

**U.S. Department of the Interior
Bureau of Land Management**

Preliminary Environmental Assessment

**Snowstorm Exploration Project
DOI-BLM-NV-W010-2012-0063-EA**

May 2013



Twentyone Creek Road (July 2012)

PREPARING OFFICE

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Assessment
Snowstorm Exploration Project
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**Prepared by
U.S. Department of the Interior
Bureau of Land Management
Winnemucca District Office
Humboldt River Field Office
Winnemucca, Nevada**

**May 2013
BLM/NV/WN/EA/13-10+1792**

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ACRONYMS

AML:	appropriate management level
amsl:	above mean sea level
AUM:	Animal Unit Month
BAPC:	Bureau of Air Pollution Control
BLM:	Bureau of Land Management
BMPs:	Best Management Practices
BMRR:	Bureau of Mining Regulation and Reclamation
BSCs:	biological soil crusts
CERCLA:	Comprehensive Environmental Response, Compensation, and Liability Act of 1980
CESA:	Cumulative Effects Study Area
CFR:	Code of Federal Regulations
CO:	carbon monoxide
E:	east
EA:	Environmental Assessment
EO:	Executive Order
ESA:	Endangered Species Act
F:	Fahrenheit
FEMA:	Federal Emergency Management Agency
FLPMA:	Federal Land Policy and Management Act
FONSI:	Finding of No Significant Impact
H:	horizontal
HMA:	Herd Management Area
HRFO:	Humboldt River Field Office
IM:	Instruction Memorandum
LR2000:	Land & Mineral Legacy Rehost 2000 System
MBTA:	Migratory Bird Treaty Act
MDB&M:	Mount Diablo Base and Meridian

MOU:	Memorandum of Understanding
N:	north
NAAQS:	National Ambient Air Quality Standards
NAC:	Nevada Administrative Code
NAGPRA:	Native American Graves Protection and Repatriation Act
NDEP:	Nevada Division of Environmental Protection
NDOW:	Nevada Department of Wildlife
NDWR:	Nevada Division of Water Resources
NE:	northeast
NEPA:	National Environmental Policy Act
NNHP:	Nevada Natural Heritage Program
NO_x:	nitrogen oxide
NRCS:	Natural Resources Conservation Service
NRHP:	National Register of Historic Places
NRS:	Nevada Revised Statute
NSAAQS:	Nevada State Ambient Air Quality Standards
NW:	northwest
OHVs:	off-highway vehicles
PFYC:	Potential Fossil Yield Classification
PGH:	Preliminary General Habitat
Plan:	Plan of Operations/Nevada Reclamation Permit application
PM₁₀:	Particulate matter of aerodynamic diameter less than ten micrometers
PM_{2.5}:	Particulate matter of aerodynamic diameter less than 2.5 micrometers
PMU:	Population Management Unit
PPH:	Preliminary Priority Habitat
PSD:	Prevention of Significant Deterioration
RFFAs:	reasonably foreseeable future actions

ROW:	Right-of-Way
S:	south
SAD:	Surface Area Disturbance
SE:	southeast
SEL:	Snowstorm Exploration LLC
SIP:	State Implementation Plan
SO₂:	sulfur dioxide
SW:	southwest
TCP:	Traditional Cultural Property
USFWS:	United States Fish and Wildlife Service
UTVs:	ultra-terrain vehicles
V:	vertical
VOCs:	volatile organic compounds
VRM:	Visual Resource Management
W:	west
WRCC:	Western Regional Climate Center
°:	degrees

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Chapter 1. Introduction

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1.1. Identifying Information

1.1.1. Title, EA number, and type of project

Snowstorm Exploration Project Environmental Assessment (EA) #DOI-BLM-NV-W010-2012-0063-EA.

1.1.2. Location of Proposed Action

The Snowstorm Exploration Project (Project) is located approximately 18 miles northwest of the town of Midas, Nevada, and approximately 40 miles northeast of Winnemucca, Nevada, on the southern border of Chimney Dam Reservoir at elevations ranging between approximately 4,650 feet above mean sea level (amsl) to 5,200 feet amsl. The Project boundary encompasses all or portions of Sections 1, 9-12, 14-16, and 20-36, Township 41 North, Range 43 East (T41N, R43E), Sections 1-5, 8-13, 16, and 17, T40N, R43E, and Sections 4-8, T40N, R44E, Mount Diablo Base and Meridian (MDB&M) in Humboldt County, Nevada (Project Area). The Project Area includes approximately 19,801 acres and is located on public land administered by the Bureau of Land Management (BLM) Winnemucca District, Humboldt River Field Office (HRFO) and on private land. [Map 1.1.1](#) shows the Project Area, access, and land ownership status.

1.1.3. Name and Location of Preparing Office

Bureau of Land Management
Winnemucca District Office
Humboldt River Field Office
5100 East Winnemucca Boulevard
Winnemucca, Nevada 89445

1.1.4. Identify the subject function code, lease, serial, or case file number

The Subject Function Code is 3809. The serial number is NVN-090649.

1.1.5. Applicant Name

Snowstorm Exploration LLC

1.2. Introduction

Snowstorm Exploration LLC (SEL) acquired existing Notices from Snowstorm LLC in July 2010. SEL has been conducting surface disturbance activities under seven Notices; however, only four have been incorporated into this Project. The four Notices include the West Cocoa Notice #NVN-083145, the Cocoa Notice #NVN-083144, the Ninga Notice #NVN-083147, and the Pulvo Notice #NVN-083146. The Notice-level activities include construction of drill sites and sumps, new road construction, and overland travel with a total surface disturbance of 21.7 acres on public land and 3.3 acres on private land. To date, approximately 20 acres of public land have

been recontoured and reseeded, and approximately 1.8 acres of recontouring and 0.8 acre of reseeding has been conducted on private land. The public land areas are pending release by the BLM. The seed mix used included: Lewis blue flax (*Linum lewisii*); Ladak alfalfa (*Medicago sativa* L.); forage kochia (*Kochia prostrata*); hycrest crested wheatgrass (*Agropyrum cristatum* X *desertorum*); and Wyoming big sagebrush (*Artemisia tridentata* ssp. *wyomingensis*). In addition, shadscale saltbush (*Atriplex confertifolia*) was used at lower elevations and fourwing saltbush (*Atriplex canescens*) was used at higher elevations. SEL proposes to conduct additional exploration-related activities in phases that would create approximately 175 acres of new surface disturbance subject to reclamation. The existing and proposed surface disturbance (public and private) for the Project would total 200 acres.

The combined acres of existing and proposed surface disturbance on BLM-administered land would be greater than five acres; therefore, in November 2011 (revised February 2012, March 2012, and April 2012) SEL submitted a Plan of Operations #NVN-090649/Nevada Reclamation Permit application (Plan) to the BLM and the Nevada Division of Environmental Protection (NDEP), Bureau of Mining Regulation and Reclamation (BMRR) in accordance with the BLM's Surface Management Regulations 43 Code of Federal Regulations (CFR) 3809, as amended, and the Nevada reclamation regulations under Nevada Administrative Code (NAC) 519A.

1.3. Purpose and Need for Action

The purpose of the Proposed Action is to provide SEL the opportunity to conduct exploration activities, including drill site and sump construction, road construction, and monitoring wells, necessary to locate, verify and delineate precious metal (gold) deposits on its mining claims on public lands as provided under the General Mining Law of 1872, as amended (Mining Law).

The need for the action is established by the BLM's responsibility under Section 302 of the Federal Land Policy and Management Act of 1976 (FLPMA) and the BLM Surface Management Regulations at 43 CFR 3809, to respond to an exploration plan of operations and to take any action necessary to prevent unnecessary or undue degradation of the lands.

1.4. Decision to be Made

The decision the BLM would make is whether to approve SEL's Plan and authorize exploration activities, as proposed, approve the Plan with stipulations, or to not approve the Plan per 43 CFR 3809.411. The decision may include additional mitigation measures that are identified as a result of the analysis presented in this EA in order to prevent unnecessary or undue degradation of public lands, protect sensitive resource values, and provide for reclamation of disturbed areas. The BLM may deny approval of the Plan and not authorize the mining activities if it is found that the proposal does not comply with the 3809 regulations and the FLPMA mandate to prevent unnecessary or undue degradation.

1.5. Scoping, Public Involvement and Issues

An interdisciplinary team meeting was held at the BLM office in Winnemucca on July 10, 2012 for internal scoping. During this meeting, BLM personnel identified the following issues associated with supplemental authorities and other resources to be addressed in this document in Chapter 3:

- Air Quality – Project emissions from road construction activities, drilling and travel in the Project Area may affect air quality.
- Cultural Resources – Cultural sites and artifacts may be impacted, removed, or damaged.
- Migratory Birds – Vegetation removal during various phases of the Project may impact or deter migratory birds. Migratory birds may also be disturbed, particularly during nesting season, as a result of increased activity in the area.
- Native American Religious Concerns – Surface disturbing activities may raise concerns with local Native American tribal governments. These activities may impact sites considered to be sacred by the Tribes.
- Noxious Weeds, Invasive and Nonnative Species – Invasive species may be present in the Project Area. New road construction may increase the threat of the spread of weeds.
- Wetlands/Riparian Zones – Removal of vegetation and increased soil erosion resulting from road construction may impact wetlands and riparian areas.
- Rangeland Management – Restrictions in livestock use as a result of fencing the drill sites, and disturbance to range improvement projects could occur.
- Soils – Soil compaction may occur as a result of heavy equipment driving over soils. Ground disturbing activities may increase soil erosion.
- Special Status Species- Removal of vegetation, increased human presence, and increased vehicular traffic may deter or impact special status species located in the area.
- Vegetation – Removal of vegetation would occur to conduct certain aspects of the Project.
- Wild Horses and Burros – Potential horse gathers may be impacted due to fencing of drill sites. Deterrence of horses from watering sources may occur due to exploration activities.

Public scoping was not conducted for this Project.

Chapter 2. Proposed Action and Alternatives

2.1. Description of the Proposed Action

The Proposed Action consists of expanding existing Notice-level exploration activities on public land and private land within the 19,801-acre Project Area. Expanded exploration activities would include the following: exploration drilling; construction of roads, drill pads and sumps; utilization of overland travel and drill sites; potential installation of ground water monitoring wells and a meteorological station; and utilization and maintenance, as necessary, of existing roads used to access the exploration sites. The Proposed Action would increase the existing Notice-level and private land surface disturbance of approximately 25 acres to a total of 200 acres. [Map 2.1.1: Project Location, Existing Disturbance, and Proposed Phase I Exploration Activities](#) shows the existing and proposed disturbance. The increased amount of disturbance would occur in phases over a ten-year period. Project activities would be located on lands administered by the BLM and on privately owned land. Surface disturbance under subsequent phases cannot be specified at this time because the specific locations would be based on the results of Phase I activities. The existing and proposed surface disturbance is outlined by type of activity in [Table 2.1, “Existing and Proposed Project Surface Disturbance”](#).

Table 2.1. Existing and Proposed Project Surface Disturbance

Disturbance Component	Surface Disturbance (acres)						Total
	Existing		Proposed Phase I		Subsequent Phases		
	Public	Private	Public	Private	Public	Private	
Constructed Road	12.9	1.5	77.2	2.6	15.2	4.3	113.7
Overland Travel	4.5	0.0	2.00	0.0	4.0	1.5	12.0
Constructed Drill Sites and Sumps	1.6	0.8	37.4	1.3	15.0	5.0	61.1
Overland Drill Sites and Sumps	2.7	0.0	1.0	0.0	2.0	1.4	7.1
Staging Area	0.0	1.0	3.0	0.0	1.0	0.0	5.0
Monitoring Well Sites	0.0	0.0	0.0	0.0	0.5	0.5	1.0
Total	21.7	3.3	120.6	3.9	37.7	12.7	200.0

As outlined in [Table 2.1, “Existing and Proposed Project Surface Disturbance”](#), SEL has projected that the total existing, proposed, and subsequent surface disturbance would be approximately 200 acres. By using a phased approach to drilling, SEL would assess the expansion needs of the Project based on current drill results. In order to provide the BLM with relevant information concerning the location and types of surface disturbance and to avoid sensitive resources under each phase, SEL would provide documentation (i.e., work plans and maps) for the areas of planned exploration prior to commencing the proposed exploration activities. The BLM would provide a review and approval of each submittal prior to initiating activities under each work plan. In addition, SEL would provide to the BLM and NDEP an annual report on, or before, April 15th of each year that documents surface disturbance locations, types of surface disturbance, and any completed concurrent reclamation.

2.1.1. Location and Access

The Project is located on public lands administered by the BLM and private lands in parts or all of Sections 1, 9-12, 14-16, and 20-36, T41N, R43E, Sections 1-5, 8-13, 16, and 17, T40N, R43E, and Sections 4-8, T40N, R44E, MDB&M in Humboldt County, Nevada. [Table 2.2, “Snowstorm Exploration Project Area Legal Description”](#) includes the legal description for the Project. The

Project is located on the United States Geological Survey 7.5-minute topographic quadrangles Dry Hills North, Kenny Creek, Chimney Reservoir, and Layton Spring. The Project is accessed from Winnemucca, Nevada, by traveling approximately 22 miles north on U.S. Highway 95, turning east and continuing for approximately ten miles on State Route 290 toward the town of Paradise Valley, then turning east on Shelton Road and continuing approximately 20 miles to Chimney Reservoir. The Project Area is located east and south of Chimney Reservoir. Access within the Project Area is provided by existing dirt roads, existing Notice-level roads, overland travel, and proposed new road construction ([Map 2.1.1](#)).

Table 2.2. Snowstorm Exploration Project Area Legal Description

Section	Location
T40N, R43E	
1	Lots 1-10; SW $\frac{1}{4}$ of the NE $\frac{1}{4}$; SW $\frac{1}{4}$; S $\frac{1}{2}$ of the NW $\frac{1}{4}$; W $\frac{1}{2}$ of the SE $\frac{1}{4}$
2	Lots 1-4; S $\frac{1}{2}$ of the N $\frac{1}{2}$; S $\frac{1}{2}$
3	Lots 1-4; S $\frac{1}{2}$ of the N $\frac{1}{2}$; S $\frac{1}{2}$
4	Lots 1-4; S $\frac{1}{2}$ of the N $\frac{1}{2}$; S $\frac{1}{2}$
5	Lots 1-4; S $\frac{1}{2}$ of the NE $\frac{1}{4}$; SE $\frac{1}{4}$ of the NW $\frac{1}{4}$; E $\frac{1}{2}$ of the SW $\frac{1}{4}$; SE $\frac{1}{4}$
8	NE $\frac{1}{4}$ of the NW $\frac{1}{4}$; E $\frac{1}{2}$
9	All
10	All
11	All
12	Lots 1-4; W $\frac{1}{2}$ of the E $\frac{1}{2}$; W $\frac{1}{2}$
13	Lots 1-4; W $\frac{1}{2}$ of the E $\frac{1}{2}$; W $\frac{1}{2}$
16	All
17	E $\frac{1}{2}$
T40N, R44E	
4	Lots 21-22; NE $\frac{1}{4}$ of the SW $\frac{1}{4}$
5	Lots 13, 15, 17-24; W $\frac{1}{2}$ of the SW $\frac{1}{4}$
6	Lots 2, 4-23; SE $\frac{1}{4}$
7	Lots 1-4; NE $\frac{1}{4}$; E $\frac{1}{2}$ of the NW $\frac{1}{4}$; N $\frac{1}{2}$ of the SE $\frac{1}{4}$; SE $\frac{1}{4}$ of the SE $\frac{1}{4}$
8	N $\frac{1}{2}$ of the NE $\frac{1}{4}$; SW $\frac{1}{4}$ of the NE $\frac{1}{4}$
T41N, R43E	
1	S $\frac{1}{2}$ of the SE $\frac{1}{4}$
9	SE $\frac{1}{4}$ of the SE $\frac{1}{4}$
10	S $\frac{1}{2}$ of the NE $\frac{1}{4}$; NE $\frac{1}{4}$ of the SW $\frac{1}{4}$; S $\frac{1}{2}$ of the SW $\frac{1}{4}$; SE $\frac{1}{4}$
11	S $\frac{1}{2}$ of the N $\frac{1}{2}$; W $\frac{1}{2}$ of the SW $\frac{1}{4}$; N $\frac{1}{2}$ of the SE $\frac{1}{4}$
12	N $\frac{1}{2}$ of the N $\frac{1}{2}$; SW $\frac{1}{4}$ of the NW $\frac{1}{4}$
14	W $\frac{1}{2}$ of the NW $\frac{1}{4}$; SW $\frac{1}{4}$; W $\frac{1}{2}$ of the SE $\frac{1}{4}$; SE $\frac{1}{4}$ of the SE $\frac{1}{4}$
15	All
16	NE $\frac{1}{4}$; NE $\frac{1}{4}$ of the SW $\frac{1}{4}$; S $\frac{1}{2}$ of the SW $\frac{1}{4}$; SE $\frac{1}{4}$
20	SE $\frac{1}{4}$ of the NE $\frac{1}{4}$; SE $\frac{1}{4}$ of the SW $\frac{1}{4}$; SE $\frac{1}{4}$
21	All
22	All
23	All
24	W $\frac{1}{2}$ of the SW $\frac{1}{4}$
25	NW $\frac{1}{4}$; S $\frac{1}{2}$
26	All
27	All
28	All
29	All
30	SE $\frac{1}{4}$ of the NE $\frac{1}{4}$; SE $\frac{1}{4}$ of the SW $\frac{1}{4}$; SE $\frac{1}{4}$
31	E $\frac{1}{2}$; E $\frac{1}{2}$ of the NW $\frac{1}{4}$; NE $\frac{1}{4}$ of the SW $\frac{1}{4}$
32	All

Section	Location
33	All
34	All
35	All
36	All

Notes: N – north; E – east; S – south; W- west; NE – northeast; NW – northwest; SE – southeast; SW – southwest

2.1.2. Drill Sites and Drilling Procedures

Drill sites would have working areas that measure approximately 150 feet long by 70 feet wide. Drill sites would be the minimum size necessary for safe access and to provide a safe working area for equipment and crews. SEL plans to utilize both overland and constructed drill sites ([Table 2.1, “Existing and Proposed Project Surface Disturbance”](#)). Sumps would be installed at each drill site to contain cuttings and manage drilling fluids, and are included within the disturbance of each drill site. Sumps would measure approximately ten feet long by 20 feet wide by 6.75 feet deep. A second in-line sump may be required for additional management of drilling fluids. One side of each sump would be constructed to slopes of 2 horizontal (h) to 1 vertical (v) or flatter and fenced for safety of personnel and wildlife. Upon completion of drilling activities, sumps would remain fenced until fluids have infiltrated or evaporated then would be reclaimed.

