous or regulated material spills occur in the Area of Proposed Activities. Regulated wastes would be disposed of in a state, federal, or local designated area.

#### 3.3.8.2 Environmental Consequences

The generation of wastes and the use of hazardous materials as a result of the Proposed Action could result in the release of these wastes or materials. Vehicles traveling on public roads in the

Area of Proposed Activities would result in the presence of other hazardous materials and wastes (e.g., fuel, antifreeze, battery acid, lead tire weights, mercury switches, or catalytic converters) for the duration of travel. Section 2.16 of this EA contains environmental protection measures associated with wastes generated by the Project.

Through the implementation of the SCP outlined in the Plan and the environmental protection measures outlined in Section 2.16 of this EA, impacts to the environment from wastes resulting from implementation of the Proposed Action would be minimized.

### 3.3.9 Water Quality-Ground

#### 3.3.9.1 Affected Environment

##### 3.3.9.1.1 Ground Water Quantity

Hydrogeologic Setting

The Area of Proposed Activities lies within the Sarcobatus Flat and Oasis Valleys. The rocks of these areas are divided into two general groups: bedrock in the mountains and valley fill in the lowlands. The bedrock includes Paleozoic limestone and dolomite and lesser amounts of shale and sandstone, and Tertiary volcanic rocks consisting principally of tuff or other pyroclastics, welded tuffs and flows. These rocks crop out in the mountains and underlie the valley fill. The valley fill includes deposits that range in age from Tertiary to Quaternary and include rock debris, which has been eroded from the surrounding mountains, and the pyroclastic deposits of tuff, welded tuff, and sedimentary deposits. The deposits of Quaternary age consist primarily of unconsolidated clay, silt, sand, and gravel. The Tertiary rocks underlying the Quaternary deposits are believed to be similar in character to the Tertiary rocks exposed in the mountains (Malmberg and Eakin 1962). The bedrock contains fracture related aquifers and the valley fill contains alluvial aquifers.

Sarcobatus Flat

Sarcobatus Flat, basin 146, is a designated basin, Order 999. Designated ground water basins are basins where permitted ground water rights approach or exceed the estimated average annual recharge into the basin such that the water resources are being depleted or require additional administration. By designating a basin, the State Engineer is granted additional authority in the administration of the ground water resources within the designated basin. The State Engineer's order to designate a basin does not define any administrative controls. The estimated average annual recharge to and discharge from the ground water reservoir in Sarcobatus Flat is on the order of 3,500 acre-feet. Approximately 1,200 acre-feet of the recharge is derived from precipitation within the drainage basin and 2,300 acre-feet from ground water underflow from Stonewall Flat and Gold Flat. Ground water discharge from Sarcobatus Flat includes about 3,000 acre-feet of evapotranspiration by native vegetation and 500 acre-feet of ground water underflow out of the basin to Grapevine Canyon (Malmberg and Eakin 1962). The amount of ground water that can be pumped from the ground water reservoir in Sarcobatus Flat on a perennial basis depends largely on the annual recharge to the ground water system that can be diverted to wells, which could not exceed the total discharge of about 3,500 acre-feet without exceeding the perennial yield (Malmberg and Eakin 1962).

Oasis Valley

The estimated average annual recharge to and discharge from Oasis Valley is on the order of 2,000 acre-feet. Approximately 250 acre-feet are derived from precipitation within the drainage basin and about 1,800 acre-feet is derived from underflow from Gold Flat. Discharge of ground water in Oasis Valley is affected by evapotranspiration and underflow through the Amargosa Narrows to the Amargosa Desert. The estimated average annual natural discharge by evapotranspiration is approximately 1,900 acre-feet and the estimated average annual spring discharge and underflow to the Amargosa Desert is approximately 400 acre-feet. A search of NDWR's water rights database results show that Beatty Water and Sanitation has six active water rights (five wells) for municipal use. All underground (wells) are located along the flood plain of the Amargosa River. In 1962 the fluoride content of the water ranged from 0.4 to 5 milligrams per liter (mg/l). The Safe Drinking Water Act (1974), as amended, has a limit of 4 mg/l and a Nevada secondary standard of 2 mg/l. Although the estimated recharge to the ground water reservoir resulting from the infiltration of precipitation on the Bullfrog Hills is less than 20 acre-feet per year, a considerable amount of water of low fluoride content may be in storage in the alluvium bordering the hills (Malmberg and Eakin 1962).

