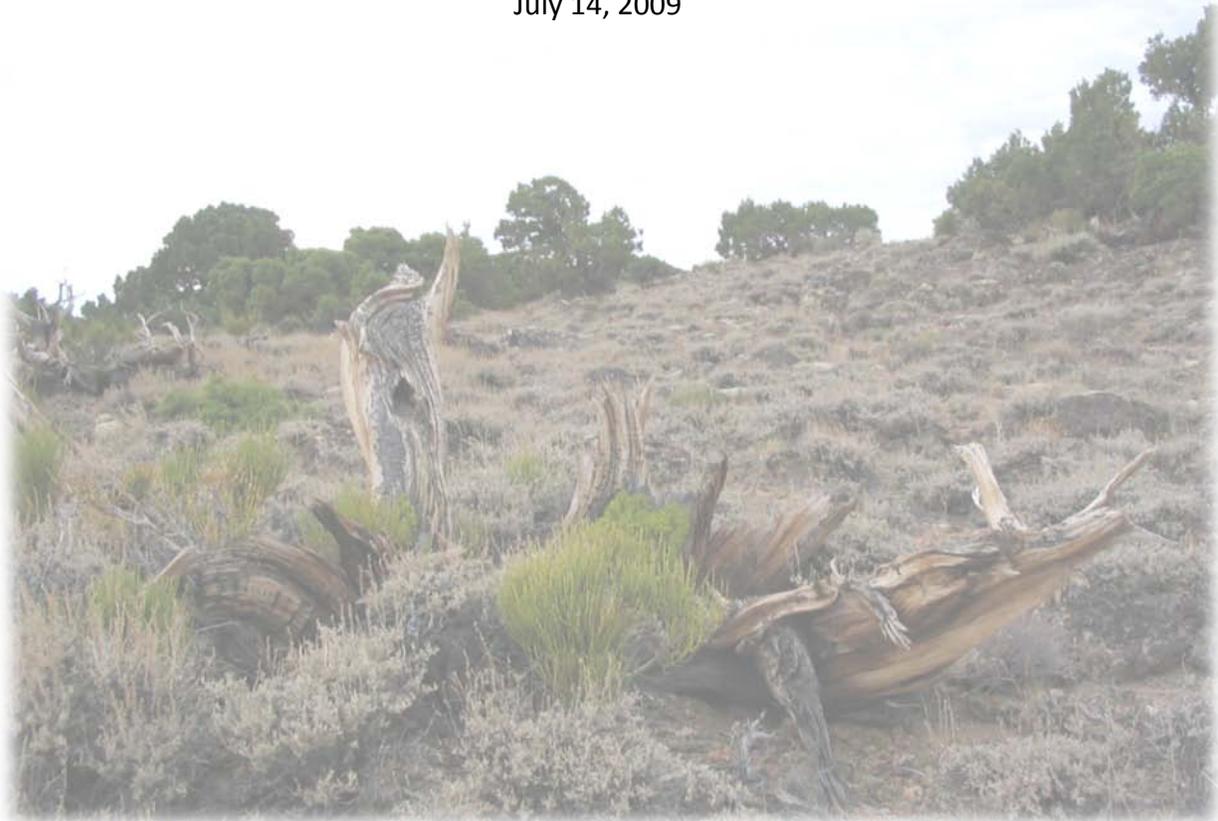


# Cougar Gold Paramount Exploration Proposal

## Environmental Assessment

DOI-BLM-CAC070-2009-0017-EA

BLM Bishop Field Office  
July 14, 2009





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## CHAPTER 1: INTRODUCTION

### A. SUMMARY.

This Environmental Assessment (EA) analyzes and discloses the environmental consequences of proposed mineral exploration activities on Bureau of Land Management (BLM) public lands within the Paramount Mine Project Area (PA) (Figure 1.1). The PA is located in east central California. A total of 11 holes at 8 drill sites are proposed for exploratory drilling in the PA. The exploration is proposed within the Bodie Wilderness Study Area (WSA) (CA-010-100). The PA was defined as the area bounding the cultural and biological resource surveys conducted in support of the EA.

The area of potential effect (APE) has been defined as the area that could be directly impacted from drilling activities. Specific exploration operations are proposed to occur on existing routes on approximately 0.09 surface acres (60 feet x 8 feet x 8 sites/43,560 sq feet) of previously disturbed land within the WSA. Although proposed activities are confined to existing routes, BLM recognizes that minor inadvertent disturbances would result from foot traffic and other activities alongside the routes. In order to ensure that these disturbances are addressed by the impact analyses for certain resources such as vegetation and soils, a 25 foot buffer on either side of the routes where drilling is proposed to occur has been included in the analysis. This buffer zone has an area of 0.55 acres. Thus, the total potential directly affected area inside the WSA would be 0.64 acres. In addition, there are approximately 5.83 acres of access routes (2.67 miles plus a 5 foot buffer on either side of the road) that would be used. Approximately 0.91 miles of the access routes are inside the WSA, 1.23 miles are on BLM lands outside the WSA and 0.45 miles are on private land (Figures 1.2). The total APE including the buffer zones is 6.47 acres, of which 2.62 are inside the WSA.

The proposal is being reviewed for implementation because it falls under the same manner and degree as those actions occurring prior to the passage of the Federal Land and Policy Management Act (FLPMA) on 10/21/1976. FLPMA stipulates that past mining uses may continue in the same manner and degree; however, unnecessary and undue impacts are prohibited. Finally, FLPMA and subsequent regulatory authorities require BLM to review the proposal for impacts related to implementation.

This EA is a site-specific analysis of potential impacts that could result from the implementation of three alternatives related to the proposal. The EA assists the BLM in ensuring compliance

with the National Environmental Policy Act (NEPA) and other applicable laws and policies affecting the alternatives. A public meeting about the proposal was held and public comments were received and considered (Chapter 1, Section F).

The proposed exploration activities plan of operations (POO) was narrowed in the early phases of the EA scoping process. The proposal was amended to reduce exploration activities. The PA and APE remains the same for all alternatives analyzed, and will continue to be cited as such for the remainder of the EA. For further information, see Chapter 2 (Description of Alternatives).

If the BLM, Bishop Field Office Manager determines from the EA analysis that this action has “significant” impacts, then an Environmental Impact Statement (EIS) would be prepared for the action. If not, a Decision Record (DR) will be issued along with a Finding of No Significant Impact (FONSI) statement.

Figure 1.1 - Paramount Mine Vicinity Map.

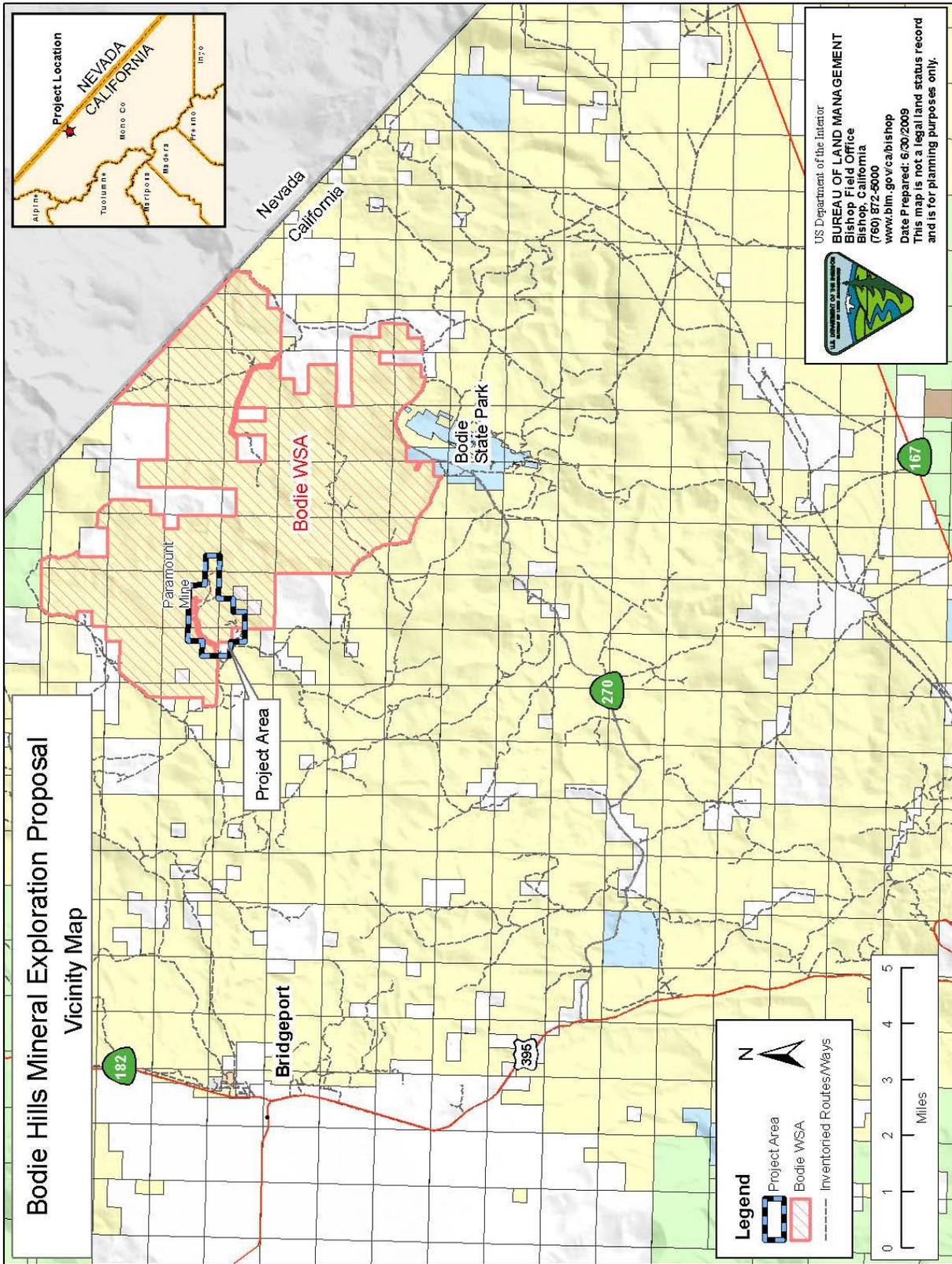
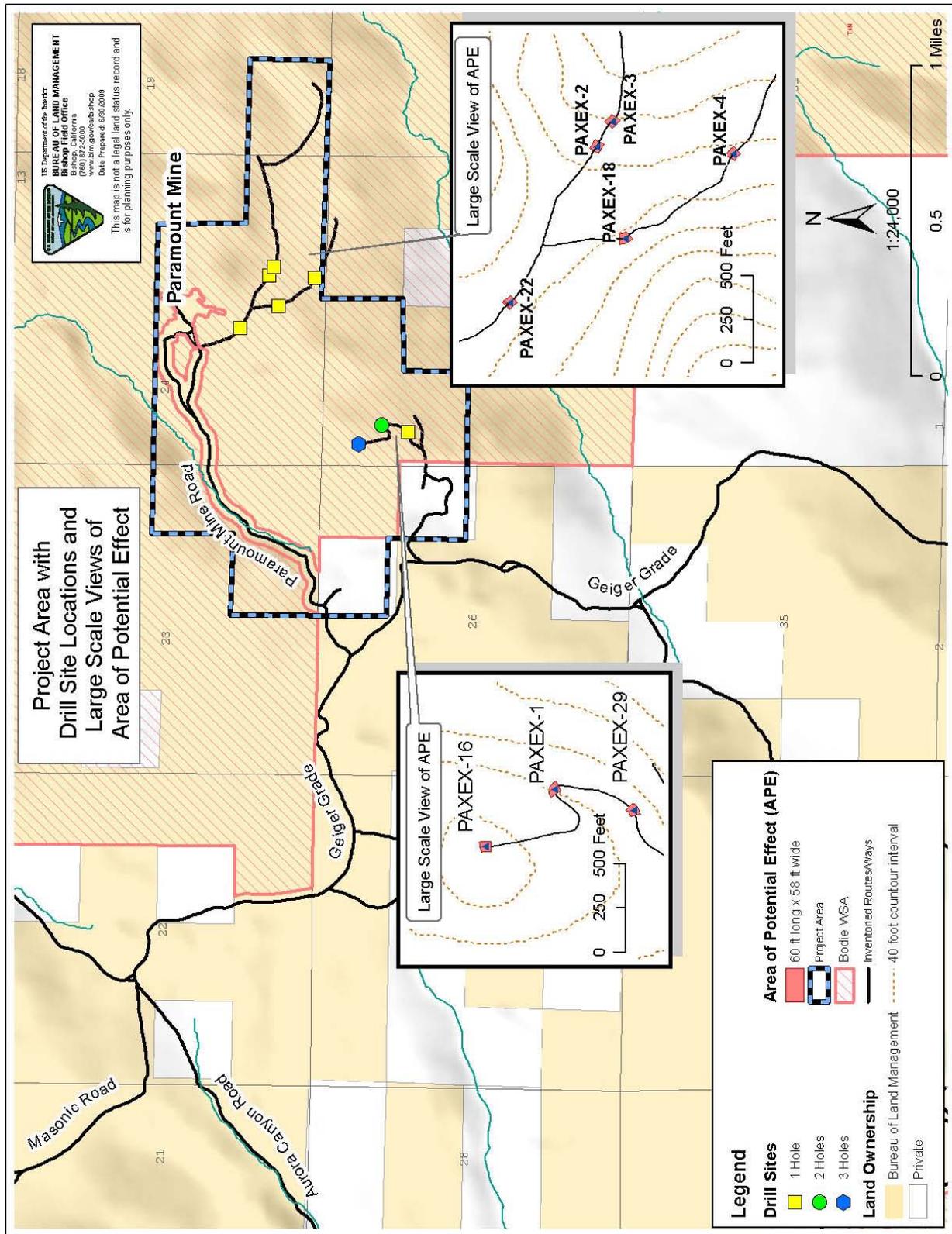


Figure 1.2 - Paramount Mine Project Area and Area of Potential Effect.



## **B. PROJECT AREA AND AREA OF POTENTIAL EFFECT.**

The PA is located in the Bodie Hills of east central California at T. 5 N., R. 26 E., MDM, Sections 23, 24, 25 and 26, Dome Hill Quadrangle in Mono County (Figure 1.1). The Bodie Hills comprise about 121,000 public land acres having private land inholdings. The Hills are a hydrothermally-altered andestic and rhyolitic volcanic system. The elevation ranges between 6,500 to 10,200 feet. Vegetation is dominated by a mix of sagebrush/bitterbrush and mountain shrub communities interspersed with pinyon-juniper woodlands. Numerous drainages provide riparian, aspen, and wetlands habitat.

The Bodie WSA totals about 16,400 acres of public land including 414 acres of private property. It was designated a WSA in 1980 and was later recommended in 1990 for return to multiple use (BLM 1990). The PA analyzed in this EA spans approximately 713 acres and includes 593 acres of the Bodie WSA. As discussed above, the APE encompasses a total of 6.47 acres and includes existing access routes (5.83 acres) and drill sites (0.64 acres). The APE has been defined as the area that could potentially be directly impacted from drilling activities and access.

## **C. BACKGROUND AND LEGAL FRAMEWORK FOR PROPOSAL.**

This proposal falls within a legal framework of numerous FLPMA considerations that require background information to provide an objective, scientific, and legal analysis. The following discussion describes the legal and historic elements BLM must consider in its analysis and final decision.

This discussion begins with a summary of applicable FLPMA Section 603 direction and subsequent implementation regulations and policy BLM must consider, i.e. the legal framework within which the exploration activities must be evaluated.

It then describes the wilderness review process and known historic uses and operations in the PA over the last 3 to 4 decades. This provides the BLM and the reader contextual history of the PA's use and a legal foundation for a forthcoming decision.

### **FLPMA Section 603(c) Summary.**

FLPMA's Section 603(c) entitled "BLM Wilderness Study" is part of Title VI (Designated Management Areas) in the law. The section articulates BLM's Wilderness Review Program and provides the legal direction for consideration of historic mining uses in WSAs.

Section 603(c) directed the Secretary of the Interior or BLM to review those roadless areas of at least five thousand acres of public lands and to determine whether they are suitable or not for wilderness designation. Hence, the BLM conducted a public lands inventory to identify WSAs in 1979, then in the 1980's enacted a wilderness designation/resource use study to identify potential conflicts, and in the early 1990's prepared a report to Congress presenting its suitability or non-suitability recommendations. The BLM fulfilled its wilderness review obligation by 1993 as directed by Section 603(c).

Section 603(c) further directs the BLM to manage newly designated WSAs under a "nonimpairment" mandate. It states that BLM must manage the WSAs so as "not to impair the suitability of such areas for preservation as wilderness..." The Section further provides an exception to the non-impairment mandate when pre-FLPMA mineral uses have occurred in the WSA. Section 603(c) further clarifies its direction to prohibit impairment as "subject, however, to the continuation of existing mining uses ... in the same manner and degree in which the same was being conducted on the date of approval of this Act: Provided, That, in managing the public lands the Secretary shall by regulation or otherwise take any action required to prevent unnecessary or undue degradation of the lands and their resources or to afford environmental protection."

### **Implementation: Title 43 CFR 3802 and the IMP.**

The BLM enacted federal regulations in the early 1980's to implement the FLPMA. Title 43 Code of Federal Regulations 3802 "Exploration and Mining, Wilderness Review Program" (43 CFR 3802) specifically defines terms, appropriate methods, protocols, and legal requirements to consider and conduct mining operations in WSAs. It serves as the defining body of legally enforceable regulations directing BLM to review and evaluate mineral exploration operations in a WSA.

The BLM also crafted the Interim Management Policy and Guidelines for Lands Under Wilderness Review (IMP) in the 1980's to provide policy and management direction for

numerous activities within or proposed in a WSA. The IMP and the 43 CFR 3802 regulations are compatibly integrated to provide common and consistent direction for minerals exploration activity in WSAs.

Title 43 CFR 3802.0-6 reaffirms FLPMA's direction to BLM and cites "mining operations occurring in the same manner and degree that were being conducted on October 21, 1976, may continue, even if they are determined to be impairing."

Section 3802.0-5 further clarifies "same manner and degree" to mean that existing operations are defined geographically by the area of active development and the logical (adjacent) continuation of the existing activity, and not necessarily by a particular claim boundary. This means the operations can increase the scale of surface activities at a logical pace and progression including geographic expansion until the deposit is exhausted.

An existing activity, even if impairing, may continue to expand in an area or may progress to further development phases as long as the additional impacts are not significantly different from those caused by the existing activity. This "same manner and degree" concept provides the BLM a continuum of allowable minerals activities that may be legally authorized in a WSA.

As in FLPMA, the regulation further stipulates that under "same manner and degree", minerals activities shall be regulated to prevent "undue and unnecessary degradation" of public lands in the WSA. Title 43 CFR 3802.0-5 defines "unnecessary and undue degradation" to mean impacts greater than those that would normally be expected from an activity being accomplished in compliance with current standards and regulations and based on sound practices, including use of best reasonably available technology.

### **Summary of the Wilderness Review Process.**

In 1980, the BLM designated the Bodie WSA after it completed its wilderness inventory. The WSA totals 16,814 public and private land acres. The area's mining features were noted in the inventory at the time and the Paramount Mine Road and the mine itself were excluded from WSA status. The 1990 Statewide Wilderness Study Report (BLM 1990), prepared for Congress, recommended the WSA as non-suitable for wilderness. The report also identified the PA as having high potential for metallic minerals and further noted impending resource conflicts with wilderness management.

Until such time as Congress determines the suitability or non-suitability of this WSA, the Bureau manages the area under the Interim Management Policy (IMP) and other applicable laws and regulations including 43 CFR 3802.

### **History of the Area's Mining Uses.**

The Paramount Mine area was originally located with mining claims from the 1930's through the 1960's. Throughout the 1960's, surface cuts, ore body development, overburden removal, drilling, tunneling, and heavy equipment use such as bulldozers and caterpillars occurred in the area. The 1970's followed with further operations including trenching, surface excavation, road building, tunnel management, and surface material removal. These activities occurred prior to and after FLPMA passed in 1976.

After the WSA was designated in 1980 and through the remainder of the decade, Homestake Mining Company, Molycorp, and Noranda, Inc. conducted exploration activities including sampling, geologic mapping, core drilling, route construction, and rehabilitation throughout the PA. A total of 138 holes have been drilled by these operators within the PA.

The early 1990's experienced some additional reclamation actions in the PA as well as tunnel cleanouts. Equinox Resources Inc. bought mineral claims from Homestake Mining in the PA. They submitted a plan of operations and received authorization to conduct a drilling program but restricted their activities to sampling, mapping, and geophysical surveying.

Paramount Gold Inc. (aka Zenda Gold Corp.) purchased the mining claims in the PA in mid-1990. Paramount submitted a POO in 1999 to conduct drilling and exploration activity in the area based on Equinox's original plan. Their intent was to continue the exploration activity conducted by Homestake, Molycorp, Noranda, et al. The BLM conducted an analysis of Paramount's plan, and determined that it failed to meet FLPMA's direction to continue mining uses in the same manner and degree as those that existed prior to FLPMA. BLM denied Paramount Gold Inc. an authorization to conduct its proposed operations. The claimant filed an appeal to the Interior Board of Land Appeals (IBLA) to challenge and reverse BLM's decision.

In 2001, the IBLA (155 IBLA 64) reversed BLM's decision and determined Paramount Gold's proposal conforms to uses conducted in the PA prior to FLPMA's passage. This decision recognized that BLM issued authorizations in 1987 and 1991 for drilling proposals considered a continuation of pre-FLPMA minerals uses. Specifically, the activities were associated with the following uses:

- Backhoe trenching and prospect pit excavation;
- Underground mining and sampling;
- Road building;
- Drilling;
- Mapping, sampling and tunnel work.

After IBLA rendered its decision, Paramount Gold for unknown reasons did not pursue its original proposal to drill exploration holes in the PA.

In 2006, Cougar Gold LLC (Cougar), the sole owner of Electrum USA Ltd. purchased and established mining claims in the PA and began discussions with BLM to conduct exploration activity in the PA. Cougar submitted a POO, and in 2007, the BLM issued a drilling authorization on the Paramount Mine Road and areas around the Paramount Mine excluded from the WSA. No drilling occurred in the WSA. Cougar met all authorization requirements and fulfilled expected rehabilitation requirements (see Appendix A, Chronology of Mining History).

#### **Present Proposal to Conduct Exploratory Drilling.**

In January 2009, Cougar Gold, the current proponent, submitted a proposed plan of operations for mineral exploration drilling in the PA within the Bodie WSA, which is the subject of this EA. The purpose of the proposed exploration is to evaluate the extent of, and/or define, the mineralized deposit in the PA.

Cougar proposes to proceed with exploration activities consistent with uses occurring within the PA as of October 1976. Their original plan submission has been narrowed in scope as a result of early EA scoping. For further details of the amended proposal, see Chapter 2, Description of Alternatives and Alternatives Considered But Eliminated from Further Analysis.

#### **D. EA DESIGN, STRUCTURE & SCOPE.**

As outlined previously, according to FLPMA, the 43 CFR 3802, and the Bureau's IMP, mining operations occurring in the PA which created surface impacts at the time FLPMA was enacted (10/21/76) qualify for continuation of those uses. The operations may proceed in a logical pace and progression as either a geographical extension or a change in the type of activity as long as the impacts of the extension are not of a significantly different kind than the impacts existing on October 21, 1976. Additionally, the use may continue in the same manner and degree onto adjacent claims held by the same person, even if the adjacent claims are post-FLPMA claims. This proposal occurs on post-FLPMA claims that qualify as continuing exploration in the same manner and degree as adjacent pre-FLPMA claims.

A review of applicable laws mentioned above and historic activities of the area's mineral operations coupled with the 2001 IBLA decision leads the BLM to conclude the proponent's request to conduct exploration qualifies as a continuation of existing uses occurring prior to 1976. The proponent's overall intent to drill exploratory core holes to sample subsurface mineral deposits complies with the law's intent to allow continued mineral uses in the same manner and degree as those uses occurring prior to FLPMA.

This EA will focus the scope of analysis solely on drilling operations and associated effects. The intent of the project is to continue drilling exploration in the PA similar to that done historically by others.

The proposal's limited nature, to drill and collect mineral core samples from eight sites (11 drill holes) for laboratory analysis to determine if further exploration or possible development is appropriate, compels BLM to prepare an analysis of comparable consideration, i.e., an E.A. Similarly authorized Bodie WSA mining operations have all been analyzed effectively with EAs where successful implementation and protection of the WSA's wilderness values occurred. Since 1976, the nature of prior authorized mining operations fell within the framework of EAs (BLM 1983, BLM 1984, BLM 1991, and BLM 1999). An EIS was not warranted for these proposals. This proposal, similar to past operations, warrants the same level of analysis unless the BLM determines that an EIS is required based on the EA and Findings Determination.

A more in-depth analysis of operations exceeding drilling such as additional exploration phases, full scale development, major surface disturbances, long term site occupation, etc. falls outside

the scope of this EA. An impact analyses on a speculative development project that at this time has no defined project description would be impractical.

Any future activities would entail additional exploration phases. Based on the history of past exploration projects (USFS 1983), the probability of development is extremely low compelling a narrow and limited analysis during this phase of the minerals development continuum. See Chapter 2, Reasonable Foreseeable Development Scenario, for information related to the likelihood of future development.

At the conclusion of the analysis, the Bishop Field Manager will prepare a determinations finding to identify if this action (with mitigations measures) has “significant” impacts. If so, then an EIS would be prepared to address the action further. If not, a Decision Record will be issued along with a Finding of No Significant Impact (FONSI) statement, documenting the reasons why implementation of the selected alternative would meet the project’s purpose and need.

#### **E. PURPOSE AND NEED.**

The purpose and need of the EA is to consider the authorization of the application for exploratory drilling. The EA will analyze the mineral exploration proposal within a WSA, which has been determined to be a continuation of minerals uses occurring in the PA prior to FLPMA’s passage in 1976. The EA will identify how to authorize the action with the least impact to natural resources and the human community.

The decision to be made from this EA is to determine the best means to authorize a mineral exploration proposal and keep impacts to natural resource values at a minimum, with no unnecessary and undue degradation of these values.

#### **F. SCOPING AND PUBLIC INVOLVEMENT.**

##### **Public Scoping.**

BLM drafted and published a Notice of Proposed Action (NOPA) on February 11, 2009, which summarized the proponent’s original project description presented in their POO. The NOPA was sent to interested publics including federal and state legislators; federal, state, and local governments; Native American Tribes; special interest groups; individuals and others. The NOPA contained the Need for the Proposed Action, Plan Conformance, the Proposed Action, an

EA schedule, and PA maps. The NOPA was also posted on the BLM internet site for public review at <http://www.blm.gov/ca/bishop>. The NOPA provided a 30-day comment period on the proposed action. Written comments on the proposal arrived to BLM up to March 16, 2009.

A public meeting was held in Bridgeport, California on February 25, 2009 to solicit input from interested parties in the area. Approximately 150 people came to voice their concerns and/or support of the project. During the initial 30 day public scoping period the following issues of concern were identified. BLM's response follows.

### **1. Helicopter Use.**

#### *Issues identified:*

The EA should consider impacts of helicopter noise, dust, and wildlife disruption.

#### *Response:*

Helicopter operations have been removed from the proposal. See Alternatives Considered but Eliminated from Detailed Analysis in Chapter 2 below.

### **2. Air Quality.**

#### *Issues identified:*

The EA must analyze impacts to air quality resulting from road usage and drilling operations.

The EA must fully analyze the project's greenhouse gas (GHG) emissions and ensure emissions are carbon-neutral.

#### *Response:*

Section 2.A addresses potential impacts to air quality from dust and GHGs. A model was developed using EPA software to determine the impacts. Chapter 3, Environmental Analysis, also addresses Air Quality.

### **3. Noise.**

#### *Issues identified:*

Several comments were received concerning 24 hour drilling operations and the potential impacts to both people and wildlife.

*Response:*

Chapter 3 addresses potential impacts to humans and animals. A noise analysis was conducted using an EPA model (See Appendix F).