Drilling of exploration holes would be completed by a combination of drilling techniques and equipment including reverse-circulation, mud rotary, and diamond core. All drilling equipment would be either truck- or track-mounted. For any one drill hole, a combination of these types of drill rigs would be used. In some situations, particularly for deep holes, all three methods may be used sequentially to complete the hole.

Drill holes would be both angled and vertical with an average depth of approximately 3,000 feet up to a maximum of 4,500 feet. Drill holes would be plugged prior to the drill rig leaving the site except for drill holes started with a mud rotary or reverse circulation drill rig and completed with a core rig. Drill holes left open for completion with a core rig would be temporarily capped to prevent wildlife or potential contaminants from entering the drill hole. Any open drill holes located near a road or with other safety hazards to personnel and/or wildlife would be fenced. Upon completion of any core drill hole, the drill hole would be plugged in accordance with Nevada Revised Statute (NRS) 534, NAC 534.4369, and NAC 534.4371. If groundwater is encountered, holes would be plugged pursuant to NAC 534.420. A maximum of 20 drill holes may remain open at any one time.

2.1.3. Overland Travel and Constructed Roads

The running width for overland travel routes would average ten feet and the running width for constructed roads would average approximately 14 feet. Planned disturbance associated with overland travel and road construction is shown in [Table 2.1, “Existing and Proposed Project Surface Disturbance”](#) and [Map 2.1.1](#). Exploration roads that require earthmoving would be constructed using typical construction practices, as described in BLM Handbook 9113-1 for road design (BLM 2011a), for temporary mineral exploration roads to minimize surface disturbance, erosion, and visual contrast, as well as to facilitate reclamation. Road construction would be implemented using a Caterpillar motor grader, backhoe, or equivalent equipment. Road grades would be no steeper than ten percent.

Balanced cut and fill construction would be used to the extent practicable to minimize the exposed cut slopes and the volume of fill material. Since the depth of the cut would be kept to a minimum, growth media removed during construction would be stockpiled as the fill slope to be used during reclamation. Road construction within drainages would be avoided where possible. When drainages must be crossed by a road, Best Management Practices (BMPs) established by NDEP and the Nevada Division of Conservation Districts through the State Environmental Commission (1994) would be followed to minimize the surface disturbance and erosion potential. Culverts would generally not be installed on exploration roads. However, if a culvert is necessary, the placement and size would need to be approved by the BLM and BMRR. It is not anticipated that blasting would be necessary to construct roadbeds. If drilling and blasting of exploration drill roads should become necessary, prior to blasting, the operator would submit an approved safety plan to the BLM and BMRR. Access roads, exploration roads, and drill sites would be visually monitored for erosion in the spring and fall, as well as after major storm events when Project activities are occurring. Maintenance of existing access roads would be conducted only on an as-needed basis. Access road maintenance would consist of smoothing rutted surfaces and holes. Maintenance of exploration roads would include minor seasonal regrading and reestablishment of water bars, as necessary. If road rock is necessary to improve some of the roads in the area, the rock would be obtained from a private borrow source.

2.1.4. Equipment and Personnel

SEL anticipates that the following types of equipment would be used at the Project:

- One motor grader;
- Up to two tracked excavators;
- One 4x4 backhoe;
- One ten-yard dump truck;
- One dozer, D-7 or D-8 equivalent;
- One small low-impact tractor and attachments;
- Up to ten drill rigs;
- Up to five 3,500-gallon water trucks;
- Up to four pipe trucks;
- One booster truck;
- One auxiliary air compressor;
- Up to four portable light plant/generators;
- One service truck;
- Up to ten light vehicles (pick-up trucks); and
- Up to two crew vans.

A combination of drilling techniques and equipment may be used including reverse circulation, mud rotary, and diamond core. It is anticipated that two core drills would be utilized for the majority of the program. Additional drill rigs may be utilized as the exploration program develops. All drilling equipment would be either truck- or track-mounted.

Earthwork would generally be completed with a Caterpillar motor grader, tracked excavator, backhoe, dozer (or equivalent equipment), and an all-terrain vehicle with a seed broadcaster, or comparable method. SEL would take steps to prevent fires by ensuring that each field vehicle carries hand tools and a fire extinguisher. Water trucks at the Project Area would be used in the event of a fire. A “fire box” would be located at each drill site with hand tools, extinguishers and hand-operated spray pumps. All portable equipment, including drill rigs, support vehicles, and drilling supplies, would be removed from the Project Area during extended periods of non-operation.

2.1.5. Work Force

The number and type of personnel present in the Project Area would vary with the level of activity. The total number of people on site at any one time could range from 5 to 80 with personnel representing SEL, the drilling company, and various support services.

SEL personnel would commonly include the following: a drilling supervisor; two geologists; and a field technician. SEL would follow standard drilling procedures and require a company representative to be on site or on call throughout drilling activities. The company representative would monitor and coordinate the layout and construction of each drill site, the setup of the drill rig, drilling progress, demobilization, and cleanup of the drill site. A company geologist would also coordinate drilling activities, log each hole according to the geologic features encountered, determine the maximum depth of each hole, and advise the drill operator, as needed. The company representative and geologist would travel to and from the drill site in separate four-wheel drive pickup trucks.

If more than one drill rig is on site, a drilling foreman may be present to coordinate operations. Each drill rig may be operating on a 24-hour basis. Standard drill rig crews for each drill rig on site would consist of a drill operator and one or two helpers for each 12-hour shift. The helpers normally remove and box the recovered core samples, the cuttings from reverse circulation rigs, mix drilling fluids in the portable mud tank, operate the water truck, assist with drilling operations, and conduct maintenance as necessary. The crew would be transported to and from the drill site in up to two four-wheel drive vehicles per drill rig or a drilling company operated crew van. As needed, drill company service trucks and mechanics may be on site.

Contract water trucks and drivers may be utilized for dust suppression, and to augment water delivery to the drills. Personnel would travel to and from the drill sites in four-wheel drive pickup trucks or crew vans.

2.1.6. Surface Occupancy

Under 43 CFR 3710 Subpart 3715.0-5, occupancy means full or part-time residence on the public lands. Occupancy also includes activities that involve residence; the construction, presence, or maintenance of temporary or permanent structures that may be used for such purposes; or the use of a watchman or caretaker for the purpose of monitoring activities. Residence or structures

include, but are not limited to, barriers to access, fences, tents, motor homes, trailers, cabins, houses, buildings, and storage of equipment or supplies. No structures, as listed above, are proposed in this Project to be located on public land. The ground water monitoring wells and meteorological station, when installed, would qualify as surface uses and occupancy under 43 CFR 3710 Subpart 3715.0-5.

2.1.7. Meteorological Station

SEL could install and operate a meteorological station under subsequent phases of the Project. The meteorological station would be installed on surface disturbance remaining from the construction of a drill site and would be within the drill site dimensions of 150 feet long by 70 feet wide. Engineering design and installation plans would be submitted to the BLM for approval prior to installation of the meteorological station.

2.1.8. Water Use

Water would be used for dust suppression, and during drilling to cool the drill bit and aid in the management of drill cuttings. Water would be utilized with or without nontoxic drilling additives. Water would be obtained from the outflow of Chimney Reservoir, or other private water sources. SEL has obtained a written water usage agreement with Nevada First Corporation (NFC) Land and Cattle LLC. It is estimated that approximately six million gallons of water would be used annually for drilling, assuming the usage of only two drill rigs, and approximately three million gallons of water would be used for dust control annually. If the maximum number of ten drill rigs were used then approximately 30 million gallons of water would be used annually for drilling, and approximately three million gallons for dust control. However, water usage may vary with weather conditions and the location of operations.

2.1.8.1. Monitoring Wells

The construction of water monitoring wells could be included under subsequent phases of the Plan. SEL has no proposed locations for any wells at this stage in the Project. Once the location and depth of monitoring wells is determined, SEL would notify the BLM, BMRR, and the Nevada Division of Water Resources (NDWR) of the monitoring well locations, and submit plans for approval by BLM, BMRR, and NDWR.

Well sites would each require a disturbance area of approximately 70 feet by 150 feet. In accordance with NAC 534.4361.1, a surface pad would be constructed around each monitoring well. The monitoring wells would be plugged in accordance with NAC 534.420.

2.1.9. Surface and Ground Water Control

Water would be used for dust suppression and during drilling to cool the drill bit and remove drill cuttings. Material Safety Data Sheets for common drill additives are included in Appendix D of the Plan. Drill fluids would be managed with the use of sumps at each drill site. BMPs for sediment control would be utilized during construction, operation, and reclamation to minimize sedimentation from disturbed areas. Proposed construction and drilling activities would avoid springs and seeps. In order to facilitate proper drainage and prevent erosion, all bladed roads would have water bars constructed, as needed, at BLM-recommended spacings.

Sediment control structures may include, but not be limited to, fabric or certified weed-free straw bale filter fences, siltation or filter berms, sumps, and downgradient drainage channels in order to prevent unnecessary or undue degradation to the environment. Sediment traps (sumps), constructed as necessary, within the drill site disturbance would be used to contain drill cuttings.

2.1.10. Solid and Hazardous Materials

All refuse generated by the Project would be disposed of at an authorized landfill facility off site, consistent with applicable regulations. No refuse would be disposed of on site. Portable toilets would be available in the Project Area for use by Project personnel. Water or nontoxic drilling fluids, additives, gels, and abandonment materials would be utilized, as necessary, during drilling and would be stored at the Project Area.

Hazardous materials utilized at the Project Area would include diesel fuel, gasoline, and lubricating grease. Approximately 500 gallons of diesel fuel would be stored in fuel delivery systems on vehicles and drill rigs. Approximately 100 gallons of gasoline would be stored in fuel delivery systems for light vehicles. Approximately 100 pounds of lubricating grease would be stored on the drill rigs or transported by drill trucks. All containers of hazardous substances would be labeled and handled in accordance with the Nevada Department of Transportation and NDEP. Any hazardous substance spills would be handled in accordance with SEL's Spill Contingency Plan which stipulates the immediate clean-up of the spilled substance and any resulting waste (e.g., oil, noxious fluids, chemicals, or contaminated materials) transferred off site in accordance with all applicable federal, state, and local regulations. Contract drill crews would maintain spill kits on site for use in case of a spill.

In the event that a reportable quantity of hazardous or regulated materials, such as diesel fuel, is spilled, measures would be taken to control the spill, and the NDEP, BLM, and the Emergency Response Hotline would be notified, as required. If any oil, hazardous material, or chemicals are spilled during operations, they would be cleaned up in a timely manner. After clean-up, the oil, toxic fluids, or chemicals, and any contaminated material would be removed from the site and disposed of at an approved disposal facility.

2.1.11. Reclamation

Reclamation would be completed to the standards described in 43 CFR 3809.420 and NAC 519A. Reclamation would meet the reclamation objectives as outlined in the U.S. Department of Interior Solid Minerals Reclamation Handbook #H-3042-1 (BLM 1992), revegetation success standards per NDEP/BLM "Nevada Guidelines for Successful Revegetation for the Nevada Division of Environmental Protection, the Bureau of Land Management, and the U.S.D.A. Forest Service" (BLM 1999), and Surface Management Handbook H-3809-1 (BLM 2012a). Overland travel and existing roads would be utilized as much as possible, minimizing the need for road construction. All SEL drill sites, sumps, overland travel, and road construction would be recontoured, decompacted, and reseeded.

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

During exploration activities, reclamation would involve management of drilling activities to contain cuttings and manage drilling fluids, monitoring road conditions, and keeping sites clean and safe. During seasonal closure of the Project and periods of inactivity between drilling phases, reclamation would involve filling sumps, cleaning sites, and maintaining the overall safety of the Project Area. The BLM and BMRR would be notified prior to any periods of inactivity greater than 120 days.

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

Should any drainages be disturbed, they would be re-shaped to approach the pre-construction contours. The resulting channels would be of the same capacity as up- and downstream reaches and would be made to prevent erosion by use of surface stabilization techniques (rip-rap) where necessary, and ultimately revegetated. Following completion of earthwork, all disturbed areas would be broadcast seeded.

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

All drill holes would be plugged prior to the drill rig leaving the site in accordance with NRS 534, NAC 534.4369, and NAC 534.4371 with the exception of drill holes collared with a mud rotary or reverse circulation drill rig and completed with a core rig, which would be plugged prior to the core rig moving from the drill site. If any drill hole produces artesian flow, the drill hole would be contained pursuant to NRS 534.060 and NAC 534.378 and would be sealed by the method described in Subsection 2 of NAC 534.4371. If the casings are set in a drill hole, either the drill hole must be completed as a well and plugged pursuant to NAC 534.420 or the casings would be completely removed from the drill hole and then be plugged in accordance with NAC 534.4369 and NAC 534.4371.

Exploration activities would occur over approximately ten years. All reclamation work, with the exception of revegetation monitoring, would be completed no later than two years after the completion of activities under this Project. SEL would conduct concurrent reclamation of disturbed areas once it is determined that the disturbance is no longer required for Project activities. [Table 2.3, “Anticipated Exploration Reclamation Schedule”](#) outlines the anticipated reclamation schedule on a quarterly basis, which would be followed to achieve the reclamation goals set forth above. Site conditions or yearly climatic variations could require that this schedule be modified to achieve revegetation success. Additional reclamation activities include the abandonment of any ground water monitoring wells in accordance with NAC 534.420 and the removal of all equipment, supplies, and materials brought onto public land at the end of the Project life.

Table 2.3. Anticipated Exploration Reclamation Schedule

TECHNIQUES	Quarter				Year(s)
	1 st Jan.-Mar.	2 nd April-June	3 rd July-Sept.	4 th Oct.-Dec.	
Regrading	No activity	Activities may occur	Activities may occur	Activities may occur	Immediately or no later than the following fall following completion of exploration activities at that particular location when those locations are no longer needed.
Seeding	Activities may occur	No activity	No activity	Activities may occur	Immediately or no later than the following fall following completion of exploration activities at that particular location when those locations are no longer needed.
Monitoring	No activity	Activities may occur	Activities may occur	No activity	Three years beyond regrading and reseeding

After exploration activities are terminated, reclamation would involve regrading disturbed areas related to this Project to their approximate original contour and seeding using the approved reclamation seed mixture and application rates furnished by the BLM ([Table 2.4, “Proposed Revegetation Seed Mix”](#)). The reclaimed surfaces would be left in a textured or rough condition (small humps, pits, etc.). Overland travel routes would be scarified and reseeded, if necessary. In general, earthwork and drainage control would be completed in the summer or early fall.