Portions of Oasis Valley, basin 228, including the Area of Proposed Activities are designated as a water of the US (Order 741). Enviroscientists was retained by CGN to evaluate the dry drainages located within the vicinity of the Area of Proposed Activities. The purpose of the evaluation was to determine whether these features would be regulated under Section 404 of the Clean Water Act (CWA). This determination was submitted as a request to the United States Army Corps of Engineers (ACOE) to make a jurisdictional determination to aid in Project planning. The ACOE determined on November 9, 2012, that there were no waters of the US within the Area of Proposed Activities and that the determination was valid for five years.

Project Specific Information

Under the existing approval, CGN and predecessors have completed 80 drill holes from 46 drill sites on BLM lands in the greater Sierra Blanca and Jolly Jane target areas. Drill hole depths range from 445 to 1,525 feet. Ground water was encountered in many but not all of the holes. Downhole depths to first notable ground water range from 265 to 885 feet. Static water levels ranging from 244 to 437 feet below ground surface have been measured in seven of the more recent vertical drill holes. The available ground water information suggests a highly variable and likely structurally controlled water table, which is consistent with the highly variable topography in the area. Water volume discharge rates measured by five gallon bucket tests in reverse circulation holes are also highly variable. Many of the holes encountered detectable but un-measurable ground water, while other holes produced between five to 70 gallons per minute. Water discharge rates generally increase with depth or upon penetration of fractured zones in the wall rock.

Project Water Usage

Daily water requirements depend on the type of drill and the number of drills active at any time. A RC drill requires approximately 3,000 gallons per 12 hour shift while a core drill uses approximately 10,000 gallons of water per 12 hour shift. The Project could potentially have as many as two RC rigs and one core rig. RC rigs work only one shift per day whereas the core rig

runs two shifts; therefore, the daily drill water requirement could be as much as 26,000 gallons per day. In addition, depending on conditions, water may be required to control dust on the roads. This could be as much as 5,000 gallons per day depending on the location of the drills. CGN has a specific agreement with Beatty Water and Sanitation District to purchase water for the exploration project. Purchases of water from the Beatty Water and Sanitation District are under Temporary Permit 81876T for 19.948 acre-feet annually.

#### 3.3.9.1.2 Ground Water Quality

State water quality standards for Nevada are established in the NAC, Chapter 445, Sections 445A.11704 through 445A.2234. The chemical quality of the water in most ground water systems in Nevada varies from place to place. In areas of recharge the dissolved-solids content normally is low. However, as the ground water moves through the system to the areas of discharge, the water comes in contact with rock materials that have different solubility. The extent to which water dissolves chemical constituents from the rock materials is governed largely by the solubility, volume, and distribution of the rock materials, the time the water is in contact with the rocks, and the temperature and pressure in the ground water system. Generally the ground water of both valleys can be classified as a sodium-bicarbonate type. This type of ground water is commonly found in areas of Nevada underlain by Tertiary tuffaceous deposits (Malmberg and Eakin 1962). Ground water in Sarcobatus Flat commonly contains relatively high concentrations of sodium and bicarbonate. Water samples collected throughout the valley suggest that all ground water in Oasis Valley, except that derived from precipitation on the Bullfrog Hills northwest of Beatty, contains excessive concentrations of fluoride.

### 3.3.9.2 Environmental Consequences

#### 3.3.9.2.1 Ground Water Quantity

No hydrological areas would be affected by the Proposed Action. The Proposed Action would be expected to require water only for dust suppression and drilling fluids. That water would be acquired from existing sources with existing valid water rights. No new water developments or water rights applications are anticipated; therefore, no impacts to ground water quantity are expected.