#### **4. Water Use/Quality.**

*Issues identified:*

The EA should conduct an analysis of Bridgeport Valley water drawdown impacts from the proponent's daily water purchase. Evaluate impacts to nearby springs/surface waters such as Rough Creek, which are important to animals during summer. Evaluate the project's effects on aquifers including artesian well mitigations, should one be encountered. Require protection measures for surface waters from spills, etc.

*Response:*

The proponent's proposed plan includes measures addressing federal and state legal requirements for protection of water sources on public land. BLM is legally required to assure compliance and enforce these regulations. See Chapter 1, Relationship to Other Applicable, Statutes, Regulations and Plans for additional regulatory information. See Chapter 2, Description of Alternatives, for a further discussion of aquifer/surface water protection practices to be used during the project's operation. Chapter 3 includes an evaluation of impacts to water sources. Finally, impacts to Bridgeport Valley will be identified in Chapter 3, Environmental Analysis.

#### **5. Vegetation.**

*Issues identified:*

The EA must analyze potential impacts to riparian habitat, Bodie Hills rock cress and noxious weeds.

*Response:*

See Chapter 3, Environmental Analysis for impacts to these resources.

## **6. Wildlife.**

### *Issues identified:*

The EA must analyze impacts to Lahontan cutthroat trout, sage-grouse, mule deer, pronghorn, pygmy rabbit, American pika, raptors, and nocturnal predators. Analyses should address mule deer fawning habitat and migration patterns, the importance of meadow and sagebrush habitats for sage-grouse and pronghorn, and impacts to mule deer and sage-grouse hunting.

### *Response:*

See Chapter 3, Environmental Analysis for impacts to these resources.

## **7. Road Usage.**

### *Issues identified:*

What is the plan for maintenance of the county roads during periods of mining personnel transport, equipment transportation, etc.?

### *Response:*

The revised proposal to eliminate helicopter based operations and 19 drill hole sites changes the proponent's frequency and intensity of county road use. See Chapter 2, Description of Alternative 1 for expected frequency of road use. The proponent is working with Mono County concerning conditions of use of public roads during the proposed operation. See Chapter 3, Environmental Analysis, for further information.

## **8. Cultural Resources.**

### *Issues identified:*

A general analysis of potential impacts to cultural resources is necessary.

### *Response:*

An extensive cultural resources inventory was conducted for the area to establish a baseline for the impacts analysis. See Chapter 3, Environmental Analysis, for further information.

## **9. Recreational Use.**

### *Issues identified:*

The EA should identify impacts to tourism, and to current recreation uses including hunting, considering measures such as suspending operations during peak weekends of the hunting season. It should also address recreational enjoyment of solitude, silence, wildlife and wildflowers.

### *Response:*

See Chapter 3, Environmental Analysis for impacts to these resources. The analysis will serve as a foundation for any mitigation that is identified in Chapter 5, Mitigation Measures and Monitoring.

## **10. “Grandfathered Uses” (Manner and Degree of Use).**

### *Issues identified:*

Helicopter use and the 24 hour drilling goes beyond the “grandfathered” uses intent of same manner and degree.

### *Response:*

Helicopter operations have been removed from the original proposal. See Chapter 2, Alternatives Considered but Eliminated from Detailed Analysis. Twenty-four hour drilling complies with the intent of “same manner and degree” because it is an operational method and FLPMA’s intent was directed to surface uses occurring before 1976 --- not the methods to conduct those uses. It is the drilling operations that may continue in the same manner and degree.

## **11. Miscellaneous.**

### *Issues identified:*

Address threats to Bodie State Historic Park’s (SHP) unique scenic, historic, recreational and biological resources and socioeconomic impacts to the park and surrounding community, including the potential for helicopter noises and vibration to violate the “Bodie experience.”

Address the risk of wildland fires to the area and to nearby Bodie SHP during the operations with measures including a dedicated fire truck and other suppression equipment in case a wildfire occurs.

Consider mitigations such as reducing frequency of travel and muffling of equipment.

Document logical pace and progression to prevent undue and unnecessary degradation.

*Response:*

Chapter 3, Environmental Analysis, will consider impacts to Bodie SHP including socio-economic impacts and wildland fire. See Chapter 2, Description of Alternative 1 for details on wildfire prevention practices during the operation. Also, note that helicopter operations have been removed from the proposal. See Chapter 2, Alternatives Considered but Eliminated from Detailed Analysis.

Mitigation suggestions will be considered subsequent to analyses of impacts identified, see Chapter 3, Environmental Analysis. Note that the revised proposal eliminating helicopter based operations and 19 drill hole sites reduces the proponent's frequency and intensity of county road use. See Chapter 2, Description of Alternative 1 for expected frequency of road use.

Chapter 1, History of the Area's Mining Uses, describes the activities that serve to guide BLM in identifying the sequential logical pace and progression of mining uses as directed by law. The Administrative Record or case file describes past minerals activities in detail and provides background for evaluating the current proposal or future proposals' ability to continue sequential exploration phases while preventing unnecessary and undue degradation in the WSA (see Chronology of Mining History, Appendix A).

*Issues identified:*

The drilling project must be bonded.

*Response:*

A bond will be calculated for the project. The Bishop Field Manager will determine the bond amount considering the estimated cost of stabilization and reclamation of operations consistent with CFR 3802.3-2(h).

*Issues identified:*

The project needs an EIS not an EA, as the impacts are too significant.

*Response:*

See Chapter 1, Section D.

*Issues identified:*

Address the direct, indirect and cumulative impacts.

*Response:*

See Chapter 3, Environmental Analysis.

*Issues identified:*

Include Material Safety Data Sheets (MSDS) in the EA.

*Response:*

MSDS are required to be on-site with the personnel using the materials and included in the spill prevention plan required by federal and state environmental laws (see Community Right to Know, Resource Conservation and Recovery Act (RCRA) and Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)).

*Issues identified:*

The BLM received a form letter email from over 4,000 respondents concerning the project stating that the following issues must be considered as part of the environmental review:

- Wildlife.
- Native plants.
- Surface and groundwater resources and water quality.
- Soils.
- Cultural resources.

These topics are required by BLM NEPA policy to be addressed in all EAs. See Chapter 3. The email also asked that impacts to nearby wilderness areas and National Forest lands be addressed (see Cumulative Impacts) and suggested an EIS is needed (see Chapter 1, Section D).

### **Additional Public Consultation.**

In addition to the public scoping meeting held in Bridgeport, consultation was conducted with the Native American tribes in the area as discussed in Chapter 3, Section K.

### **Public Review and Comment.**

On May 1, 2009 the EA was released for a 30 day public review and comment period. The EA was sent to interested publics including federal and state legislators; federal, state, and local governments; Native American Tribes; special interest groups; individuals and others. The EA was also posted on the BLM internet site for public review at <http://www.blm.gov/ca/bishop>. Written comments on the EA arrived to BLM up to June 5, 2009. During the 30 day comment period, 27 letters were received, 11 citing concerns about the project and 16 in support of the project. In addition, approximately 4000 form letters were received by email identifying the same concerns listed in the 11 letters. A summary of comments received during the 30 day public review and comment period is provided below with a BLM response to those comments.

***Comment 1:*** Why is the project area still 713 acres?

***Response 1:*** The PA defined in the EA was the study area boundary for resource surveys conducted in support of the EA. The PA was used to facilitate the evaluation of resources present in the area surrounding the proposed drill site locations and assisted BLM in the analyses of potential indirect impacts to resources such as wilderness values, wildlife, and water resources. For the analyses of potential direct impacts to resources such as soils, vegetation, wildlife habitat, and non-maintained access routes, an Area of Potential Effect (APE) was defined in the EA as follows:

The APE is the area that could be directly impacted by project implementation. This includes 60 foot long segments of existing non-maintained access routes centered on each drill site with a 25 foot buffer on either side of the drill rig and support truck (60 feet long x 58 feet wide), plus 2.99 miles of existing non-maintained access routes with a 5 foot buffer on either side of the routes. The result is a maximum APE of 6.47 acres.

**Comment 2:** EA does not adequately analyze the impacts to or have appropriate mitigation for sage-grouse.

**Response 2:** The Affected Environment and Environmental Consequences portions of the EA in Chapter 3, Section V - Wildlife/Threatened and Endangered have been restructured and supplemented to clarify the analysis of potential impacts to sage-grouse and sage-grouse habitat. Additional mitigation measures designed to reduce potential noise and lighting disturbance impacts to sage-grouse are included in Chapter 5, Mitigation Measures and Monitoring (EA pages 113 - 115). BLM has also added mitigation that specifies drilling will not begin until August 15. These mitigation measures would measureable reduce both the direct and indirect disturbance impacts to sage-grouse that could occur from project implementation.

**Comment 3:** Several comments suggested that the 24 hour per day drilling alternative would have more impact than the 12 hour per day drilling alternative due to potential impacts from continuous noise disturbance and night-time lighting associated with a 24 hour program.

**Response 3:** The EA provides an analysis of the potential impacts that could occur under implementation of either the 12 hour per day drilling alternative or the 24 hour per day drilling alternative and describes the differential impacts that could occur under each of these alternatives. For some resources, such as nocturnal wildlife species, the 24 hour per day drilling alternative would likely have more impact than the 12 hour per day drilling alternative as the result of noise and lighting disturbance associated with night-time operations. In contrast, for diurnal wildlife species, the 24 hour per day drilling alternative would likely have less impact than the 12 hour per day drilling alternative as the result of fewer days of activity and the ability to complete the proposed drilling program in a single season. Additional mitigation measures designed specifically to reduce both noise and lighting impacts associated with 24 hour per day drilling operations have been incorporated as the result of public review and are included in Chapter 5, Mitigation Measures and Monitoring (EA pages 113 - 115).

**Comment 4:** Comment requesting reduction in speed limit to below 20 mph, especially during dawn and dusk travel.

**Response 4:** Speed limits on the Aurora Canyon and Geiger Grade access roads are under the jurisdiction of Mono County. Mono County has not indicated a need for a speed limit below the proposed 20 mph speed limit. In addition, the commenter did not provided any supporting

literature or documentation that justifies reducing the proposed speed limit for project vehicles below the industry accepted safety standard of 20 mph.

**Comment 5:** EA does not adequately address impacts to fawning deer.

**Response 5:** The fawning period for mule deer in the Bodie Hills occurs from late June through mid-August, with the peak occurring in early July. BLM has added mitigation that specifies drilling will not begin until August 15; see Chapter 5 Mitigation Measures and Monitoring (EA page 115). This mitigation effectively eliminates any potential direct or indirect impacts to fawning mule deer that could occur from project implementation.

**Comment 6:** EA does not adequately address impacts to migratory birds.

**Response 6:** The PA was surveyed for nesting neotropical migratory birds by JBR Environmental Consultants, Inc. during June, 2009. The results of this survey have been incorporated into the Affected Environment and Environmental Consequences portions of the EA in Chapter 3, Section V - Wildlife/Threatened and Endangered to supplement and clarify the analysis of potential impacts to migratory birds. BLM has added mitigation that specifies project activities will not start until August 15; see Chapter 5 Mitigation Measures and Monitoring (EA page 115). This mitigation effectively eliminates any potential direct or indirect disturbance impacts to nesting neotropical migratory birds that could occur from project implementation.

**Comment 7:** Section I of Chapter 3 is incomplete because it does not mention the Migratory Bird Treaty Act.

**Response 7:** Section I of Chapter 3 has been updated to include a brief summary of BLM's requirements under the Migratory Bird Treaty Act (EA page 38).

**Comment 8:** EA does not adequately address impacts to bat species.

**Response 8:** The PA was surveyed for bats by JBR Environmental Consultants, Inc. during June, 2009. Bat surveys were conducted near open shafts associated the historic Paramount Mine workings for two consecutive nights (June 11 and 12, 2009). Long-eared myotis (*Myotis evotis*) was the only bat species detected and there was no indication that a colony was present in the project area. The results of this survey have been incorporated into the Affected Environment and Environmental Consequences portions of the EA in Chapter 3, Section V -

Wildlife/Threatened and Endangered to supplement and clarify the analysis of potential impacts to bats.

**Comment 9:** EA does not adequately address impacts to raptors.

**Response 9:** The PA was surveyed for nesting raptors by JBR Environmental Consultants, Inc. during June, 2009. No evidence of nesting raptors was encountered. The results of this survey have been incorporated into the Affected Environment and Environmental Consequences portions of the EA in Chapter 3, Section V - Wildlife/Threatened and Endangered to supplement and clarify the analysis of potential impacts to raptors.

**Comment 10:** EA does not adequately analyze the impacts on pygmy rabbits or pygmy rabbit habitat.

**Response 10:** A 500-foot radius around each proposed drill site and a 150-foot corridor on each side of the access roads was surveyed for pygmy rabbits by JBR Environmental Consultants, Inc. using the methods described by Ulmscheider et. al. (2004) during June, 2009. No evidence of current or past pygmy rabbit use or occupancy was encountered. The results of this survey have been incorporated into the Affected Environment and Environmental Consequences portions of the EA in Chapter 3, Section V - Wildlife/Threatened and Endangered to supplement and clarify the analysis of potential impacts to pygmy rabbits and pygmy rabbit habitat.

**Comment 11:** EA does not adequately analyze the impacts on American pika.

**Response 11:** The PA was surveyed for American pika by JBR Environmental Consultants, Inc. during June, 2009. The only potential pika habitat encountered during the survey was in the immediate vicinity of the historic Paramount Mine site; however, no evidence of current or past use or occupancy by American pika was recorded. The results of this survey have been incorporated into the Affected Environment and Environmental Consequences portions of the EA in Chapter 3, Section V - Wildlife/Threatened and Endangered to supplemented and clarify the analysis of potential impacts to American pika and American pika habitat.

**Comment 12:** EA does not adequately analyze the impacts on BLM designated sensitive wildlife species in particular the northern sagebrush lizard and golden eagle.

**Response 12:** The Affected Environment and Environmental Consequences portions of the EA in Chapter 3, Section V - Wildlife/Threatened and Endangered have been restructured and

supplemented to clarify the analysis of potential impacts to BLM designated sensitive wildlife species including the northern sagebrush lizard and golden eagle.

**Comment 13:** Mitigation should include surveys for amphibians including Yosemite toad and mountain yellow legged frog.

**Response 13:** Amphibian surveys were completed at spring/seep locations within the PA by JBR Environmental Consultants, Inc. during June, 2009 and no evidence of Yosemite toads or mountain yellow legged frogs were encountered. The results of these surveys have been incorporated into the Affected Environment and Environmental Consequences portions of the EA in Chapter 3, Section V - Wildlife/Threatened and Endangered to supplement and clarify the analysis of potential impacts to amphibians including the Yosemite toad and mountain yellow legged frog.

**Comment 14:** Rough Creek and all its tributaries have been designated by the Walker Recovery Implementation Team (WRIT) as a priority for Lahontan cutthroat trout (LCT) restoration.

**Response 14:** The Bishop Field Office is an active participant on the Walker Recovery Implementation Team (WRIT) and is fully aware of the recovery potential for Lahontan cutthroat trout in the upper Rough Creek watershed. As is accurately described in the EA, potential habitat for Lahontan cutthroat trout does not occur in the upper perennial reach of the tributary to Rough Creek (Paramount Creek) that crosses the PA. The nearest potential habitat on this tributary is located approximately 2.5 miles down slope and downstream of the nearest drill site and below an intervening 1.4 mile segment of intermittent dry streambed. In addition, to date no decision has been made regarding any potential introduction of Lahontan cutthroat trout into the upper Rough Creek watershed. Current Bishop RMP guidance directs BLM to manage the suitable portions of Rough Creek and its tributaries so they remain suitable as potential introduction sites (BLM 1993). The proposed exploration project would not negatively affect any suitable habitat. Furthermore, since the majority of potential habitat is privately owned, current BLM planning direction only allows for the establishment of experimental non-essential populations of Lahontan cutthroat trout in the upper Rough Creek watershed.

**Comment 15:** Comment made requesting that precautions are taken to secure employee food from black bears.

**Response 15:** Drillers will be notified of precautionary measures necessary to avoid black bear encounters; see employee training in Chapter 5, Mitigation Measures and Monitoring (EA page 116).

**Comment 16:** EA does not adequately address weeds species or weed control.

**Response 16:** Pages 44 and 45 of the EA addresses weed control measures for all weed species. No noxious weeds were found in the APE. The PA contained the early successional native species *Stephanomeria spinosa* [*Lygodesmia spinosa* Nutt.] and non-native knotweed (*Polygonum arenastrum*), both comprising less than 2% of cover at all transect sites (Synergy Resource Solutions 2008). A *Halogeton glomeratus* population comprised of less than 100 individuals also occurs outside of the APE and would be treated prior to project initiation as stated on page 45. Best management practices and monitoring frequency and baselines have been incorporated into the project design to minimize any risk of introducing weeds into the APE and larger PA, including washing all vehicles in Bridgeport prior to entry into the PA. (EA pages 44 and 45). Any material used for erosion control measures would be from a certified weed-free source and these sources would be identified prior to project implementation.

**Comment 17:** Erosion control measures need to be weed free.

**Response 17:** Mitigation measures requiring that all erosion control measures will be weed free have been incorporated; see Chapter 5, Mitigation Measures and Monitoring (EA page 113).

**Comment 18:** The EA does not adequately address rare plants, in particular with respect to Bodie Hills rock cress.

**Response 18:** As described in the EA, during June and July of 2008 a vegetation survey was conducted on approximately 700 acres of BLM lands in the PA (EA page 72). The survey report includes a summary of pre-survey data collections, field methods, plant habitat descriptions, and survey results (Synergy Resource Solutions 2008). In conjunction with this general vegetation survey, a survey of the same area was conducted for the following eight Special Status Plant Species reported by the California Natural Heritage Database (CNDDDB 2009) and the Nevada Natural Heritage Plant (NHP) database as having potential habitat and plant species occurrences in the vicinity of the PA: Bodie Hills draba (*Cusickiella quadricostata*), Mono County phacelia (*Phacelia monoensis*), Long Valley milkvetch (*Astragalus johannis-howellii*), Bodie Hills rock cress (*Boechera bodiensis*), Beatley buckwheat (*Eriogonum beatleyae*), Williams combleaf

(*Polycytenium williamsiae*), Masonic Mountain jewel flower (*Streptanthus oliganthus*), and Tioga sedge (*Carex tiogana*). Bodie Hills rock cress (*Boechera bodiensis*) was the only Special Status Plant Species found during the project surveys which were conducted during the peak flowering period for these species. Bodie Hills rock cress was only found in the larger PA not in the APE, e.g. near the proposed drill site locations. “Plants were found on all aspects, at elevations ranging from 8,200 to 9,000 feet and primarily in granitic rock outcrops, in rocky open areas, and in rocky reclaimed roads” (Reynolds 2008). “The population and suitable habitat of the Bodie Hills rock cress extended beyond the boundaries of the field survey and project boundaries in all directions” (Reynolds 2008).

**Comment 19:** The EA does not state the timing, scope, or duration of the vegetation and threatened and endangered species surveys that were conducted and therefore “it is not possible to discern from the EA whether they were conducted during appropriate seasons or otherwise satisfy NEPA requirements for analyzing effects on imperiled species.”

**Response 19:** The EA does state the timing of these surveys on page 72. The biological survey reports have been included as Appendix D – Biological Assessment of the EA.

**Comment 20:** The EA does not adequately analyze impacts to wetlands.

**Response 20:** A wetlands assessment was conducted in the southern portion of the PA (Appendix E of the EA). Although wetlands do occur in the study area, there will be no direct impacts to these areas as a result of project activities. A directional spill analysis was conducted using GIS and the results of this analysis indicate that the direction of any spill from drill holes located in the southern portion of the PA would not flow into any wetlands on site. A spill control and contingency plan has also been developed and in the event of an accidental spill, appropriate measures will be taken to reduce any potential off-site impacts to riparian habitat.

**Comment 21:** Remove existing halogeton.

**Response 21:** Existing halogeton will be removed prior to initiation of project activities (EA page 45).

**Comment 22:** The EA does not adequately address the recovery of vegetative cover.

**Response 22:** The EA states that Alternative 1 has the potential to affect 0.55 acres of vegetation in the APE. Impacts would include crushing, scattered stem breakage, and

compaction of above ground vegetation, resulting in some removal of plants and increases in plant interspaces. The 3-5 year recovery would include re-sprouting of crushed vegetation and emergence of seedling of grasses, forbs and shrubs. These indices of plant recovery are typical of what has been observed on sites throughout the Bodie Hills under similar disturbance events that have had similar intensity and duration.

**Comment 23:** The EA does not adequately address impacts to soils.

**Response 23:** Soils impacts would be confined to existing roads and drill hole locations affecting a maximum of 2.62 acres within the WSA. Potential temporary impacts during project operations due to travel frequency and transport loads would include increased soil compaction, reduced aeration, permeability and water-holding capacity. The proponent would monitor the routes during drilling operations to identify any excessive rut development, soil pulverization/compaction, or other impacts. If these impacts occur, the proponent would consult with BLM to install erosion control structures and materials including weed-free straw wattles, silt fences and temporary bridge structures to minimize the impacts. It is unlikely that sediment loads into Paramount Creek would measurably increase beyond existing conditions due to the installation of the above mentioned erosion control structures and/or materials. Reclamation of compacted soils in areas such as drill site locations would take place post-project and include standard practices to improve aeration such as soil scarification and mulch application as well as seeding with site-specific native species where necessary to accelerate native plant recovery. Soil scarification and road bed resurfacing would also be applied to select sections of road that could pose an increase in sheet erosion or drilling.

**Comment 24:** The EA does not adequately define the difference in water use between Alternative 1 versus Alternative 2.

**Response 24:** The EA states that water use will increase by at least 50% if Alternative 2 is implemented (EA page 46). It is not possible to define this any better as water use is dependent upon subsurface conditions.

**Comment 25:** Comments received that water use in dry year(s) is inadequately addressed.

**Response 25:** Water for the proposed project will be purchased from the Bridgeport Public Utility District (PUD). The Bridgeport PUD has the right to withdraw water from the aquifer and a letter was received indicating their willingness to sell the proponent the water required for

project activities. In addition, groundwater information is proprietary according to the Lahontan State Water Resources Control Board and as such no additional information could be provided on the groundwater resources.

**Comment 26:** EA does not include a plan for treating water rock slurry. Specific comment to "containerize the drilling waste" is unclear if this includes all water used during the project activities.

**Response 26:** The water containment system on the drill rigs is designed to be a zero discharge system. Any residual drilling water left in the water containment system at the end of the drilling program would be properly disposed of at an authorized landfill location in either Mono or Inyo Counties or in the state of Nevada. (EA page 48).

**Comment 27:** The EA does not provide mitigation for surface or groundwater impacts.

**Response 27:** No impacts to surface or ground water quantity are expected due to drilling operations. There is some limited potential for impacts to surface water quality in the event of a large accidental spill. A directional spill analysis was conducted as described in Response 20. A spill prevention and control plan has also been developed for the project. Pages 45 and 46 describes the measures that will be taken in the event of an accidental fuel/water spill.

**Comment 28:** If an artesian aquifer is encountered does this stop drilling activities and open up a new hole?

**Response 28:** Page 49 of the EA describes the measures that will be taken in the event that artesian conditions are encountered during drilling operations. The containment system at the drill rig is designed to be a zero discharge system. If artesian conditions are encountered beyond what the containment system can capture, the hole will be plugged until the water can be controlled. A new hole would not be drilled.

**Comment 29:** Need to monitor nearby seeps and springs during drilling operations.

**Response 29:** The impact analysis does not indicate that the program will affect seeps and springs in the PA and as such a formal monitoring program is unnecessary (EA page 80). Spring and seep monitoring will be conducted during project implementation in the event of drilling through a perched aquifer (See Chapter 5, Mitigation Measure and Monitoring, page 115).

**Comment 30:** The EA states that there are no groundwater users in the PA, but the plants and animals use the groundwater.

**Response 30:** The EA has been modified to clarify beneficial uses of surface and groundwater in the PA (EA page 80).

**Comment 31:** Need to include a map of all seeps, springs, wetlands, creeks and livestock grazing allotments in the PA.

**Response 31:** Maps of seeps, springs, wetlands, and creeks have been included in the EA (Figure 3.3). As described on page 65, the entire PA is located completely within the Bodie Mountain Allotment.

**Comment 32:** The EA does not adequately address bentonite spills.

**Response 32:** The containment system for the drilling fluids has been designed as a zero discharge system. In the event of an accidental spill, a spill prevention and mitigation plan has been developed (see Appendix A of the Plan of Operations, posted at [http://www.blm.gov/ca/bishop/cougar\\_gold.html](http://www.blm.gov/ca/bishop/cougar_gold.html)). Pages 45 and 46 of Chapter 2, Project Description, also describes the measures that will be taken in the event of an accidental spill.

**Comment 33:** EA needs to address potential impacts to Rough Creek and the East Walker River.

**Response 33:** A directional spill analyses was conducted and it was determined that in order for a spill to reach Rough Creek, approximately 3,400 gallons would need to be discharged. The maximum amount of fuel at any given time at the drill sites would be a maximum of 200 gallons. The temporary fuel containment system on the supply truck would have 110% containment. In the event of an accidental spill, the spill control plan measures would be implemented.

**Comment 34:** The EA does not adequately address impacts to springs that may result from drilling into perched aquifers.

**Response 34:** Several surveys have been conducted on the springs in the area. These surveys indicate that the springs are not likely connected with the deeper confined aquifers. The results of a recent 2009 survey and a survey conducted during 2007 found indicate that annual flows in the springs are highly variable. If a perched aquifer is encountered during drilling

operations, the springs identified during the baseline surveys will be monitored to identify potential effects (see Section 5, Mitigation Measures and Monitoring, page 115).

**Comment 35:** MSDS need to be included or need to list the substances that will be used.

**Response 35:** Chapter 2, Project Description has been updated to include a table listing drilling additives to be used (Table 2.3 Drilling Additives, EA page 48).

**Comment 36:** Comment that impacts to wildlife may be more significant now as there were no sensitive species in the area in 1976 (the year FLPMA was enacted) and therefore the project cannot be consider under the same manner and degree.

**Response 36:** Same manner and degree has to do with mineral exploration activities occurring in the project area in 1976 and not with the wildlife species potentially impacted as a result of those activities. Pages 6 and 7 of the EA clarify the definition of same manner and degree.

**Comment 37:** The EA does not adequately address the risk of wildfire in relation to the use of Bodie State Historic Park.

**Response 37:** Additional mitigation has been incorporated that requires secondary water trucks to be equipped with 200 feet of hose and a water-tender to insure adequate fire protection. There will be no smoking at any of the proposed drill sites. Industry standard fire suppression is included in the project design.

**Comment 38:** Time frames need to be stated more quantitatively for each alternative.

**Response 38:** Pages 49 and 52 of the EA define the estimated time frames for each of the alternatives. These time frames represent the current best estimate of drilling activity associated with each alternative; however, drilling conditions will dictate the actual length of time required to complete the program.

**Comment 39:** The EA does not adequately evaluate impacts to visual resources.

**Response 39:** The EA did evaluate impacts to visual resources (EA pages 76-77). The analysis determined that project implementation would not violate the VRM Class Standards (Class II and III) identified in the Bishop RMP (BLM 1993). The objective of Class II is that the project can be seen from any key observation point, but would not attract the attention of the casual

observer. Any changes in the characteristic landscape should be low. The objective of Class III is to partially retain the existing character of the landscape, and management activities may attract attention from a key observation point, but should not dominate the viewshed of the casual observer.

As stated in the EA, “There is only one key observation point (for VRM Class II) approximately ½ mile to the southeast of the PA, where a casual observer might glimpse a drill rig when travelling along the Geiger Grade Road.” and “The VRM Class III area is hidden from view when travelling along Aurora Canyon and Geiger Grade Roads and cannot be seen from any key observation point.”

**Comment 40:** The EA does not adequately evaluate impacts resulting from night time lighting.

**Response 40:** The Project Description, Environmental Consequences, and Mitigation Measures and Monitoring Sections of the EA have been supplemented to clarify the analysis of impacts associated with night time lighting (EA pages 46, 95-96, 104-105 and 115).