Table 2.4. Proposed Revegetation Seed Mix

Common Name	Scientific Name	Pounds/Acre (pure live seed)
Fourwing saltbush	<i>Atriplex canescens</i>	3.0
Shadscale	<i>Atriplex confertifolia</i>	3.0
Indian ricegrass	<i>Achnatherum hymenoides</i>	2.0
Snake River wheatgrass	<i>Elymus wawawaiensis</i>	2.5
Wyoming big sagebrush	<i>Artemisia tridentate ssp. wyomingensis</i>	0.1
Total		10.6

Timing of revegetation activities is critically important to the overall success of the program. Seeding activities would be timed to take advantage of optimal climatic periods and would be coordinated with other reclamation activities, if possible. Seedbed preparation would generally be completed in the fall, either concurrently with or immediately prior to seeding. Seeds would be sown in late fall to take advantage of winter and spring precipitation and optimum spring germination. Early spring seeding may be utilized for areas not seeded in the fall.

The seeding would be completed using a broadcast method and then raked by hand or low impact equipment. Broadcast seed application would be at the rate of approximately 9.5 pounds of pure live seed per acre and native seed would be used, when available. Only certified weed-free seed would be used for reclamation seeding. Changes or adjustments to the reclamation plant list or application rate would be completed in consultation with and approval by the BLM and BMRR.

Post-reclamation maintenance would consist of remedial dirt work and reseeding, if required. Site monitoring for stability and revegetation success would be conducted once a year, generally during the spring or fall, for a minimum of three years or until attainment of the revegetation

standards established in the Nevada Guidelines for Successful Revegetation for the NDEP, the BLM, and the USDA Forest Service (Instruction Memorandum [IM] #NV 99-013).

Post-closure management would commence on any reclaimed area following completion of the reclamation work for the area. Post-closure management would extend until the reclamation of the site or component has been accepted by both the BLM and BMRR. For sites reclaimed early in the operations of the Proposed Action, management of the reclaimed sites would occur concurrently with operational site management.

2.1.12. Monitoring

Monitoring of the drill sumps would include periodic visual inspections during drill operations to ensure that the drill cuttings and fluids are contained. Should the observed condition indicate that the sump containment is inadequate, additional sump capacity would be built or incorporated into the drilling fluid management system. Monitoring of drill roads and water bars would also include visual inspections, especially after storm events. If erosion occurs, or seems likely to occur, the water bars and roads would be repaired using a bulldozer, or equivalent equipment.

Yearly visits to the site would be conducted to monitor the success of the revegetation for a minimum of three years following seeding or would extend until the revegetation of the site has met the criteria of IM NV-1999-013 as determined by both the BLM and BMRR.

SEL would be required to comply with reporting requirements identified in [Section 2.1, “Description of the Proposed Action”](#).

Annual reports showing reclamation progress would be submitted to the BLM and BMRR by April 15th of each year. This report would document surface disturbance locations, types of surface disturbance, and any completed concurrent reclamation.

2.1.13. Environmental Protection Measures

SEL would commit to the following environmental protection measures to prevent unnecessary or undue degradation during construction, operation, and reclamation of the Project. The measures are derived from the general requirements established in the BLM’s Surface Management Regulations at 43 CFR 3809 and BMRR mining reclamation regulations, as well as water, air quality, and other environmental protection regulations.

Air Quality

- Emissions of fugitive dust from disturbed surfaces would be minimized by the application of water from a water truck as a method of dust control. A Surface Area Disturbance (SAD) Permit (Permit No. AP1041-3262) was obtained for the Project and approved by the Bureau of Air Pollution Control (BAPC) on October 30, 2012 because the proposed surface disturbance exceeds 20 acres. A Dust Control Plan is included in the SAD Permit (BAPC 2012).

Cultural and Paleontological Resources

- Pursuant to 43 CFR 10.4(g), SEL would notify the BLM authorized officer, by telephone, and with written confirmation, immediately upon the discovery of human remains, funerary objects, sacred objects, or objects of cultural patrimony (as defined in 43 CFR 10.2). Further pursuant to 43 CFR 10.4 (c) and (d) and 3809.420(b)(8)(iii), the operator would immediately

stop all activities in the vicinity of the discovery, make a reasonable effort to protect the discovered objects, and not commence again until notified to proceed by the BLM authorized officer.

- SEL would avoid all National Register of Historic Places (NRHP) eligible sites and/or contributing elements of eligible cultural sites by a buffer zone of 30 meters. Prior to SEL initiating activities under each phase, the BLM would review the work plan for each phase to ensure the protection of all NRHP-eligible sites and/or contributing elements of eligible sites. If deemed necessary by the BLM, SEL would place a qualified archaeologist on site during surface disturbing activities near known cultural resources to inspect the area prior to disturbance to ensure eligible cultural sites are avoided.
- SEL would inform all field personnel of the Archaeological Resources Protection Act of 1979 and the Native American Graves Protection and Repatriation Act (P.L. 101-601) (NAGPRA) responsibilities and their associated penalties.
- Any cultural resource discovered by the permit holder, or any person working on their behalf, during the course of activities on federal land would be immediately reported to the authorized officer by telephone, with written confirmation. The permit holder would suspend all operations in the immediate area of such discovery and protect it until an evaluation of the discovery can be made by the authorized officer. This evaluation would determine the significance of the discovery and what mitigation measures are necessary to allow activities to proceed. The holder is responsible for the cost of evaluation and mitigation. Operations may resume only upon written authorization to proceed from the authorized officer.
- Pursuant to 43 CFR 3809.420(b)(8)(ii), SEL would notify the BLM authorized officer, by telephone, and with written confirmation, immediately upon the discovery of paleontological resources that are discovered as the result of surface disturbing activities, the item(s) or condition(s) would be left intact and immediately brought to the attention of the BLM. Further pursuant to 43 CFR 10.4 (c) and (d), the operator would immediately stop all activities in the vicinity of the discovery and not commence again for 30 days of when notified to proceed by the BLM authorized officer. If significant paleontological resources are found, avoidance, recordation, and data recovery would be required.

Migratory Birds

- In order to avoid potential impacts to breeding migratory birds (including golden eagles [*Aquila chrysaetos*] and western burrowing owls [*Athene cunicularia hypugaea*]), a nest survey would be conducted by a qualified biologist within potential breeding habitat prior to any surface disturbance associated with exploration activities during the avian breeding season (February 1 through August 31 for raptors and March 1 through July 31 for other avian species). Pre-disturbance surveys would be required to be conducted no more than ten days and no less than three days prior to initiation of disturbance. If the disturbance for the specific location does not occur within ten days of the survey, another survey would be conducted. If active nests are located, or if other evidence of nesting (i.e., mated pairs, territorial defense, carrying nest material, transporting food) is observed, a protective buffer (the size depending on the habitat requirements of the species) would be delineated after consultation with the BLM biologist and the buffer area avoided to prevent destruction or disturbance to nests or birds until they are no longer actively breeding or rearing young, or until the young have fledged. The site characteristics to be used to determine the size of the buffer area are as follows: a) topographic screening; b) distance from disturbance to nest; c) the size and quality

of foraging habitat surrounding the nest; d) sensitivity of the species to nest disturbances; and e) the protection status of the species.

- In order to avoid impacts to western burrowing owls, no surface disturbance would occur within 250 feet of active burrows year-round or within one-quarter mile of active nest burrows during the breeding season of February 1 through August 31.
- Prior to surface disturbing activities and to the issuance of a Finding of No Significant Impact (FONSI) and Decision Record, the client would prepare an Eagle Conservation Plan to be submitted to and be concurred with by the United States Fish and Wildlife Service (USFWS). Based on the USFWS determination of potential Project impacts and if a take permit is necessary, the client would obtain a take permit prior to surface disturbing activities that could have an impact on nesting activity.

Noxious Weeds

- Noxious weeds would be controlled through implementation of the following BMPs: concurrent reclamation efforts; operator control; removal of invasive, nonnative, and noxious weeds on reclaimed areas; and avoiding areas of known invasive, nonnative, and noxious weeds during periods when the weeds could be spread by vehicles.
- To eliminate the transport of vehicle-borne noxious weed seeds, roots, or rhizomes, all vehicles and heavy equipment used for the completion, maintenance, inspection, or monitoring of ground disturbing activities, for emergency fire suppression, or for authorized offroad driving within the Project Area, would be free of soil and debris capable of transporting weeds. All such vehicles and equipment would be cleaned with high power or high pressure equipment available at car washes in Battle Mountain or Winnemucca prior to entering the Project Area. Vehicles and equipment would not drive through known populations of noxious weeds or invasive species following the vehicle washing and prior to entering the Project Area. Cleaning efforts would concentrate on tracks, feet and tires, and on the undercarriage. Special emphasis would be applied to axles, frames, cross members, motor mounts, on and underneath the steps, running boards, and front bumper/brush guard assemblies. Vehicle cabs would be swept out and refuse would be disposed of in waste receptacles. There would be no cleaning sites in the Project Area.

Public Safety

- Public safety would be maintained throughout the duration of the Project. All equipment and other facilities would be maintained in a safe and orderly manner.
- Any survey monuments, witness corners, or reference monuments would be protected to the extent economically and technically feasible.
- All solid wastes would be disposed of in a state, federal, or local designated site.
- Pursuant to 43 CFR 8365.1-1(b)(3), no sewage, petroleum products, or refuse would be dumped from any trailer or vehicle.
- SEL would comply with all applicable state and federal fire laws and regulations and all reasonable measures would be taken to prevent and suppress fires in the Project Area.

- SEL would post traffic signs, such as heavy equipment operation and safety turnout areas. Project-related vehicles would also maintain appropriate speeds on Project access roads to ensure public safety.

Special Status Species

- In order to avoid potential impacts to pygmy rabbits, annual pre-disturbance surveys would be conducted by a qualified biologist within the two identified areas of pygmy rabbit habitat within the Project Area. If burrows or burrow complexes are identified within suitable sagebrush habitat in these two identified areas, a 400-foot buffer around the burrows or burrow complexes would be applied per IM-NV 2003-064(P) to ensure the burrows would not be impacted by Project activities.
- In order to reduce potential impacts to greater sage-grouse within the Project Area the following stipulations would be followed:
 - Sumps would be constructed with slopes of 2h:1v or flatter on one side to allow for safety of personnel and wildlife;
 - Once a drill site is no longer occupied, any associated drill sump would be fenced with highly visible temporary safety barriers that would eliminate the hazard for entanglement and would remain in place until reclamation of the sump has been completed;
 - Corner posts would be secured in undisturbed ground rather than loose spoil material; and
 - Excess fence material would be removed upon completion of Project activities.
- Within the proposed Project Area, vehicular travel would be permitted on existing roads only from 10 a.m. through 4 p.m. daily between March 1 and June 30 within a 3.2-mile buffer around the active lek site. All vehicles being actively used (including all-terrain vehicles [ATVs], off-highway vehicles [OHVs], and ultra-terrain vehicles [UTVs]) must be outside the 3.2-mile buffer area prior to 10 a.m. and after 4 p.m. Equipment and vehicles not in use may be left on site but must be shut down. No other mechanical disturbance activities (i.e., drilling, offroad travel, ATV use, grading) would be permitted on BLM-administered land during this time frame in order to avoid potential impacts to the greater sage-grouse lek within the proposed Project Area. An exception to these restrictions: Shelton Lane (also known as the Little Humboldt River Road), a Humboldt County road, may be used for vehicular travel within the Project Area at any time ([Map 2.1.2](#)).

Vegetation and Soils

- BMPs would be followed for sediment control and would be utilized during construction, operation, and reclamation to avoid negative impacts to the riparian scrub community resulting from surface disturbance activities. BMPs would include the use of one or all of the following: sediment traps or sumps; straw bales (certified weed-free); silt fences; the distribution of clarified water from sediment traps through perforated pipes in order to minimize erosion from channeling; and the use of common, centrally located sediment sumps. If needed, the use of a sand separation system would be used in conjunction with the sumps so that the recirculation of drilling fluids can be maximized.
- In order to avoid impacts to sagebrush habitat and biological soil crusts (BSCs), to the greatest extent feasible, SEL would utilize existing roads and trails, bare ground, burned areas, or

other areas devoid of sagebrush as much as possible. Overland travel would be utilized to the greatest extent feasible.

Water Quality

- All drill holes would be plugged in accordance with NRS 534, NAC 534.4369, and NAC 534.4371 with the exception of drill holes collared with a mud rotary or reverse circulation drill rig and completed with a core rig, which would be plugged prior to the core rig moving from the drill site. If any drill hole produces artesian flow, the drill hole would be contained pursuant to NRS 534.060 and NAC 534.378 and would be sealed by the method described in Subsection 2 of NAC 534.4371. If the casings are set in a drill hole, either the drill hole must be completed as a well and plugged pursuant to NAC 534.420 or the casings would be completely removed from the drill hole and then be plugged in accordance with NAC 534.4369 and NAC 534.4371.
- Storm water BMPs would be used at construction sites to minimize storm water erosion.
- BMPs such as weed-free straw bales to slow and disseminate discharge water from pump tests to decrease erosion and sedimentation to surface waters, would be used.
- Drill cuttings would be contained on site and fluids managed utilizing appropriate control measures. Sediment traps would be used as necessary and filled at the end of the drill program.
- SEL would follow the Spill Contingency Plan included in Appendix D of the Plan (SEL 2012).
- Only nontoxic fluids would be used in the drilling process.
- Surface disturbance in all riparian areas, would be avoided except for travel on existing road crossings. A buffer of 500 feet will be utilized for new surface disturbance near riparian areas.

2.2. Description of Alternatives Analyzed in Detail

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

Under the No Action Alternative, the Proposed Action would not be approved by the BLM; however, the area would remain available for other multiple use activities as approved by the BLM and BMRR. SEL would continue exploration in the Project Area on public and private land. Disturbance limits for the approved four Notices total approximately 20 acres of surface disturbance on public land. This acreage could be reclaimed and released by the BLM, based on compliance with the revegetation success release criteria, thereby allowing SEL to create sequential acreage of disturbance with BLM approval. Activities on private land would be approximately five acres. Activities associated with this total of approximately 25 acres of surface disturbance on public and private land include construction of exploration roads and drill pads, and utilization of overland travel.

2.3. Alternatives Considered but not Analyzed in Detail

2.3.1. Cross Country/Overland Travel Only Alternative

This alternative would utilize only overland or cross country travel and would not allow for construction of new roads. Utilization of cross country travel exclusively for the Project would eliminate portions of the exploration area due to steepness of the terrain, thick layers of soft sediments, or the presence of Wyoming big sagebrush, which would not permit the overland passage of Project-related equipment.

2.3.2. Use Only Existing Roads Alternative

Under this alternative, all exploration activities would use only existing roads and no new roads would be constructed. Utilization of existing roads only would eliminate portions of the exploration area. Exploration for lithologically controlled deposits in this area is difficult and requires numerous drill holes in locations that are not on the existing roads in order to evaluate the geologic and mineral potential. An alternative that eliminates access to portions of the exploration area would deny the claimant the opportunity to fully evaluate and characterize the mineral potential.

2.4. Conformance

The Proposed Action described in this EA is in conformance with the Paradise-Denio Management Framework Plan (BLM 1982), which states that the BLM should “make no land use decisions that would interfere with mineral development in areas (mining districts) of significant current and past mining activity.”

On lands open to location under the Mining Law, the BLM administers the surface of public land and federal subsurface mineral estate under the Mining Law and the FLPMA. The FLPMA also governs BLM’s administration of public land not open to location under the Mining Law.

Chapter 3. Affected Environment:

The purpose of this section of the EA is to describe the existing environment and potential impacts resulting from implementation of the Proposed Action or any of the listed alternatives.

3.1. General Project Setting

The Project Area lies at the base of the Snowstorm Mountains, and the topography in the Project Area is typical of the Basin and Range geomorphic province. Gently inclined planate erosion surfaces are carved in bedrock and generally veneered with fluvial gravels and fine-sandy alluvium or aeolian-placed material. Relief within the greater part of the Project Area is generally low; however, along the southeastern edge the relief increases as the plateaus of the Snowstorm Mountains are encountered.

According to the Western Regional Climate Center (WRCC), the average maximum temperature at Paradise Valley Ranch, which is located approximately 22 miles west of the Project Area, is 90.8 degrees (°) Fahrenheit (F) in July, and the average minimum temperature is 16.1 °F in January (WRCC 2010).

Vegetation communities in the vicinity of the Project Area are indicative of a desert environment, such as Wyoming Big Sagebrush, Sagebrush/Perennial Grass, Great Basin Grassland, and Riparian. Wildlife species in the area are those found in the Great Basin and adapted to arid environments.

Dispersed recreation activities occur within the vicinity of the Project Area and are dominated primarily by camping, hunting, fishing, and rock collecting. The Project Area lies within the vicinity of Chimney Reservoir and the Little Humboldt River. There are no designated wilderness areas in the vicinity of the Project Area. The North Fork of the Little Humboldt River Wilderness Study Area is located directly adjacent to the northern portion of the Project Area.