#### 3.3.9.2.2 Ground Water Quality

No ground water quality data are available from water encountered in drill holes within the Area of Proposed Activities. The Proposed Action is not expected to impact ground water quality because the drill holes would be abandoned in accordance with NRS 534, NAC 534.4369 and NAC 534.4371. In addition, no drill holes would be left open at the end of the project.

## 3.3.10 Wild Horses and Burros

### 3.3.10.1 Affected Environment

The project is located within the Bullfrog Herd Management Area (HMA), which is 151,782 acres in size and surrounds the Town of Beatty. Elevations within the HMA range from a high of 6,031 feet in the Bare Mountains to a low of 3,095 feet south of Beatty. The HMA is approximately 18 miles wide and 14 miles long. This HMA provides suitable habitat for wild

burros, but it is not good habitat for wild horses. The AML for the Bullfrog HMA is 58-91 wild burros. The current population estimate is approximately 137 wild burros, but may fluctuate with interchange from burros residing and traveling from outside the HMA. US Highway 95, which bisects the HMA, forms a barrier for burro movement into the Area of Proposed Activities.

#### 3.3.10.2 Environmental Consequences

Approximately 93.6 acres within the 151,782-acre HMA would be disturbed by the Project, which equals approximately 0.06 percent of the HMA. There are no water sources located within the Area of Proposed Activities that would attract the burros; however, there is foraging habitat. Due to the lack of water, impacts to burros would be minimized.

### 3.3.11 Wildlife

#### 3.3.11.1 Affected Environment

Wildlife in the Area of Proposed Activities is characteristic of that in the Great Basin and the northern Mojave Desert based on previous surveys (Enviroscientists 2012) and agency information. In addition to the species discussed in Sections 3.3.2 and 3.3.6, typical wildlife in the area could include mammals such as black-tailed jackrabbit (*Lepus californicus*), coyote (*Canis latrans*), badger (*Taxidea taxus*), ringtail cat (*Bassariscus astutus*), kit fox (*Vulpes macrotis*), Merriam's kangaroo rat (*Dipodomys merriami*), desert wood rat (*Neotoma lepida*), valley pocket gopher (*Thomomys bottae*), Great Basin pocket mouse (*Perognathus parvus*), white-tailed antelope squirrel (*Ammospermophilus leucurus*), mule deer (*Odocoileus hemionus*) and deer mouse (*Peromyscus maniculatus*); gamebirds including chukar (*Alectoris chukar*) and Gambel's quail (*Callipepla gambelii*); and reptiles such as the zebra-tailed lizard (*Callisaurus draconoides*), leopard lizard (*Gambelia wislizenii*), collared lizard (*Crotaphytus bicinctores*), chuckwalla (*Sauromalus ater*), and western rattlesnake (*Crotalus oreganus*) (BLM 1988b). All of these species are typical in the Mojave Desert Scrub vegetation community.

#### 3.3.11.2 Environmental Consequences

Direct impacts to wildlife would consist of temporary habitat loss and disturbance from human activity and noise. Approximately 93.6 acres of existing wildlife habitat would be temporarily impacted by project activities over its ten-year life span. No long-term impacts to wildlife habitat are likely to occur since reclamation and reestablishment of vegetation would take place within three years after project completion. Reclamation activities would occur concurrently with project activities when feasible.

Although long-term improvement of habitat could occur in the Area of Proposed Activities as surface disturbance is reclaimed and revegetated and a greater amount of forb species becomes available for wildlife foraging, minimal short-term impacts to wildlife would occur due to the short-term temporary loss of vegetation as a result of project-related surface disturbance.

## 3.4 Effects of the No Action Alternative

Under the No Action Alternative, none of the impacts associated with the Proposed Action would occur, as the Proposed Action would not be implemented. However, CGN would continue authorized exploration activities including drilling and sampling under Plan NVN-83002 in the Area of Proposed Activities. CGN is currently approved for 6.4 acres of disturbance. Impacts associated with this activity, which are presented in environmental assessment NV065-EA08-067 (BLM 2008), would be similar to, but proportionately less, than the Proposed Action (6.4 acres of disturbance versus 93.6 acres).