**Comment 41:** Make the air quality assessment available.

**Response 41:** The air quality assessment is included as Appendix C.

**Comment 42:** The EA does not adequately address impacts to global climate change.

**Response 42:** The EA sufficiently addresses known impacts to global climate change (EA pages 60 – 61). An air quality model was developed with two test applications to identify greenhouse gas emissions from the project. A table shown in Chapter 3, Table 3-2 under Global Climate Change compares the project results to the National Ambient Air Quality Standards. As stated, there is a lack of scientific tools designed to predict climate change on regional or local scales. According to the EPA, scientific questions remain about how much warming will occur, how fast it will occur, and how the warming will affect the rest of the climate system including precipitation patterns and storms (USEPA 2009). The EPA further states that answering these questions will require advances in scientific knowledge. These advances include, improving understanding of natural climatic variations, land-use changes, the warming or cooling effects of pollutant aerosols, and the impacts of changing humidity and cloud cover. Advances are also needed to determine the relative contribution to climate change of human activities and

natural causes, and to project future greenhouse emissions and how the climate system will respond within a narrow range (EPA 2009).

**Comment 43:** EA fails to identify that permitting of the drill rigs through the Great Basin Air Pollution Control District is required.

**Response 43:** Great Basin Air Pollution Control District has been contacted and no permit is required for this action as the generator being used on the rigs is less than 50 horsepower.

**Comment 44:** The EA does not adequately address impacts resulting from hazardous waste and solid waste.

**Response 44:** No hazardous materials will be used for the proposed drilling activities. As stated in Chapter 2, page 48, any solid waste generated during project implementation will be removed daily and deposited in the landfill at Benton Crossing or other approved waste disposal facility.

**Comment 45:** The EA does not adequately address cultural resources, the delineation is inadequate.

**Response 45:** A cultural resource evaluation was conducted for the study area that has been approved by the BLM. In addition, a field reconnaissance was conducted at the intersection of Geiger Grade and the Paramount Mine Road where the water truck will be stationed. No cultural resources were identified in this area. The EA addresses potential impacts to cultural resources in the APE (EA pages 57-59); and a No Adverse Effect determination has been rendered. Potential effects would be further mitigated by implementing the measures identified in Section 5, Mitigation Measures and Monitoring (EA page 113).

**Comment 46:** The EA does not adequately assess socio-economic impacts to recreation or Bodie State Historic Park.

**Response 46:** Impacts to recreation were analyzed and have been determined to be minimal (EA page 68). Mitigation to reduce impacts to recreation includes stopping project activities during the major hunting weekends (see Chapter 5, Mitigation Measures and Monitoring, page 113). Due to the limited time frame of the proposed project, impacts to socioeconomics resulting from negative effects on recreational activities would be minimal. The primary access route to Bodie State Historic Park is approximately 6 miles to the south of the PA via State

Highway 270. The vast majority of visitors to Bodie State Historic Park would not drive past the PA.

**Comment 47:** The EA does not adequately address impacts to wild and scenic rivers that could potentially result from fuel spills.

**Response 47:** There are no wild and scenic rivers that could be impacted due to spills in the PA. A spill prevention and control plan has been developed and would be implemented in the event of an accidental spill. The fuel containment system on the service truck would have 110% containment.

**Comment 48:** The EA does not adequately address monitoring standards.

**Response 48:** Baseline inventories conducted in the PA will be used to address potential impacts as a result of project implementation. Mitigation measures would be incorporated to all aspects of the project to ensure that the project activities will have no long term negative effects.

**Comment 49:** The EA does not adequately address degradation of wilderness values.

**Response 49:** The analysis of impacts to wilderness values states that impacts would be short term and temporary (EA page 87-89). Neither historic mining activities nor recent mineral exploration activities have negatively affected the wilderness values in the PA. This supports the analyses presented in the EA that long term impacts to wilderness values would be immeasurable and would not preclude Congresses ability to designate the area as wilderness in the future.

**Comment 50:** A NEPA/CEQA document should be prepared because of county road usage.

**Response 50:** The Mono County Planning Department has been contacted and has indicated that a CEQA document is not necessary (email to Cheryl Seath, April 10, 2009).

**Comment 51:** The EA does not contain adequate mitigation.

**Response 51:** The project design incorporates many design features to reduce potential project impacts. Additional mitigation has been incorporated into Chapter 5, Mitigation Measures and Monitoring in response to comments received during the public review and comment period (EA pages 113-116).

**Comment 52:** An EIS for a full scale mining project must be prepared.

**Response 52:** The EA is for a mineral exploration project only and not for a full scale mining operation. An EIS would be prepared for any full scale mining proposal.

**Comment 53:** The proposed project is inconsistent with Bishop RMP.

**Response 53:** Page 34 of the Bishop RMP clearly states that mineral exploration may continue in the area as long as appropriate mitigation is implemented. The EA has been revised to clarify RMP guidance relative to mineral exploration activities in the Bodie Hills Management Area (EA page 35 - 36).

**Comment 54:** The purpose and need is inadequate.

**Response 54:** Language in the purpose and need has been clarified to address the need for BLM action (EA page 11).

**Comment 55:** Divulge results of previous drilling programs.

**Response 55:** Previous results are not pertinent to the environmental analysis nor required for the Field Manager to make a decision regarding the proposed exploration project. Previous exploratory drilling information is proprietary and beyond the scope of information required for this EA.

**Comment 56:** Eliminate drilling in the southern half of the project area.

**Response 56:** Eliminating drilling in the southern portion of the project area would not allow the project proponent to continue mineral exploration activities associated with the Paramount Mine site at a logical pace and progression or in the same manner and degree as provided by law. The EA does not document that any undue or unnecessary degradation would occur as the result of proposed drilling activities in the southern half of the project area, therefore BLM cannot eliminate these proposed drill sites from consideration.

**Comment 57:** Eliminate grazing and close the cherry stem.

**Response 57:** The current proposal does not include closing the cherry stem or eliminating grazing. These proposals do not respond to the purpose and need and are outside the scope of the project.

**Comment 58:** The environmental analysis must include the primary and secondary staging areas.

**Response 58:** There are no staging areas associated with the proposed project.

**Comment 59:** The project is contrary to a fair multiple use policy.

**Response 59:** The Federal Land Management Policy Act of 1976 (FLPMA) directs BLM to manage all public lands for multiple use. The Act states at the beginning “To establish public land policy; to establish guidelines for its administration; to provide for the management, protection, development, and enhancement of the public lands; and for other purposes” (EA pages 1, 5, 6, 7 and 35).

**Comment 60:** The project area should be set aside as a national monument or national park.

**Response 60:** This proposal does not respond to the purpose and need and is outside the scope of this project.

**Comment 61:** The EA “fails to adequately address the environmental impacts of impairing the wilderness quality and character of the Bodie Wilderness Study Area and fails to provide a meaningful range of alternatives to avoid or minimize the projects significant impacts.”

**Response 61:** The three alternatives analyzed in this EA provide a reasonable range of alternatives that clearly address the purpose and need for action. The three alternatives presented in the EA are considered sufficient both to analyze the potential impacts and to identify mitigation to minimize any potentially significant impacts. Both Alternative 1 and Alternative 2 respond specifically to the purpose and need “to consider the authorization of the application for exploratory drilling.” The alternatives proposed must comply with the BLM policy that “The decision to be made from this EA is to determine the best means to authorize a mineral exploration proposal and keep impacts to natural resource values at a minimum, with no unnecessary and undue degradation of these values”, and that “the exploration proposal conforms to the Bishop Resource Management Plan (RMP) approved on March 23, 1993” (see Chapter 1 Sections E and G). The No-action Alternative provides a clear comparison of the environmental effects and consequences of not authorizing either drilling alternative. The No Action alternative also provides the existing baseline for comparison and allows the BLM to evaluate the environmental effects and consequences of both Alternative 1 and Alternative 2.

The proponent's original proposal that included helicopter use and staging area was eliminated from consideration to reduce the overall environmental impacts associated with the proposed drilling program.

**Comment 62:** Mining of low-grade ore on public lands will cause unnecessary and undue degradation.

**Response 62:** Mining of low-grade ore does not relate to the purpose and need for the proposed project and is outside the scope of this EA. The proposed project is for exploratory drilling within existing routes (EA pages 1, 5, and 9). Additionally, the definition of "undue and unnecessary" degradation is listed on page 7 of the EA. The exploratory drilling project is in compliance with current standards and regulations and is based on sound practices, including the best reasonable and available technology. Additional mitigation measures to reduce impacts and insure that undue and unnecessary degradation does not occur as a result of proposed exploration activities are included in Chapter 5, Mitigation Measures and Monitoring (EA page 113-116).

**Comment 63:** By failing to address whether this area is even appropriate for a large scale gold mine....the EA fails to consider the possibility that the exploratory drilling ...will cause needless environmental harm.....

**Response 63:** The record shows that this area was historically mined in the 1930's through the 1960's (EA page 8 and Appendix A). Three different mining companies have conducted exploration activities in the area with successful reclamation that has not resulted in any measureable environmental harm in the Paramount Mine area. In addition, FLPMA directs BLM to manage public lands for multiple-use and provides the legal framework that BLM must consider to evaluate the exploration activities on public lands. In 2001, the IBLA (155 IBLA 64) determined Paramount Gold's exploration proposal conformed to uses conducted in the PA prior to FLPMA's passage (EA page 6). As stated previously, mitigation measures designed to reduce impacts have been incorporated into the proposed project to insure that undue and unnecessary degradation does not occur as a result of proposed exploration activities.

## **G. PLAN CONFORMANCE.**

In addition to FLPMA, 43 CFR 3802, and the IMP mentioned above, the exploration proposal conforms to the Bishop Resource Management Plan (RMP) approved on March 23, 1993. The RMP provides a comprehensive framework for managing land use authorizations, including mining, for public lands administered by the Bishop Field Office.

The proposal is consistent with the General Policies, Area Manager's Guidelines, Valid Existing Management, Standard Operating Procedures, Decisions, and Support Needs prescribed in the RMP. Key RMP prescriptions are described below.

**RMP page 1-7:** Wilderness values will be protected or enhanced according to the Interim Management Policy.

**RMP Record of Decision (ROD) page 8, Item 5:** Public lands will be managed in a manner which recognizes the Nation's need for domestic sources of minerals, food, timber, and fiber including implementation of the Mining and Minerals Act of 1970, as it pertains to public land. [Section 102(a)(12)].

**RMP Record of Decision (ROD) page 14, Item 4:** All mineral operations will conform with the state's Surface Mining and Reclamation Act, and county and local health and operation requirements.

**RMP Record of Decision (ROD) page 17:** "Yearlong Protection of endangered, threatened, candidate, and sensitive plant and animal habitats" (Area-Wide decision). The RMP defines Yearlong Protection as "No discretionary actions which would adversely affect target resources would be allowed. Existing uses and casual use would be managed to prevent disturbance which would adversely affect the target resources. Locatable mineral exploration and development could continue, with appropriate mitigation."

**RMP Record of Decision (ROD) page 17:** "Seasonal Protection within 2 miles of active sage grouse leks from 3/1 to 6/30" (Area-Wide decision). The RMP defines Seasonal Protection as "During the period specified, no discretionary actions which would adversely affect target resources would be allowed."

**RMP Record of Decision (ROD) page 22:** "The entire resource area will remain open to mineral entry with the following exceptions:" (Area-Wide decision). Only Dog Town, the Bishop

Petroglyph Loop, the Bodie Bowl Area of Critical Environmental Concern (ACEC), the Inyo Mountains Wilderness and the Granite Mountains Wilderness are withdrawn from mineral entry.

**RMP Record of Decision (ROD) page 32:** Bodie Hills Management Area specific direction includes managing the area to conform to VRM II and III standards and managing vegetation resources to meet Desired Plant Community goals in sagebrush-bitterbrush habitats to provide cover and forage for mule deer, pronghorn and sage grouse.

**RMP Record of Decision (ROD) page 32:** “Seasonal Protection and no snowmobile use in sage grouse wintering areas from 11/15 to 05/15” (Bodie Hills Management Area decision). The RMP defines Seasonal Protection as “During the period specified, no discretionary actions which would adversely affect target resources would be allowed.”

**RMP Record of Decision (ROD) page 34:** With the exception of the Bodie Bowl Area of Critical Environmental Concern (ACEC), “the management area as a whole will remain open to mining.” The PA is not part of the Bodie Bowl ACEC.

#### **H. PREVENTION OF UNNECESSARY AND UNDUE DEGRADATION.**

In addition to management prescriptions analyzed in this EA, BLM may use its authority to close the area or take other measures to protect resources at any time, if needed. Therefore, issuance of an authorization with appropriate terms and conditions is consistent with BLM’s responsibility to manage public use, occupancy, and development of the public lands and to prevent unnecessary or undue degradation of those lands (43 USC 1732(b)).

#### **I. RELATIONSHIP TO OTHER STATUTES, REGULATIONS, AND PLANS.**

The following statutes, regulations, and plans provide an additional legal framework BLM must consider for mineral exploration on public lands.

- **Air Quality.**

Section 176 (c) of the Clean Air Act (CAA), as amended (42 U.S.C. 7401 et seq.), and regulations under 40 CFR part 93 subpart W, with respect to the conformity of general Federal actions to the applicable State Implementation Plan apply to projects within any Federal Air Quality Non-Attainment/Maintenance Areas.

The PA and the access through Aurora Canyon are not within any Federal Air Quality Non Attainment/Maintenance Area under the jurisdiction of the Great Basin Unified air Pollution Control District (GBUAPCD).

- **Cultural Resources.**

California BLM has the responsibility to manage cultural resources on public lands pursuant to the National Historic Preservation Act of 1966, as amended, the 1997 Programmatic Agreement Among the BLM, the Advisory Council on Historic Preservation, and the National Conference of State Historic Preservation Officers Regarding the Manner in Which BLM Will Meet Its Responsibilities Under the National Historic Preservation Act, and the State Protocol Agreement Between the California State Director of the BLM and the California State Historic Preservation Officer (2007) and other internal policies.

- **Special Status Plant Species.**

BLM Special Status Plant Species are species listed by the California Native Plant Society as List 1B species, which includes plants that are rare, threatened, or endangered in California and elsewhere. All plants constituting List 1B meet the definition of Sec. 1901, Chapter 10 (Native Plant Protection Act), or Secs. 2062 and 2067 (California Endangered Species Act) of the California Department of Fish and Game Code, and are eligible for state listing. The Bishop RMP (pg. 17) stipulates year-long protection of sensitive plants (Special Status Plants) and their associated habitats.

- **Threatened and Endangered Species (T&E).**

Pursuant to Section 7 of the Endangered Species Act, consultation with the U.S. Fish and Wildlife Service (FWS) is required when BLM determines that public lands authorizations may affect listed species or designated critical habitat. The stipulations of any authorization may be modified to conform to the terms and conditions specified in a FWS biological opinion as the result of formal consultation. In addition, the terms and conditions of any authorization may also be modified through subsequent land use plan amendments or revisions to conform to decisions made to achieve recovery plan objectives.

- **California BLM Sensitive Animal Species.**

These species are managed pursuant to the policies prescribed in BLM Manual 6840 (BLM 2008): “State Directors shall designate species within their respective States as Bureau sensitive by using the following criteria: 1. There is information that a species has recently undergone, is undergoing, or is predicted to undergo a downward trend such that the viability of the species or a distinct population segment of the species is at risk across all or a significant portion of the species range, or 2. The species depends on ecological refugia or specialized or unique habitats on BLM-administered lands, and there is evidence that such areas are threatened with alteration such that the continued viability of the species in that area would be at risk.” BLM policy direction states that “Actions authorized by the BLM shall further the conservation and/or recovery of federally listed species and conservation of Bureau sensitive species” and that “Bureau sensitive species will be managed consistent with species and habitat management objectives in land use and implementation plans to promote their conservation and to minimize the likelihood and need for listing under the ESA.” The Bishop RMP (pg. 17) stipulates year-long protection of sensitive animal habitats.

- **Migratory Bird Treaty Act.**

According to Executive Order # 13186 of January 10, 2001 entitled “Responsibilities of Federal Agencies to Protect Migratory Birds” federal agencies are expected to take measures to protect migratory birds if a project or action is expected to have a “measureable negative effect.” Under this executive order Federal Agencies are also required to “ensure that environmental analyses of Federal actions required by the NEPA or other established environmental review processes evaluate the effects of actions and agency plans on migratory birds, with an emphasis on species of concern.” Potential effects to migratory birds are discussed in Chapter 3, Section V - Wildlife/Threatened and Endangered.

- **Water Quality.**

The Paramount Mine site is within watersheds governed by basin plans subject to California's Clean Water Act. Nationally, Executive Order # 12088 directs federal agencies to comply with state administrative procedures. Recently, standards and guidelines reiterated the intent of the Federal Clean Water Act (CWA) and States' water quality plans. All public lands that contain any water bodies (streams, lakes, springs, etc.) must have adopted BMPs for all associated management activities that could affect water quality.

## **J. ISSUES FOR ANALYSIS.**

The following issues or concerns surfaced during internal and external scoping (see Section F above) and are specifically addressed in Chapter 3 under related resource topics.

- Air Quality – impacts to air quality from drilling operations.
- Community – water table impacts from drilling operations’ purchase of local water.
- Recreation – impacts to recreation users in the PA especially hunting season.
- Wilderness Values – impacts to wilderness values from mining operations.
- Wildlife Species Populations – impacts to wildlife from 24 hour operations due to night lighting and nocturnal noise.

## **CHAPTER 2: PROPOSED ACTION AND ALTERNATIVES**

### **INTRODUCTION.**

The BLM's internal and external scoping process contributed to the formulation of the three alternatives described below. The proponent presented an original proposal that has been reduced in scope since its submission. This amended proposal serves as Alternative 1 which would be a 24-hour a day, 11-hole truck based drilling operation at 8 drill locations to occur on existing routes only. Alternative 2 would be the same as Alternative 1 except it would be a 12-hour a day operation. Alternative 3 is the No Action Alternative.

### **ALTERNATIVE 1 – TRUCK-MOUNTED CORE DRILLING 24 HOUR OPERATIONS ON EXISTING ROUTES.**

This alternative was part of the original Plan of Operations (POO) submitted to the BLM by the proponent in January 2009. Originally entitled the "Proposed Action" early in the scoping process, it has been modified by eliminating helicopter use and relegated from "Proposed Action" status to one of three alternatives to be analyzed in this EA. As modified, it meets the "Purpose and Need" for the project albeit under a narrower scope of drilling operations and execution. It overlaps with the original "Proposed Action" in that both stipulate using truck-mounted core drill rigs on existing routes or ways (see "Purpose and Need" in Section 1.E of Chapter 1). This commonality and conformance with the "Purpose and Need" render this alternative as appropriate for analysis and inclusion in this EA.

#### **Project Description.**

Core drilling under this alternative would require two coring rigs (See Appendix B Photo-1, Example of Drill Rig), operating simultaneously 24 hours a day for approximately 45 days. Twenty-four hour drilling would increase drilling efficiency, reduce fuel and water consumption and reduce the overall time of the project (Jim Erdman, Ruen Drilling Inc., email communication).

The 11 core holes at 8 locations would be drilled within existing routes. Drill holes would be about 4 inches in diameter and reach depths of 500 to 1300 feet. Two drill sites would have multiple holes. Figure 1.2 shows the approximate drill site locations for Alternative 1. Table 2.1 provides locations and depths of the holes to be drilled at each drill site. While the truck mounted drill is actively drilling the access route would be temporarily blocked. A sign notifying

area visitors of the restriction would be placed at locations where they could turn around or take an alternate route around the drilling operations.

**Table 2.1 - Drillhole Locations and Depths.**

Location Name	Easting	Northing	Elevation (ft)	Core Depth (ft)	Dip (degrees)	Direction (degrees)	Access
PAXEX-01	319362	4237462	9022	984.3	-60	120	Truck
PAXEX-02	320133	4238040	8648	984.3	-60	300	Truck
PAXEX-03	320183	4238020	8625	984.3	-60	120	Truck
PAXEX-04	320121	4237807	8668	1312.3	-60	300	Truck
PAXEX-16	319265	4237581	9075	656.2	-60	300	Truck
PAXEX-18	319990	4238000	8705	492.1	-90	0	Truck
PAXEX-22	319865	4238193	8680	656.2	-60	120	Truck
PAXEX-26	319265	4237581	9075	656.2	-60	120	Truck
PAXEX-29	319327	4237323	8980	656.2	-60	120	Truck
PAXEX-33	319362	4237462	9022	656.2	-60	0	Truck
PAXEX-36	319265	4237581	9075	656.2	-60	0	Truck

Samples from the holes would be boxed, tagged, and removed off site for lab analysis. Each site would require approximately 500 square feet of drilling area to conduct the operations, all located within existing routes. The dimensions of each drill site would be about 60 feet of route length and 8 feet in route width. A 25 foot buffer on each side of the drilling area has been included to allow for foot traffic around the active drilling sites. Potential surface area disturbance inside the WSA is approximately 2.62 acres.

Drilling supplies and service materials would be delivered, and core and cuttings removed, from drill sites by pick-up truck along existing routes. Core drilling would occur from truck-mounted drill rigs supported by vehicles under 8 feet wide. No cross country vehicle traffic would occur and only limited foot traffic surrounding the drilling rig would occur. Operations personnel would communicate with vehicle support personnel by radio to ensure access routes to drill sites are clear. This would prevent two vehicles encountering each other from having to drive in adjacent vegetation to pass each other, resulting in unnecessary impacts to vegetation.

Two truck-mounted coring rigs would operate 24-hours per day to complete exploration activities in one drilling season. The exploration drilling period would occur from approximately mid-July to early September when the project is expected to be complete. However the program could continue into October or November depending on poor drilling conditions and/or weather related delays.

Water would be supplied using up to a 3,500 gallon water truck, (see Appendix B, Photo 2, Example of Water Truck), which would be stationed at the Paramount Mine Road and Geiger Grade intersection (Figure 1.2) to provide drilling fluids for the operation. The truck would secure water from the Bridgeport Public Utility District (PUD) in nearby Bridgeport and transport it up Aurora Canyon Road to Geiger Grade approximately once or twice per day. Pickup trucks outfitted with tanks would deliver water to each drilling site. The drilling water supply plan is described fully below.

After drilling is completed at a drill site, all equipment, tools, and debris would be removed and rehabilitation activities would be conducted. The drill holes would be plugged in accordance with State regulations found at:

[http://www.dpla.water.ca.gov/sd/groundwater/california\\_well\\_standards/wws/wws\\_combined\\_sec23.html](http://www.dpla.water.ca.gov/sd/groundwater/california_well_standards/wws/wws_combined_sec23.html).

The drill holes would be filled with bentonite grout to within ten feet of the surface and then a cement plug would be installed to the surface. The drill hole plugs would be completed below ground surface so that hand smoothing of adjacent disturbed soils would obscure the drill locations. Once the cement plug has set, forming a permanent plug, any above-ground casing would be cut just below ground level to reduce erosion. Soil would be placed over the hole to cover any signs of the hole location.

The operational elements of the project are described in more detail in the following subsections.

#### **Access.**

Access to the PA would be via eight miles of Aurora Canyon Road from State Highway 182, then two miles of Geiger Grade Road, also known as the Masonic-Bodie Road and one and a half miles of Paramount Mine Road. The Paramount Mine Road is cherry-stemmed as non-WSA to the Paramount Mine itself. Travel on the Paramount Mine Road for five of the eight drill sites would be from its intersection with Geiger Grade Road for approximately one mile and then another half mile on existing access routes within the WSA (Figure 1.2). The three additional drill sites in the WSA would be accessed from an existing BLM and private land access road off of Geiger Grade, approximately a half mile past its intersection with Paramount Mine Road (Figure 1.2).

All vehicular traffic would be restricted to existing routes (Figures 1.1 and 1.2). No new access would be constructed. Trucks would transport supplies, drill cuttings and cores, refuse, and

drilling equipment to and from the drill sites. To prevent unnecessary impacts to vegetation, only trucks that would fit within the confines of the 8 foot wide routes would be used. Table 2.2 lists the support vehicles' estimated trips per day for the exploration project. The impact assessment conducted for the project (Chapter 3) includes an analysis of the potential impacts within the PA and the access roads that would be utilized during project implementation.

**Table 2.2 - Projected Daily Roundtrip Travel for Support Vehicles.**

Vehicle Type	Round Trips per Day		
	Aurora Canyon Rd	Geiger Grade <sup>(1)</sup>	Paramount Mine Road
Pickups	9	12 <sup>(2)</sup>	13
Vans	2	2	2
<b>Total Light Duty</b>	<b>11</b>	<b>14</b>	<b>15</b>
Water Truck	2	2	0
<b>Total Heavy Duty</b>	<b>2</b>	<b>2</b>	<b>0</b>
<b>Total</b>	<b>13</b>	<b>16</b>	<b>15</b>

1. No heavy duty vehicles past the intersection of Geiger Grade and Paramount Mine Road
2. There will be two pickup trucks dedicated as secondary water supply vehicles to deliver water from the portable water truck to the rigs (~8 trips daily to each rig on Paramount Mine Road and from intersection of Geiger Grade/Paramount Mine Road to the drill sites off Geiger Grade).

The proponent would install erosion and sediment control measures where applicable. For example, subject to BLM approval, temporary erosion control measures such as a bridging structure would be installed where Paramount Mine Road crosses a perennial spring in Section 23, T5N, R26E (Figure 1.2). Additional erosion control measures such as haybales, sandbags or silt fences would be implemented as appropriate.

The proponent and BLM would monitor the routes during drilling operations to identify excessive rut development, soils pulverization/compaction, or other impacts. With BLM's approval, the proponent would take steps to fill in the ruts as authorized, control dust on the routes as necessary, and install erosion control devices. The proponent would return the existing routes to their pre-exploration conditions within 15 days of project completion. Subject to Mono County approval, similar sediment and erosion control measures would be implemented on County roads.

Best Management Practices (BMPs) for routes inside the APE include the following:

- Treat routes with non-toxic dust control agents, if necessary.
- Monitor and treat for weeds, as per BLM's direction (BLM Manual 9015 – 1992).
- Maintain, replace and repair existing culverts at project completion as needed.
- Establish a photo monitoring baseline for all drill sites and existing support routes in the APE prior to the project implementation. Re-photograph all locations upon project completion.

It would take approximately 30 minutes one way (11 miles) per trip from Bridgeport to the Paramount Mine Road. Most project travel would occur in the early morning (before 8 a.m.) and early evening (around 8 p.m.). Field observations in 2008 indicate these roads are traveled by few vehicles at these times (Jack Alexander, personal communication, 2009). Light vehicles for the project include SUVs, pickups, and the crew van. Pickups would typically be 3/4 to 3 ton 4-wheel-drive. The crew van would be a 15-passenger van. The crew van would be returned to town until the following work shift. The service truck and the secondary water supply trucks would be 1.5 to 3-ton trucks with capability to serve as a diesel fuel truck, supply truck, and water truck. The primary water supply truck would have a capacity of up to 3,500 gallons.

### **Weed Control.**

No noxious weeds were found in the area where drilling activities would be conducted or on the designated access routes. Some noxious weeds were found in isolated portions of the PA, away from the drill sites and routes. These are described below. Best management practices (BMPs) have been incorporated into the project design to minimize the risk of introducing noxious and invasive weed seed along Aurora Canyon and Geiger Grade roads and within the cherry-stemmed routes and WSA. The following BMPs would be implemented to reduce the potential for weed introduction:

- No off-road travel of vehicles (i.e. off identified roads or routes).
- Weed survey will be repeated before and after drilling activity.
- All project vehicles will remain on pavement or graded roads when off the project. Vehicles will remain on graded roads or routes that have been surveyed and treated for weeds (if necessary) when on the project.