3.2. Supplemental Authorities and Additional Affected Resources

Supplemental Authorities

Supplemental authorities that are subject to requirements specified by statute or executive order (EO) and must be considered in all BLM documents. These authorities are listed in [Table 3.1, “Supplemental Authorities \(Critical Elements of the Human Environment\)”](#). The table lists the elements and their status as well as the rationale to determine whether an element present in the Project Area would be affected by the Proposed Action. Supplemental authorities that may be affected by the Proposed Action are analyzed in this chapter following the discussion of the Affected Environment for each element, resource, or use.

Table 3.1. Supplemental Authorities (Critical Elements of the Human Environment)

Supplemental Authorities	Not Present	Present/Not Affected	Present/May be Affected	Reference Section
Air Quality			X	See Section 3.3, “Air Quality”
Areas of Critical Environmental Concern (ACECs)	X			This element is not present within the Project Area.
Cultural Resources			X	See Section 3.4, “Cultural Resources”

Supplemental Authorities	Not Present	Present/Not Affected	Present/May be Affected	Reference Section
Environmental Justice		X		Based on the review of existing baseline data, Environmental Justice concerns were not identified in relation to the Project. Therefore, this element is not analyzed further in the EA.
Farmlands (Prime or Unique)	X			This element is not present within the Project.
Floodplains	X			There are no floodplains identified by the Federal Emergency Management Agency (FEMA) within the Project Area.
Migratory Birds			X	See Section 3.5, "Migratory Birds"
Native American Religious Concerns			X	See Section 3.6, "Native American Religious Concerns"
Noxious Weeds, Invasive and Nonnative Species			X	See Section 3.7, "Noxious Weeds, Invasive, and Nonnative Species"
Threatened & Endangered Species		X		Based on the results of agency consultation, no threatened or endangered species are located in the Project Area. Therefore, this element is not analyzed further in the EA.
Wastes, Hazardous or Solid		X		Based on the review of existing baseline data, impacts from wastes, hazardous or solid were not identified in relation to the Project. Therefore, this element is not analyzed further in the EA.
Water Quality (Surface/Ground)		X		Based on the review of existing baseline data, water quality concerns were not identified in relation to the Project. Therefore, this element is not analyzed further in the EA.
Wetlands and Riparian Zones			X	See Section 3.8, "Wetlands and Riparian Zones"
Wild and Scenic Rivers	X			This element is not present within the Project Area.
Wilderness	X			This element is not present within the Project Area.

Environmental Justice

The Project's effects on environmental justice were analyzed based on EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*. It was determined that there were no impacts as a result of the Proposed Action or alternatives, since the minority population in areas encompassing the Project did not exceed 50 percent pursuant to EO 12898, and the minority population was not meaningfully greater than the minority population percentage in the State of Nevada. In addition, income indicators were generally similar to the State of Nevada, which do not indicate that the areas in the vicinity of the Project would be classified as low income communities. This element is not analyzed in this EA.

Threatened or Endangered Species

The USFWS, Nevada Natural Heritage Program (NNHP), and the Nevada Department of Wildlife (NDOW) were contacted to obtain information regarding any threatened or endangered species that have the potential to occur within the Project Area (USFWS 2011; NNHP 2011; NDOW

2011). In addition, the BLM Sensitive Species List, which includes Threatened and Endangered Species, was evaluated for species with the potential to occur within the Project Area.

In a letter dated December 12, 2011, the NNHP identified that there may be habitat available for Lahontan cutthroat trout (*Oncorhynchus clarkii henshawi*), a federally threatened and BLM sensitive species within a five kilometer radius of the Project Area. Based on wildlife field surveys in June and August 2011, there was no potential habitat identified within the Project Area. Potential habitat is available northwest of the Project Area in the South Fork of the Little Humboldt River. This resource is not analyzed in this EA.

Wastes, Hazardous or Solid

Federal hazardous material and waste laws and regulations are applicable to hazardous substances used, stored, or generated by the Project. Applicable federal laws would include the following: the Resource Conservation and Recovery Act of 1976; Hazardous and Solid Waste Amendments; Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA [aka Superfund]); and the Superfund Amendments and Reauthorization Act of 1986. Pursuant to regulations promulgated under Section 102 of CERCLA, as amended, release of a reportable quantity of a hazardous substance to the environment in a 24-hour period must be reported to the National Response Center (40 CFR Part 302). A release of a reportable quantity on public land must also be reported to the BLM.

Similarly, State of Nevada hazardous material and waste laws and regulations are applicable to hazardous substances used, stored, and generated by the operation of the Project. NAC 445A.240 requires immediate reporting of a release of a reportable quantity of a hazardous substance to the NDEP, based on Table 302.4 in 40 CFR Part 302.

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

All refuse generated by the Project would be disposed of at an authorized landfill facility off site, consistent with applicable regulations. No refuse would be disposed of on site. Portable toilets would be available in the Project Area for use by Project personnel. Water or nontoxic drilling fluids, additives, gels and abandonment materials would be utilized as necessary during drilling and would be stored at the Project Area.

The generation of wastes and the use of hazardous materials as a result of the Proposed Action may result in the release of these wastes or materials. Vehicles traveling on public roads in the Project Area would result in the presence of other hazardous materials and wastes (e.g., fuel, antifreeze, battery acid, lead tire weights, mercury switches, or catalytic converters) for the duration of travel. [Section 2.1.10, "Solid and Hazardous Materials"](#) of this EA outlines how these wastes and materials would be managed and stored.

Through the implementation of the spill measures outlined in Appendix D of the Plan and the environmental protection measures outlined in [Section 2.1.13](#) of this EA, no impacts to the environment from wastes are anticipated as a result of the Proposed Action. This element is not analyzed in this EA.

Water-Quality, Surface and Ground

Surface Water

The Project Area receives moderate levels of precipitation, with moderate fluctuations in seasonal temperatures. The average annual precipitation is approximately 9.75 inches and tends to peak in January in the form of snow, with an average annual snowfall of 30.5 inches (WRCC 2010). Most of the rainfall in north central Nevada occurs as high-intensity, convective thunderstorms in spring and autumn (Natural Resources Conservation Service [NRCS] 2012a).

Surface water features within the Project Area include springs and drainages that traverse the Project Area in an east-west trend towards the Little Humboldt River and Chimney Dam Reservoir. Twelve springs have been identified in the Project Area. Most are ephemeral appearing only seasonally or during wet seasons. Three have been identified as perennial with only one named (Layton Spring). There is also a small segment of a perennial stream associated with a perennial spring in the southern portion of the Project Area on public land, as well as the perennial Little Humboldt River in the northern portion of the Project Area on private land. In general, surface water does not appear to be connected to the regional aquifer due to the geology in the area.

The Proposed Action could result in impacts to surface water quality as a result of spills and sedimentation or erosion from surface disturbance. The potential impacts to surface water quality from spilled petroleum products and drilling fluids would be minimized by the implementation of the Spill Contingency Plan included as Appendix D in the Plan. In addition, all containers of hazardous substances would be labeled and handled in accordance with the U.S. Department of Transportation, Federal Motor Carrier Safety Administration, and NDEP regulations. The potential impacts to surface water quality from sedimentation would be minimized by the implementation of the environmental protection measures outlined in [Section 2.1.13](#), including BMPs for road and drill pad construction. BMPs would include the use of one or all of the following: sediment traps or sumps; straw bales (certified weed-free); silt fences; the distribution of clarified water from sediment traps through perforated pipes in order to minimize erosion through channeling; and the use of common, centrally located sediment sumps. With implementation of the Spill Contingency Plan and applicable BMPs, impacts to surface water are not anticipated. This resource is not analyzed in the EA.

Ground Water

Ground water within the Project Area consists of flow through fractured zones in consolidated rocks. Hydrological information available from exploration drilling performed to date suggests that the depth to ground water is approximately 400 to 600 feet below the ground surface within the basin area, varying over different structural regimes. Records from previous exploration drilling activities in the Project Area and vicinity indicates that the amount of groundwater appears to be limited. The Project design and environmental protection measures ([Section 2.1.13](#)) would ensure that the Proposed Action does not cause degradation of ground water quality or quantity in accordance with NAC 534.4369 through NAC 534.4371. This resource is not analyzed in the EA.

Additional Affected Resources

In addition to the elements listed under supplemental authorities, the BLM considers other important resources and uses that occur on public lands in which impacts may occur from implementation of the Proposed Action. Other resources or uses of the human environment that have been considered for this EA are listed in [Table 3.2, “Additional Affected Resources”](#).

Resources that may be affected by the Proposed Action are analyzed in this chapter following the discussion of the Affected Environment for each resource or use.

Table 3.2. Additional Affected Resources

Additional Affected Resources	Not Present	Present/Not Affected	Present/May be Affected	Reference Section
Geology and Mineral Resources		X		Based on results of internal scoping and review of existing data, this resource is dismissed from further analysis.
Lands and Realty		X		Based on results of internal scoping and review of existing data, this resource is dismissed from further analysis.
Lands with Wilderness Characteristics	X			This element is not present within the Project Area
Paleontological Resources		X		Based on a detailed study of the paleontological resource potential, no vertebrate fossil locations would be impacted by the Proposed Action. Therefore, this resource is not analyzed in this EA.
Public Safety		X		Based on results of internal scoping and review of existing data, this resource is dismissed from further analysis.
Rangeland Management			X	See Section 3.9, “Rangeland Management”
Recreation		X		Based on results of internal scoping and review of existing data, this resource is dismissed from further analysis.
Social Values and Economics		X		Based on results of internal scoping and review of existing data, this resource is dismissed from further analysis.
Soils			X	See Section 3.10, “Soils”
Special Status Species (Plants and Wildlife)			X	See Section 3.11, “Special Status Species”
Vegetation			X	See Section 3.12, “Vegetation”
Visual Resources		X		Based on results of internal scoping and review of existing data, this resource is dismissed from further analysis.
Wild Horses			X	See Section 3.13, “Wild Horses”
Wildlife (General)			X	See Section 3.14, “Wildlife (General)”

Geology and Mineral Resources

The geology of the Snowstorm Project Area has been mapped and described by Willden (1964) in the Nevada Bureau of Mines publication “Geology and Mineralization of Humboldt County, Nevada.” This information was compiled and adapted by Crafford (2007) in the form of an updated geology map of Nevada. Details of the Chimney basin (west of the Snowstorm Mountains) geology and rock age dates have been presented by Wallace et al. (2008).

Miocene rocks are the oldest rocks exposed in the eastern part of the area and are composed of rhyolitic and dacitic volcanic rocks, predominantly flows and welded tuffs. Water-lain tuffs and other volcanoclastic rocks, and locally thin layers of andesite or basalt are also common.

Tertiary sedimentary rocks are abundant and include conglomerate, sandstone, shale, mudstone, and tuffaceous rocks. The age of the sedimentary rocks ranges from middle Miocene to middle

Pliocene. Locally in the Chimney basin (as defined by Wallace et al. 2008) the majority of the exposed sedimentary rocks are composed of fine-grained, even bedded, tuffaceous sediments and coarser unwelded, pumaceous air-fall deposits. Mud cracks and siliceous sinter deposits are common in the northern and western part of the basin and indicate periodic subaerial exposure.

A flow-folded and -banded, moderately phenocrystic rhyolite flow unit exposed at Chimney Dam has been age dated at 16.3 million years ago (Ma) (Wallace et al. 2008). This flow underlies tuffaceous sedimentary units of the Chimney basin.

The western edge of the Project Area is covered by Quaternary Older Alluvium as mapped by Willden (1964). The Older Alluvium is principally poorly sorted sub-angular to sub-rounded sand to cobble gravel. The coarser material is high on the alluvial fans and the finer material occurs near the toes of the fans. The highest recognizable terrace of Lake Lahontan (Late Pleistocene) is commonly established at an elevation of 4,360 to 4,400 feet amsl within the widespread Older Alluvium. The lowest elevation within the Project Area is approximately 4,600 feet amsl.

Quaternary Younger Alluvium is located along the stream channels of the Little Humboldt River. The Younger Alluvium contains Pleistocene and Recent lake sediments and shore line deposits, stream deposits and wind-blown sand.

The geologic structures in the area include four periods of intense compressive deformation between the middle or late Paleozoic and Late Cretaceous or early Tertiary (Willden 1964). One or more periods of high-angle Basin and Range faulting of late Tertiary to Recent age has affected the area and is responsible for the majority of the relief in the region. Numerous small, normal faults offset the Miocene rocks throughout the area in the northern part of the Chimney basin (Wallace et al. 2008). Dips on the Miocene sedimentary units are commonly less than 15° and many units are nearly horizontal. Faults strike predominantly north to northeast and the offset ranges from a few feet to approximately 300 feet.

The Project would not involve the removal of large volumes of earth that could potentially lead to structural instability. Only small samples of drill rock or rock chips would be removed and sampled. There would be no impact to geology and mineral resources from the Proposed Action; therefore, geology and mineral resources are not analyzed in this EA.

Lands and Realty

The Project Area contains both public land administered by the BLM and private land. The private land encompasses approximately 3,703 acres of the Project Area and has two landowners: NFC Land and Cattle LLC and joint ownership by Gary D. Wilson and Patricia M. Albusu. Private lands in the Project Area are zoned by Humboldt County as agricultural, General Agricultural District. Permitted uses within this zone include the following: residential dwellings including mobile homes; ranching and farming activities including the sale and display of products grown on the premises; breeding and raising of poultry and livestock; riding academies, schools, and stables; power transmission lines; and water supply reservoirs. The current land uses are livestock grazing, mineral exploration, dispersed recreation, and wildlife habitat. In addition, the Project Area is utilized for other uses, based on the BLM Master Title Plats, which have specific authorizations when located on public land. These uses include the following: two Humboldt County roads (NVN-074218 and NVN-074219) and an underground telephone/fiber optic line (NVN-060463).

There are two drill sites identified adjacent to the underground line. However, the drill sites occur on the west side of the road, and the underground line occurs on the east side of the road.

In addition, Humboldt County is aware of the Project and the usage of Shelton Road and Kelly Creek Road by Project equipment, and has not identified any potential issues for the utilization of the roads.

Roads created prior to January 1981 are generally exempt from reclamation as they were created prior to the issuance of applicable federal regulations. Roads that have been altered (i.e., footprint widened) may have to be reclaimed. Roads that have not been altered, other than for maintenance and minor repairs to the existing footprint, would not have to be reclaimed. [Map 3.2.1](#) shows the access roads which existed in the Project Area prior to January 1, 1981. These roads include County and other roads created by ranching, recreation, and exploration activities. Some of these roads have naturally revegetated due to limited use such that only two-tracks may be visible. No long-term impacts to lands and realty are expected as a result of the Proposed Action. This resource is not analyzed in this EA.

Paleontological Resources

A detailed study was conducted by Enviroscientists (Enviroscientists 2012b) using IM No. 2008–009 (BLM 2007) and IM No. 2009-011 (BLM 2008b). These two IMs provide guidance for the assessment of potential impacts to paleontological resources, field survey and monitoring procedures, and recommended mitigation measures that protect paleontological resources impacted by federal actions. Specifically, IM 2008-009 provides a detailed listing and description of the Potential Fossil Yield Classification (PFYC) system. The PFYC classification of the Project Area has been identified as Class 3, or moderate or unknown potential for significant paleontological resources.

The following is a description of this classification in the Project Area and a description of local site-specific geology:

- *Class 3 – Moderate or Unknown.* Fossiliferous sedimentary geologic units where fossil content varies in significance, abundance, and predictable occurrence; or sedimentary units of unknown fossil potential. These rock units are often marine in origin with sporadic known occurrences of vertebrate fossils. Vertebrate fossils and scientifically significant invertebrate or plant fossils are known to occur intermittently and predictability is known to be low. The units may be poorly studied and/or poorly documented.
 - *Class 3a – Moderate.* Units are known to contain vertebrate fossils or scientifically significant nonvertebrate fossils, but these occurrences are widely scattered. Common invertebrate or plant fossils may be found in the area, and opportunities may exist for hobby collecting. The potential for a project to be sited on or impact a significant fossil locality is low, but is somewhat higher for common fossils.
 - *Class 3b – Unknown.* Fossiliferous sedimentary units exhibit geologic features and preservational conditions that suggest significant fossils could be present, but little information about the paleontological resources of the unit or the area is known. This may indicate the unit or area is poorly studied, and field surveys may uncover significant finds. The units in this class may eventually be placed in another class when sufficient survey and research is performed.