# 4 CUMULATIVE EFFECTS

For the purposes of this EA, cumulative impacts are the sum of all past, present (including proposed actions), and reasonably foreseeable future actions (RFFAs) resulting primarily from mining, commercial activities, and public uses. The purpose of the cumulative analysis in the EA is to evaluate the significance of the Proposed Action's contributions to cumulative impacts. A cumulative impact is defined under federal regulations as follows:

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

As required under the NEPA and the regulations implementing NEPA, this chapter addresses those cumulative effects on the environmental resources in the Cumulative Effects Study Area (CESA), which could result from the implementation of the Proposed Action and No Action Alternative, past actions, present actions, and RFFAs. The extent of the CESA was defined based on the geographic or biologic limits of the resources analyzed. In addition, the length of time for cumulative effects analysis would vary according to the duration of impacts from the Proposed Action on the particular resource.

For the purposes of this analysis and under federal regulations, 'impacts' and 'effects' are assumed to have the same meaning and are interchangeable. The cumulative impacts analysis was accomplished through the following three steps:

Step 1: Identify, describe, and map the CESAs for each resource to be evaluated in this chapter.

Step 2: Define time frames, scenarios, and acreage estimates for cumulative impact analysis.

Step 3: Identify and quantify the location of potential specific impacts from the Proposed Action and judge these contributions to the overall impacts.

## 4.1 Introduction

Environmental consequences of the Proposed Action were evaluated previously in Chapter 3 for the various environmental resources. Discussed in the following sections are the resources that have the potential to be cumulatively impacted by the Proposed Action within the identified CESA. The discussions are based upon the previous analysis of each environmental resource. Based on the preceding analysis, and with the application of avoidance/mitigation measures, the Proposed Action would not impact the following resources and would therefore not have cumulative impacts: Air Quality; Cultural Resources, Land Use and Realty; Native American Religious Concerns (as currently known); Paleontological Resources; Recreation; Social and Economic Values; Special Status Plant Species; Visual Resources; Wastes, Solid or Hazardous; Water Resources, and Wild Horses and Burros. These resources are not discussed further in the cumulative impacts section.

Cumulative impacts are analyzed for the following resources: Migratory Birds, Soils, Special Status Animal Species, Vegetation, and Wildlife. One geographical area has been considered for the analysis of cumulative effects. This CESA includes portions of the Sarcobatus Flat and Oasis Valley subbasins as shown on Figure 4. Table 4.1-1 outlines the CESA area by each resource. Figure 4 shows the respective CESAs.

**Table 4.1-1: Cumulative Effects Study Area**

| Resource | CESA | Description of CESA | Size of CESA (acres) |
|---|---|---|---|
| Migratory Birds, Soils, Special Status Animal Species, Vegetation, and Wildlife | Hydrographic Areas 146 and 228 | Portions of Sarcobatus Flat in the Central Hydrographic Basin and Oasis Valley in the Death Valley Hydrographic Basin | 110,597 |

Note: No special status plant species would be impacted by the project, so the cumulative analysis only brings forward special status wildlife species.

## 4.2 Past and Present Actions

Past actions in the CESA include historic mining, mineral exploration, dispersed recreation, organized off-road racing and residential occupation. The existing road network originated from these past activities.

## 4.3 Present and Proposed Actions

Present actions in the CESA include mineral exploration, quarry operations, roads, powerlines, and other ROWs, dispersed recreation, annual off-road racing and residential occupation. In 2007, CGN was approved to disturb a total of 6.4 acres on federal land administered by the BLM and 5.1 acres on private land. In 2012, CGN was approved to disturb an additional 20 acres on private land. The proposed drilling exploration by CGN would disturb an additional 93.6 acres on federal land administered by the BLM.