- All equipment entering the PA must be weed free prior to project initiation. Vehicles will be pressure washed in Bridgeport before coming onto the PA.
- Known *Halogeton glomeratus* sites would require treatment by the project proponent and any additional populations that appear during and post project implementation (2 years) would require treatment as well.
- *Halogeton glomeratus* treated sites would require a two-year monitoring period to ensure eradication.
- If weeds are found along Aurora Canyon road they will be treated in cooperation with the Inyo/Mono County Agricultural Commissioner's office.
- Should weeds increase beyond the 2-5% cover documented in conjunction with the proposed drill site locations, the project proponent would initiate weed treatments. Weed treatments for *Halogeton glomeratus* may involve herbicide application in accordance with the Federal Insecticide, Fungicide, and Rodenticide Act and BLM policy. No herbicide treatments should be required for other identified weeds, but mechanical methods such as flaming, digging, and hoeing would be employed if weeds increase following project implementation. All weed treatment sites would require two years of post-project monitoring and follow-up treatment.

### **Fuel Storage.**

There would be no permanent fuel storage or permanent fuel tank to supply drilling operations at the project site. Diesel fuel would be delivered by truck daily to fill temporary storage tanks at the drill rigs. The fuel transfer location at the drill rigs would have temporary containment such as a high density polyethylene plastic (HDPE) liner with wattles to contain the product in the event of an accidental spill. Temporary fuel tank volumes would range between 150 and 200 gallons. The secondary containment capacity would equal 110% of the fuel tanks.

In the event of an accidental spill, the first response is to immediately stop the spill and conduct a site assessment. After the spill has been stopped and the site assessed, chemical absorbent pads would be used to remove any spilled material/fluids. Any contaminated soils would be removed and disposed of in a registered waste disposal facility.

Spill kits containing absorbent pads, shovels, disinfectant, and personal protection equipment would be available at each drilling operation for immediate use. The spill kits would be located at the drill rigs to control releases, in the event of an accidental spill. A Spill Protection and

Control Plan has been developed for the project and will be available at each rig during operations.

All fuel handling, transportation, transference, use, spill abatement, and control would conform to all federal, state, and local regulations.

### **Drilling Water Supply Plan.**

Core drilling requires water to cool the cutting bit and remove the pulverized rock from the bit's cutting edge. The proponent would purchase water from the Bridgeport Public Utility District (PUD) and transport it for distribution at the Paramount Mine Road and Geiger Grade intersection. An archeological evaluation was conducted at this intersection on June 10, 2009, and no cultural resources were identified.

Water requirements would range between 500 and 4,000 gallons per shift depending on subsurface conditions. Water would be reused during drilling operations, reducing unnecessary consumption. The water used during the drilling program could be lost to the aquifer. This water is potable water. One 3,500 gallon water truck for primary storage would be stationed at the intersection of Geiger Grade and Paramount Mine Road on previously disturbed land to provide drilling fluids via pickup trucks to the drill rigs as needed.

Initial water supply on each drill rig (stored in tanks on the supply truck) would be approximately 1000 gallons with an overflow capacity of 300 gallons in the event of artesian conditions. Water would be hose pumped from the primary water truck into portable tanks stored in the back of the secondary water supply trucks, which would then deliver the water to the rigs. The secondary water truck's portable tanks would have the capacity of 400 gallons to limit the number of trips necessary per day.

### **Core Drill Rigs.**

The truck mounted core drill rigs (Appendix B-1, Photo of Drill Rig) are approximately eight feet wide and fourteen feet long, such as a LF-70 (or equivalent), would be used for core drilling in the APE. The rigs will be equipped with directional lighting of approximately 500 watts. The lighting equipment will have a shade to reduce the area of illumination to just the drilling operations and supply truck. For the project, it is estimated that the core rig would be able to

advance approximately 50 feet during each 12 hour shift. The truck mounted core rig would be set up within existing routes and be assisted by a support truck.

Drill rigs would be maintained by full-time mechanics. There would be a mechanic on duty 24 hours. The mechanic would have available parts and supplies for routine maintenance and foreseeable repairs. The drilling companies expected to work on this project can secure materials and repair support from Reno or Fernley, Nevada. Personnel are available in Reno to deliver parts directly to site. Should a drill rig have catastrophic failure, it would be possible to substitute another machine within five days.

### **Rig Operations.**

Drilling would be conducted 24 hours per day, 7 days a week. This drilling schedule is the most operationally effective and minimizes the duration of exploration activities. Drilling crews typically work three straight weeks with a week of rest; however, rotation of drilling crews would not interrupt the around-the-clock drilling operations.

### **Project Support Vehicles.**

Various project support vehicles would deliver and remove drilling supplies, materials, and personnel to the drilling operations. Vehicles would include, but are not limited to, pick-up trucks, the primary water truck, truck-mounted drilling rigs and support trucks, and the crew van. All vehicles would be appropriately licensed for use on public roads. All vehicle traffic would be restricted to existing routes. Vehicles too large to turn within the eight foot limits of existing routes or previously disturbed areas would be required to back in or out of the WSA on existing routes. Ground personnel would guide drivers to prevent unnecessary vegetation or soils impacts. The proponent prohibits all its employees and contractors from bringing personal vehicles into the PA. Personnel would travel to the project in a transport crew van.

### **Core Drilling Supplies and Servicing Materials.**

Core drilling requires a range of supplies and service materials. Project support vehicles would deliver and remove all materials from the drill sites. All supplies and service material stored at the drill site would be located on the support vehicle. Material re-supply would come from the proponent's facility in Bridgeport. Legally compliant storage containers would be used for each individual material or type of material.

Drilling additives may or may not be needed for the project. Drilling additives serve to increase drilling efficiency. If drilling additives (i.e. polymers) are added to the drilling water, all recovered water that is not recycled would be containerized and removed for off-site disposal in approved sites. Table 2.3 lists the additives that would be used during the drilling program. These compounds are commonly used when drilling groundwater drinking supply wells without causing undue harm to the environment. Appropriate BMPs for handling these substances include using secondary containment when mixing the materials with water and storing the unused product with secondary containment. The Material Safety Data Sheets for all potential drilling additives will be available at each rig during operations.

<b>Table 2.3 - Drilling Additives</b>		
<b>Substance</b>	<b>Quantity per Hole<sup>1</sup></b>	<b>Use</b>
EZ Mud	~30 gallons	Drilling Mud
Portland Cement	~ 3 94 lb bags	Hole Plugging
Quik Grout	~ 1 50 lb bag	Hole Plugging
Soda Ash	~ 4 50 lb bags	Drilling Mud

1) All quantities are estimates based on a 790 ft hole

All project refuse would be disposed of daily consistent with applicable federal, state, and local regulations. No refuse would be disposed onsite. In the event that hazardous or regulated materials such as diesel fuel are spilled, measures would be taken to control the spill and the proper authorities would be notified. A Spill Prevention Control Plan has been developed and is available as an appendix to the previously submitted POO (Appendix A of the POO).

**Drill Cuttings, Core, and Water Handling.**

Drill cuttings, core, and water would be recovered from the drill hole during drilling. Core is collected separately from the water and cuttings. Core would be boxed and removed from the drill site for later logging, mineral and assay analyses.

Water and cuttings would be separated by gravity in a portable sump located on the support truck. After separating the drilling cuttings from the recyclable drilling fluid, all drill cuttings would be containerized, removed by truck and disposed of off-site at an authorized landfill location in either Mono or Inyo Counties or in the state of Nevada. Clean, cuttings-free water may be used to suppress dust generated during drilling travel along existing routes.

Each drill hole would be constructed using a plastic sleeve with a threaded top that can be plugged immediately if artesian conditions are encountered during drilling. A 20 foot section of casing would be installed at the top of the hole and would have a valve assembly screwed to the casing. This assembly includes an opening at the top into which the drill rods would be placed. To the side is another, smaller valve that would connect to a hose where drilling fluids flow from the drill hole to holding tanks. The fluids would then re-circulate back into the hole from the tanks with no discharge to the environment. If ground water is generated from the hole, this water would be directed to the holding tanks to augment the drilling fluids, thus reducing or eliminating the necessity for adding additional water. In the event that multiple aquifers are encountered, the lower aquifer will be sealed using cement grout or bentonite as defined by California water well standards (Department of Water Resources, 1981).

If ground water flow exceeds the management capacity of the holding tanks, the drill rods would be pulled from the hole, the top of the valve capped, and the side valve closed to prevent further discharge. The water would then be confined in the aquifer. If the artesian conditions cannot be controlled, the hole would be plugged according to California regulations and abandoned.

### **Drilling Season.**

The drilling season would begin as soon as possible after July 15th and continue until the proposed drilling program is completed. Although approximately 45 days of drilling are anticipated (anticipated end date August 30th), adverse drilling conditions and severe weather could extend the drilling period. Should the project duration be extended due to unforeseen conditions, drilling could continue into late October or November depending on weather conditions. No drilling would occur prior to July 1<sup>st</sup> or after November 15<sup>th</sup> as required by the Bishop RMP (BLM 1993) for seasonal protection of sage grouse nesting and winter habitat.

### **Staff Numbers.**

One project coordinator would be on-site throughout the drilling program. The project coordinator would ensure all aspects of the project run smoothly and all contractors communicate effectively. The project coordinator is also responsible for the scheduling of drilling crews and equipment deliveries so that ongoing drilling is not interrupted.

Standard core drill rig crews consist of a drill operator and two helpers. The helpers' duties vary; they typically remove and store the core, mix drilling fluids in the portable tanks at the drill sites, coordinate water delivery and reuse of drilling solution, assist with drilling operations, containerize the drilling waste, and conduct maintenance as necessary.

A geologist would be stationed at each drill site throughout the drilling activities. The duties of the geologist normally include watching the drill rig, logging each hole according to the geologic features encountered, determining the maximum depth of each hole, and advising the drill operator as needed.

There would also be drivers for the crew van, the service vehicle, and the secondary water supply trucks.

Depending on the shift, between 9 and 12 people would be working on-site at any given time. Neither employee pets nor firearms would be allowed in the PA.

#### **Project Staff Housing.**

Project staff would be housed in hotels/motels in Bridgeport or other surrounding communities. There are 6 hotels/motels with a total capacity of approximately 120 rooms in Bridgeport. A survey of the existing accommodations indicates that there should always be vacancies during the summer season. As such no additional housing needs are evaluated in the project description. No housing would be provided in the PA.

#### **Project Staff and Personnel Transportation and Access.**

All staff and visitors would arrive at the PA via Bridgeport. Staff and visitors would travel within the PA either on foot or in project vehicles, which would travel on existing routes only. A regularly scheduled van would transport the drill crew from each shift to and from Bridgeport to minimize impacts to roads. One round trip between Bridgeport and the site would occur at shift changes.

#### **Communication.**

Communications at the PA and to Bridgeport would use dedicated project radios. A central communication center would be established at the proponent's office in Bridgeport. From the central communications center, radio to telephone linkage would be possible. In addition, the

radio system would be set up to allow direct communication with local law enforcement and the BLM for emergency use.

### **Description of Drilling Sequence to Reduce Recreational Conflicts.**

Drilling operations would be scheduled to minimize, to the extent practicable, disruption of area use by other users. Drilling schedules and locations would be communicated to the BLM, local agencies, and recreational user groups, as well as informational notices posted along access routes, to provide as much notice and information to other users of the area as possible.

### **Fire Protection Plan.**

Fires would be prevented to the extent possible on or adjacent to the PA as defined in this project description. In the unlikely event of a fire, the contractor would notify the Sierra Front Dispatch Center, Minden and the Owens Valley Interagency Dispatch Center (OVICC) (phone numbers: 775-883-5995 and 760-873-2488, respectively) of fire location and actions taken.

The contractor would ensure that prevention and suppression actions are in accordance with best management practices including the following measures:

- All internal combustion power equipment used by the contractor on the project would be equipped with an approved spark arrester that complies with all state and federal fire requirements.
- All spark arresters would be in satisfactory working condition.
- The proponent would conform to any fire restriction orders the BLM may enact based on potential wildland fire conditions.

All vehicles including the drilling rigs, the primary water supply truck, and pickup trucks would have fire suppression tools with at least one (1) size "O" shovel (38½-inch handle minimum) or larger and one (1) 5 BC or larger rated fire extinguisher. In addition, water for suppression will be available on site at all times on the support water trucks. The contractor would contact the BLM to determine fire restriction levels prior to moving onsite and during the period of operation. No smoking would be allowed by any of proponent's employees or contractors.

## **Public Safety.**

The proponent would coordinate with the Mono County Sheriff's Department and California Department of Public Safety throughout the planning and implementation of the exploration plan. BMPs for road issues include:

- Develop and enforce speed limits on county roads and within the PA.
- Improve signage for county roads to notify public of increased exploration traffic.
- Schedule shift changes for times with lower expected recreation traffic.
- Maintain good road conditions for safety.
- Car pool to reduce number of vehicle trips.
- Improve sight lines in low visibility areas, where practical.

## **ALTERNATIVE 2 – TRUCK-MOUNTED CORE DRILLING 12 HOUR OPERATIONS ON EXISTING ROUTES.**

Alternative 2 is also based on drilling a total of 11 exploration drill holes using a standard core drilling technique as identified above; however, drilling activities would be conducted in 12 hour shifts and only during daylight hours. The 11 core holes would be drilled along existing open access routes. All coring activities would be mobilized, supported, and supplied with vehicle traffic (drill truck and pick-up trucks) along existing routes. All related activities regarding the drilling program would be the same as Alternative 1; however road usage of Aurora Canyon Road, Geiger Grade and the Paramount Mine Road would be reduced on a daily basis. Core drilling for this alternative would require 2 coring rigs operating on 12 hour shifts for approximately 110 days. The 110 day estimate assumes that there would be active drilling for 10 hours per day. The other two hours would be spent setting up and breaking down the holes as the drill rods would need to be inserted and removed every day. Under this alternative, the proponent would at a minimum, more than double the occupancy time within the PA. Implementation of this alternative may not return adequate data within one year due to weather constraints, requiring an extension of the program into the following year. Water usage for Alternative 2 would be at least a 50% increase (750 to 6,000 gallons per day) as compared to Alternative 1. The primary water supply truck would still be temporarily stationed at the intersection of Geiger Grade and Paramount Mine Road.

Each drill site would require a 1 person security presence during hours of non-operation. A travel trailer would be located at each active drill site (Figure 1.2). The trailer would be occupied during non-operational hours and used as an office during inclement weather.

### **ALTERNATIVE 3 – No Action**

Under the No Action Alternative, BLM would not approve the proposed exploration program. This alternative would not authorize the plan of operations to conduct minerals exploration in the WSA. Implementation of this alternative would potentially violate FLPMA's intent to allow surface minerals uses to continue in WSAs in the same manner and degree as when FLPMA was passed in 1976. Thus, selecting the No Action Alternative in the absence of an impact analysis would arbitrarily deny the proponent's legal right to explore resources associated with its mining claims. The No Action alternative is the only alternative that is not required to meet the project purpose and need; it is required by NEPA to serve as a baseline for comparison of the impacts of the action alternatives.

### **ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED ANALYSIS**

Two alternatives were considered but eliminated from detailed analysis. They are described below.

The first alternative was the original POO submitted by the proponent, also previously known as the Proposed Action. During the EA scoping process, the Proposed Action was reduced in magnitude and scope from its original submission, and renamed Alternative 1 for analysis.

The original proposal requested that BLM authorize drilling 31 core holes in the Paramount Mine area. Coring under this plan would include a combination of truck-mounted drilling along existing routes and helicopter supported drilling at locations within the PA on cross country sites where vehicle access routes do not exist.

Helicopters would be used to transport platforms, drilling equipment, etc. to nineteen sites located at cross-country locations. These sites totaling 20 drill holes would be drilled from the transported platforms. Eight drill sites (11 drill holes) would be along existing routes and drilled with a truck supported coring rig. Three separate active drilling sites would operate 24-hours per day using two shifts. The drilling period would be from approximately mid-July until completion in October or November depending on snowfall. Staging areas for support operations would occur on private land nearby.

It was determined that at this preliminary exploration stage, the helicopter based program may not provide sufficient additional information to justify the high cost of aerial operations. Limiting the proposal solely to truck coring operations would yield adequate results to determine whether future exploration should continue and expand to other locations. Therefore the original proposal has been modified to suspend helicopter use and associated drilling operations on the 19 helicopter based drilling sites and to retain only the eight truck drilling site operations along existing routes. As a result, no staging would be required on private land for the modified alternative. This modified proposal is titled as Alternative 1 in this document (see Chapter 2, Alternative 1 - Truck-mounted Core Drilling 24 hour Operations on Existing Routes).

The second alternative considered but eliminated from further analysis was terminating the helicopter based operations component described above and accessing the original helicopter based drilling platform sites by vehicle. Under this alternative, transferring the helicopter based operations to vehicle based routes would require ground access be developed to facilitate drilling equipment passage. Route development would include construction and/or cross country vehicle use to the 19 drill sites. The remaining 8 drill sites would be accessed by truck coring drill rigs along existing routes as identified above. No private land would be used for staging. Approximately, 1.7 acres (assuming 8 foot wide road cut) would be disturbed as newly created access under this alternative.

This second alternative was eliminated because the proponent has expressed their desire to keep project impacts to very low levels and non-perceptible to the greatest extent possible. Route construction and cross-country vehicle use to the drill sites would conflict with their environmental protection objectives. Although historic use of the area under the “same manner and degree” qualifies the proponent to construct or conduct cross-country vehicle use corridors, they have discarded this option at this time.

#### **REASONABLE FORESEEABLE DEVELOPMENT SCENARIO.**

The current proposal is for exploration and further resource development is highly speculative at best and further analysis of potential future development is not warranted at this time. Activities associated with mineral exploration, development and reclamation in the Bishop Field Office area vary with the commodities sought, geomorphic and topographic character of the operation area, and the statutory authority allowing the activity. Exploration activity in the

Bishop Field Office area has generally been associated with drilling and access to the drilling site. In some cases, excavation and trenching operations have occurred, as well as small pits for metallurgical and mechanical feasibility tests.

Within the Bodie Hills, mining was prevalent in the mid-1800's until the latter part of the 20th century. Most notably, Bodie State Historic Park was designated as a National Landmark to preserve the history of mining in the area. Some historic activity also occurred at Aurora Mining Camp in Nevada and to a limited extent, at the Paramount Mine in the PA.

As a general rule, exploration activity does not often advance to a full scale mine development. A study conducted by the United States Forest Service (USFS, 1983) identified a probability of 1 out of every 6,000 "prospects" developing into a mine. About 0.01% of exploration drilling programs lead to mine plans and production. Most companies focus their efforts in areas of past production where companies use new technologies to extract ore from existing sites.

If assay results from the core drilling indicate favorable mineralization under the proposed exploration, then further exploration drilling phases would potentially occur in this part of the WSA through the next several years. Industry markets and the economy could increase or reduce exploration interest. Any future exploration within the WSA cannot exceed manner and degree of the uses occurring in 1976. Future proposals will be individually assessed to determine appropriate and required levels of analysis based the probability and likelihood of long term impacts.

In conclusion, the present uncertainty of the area's mineralization precludes any analyses of a future mining development scenario in this environmental review. If exploration identifies favorable results, then an environmental review of any subsequently proposed exploration operations would be conducted with full public involvement.

## CHAPTER 3: ENVIRONMENTAL ANALYSIS

### INTRODUCTION.

The following impact assessment was developed to identify potential direct and indirect effects resulting from implementation of the three alternatives discussed in Chapter 2. Impacts have been analyzed for the access roads along Aurora Canyon Road (8 miles) and Geiger Grade (2 miles), which are county roads, the cherry-stem (1.13 miles) and a small section of BLM (0.17 miles) and private land (0.5 miles) road outside the WSA, and along the routes inside the WSA (1.24 miles).

### A. AIR QUALITY.

#### 1. Affected Environment.

Air quality in the northern Bodie Hills is generally very good with current minor, occasional, short term impacts from exhaust and dust from vehicles driving on dirt roads. The PA is located in an area which is under the jurisdiction of the Great Basin Unified Air Pollution Control District (GBUAPCD) and is not within any federal non-attainment/maintenance area.

#### 2. Environmental Consequences.

##### a. Impacts of Alternative 1.

Air quality impacts would result from short-term pollution emissions associated with drill rigs, vehicle travel along roads and vehicle exhaust. Support vehicles emit various precursor emissions for ozone. Fugitive road dust from vehicle travel would be controlled with water and/or non-toxic dust suppressants. An air quality model for the project was prepared (McVehil-Monnett Associates, Inc. 2009). Due to the short duration of the proposed project and design conditions to reduce emissions, air quality impacts are expected, from the model's results, to be negligible (McVehil-Monnett 2009). This analysis is included as Appendix C.

##### b. Impacts of Alternative 2.

Fugitive dust emissions would occur due to vehicle traffic, drill rigs and vehicle exhaust. The air quality emissions would be approximately 50% less per day than the proposed action but would extend over a period of time at least twice as long. The 12 hour drilling Alternative would not measurably change total impacts to air quality as compared to Alternative 1.

### **c. No Action Alternative.**

There would be no impacts to air quality resulting from the No Action Alternative.

## **B. AREA OF CRITICAL ENVIRONMENTAL CONCERN (ACEC).**

No Areas of Critical Environmental Concern (ACECs) are in or adjacent to the Paramount Mine area. The closest ACEC to the PA is the Bodie Bowl ACEC located approximately 5 miles to the southeast via Geiger Grade Road. The Bodie Bowl ACEC Management Plan (1995) provides management direction for this area. The proposed access route and drilling activities are sufficiently distant from the Bodie Bowl ACEC that no impacts are anticipated under any of the alternatives. State Route 270 and the Cottonwood Canyon Roads are the primary public roads used to access the ACEC. Geiger Grade Road is the least used access road to the ACEC. The alternatives are compatible with the ACEC direction.

## **C. CULTURAL RESOURCES.**

### **1. Affected Environment.**

General information on the PA's history is provided in the "Cultural Resource Overview of the BLM Coleville, Bodie, Benton and Owens Valley Planning Units, California" (Busby et al. 1980) and other cultural resource studies (Halford 1998). In addition, Cougar Gold contracted to complete a Class III Cultural Resource inventory of approximately 700 acres in and surrounding the PA (ASM Affiliates, Inc. 2007). The report and its findings were permitted, reviewed, and accepted by BLM. A cultural resource evaluation was also conducted at the intersection of Paramount Mine Road and Geiger Grade by the BLM in the area where the primary water truck would be temporarily stationed. No cultural resources were found in this area.

The cultural resource study consisted of a literature and records search review followed by a Class III intensive pedestrian survey. Fieldwork was conducted August 21-25, 2007. As a result, 22 newly discovered archaeological sites were recorded within the study area. One previously recorded archaeological site, the Paramount Mine, was resurveyed and evaluated for eligibility to the National Register of Historic Places (NRHP). Four additional previously recorded sites were also documented and re-examined within the PA, and one additional site was documented and recorded outside of the proposed exploration activity area. In sum, 27 archaeological sites were identified within the survey area, including 10 historic sites and 17 prehistoric sites.

After the original proposal was modified to Alternative 1, 18 sites fell outside the project's (APE) (see Figure 1.2). The proposed drilling would avoid all cultural resources.

Nine sites are located within the project's APE and are listed in Table 3.1. Eligibility determinations have been rendered for these sites and four sites have been determined ineligible for listing on the NRHP. These sites include MNO-4021 (Paramount Mine), MNO-4022 (historic refuse deposit), MNO-4379 (prospect and well) and MNO-4383 (prospect).

Five sites within the project's APE, all prehistoric sites, have been determined eligible or potentially eligible for listing on the NRHP. These sites include MNO-3249, MNO-4369, MNO-4371, MNO-4375 and MNO-4386.

**Table 3.1 - Archaeological Resources on Site and NRHP Recommendations.**

Site No.	Owner	Site Type	Area (sq. m)	Integrity*	Subsurface Potential	NRHP Eligibility Recommendations
MNO-3249	BLM	Quarry and lithic scatter	8584	M	M	Potentially eligible
MNO-4021	BLM	Paramount Mine (mercury)	114974	L	L	Ineligible
MNO-4022	BLM	Refuse Deposit	301	L	L	Ineligible
MNO-4369	Private	Temporary camp/seasonal habitation	14291	L-M	M-H	Eligible
MNO-4371	BLM	Lithic scatter	1490	M	M	Potentially eligible
MNO-4375	Private	Temporary camp	4047	M	L-M	Potentially eligible
MNO-4379	BLM	Prospect mine and well	1817	M	L	Ineligible
MNO-4383	BLM	Prospect mine	5389	M	L	Ineligible
MNO-4386	BLM	Lithic scatter	1047	L-M	L	Potentially eligible

\*Integrity: Subsurface potential: L = Low, M = Moderate, H = High

## 2. Environmental Consequences.

### a. Impacts of Alternative 1.

No drilling activity would occur within the eligible or potentially eligible sites; however, the existing routes pass through or are on the edge of these sites. Of the five sites potentially affected, the route passes through the center of one site, MNO-4369; the remainder the route is located on the fringe (edge) of the sites. Travel through the sites would be limited to existing

routes. The routes do not affect features or artifacts within the sites that contribute to their eligibility and would not affect the constituents of the sites that make them eligible or potentially eligible for listing on the NRHP, therefore, a no adverse effect determination can be rendered for these sites pursuant to 36 CFR 800.5(3)(b). However, at all of the sites, monitoring would be conducted to ensure road surface degradation does not affect any subsurface deposits that may contribute to the sites eligibility. Road degradation such as rutting, etc. could impact subsurface artifacts on the routes.

**b. Impacts of Alternative 2.**

The impacts of Alternative 2 would be the same as those for Alternative 1.

**c. No Action Alternative.**

The No Action Alternative would not result in impacts to cultural resources.

**D. ENVIRONMENTAL JUSTICE.**

**1. Affected Environment.**

There are no low-income or minority populations living in the Bodie Hills or the PA. Of 11 Native American communities within the Bishop Field Office area, there are three who reside in relatively close proximity to the PA, the *Utu Utu Gwaitu* (Benton Paiute), Bridgeport Indian Colony and Mono Lake Paiute Community. Members of these communities do some hunting and subsistence collecting of materials such as pinyon nuts, basket weaving materials, medicinal plants, etc. from public lands within the Bodie Hills. Some members work in nearby local communities or are employed on their respective reservations.

**2. Environmental Consequences.**

**a. Impacts of Alternative 1.**

The proposed action would result in creating a few temporary jobs for the local population. There would not be disproportionate impacts, either positive or negative, to any low income minority.

**b. Impacts of Alternative 2.**

Impacts resulting from this alternative would be the same as under Alternative 1.

### **c. No Action Alternative.**

There would be no impacts resulting from the No Action Alternative.

### **E. ESSENTIAL FISH HABITAT.**

Alternative 1, Alternative 2 and the No Action alternative would have no effect on essential fish habitat because there are no anadromous fish species or designated essential fish habitats in the Paramount Mine area, the Bodie WSA, or the surrounding vicinity.

### **F. FARMLANDS, PRIME OR UNIQUE.**

Alternative 1, Alternative 2 and the No Action Alternative would have no effect on farmlands, prime or unique, because none are present in the Paramount Mine area in the Bodie WSA.

### **G. FLOOD PLAINS.**

Alternative 1, Alternative 2 and the No Action Alternative would have no effect on flood plains because none are present in the Paramount Mine area in the Bodie WSA.

### **H. GLOBAL CLIMATE CHANGE.**

#### **1. Affected Environment.**

United States Department of Interior, Order Number 3226, signed January 19, 2001, Evaluating Climate Change Impacts in Management Planning, is an order to ensure climate change impacts are taken into account in connection with planning and decision making. Climate change refers to any significant change in measures of climate (e.g. temperature or precipitation) lasting for an extended period of time (decades or longer). Climate change may result from: natural processes, such as changes in the sun's intensity; natural processes within the climate system (e.g. changes in ocean circulation); human activities that change the atmosphere's composition (e.g. burning fossil fuels) and the land surface (e.g. urbanization) (IPCC 2007). The Earth's climate is changing.

