## 3.7 Paleontological Resources

The study area for direct and indirect impacts to paleontological resources is defined as the POO boundary expansion areas. The CESA includes the area within a modified Battle Mountain Mining District (**Figure 3.1-1**).

### 3.7.1 Affected Environment

Paleontological resources have scientific, educational, and recreational values. The BLM considers paleontological resources identified on public lands as a fragile and nonrenewable scientific record of the history of life on earth. Once damaged, destroyed, or improperly collected, their scientific and educational value may be reduced or lost forever.

#### 3.7.1.1 Regulatory Framework

Paleontological resources are managed by the BLM in accordance with several federal laws including FLPMA Sections 310 and 302(b), which directs 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; and 43 CFR 3622, which regulates the amount of petrified wood that can be collected for personal, noncommercial purposes without a permit.

BLM Handbook H-8270, General Procedural Guidance for Paleontological Resource Management (BLM 1998b) guides paleontological research on BLM-administered lands. The handbook presents a classification system for ranking areas and geologic formations according to their potential to contain vertebrate fossils or noteworthy occurrences of invertebrate or plant fossils. The ranking categories under the BLM classification system are described as follows:

**Condition 1.** Areas that are known to contain vertebrate fossils or noteworthy occurrences of invertebrate or plant fossils.

**Condition 2.** Areas with exposures of geological units or settings that have high potential to contain vertebrate fossils or noteworthy occurrences of invertebrate or plant fossils. The presence of geologic units from which such fossils have been recovered elsewhere may require further assessment of these units where they are exposed in the area of consideration.

**Condition 3.** Areas that are very unlikely to produce vertebrate fossils or noteworthy occurrences of invertebrate or plant fossils based on their surficial geology, igneous or metamorphic rocks, extremely young alluvium, colluvium, or eolian deposits or the presence of deep soils. If possible, it should be noted at what depth bedrock may be expected in order to determine if fossiliferous deposits may be uncovered during surface-disturbing activities.

This classification system is used by the BLM to rank areas according to their potential to contain vertebrate fossils or noteworthy occurrences of invertebrate or plant fossils. These rankings are used by the BLM in its land use planning process, as well as to identify areas that may warrant special management based on their potential to contain such fossils.

#### 3.7.1.2 Site Conditions

Paleontological resources are fossilized remains of multicellular invertebrate and vertebrate animals and multicellular plants, including imprints thereof (36 CFR 261.2). Fossilized remains are any non-manufactured evidence of prehistoric life, including skeletal remains, impressions of these remains, or their chemical signatures. The significance of paleontological resources is subjectively ranked based on the presumed scientific value of proven fossil content. For example, vertebrate fossils typically are both less common and less abundant than invertebrate fossils, and usually are rated as more significant.

Exceptions are common, however, as in the case of rare invertebrate fossils that have a unique occurrence.

The geology of the study area is described in Section 3.1, Geology and Minerals. The study area is situated within areas defined as Quaternary-age alluvium (i.e., alluvial fan deposits). These deposits are considered as Condition 3 for paleontological sensitivity.

A paleontological resources report that addresses vertebrate and invertebrate fossils in the Phoenix Mine area (including the study area) was prepared by Dr. James Firby in February 1995. Firby (1995) notes that the potential for paleontological resources was subjectively determined by: 1) the presence of fossil material recorded in the literature within the project area; 2) the presence of fossils elsewhere within a stratigraphic unit mapped or recorded as present within the project area; and 3) the favorability of a stratigraphic unit to contain fossil material based on its assumed depositional environment. According to the report, no fossil vertebrate localities were confirmed within the study area. Additionally, the report states that for Quaternary deposits (including alluvial fan deposits, undifferentiated alluvium, and older Quaternary and later Tertiary alluvium), there is "…little potential for significant paleontological resources occurring within these units."