### 4.3.1 Rights-of-Way

The LR2000 database was used to query the various types of ROWs that have been approved in the CESAs by Township, Range, and Section, and include the following: water and irrigation/pipeline facilities; telecommunications; roads and highways; communication sites; power transmission; mineral material disposal sites; and other ROWs for a total of 40,044 acres of ROWs within the 110,597-acre CESA (Table 4.3-1). In addition there are 29 acres of pending roads, 611 acres of pending power transmission facilities, and five acres of pending "other" for a total of 645 acres of pending actions. Existing ROWs and pending actions account for 37 percent of the CESA. It is assumed that these types of ROWs and the construction and maintenance associated with these facilities would create a level of surface disturbance that would contribute to cumulative impacts to various resources. In addition, certain types of ROWs can fragment habitat or create barriers or hazards for wildlife passage. The LR2000 database was queried on November 8, 2012. Any recently approved ROWs that have been added to the LR2000 database after this date are not included in this analysis.

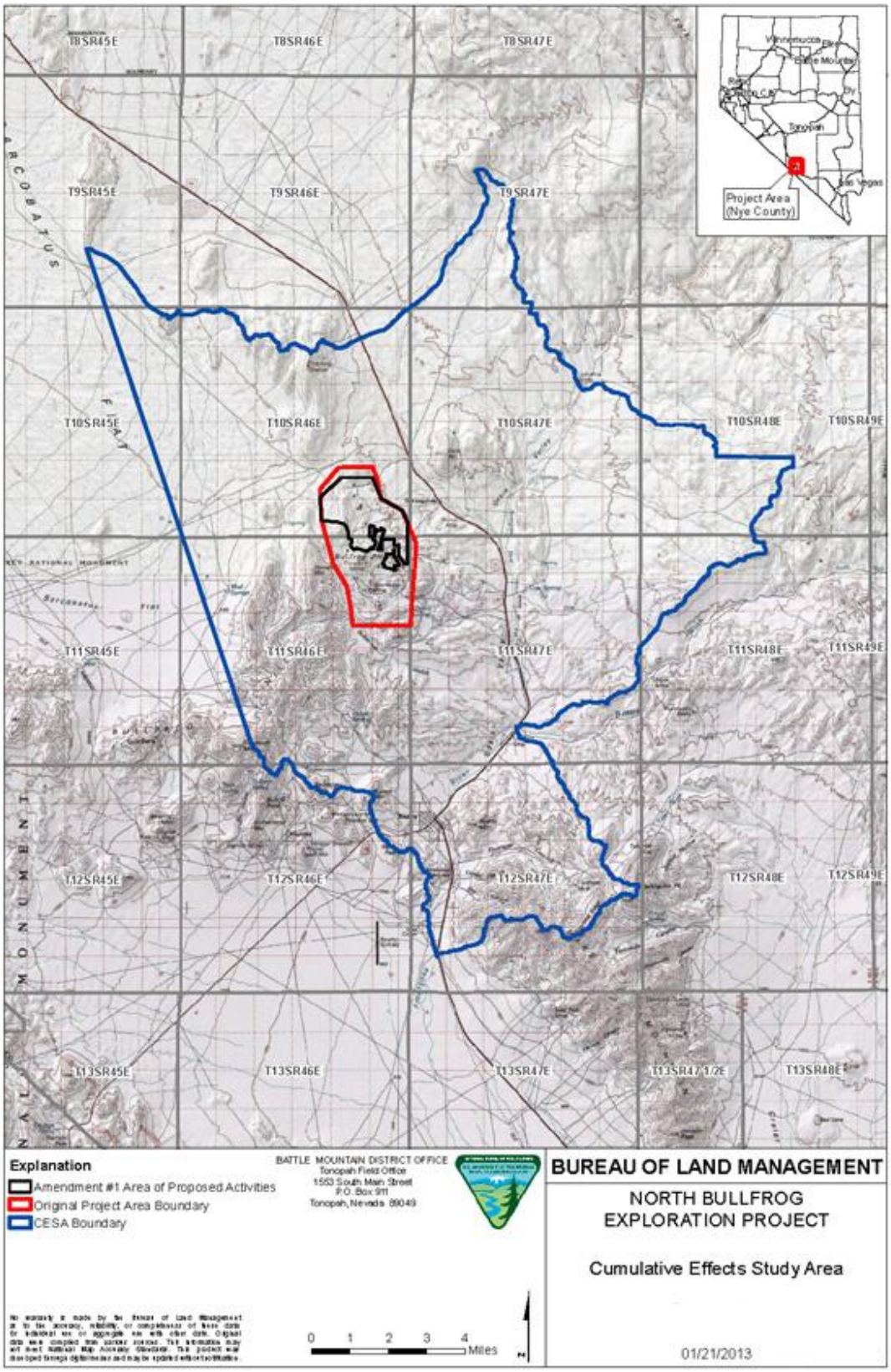


**Figure 4: Cumulative Effects Study Area**

**Table 4.3-1: Past and Present Rights-of-Way Acres in the CESA**

| ROW Type | Acres in CESA |
|---|---|
| Roads and Highways | 6,744 |
| Telecommunications | 2,646 |
| Power Transmission | 26,170 |
| Communication Sites | 89 |
| Irrigation/Water Facilities and Pipelines | 109 |
| Mineral Material Disposal Sites listed in LR2000 | 442 |
| Other | 3,844 |
| **Total** | **40,044** |

### 4.3.2 Mineral Exploration and Mining

The LR2000 database was used to query the past and present mineral exploration or mining activities (authorized Notices, expired Notices, closed Notices, approved and closed plans of operation, and sand and gravel extraction operations) that have been issued in the CESAs by Township, Range, and Section. Past and present mineral activities in the CESA include historic exploration and mining operations. Table 4.3-2 is a summary of the past and present mineral activities within the CESA and is based on the LR2000 database used by the BLM. The acreage of remaining surface disturbance associated with these mining activities is approximately 375 acres. The LR2000 database was queried on November 8, 2012; therefore, any recently approved Notices or plans that have been added to the LR2000 database after November 8, 2012, are not included in this analysis. The 25 acres of private land authorizations occurs on CGN controlled lands within the CESA.