“There is broad scientific consensus that humans are changing the chemical composition of our atmosphere” (Jones & Stokes, August 2007). Changes in the atmosphere have likely influenced temperature, precipitation, storms, and sea level (IPCC, 2007). Rising greenhouse gas (GHG) levels are likely contributing to global climate change. Throughout the past century, humans

have contributed to the amount of GHGs in the atmosphere by burning fossil fuels such as natural gas, oil and gasoline to power our cars, utilities and appliances. The added gases, primarily carbon dioxide (<http://www.epa.gov/climatechange/emissions/co2.html>) and methane (<http://www.epa.gov/methane/sources.html>), are enhancing the natural greenhouse effect, and likely contributing to an increase in global average temperature and related climate changes (USEPA 2009). However, challenges exist to determine what fractions of climate change are due to natural variability versus human action since natural contributions of GHG occur (USEPA #430-R-08-005, 2008). In the eastern Sierra region of California, climate change may result in warmer, drier conditions, and potentially more extreme weather events. An air quality model was developed with two test applications to identify greenhouse gas emissions from the project.

## **2. Environmental Consequences.**

Potential impacts to air quality due to climate change are likely to be varied. For example, if global climate change results in a warmer and drier climate, increased particulate matter impacts could occur due to increased windblown dust from drier and less stable soils. Cool season plant species' spatial ranges are predicted to move north and to higher elevations, and extinction of endemic threatened/endangered plants may be accelerated. Due to loss of habitat, or due to competition from other species whose ranges may shift northward, the population of some animal species may be reduced. Less snow at lower elevations would be likely to impact the timing and quantity of snowmelt, which, in turn, could impact aquatic species.

The proposed action and alternatives may involve some future contribution of GHGs, these contributions would not have a noticeable or measurable effect, independently or cumulatively, on a phenomenon occurring at the global scale believed to be due to more than a century of human activities. Results of the model conducted for the project predicted that all regulated GHGs are well below California Air Quality Standards (Table 3.2), and that impacts from GHGs are considered negligible.

**Table 3.2 - Comparison of Predicted Model Impacts from Paramount to California and National Ambient Air Quality Standards (McVehil Monnett, 2009).**

Pollutant	Averaging Period	Modeled Highest First-High Concentration ( $\mu\text{g}/\text{m}^3$ )	CAAQS <sup>1</sup> ( $\mu\text{g}/\text{m}^3$ )	Highest Second-High Modeled Concentration Or maximum Annual ( $\mu\text{g}/\text{m}^3$ )	NAAQS <sup>2</sup> ( $\mu\text{g}/\text{m}^3$ )
PM <sub>10</sub>	24-Hour	25.2	50	22.8	150
	Annual	0.7	20	0.7	NA
CO	1-Hour	23.6	23,000	22.2	40,000
	8-Hour	10.6	10,000	6.2	10,000
NO <sub>2</sub> <sup>3</sup>	1-Hour	297.5	339	NA	NA
	Annual	0.4	57	0.4	100
SO <sub>2</sub>	1-Hour	29.2	665	NA	NA
	3-Hour	16.0	NA	14.0	1300
	24-Hour	4.9	105	2.9	365
	Annual	0.1	NA	0.1	80

1. California Ambient Air Quality Standards (CAAQS) values are not to be exceeded during the year.
2. National Ambient Air Quality Standards (NAAQS) values are not to be exceeded more than once per year for short-term periods, and are not to be exceeded for annual averaging periods.
3. Ozone limiting methods applied.

The assessment of GHG emissions and climate change remains in its formative phase. The lack of scientific tools designed to predict climate change on regional or local scales limits the ability to quantify potential future impacts of climate change on resources within the Bishop Field Office. However, it is assumed that due to the short duration of the project, there would be no impacts associated with global climate change as a result of implementation of either Alternative 1 or 2. There would also be no impacts resulting from the No Action Alternative.

## **I. INVASIVE, NON-NATIVE SPECIES.**

### **1. Affected Environment.**

Field surveys were conducted to document noxious weed occurrences as part of the Threatened, Endangered, Sensitive and Species of Concern (TESC) Study conducted for the Project between June and July 2008 (Appendix D).

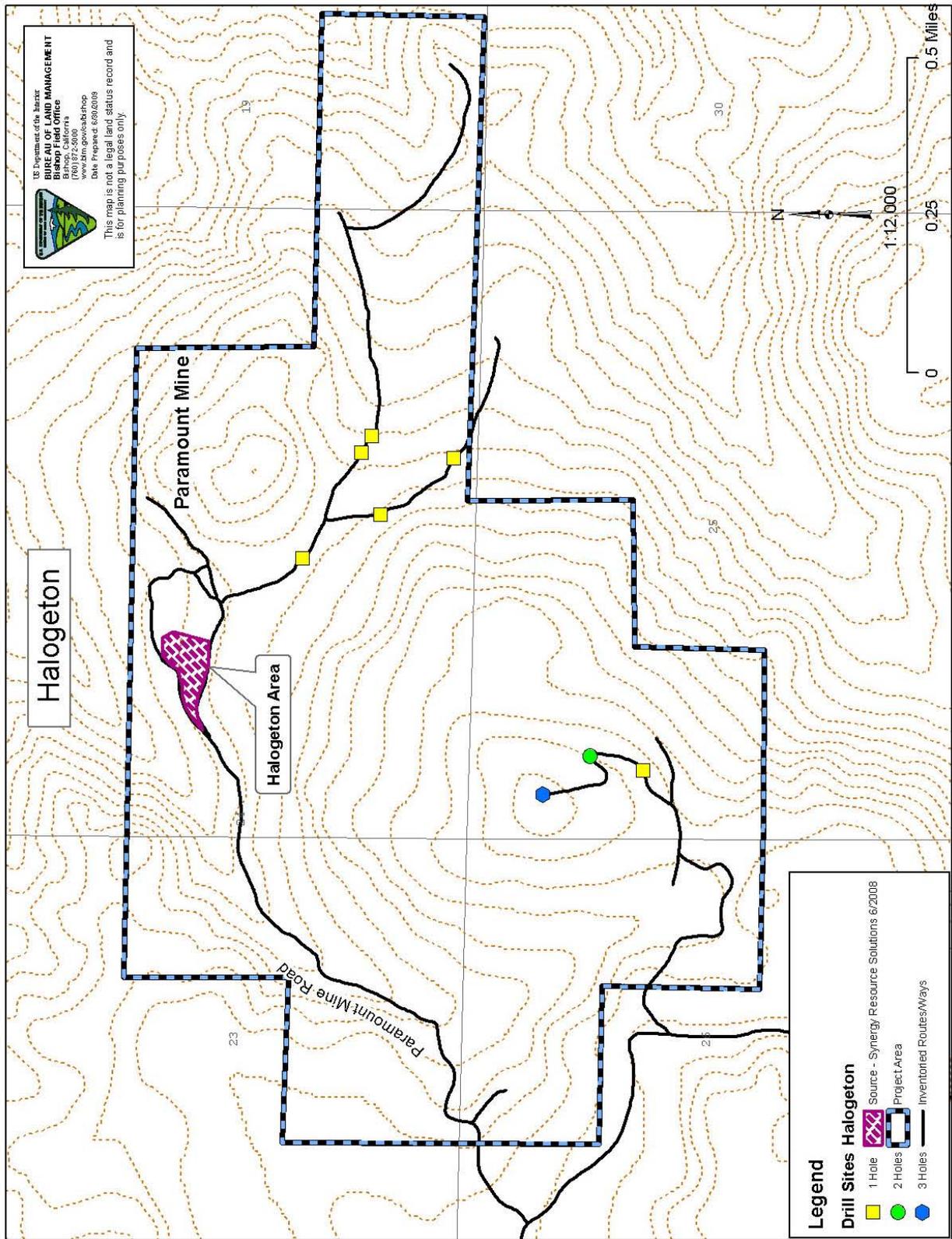
No noxious weeds were observed during the field surveys conducted in the areas at or surrounding the proposed drill hole locations. Very few weed species were encountered within the PA in general. Weed cover was less than 2% at all transects. Species found were sparsely scattered throughout the PA, typically in roadbeds and in other disturbed areas. Weeds were very sparse or absent in the area around proposed drill sites.

Weedy, non-native plant species noted in the PA were identified as cheatgrass (*Bromus tectorum*), knotweed (*Polygonum arenastrum*), common dandelion (*Taraxacum officinale*) and lamb quarters (*Chenopodium album*). The other early successional species included tansy mustard (*Descurainia pinnata*), spiny skeleton weed (*Stephanomeria spinosa*), and poverty weed (*Iva axillaris*).

Due to limited occurrence, no basal cover measurements were made for any weed species on any vegetation transects. During the field investigation, only three weed occurrences were found for 2 species, *Lygodesmia spinosa* (spiny skeletonweed) and *Polygonum arenastrum* (knotweed). Both species were found in less than 2% of cover at all three transects.

*Halogeton glomeratus* (halogeton), a California A-listed noxious weed, was also identified in a small area away from the proposed drill sites near the top of Paramount Mine Road (Figure 3.1). Fewer than 100 plants were observed scattered in small bunches. No dense bunches were observed. Halogeton was not found in any of the proposed drill sites.

Figure 3.1 - Halogeton Location Identified during the 2008 Vegetation Survey.



## **2. Environmental Consequences.**

### **a. Impacts of Alternative 1.**

Noxious weeds could potentially increase via spread of seeds due to increased vehicular traffic, especially on bladed roads along Aurora Canyon Road and Geiger Grade. There also exists the possibility to spread noxious weeds along the routes within the cherry-stem and the WSA (approximately 2.67 miles of routes). The spread of noxious weeds would be limited by the implementation of the BMPs described in Chapter 2, Weed Control.

### **b. Impacts of Alternative 2.**

The impacts associated with implementation of Alternative 2 would be the same as Alternative 1.

### **c. No Action Alternative.**

There would be no impacts associated with implementation of the No Action Alternative.

## **J. LIVESTOCK MANAGEMENT.**

### **1. Affected Environment.**

The entire PA is located within the bounds of the Bodie Mountain allotment. The Bodie Mountain allotment is located within the Bodie Hills Management Area as defined in the Bishop RMP (1993). The eastern boundary of the allotment is the California/Nevada state line. The allotment extends south to border the BLM Mono Sand Flat allotment, includes Bodie Mountain peak in the west, and abuts the Toiyabe National Forest on the north. The allotment is comprised of approximately 55,000 acres of public and private land.

There is one permittee for the Bodie Mountain allotment. The allotment is used in conjunction with the permittee's unfenced and intermingled private land. Livestock grazing is permitted from June 1<sup>st</sup> to October 15<sup>th</sup>.

## **2. Environmental Consequences.**

### **a. Impacts of Alternative 1.**

Alternative 1 may create some short-term impacts to the livestock permittee when livestock are on the Bodie Mountain allotment. Livestock may avoid the PA altogether or leave the area surrounding a drill rig during the active drilling period. Livestock utilization in the PA may be less due to disturbance and would therefore disperse to other areas of the allotment. No lasting impact is expected because livestock may return to the PA if they become accustomed to the disturbance or once the disturbance has ended. Furthermore, no impacts are expected to livestock performance due to the small PA acreage compared to the entire allotment acreage.

### **b. Impacts of Alternative 2.**

Impacts to livestock management for the 12 hour per day drilling program would be similar to Alternative 1.

### **c. No Action Alternative.**

There would be impacts to livestock management resulting from the No Action alternative.

## **K. NATIVE AMERICAN CULTURAL VALUES.**

### **1. Affected Environment.**

There are 11 Native American communities who reside in or in close proximity to the eastern Sierra region administered by the Bishop Field Office. None of these communities are living in the Bodie WSA. There are no treaty rights (hunting, fishing, etc.) associated with any of the communities or within the Bodie WSA.

Some members of these communities hunt and some do subsistence collecting of materials from public lands such as basket weaving materials, medicinal plants, etc. However, this is general use and there are no specific "traditional use areas" identified at this time by any of the Tribes on the PA.

The Tribes were consulted, via certified mail, during the NOPA and IMP notifications and pursuant to the American Indian Religious Freedom Act of 1978, Executive Order 13007 (1996),

and under Section 101(d)(6) of the National Historic Preservation Act of 1966 (as amended). The BLM solicited opinions or concerns related to the proposed undertaking and whether the Tribes have any cultural or religious concerns or know of any traditional cultural properties or sacred sites within the PA. None of the Tribes responded to the letter. Follow-up phone calls were made and the following responses were documented for Tribes that commented:

- Bridgeport Indian Colony: Visited PA and have no cultural or religious concerns or other issues with the proposed project.
- Benton Paiute Reservation: No concerns, but advised us to be sure to contact the Tribes whose “territory” the PA is in (i.e. the Bridgeport Tribe and Mono Lake Indian Community).
- Big Pine Band of the Owens Valley: Did not comment on the NOPA/IMP, but will provide any comments or concerns during comment period for the EA.
- No other Tribes commented.

Some general concerns associated with Native American Cultural Values identified by the Tribes during this and other consultations are:

- They have general concerns that archaeological evaluations should be conducted and no impacts to cultural sites should occur.

## **2. Environmental Consequences.**

### **a. Impacts of Alternative 1.**

As the impacts to cultural resources would be avoided as part of the project design, there would be no impacts to Native American Cultural Values resulting from the implementation of Alternative 1 (see Chapter 3, Section C).

### **b. Impacts of Alternative 2.**

Impacts to Native American Cultural Values associated with implementation of Alternative 2 would be the same as those for Alternative 1.

**c. No Action Alternative.**

There would be no impacts to Native American Cultural Values associated with the No Action Alternative.

**L. RECREATION.**

**1. Affected Environment.**

A variety of recreation activities take place in the Paramount Mine area and surrounding Bodie WSA including motorized touring, motorcycle riding, horseback riding, hiking, hunting, birding, rock hounding and dispersed camping. Access consists of approximately 18-20 miles of primitive 4 wheel drive and other motorized vehicle routes and trails throughout the area. Access is limited and recreational activities take place over a very large geographic area, with no developed recreational facilities except for the Bodie State Historic Park which lies in the center of the Bodie Bowl ACEC, 5 miles to the southeast, well outside of the PA. The lack of development in the area currently sustains recreation at low levels of use.

**2. Environmental Consequences.**

**a. Impacts of Alternative 1.**

Impacts resulting from Alternative 1 implementation include temporary access loss for some recreational activities in the PA during the proposed 45 day drilling period. These may include loss of public vehicle access on the WSA routes for up to several days during the active drilling. The impact to recreational hunting could coincide with the sage-grouse and mule deer hunting season (the second weekend in September and September 19 through October 12, respectively) if the drilling program is extended beyond the expected 45 day period (assuming a start date of August 15). The impacts to recreation are temporary, the main effects being periods of restricted access and noise from drilling rigs which may influence the public to recreate elsewhere. Impacts would not last beyond the project's duration.

**b. Impacts of Alternative 2.**

Impacts resulting from implementation of Alternative 2 would be similar to those as Alternative 1, but for a longer duration, as this alternative would extend the drilling period at least an additional 65 days.

### **c. No Action Alternative.**

The No Action Alternative would not result in any impacts to recreational activities.

## **M. SOCIAL AND ECONOMIC VALUES.**

### **1. Affected Environment.**

Mono County's land area is 3,030 square miles; at least 94% is publicly owned, managed mainly by the U.S. Forest Service and the BLM. The Los Angeles Department of Water and Power also owns large parcels of land in the county's southern end. Mono County is sparsely settled, and over half of its residents live in Mammoth Lakes, the county's only incorporated community. The remainder live in scattered small communities and rural areas. In 2000, 55.7% of residents lived in urban areas and 51.9% of the housing units were vacant except for seasonal, recreational, or occasional use. In 2004, of California's 58 counties, Mono County's population ranked 55th at 12,687. By 2008 the population had increased to 13,759 and is projected to increase to over 16,000 by 2020.

In 2009, the county's employment rate was up by 3.3% from January 2008, with a lower average unemployment rate (7.9%) than California as a whole (11.5%). In 2000, 69% of families had 2 or more workers. According to the U.S. Census Bureau, median household income was \$44,992 in 2000 and \$54,174 in 2007.

Mining of lead, silver and gold played a very prominent role in Mono County's early history, especially in the late 1880s. In 2009, the State of California Division of Mines and Geology report lists six active aggregate mine sites in Mono County producing cinders, kaolinite, pumice, and general aggregates. In 2005, 42.5% of Mono County's employment was in leisure and hospitality, 21% government, 17% in a variety of other services (professional, educational, health, etc.), 10.7% transportation, trade and utilities, 8.5% goods producing, and 0.4% agriculture.

### **2. Environmental Consequences.**

#### **a. Impacts of Alternative 1.**

The exploration drilling project would benefit the Mono County economy, primarily in Bridgeport, from monies spent for lodging, meals and other services necessary for the drilling crews working in the PA. The drilling crew would consist of approximately 15 employees

occupying hotels for approximately 45 days. Cougar Gold would hire approximately 10 people from the local community for temporary work. Implementation of Alternative 1 would have a short term positive impact on the local community of Bridgeport by infusing dollars into the local economy.

**b. Impacts of Alternative 2.**

The exploration drilling project would benefit the Mono County economy, primarily in Bridgeport, from monies spent for lodging, meals and other services necessary for the drilling crews working in the PA. Similar to Alternative 1, the drilling crew would consist of 15 employees occupying hotels but the stay would be extended to approximately 110 days. Cougar Gold would hire approximately 6 people from the local community for temporary work. Implementation of Alternative 2 would have a longer short term positive impact on the local community of Bridgeport.

**c. No Action Alternative.**

The No Action Alternative would maintain the present socioeconomic conditions described in Affected Environment above.

**N. SOILS.**

**1. Affected Environment.**

The PA is located in the NRCS (National Resource Conservation Service) Survey Area CA686, Coleville-Bridgeport Area (parts of Alpine and Mono Counties, CA), where NRCS recently completed an Order 3 Soil Inventory (Ed Blake, USDA-NCRS, draft report, 2009).

There are two major soil units in the PA:

- 1) 4070 – Marmolith-Vetash-Ashflat Association
- 2) 3010 – Lastsummer-Hardshoulder-Domehill Association

Unit 4070 comprises approximately 84% of the PA. This soil occurs at elevations between 8,200 and 9,040 ft. on slopes between 4 to 30%. The soils are located on the foot-slopes and back-slopes of mountain slopes and are derived from volcanic parent materials. The soil profile is characterized by gravelly to very gravelly ashy sandy loam to loamy sands with some higher fine

components within the soil profile. Deeper in the soil profile, clay lenses occur. Soil permeability is very slow to moderate and soils have a medium to high runoff coefficient.

Unit 3010 comprises approximately 12% of the PA and is similar to Unit 4070 but occurs at elevations between 8,420 and 10,200 ft. on slopes between 4 to 30%. The soil profile is gravelly to gravelly ashy sandy loam to loamy sands with some higher fines. Soil permeability and runoff coefficients are the same as the 4070 soil type.

A small component (4%) of the PA contains riparian soils and soils that support aspen communities. The riparian soil type occurs at elevations between 8,200 and 9,040 ft. on slopes between 2 to 8% and is associated with seeps and springs. This soil is derived from volcanic parent materials with a soil profile characterized by fine loamy mixed Aquandic Cryaquolls. Typically the Aquandic Cryaquolls are wetter and support meadow vegetation adjacent to springs and seeps or along stream floodplains. If the aspen are directly adjacent to a stream channel or seep, they are likely ashy glassy Vitrandic Haplocryolls that have a seasonal water table within about 24 to 36 inches. If the aspen are on a mountain slope the soil is most likely ashy, glassy Vitrandic Argicryolls with a seasonal water table within about 40 to 60 inches. Soil permeability is moderate to high and soils have a medium to low runoff coefficient.

## **2. Environmental Consequences.**

### **a. Impacts of Alternative 1.**

Soils impacts would be confined to existing routes and drill hole locations totaling a maximum of 2.62 acres in the WSA. Temporary soil impacts due to travel frequency and transport loads would include increased soil compaction, reduced aeration, permeability and water-holding capacity. These impacts would be reduced via the implementation of project BMPs (Chapter 2, Access). Specifically, the proponent would install erosion and sediment control measures where applicable and subject to BLM approval, temporary erosion control measures such as a bridging structure would be installed where Paramount Mine Road crosses a perennial spring in Section 23, T5N, R26E (Figure 1.2). Additional erosion control measures such as haybales, sandbags or silt fences would be implemented as appropriate.

### **b. Impacts of Alternative 2.**

Soils impacts resulting from the implementation of Alternative 2 would be similar to those of Alternative 1 although potentially less frequent, but of longer duration.

### **c. No Action Alternative.**

The No Action Alternative would not result in impacts to soils in the PA.

## **O. VEGETATION/THREATENED AND ENDANGERED.**

### **1. Affected Environment.**

In June and July of 2008 a vegetation survey was conducted on approximately 700 acres of BLM lands in the PA. The survey report includes a summary of pre-survey data collections, field methods, plant habitat descriptions, and survey results (Synergy Resource Solutions 2008, Appendix D – Biological Assessment).

Mountain sagebrush comprises the dominant plant community in the PA and is dominated by an over-story of shrubs, primarily mountain sagebrush (*Artemisia tridentata* ssp. *vaseyana*) with other shrubs, forbs and grasses that include, but are not limited to: mountain snowberry (*Symphoricarpos oreophilus*), parry's rabbitbrush (*Chrysothamnus parryi*), green rabbitbrush (*Chrysothamnus viscidiflorus*), hopsage (*Grayia spinosa*), smooth horsebrush (*Tetradymia canescens*), currant and gooseberry (*Ribes cereum*, *R. velutinum*), bitterbrush (*Purshia tridentata*), Junegrass (*Koeleria micrantha*), needle grasses (*Achnatherum occidentale*, *A. thuberianum*), Indian ricegrass (*Achnatherum hymenoides*), Great Basin wildrye (*Leymus cinereus*) sulfur buckwheat (*Eriogonum umbellatum* var. *nevadense*), long-leaf phlox (*Phlox longifolia* ssp. *stansburyi*), compact phlox (*Phlox condensata*), low penstemon (*Penstemon humilis*), and silver lupine (*Lupinus argenteus* var. *heteranthus*).

Low sagebrush (*Artemisia arbuscula*) comprises the co-dominant plant community in the PA. Common associate understory species include, but are not limited to: low pearly everlasting (*Antennaria dimorpha*), King's sandwort (*Arenaria kingii* var. *glabrescens*), cushion golden-weed (*Stenotus acaulis*), rayless daisy (*Erigeron aphanactis*), lava aster (*Aster scopulorum*), matted buckwheat (*Eriogonum caespitosum*), yellow-eyed cryptantha (*Cryptantha flavoculata*), needle-and-thread grass (*Hespirostipa comata*), squirreltail grass (*Elymus elymoides*), and bluegrass (*Poa secunda* ssp. *secunda*).

### ***Threatened and Endangered Plant Species.***

In June and July of 2008, approximately 700 acres of BLM lands were surveyed for Threatened, Endangered, Sensitive and Species of Concern (TESC) by three botanists and one biological

technician. The subsequent survey report contains a summary of pre-survey data collections, field methods, Special Status plant species, plant habitat descriptions, and survey results (Reynolds 2008, Appendix D). No threatened or endangered species were included in the agency database reports and no threatened or endangered species were found within the study area.

### ***Special Status Plant Species***

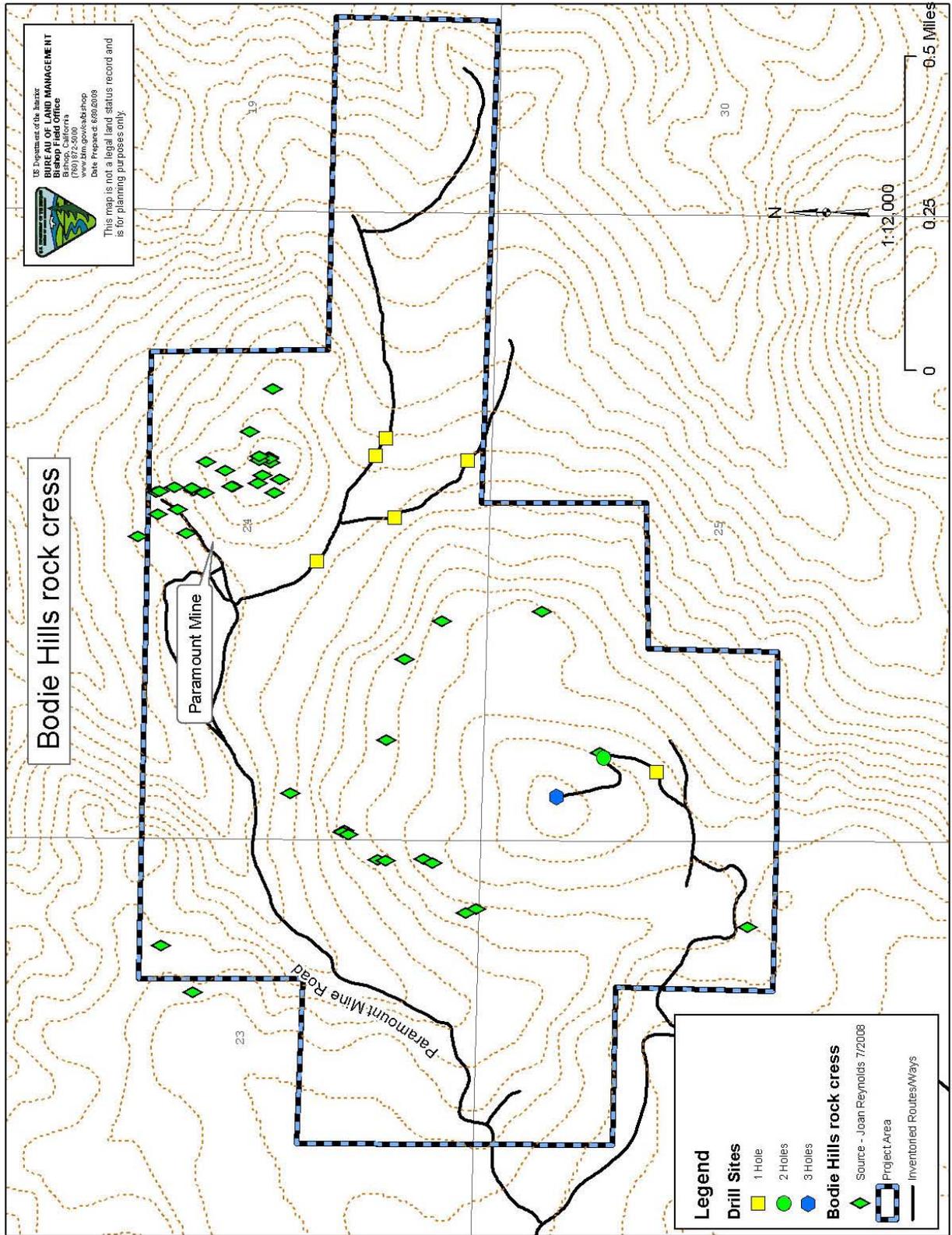
BLM Special Status Plant Species are those species that have been listed by the California Native Plant Society as List 1B species, which includes plants that are rare, threatened, or endangered in California and elsewhere. All of the plants constituting List 1B meet the definition of Sec. 1901, Chapter 10 (Native Plant Protection Act), or Secs. 2062 and 2067 (California Endangered Species Act) of the California Department of Fish and Game Code, and are eligible for state listing. The Bishop RMP (BLM 1993, p. 17) stipulates yearlong protection of sensitive (Special Status) plants and their associated habitats.

Eight Special Status plant species were reported by the California Natural Heritage Database (CNDDDB 2009) and the Nevada Natural Heritage Plant (NHP) database as having potential habitat and plant species occurrences in the vicinity of the PA: Bodie Hills draba (*Cusickiella quadricostata*), Mono County phacelia (*Phacelia monoensis*), Long Valley milkvetch (*Astragalus johannis-howellii*), Bodie Hills rock cress (*Boechera bodiensis*), Beatley buckwheat (*Eriogonum beatleyae*), Williams combleaf (*Polyctenium williamsiae*) and Masonic Mountain jewel flower (*Streptanthus oliganthus*), and Tioga sedge (*Carex tiogana*). Species occurrences in the Bodie Hills and habitat descriptions for these plants are described in Reynolds, 2008. Bodie Hills rock cress (*Boechera bodiensis*) was the only Special Status plant species found during the project surveys.