### 3.7.2 Environmental Consequences

Environmental impacts to paleontological resources would be significant if the Proposed Action or alternatives to the Proposed Action result in any of the following:

- Disturbance or loss of a unique or site-specific invertebrate, vertebrate, or paleobotanical fossil occurring in formations found in the proposed new disturbance areas; or
- Disturbance or loss of a resource that qualifies as significant or critical and requires protection under the Antiquities Act of 1906.

#### 3.7.2.1 Proposed Action

Potential direct impacts to paleontological resources from implementation of the Proposed Action would be limited to areas of disturbance; potential indirect impacts could result from potential increased accessibility to fossil beds from improved access to remote areas and subsequent illegal collecting.

The Quaternary-age alluvial deposits within the proposed disturbance areas are considered as Condition 3 for paleontological sensitivity and are unlikely to produce vertebrate or invertebrate fossils. In addition, an assessment of paleontological resources found no known vertebrate or invertebrate localities within the study area (Firby 1995). Therefore, because there are no known or suspected unique or site-specific paleontological resources in the study area, there would be no significant impacts to paleontological resources anticipated under the Proposed Action.

Since fossils generally are buried, their locations cannot be confirmed until excavation occurs. If paleontologically unique or site-specific fossiliferous deposits (particularly vertebrate fossils) are encountered during construction, operation, or reclamation of the proposed project, measures would need to be taken to evaluate the paleontological resource.

#### 3.7.2.2 Reona Copper Heap Leach Facility Elimination Alternative

The Reona Copper Heap Leach Facility Elimination Alternative would be the same as the Proposed Action, except that the proposed Reona Copper HLF and associated infrastructure (i.e., solution pipelines) would not be developed. The Reona HLF (Gold) would continue to operate under current permitted authorizations. All other direct and indirect impacts associated with this alternative would be the same as the Proposed Action.

#### 3.7.2.3 No Action Alternative

Under the No Action Alternative, the proposed project would not be developed and potential related impacts to paleontological resources would not occur. Under this alternative, mining activities associated with the existing Phoenix Project would continue under the terms of current permits and approvals as authorized by the BLM and State of Nevada. Potential impacts to paleontological resources previously were discussed and analyzed in the Phoenix Project Final EIS (BLM 2002a).

### 3.7.3 Cumulative Impacts

The CESA for paleontological resources is shown in **Figure 3.1-1**. Past and present actions and RFFAs are identified in **Table 2.8-1**; their locations are shown in **Figure 2.8-1**.

According to the paleontological resources report that addresses vertebrate and invertebrate fossils in the study area (Firby 1995), no vertebrate fossil localities were confirmed within the study area. Additionally, the report states that the potential for the occurrence of vertebrate fossils in the study area is considered low. Therefore, because no direct or indirect impacts to paleontological resources are anticipated under the Proposed Action, no cumulative impacts to paleontological resources are anticipated.

### 3.7.4 Monitoring and Mitigation Measures

**Issue**. Unique or site-specific paleontological resources are unlikely to exist within the proposed areas of new disturbance; however, because fossils are commonly buried, their locations cannot be confirmed until site grading or excavation activities occur. If unique or site-specific invertebrate, vertebrate, or paleobotanical fossils are present within the proposed disturbance areas, they would require protection under FLPMA and BLM Manual H-8270 (BLM 1998b).

**Mitigation Measure P1**. If vertebrate fossils are discovered during construction, operation, or reclamation of the proposed project, construction activities would be halted in the area of the discovery and Newmont would contact the BLM AO. The BLM AO would evaluate the discovery within 5 working days of being notified. If the discovered paleontological resource is determined significant, appropriate measures would be developed in coordination with the BLM to mitigate potential adverse effects. Construction activities would not resume until a NTP was granted by the BLM AO.

**Effectiveness**. This measure would allow for the evaluation of any vertebrate fossils that may be discovered and provide adequate time for their preservation or data recovery, if needed.

### 3.7.5 Residual Adverse Effects

Since no known unique or site-specific paleontological resources have been identified in the study area, no residual adverse effects are expected to occur from the Proposed Action.