Fossils associated with Lake Lahontan, based on current fossil finds in Nevada in pluvial environments, are found in sinkholes that are below beach level or in near beach tributaries flowing into the lake. The Lake Lahontan highstand contour is important for its potential to

produce Pleistocene fauna, which are considered significant fossil finds. Although the Project Area contains Quaternary alluvium, the alluvium is principally poorly sorted, sub-angular to subrounded sand to cobble gravel. The coarser material is high on the alluvial fans and the finer material occurs near the toes of the fans. Any Quaternary alluvium that is topographically higher than the Lake Lahontan highstand would be unlikely to contain significant fossils because of the nature of the alluvium and topographic relief. The Lake Lahontan highstand contour occurs 200 feet lower in elevation than the lowest contour found in the Project Area.

Miocene sedimentary rocks are abundant in the Project Area and include conglomerate, sandstone, shale, mudstone, and tuffaceous rocks. Based on other localities in Nevada, these lithologies could have the potential to contain fossils such as leaves or other flora and possibly fish, although none have been found to date in the geologic mapping that has been conducted. These fossils would be associated with finer-grained water-lain units and would be dependent on the original depositional environment (e.g., streams or lakes). It is unlikely that any significant paleontological resources would be found or impacted.

Surface disturbing activities may cause direct adverse impacts to paleontological resources through the damage or destruction of fossils, or loss of valuable scientific information by the disturbance of the stratigraphic context in which fossils are found. Indirect adverse impacts may be created by increased accessibility to important paleontological resources leading to looting or vandalism. The potential for significant paleontological resources in the Project Area has been identified as moderate or unknown (PFYC 3). If any previously undiscovered paleontological resources are discovered during Project operations, a BLM authorized officer would be immediately notified. If any significant paleontological resources are found during operations, avoidance, recordation, and/or data recovery would be required ([Section 2.1.13](#)). In addition, the Project proponent is generally responsible for the cost of implementing mitigation measures, including the cost of investigation, salvage, and curation of paleontological resources. Therefore, no impacts to paleontological resources are anticipated. This resource is not analyzed in this EA.

Public Safety

Primary public safety concerns in the Project Area would be from vehicle collisions between public vehicles traveling on Project access roads, such as Shelton Road and Kelly Creek Road, and Project related vehicles. In the vicinity of the Project Area the road surfaces are primarily gravel, curves are generally not banked, and the roads are not designed for high speed travel. The environmental protection measures in [Section 2.1.13](#) state that all equipment and other facilities would be maintained in a safe and orderly manner and that SEL would post traffic signs and Project-related vehicles would maintain appropriate speeds to ensure public safety. Therefore, impacts to public safety are not anticipated. This resource is not analyzed in this EA.

Recreation

Recreational uses of the public land in the vicinity of the Project Area consist of dispersed activities such as hunting, rock hounding, wildlife viewing, fishing, primitive camping, and limited offroad vehicle travel. The Chimney Reservoir is located to the northwest of the Project Area, with developed campsites on the eastern shoreline. Boat launching facilities and vehicle parking is provided adjacent to the campsites.

The Proposed Action would result in up to 200 acres of surface disturbance, which would reduce opportunities for hunting, rock hounding, wildlife viewing, primitive camping, and limited offroad vehicle travel within the Project Area. However, no impacts are anticipated as a result

of the Proposed Action, since there is other similar land available to recreational visitors in the vicinity of the Project Area. This resource is not analyzed in this EA.

Social Values and Economics

The Project Area is located in Humboldt County, Nevada, approximately 40 miles northeast of Winnemucca, Nevada. The total population of Humboldt County in 2011 was estimated to be 16,735 (U.S. Census Bureau 2012). The median household income in 2009 was \$57,309, with mining being identified as a major employment sector (Department of Employment, Training, and Rehabilitation [DETR] 2012).

A temporary workforce of up to 80 employees or contractors could be on the Project site at any given time. It is assumed that approximately 28 of these workers, including approximately eight SEL employees, would live in Humboldt County, while approximately 52 would come from outside areas. Such personnel would be temporary and should not create a demand for additional public or private services and would not impact public schools, the permanent housing market, or other services associated with permanent workers. Because of the low to no increase in local population and low economic contribution to the local economy, this resource is not analyzed in this EA.

Visual Resources

The Visual Resource Management (VRM) system designates classes for BLM-administered lands in order to identify and evaluate scenic values to determine the appropriate levels of management during land use planning ([Table 3.3, “BLM Visual Resource Management Classes”](#)). Each management class portrays the relative value of the visual resources and serves as a tool that describes the visual management objectives (BLM 1986).

Table 3.3. BLM Visual Resource Management Classes

Class	Description
I	The objective of this class is to preserve the existing character of the landscape. This class provides for natural ecological changes; however, it does not preclude very limited management activity. The level of change to the characteristic landscape should be very low and must not attract attention.
II	The objective of this class is to retain the existing character of the landscape. The level of change to the characteristic landscape should be low. Management activities may be seen, but should not attract the attention of the casual observer. Any change must repeat the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape.
III	The objective of this class is to partially retain the existing character of the landscape. The level of change to the character should be moderate. Management activities may attract attention, but should not dominate the view of the casual observer. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape.
IV	The objective of this class is to provide for management activities which require major modification of the existing character of the landscape. The level of change to the characteristic landscape can be high. Management activities may dominate the view and be the major focus of viewer attention. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and repeating the basic elements.
Source: BLM 1986	

Lands within the Project Area are currently designated as VRM Class IV. The activities associated with mineral exploration and surface disturbance may require modifying the existing character of the landscape. There has been previous surface disturbance from mineral exploration and road construction activities in the Project Area. In addition, the Project Area is located approximately

40 miles northeast of Winnemucca, Nevada, in a remote area of rolling hills, so it is not visible from any major highway.

Horizontal and shallow diagonal lines from drill roads would cause moderate, temporary line contrasts with the natural landscape. Disturbance of vegetation would cause moderate, temporary color contrasts. With successful reclamation of exploration roads and revegetation, long-term visual impacts are not anticipated. The objective of Class IV is to provide for management activities that require major modification of the existing character of the landscape. The level of change to the characteristic landscape can be high. These management activities may dominate the view and be the major focus of viewer attention. However, every attempt should be made to minimize the impacts of these activities through careful location, minimal disturbance, and repeating the basic elements (BLM 1986). The effects of the Proposed Action on visual resources would be consistent with BLM prescribed Class IV VRM objectives. This resource is not analyzed further in this EA.

3.3. Air Quality

The BAPC is the agency in the State of Nevada that has been delegated the responsibility for implementing a State Implementation Plan (SIP) for air quality (excluding Washoe and Clark Counties, which have their own SIPs). Included in a SIP are the State of Nevada air quality permit programs (NAC 445B.001 through 445B.3485, inclusive). Also as part of a SIP are the Nevada State Ambient Air Quality Standards (NSAAQS). The NSAAQS are generally identical to the National Ambient Air Quality Standards (NAAQS), with the exception of the following: (a) an additional standard for carbon monoxide (CO) in areas with an elevation in excess of 5,000 feet amsl; (b) the recently implemented NSAAQS for particulate matter of aerodynamic diameter less than 2.5 microns (PM_{2.5}); (c) the revised NAAQS for particulate matter of aerodynamic diameter less than ten microns (PM₁₀); (d) ozone (Nevada has yet to adopt the new and revised federal standards); and (e) a violation of a state standard occurs with the first annual exceedance of an ambient standard, while federal standards are generally not violated until the second annual exceedance. In addition to establishing the NSAAQS, the BAPC is responsible for the Prevention of Significant Deterioration (PSD) program, enforcing the New Source Performance Standards, and implementing the Federal Operating Permit Program (Title V) throughout the State of Nevada.

Attainment status within the Project Area is determined by monitoring ambient levels of criteria pollutants. The attainment or unclassified designation means that no violations of Nevada or national air quality standards have been documented in the region. The Project Area is located within the Little Humboldt Valley Air Basin (67). This basin is considered in attainment relative to the NAAQS and is not a PSD triggered basin for any pollutant. The existing air quality is typical of largely undeveloped regions of the western United States with limited sources of pollutants.

3.4. Cultural Resources

Available data indicate that prehistoric human populations have occupied the Project Area since the end of the Pleistocene era (ca. 11,000 years ago) but primarily during the late Holocene (ca. 3,000-500 years ago). Major creeks and their terraces were favored for occupation through prehistoric times, people evidently having used these areas for collecting roots, seed grasses, and other edible plants. Hunting was also a common activity, perhaps more so during earlier times than later. Obsidian from the Paradise Valley source and other deposits of raw chert were also of

interest to area occupants and were quarried at various locations across the Project Area. Historic use of the Project landscape was quite minimal, limited to transportation and grazing activities.

Thirteen previous cultural resources inventories identified 45 prehistoric sites and a single historic site in the Project Area and within a one-mile radius of the Project Area boundary. Most of the prehistoric sites are simple lithic scatters, while others include lithic quarries, a rock shelter, a hunting blind, an isolated flake, a historic artifact, and a rock wall. Many lie at the west and south ends of the Project Area, and most of those near Chimney Reservoir were identified by Hand (1975) or Smith and McGuckian (1977). Sites in the southern reaches were identified during the Twin Creek surveys (McCabe 1994; Walsh et al. 1996). Prehistoric sites mainly reflect the quarrying of obsidian and chert and short-term, probably task-specific stopovers; this is consistent with patterns identified in Kelly Creek Valley (Walsh et al. 1996) and during the current survey. One linear historic resource was also identified in the Project vicinity through pre-field map research. This resource is an old stage road depicted on 1872 and 1873 historical plat maps (T41N, R43E) as the "Road to Owyhee". The original route paralleled the south side of the South Fork of the Little Humboldt River. Currently, a section of the road passing through the Project Area is overlain by a modern graded road.

The 2012 Class III cultural resources inventory conducted only on public lands within the Project Area (Giambastiani et al. 2012) resulted in the documentation of 216 newly identified archaeological sites, 12 previously identified sites, and 211 isolated finds. All but six of the identified sites are of prehistoric age, ranging from simple lithic scatters with just two artifacts, to complex habitations with multiple artifact classes and horizontal structure; the exceptions are of historic age or have both prehistoric and historic artifact deposits. Historic-age remains consist entirely of domestic refuse except for a single road built sometime prior to 1872, which has been extensively altered/improved for contemporary use.

Evaluation efforts recommended 53 sites as eligible for listing in the NRHP under Criterion D and 175 sites as not eligible under any evaluation criteria. All of the eligible sites are of prehistoric age and stand to offer important archaeological data concerning various key research themes such as terminal Pleistocene-early Holocene adaptations, prehistoric land use and settlement patterns, chronology, hunter-gatherer subsistence, lithic procurement and use, and lithic technology. All 211 isolated finds are recommended not eligible for NRHP inclusion, including the pre-1872 road segment of the "Road to Owyhee" passing through the Project Area.

3.5. Migratory Birds

"Migratory bird" means any bird listed in 50 CFR 10.13. All native birds commonly found in the United States, with the exception of native resident game birds, are protected under the Migratory Bird Treaty Act (MBTA). The MBTA prohibits taking of migratory birds, their parts, nests, eggs, and nestlings. EO 13186, signed January 10, 2001, directs federal agencies to protect migratory birds by integrating bird conservation principles, measures, and practices.

Additional direction comes from the Memorandum of Understanding (MOU) between the BLM and the USFWS, signed January 17, 2001. The purpose of this MOU is to strengthen migratory bird conservation through enhanced collaboration between the BLM and USFWS, in coordination with state, tribal, and local governments. The MOU identifies management practices that impact populations of high priority migratory bird species, including nesting, migration, or over-wintering habitats, on public lands, and develops management objectives or recommendations that avoid or minimize these impacts.

During a June 2011 wildlife field survey, the following non-special status migratory bird species were detected in the Project Area: American coot (*Fulica americana*); American kestrel (*Falco sparverius*); American robin (*Turdus migratorius*); American white pelican (*Pelecanus erythrorhynchos*); barn swallow (*Hirundo rustica*); black-billed magpie (*Pica hudsonia*); blackthroated sparrow (*Amphispiza bilineata*); Brewer's blackbird (*Euphagus cyanocephalus*); brownheaded cowbird (*Molothrus ater*); bushtit (*Psaltiriparus minimus*); Canada goose (*Branta canadensis*); chipping sparrow (*Spizella passerina*); Cinnamon teal (*Anas cyanoptera*); cliff swallow (*Petrochelidon pyrrhonota*); common goldeneye (*Bucephala clangula*); common nighthawk (*Chordeiles minor*); common poorwill (*Phalaenoptilus nuttallii*); common raven (*Corvus corax*); Forster's tern (*Sterna forsteri*); gray flycatcher (*Empidonax wrightii*); great horned owl (*Bubo virginianus*); green-winged teal (*Anas crecca*); hairy woodpecker (*Picoides villosus*); horned lark (*Eremophila alpestris*); house finch (*Carpodacus mexicanus*); killdeer (*Charadrius vociferous*); lark sparrow (*Chondestes grammacus*); lesser goldfinch (*Carduelis psaltria*); long-eared owl (*Asio otus*); mallard (*Anas platyrhynchos*); mountain bluebird (*Sialia currucoides*); mourning dove (*Zenaidura macroura*); northern flicker (*Colaptes auratus*); olivesided flycatcher (*Contopus cooperi*); red-tailed hawk (*Buteo jamaicensis*); red-winged blackbird (*Agelaius phoeniceus*); rock wren (*Salpinctes obsoletus*); ruddy duck (*Oxyura jamaicensis*); sage sparrow (*Amphispiza belli*); spotted towhee (*Pipilo maculatus*); turkey vulture (*Cathartes aura*); western kingbird (*Tyrannus verticalis*); western meadowlark (*Sturnella neglecta*); Wilson's warbler (*Wilsonia pusilla*); white-faced ibis (*Plegadis chihi*); vesper sparrow (*Pooecetes gramineus*); and yellow-rumped warbler (*Dendroica coronata*) (Enviroscientists 2012a). The NDOW has identified the following species as conservation priority species: American white pelican; common nighthawk; olive-sided flycatcher; sage sparrow; and white-faced ibis (NDOW 2012).

The NDOW identified other non-special status migratory birds that are known to reside in the vicinity of the Project Area and include the following: barn owl (*Tyto alba*); Cooper's hawk (*Accipiter cooperii*); merlin (*Falco columbarius*); northern saw-whet owl (*Aegolius acadicus*); osprey (*Pandion haliaetus*); rough-legged hawk (*Buteo lagopus*); sharp-shinned hawk (*Accipiter striatus*); short-eared owl (*Asio flammeus*); western screech-owl (*Megascops kennicottii*); and greater sandhill crane (*Grus canadensis tabida*) (NDOW 2011). The NDOW has identified the greater sandhill crane as a conservation priority species (NDOW 2012). In addition, an NDOW biologist observed a prairie falcon (*Falco mexicanus*), also an NDOW conservation priority species, in the Project Area during the 2012 breeding season.

Special status bird species are discussed in [Section 3.11, "Special Status Species"](#).

3.6. Native American Religious Concerns

Located within the traditional territory of the Western Shoshone, the HRFO administrative boundary contains spiritual, traditional, and cultural resources, sites, and social practices that aid in maintaining and strengthening social, cultural, and spiritual integrity. Recognized tribes with known interests near the Project Area include the following: the Te-Moak Tribal Council; the Battle Mountain, Elko, South Fork, and Wells Bands of the Te-Moak Tribe of Western Shoshone; the Fort McDermitt Paiute and Shoshone Tribe; the Shoshone-Bannock Tribes; and the Shoshone Paiute Tribes of the Duck Valley Indian Reservation.

Social activities that continue to define the culture take place across lands currently administered by the BLM. Some Western Shoshone maintain certain cultural, spiritual, and traditional activities, visit their sacred sites, hunt game, and gather available medicinal and edible plants. Through oral

history (the practice of handing down knowledge from the elders to the younger generations), some Western Shoshone continue to maintain a world view similar to that of their ancestors.

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

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

On June 4, 2012, consultation initiation/invitation letters were mailed from the BLM HRFO administrative area to the following: the Te-Moak Tribal Council; the Battle Mountain, Elko, South Fork, and Wells Bands of the Te-Moak Tribe of Western Shoshone; the Fort McDermitt Paiute/Shoshone Tribe; and the Shoshone-Bannock Tribes. In addition, on June 6, 2012, a consultation initiation/invitation letter was sent to the Shoshone Paiute Tribes of the Duck Valley Indian Reservation. Phone calls were made to all the above listed tribes on July 5th and 6th, 2012. To date, no TCPs or EO 13007 sites have been identified within the Project Area that might be impacted by the Proposed Action or alternative; however, the BLM continues to provide opportunities for participation and input.

3.7. Noxious Weeds, Invasive, and Nonnative Species

The BLM defines "noxious weed" as "any plant growing where it is not wanted. Legally, a noxious weed is any plant designated by a federal, state or county government as injurious to public health, agriculture, recreation, wildlife or property. A noxious weed is also commonly defined as a plant that grows out of place and is 'competitive, persistent, and pernicious'." The agency's primary focus is "providing adequate capability to detect and treat smaller weed infestations in high-risk areas before they have a chance to spread." Noxious weed control would be based on a program of "...prevention, early detection, and rapid response" (BLM 2013).