**Table 4.3-2: Past and Present Mineral Activities Acres in the CESA**

| Authorization Status | Total Acres of Disturbance |
|---|---|
| Authorized and Expired Notices (10) | 15 |
| Authorized and Closed Plan of Operations (3) | 300 |
| Mineral Material Sites | 60 |
| Private Land Authorizations | 25 |
| **CESA Total** | **400** |

## 4.4 Reasonably Foreseeable Future Actions

RFFAs, in addition to the Proposed Action, in the CESA include expanded mineral exploration by CGN, continuation of quarry operations by D & H Mining Ltd., a continuation of dispersed recreation, off-road race events and road use, and occupation by residents in the Beatty and Armargosa River area. In addition, approximately 645 acres of pending ROW projects are located within the CESA.

## 4.5 Impact Analysis

### 4.5.1 Migratory Birds, Special Status Animal Species, Vegetation, and Wildlife

The CESA for migratory birds, special status animal species, vegetation, and wildlife encompasses 110,597 acres and is shown on Figure 4.

*Past and Present Actions:* Past and present actions within the CESA that could have an impact on migratory bird habitat, special status species habitat, vegetation, and wildlife and their habitat are dispersed recreation, off-road races, utilities and other ROWs, mineral exploration, and mining. Examples of impacts to habitat and vegetation include the following: 1) destruction of habitat associated with road building; 2) disruption from human presence or noise from drill rigs, water trucks and four wheel drive pickups; or 3) direct impacts or harm to vegetation, special status animal species, or migratory birds that would result if cliffs containing viable nests or adits with bat populations were destroyed by construction or off-road equipment. There are no specific data that quantify impacts to vegetation, wildlife and wildlife habitat, special status animal species habitat, migratory bird habitat as a result of recreational activities. However, impacts to from recreational activities would include destruction of native vegetation or nesting areas from off-road vehicles that traveled off of established roadways.