### **Bodie Hills rock cress (*Boechera bodiensis*)**

This species is confined to rocky, steep slopes and mountain summits and ridgelines. It is sparsely distributed in the Bodie Hills in sagebrush scrub, subalpine forest, and pinyon-juniper habitats, and extends into the Granite Mountain Wilderness. Small, isolated populations of Bodie Hills rock cress were found on rocky outcrops throughout the upland areas in the PA (Figure 3.2).

Figure 3.2 - Bodie Hills rock cress Locations Identified during the 2008 Vegetation Survey.



The population and suitable habitat of Bodie Hills rock cress extended beyond the boundaries of the field survey and PA in all directions. Plants were found on all aspects, at elevations ranging from 8,200 to 9,000 feet, and primarily in granitic rock outcrops, rocky open areas, rocky reclaimed roads, and un-reclaimed, previously-mined areas. Plants were flowering and fruiting during the time surveys were performed.

Approximately 286 individual plants were documented within the PA, but no plants were found in any of the proposed drill site locations (Figure 3.2). Specimens of the *Boecheira bodiensis* were collected and identified using *The Jepson Manual, Intermountain Flora, Vol Two Part B* at the University of Nevada, Reno herbarium.

## **2. Environmental Consequences.**

### **a. Impacts of Alternative 1.**

Alternative 1 has the potential to affect 0.54 acres of vegetation in the area surrounding the drill sites due to increased foot traffic. Impacts would include crushing, scattered stem breakage, and compaction of above ground vegetation, resulting in some removal of plants and increases in plant interspaces. Impacts to vegetation would be confined to the duration of the operations. Recovery of plant biomass post-operations is anticipated within a 2-5 year time span given the elevation and annual precipitation levels as well as observed recovery of vegetation from similar impacts in the PA.

Alternative 1 would have no effect on threatened or endangered plant species because no federally listed threatened or endangered species are present in the PA based on historical records, field monitoring, and habitat suitability. None of the drill sites or any of the access routes occur in locations where Bodie Hills rock cress was identified during the field survey. There would be no impacts to this Special Status plant species.

### **b. Impacts of Alternative 2.**

Impacts to vegetation resulting from the implementation of Alternative 2 would be similar to the impacts resulting from Alternative 1. Under Alternative 2 foot traffic would be less frequent but would occur over a longer period of time.

### **c. No Action Alternative.**

There would be no impacts as a result of the No Action Alternative.

## **P. VISUAL RESOURCES.**

### **1. Affected Environment.**

The proposed project area (PA) is designated as Visual Resource Management Class II Scenic Objective for those drill sites in northern portion of project area and as Visual Resource Management Class III Scenic Objective for those drills sites in the southern portion of the project area. VRM Classes were identified in the Bishop RMP (BLM 1993).

The objective of Class II is that the project can be seen from any key observation point, but would not attract the attention of the casual observer. Any changes in the characteristic landscape should be low. The objective of Class III is to partially retain the existing character of the landscape, and management activities may attract attention from a key observation point, but should not dominate the viewshed of the casual observer.

The project area is in a fairly remote and isolated location, with low visitation. It is not located near a key observation point with a viewshed such as a recreation facility or major highway where the project would be seen by the casual observer. There is only one key observation point (for VRM Class II) approximately ½ mile to the southeast of the PA, where a casual observer might glimpse a drill rig when travelling along the Geiger Grade Road. The VRM Class III area is hidden from view when travelling along Aurora Canyon and Geiger Grade Roads and cannot be seen from any key observation point.

Physically, the PA is a complex series of rolling large hills, numerous rock features and generally varied terrain. Low shrub vegetation dominated by sagebrush occupied the majority of the area. The combination of these natural features reduces and eliminates visibility of many foreground and mid-ground viewsheds from the project site due to the variations in form, line, color and texture.

## **2. Environmental Consequences.**

### **a. Impacts of Alternative 1.**

The project would conform to VRM Class II and Class III Scenic Objectives because its limited physical impacts to the area's physical features, remoteness, and distance from key observation points meet the standard defined by the objectives. There are no key observation points where the northern portions of the project could easily be seen by a casual observer. At the only key observation point along Geiger Grade Road, a casual observer may be attracted by the project's contrasts but only for a few seconds while in a VRM II area. The drilling operation would remain subordinate to the surrounding landscape of the Bodie Hills.

The project's visual impacts would be temporary in nature and would not result in any permanent impacts to the visual resources in the project area.

### **b. Impacts of Alternative 2.**

Impacts resulting from the implementation of Alternative 2 would be similar to those as Alternative 1, but for a longer duration, as this alternative would extend the drilling period at least 65 days in addition to the 45 scheduled days planned under Alternative 1.

### **c. No Action Alternative.**

The No Action Alternative would not result in impacts to visual resources in the PA.

## **Q. WASTE, HAZARDOUS OR SOLID.**

### **1. Affected Environment.**

Federal, state, and local regulations govern the use of fluids, fuel, drill cuttings, etc. Drilling fluids, fuel, etc. would be located on site.

## **2. Environmental Consequences.**

### **a. Impacts of Alternative 1.**

Standard operating procedures to minimize accidents and emergency spill contingency plans (see Chapter 2, Fuel Storage, Drilling Water Supply Plan, and Drill Cuttings, Core, and Water

Handling) would conform to all federal, state, and local regulations and are expected to reduce any risk to a very low level.

**b. Impacts of Alternative 2.**

The risk and types of potential impacts resulting from the implementation of Alternative 2 would be similar to Alternative 1, for less time per day but for a longer duration.

**c. No Action Alternative.**

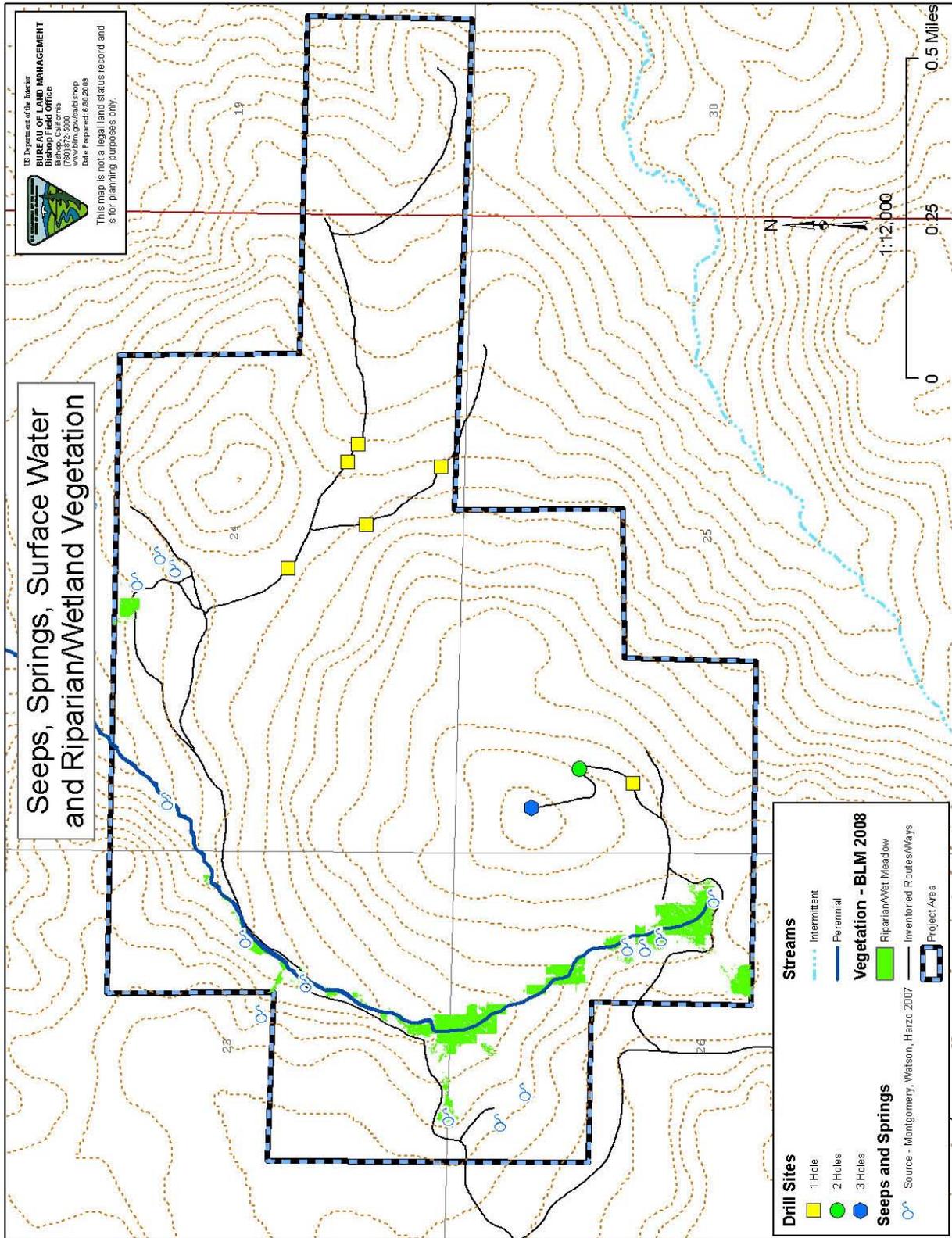
The No Action alternative would not generate hazardous or solid waste at the PA.

**R. WATER QUALITY, DRINKING, GROUND.**

**1. Affected Environment.**

Two water studies were conducted for the PA in 2007 (MWH Americas, Inc. 2007a and 2007b, spring and seep survey included as Appendix E). The PA is characterized as having a semi-arid climate with most precipitation occurring during the winter as snow. The PA includes approximately 1.5 mile of Paramount Creek, a perennial tributary to Rough Creek, which in addition to carrying snowmelt and precipitation runoff from upslope areas, is also fed by perennial springs and seeps. Other springs and seeps also appear as surface water during wet years or wet seasons. Thirteen springs and seeps have been identified within the project area boundary, with one other directly adjacent (Figure 3.3). Most of these have outflows that feed into Paramount Creek; a few smaller seeps lacking such outflows create localized wet meadow areas. The tributary flows northeast to join Rough Creek which continues northeast into Nevada.

Figure 3.3 - Seeps, Springs, Surface Water and Riparian Vegetation



At the time of the field evaluation (September), water was flowing from six of the seeps/springs at rates ranging from less than 1 gpm to about 4 gpm. Samples were collected from these and from Paramount Creek for water quality analyses. The results indicate low concentrations of major cations (Ca, Mg, Na, and K) and anions (HCO<sub>3</sub>, Cl, F, NO<sub>3</sub>, and SO<sub>4</sub>) that are marginally higher than generally found in rainwater in the continental U.S. (Langmuir 1997). The TDS concentrations are also low, ranging from 70 to 84 mg/l. The concentrations of dissolved metals and total recoverable metals are generally near or below detection levels with a few exceptions. The data show no trends in concentrations from upstream to downstream. The lack of trends and the very low concentrations of major cations, anions, and metals imply that the water has a short residence time in the subsurface. This is consistent with field observations indicating that the water is derived from stored rain and snowmelt recharging shallow perched aquifers. An additional seep survey was conducted in July of 2009. This survey verified the results of the 2007 survey in that the pH and conductivity were similar and all of the springs identified in 2007 were still wet in 2009. Additionally 2 more springs were mapped during the 2009 survey (Appendix E).

The seeps and springs are likely underlain by a fairly competent continuous layer of less permeable bedrock that acts as perching layers for the shallow groundwater system although not necessarily the same rock unit for all springs. If the hydraulic conductivity of the underlying bedrock were higher (e.g., due to fracturing), then groundwater would likely migrate deeper and would not discharge at the surface as observed.

Information on water quality and quantity for any deep aquifers beneath the PA is not currently available. Regional groundwater flow beneath the site is likely to the northeast. Some portion of shallow groundwater in the PA may infiltrate and discharge to Paramount Creek or another tributary of Rough Creek, depending on the elevation of the groundwater compared to these creeks. Otherwise, the creeks may be a source of recharge to the aquifer. Faults may complicate groundwater flow in the area by acting as conduits for flow, barriers to flow, or both. Joints and other fracturing likely impact groundwater flow as well.

Beneficial uses of surface water in the PA include water sources for cattle and wildlife that use the habitat supported by the springs and streams.

Along the planned access route, the Aurora Canyon Road closely follows a perennial stream, directly adjacent in most parts, for approximately 6 miles. A few springs and seeps lie near the

road and contribute to the Aurora Canyon stream. Current known impacts to water quality are from varying degrees of cattle grazing, plus road maintenance activities that have occasionally added sediment loads to the stream. The Aurora Canyon stream flows westward towards Bridgeport Valley and the East Walker River about ¼ mile upstream from the Bridgeport Reservoir; however, surface flow rarely, if ever, reaches the East Walker River.

The domestic water supply for the Bridgeport community is groundwater pumped from a local aquifer, with total aquifer capacity and rate of recharge unknown. The Bridgeport Public Utility District has a water storage capacity of 535,000 gallons, and estimates that water use in 2007, the latest year for which records were available, was approximately 122,000,000 gallons. The highest usage was in August, with a maximum rate of 750,000 gallons per day (Bridgeport Public Utility District, 2007 Annual Report).

## **2. Environmental Consequences.**

### **a. Impacts of Alternative 1.**

Groundwater resource impacts within the PA could result from drilling through multiple aquifers or if artesian conditions are encountered. If multiple aquifers are encountered during drilling, there could be cross contamination of the aquifers. If artesian conditions occur this could result in overland flow of water, thereby causing increased sedimentation/erosion to the surface drainages. As part of the project design, should either of these scenarios occur, drilling activities would cease in that hole until the aquifer can be controlled, the hole would be temporarily plugged, and if it appears that the drilling has perforated two aquifers, the lower aquifer would be sealed off. These measures would be adequate to prevent cross-contamination groundwater impacts.

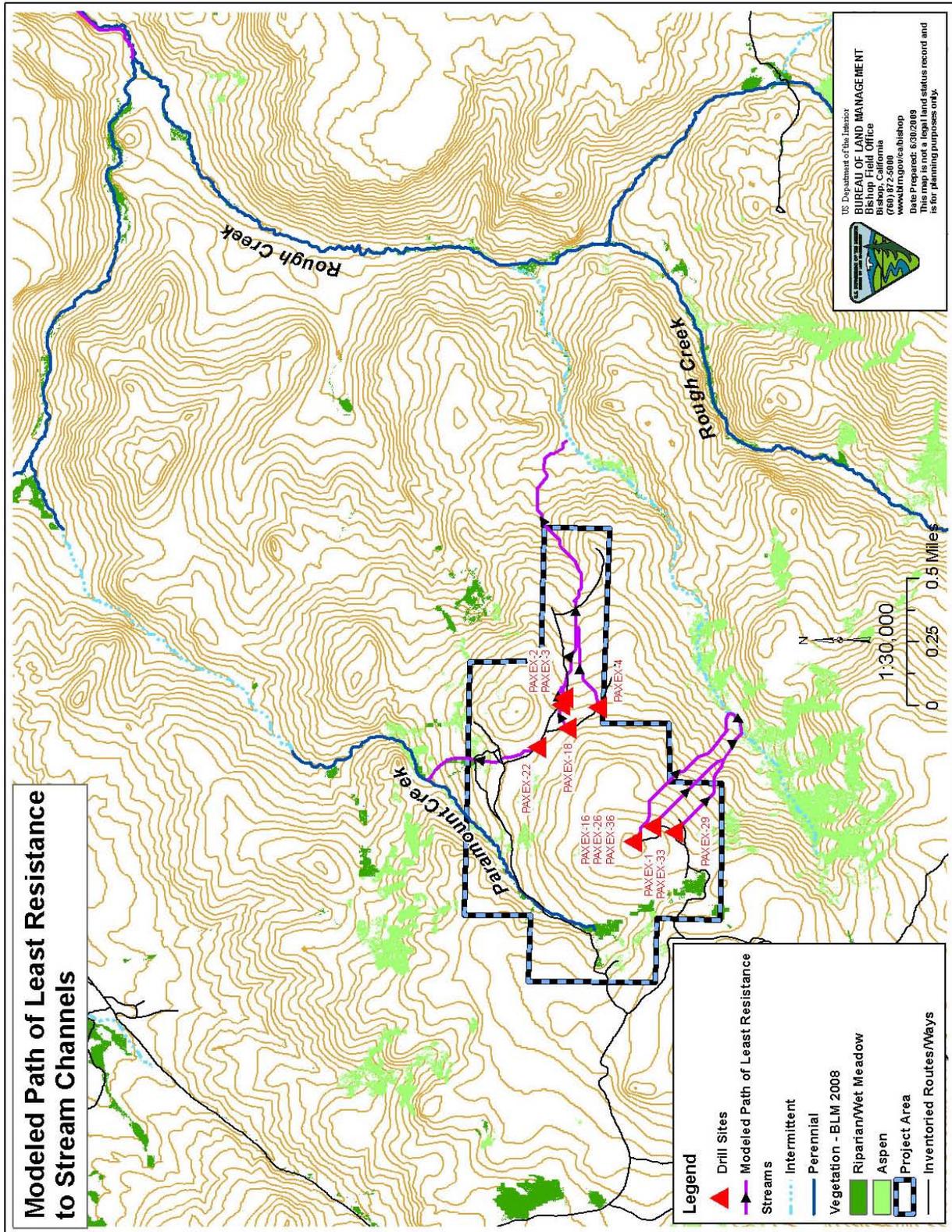
The water used for the drilling program would be potable water, and the drilling additives that would be used (Table 2.3 Drilling Additives, EA page 48) are used in low quantities that would not degrade water quality. Therefore, there would be no impacts to surface water or groundwater quality in the PA as a result of accidental spills of drilling fluids. There exists a risk of accidental spills that could potentially affect shallow groundwater or surface water. A spill analysis was conducted that indicated the direction of spills and distance to perennial streams in the PA (Table 3.3 and Figure 3.4). An additional analysis using the Manning's Equation (Natural Resources Conservation Service, 1986) was conducted to calculate the quantity of spill necessary to reach the intermittent part of Rough Creek or Paramount Creek. This analysis

found that approximately 3,400 gallons would need to spill before Rough Creek or Paramount Creek would be impacted. The maximum amount of fuel at any given time at the drill sites would be a maximum of 200 gallons. The temporary fuel containment system on the supply truck would have 110% containment. A spill control plan has been developed and in the event of an accidental spill the measures identified in Chapter 2 will be implemented.

**Table 3.3 - Calculated Distances to Stream Reaches in the PA**

Drill sites	Distance from Drill Site to Intermittent Tributary of Rough Creek in Miles	Distance from Drill Site to Perennial Reach of Paramount Creek in Miles.	Distance from Potential Spill Intersection to Interconnected Perennial Reaches of Rough Creek and Tributaries in Miles.
Paxex-29	0.5		2.48
Paxex-1, Paxex-33	0.52		2.48
Paxex-16, 26, 36	0.69		2.38
Paxex-22		0.49	2.14
Paxex-18	1.32		0.85
Paxex-2	1.22		0.85
Paxex-3	1.18		0.85
Paxex-4	1.24		0.85

Figure 3.4 - Modeled Flow Paths for Potential Spills.



All proposed drill sites are located approximately 0.2 to 0.5 mile from surface water. All drill sites are upslope from surface water. Impacts could result from accidental spills during fuel transfer. Measures to prevent this (see Chapter 2, Fuel Storage) conform to all federal, state, and local regulations and are expected to reduce this risk to a very low level.

Project water usage has been estimated to range between 500 and 4,000 gallons per shift per rig, or between 2,000 and 16,000 gallons of water per day obtained from the Bridgeport Public Utility District (PUD). These daily usage figures represent from 0.3% to 3.0% of Bridgeport's water storage capacity; 0.6% to 4.8% of Bridgeport's daily usage as averaged over the entire year; and 0.3% to 2.1% of Bridgeport's estimated daily peak use in August. Therefore, implementing Alternative 1 is expected to have a negligible short-term or long-term effect on Bridgeport's water supply.

#### **b. Impacts of Alternative 2.**

The impacts resulting from Alternative 2 would be similar to impacts resulting from Alternative 1. With only one shift per day, water use would be less per day. Due to the additional drilling time needed in order to restart each day and return to the depth reached the previous day, the number of days would more than double. Overall water usage would increase by at least 50% as compared to Alternative 1; however levels are still not expected to have a large effect on Bridgeport's water supply (less than a 10% increase on the resource).

#### **c. No Action Alternative.**

The No Action Alternative would not impact water resources in the PA or community of Bridgeport.

### **S. WETLANDS/RIPARIAN ZONES.**

#### **1. Affected Environment.**

Wetland/riparian communities comprise approximately 13 acres of the PA (Figure 3.3). Mesic graminoid meadows remain wet to moist into the growing season. This meadow type is found along the drainage of Paramount Creek, which flows through the western edge of the PA (refer to the general PA map, Figure 1.2), and the springs/seeps associated with the creek. Dominant species include Nebraska sedge (*Carex nebrascensis*), slenderbeak sedge (*Carex athrostachya*), woolly sedge (*Carex lanuginosa*), Holm sedge (*Carex atrata*), golden sedge (*Carex aurea*), capitate sedge (*Carex capitata*), meadow barley (*Hordeum brachyantherum*), Colorado rush

(*Juncus confusus*), swordleaf rush (*Juncus ensifolius*), Rocky Mountain rush (*Juncus saximontanus*), Sierra rush (*Juncus nevadensis*), straight-leaf rush (*Juncus orthophyllus*), fringed willowherb (*Epilobium ciliatum*), chaparral willowherb (*Epilobium minutum*), Torrey's willowherb (*Epilobium torreyi*), chickweed (*Stellaria longipes* var. var *longipes*), Sierra monkeyflower (*Mimulus coccineus* ), primrose monkeyflower (*Mimulus primuloides*), and meadow thistle (*Cirsium scariosum*). Scattered willows border these communities and included such species as Geyer's willow (*Salix geyeriana*), and Lemmon's willow (*S. lemmonii*). Plant community shifts within this meadow type are driven by changes in site hydrology and soil compaction. At the outer edges of the meadow areas wild iris (*Iris missouriensis*), orange sneezeweed (*Helenium hoopesii*) and Baltic rush (*Juncus balticus*) dominate and upland shrubs begin to occur, such as silver sagebrush (*Artemisia cana*), mountain big sagebrush, and rabbitbrush.

Several aspen (*Populus tremuloides*) stands occur throughout the PA and vary in age from dense sapling stands to more mature stands with larger diameter trees and many dead standing snags. Aspen stands constitute approximately 16 acres of the PA. Age-class distributions in these complexes are generally even-aged with moderate to low juvenile (sucker) recruitment. Dense stands have low cover values of associate species. In more mature stands, grass species include California brome (*Bromus carinatus*), basin wildrye (*Leymus cinereus*), needlegrass (*Achnatherum spp.*), Kentucky bluegrass (*Poa pratensis* ssp. *pratensis*), and spike fescue (*Leucopoa kingii*). Forbs include wild iris (*Iris missouriensis*), hawksbeard (*Crepis spp.*), flixweed tansymustard (*Descurania sophia*), lambsquarters (*Chenopodium album*), and penstemon species. Understory shrubs include currant (*Ribes velutinum*), occasional snowberry, and mountain big sagebrush.

## **2. Environmental Consequences.**

### **a. Impacts of Alternative 1.**

Potential impacts to riparian habitat would be limited by implementing the BMPs as described in Chapter 2, Access. Specifically, the project proponent would install erosion control structures and materials as well as fill road ruts. The proponent would also return existing routes to their pre-exploration conditions within 15 days of the project's completion. During project operations, however, impacts due to travel frequency and transport loads would include increased soil compaction, reduced aeration, permeability and water-holding capacity.

Ancillary effects of these impacts could temporarily increase the risk of sheet, rill and gully erosion especially where the road intersects the Paramount Creek.

**b. Impacts of Alternative 2.**

The impacts resulting from the implementation of Alternative 2 would be similar to the impacts resulting from Alternative 1, though potentially of less intensity, but longer duration.

**c. No Action Alternative.**

The No Action Alternative would not result in impacts to wetlands/riparian zones in the PA.

**T. WILD AND SCENIC RIVERS.**

**1. Affected Environment.**

There are no designated wild and scenic rivers inside the PA or WSA. The closest designated river system is the East Walker River, about 15 miles to the northwest.

The closest waterways that are classified as eligible for study for potential wild and scenic designation are portions of Rough and Atastra Creeks; both lie outside the PA. Rough Creek lies 2 miles east, while Atastra Creek lies an additional 1 ½ miles easterly from the PA. The Rough Creek segment totals 2.1 miles on public land (from Section 31 of T5N, R27E to Section 9 of T5N, R27E) and the Atastra Creek segment totals 1.75 miles on public land (from Section 32 of T5N, R27E to Section 20 of T5N, R27E). Rough Creek is classified as a wild study river segment, while Atastra is classified as a scenic/recreational study river segment. The acreage of Rough Creek and its riparian/upland corridor totals about 672 acres, while Atastra Creek totals about 560 acres. These reaches are to the east of and above the confluence of Paramount Creek. Descriptions of the creeks and their associated outstandingly remarkable values, which qualified them for further study and consideration as designated wild and scenic rivers, are in Appendix 3 of the final Bishop RMP and EIS (1991).

## **2. Environmental Consequences.**

### **a. Impacts of Alternative 1.**

Implementation of Alternative 1 would not impact wild and scenic rivers because there are no designated wild and scenic rivers or eligible river segments in the PA or along the access route. Rough and Atastra Creeks would not be affected because they lie above the drill sites and are respectively 2 and 1 ½ miles east of the PA. The outstandingly remarkable values for both eligible study river segments outside the PA would remain the same.

### **b. Impacts of Alternative 2.**

Implementation of Alternative 2 would not result in impacts to wild and scenic rivers because there are no designated or eligible river segments in the PA or along the access route. The outstandingly remarkable values for both eligible study river segments outside the PA would, remain the same.

### **c. No Action Alternative.**

The No Action Alternative would not impact wild and scenic rivers. The outstandingly remarkable values for both eligible study river segments would remain the same.

## **U. WILDERNESS.**

### **1. Affected Environment.**

The PA is not within any designated Wilderness Area. However, it lies within the 16,814 acre Bodie WSA (CA-010-100). The Wilderness character of the WSA is described in the 1979 Final Wilderness Intensive Inventory Report. The BLM California Statewide Wilderness Study Report (1990) provides further information on the area's wilderness values, existing activities and improvements. It states that the overall unit has retained its primeval character and influence with the imprint of man's work substantially unnoticeable, and outstanding opportunities for solitude or primitive and unconfined types of recreation remain.

Unnatural features are visible on a local basis, but are small in magnitude in relation to the unit's size and topographic diversity. Unimproved vehicle routes, old mining prospects and associated surface disturbances are located in the WSA, primarily around the Paramount Mine

area, with a cherry-stemmed road to Paramount Mine. Special features include the diversity of wildlife in the area.

The Interim Management Policy for Lands Under Wilderness Review (IMP) provides direction for minerals exploration management in WSAs until they are either designated wilderness or released from the wilderness review process. In general, BLM is required to maintain the wilderness characteristics of each WSA until Congress decides whether it should either be designated as wilderness or released for other purposes. Lands under wilderness review must be managed so as not to impair their suitability for preservation as wilderness. The exception to this non-impairment standard is the continuation of existing mining uses in the same manner and degree as were being conducted on the date of FLPMA's approval (October 21, 1976). Instead, these activities are subject to prevention of unnecessary and undue degradation of the area. Minerals exploration existed on the PA at the time the Bodie WSA was designated by BLM in 1979-1980.

In addition, Title 43 Code of Federal Regulations 3802 governs the terms, methods, protocols and legal requirements to consider when conducting mining operations in WSAs. It is under these regulations that BLM authorizes mineral exploration activities in WSAs.