Animal and plant species designated as "pests" are generally species that are injurious to agricultural and nursery interests or vectors of diseases, which may be transmissible and injurious to humans.

An "invasive species" is defined as a species that is nonnative to the ecosystem under consideration and whose introduction causes or is likely to cause economic or environmental harm or harm to human health (EO 13112). Invasive, nonnative species are species that are highly competitive, highly aggressive, and spread easily. They include plants designated as "noxious" and animals designated as "pests" by federal or state law.

The Nevada Department of Agriculture maintains a Nevada Noxious Weed List which was used as a reference to identify the types of noxious weeds to identify during field surveys.

During a June 2011 field survey, hoary cress (*Cardaria draba*), included on the Nevada Noxious Weed List, was observed in the riparian area along Twentyone Creek (as spelled on topographic maps).

The following invasive, nonnative species were observed during the June 2011 field survey: bull thistle (*Cirsium vulgare*); crossflower (*Chorispora tenella*); clasping pepperweed (*Lepidium perfoliatum*); bulbous bluegrass (*Poa bulbosa*); curvseed butterwort (*Ceratocephala testiculata*); Russian thistle (*Salsola tragus*); dandelion (*Taraxacum officinale*); and cheatgrass (*Bromus tectorum*). These invasive, nonnative species were primarily observed in previously disturbed areas intermixed with native species. No large populations or monocultures of most of these species were noted in the survey area; however, there were large populations of cheatgrass found within the previously burned areas.

3.8. Wetlands and Riparian Zones

There were no wetlands identified within the Project Area, but there is a large riparian area, approximately 61 acres in size, that occurs along the Twentyone Creek ephemeral drainage ([Map 3.8.1](#)). The dominant plant species in this community include: yellow willow (*Salix lutea*); coyote willow (*Salix exigua*); and Utah serviceberry (*Amalanchier utahensis*). Forbs observed within this community include: yarrow (*Achillea millefolium*); dandelion; wild mint (*Mentha arvensis*); sagebrush buttercup (*Ranunculus glaberrimus*); stinging nettle (*Urtica dioica*); and Wood's rose (*Rosa woodsii*). Grasses observed within this community include Kentucky bluegrass (*Poa pretense*), baltic rush (*Juncus balticus*), and carex (*Carex* spp.). There are floodplains along Twentyone Creek and Little Humboldt River that have not yet been delineated by FEMA. These floodplains are identified by wetland, riparian, and topographic features.

Additional Affected Resources

3.9. Rangeland Management

3.9.1. Livestock Grazing

The Project Area is primarily located within the First Creek Basin West Pasture of the Bullhead Grazing Allotment where cattle are grazed. The First Creek Basin West Pasture is permitted for a total of 2,005 active cattle Animal Unit Months (AUMs) with a pasture size of 17,564 acres, available from April 1 through May 31. An AUM represents the amount of forage required to support one cow and her calf for one month. The Project Area is also located within the Dry Hills, Kinney West, Kinney East, and First Creek Basin East pastures of the Bullhead Grazing Allotment. Within the Project Area, there is approximately 13,749 acres of the First Creek Basin West pasture, approximately 1,047 acres of the Dry Hills pasture, approximately 1,443 acres of the Kinney West pasture, approximately 1,122 acres of the Kinney East pasture, and approximately 1,710 acres of the First Creek Basin East pasture. The Dry Hills Pasture is permitted for a total of 2,041 active AUMs, available from November 1 through April 30 in both even and odd years. The Kinney West Pasture is permitted for a total of 658 AUMs available from June 1 through June 20 in even years. The Kinney East Pasture is permitted for a total of 888 AUMs available from July

30 to August 25 in even years and from June 1 through July 6 in odd years. The First Creek Basin East Pasture is permitted for a total of 2,515 AUMs available from March 1 through May 31 in odd years. There are no ponded areas within the Project Area boundary that would attract livestock.

3.9.2. Rangeland Improvements

There are approximately 19 miles of fencing within the Project Area. These fences would not be impacted by Project activities. No cattle guards or other rangeland improvements are present within the Project Area.

3.10. Soils

The information regarding the soils in the Project Area was obtained primarily from the United States Department of Agriculture NRCS. The soils within the Project Area consist of the following: fan piedmonts with alluvium derived from mixed rocks; loess and volcanic ash; fan piedmonts with residuum derived from tuffaceous rocks; plateaus with alluvium derived from mixed rocks, loess and volcanic ash; plateaus with residuum and colluvium derived from mixed rocks, volcanic rocks, loess, and volcanic ash; intermontane basins with alluvium derived from mixed rocks, lacustrine sediments, and tuffaceous rocks; and mountains with residuum and colluvium derived from volcanic rocks and mixed rocks (NRCS 2012b).

According to the NRCS, a total of 14 soil associations occur within the Project Area. The soil mapping units are shown on [Map 3.10.1](#) and are listed in [Table 3.4, “Summary of Soil Mapping Units and Characteristics”](#). The dominant soil association is Snapp-Puett which occurs in 14,145 acres (71.4 percent) of the Project Area. The Snapp-Puett association has a moderate to low soil erosion hazard for water and wind.

Table 3.4. Summary of Soil Mapping Units and Characteristics

Association	Soil Series	Soil Depth in Inches to Restrictive Feature	Profile Soil Texture	Hydrologic Characteristics	Soil Erosion Hazard	
					By Water	By Wind
Chiara-Boger (187)	Chiara (45%)	10 to 20 inches (duripan)	Gravelly loam	Well drained	Moderate to Severe	Low
	Boger (30%)	14 to 20 inches (duripan); 18 to 30 inches (lithic bedrock)	Gravelly very fine sandy loam	Well drained	Low to moderate	Moderate
	Chiara (15%)	10 to 20 inches (duripan)	Very fine sandy loam	Well drained	Severe	Moderate
Flue-Snapp (215)	Flue (40%)	20 to 40 inches (duripan)	Gravelly loam	Well drained	Moderate to Severe	Low
	Snapp (30%)	--	Very fine sandy loam	Well drained	Moderate	Moderate
	Snapp (15%)	--	Very cobbly very fine sandy loam	Well drained	Low to moderate	Moderate
Weiland (370)	Weiland (55%)	--	Very fine sandy loam	Well drained	Moderate to Severe	Moderate
	Weiland (35%)	--	Very gravelly loam	Well drained	Moderate	Low

Association	Soil Series	Soil Depth in Inches to Restrictive Feature	Profile Soil Texture	Hydrologic Characteristics	Soil Erosion Hazard	
					By Water	By Wind
Preble-Valmy (436)	Preble (45%)	--	Fine sandy loam	Somewhat poorly drained	Moderate	Moderate
	Valmy (30%)	--	Fine sandy loam	Well drained	Moderate	Moderate
	Valmy (15%)	--	Very fine sandy loam	Well drained	Moderate to Severe	Moderate
Shabliss-Puett (534)	Shabliss (60%)	10 to 20 inches (duripan)	Very fine sandy loam	Well drained	Moderate to Severe	Moderate
	Puett (25%)	10 to 20 inches (paralithic bedrock)	Very gravelly loam	Well drained	Low	Low
Ninemile- Vanwyper (552)	Ninemile (35%)	10 to 20 inches (lithic bedrock)	Gravelly loam	Well drained	Moderate	Low
	Vanwyper (25%)	20 to 40 inches (lithic bedrock)	Very cobbly loam	Well drained	Low	Low
	Ninemile (25%)	10 to 20 inches (lithic bedrock)	Gravelly loam	Well drained	Moderate	Low
Ninemile-Tusk (553)	Ninemile (35%)	10 to 20 inches (lithic bedrock)	Gravelly loam	Well drained	Moderate	Low
	Tusk (25%)	--	Gravelly loam	Well drained	Moderate	Low
	Ninemile (25%)	10 to 20 inches (lithic bedrock)	Gravelly loam	Well drained	Moderate	Low
Carstump- Soughe-Ninemile (620)	Carstump (30%)	20 to 40 inches (lithic bedrock)	Gravelly loam	Well drained	Moderate	Low
	Soughe (30%)	10 to 20 inches (lithic bedrock)	Cobbly loam	Well drained	Low to Moderate	Low
	Ninemile (25%)	10 to 20 inches (lithic bedrock)	Very cobbly loam	Well drained	Low to Moderate	Low
Clementine, drained-Paranat complex (641)	Clementine (45%)	--	Silt loam, drained	Poorly drained	Severe	Moderate
	Paranat (40%)	--	Silt loam	Poorly drained	Severe	Moderate
Burrita- Snowmore-Rock outcrop (657)	Burrita (40%)	14 to 20 inches (lithic bedrock)	Very gravelly loam	Well drained	Low	Low
	Snowmore (35%)	20 to 34 inches (duripan); 21 to 40 inches (lithic bedrock)	Very fine sandy loam	Well drained	Moderate	Moderate
	Rock outcrop (10%)	--	N/A	N/A	N/A	N/A
Dewar-Flue- Burrita (722)	Dewar (35%)	14 to 20 inches (duripan)	Gravelly very fine sandy loam	Well drained	Moderate	Moderate
	Flue (25%)	20 to 40 inches (duripan)	Very gravelly very fine sandy loam	Well drained	Moderate to Severe	Low
	Burrita (25%)	14 to 20 inches (lithic bedrock)	Gravelly loam	Well drained	Low to Moderate	Moderate
Kelk silt loam, occasionally flooded (734)	Kelk (90%)	--	Silt loam	Well drained	Severe	Low

Association	Soil Series	Soil Depth in Inches to Restrictive Feature	Profile Soil Texture	Hydrologic Characteristics	Soil Erosion Hazard	
					By Water	By Wind
Snapp-Puett (754)	Snapp (60%)	--	Very fine sandy loam	Well drained	Moderate	Moderate
	Puett (25%)	10 to 20 inches (paralithic bedrock)	Very gravelly loam	Well drained	Low	Low
Soughe-Soughe, very steep-Rock outcrop (940)	Soughe (40%)	10 to 20 inches (lithic bedrock)	Very stony loam	Well drained	Low	Low
	Soughe (30%)	10 to 20 inches (lithic bedrock)	Very cobbly loam	Well drained	Low	Low
	Rock outcrop (15%)	--	N/A	N/A	N/A	N/A
Soughe-Ninemile-Rock outcrop (942)	Soughe (45%)	10 to 20 inches (lithic bedrock)	Very stony loam	Well drained	Low	Low
	Ninemile (20%)	10 to 20 inches (lithic bedrock)	Very cobbly loam	Well drained	Low	Low
	Rock outcrop (20%)	--	N/A	N/A	N/A	N/A
Wendane complex (1102)	Wendane (50%)	--	Silt loam	Somewhat poorly drained	Severe	Moderate
	Wendane (35%)	--	Silt loam, occasionally flooded	Somewhat poorly drained	Severe	Moderate

The BLM Winnemucca District model identified a high probability of BSCs throughout the Project Area. BSCs are “a complex mosaic of cyanobacteria, green algae, lichens, mosses, microfungi, and other bacteria. Cyanobacterial and microfungi filaments weave through the top few millimeters of soil, gluing loose particles together and forming a matrix that stabilizes and protects soil surfaces from erosive forces (BLM 2001).

3.11. Special Status Species

BLM policy for management of special status species is described in the BLM Manual 6840 (BLM 2008c). Special status species include the following:

- Federally Threatened or Endangered Species: Any species that the USFWS has listed as an endangered or threatened species under the Endangered Species Act of 1973, as amended (ESA), throughout all or a significant portion of its range;
- Proposed Threatened or Endangered Species: Any species that the USFWS has proposed for listing as a federally endangered or threatened species under the ESA;
- Candidate Species: Plant and animal taxa that are under consideration for possible listing as threatened or endangered under the ESA;
- BLM Sensitive Species: 1) Species that are currently under status review by the USFWS; 2) Species whose numbers are declining so rapidly that federal listing may become necessary; 3) Species with typically small and widely dispersed populations; or 4) Species that inhabit ecological refugia or other specialized or unique habitats; and

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

Nevada BLM policy is to provide State of Nevada listed species and Nevada BLM sensitive species with the same level of protection as is provided to candidate species in BLM Manual Section 6840.06C. Per the wording in Table IIa in BLM Information Bulletin No. NV-2003-097, Nevada protected animals that meet BLM's 6840 policy definition are those species of animals occurring on BLM-managed lands in Nevada that are: 1) "protected" under authority of the NAC; 2) have been determined to meet BLM's policy definition of "listing by a state in a category implying potential endangerment or extinction;" and 3) are not already included as federally listed, proposed, or candidate species.

The USFWS, NNHP, and the NDOW were contacted to obtain information on sensitive species that have the potential to occur within the Project Area (USFWS 2011; NNHP 2011; NDOW 2011). In addition, the BLM Special Status Species list was evaluated for species with the potential to occur within the Biological Survey Area.

A special status plant survey was conducted from June 1 through June 4, 2011, by Enviroscientists. Wildlife field surveys were conducted by qualified Enviroscientists biologists in the Biological Survey Area June 21 through 26, 2011, and on August 4, 2011. The Biological Survey Area does not match the Project Area, as the Project Area boundary changed to include private lands after the Biological Survey Report (which only included public land) was finalized and approved by the BLM. Enviroscientists conducted a biological assessment of the Biological Survey Area, which included potential sensitive species habitat. Prior to conducting field surveys, Enviroscientists reviewed available literature and corresponded with resource agencies to identify potential biological resources and special status species that have the potential to occur within the Biological Survey Area. The survey assessment included the following: a vegetation community assessment and species inventory; a general wildlife habitat assessment and species inventory; a pygmy rabbit survey and habitat assessment; and a migratory bird and raptor survey including an assessment of potential golden eagle or bald eagle (*Haliaeetus leucocephalus*) habitat.

Based on the results of the vegetation survey and habitat assessment conducted for the Project, potential habitat exists for Packword mugwort (*Artemisia packardiae*), windloving buckwheat (*Eriogonum anemophilum*), and Lahontan beardtongue (*Penstemon palmeri* var. *macranthum*). These special status plants species are further described below in [Section 3.11.1.1, "Sensitive Plant Species"](#). Based on the results of the biological survey and habitat assessment, BLM sensitive or special status wildlife species that were determined to have the potential to utilize the Biological Survey Area include: golden eagle; western burrowing owl; ferruginous hawk (*Buteo regalis*); Swainson's hawk (*Buteo swainsoni*); loggerhead shrike (*Lanius ludovicianus*); sage thrasher (*Oreoscoptes montanus*); Brewer's sparrow (*Spizella breweri*); pallid bat (*Antrozous pallidus*); western smallfooted myotis (*Myotis cilolabrum*); fringed myotis (*Myotis thysanodes*); western pipistrelle (*Pipistrellus hesperus*); pygmy rabbit; and Preble's shrew (*Sorex preblei*). Potential greater sage-grouse (*Centrocercus urophasianus*) winter and brood-rearing habitat occurs in the Biological Survey Area. These special status wildlife species are further described in [Section 3.11.1.2, "Sensitive Wildlife Species"](#).

3.11.1. BLM Sensitive Species

Sensitive species are species that require special management consideration to avoid potential future listing under the ESA and that have been identified in accordance with procedures set forth in BLM Manual 6840 (BLM 2008c). BLM policy in BLM Manual 6840.06 states:

Actions authorized by the BLM shall further the conservation and/or recovery of federally listed species and conservation of Bureau sensitive species. Note that “conservation” has a different meaning depending on whether it is referring to ESA listed species or Bureau sensitive species. See glossary. 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 following sensitive species are discussed because they either have been observed in the Project Area or habitat characteristics indicate they may be present in the Project Area.

3.11.1.1. Sensitive Plant Species

In a letter dated December 12, 2011, the NNHP stated that no at risk taxa have been recorded within the Project Area, but there is potential habitat for the Packard mugwort, an NNHP watch list plant species and a taxon determined to be Imperiled by the NNHP (NNHP 2011). No Packard mugwort were observed in the Project Area during the June 2011 surveys. Potential habitat for windloving buckwheat and Lahontan beardtongue was surveyed for within the Project Area. The survey was conducted during the time of year when these species would have been visible.