Approved, closed or expired mining, quarry operations, and mineral exploration Notices or plans of operations, or state reclamation plans total 400 acres within the CESA; however, it is reasonable to assume that 375 of those acres from authorized plans of operations, authorized and expired notices, and mineral material sites will be reclaimed since state and federal regulations require reclamation, also that some areas have naturally revegetated over time. Therefore, once the disturbance associated with these operations has been reclaimed and revegetated, impacts to vegetation and habitat would no longer contribute to a cumulative effect. Approximately 40,044 acres of surface disturbance for ROWs were issued within the CESA that had the potential to create surface disturbance and disturb vegetation, wildlife and wildlife habitat, soils, special status animal species habitat, or migratory bird habitat.

Disturbance to vegetation, wildlife and wildlife habitat, soils, special status animal species habitat, and migratory bird habitat from past and present actions would have been reduced through reclamation and seeding of disturbed areas and natural recolonization of native species. The past and present actions that are quantifiable have disturbed up to 37 percent of the CESA.

*RFFAs:* Potential impacts to vegetation, wildlife and wildlife habitat, soils, special status animal species habitat, migratory bird habitat from dispersed recreation, off-road races, roads, ROWs, or minerals activities could occur. There are no specific data on the potential impacts to wildlife, soils, special status species, migratory birds or their habitat as a result of dispersed recreation. Approximately 645 acres of pending ROW projects were reported in the LR2000 database within the CESA.

#### 4.5.1.1 Proposed Action

Impacts to vegetation, wildlife and wildlife habitat, soils, special status animal species habitat, migratory bird habitat from the Proposed Action would be limited to the removal of vegetation over a period of ten years, or temporary alteration of habitat (up to 93.6 acres or 0.008 percent of the CESA), and noise associated with Project related activities. These impacts would be

localized and minimized due to implementation of environmental protection measures outlined in Section 2.16 and measures required by the BLM. Quantifiable past and present actions and RFFA disturbance in the CESA is 41,089 acres, which is an impact of up to approximately 37 percent of the total CESA (110,597 acres). Based on the above analysis and findings, incremental impacts to vegetation, wildlife and wildlife habitat, soils, special status animal species habitat, and migratory bird habitat as a result of the Proposed Action when added to the past and present actions and RFFAs would be minimal. In addition, all surface disturbance would be reclaimed and revegetated at the end of the Project, so the cumulative impacts associated with the Proposed Action would be temporary.

#### 4.5.1.2 No Action Alternative

A total of the quantifiable past and present actions and RFFA disturbance within the CESA is 41,089 acres, which is an impact to approximately 37 percent of the CESA. This alternative (6.4 acres of disturbance) would impact approximately 0.006 percent of the CESA. Due to the small impact within the CESA, the incremental impacts to vegetation, wildlife and wildlife habitat, soils, special status animal species habitat, and migratory bird habitat or their habitat from this alternative in combination with past and present actions and RFFAs would be minimal. In addition, all surface disturbance would be reclaimed and revegetated at the end of the Project, so the cumulative impacts associated with the No Action Alternative would be temporary.

# 5 CONSULTATION AND PUBLIC INPUT

This EA was prepared at the direction of the BLM, TFO, Battle Mountain District, Nevada, by Enviroscientists, Inc., under a contract with CNG. The following is a list of individuals responsible for preparation of the EA.

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| | |
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| Christopher Dalu | Cultural Resources, Paleontological Resources |
| Dustin Hollowell | Migratory Birds, Wildlife, Threatened and Endangered Species, Special Status Species,Wild Horse and Burros |
| Larry Grey | Water Resources |
| Marc Pointel | Rangeland Management, Vegetation, Soils, Noxious Weeds, Invasive and Nonnative Species, Threatened and Endangered Plant Species |
| Tim Coward | Native American Religious Concerns |
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| Opal Adams | Project Principal, Technical Review/Editing, Visual Resources, Paleontological Resources, Native American Religious Concerns, Cultural Resources, Recreation, Rangeland Management |
| Melissa Sherman | Project Manager, Wildlife, Vegetation, Migratory Birds, Special Status Species. Noxious Weeds, Invasive and Nonnative Species, Wild Horses and Burros |
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Federal Agencies

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State Agencies

Tim Herrick, Nevada Department of Wildlife
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