## **2. Environmental Consequences.**

### **a. Impacts of Alternative 1.**

Temporary impacts to wilderness would occur under Alternative 1. These include impacts to naturalness, solitude, primitive recreation, wildlife habitat and wildlife.

The proposed drilling program would result in disturbance on and near existing routes. During the operations, the naturalness of the area, immediately around the drill sites (0.64 acres), would be disrupted. Wilderness values of outstanding opportunities for solitude and unconfined recreation would be temporarily affected due to noise generated by the drilling operation. Opportunities for solitude and primitive recreation would also be negatively impacted during drilling as access may be blocked, and noise, lights, and activity would disturb the solitude. These impacts are temporary and once the operations cease, there would be no lasting impacts to the wilderness values in the project area. For additional information regarding special features such as cultural values, wildlife, plants, etc., refer to specific narratives addressing these values in other sections of this document.

Implementation of the proposed exploratory drilling operation in the Bodie WSA would conform with the BLM IMP and not impair Congress' ability to designate the WSA as Wilderness should it choose to do so. The project would create no new or lasting impacts to the WSA's wilderness values. In addition, since minerals exploration was occurring when the WSA was inventoried and those impacts did not disqualify the area or any portion of the area from being designated as a WSA, they would not do so now.

**b. Impacts of Alternative 2.**

The impacts resulting from the implementation of Alternative 2 would be similar to the impacts resulting from Alternative 1, but for a longer duration due to daytime operations.

**c. No Action Alternative.**

The No Action Alternative would not impact wilderness values in the PA.

**V. WILDLIFE/THREATENED AND ENDANGERED.**

***Wildlife Habitats and Associated Species.***

**1. Affected Environment.**

**Upland Wildlife Habitats.**

The 713 acre PA is characterized by a mosaic of Great Basin shrub-steppe habitats and includes about 500 acres of montane sagebrush, 183 acres of low sagebrush, and less than 1 acre of mixed mountain shrub (0.15 acre), mountain mahogany (0.10 acre) and barrens (0.31 acre), and about 29 acres of riparian/wetlands vegetation (see Aquatic, Riparian, Wet Meadow, and Aspen Habitats below). High habitat quality and diversity, and the ability to freely use the area with minimal disturbance, are habitat attributes which make the PA attractive to wildlife. While wildlife species most frequently associated with upland habitats are discussed in this section, they also make use of available surface water and riparian habitat in the PA which contributes to the area's overall habitat value.

The PA provides habitat for mule deer (*Odocoileus hemionus*) of the Mono Lake and East Walker herds. Due to the mix of vegetation types for forage and cover, and the availability of water in the immediate drainage, the area provides good quality mule deer habitat. Mule deer use this area for two primary purposes: summer residence and migration. Under normal

environmental conditions of snow melt and vegetation growth, summer resident mule deer use the PA and surrounding vicinity for maintenance behavior (foraging, resting, etc.) and for fawning, from early April until the first significant snowfall, usually in late October or November. The fawning period for mule deer in the Bodie Hills occurs from late June through mid-August, with the peak occurring in early July. A larger number of mule deer from both herds pass through the area twice a year during their spring (April/May) and fall (October/November) migrations between summer range in the Sierra Nevada and winter range in western Nevada. The number of deer occupying the area as summer residents and for migration varies from year to year and is less important than the availability of quality habitat and the freedom for deer to use the area with minimal disturbance. Mule deer are likely below the current carrying capacity of summer habitat in the Bodie Hills due to recent drought conditions and limited forage availability on winter ranges in Nevada.

Pronghorn (*Antilocapra americana*) also use the PA and surrounding vicinity, due to some of the same habitat attributes including forage and water that attract mule deer, along with the open rolling terrain that is suitable for pronghorn. Pronghorn are resident from about April through November, depending upon snow conditions. In most years, one breeding subgroup comprised of a male and several females, uses the area extending from Paramount Mine to the headwater springs of Aurora Canyon just west of Geiger Grade Road during the fall mating season. Pronghorn are also likely below the current carrying capacity of summer habitat in the Bodie Hills due to due to recent drought conditions and limited forage availability on winter ranges in Nevada.

Due to the combination of several different vegetation communities, topography and other landform characteristics, the PA also provides habitat for other wildlife which, except for during the most severe parts of the winter, are found in the area. These include black bears (*Ursus americanus*), mustelids (e.g. weasels, badgers, and skunks), canids (e.g. coyotes), lagomorphs (e.g. rabbits and hares), rodents (including kangaroo rats and ground squirrels), reptiles (several species of lizard and snake), raptors (e.g. Golden Eagle, Red-Tailed Hawk) and songbirds. Songbirds found to be most abundant during the spring/summer breeding season in upland habitats in the Bodie Hills by Moss et al. (2009) include: sagebrush obligate species - Sage Thrasher and Brewer's Sparrow; shrubland species - Green-tailed Towhee; and grassland species - Vesper Sparrow. The upland songbird breeding season in the Bodie Hills from nest initiation through fledging and dispersal begins in May and extends through mid-August.

The Geiger Grade and Aurora Canyon roads, which comprise the access roads to the PA, are located within habitat that is also of value to a variety of upland species due to the year-round availability of water. The Geiger Grade Road and the upper elevations of the Aurora Canyon Road traverse upland habitats with values similar to those described for the PA and support the same wildlife species. Wildlife habitat along the lower elevations of the Aurora Canyon Road differs in that the road is flanked by steep slopes covered with relatively arid pinyon-juniper woodlands. Pronghorn are not observed in this terrain or vegetation type, and sagebrush obligate songbirds are less common. A stream runs directly alongside the road throughout this section and provides fresh water, shade and succulent forage that attract many upland species. Mule deer and Mountain Quail are among wildlife species of interest commonly observed.

### **Supplemental Wildlife Survey Information.**

During June 2009, the PA was surveyed for nesting neotropical migratory birds and raptors, bats, American pika (*Ochotona princeps*), amphibians including Yosemite toad (*Bufo canorus*) and yellow-legged frog (*Rana muscosa*), and pygmy rabbit (*Brachylagus idahoensis*) by JBR Environmental Consultants, Inc. in response to comments expressing concern about potential impacts to these species that could occur from implementation of the proposed exploratory drilling program. The results of this supplemental wildlife survey are summarized below:

#### *Nesting Neotropical Migratory Birds and Raptors*

Surveys for nesting neotropical migratory birds and raptors were conducted by traversing the area using 10 meter transect intervals and listening and watching for birds and/or their nests in the in survey area. Surveys included the examination of trees, shrubs, and grass clumps for ground and stick nests. When birds were encountered, their behavior was observed for indications of territory establishment or nest building activity. The following species were documented in the PA during the nesting surveys: Golden-crowned Kinglet, Western Meadowlark, Horned Lark, American Robin, Brewer's Blackbird, Violet-green Swallow, and Northern Flicker. Active nests were documented only for the American Robin and Violet-green Swallow. No raptor nests were reported.

#### *Bats*

Bat surveys were conducted near the historic Paramount Mine site for two consecutive nights on June 11 and 12, 2009. An AnaBat II detector was placed near the entrance of the two

remaining open mine shafts in the PA to record bats using the area for both hunting and roosting. The AnaBat equipment detected only a small amount of bat activity in the area. Long-eared myotis (*Myotis evotis*) was the only bat species detected and there was no indication that a colony was present in the area. Long-eared myotis are a California BLM designated sensitive wildlife species and are discussed further below (see ***Sensitive Wildlife Species***).

#### *American Pika and American Pika Habitat*

Proposed drill site locations and access routes were assessed for American pika even though habitat characteristics were less than favorable. The species was looked for in all areas covered by the supplemental wildlife survey but the only potential American pika habitat encountered was in the immediate vicinity of the historic Paramount Mine site. No evidence of current or past use or occupancy by American pika was recorded.

#### *Amphibians - Yosemite Toad and Mountain Yellow-Legged Frog*

Amphibian surveys were conducted at spring/seep locations to determine presence/absence of Yosemite toads and/or mountain yellow-legged frogs within the PA. Surveys consisted of traversing each spring/seep site using ten meter transects through all moist areas and areas with surface water present. A dip net was used to sample areas of deep running water and pools. Where rodent holes were present, they were sampled for amphibians seeking refuge within them. No evidence of Yosemite toad or mountain yellow-legged frog presence was recorded.

#### *Pygmy Rabbit and Pygmy Rabbit Habitat*

A 500-foot radius around each proposed drill site and a 150-foot corridor on each side of the access routes was surveyed for pygmy rabbit and pygmy rabbit habitat using the methods described by Ulmscheider et al. (2004) even though habitat characteristics were less than favorable. Burrows were assessed for known pygmy rabbit burrow characteristics including size, shape, depth, soil type and composition, and location plus the presence and size of associated droppings to determine which wildlife species were likely using the burrows. No evidence of current or past use or occupancy by pygmy rabbits was recorded. Pygmy rabbit are a California BLM designated sensitive wildlife species and are discussed further below (see ***Sensitive Wildlife Species***).

### **Aquatic, Riparian, Wet Meadow, and Aspen Habitats.**

Aquatic, riparian, wet meadow and aspen habitats are represented in the PA and are associated with several perennial and ephemeral springs and seeps, and the upper perennial reach of the tributary of Rough Creek (Paramount Creek) which some of these water sources feed (Figure 3.3). These habitats provide drinking water, succulent forage, shade and cover to species largely using the adjacent upland habitats described above. They also support abundant insect life and other small animals used as food by upland species. Aspen constitutes about 16 acres and riparian/wetland habitats comprise about 13 acres of the PA (Figure 3.3). Wildlife species especially dependent upon these water associated habitats are discussed in this section.

The springs and the upper perennial reach of the tributary to Rough Creek (Paramount Creek) provide habitat for aquatic species, including native invertebrates and, farther downstream, introduced trout. Species entirely dependent upon the wet habitats adjacent to water include amphibians (frogs and toads) and small mammals such as water shrews.

Formal breeding riparian songbird monitoring has not been conducted in the project area. Spot mapping (Johnston and Weston 1979) and point counts (Heath and Ballard 2005) have been conducted along two riparian transects in the Bodie Hills, at Atastra Creek 2 ½ miles southeast of the PA and at similar elevations, and in Clark Canyon 7 miles west of the PA and at lower elevations. The PA has similar riparian vegetation although in smaller and less dense stands, and likely supports some if not all of the breeding riparian songbird species documented along these transects. These include: Yellow Warbler, possible breeding at Clark Canyon; Black-headed Grosbeak, probable breeding at Atastra Creek and confirmed at Clark Canyon; Song Sparrow, confirmed breeding at both. The riparian songbird breeding season is the same as for upland songbirds.

Aquatic, riparian, wet meadow and aspen habitats are also found along the main access route to the PA, with the perennial stream occupying the lower part of Aurora Canyon directly alongside the road, and several perennial and ephemeral seeps and springs alongside and nearby both roads in the higher elevation portions of the access route. The Clark Canyon breeding bird transect intersects lower Aurora Canyon and is representative of bird life along this part of the route. The Atastra Creek transect is representative of aspen and willow habitats along the upper portions of the access route.

## 2. Environmental Consequences.

### a. Impacts of Alternative 1.

#### Habitat Impacts.

**Habitat alteration:** Alteration or destruction of wildlife habitat in terms of landforms and vegetation would be minimal due to confinement of project activities to existing county roads and existing routes within the APE. The maximum extent of the APE includes about 4.7 acres of montane sagebrush, 1.6 acres of low sagebrush, and .20 acres of aspen and meadow habitats. Drilling activities would be confined to existing routes within montane sagebrush and low sagebrush habitats and no impacts to aspen or wet meadow habitat are expected. No vegetation clearing would occur as the result of project activities and habitat alteration impacts would be limited to some localized crushing, stem breakage, and compaction of above ground vegetation as the result of foot traffic in the immediate vicinity of the drill holes and along access routes. Habitat alteration impacts would be short-term and recovery is anticipated within a 2-5 year time span given the elevation and annual precipitation levels, as well as observed recovery of vegetation from similar impacts in the PA (see Section O, Vegetation/Threatened and Endangered).

Wildfire or weed invasions could have larger-scale, long-term habitat impacts, and any spill or release of toxins could have severe localized impacts to wildlife, especially in water; but observance of BMPs and prevention measures identified in the proposal would result in negligible increased risks over those incurred by the usual levels of recreational use (see Chapter 2, Fuel Usage, and Chapter 3, Recreation).

**Burrow destruction:** As some small burrow-dwelling animals such as ground squirrels may place burrows on or adjacent to roadways, there is a chance that project vehicles and equipment may destroy some burrows in or immediately adjacent to the access routes and drill sites in the APE. This impact would be proportional to the increase in traffic as compared to the pre-project baseline. Road maintenance or improvements necessitated by the increased traffic might also destroy burrows. A 500-foot radius around each proposed drill site and a 150-foot corridor on each side of the access routes was surveyed for burrow activity during June 2009 and no evidence of any BLM designated sensitive wildlife species was recorded. Since the majority of burrow dwelling species known to occupy the Bodie Hills are common and widely

distributed throughout similar elevations and habitats, the overall impact to burrow dwelling species is expected to be very minor.

#### **Displacement and Disturbance Impacts.**

**Vehicle collisions:** All terrestrial animals are vulnerable to collisions with project vehicles and equipment, especially during twilight hours and at night, when many species are more active and less easily seen. This impact would be proportional to the increase in traffic as compared to the pre-project baseline (the analysis predicts 13 total vehicle round trips per day along Aurora Canyon Road, 16 total vehicle round trips per day along and Geiger Grade, and up to 15 trips per day on existing routes within the APE). Observance of project vehicle speed limits (20 mph) and restricting travel to the hours between sunrise and sunset, as much as practicable, would minimize vehicle collision impacts (see Chapter 5, Mitigation Measures and Monitoring).

**Displacement and disruption:** A noise analysis was conducted for Alternative 1 (Appendix F, HDR Engineering 2009). The modeled noise survey (112 dBA at drill sites, <55 dBA at 258 meters [846 feet] from any drill site, per the noise analysis) and human activity associated with drilling could displace and/or disrupt the wildlife activities within and immediately adjacent to the APE to varying degrees which are difficult to predict. Lighting associated with night drilling operations could also impact wildlife behavior within and immediately adjacent to the APE.

Some species groups and individuals may potentially avoid the APE and surrounding vicinity entirely during drilling operations, which with 24 hour drilling could be throughout the project duration. This most likely applies to widely-ranging species such as mule deer, pronghorn and black bears which may temporarily move to similar habitat elsewhere in the Bodie Hills. Their ability to thrive elsewhere would depend upon whether adjacent areas are already occupied at carrying capacity, which is somewhat dependent upon annual forage production. Mule deer and pronghorn would not likely be adversely affected because existing populations are currently below the carrying capacity of summer habitat available in the Bodie Hills. There would be some disturbance and displacement of the pronghorn group that typically uses the area during the fall mating season. Normal use of the area would likely resume the following year if the project duration is only 45 days as planned. Postponing the onset of drilling operations until August 15 would eliminate any potential direct or indirect disturbance and displacement impacts to fawning mule deer and nesting neotropical migratory birds that could occur from project implementation (see Chapter 5, Mitigation Measures and Monitoring).

The combination of noise and lighting associated with 24 hour drilling would likely cause less widely-ranging animals to alter their behavior within the area and could also make some species or individuals more susceptible to predation. This includes both migratory and resident species of birds, small mammals, and reptiles that typically inhabit the area during the summer and fall. These individuals could experience some physiological effects of stress and may have less foraging success. Project related noise from vehicles, generators, and drill rigs would mask the sounds of predators and could result in greater hunting success than under naturally quiet conditions. Project lighting, if not properly shielded, would illuminate the area and could enhance the ability of nocturnal predators to locate prey. The combination of noise and lighting could result in a temporary decline in prey species abundance in the APE and surrounding area. If local population sizes decline as a result, the effect would likely be minor and the effect would be short term because of the temporary nature of the project. The implementation of mitigation measures designed specifically to reduce both noise and lighting impacts associated with 24 hour per day drilling operations would minimize displacement and disturbance impacts (see Chapter 5, Mitigation Measures and Monitoring).

#### **b. Impacts of Alternative 2.**

Effects predicted for wildlife are similar to those under Alternative 1, except that compared to 24 hour drilling under Alternative 1, 12 hour drilling would allow many animals to return to the area and/or resume normal activities within the APE and immediate vicinity during the night. This would be most advantageous for nocturnal species, including owls and most mammals, or diurnal species that would have been displaced from night roost areas by night drilling. Predation rates would likely remain at or near pre-project levels for prey species most susceptible to nocturnal predators. Most diurnal species, including reptiles and most birds, would experience at least twice as many days of disturbance and disruption of normal maintenance activities (foraging, resting, etc.) as under Alternative 1. For those species whose most important uses of the area are at night, the advantages of 12 hour drilling would be somewhat offset by the longer project duration. Postponing the onset of drilling operations until August 15 would eliminate any potential direct or indirect disturbance and displacement impacts to fawning mule deer and nesting neotropical migratory birds that could occur from project implementation (see Chapter 5, Mitigation Measures and Monitoring). In addition, the implementation of mitigation designed specifically to noise impacts associated with drilling operations would minimize displacement and disturbance impacts (see Chapter 5, Mitigation Measures and Monitoring). Impacts would likely occur over two drilling seasons (years).

### **c. No Action Alternative**

There would be no habitat alteration or displacement and disturbance impacts to wildlife under the No Action Alternative.

#### ***Threatened and Endangered Wildlife Species***

##### **1. Affected Environment.**

There are no Federal or State listed threatened or endangered wildlife species known or likely to occur within or near the PA and APE, or along the access route, based on historical records, field monitoring and habitat suitability. There is no potential habitat for Lahontan cutthroat trout (Federal Threatened) in the upper perennial reach of the tributary to Rough Creek (Paramount Creek) that crosses the PA. There is potential Lahontan cutthroat trout habitat about 2.5 miles downstream from the PA with about 1.4 miles of intervening intermittently dry streambed.

##### **2. Environmental Consequences.**

###### **a. Impacts of Alternative 1.**

No impacts are anticipated to potential habitat for Lahontan cutthroat trout downstream from the PA due to the distance from the PA, the intervening reach of intermittently dry streambed, and the very low likelihood of impacts to water quality at that distance (see Water Quality section of this document).

###### **b. Impacts of Alternative 2.**

No impacts are anticipated (see Alternative 1).

###### **c. No Action Alternative**

There would be no impacts to any threatened or endangered wildlife species or to potential habitat for Lahontan cutthroat trout located downstream of the PA under the No Action Alternative.

## ***Sensitive Wildlife Species.***

### **1. Affected Environment.**

**Greater Sage-grouse** are a BLM designated sensitive wildlife species. The subgroup of Greater Sage-grouse occupying Mono County, California and adjacent portions of Nevada, at the southwest edge of the species' range, was found by Oyler-McCance et al. (2005) to be "sufficiently genetically distinct that it warrants management as a separate unit" and is currently undergoing a status review by the U.S. Fish and Wildlife Service to determine if it warrants federal protection under the Endangered Species Act (Federal Register 2008-04-29). A stakeholders group including government agencies, conservation organizations, private landowners, livestock operators and other interested individuals formulated guidelines for its management in the *Greater Sage-Grouse Conservation Plan for Nevada and Eastern California* (NDOW 2004). The Bi-State portion of this plan identifies the Bodie Population Management Unit (PMU), which includes the proposed project site, as one of the three largest breeding complexes in the Bi-State area. The minimum 2008 spring breeding population estimate for sage-grouse in the Bodie PMU was 567 based on a peak high count of 136 males. This was approximately 20% below the moving average for the period between 2002 and 2008 (T. Taylor, CDFG, personal communication 2009). The minimum 2009 spring breeding population estimate of sage-grouse in the Bodie PMU was 821 based on a peak high count of 197 males. This is about 15% above the moving average for the period between 2003 and 2009 and is also the second highest count recorded for the period between 1993 and 2009. Minimum populations estimates are based on the formula developed by Emmons and Braun (1984) (T. Taylor, CDFG, personal communication 2009).

The PA provides excellent overall habitat quality for sage-grouse in that it includes a mix of plant communities and landforms meeting a full range of sage-grouse needs. These include: sagebrush, essential as the main source of year-round food and cover; areas of tall, dense shrubs suitable for nesting; meadows and riparian vegetation providing abundant insects and herbaceous forage, valuable as summer foraging habitat and especially important to breeding hens and their broods; night roost sites in low sagebrush and barrens on slopes and hilltops; abundant open water; and intervening cover among the mosaic of shrub communities. The PA includes about 1.7 percent of the available low sagebrush and less than 1 percent of the available barren (0.8%), wet meadow (0.7%), montane sagebrush (0.5%), riparian (0.05%) and

mixed mountain shrub (0.002%) habitats within the portion of the Bodie PMU identified as key sage-grouse habitat (BLM 2008).

The northern portion of the PA falls within 2 miles of the Big Flat lek complex (strutting grounds), which indicates an area of high probability for nesting and brood rearing (Connelly et al. 2000). Numerous radio telemetry observations, collected since 1999 by BLM, USGS, CDFG and the University of Idaho, confirm BLM observations from past decades that the PA is particularly important as late-brood/summer habitat. The Bi-State Plan (NDOW 2004, Appendix L) describes how males and non-breeding females begin an elevational migration in the Bodie Hills in early June, followed by hens with broods. By mid-July, large numbers of sage-grouse have moved to higher elevations around the springs, streams and meadows that comprise the headwaters of Rough Creek and originate on the north and eastern flanks of Bodie Mountain and Potato Peak. Available data demonstrate that these high elevation areas provide important summer habitat for sage-grouse in the Bodie Hills, especially during drought years. The upper Paramount Mine drainage, including the PA, is one of these important summer use areas. Telemetry tracking has shown that individual sage-grouse who use distant parts of the Bodie Hills during winter and spring use the PA during the summer and early fall.

Radio telemetry data collected over the last 9 years documents a seasonal pattern of high elevation summer use in the Bodie Hills. The cooler summer temperatures at higher elevations are more preferable for sage-grouse and prolong the availability of nutritious herbaceous plants and insects that become limited at lower elevations during the summer. Within the high elevation areas, sage-grouse tend to concentrate around open water, which they require for drinking during the summer. The associated wet meadows and riparian areas also provide summer availability of herbaceous plants and insects. The timing and abundance of these resources varies among wetter/drier and warmer/cooler years. Generally, all of them decline in number and quality during the summer. Some high elevation springs, ponds and wet meadows dry up during summer and may not appear at all in a dry year. Perennial open water and year-round green meadows such as those found in the PA are of particular importance during such years. Individual sage-grouse, as documented by telemetry tracking, move freely among these higher, wetter and greener habitats throughout the summer season. By mid-July the young of the year are able to move long distances along with the adults. The PA includes about 3.9 percent of the wet meadow; 3.1 percent of the low sagebrush; 2.7 percent of the riparian; 1.5 percent of the montane sagebrush; and less than 1 percent of the barren (0.18%) and mixed

mountain shrub (.005%) habitats above 8,200 feet in elevation in the northeast portion of the Bodie Hills.

The westernmost proposed drill sites (3 sites, 6 holes), in the south half of the PA, are located in low sagebrush on slopes above meadows in a part of the PA known to support roosting and late-brooding/summering sage-grouse. Bishop BLM biologists have observed more than 60 sage-grouse at one time using the meadows and surrounding habitat in the PA for foraging and roosting. The easternmost proposed drill sites (5 sites, 5 holes), in the more northern portion of the PA, are located within montane sagebrush habitat that is more widely distributed throughout the PA and the surrounding area.

The Aurora Canyon/Geiger Grade access route traverses a mosaic of high elevation habitats similar to the PA in apparent value to Greater Sage-grouse, although with fewer summer sage-grouse observations recorded. The lower elevation pinyon-juniper woodlands of Aurora Canyon are unsuitable habitat for sage-grouse.

**Pygmy rabbit** are also a BLM designated sensitive wildlife species known to occur in the Bodie Hills. Pygmy rabbits are active year-round, do not make long distance seasonal migrations, and tend to remain close to the burrows in which they live. They are generally considered to be crepuscular (most active in morning and evening) but may be active at any time. The U.S. Fish and Wildlife Service is currently conducting a status review of the species to determine if pygmy rabbit warrant federal protection under the Endangered Species Act (Federal Register 2008-01-08).

Pygmy rabbits are habitat specialists and distribution is sparse and patchy even within what may appear to be suitable habitat. They consume sagebrush as their main food year-round, and prefer to place their burrows in tall, dense big sagebrush stands, apparently for shelter from the elements and cover from predators. Burrows may also be found among stands of other vegetation such as willows. Pygmy rabbits generally dig their own burrows, although they may use burrows dug by other animals. Suitable habitat usually includes soils that are friable enough for them to dig, while firm and cohesive enough that burrows do not collapse. Within these general habitats, pygmy rabbits typically conceal burrow openings under cover near the base of big sagebrush or other shrub species. Burrows may also be found in more open areas, including the shoulders and embankments of roads where these disturbed areas offer mounds of soil with desirable burrowing characteristics in proximity to suitable cover.

Pygmy rabbits are secretive and seldom observed. Surveys for their presence are conducted by means of searching for their burrows, which are distinctive in appearance and can usually be classified as currently used or abandoned with a high degree of confidence (Ulmscheider et al. 2004). Surveys have been conducted and observations made in many parts of the Bodie Hills; however, current distribution is not thoroughly documented. There are no observations on record for the PA. Soils in the immediate vicinity of the proposed drill sites are too rocky and suitable habitat is patchily distributed in the remainder of the PA. An often-cited elevational record for pygmy rabbits in California is near Bodie at 8,374 feet (Severaid 1950). More recent surveys in the Bodie Hills have found them at a wide range of elevations, including approximately 8400 feet; the elevations in the PA are not considered a limiting factor.

During June 2009, a 500-foot radius around each proposed drill site and a 150-foot corridor on each side of the access routes was surveyed for pygmy rabbit and pygmy rabbit habitat by JBR Environmental Consultants, Inc. using the methods described by Ulmscheider et al. (2004) even though habitat characteristics were less than favorable. Burrows were assessed for known pygmy rabbit burrow characteristics including size, shape, depth, soil type and composition, and location plus the presence and size of associated droppings to determine which wildlife species were likely using the burrows. No evidence of current or past use or occupancy by pygmy rabbits was recorded.

The Aurora Canyon/Geiger Grade access route traverses larger areas of suitable habitat and BLM biologists occasionally observe pygmy rabbits in the lower elevations of Aurora Canyon. To our knowledge, no surveys have been conducted along the Aurora Canyon/Geiger Grade access route.

**Long-eared myotis** are a California BLM designated sensitive wildlife species and bat surveys conducted near the historic Paramount Mine site by JBR Environmental Consultants, Inc. during June 2009 documented the occurrence of long-eared myotis in the PA. Only a small amount of bat activity was detected and there was no indication that a colony of long-eared myotis was present in the area. Long-eared myotis prefer to roost in rock outcroppings and snags; however, roosts are known to include abandoned buildings, hollow trees, caves and mines. They feed on a variety of insects and are often observed hunting in dense vegetation or over small bodies of water. Preferred prey includes moths and beetles. Long-eared myotis appear to "turn off" their echolocation to listen for insects, which they pluck from trunks and branches

by hovering momentarily (Allen 1864, Harvey et al. 1998). Currently available information indicates a small number of long-eared myotis use the PA as roosting and foraging habitat.

**Northern sagebrush lizard** (*Sceloporus graciosus graciosus*) are a California BLM designated sensitive wildlife species that could occur in the PA; however, to date no occurrences of this species have been documented in the area. In California, they occur primarily in the Great Basin east of the Sierra Nevada and in the northeast corner of the state where they occupy plant communities dominated by sagebrush (*Artemisia spp.*) and other shrubs. Northern sagebrush lizards prefer open areas with scattered low bushes and lots of sun; and select for areas with significantly higher than average bare soil coverage and significantly lower than average coverage of grass, litter, and lichen. They are active during the spring, summer and fall and hibernate during the winter. Northern sagebrush lizards are diurnal and diet includes a variety of small invertebrates, including ants, termites, grasshoppers, flies, spiders, and beetles (Green et al. 2001, Stebbins 2003).