Windloving buckwheat

Based on the location of the Project Area, suitable habitat for windloving buckwheat, a BLM sensitive species, may exist within the Project Area. The windloving buckwheat is a low perennial herb known to occur at elevations between 4,600 feet amsl to 9,840 feet amsl. Habitat occurs at high elevations on dry, exposed, relatively barren and undisturbed, gravelly, limestone or volcanic ridges and ridgeline knolls, on outcrops or shallow rocky soils over bedrock, along with other species including the following: little sagebrush (*Artemisia arbuscula*); green rabbitbrush (*Ericameria viscidiflora*); Sandberg bluegrass (*Poa secunda*); bottlebrush squirreltail (*Elymus elymoides*); and King’s sandwort (*Arenaria kingii*). Habitat also occurs at low elevations on dry, relatively barren and undisturbed knolls and slopes of light-colored, platy volcanic tuff weathered to form stiff clay soils, on all aspects, along with other species including the following: spineless horsebrush (*Tetradymia canescens*); rubber rabbitbrush (*Ericameria nauseosa*); green rabbitbrush; shadscale saltbush; bottlebrush squirreltail; Great Basin wild rye (*Elymus cinereus*); and Torrey’s milkvetch (*Astragalus calycosus*). Suitable habitat was observed in the Project Area, but no species were observed in the June 2011 surveys.

Lahontan beardtongue

Based on the location of the Project Area, suitable habitat for Lahontan beardtongue, a BLM sensitive species, may exist within the Project Area. The Lahontan beardtongue is a tall perennial herb known to occur at elevations between 3,280 and 4,590 feet amsl along washes, roadsides, and on canyon floors, particularly on carbonate-containing substrates. Habitat consists of locations where subsurface moisture is available throughout most of the summer. The Lahontan beardtongue flowers in late spring, between May and June. The elevation of the Project Area

varies between 4,650 feet amsl and 5,200 feet amsl. The Project Area is outside of the known range of this species with the nearest mapped population approximately 90 miles south of the Project Area. No species were observed during the June 2011 surveys.

3.11.1.2. Sensitive Wildlife Species

As discussed above, the BLM sensitive species that were determined to have the potential to utilize the Project Area include: golden eagle; western burrowing owl; ferruginous hawk; Swainson's hawk; greater sage-grouse; loggerhead shrike; sage thrasher; Brewer's sparrow; pallid bat; western small-footed myotis; fringed myotis; Western pipistrelle; pygmy rabbit; and Preble's shrew.

Golden eagle

The golden eagle is protected by the MBTA and the Bald and Golden Eagle Protection Act, both of which prohibit take. The *Interim Golden Eagle Technical Guidance: Inventory and Monitoring Protocols; and Other Recommendations in Support of Golden Eagle Management and Permit Issuance* provides guidance to conduct informed impact analyses and mitigation during the NEPA process (USFWS 2010).

Golden eagles nest in rugged crags, canyons, cliffs, and mountains, and forage in areas surrounding nest sites and can be found in any habitat type. The most common habitat uses reported for foraging in Nevada are sagebrush scrub and sagebrush steppe.

The NDOW identified two known golden eagle nests within ten miles of the Project Area. During the biological survey for the Project, a possible nest was located in the large south-facing cliffs above Spring Creek. A stick nest and abundant white-wash could be discerned from binoculars at an approximate distance of 0.5 mile. In addition, two adult golden eagles and two first year golden eagles (white wing and tail patches apparent) were observed flying above and near the cliffs. The entire Project Area is suitable golden eagle foraging habitat.

Western burrowing owl

The western burrowing owl uses a variety of habitats that are open, arid, and treeless with low vegetation. Most common uses are where mammal burrows are available for nesting. Western burrowing owls often breed near agricultural lands, golf courses, and roadsides, but do not tolerate highly disturbed areas. Suitable habitat of open and arid areas is present in the Project Area, and rodent colonies are present to provide possible burrows. Western burrowing owls were observed in the Project Area during the June and August 2011 surveys.

Ferruginous hawk

Ferruginous hawks inhabit open country including grasslands and shrublands, while avoiding forests, steep terrain, and high elevations. These hawks are most likely found in sagebrush scrub, but may also occur in salt desert scrub and sagebrush steppe, and may also be associated with piñon-juniper blocks. Suitable habitat of sagebrush scrub is present in the Project Area, but the preferred nesting habitat of piñon-juniper is not present. Ferruginous hawks were observed in the Project Area during the June and August 2011 surveys.

Swainson's hawk

Swainson's hawks use open grasslands and shrublands, and are well adapted to agricultural areas. The hawks typically nest in scattered trees near open areas for foraging and nest in junipers in the Great Basin. Suitable habitat of open shrubland is present in the Project Area. Trees for nesting are not present in the Project Area, but large shrubs offer possible nest sites. Swainson's hawks were observed in the Project Area during the June and August 2011 surveys.

Greater sage-grouse

In response to a request for identification of federally-listed and candidate species in the Project Area, the USFWS memorandum on May 23, 2011, stated that the greater sage-grouse, a candidate species, has the potential to occur in the Project Area (USFWS 2011). In addition to federally listed species (i.e., protected by the ESA) and candidate species discussed above, the BLM also protects special status species by policy (BLM 2008c). The list includes certain species designated by the State of Nevada, as well as species designated as "sensitive" by the Nevada BLM State Director. The greater sage-grouse is a BLM Sensitive Species.

The BLM has issued two IMs for the protection of greater sage-grouse. IM 2012-043, *Greater Sage-Grouse Interim Management Policies and Procedures*, provides interim policies and procedures to the BLM to be applied to ongoing and proposed authorizations that affect greater sage-grouse, while long-term permanent measures are being developed (BLM 2011b). IM 2012044, *BLM National Greater Sage-Grouse Land Use Planning Strategy*, provides direction to the BLM for the consideration of conservation measures, identified in *A Report on National Greater Sage-Grouse Conservation Measures* prepared by the Sage-Grouse National Technical Team, to apply during the land use planning process (BLM 2011c). The NDOW has recently mapped greater sage-grouse habitat in Nevada to support these IMs and published a Habitat Characterization Map in March 2012. The BLM used this NDOW map to create a map identifying Preliminary Priority Habitat (PPH) and Preliminary General Habitat (PGH) on BLM administered lands. According to this map, there is no PPH located within the Project Area and approximately 11,261 acres of PGH located within the Project Area. Most of the area identified as PGH within the Project Area is subject to proposed disturbance from the proposed exploration activities. On August 10, 2012, the BLM Nevada State Office issued IM NV-2012-058, which provides clarity on how to implement mapping and management protocols outlined in IM 2012-043 and IM 2012-044 (BLM 2012c).

Greater sage-grouse is a candidate for listing under the ESA and on March 23, 2010, the USFWS's 12-month status review of the species determined that the species warrants the protection under the ESA. The listing of the greater sage-grouse at this time is precluded by the need to address higher priority species and the state and BLM are responsible for management of the species.

Greater sage-grouse, an upland game bird, is largely dependent on sagebrush for nesting and brood rearing and feed almost exclusively on sagebrush leaves during the winter. They are known to occur in foothills, plains, and mountain slopes where sagebrush meadows and aspen are in close proximity. Dense sagebrush overstory and an herbaceous understory of grasses are important to provide shade and security, and both new herbaceous growth and residual cover are important in the understory. Greater sage-grouse have specific habitat requirements to carry out their life cycle functions. Early spring habitat or breeding sites called "leks," are usually situated on ridge tops or grassy areas surrounded by a substantial brush and herbaceous component (Schroeder et al. 1999). Leks have less herbaceous and shrub cover than surrounding areas. In early spring males gather in leks where they strut to attract females.

Late spring habitat or nesting sites are located in thick cover in sagebrush habitat beneath sagebrush or other shrubs. Nests are situated on the ground in a shallow depression with an average distance between nest sites and nearest leks of 0.7 mile to 3.9 miles; however, females may move greater than 12.4 miles from a lek to nest (NatureServe 2012).

Early brood rearing habitat may be relatively open with approximately 14 percent canopy cover of sagebrush and abundant forbs, which attract insects to feed young chicks. Denser sagebrush is often on the periphery to provide shelter from predators. Late brood rearing habitat includes sagebrush vegetation with plants that are more succulent and have a perennial water source nearby such as meadows with streams (NatureServe 2012).

Fall habitat consists mainly of sagebrush as a result of frost killing the forbs and grasses. In the winter males and females separate into different groups. Fall movements to winter ranges are typically slow. The winter habitat consists of sagebrush that has approximately 15 percent canopy cover and is approximately 18 inches in height (Schroeder et al. 1999). The territory of this species ranges from the mid-west to the western United States.

According to the response letter from NDOW dated April 2011, there were no known lek sites in the vicinity of the Project Area (NDOW 2011). Data provided by the NDOW (NDOW 2011) for the baseline biology studies conducted for the Project, indicated that there was no core breeding or nesting habitat for greater sage-grouse in the Project Area.

During the June and August 2011 field surveys, 49 locations of single sage grouse scat and 45 locations of sage grouse scat piles were recorded in the Project Area. No fresh scats were found, but a concentration of scat piles indicated a possible lek site that would have been active in 2011.

Based on the 2011 survey results, BLM and NDOW wildlife specialists inspected the area of the suspected lek in early March and documented the presence of 12 male sage grouse. Enviroscientists were requested to conduct additional lek surveys. These surveys were conducted in March and April 2012 and confirmed the presence and active status of a lek. The lek site is on an existing road and reclaimed drill site. Five male greater sage-grouse were observed on the lek on March 22, 2012 and seven males were observed on the lek on April 2, 2012. No females were observed during the surveys. In addition, the NDOW conducted a helicopter survey of the area in April 2012 which also documented the presence of sage grouse and the active status of the lek.

IM NV-2012-058 also provides the BLM with the option of delineating additional habitat that needs special consideration. During the biological surveys conducted for this project a lek was discovered in the Project Area. As a result, sagebrush habitat within 3.2 miles of the lek is now treated as PPH. NDOW indicated that they will be reevaluating their habitat maps and that the area originally identified as PGH on the BLM habitat maps should be changed to and treated as PPH.

Loggerhead shrike

Loggerhead shrike is typically associated with greasewood (*Sarcobatus vermiculatus*) and sagebrush communities. These birds also frequent open country in valleys and foothills, juniper or piñon-juniper woodlands. Dense strands of trees and shrubs are used for nesting and roosting sites, as well as for hunting perches (Great Basin Bird Observatory [GBBO] 2010). Loggerhead shrike was observed throughout the Project Area during the June and August 2011 surveys.

Sage thrasher

Sage thrasher is most often associated with sagebrush, montane shrubland, and salt desert scrub habitats. Species abundance can be associated with higher shrub densities and a lack of trees. Nest habitat often consists of low branches in dense shrubs (GBBO 2010). Sage thrasher was observed in the rolling sagebrush steppe in Section 26, T41N, R43E, during the June and August 2011 surveys.

Brewer's sparrow

Brewer's sparrow is typically associated with montane shrubland, sagebrush, and salt desert scrub habitats. This species prefers high shrub density and relatively large habitat patches and mosaics of varying shrub densities. Nesting habitat often consists of dense crown tall shrubs (GBBO 2010). Brewer's sparrow was observed throughout the Project Area during the June and August 2011 surveys.

Pallid bat

Pallid bat is found in arid deserts and grasslands within cliffs and shrublands, often near rock outcrops and water, and occasionally in evergreen and mixed coniferous woodland. They roost in rock crevices or buildings and sometimes in caves, snags, or mines. Their primary food is arthropods that they capture on the ground. Pallid bats are found throughout Nevada. The June and August 2011 field surveys identified suitable foraging habitat in the Project Area, but suitable roosting habitat was only present outside of the Project Area.

Western small-footed myotis

Western small-footed myotis roosts in crevices occurring in mines, caves, buildings, rock crevices, hollow trees, and in exfoliating bark on trees. They are found in desert scrub, grasslands, sagebrush steppe, blackbrush (*Coleogyne* sp.), greasewood, piñon-juniper woodland, pine-fir forests, agricultural, and urban areas. Western small footed myotis forages in open areas for moths, flies, ants, and beetles. This species occurs throughout Nevada. The June and August 2011 field surveys identified suitable habitat in the semiarid shrubland and rock crevices in the Project Area.

Fringed myotis

Fringed myotis is found in middle elevations of 3,940 to 7,050 feet amsl in desert, grassland, and woodland habitats. They roost in caves, mines, rock crevices, buildings, and other protected sites. Fringed myotis forage for insects, primarily beetles. This species occurs throughout Nevada (NatureServe 2012). The June and August 2011 field surveys identified suitable foraging habitat in the grassland areas in the Project Area, but suitable roosting habitat in rock crevices was only present outside of the Project Area.

Western pipistrelle

Western pipistrelle is found in deserts and lowlands, desert mountain ranges, desert scrub flats, and rocky canyons. The pipistrelle roost in rock crevices, under rocks, in burrows, and sometimes in buildings or mines. The pipistrelle forage on small insects, especially those in swarms. This species occurs in the northwestern, western, and southern portions of Nevada (NatureServe 2012). The June and August 2011 field surveys identified suitable habitat of desert shrub, rocks, and burrows in the Project Area.

Pygmy rabbit

Pygmy rabbit typical habitat consists of dense stands of big sagebrush growing in deep loose or friable soils. The rabbits dig burrows three inches in diameter and a burrow may have three or more entrances. Pygmy rabbits often use burrows created by other species, and may occur in shallower or more compact soils if these soils support sufficient shrub cover. Big sagebrush is the primary food source in winter, but grasses and forbs are eaten in spring and summer (NatureServe 2012).

No pygmy rabbits or their sign (e.g., burrows, runways, or scat) were identified in the Project Area during the June and August 2011 field surveys. Potential pygmy rabbit habitat is located in the Twentyone Creek and Spring Creek drainages. Vegetation within the Twentyone Creek drainage has the typical characteristics of occupied pygmy rabbit habitat, including very tall, large, dense basin big sagebrush shrubs and areas of loamy soil; however, signs of use of long-eared owls in this area reduce the suitability of the habitat for pygmy rabbits. Much of the Project Area consists of Wyoming big sagebrush that is uniform in height and density, and lacks patches of tall dense sagebrush, the preferred pygmy rabbit habitat.

Preble's shrew

Preble's shrew is usually found in arid and semiarid shrub-grass associations, willow-fringed creeks, bunchgrass associations, and sagebrush-grass associations. The shrew feed primarily on insects and other small invertebrates, such as worms, mollusks, and centipedes. Preble's shrew is found mostly in the northern portions of Nevada (NatureServe 2012). The June and August 2011 field surveys identified suitable habitat of semiarid shrub-grass associations in the Project Area.

3.12. Vegetation

The Project is located within the Intermountain Region, Great Basin Division, Central Great Basin Section floristic zone. This region is characterized by elevated valleys and mountains of sandstone, siltstone, and shale derived from volcanic rock. The Central Great Basin Section floristic zone is large and diverse, covering approximately 30,250 square miles (Cronquist et al. 1972).

Vegetation in the Project Area consists of Wyoming big sagebrush, sagebrush/perennial grass, Great Basin grassland, and riparian communities. Evidence of wildfire within the Project Area was noted during the field survey. The Great Basin grassland community consisted mainly of previously burned areas that are in recovery. The 2007 Kelly Creek fire burned approximately 2,550 acres in the Project Area.

The Wyoming Big Sagebrush community is the dominant plant association in the Project Area and occupies approximately 10,120 acres. The dominant shrub species in this community are Wyoming big sagebrush, Mountain big sagebrush (*Artemisia tridentata* ssp. *vaseyana*), and to a lesser extent, yellow rabbitbrush (*Chrysothamnus viscidiflorus*), and rubber rabbitbrush. Forbs interspersed within the shrubs include: Humboldt River milkvetch (*Astragalus iodanthus*); basalt milkvetch (*Astragalus filipes*); rough seeded cryptantha (*Cryptantha fasciculata*); Indian paintbrush (*Castilleja chromosa*); phlox (*Phlox* sp.); desert candle (*Caulanthus inflatum*); longleaf hawksbeard (*Crepis acuminatus*); common larkspur (*Delphinium nuttallianum*); sego lily (*Calochortus nuttallii*); whitewoolly buckwheat (*Eriogonum ochrocephalum*); and yarrow. Grasses noted within this community include: Sandberg bluegrass; Great Basin wild rye; and bluebunch wheatgrass (*Pseudoroegneria spicata*).

The Great Basin grassland community occurs in the western and southern portions of the Project Area and occupies approximately 4,723 acres. This community consists mainly of burned areas that are in recovery. The dominant species in this community include the following: bluebunch wheatgrass; Sandberg bluegrass; Great Basin wild rye; bottlebrush squirreltail; and cheatgrass. The dominant shrubs observed in this community include Wyoming big sagebrush, yellow rabbitbrush, and rubber rabbitbrush. Forbs observed in this community include the following: Nevada wild onion (*Allium nevadense*); basalt milkvetch; bristly fiddleneck (*Amsinckia tessellata*); pinnate tansy mustard (*Descurainia pinnata*); large-fruited desert parsley (*Lomatium macrocarpum*); Indian paintbrush; phlox; desert evening primrose (*Oenotherum caespitosa*); and lupine (*Lupinus* sp.).