**Golden Eagle** are another California BLM designated sensitive wildlife species that could occur in the PA and are known to occur in the Bodie Hills. A survey for nesting birds conducted in the PA during June 2009 did not document any evidence of this species using the PA or immediate vicinity as nesting habitat. Currently available information indicates that Golden Eagle may occasionally use the PA during daylight hours as foraging habitat.

## **2. Environmental Consequences.**

### **a. Impacts of Alternative 1.**

#### **Greater Sage-Grouse.**

**Habitat alteration:** Alteration or destruction of sage-grouse habitat in terms of landforms and vegetation would be minimal due to confinement of project activities to existing county roads and existing routes within the APE. The maximum extent of the APE includes about 4.7 acres of montane sagebrush, 1.6 acres of low sagebrush, and .20 acres of aspen and meadow habitats. Drilling activities would be confined to existing routes within montane sagebrush and low sagebrush habitats and no impacts to aspen or wet meadow habitat are expected. No vegetation clearing would occur as the result of project activities and habitat alteration impacts would be limited to some localized crushing, stem breakage, and compaction of above ground vegetation as the result of foot traffic in the immediate vicinity of the drill holes and along

access routes. Habitat alteration impacts would be short-term and recovery is anticipated within a 2-5 year time span given the elevation and annual precipitation levels, as well as observed recovery of vegetation from similar impacts in the PA (see Section O, Vegetation/Threatened and Endangered).

Wildfire or weed invasions could have larger-scale, long-term habitat impacts to sage-grouse habitat, but observance of BMPs and fire prevention and weed control measures would result in negligible increased risks over those incurred by the usual levels of recreational use and prevent any large-scale impacts to sage-grouse habitat (see Chapter 5, Mitigation Measures and Monitoring).

**Vehicle collisions:** Greater Sage-grouse are vulnerable to collisions with project vehicles and equipment, especially during the dawn and dusk twilight hours when the species is more active and less easily seen. This impact would be proportional to the increase in traffic as compared to the pre-project baseline (the analysis predicts 13 total vehicle round trips per day along Aurora Canyon Road, 16 total vehicle round trips per day along and Geiger Grade, and up to 15 trips per day on existing routes within the APE). Observance of project vehicle speed limits (20 mph) and limiting vehicle travel during twilight hours, as much as practicable, would minimize vehicle collision impacts (see Chapter 5, Mitigation Measures and Monitoring).

**Displacement and disruption:** Modeled project noise (112 dBA at drill sites, <55 dBA at 258 meters [846 feet] from any drill site, as compared to the baseline average of 34 dBA and maximum of 72 dBA as measured at 2 locations within the PA (Appendix F, HDR Engineering 2009) and human activity associated with the project are likely to disturb and/or displace sage-grouse from the area (Holloran 2005). Displacement of sage-grouse is a concern due to their documented use of the PA during the late-brood/summer period (mid July - early September) and the limited availability of wet meadow habitats in the Bodie Hills. Lighting associated with night drilling operations could also negatively impact sage-grouse within and immediately adjacent to the APE.

Some sage-grouse would likely abandon use of the PA for the duration of the project (45 days). However, casual observations of sage-grouse use near Bodie State Historic Park indicate that sage-grouse do not completely abandon key late-brood/summer habitat as the result human activity and disturbance. Sage-grouse are regularly observed on the meadows in the vicinity of Bodie State Historic Park during the late-brood/summer use period despite intensive human

activity associated with peak summer visitation. Nonetheless, sage-grouse remaining in the PA would likely alter their use of the area and avoid the immediate vicinity of the drill sites for the duration of the project. Sage-grouse remaining in the PA would also experience some level of continual disturbance that could result in physiological stress, reduced foraging success, and exposure to higher predation rates due to increased movements to avoid project activities. The combination of noise and lighting associated with 24 hour drilling would also likely make sage-grouse remaining in the area more susceptible to predation. Project related noise from vehicles, generators, and drill rigs would mask the sounds of predators and could result in greater hunting success than under naturally quiet conditions. Project lighting, if not properly shielded, could illuminate night roosts and enhance the ability of nocturnal predators to locate and prey upon sage-grouse. The combination of noise and lighting could result in a temporary decline in sage-grouse abundance in the APE and surrounding area.

Disturbance and displacement impacts would be greatest in the vicinity of the westernmost drill sites (3 sites, 6 holes) due to proximity of known night roosts and wet meadows that provide important late-brood/summer habitat. Since these drilling locations occur in proximity to known night roost habitat, disturbance effects would be 24 hours a day. Suitable night roost habitat is not known to be limiting in the Bodie Hills and is readily available outside the PA. Displaced sage-grouse would likely find suitable night roost habitat elsewhere. Displacement and disturbance impacts associated with late-brood/summer meadow habitat would be more pronounced due to the limited availability of similar habitats in the Bodie Hills. These impacts would be exacerbated during a dry year and during the hottest/driest part of the year (mid July - early September), when perennial water sources and associated wet meadow habitats are most limited. Postponing the onset of drilling operations until August 15 would reduce disturbance and displacement impacts to sage-grouse hens with broods that could occur from project implementation (see Chapter 5, Mitigation Measures and Monitoring).

Displacement and disturbance impacts in the vicinity of the easternmost drill sites (5 sites, 5 holes) would be less pronounced due to their association with montane sagebrush habitats that are more widely available within the PA and throughout the surrounding area. Since these drilling locations do not correspond with known night roost habitat, disturbance effects would primarily impact daytime foraging and loafing activities and occur during daylight hours only.

Population-wide effects would depend in part on the overall availability of summer forage resources. If available forage is limiting, as in a dry year, sage-grouse displaced from the PA

that move into other suitable summer habitat areas could increase competition for resources resulting in poor nutrition and reduced survival and recruitment. More sage-grouse concentrating in a smaller area are also more vulnerable to predation. These impacts could result in measurable population effects in terms of lower lek census counts the following year. However, since no measurable habitat loss would occur, the population would likely rebound in following years as sage-grouse were able to reoccupy and use the PA upon project completion. The overall effects would likely be minor and short term because of the temporary nature of the project. The implementation of mitigation measures designed specifically to reduce both noise and lighting impacts associated with 24 hour per day drilling operations would minimize displacement and disturbance impacts to sage-grouse (see Chapter 5, Mitigation Measures and Monitoring).

### **Pygmy Rabbit.**

No impacts to pygmy rabbits or pygmy rabbit habitat would occur as the direct result of any drilling activities associated with the proposed project because no pygmy rabbits or known pygmy rabbit habitats are located within the APE. Any pygmy rabbit burrows located immediately adjacent to the Aurora Canyon and/or Geiger Grade access roads would be vulnerable to disturbance by project vehicles or to destruction by road maintenance or improvement activities required for, or as a result of, project vehicle use. The potential impact from project vehicle travel would be proportional to increased vehicle use levels as compared to the pre-project baseline. Road maintenance impacts are not expected to be any greater than those that would typically occur as the result of annual road maintenance activities conducted by Mono County. However, the impact of road maintenance and improvement might be disproportionate if the size, weight, and trip frequency of project vehicles and equipment ultimately requires more maintenance than typical traffic for these roads.

There is a slight possibility of mortality due to project vehicles colliding with pygmy rabbits (because they usually remain in concealment and near burrows, this occurs less commonly than with other rabbits and hares). Observance of project vehicle speed limits (20 mph) and limiting vehicle travel during twilight hours, as much as practicable, would minimize potential vehicle collision impacts (see Chapter 5, Mitigation Measures and Monitoring).

As pygmy rabbits are habitat specialists with limited and patchy distribution, potential impacts to pygmy rabbits along the Aurora Canyon and Geiger Grade access roads would be minimized

by the identification of occupied habitats and implementation of appropriate avoidance measures as suggested in Chapter 5, Mitigation Measures and Monitoring.

**Long-eared myotis.**

No impacts to long-eared myotis would occur as the direct result of any drilling activities associated with the proposed project because no preferred long-eared myotis roosting or foraging habitats are located within the APE. While bat surveys conducted near the historic Paramount Mine site during June 2009 documented the occurrence of long-eared myotis in the PA, only a small amount of bat activity was detected and there was no indication that a colony of long-eared myotis is present in the area. Night drilling operations could result in some disturbance of foraging behavior; however, impacts are expected to be minor since drilling activities would not occur in or immediately adjacent to any preferred foraging habitat. The implementation of mitigation measures designed specifically to reduce both noise and lighting impacts associated with 24 hour per day drilling operations would minimize potential disturbance impacts to foraging long-eared myotis (see Chapter 5, Mitigation Measures and Monitoring).

**Northern sagebrush lizard.**

No impacts to northern sagebrush lizard are expected to occur as the direct result of any drilling activities associated with the proposed project because northern sagebrush lizard are not known to occupy the PA. Any reduction in vegetative cover within the APE would improve potential habitat for northern sagebrush lizard over the short term since these lizards prefer open areas with higher than average bare soil coverage and lower than average coverage of grass, litter, and lichen.

**Golden Eagle.**

No impacts to Golden Eagles are expected to occur as the direct result of any drilling activities associated with the proposed project because currently available information indicates that the PA may occasionally serve as Golden Eagle foraging habitat. Since Golden Eagles are primarily diurnal foragers, no impacts would occur as the result of night operations. Any potential impacts to foraging Golden Eagles is expected to be minor due to the temporary nature of the proposed drilling program and the abundance of suitable foraging habitat that is readily available throughout the Bodie Hills.

## **b. Impacts of Alternative 2.**

### **Greater Sage-Grouse.**

Effects to Greater Sage-grouse would be similar to those described under Alternative 1, except that the amount of disturbance to night roost areas and late-brood/summer meadow habitat would be different. If project noise and activity have ceased when darkness falls on any given day, sage-grouse that have remained in the vicinity of the PA would be more likely use night roost areas in and near the PA than under 24-hour drilling. Any potential effects of noise and lighting on sage-grouse predation rates would not occur under this alternative. In contrast, displacement and disturbance impacts associated with late-brood/summer meadow habitat use would be greater because it would occur over at least twice as many days as under Alternative 1. These differential impacts would be most apparent in the vicinity of the westernmost drill sites (3 sites, 6 holes). Postponing the onset of drilling operations until August 15 would reduce disturbance and displacement impacts to sage-grouse hens with broods that could occur from project implementation (see Chapter 5, Mitigation Measures and Monitoring); however, impacts would likely occur over two drilling seasons (years). Displacement and disturbance impacts in the vicinity of the easternmost drill sites (5 sites, 5 holes) would also occur over at least twice as many days as under Alternative 1. The implementation of mitigation designed specifically to reduce noise impacts associated with drilling operations would minimize displacement and disturbance impacts to sage-grouse (see Chapter 5, Mitigation Measures and Monitoring).

### **Pygmy Rabbit.**

Effects to pygmy rabbits would be similar to those described under Alternative 1, except that any individuals living within the radius of noise disturbance would have 12-hour periods of rest and resumption of normal activities. The amount of daylight displacement and disturbance would occur over at least twice as many days as under Alternative 1 and likely occur over two drilling seasons (years). The potential for vehicle collisions would also increase commensurate with the increased vehicle usage that would occur under this alternative. Observance of project vehicle speed limits (20 mph) and limiting vehicle travel during twilight hours, as much as practicable, would minimize potential vehicle collision impacts (see Chapter 5, Mitigation Measures and Monitoring). As pygmy rabbits are habitat specialists with limited and patchy distribution, potential impacts to pygmy rabbits along the Aurora Canyon and Geiger Grade access roads would be minimized by the identification of occupied habitats and implementation

of appropriate avoidance measures as suggested in Chapter 5, Mitigation Measures and Monitoring).

**Long-eared myotis.**

Effects to long-eared myotis would be the same as those described under Alternative 1, except there would be no potential for disturbance of foraging behavior from night drilling operations.

**Northern sagebrush lizard.**

Effects to northern sagebrush lizard would be the same as those described under Alternative 1, except they would occur over twice as many days and likely be distributed over two drilling seasons (years).

**Golden Eagle.**

Effects to Golden Eagle would be the same as those described under Alternative 1, except they would occur over twice as many days and likely be distributed over two drilling seasons (years).

**c. No Action Alternative.**

There would be no impacts to any BLM designated sensitive wildlife species under the No Action Alternative.

## CHAPTER 4: CUMULATIVE IMPACTS

The geographic scope of the cumulative impact analysis includes the PA and, in some cases, the Bodie Hills and their immediate vicinity, based on the natural boundaries of the resources affected and regional human use patterns. The specific area considered for analysis varies by resource. Most potential impacts of the proposed exploration project (e.g. direct impacts to soils and vegetation) are limited to the specific location of the action. Time frames considered also vary by resource.

The existing condition of the area and associated resources is the combination of the natural condition and effects of past actions, and is described in Chapter 1, Section C. To summarize relevant past actions and their known effects: the Bodie Hills and surrounding area have been affected by localized, primarily underground mining and scattered small prospects since the mid-1800s, while the PA has remnants of mining activity dating back to the 1960s. Paramount Mine and the cherry-stem area occupy approximately 51 acres within the WSA. The mine itself includes numerous routes, waste piles, trenches/tunnels, etc. There are also many small prospects comprising approximately 1 acre of total disturbance. After the area was designated as a WSA, mineral exploration continued into the 1990s including construction of temporary routes. Rehabilitation efforts from these past actions have been successful, largely maintaining the area's physical and wilderness values as inventoried in 1980. The PA includes another 661 acres that have not been impacted by previous mining activities. The Bodie Hills in general also include large areas of wildlife habitat, watersheds, wilderness values, native plant communities, livestock forage, and other natural resources that do not show evidence of having been affected by historic mining activities. Past actions, where applicable, are discussed in relation to particular resources below.

Present actions relevant to these resources consist mainly of recreational uses and livestock grazing. No similar minerals exploration actions are currently underway in the Bodie Hills or immediate vicinity.

Foreseeable future actions potentially affecting these resources consist of recreation and livestock grazing, plus the foreseeable possibility of similar future mineral exploration in the PA and in the Bodie Hills area. This analysis does not include an assumption of future mine development or larger-scale exploration activities, as there are no existing decisions, proposals,

funding, etc. nor is there a high probability based on current trends. If and when these are proposed they will be analyzed appropriately.

### **General Impact Discussion.**

In general, cumulative impacts under Alternatives 1 and 2 to most resources are not expected because the project design standards and objectives would limit impacts to nonexistent to low levels. Direct impacts to soils, water quality, vegetation, riparian habitats, wildlife habitat, etc. would not create an additive effect resulting in cumulative impacts because of the low impacts expected and the temporary nature of the project. No permanent impacts to these resources are expected. Direct impacts such as vegetation loss would become unnoticeable in a few seasons, at most. Total surface use of the PA includes existing roads, routes, drill sites and immediate areas around the drill sites. Total surface disturbance in the PA would be about 6.47 acres with 2.62 of these acres occurring on existing routes.

The project would have indirect impacts to area wildlife populations such as Greater Sage-grouse and merits additional discussion.

### **Cumulative Impacts to Weeds.**

Given the low current use of the PA for recreation and wilderness, the short duration of the project, and the mitigation that would be implemented for weed control the cumulative effects due to weed invasion in the PA are not expected to be measureable.

### **Cumulative Resulting from Future Exploration Activities.**

Historic mining in the PA and more recent exploration projects have not affected the wilderness values of the WSA. The current project is not expected to result in any long term residual impacts. Future additional exploration activities are also not expected to result in any long term residual impacts. Therefore the cumulative impact of additional exploration in the area is expected to be negligible.

### **Cumulative Effects to Wildlife Populations.**

Potential disturbance and displacement impacts to wildlife were identified in the EA. The main difference between the two alternatives is the disturbance in Alternative 2 would be of longer duration and would not occur at night.

The impacts vary depending on species' diurnal or nocturnal habits and whether animals would avoid the area for the project duration, regardless of whether disturbance ceases at night. Disturbance and displacement cumulative effects for wide-ranging wildlife species such as mule deer, pronghorn and black bears are expected to be minimal because of their ability to relocate to suitable habitat elsewhere.

Disturbance and displacement may also affect Greater Sage-grouse. The potential effects to sage-grouse require additional consideration because late-brood/summer habitat may be limiting and they are designated a BLM sensitive wildlife species. Current policy requires BLM to manage sage-grouse habitat to avoid the need to list the species under the Endangered Species Act.

Past actions related to historic mining likely affected the Greater Sage-grouse population in the Bodie Hills. Hunting pressure was intense and unregulated during the initial mining boom in the 1800s. Sage-grouse hunting has been increasingly regulated in California since 1901. Since 1987, hunting has been strictly regulated with limited annual permit quotas. Permit limits are based on the estimated spring population as derived from lek counts and estimated production based on brood surveys. Sage-grouse populations have likely recovered to habitat carrying capacity (NDOW 2004).

Past mining activities in the Bodie Hills have had highly localized direct impacts and minor long term impacts on sage-grouse habitat. Mines of the late 1800s and early 1900s were mainly underground. Wood was in huge demand and it is uncertain whether the current extent of pinyon/juniper woodlands represents expansion or recovery relative to the mining boom era; reduction of woodlands constitutes a habitat improvement for sage-grouse (NDOW 2004).

More recent low-level mineral exploration has also left few scars in sage-grouse habitat. Livestock have grazed the Bodie Hills since the 1800s and may have affected habitat quality to an unknown degree; current livestock use is closely monitored and managed and has improved substantially over past use (NDOW 2004).

The current proposal is not expected to have an additive effect to these past actions. It will not result in measurable direct mortality to sage-grouse nor direct loss or alteration to sage-grouse habitat. Impacts of either alternative to sage-grouse are expected to include disturbance and displacement from key late-brood/summer habitat in the PA. Current levels of recreation (including hunting) and livestock grazing have very low direct mortality and minor, temporary

disturbance and displacement effects on sage-grouse, so they would not contribute to a noticeable additive effect. It is unknown exactly how sage-grouse would respond to the proposed disturbance. The determination that impacts to sage-grouse would be minor is based on the short-term nature of the project and the likelihood that sage-grouse would resume use of the PA the following year. Direct observations of sage-grouse use near Bodie State Historic Park indicate that sage-grouse do not completely abandon key late-brood/summer habitat as the result human activity and disturbance. Sage-grouse are regularly observed on the meadows in the vicinity of Bodie during the late-brood/summer use period despite intensive human activity associated with peak summer visitation. Close observation of sage-grouse movements in the PA during project implementation, preferably via radio telemetry, would allow improved analyses in the future. This should reduce the additive effect of future actions so that cumulative effects do not impact the viability of the Bodie Hills sage-grouse population.

#### **Global Climate Change.**

The project will increase baseline GHGs during operations. The incremental impact of Alternatives 1 and 2 would produce very minor increases in baseline GHGs, however the modeled concentrations of GHGs do not exceed any of the California Air Quality Standards (McVehil Monnett, 2009). This impact would be temporary.

#### **Conclusion.**

Overall, this project is expected to make a very minor contribution to cumulative effects because of its limited geographic scope and short duration, and low levels of resource impacts as described in the EA. The project design includes BMPs designed to keep impacts to a minimum, thereby reducing any aggregate effect that may broaden the scope of impacts.

## **CHAPTER 5: MITIGATION MEASURES AND MONITORING.**

Based on the environmental analyses conducted in Chapter 3, the following mitigation measures would reduce potential impacts to the following resources to negligible levels:

### **Mitigation for Cultural Resources.**

Monitor to ensure degradation of the road surface does not affect cultural sites.

Implement additional mitigation measures to routes where archeological sites exist including armoring with fill or planks to reduce or eliminate any potential impacts from vehicle traffic.

### **Mitigation for Recreation.**

Suspend operations during the sage-grouse hunting season.

Suspend operations during the opening and closing weekends of the X-12 archery and rifle deer seasons.

### **Mitigation for Vegetation.**

Instruct contractors to limit foot traffic off existing access routes.

Install temporary plastic staked fencing around each drill site prior to drilling operations.

All sediment/erosion control measures such as haybales, straw wattles, or silt fences must be certified weed free and installed in consultation with BLM.

### **Mitigation for Wildlife.**

Conduct a survey for pygmy rabbit burrows prior to the onset of any road maintenance work beyond the existing road footprint in areas of potential habitat along the access routes. If any are found, flag and develop avoidance procedures with BLM wildlife staff.

Maintain speed limit of 20 mph for project vehicles and equipment within the PA and on the access roads.

Restrict discretionary travel to the hours between sunrise and sunset as much as practicable, except in the case of emergencies and urgent unscheduled needs.

Drill rigs will be equipped with sound blankets which are estimated to reduce the sound level at the drill between 15 to 20 dB. With this mitigation the noise level next to the drill rig would be reduced to approximately 90 dB or the equivalent of power mower. At 300 feet the noise would be reduced to below 65 decibels or in the range of normal conversation (Table 5.1).

**Table 5.1 Common Noise Levels and associated dB(A).**

dB(A)	Overall Level	Community Noise Levels (Outdoors)	Home and Industry Noise Levels	Subjective Loudness (Relative to 70 dB)
90		<ul style="list-style-type: none"> <li>Boeing 737 or DC-9 aircraft at one nautical mile (6080 ft) before landing 97 dB</li> <li>Power mower 96 dB</li> <li>Motorcycle at 25 ft 90 dB</li> </ul>	<ul style="list-style-type: none"> <li>Newspaper press 97 dB</li> </ul>	4 times as loud
80		<ul style="list-style-type: none"> <li>Car wash at 20 ft 89 dB</li> <li>Propeller plane flyover at 1000 ft. 88 dB</li> <li>Diesel truck 40 mph at 50 ft. 84 dB</li> <li>Diesel train 45 mph at 100 ft. 83 dB</li> </ul>	<ul style="list-style-type: none"> <li>Food blender 88 dB</li> <li>Milling machine 85 dB</li> <li>Garbage disposal 80 dB</li> </ul>	2 times as loud
70	Moderately loud	<ul style="list-style-type: none"> <li>High urban ambient sound 80 dB</li> <li>Passenger car 65 mph at 25 ft. 77 dB</li> <li>Freeway at 50 ft from pavement edge 10 a.m. 76 dB</li> </ul>	<ul style="list-style-type: none"> <li>Living room music 76 dB</li> <li>Radio or TV-audio, vacuum cleaner 70 dB</li> </ul>	70 dB(A)
60		<ul style="list-style-type: none"> <li>Air conditioning unit at 100 ft. 60 dB</li> </ul>	<ul style="list-style-type: none"> <li>Cash register at 10 ft. 65-70 dB</li> <li>Electric typewriter at 10 ft. 64 dB</li> <li>Dishwasher (Rinse) at 10 ft. 60 dB</li> <li>Conversation 60 dB</li> </ul>	1/2 as loud
50	Quiet	<ul style="list-style-type: none"> <li>Large transformers at 100 ft. 50 dB</li> </ul>		1/4 as loud
40		<ul style="list-style-type: none"> <li>Bird calls 44 dB</li> <li>Lowest limit of urban ambient sound 40 dB</li> </ul>		
10		<ul style="list-style-type: none"> <li>Just audible</li> </ul>		
0		<ul style="list-style-type: none"> <li>Threshold of Hearing</li> </ul>		

Drill sites will be equipped with opaque curtains that will surround the drill sites on three sides to reduce glare from lighting used during night operations.

The drilling program will not start until August 15 to reduce potential impacts to wildlife.

Monitor sage-grouse movements and use in the PA during project implementation.

**Mitigation for Fire Control.**

Secondary water trucks will be equipped with 200 feet of hose and a water tender nozzle.

**Monitoring Program.**

BLM monitoring will occur weekly to document conformance with the Plan of Operations and Decision Record Mitigation Measures. Additionally, monitors will assess any changes in resource values including, but not limited to the following:

- Seeps and spring impacts;
- Air Quality (dust Levels);
- Road impacts;
- Sediment control measures; and
- Wildlife

This monitoring would include taking photos, logging observations in field notebook and reporting results to BLM. A biologist would conduct a field survey of the area 2 weeks prior to drilling for nesting birds. Wildlife observations would be recorded for all species of wildlife noted in the area. The road would be monitored for road conditions such as increased rill and gully erosion. The proponent would install erosion control structures and materials as well as fill road ruts as directed by the BLM. These treatments would be monitored as to their effectiveness.

All employees working on the Cougar Gold project would have an employee orientation so each person understands the project protection measures and the special concerns of the area.

- a. No smoking on or around the drilling rig or anywhere in the project area.
- b. Keep all food contained in a container and inside the vehicles. This is for the worker safety as there may be bears in the area. Do not feed the bears.
- c. Keep work site clean of trash and keep existing work area to a minimum area within the road area as much as possible.
- d. Keep traffic trips along the Paramount road to those specified in the Plan of Operations and EA.
- e. Speed limit within the project area would not exceed 20 mph at all times.
- f. All vehicles would be equipped with a shovel, fire extinguishers and bucket for fire suppression.
- g. All employees are to stay within the project area boundary.
- h. No firearms would be allowed in the PA by any employee/contractor.

## CHAPTER 6: RESIDUAL IMPACTS

Implementation of mitigation measures identified in Chapter 5 would reduce impacts to several resources. Most notably, impacts to cultural resources, recreation, vegetation, and wildlife would diminish. Monitoring route conditions during exploration use would identify opportunities to initiate actions to prevent impacts to cultural features located on the route. Suspension of exploration actions for the sage-grouse and deer hunting opening and closing weekends would reduce impacts to hunters who use the PA. At the same time, a manned trailer would need to be located on site to protect drilling equipment from vandalism. While pre-project communication with exploration personnel to instruct them to reduce foot traffic around drill sites would reduce direct plant and wildlife habitat impacts. Finally, wildlife mitigation measures would reduce the possibility of direct impacts to pygmy rabbit and pygmy rabbit habitat, reduce vehicle/wildlife collisions, reduce direct and indirect impacts to brooding and roosting sage-grouse, and eliminate direct and indirect impacts to any fawning mule deer and nesting neotropical migratory birds that could occur from project implementation.

Some disturbance and displacement of sage-grouse and other wildlife that use the area would occur as identified in the EA. Although impacts are expected to be low because they are temporary, BLM would closely monitor project implementation to determine if unforeseen impacts are occurring. Monitoring sage-grouse response to the disturbance could provide a greater level of certainty in analyzing future proposals.

Approximately 6.47 acres of surface use would occur in the PA. Each drill site location would incur approximately 0.01 acres (480 sq feet) of direct plant and soils impacts within the footprint of the existing route associated with the drill site. Other impacts expected to occur include some soils pulverization and plant damage on up to 0.07 acres (3,000 sq feet) immediately adjacent to each drill site, mostly from employee foot traffic. Some soils compaction and pulverization and plant damage associated with the use of existing access routes is also expected on a maximum of 5.83 acres. Mobile fences around each drill site would contain any spillover impact outside the project design and management standards. BLM would enforce any violations, if necessary.

Wilderness values of naturalness and outstanding opportunities for solitude or primitive and unconfined recreation would be diminished for recreation users seeking those experiences during the project's proposed season of use. The impacts of the alternatives are temporary and

would be imperceptible at the end of the project, thus not constraining Congress's ability to designate the area wilderness if they so choose.

Greenhouse gases would be emitted from the project's operations including support related functions such as driving employees to the project site. However, all greenhouse gases emitted are well below the CAAQS limits (Table 3.2).

## CHAPTER 7: EA CONTRIBUTORS/PREPARERS.

### **Bureau of Land Management**

Joy Fatooh	Wildlife Biologist
Anne Halford	Botanist
Kirk Halford	Archeologist
Sandra McGinnis	State Land Use Planning/NEPA Coordinator
Lauire Morrow	GIS Specialist/System Administrator
Steve Nelson	Supervisory Natural Resource Specialist
Diana Pietrasanti	Recreation/Wilderness
Joseph Pollini	Assistant Field Manager
Cheryl Seath	Geologist/Hazardous Materials Specialist
Jeff Starosta	Rangeland Management Specialist

### **Knight Piésold and Company.**

Cynthia Parnow	MSc Environmental Specialist
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