The sagebrush/perennial grass community occurs in the southeastern portion of the Project Area and occupies approximately 1,151 acres. This community is co-dominated by Wyoming big sagebrush and perennial bunchgrasses such as bluebunch wheatgrass and bottlebrush squirreltail. Additional shrubs found in this community include yellow rabbitbrush and rubber rabbitbrush. Forbs observed in the Project Area during the field survey include the following: Nevada wild onion; basalt milkvetch; bristly fiddleneck; pinnate tansy mustard; large-fruited desert parsley; Indian paintbrush; phlox; desert evening primrose; and lupine. Grasses observed in this community include Sandberg bluegrass and cheatgrass.

The riparian community occurs along Twentyone Creek, which runs east to west through the center of the Project Area, and occupies approximately 61 acres. Details of this community are discussed in [Section 3.8, “Wetlands and Riparian Zones”](#).

3.13. Wild Horses

The Project Area lies within the Snowstorm Mountains Herd Management Area (HMA), which encompasses approximately 145,538 acres of public and private lands. Wild horses are managed by the BLM under the authority of the Wild Free-Roaming Horses and Burros Act of 1971 in accordance with the FLPMA. The appropriate management level (AML) for the HMA has been established at 90 to 120 animals. A total of 500 animals were counted during the last population survey of the HMA in May 2011. A portion of the Project Area also lies within the Osgood Mountains Herd Area, which encompasses approximately 142,122 acres of public and private lands. There is no AML established for the Osgood Mountains Herd Area.

3.14. Wildlife (General)

Terrestrial wildlife resources in the Project Area are typical of the northern Great Basin. A wide variety of wildlife species common to the Great Basin ecosystem may be found in the Project Area. Seven wildland fires have occurred in the Project Area between 1990 and 2007. The most recent fire, the Kelly Creek fire, burned approximately 2,550 acres of the Project Area. Wildlife habitat has been altered within the Project Area as a result of the wildland fires. The Project Area topography includes rolling hills and valleys. Several ephemeral drainages are located within the Project Area. The Chimney Reservoir, along with a few smaller ponds, are the only known surface water bodies in the vicinity of the Project Area. Existing pre-1981 roads, previous exploration disturbance, and gravel and dirt roads occur within the Project Area.

Non-special status wildlife species detected in the Project Area during the June and August 2011 field surveys include the following: gopher snake (*Pituophis catenifer*); sagebrush lizard

(*Sceloporus graciosus*); western fence lizard (*Sceloporus occidentalis*); American badger (*Taxidea taxus*); woodrat (*Neotoma* spp.); black-tailed jackrabbit (*Lepus californicus*); kangaroo rat (*Dipodomys* spp.); Townsend's ground squirrel (*Spermophilus townsendii*); coyote (*Canis latrans*); desert cottontail (*Sylvilagus audubonii*); mountain cottontail (*Sylvilagus nuttallii*); deer mouse (*Peromyscus maniculatus*); golden-mantled ground squirrel (*Spermophilus lateralis*); vole (*Microtus* spp.); yellow-bellied marmot (*Marmota flaviventris*); and an unknown species of shrew (*Sorex* spp). The migratory birds observed in the Project Area are listed in [Section 3.5, "Migratory Birds"](#). Special status species are discussed in [Section 3.11, "Special Status Species"](#).

Big game species

Two big game species, mule deer (*Odocoileus hemionus*) and pronghorn antelope (*Antilocapra americana*), were observed in the Project Area. Mule deer scat was observed throughout the Project Area. No other mule deer sign, such as sheds, tracks, beds, or skeletal remains, was found in the Project Area. Pronghorn antelope were observed in the northern portion of the Project Area and scat was seen throughout the Project Area. The NDOW also identified that elk (*Cervus canadensis*) distribution occurs throughout the majority of the Project Area (NDOW 2011), but no elk were identified in the Project Area during field surveys.

Upland game birds

Upland game birds observed in the Project Area during the June and August 2011 field surveys include California quail (*Callipepla californica*), mourning dove, and chukar (*Alectoris chukar*). A few pairs of mourning dove were observed in upper elevations of the Twentyone Creek drainage. Based on the time of year that mourning dove was observed, these species likely nest in the Project Area. Although not directly observed in the Project Area, chukar scat was found at the base of a large rock outcrop. Suitable chukar nesting habitat is present in the Project Area, but no nests, eggshells, or young were observed. California quail were observed within the Twentyone Creek drainage.

Chapter 4. Environmental Consequences

The direct and indirect effects of the Proposed Action and the No Action Alternative on resources present and brought forward for analysis are discussed in this section. Direct effects are caused by the action and occur at the same time and place. Indirect effects are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect effects may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems (40 CFR 1508.8). Under the No Action Alternative, mineral exploration activities currently acknowledged in the Project Area (four notices) and activities on private land, which are similar to those described for the Proposed Action, would continue and would result in impacts similar to but proportionally less than those associated with the Proposed Action.

4.1. Direct and Indirect Impacts

Supplemental Authorities

4.1.1. Air Quality

Proposed Action

The Project has the potential to disturb approximately 200 acres. Travel on access roads and drilling within the Project Area would create emissions which would have a potential impact on air quality. Fugitive dust, in the form of PM₁₀ and PM_{2.5}, would be caused by the operation of the following equipment: up to ten drill rigs; bulldozers; and road graders. Vehicle emissions, in the form of sulfur dioxide (SO₂), nitrogen oxide (NO_x), CO, and volatile organic compounds (VOCs), would occur anytime the internal combustion engines on the vehicles are operating. [Table 4.1, “Fugitive Dust and Combustion Emissions Associated with the Project, Tons per Year”](#) summarizes the process equipment emissions and fugitive dust emissions associated with the Project (see Appendix A; Enviroscientists 2012c).

Table 4.1. Fugitive Dust and Combustion Emissions Associated with the Project, Tons per Year

Equipment	PM ₁₀	PM _{2.5}	SO ₂	NO _x	CO	VOCs
Process Equipment Emissions	0.52	0.52	0.48	7.27	1.57	0.53
Fugitive Emissions (Dust and Tailpipe)	9.32	3.23	0.08	47.16	42.96	2.48
Total	9.84	3.75	0.56	54.43	44.53	3.01

All exploration activities with surface disturbance exceeding 20 acres are required to obtain a SAD permit from the BAPC. This SAD permit application was approved by the BAPC for the Project on October 30, 2012 (Permit No. AP1041-3262). This permit includes a Dust Control Plan to control the emissions of fugitive dust at the Project. The BAPC’s issuance of the SAD permit and requirement that the Project operate in compliance with the Dust Control Plan are intended to ensure that fugitive dust emissions are minimized to the maximum extent possible using BMPs. The Dust Control Plan stipulates that travel on roads within the Project Area would be conducted at prudent speeds. The Dust Control Plan includes watering roads to suppress dust to minimize the potential effects of fugitive dust on air quality. Two of the major access roads,

Shelton Road and Kelly Creek Road, have improved gravel surfaces, which also reduce the amount of fugitive dust generated. Reclamation of Project-related proposed surface disturbance would gradually eliminate fugitive dust from wind erosion potential.

No Action

Mineral exploration activities in the Project Area currently permitted through Notices and activities on private land would continue, and impacts to air quality through fugitive dust emissions would occur. Impacts to air quality as a result of the No Action Alternative would be similar, but proportionally less than the Proposed Action (approximately 25 acres of surface disturbing activities versus approximately 200 acres).

4.1.2. Cultural Resources

Proposed Action

Based on the results of the Class III cultural survey conducted by ASM Affiliates (Giambastiani et al. 2012), there are 53 cultural sites within the Project Area eligible for listing on the NRHP. Based on the environmental protection measure outlined in [Section 2.1.13](#), there would be no impacts to NRHP-eligible cultural resources as all 53 sites would be subject to avoidance by a minimum buffer distance of 30 meters. Inadvertent discoveries of previously undetected cultural resources would be treated as required under 43 CFR 10.4 and 43 CFR 3908.420(8)(b). Any such discovery would be immediately reported to the authorized BLM officer. All operations in the immediate area of the discovery would be suspended and the site would be protected until the authorized officer could develop an appropriate plan for management of the resource. Through implementation of these measures, no appreciable impact is expected; therefore, this resource is not further analyzed in this EA.

No Action

Under the No Action Alternative, ongoing mineral exploration activities currently authorized or potentially occurring under the No Action Alternative would result in impacts similar to those associated with the Proposed Action. Previously mapped eligible or unevaluated cultural sites would be avoided as specified in the Decision Memos issued for the four Notices.

4.1.3. Migratory Birds

Proposed Action

The potential direct impacts from the Proposed Action to migratory birds include destruction of nests. Potential indirect impacts occur to migratory birds as a result of vegetation removal and activities associated with the Proposed Action. Migratory birds foraging in the Project Area during exploration activities would likely leave the immediate area and may result in a spatial redistribution of individuals or habitat-use patterns during the life of the Project. Environmental protection measures proposed ([Section 2.1.13](#)) would mitigate most impacts to migratory birds. No long-term impacts are likely to occur because reclamation and reestablishment of vegetation would occur approximately three years after Project completion.

No Action

Mineral exploration activities in the Project Area currently permitted through Notices and activities on private land would continue. The No Action Alternative could result in the temporary loss of approximately 25 acres of migratory bird nesting or foraging habitat. Reclamation of surface disturbance would gradually eliminate potential impacts to migratory birds. Impacts to migratory birds as a result of the No Action Alternative would be similar, but proportionally less than the Proposed Action (approximately 25 acres of surface disturbing activities versus approximately 200 acres). In addition, impacts to migratory birds under the No Action Alternative would be reduced by the protection measure stipulated in the Decision Memos issued for the four Notices.

4.1.4. Native American Religious Concerns

Proposed Action

To date, the eight tribal councils that have been contacted by the BLM have not indicated any concerns with respect to activities associated with the Proposed Action within the Project Area.

No impacts to Native American Religious Concerns are anticipated as no TCPs or NAGPRA sites have been identified. Environmental protection measures described in [Section 2.1.13](#) would protect any site discovered during exploration activities. Therefore, this resource is not analyzed further in this EA.

No Action

The BLM has continual consultation with the local tribes with regards to ongoing and proposed projects and land management activities. Concerns raised during Notice-level activities would be addressed at that time. No impacts to TCPs or NAGPRA sites are anticipated as none have been discovered within the current Notice-level areas. If sites were to be discovered, SEL would be required to stop work and notify the BLM pursuant to the terms and conditions of their current Notices. Impacts to Native American Religious Concerns would not be anticipated.

4.1.5. Noxious Weeds, Invasive, and Nonnative Species

Proposed Action

New surface disturbance from the Proposed Action would increase the potential for and promote the spread and establishment of noxious weeds, invasive, and nonnative species. These impacts would be reduced based on BLM's current strategy for noxious weed management and implementation of the environmental protection measures outlined in [Section 2.1.13](#).

No Action

Mineral exploration activities in the Project Area currently permitted through Notices and activities on private land would continue. The No Action Alternative could include disturbance of up to approximately 25 acres. The impacts associated with the No Action Alternative could result from establishment of noxious weeds, invasive, and nonnative species. Reclamation of surface disturbance, including reseeding, would gradually decrease potential impacts from noxious weeds, invasive, and nonnative species. Impacts from noxious weeds, invasive, and nonnative species as

a result of the No Action Alternative would be similar, but proportionally less than the Proposed Action (approximately 25 acres of surface disturbing activities versus approximately 200 acres).

4.1.6. Wetlands and Riparian Zones

Proposed Action

The Proposed Action would have no impacts to wetlands or riparian zones because SEL would avoid direct and indirect impacts to wetlands or riparian areas within the Project Area. BMPs would be used to prevent soil erosion and sedimentation of these resources ([Section 2.1.13](#)). Therefore, wetlands and riparian zones are not further analyzed in this EA.

No Action

Under the No Action Alternative, there would be no impacts to wetlands or riparian zones as no Notice-level exploration activities are planned within the riparian area along the Twentyone Creek drainage in the Project Area or within the riparian area along the Little Humboldt River.

Additional Affected Resources

4.1.7. Rangeland Management

Proposed Action

The Project Area is primarily located within the First Creek Basin West Pasture of the Bullhead Grazing Allotment, with smaller portions of the Project Area located in the Dry Hills, Kinney West, Kinney East, and First Creek Basin East pastures. Impacts would be primarily limited to a reduction in forage and noise associated with drilling activities. These impacts would be localized and any surface disturbing activities generated by the Project would be subject to reclamation. In addition, based on potential active use AUMs, there are approximately seven acres per AUM in the First Creek Basin West Pasture, approximately 21 acres per AUM in the Dry Hills Pasture, approximately 13 acres per AUM in the Kinney West Pasture, approximately ten acres per AUM in the Kinney East Pasture, and approximately 11 acres per AUM in the First Creek Basin East Pasture. The Proposed Action has the potential to affect approximately 26 AUMs or approximately one percent of the total AUMs in the First Creek Basin West Pasture; approximately 0.4 AUM or approximately 0.02 percent of the total AUMs in the Dry Hills Pasture; approximately 0.6 AUM or approximately 0.09 percent of the total AUMs in the Kinney West Pasture; and approximately 0.02 AUM or approximately 0.0008 percent of the total AUMs in the First Creek Basin East Pasture. There is no public land disturbance proposed in the Kinney East Pasture. Due to the dispersed nature of the surface disturbance resulting from phased exploration activities (i.e., not all proposed sites would be disturbed at once) no impacts from the Proposed Action are expected on grazing animals.

No Action

Mineral exploration activities in the Project Area currently permitted through Notices on public land and activities on private land would continue. The impacts to rangeland management under the No Action Alternative would be similar, but less than the Proposed Action (approximately 25 acres of surface disturbing activities versus approximately 200 acres).

4.1.8. Soils

Proposed Action

The total surface disturbance associated with the Proposed Action would impact up to 200 acres of soils, or approximately one percent of the Project Area, and could occur in any of the soil series within the Project Area ([Table 3.4, “Summary of Soil Mapping Units and Characteristics”](#)). It is expected that the majority of the surface disturbance associated with the Project would occur on the Snapp-Puett association since it occupies approximately 71 percent of the Project Area. The Snapp-Puett association has a moderate to low soil erosion hazard potential from water and a moderate to low erosion hazard potential from wind. Impacts from erosion by water and wind for this soil type are anticipated to be minimal. In addition, the removal of BSCs would reduce soil stability and increase the potential for wind and water erosion. However, approximately only one percent of the 200 acres of proposed disturbance would be disturbed at any given time, limiting the potential for impacts from the removal of BSCs. Concurrent reclamation would also help limit the potential for impacts from wind and water erosion as a result of the removal of BSCs.

The potential impacts to soils would be reduced by measures incorporated in the Project design including: BMPs; the use of overland travel when practicable; and the concurrent reclamation of drill pads, sumps, and drill roads no longer needed for access. BMPs would include the use of one or all of the following: sediment traps or sumps; straw bales (certified weed-free); silt fences; the distribution of clarified water from sediment traps through perforated pipes in order to minimize erosion through channeling; and the use of common, centrally located sediment sumps. In addition, SEL would apply gravel, crushed rock, or aggregate to constructed roads, as necessary, to help reduce erosion and soil compaction. Soils or alluvium capable of serving as growth media would be salvaged and stockpiled as part of the fill slope of newly constructed roads. Following successful reclamation, which would include regrading, ripping, and revegetation of disturbed areas, soil loss due to the Proposed Action would be temporary and minimal.

No Action

Mineral exploration activities in the Project Area currently permitted through Notices on public land and activities on private land would continue. Under the No Action Alternative, the construction and maintenance of access roads and drill pads could impact up to approximately 25 acres of soils on public land. The potential for wind and water erosion of disturbed soils would be increased until reclamation was successfully completed. The potential impacts to soils would be reduced by measures incorporated in the Project design, including the concurrent reclamation of drill pads, sumps, and drill roads no longer needed for access. BMPs would include the use of one or all of the following: sediment traps or sumps; straw bales (certified weed-free); silt fences; the distribution of clarified water from sediment traps through perforated pipes in order to minimize erosion through channeling; and the use of common, centrally located sediment sumps. In addition, SEL would continue to apply gravel, crushed rock, or aggregate to constructed roads to help reduce erosion and soil compaction. Impacts associated with the Proposed Action would be similar but less than the Proposed Action (25 acres of disturbed soils versus 200 acres under the Proposed Action).

4.1.9. Special Status Species

Proposed Action

Sensitive Plant Species

No sensitive plant species were detected within the Project Area; therefore, no impacts to sensitive plants are expected from the Proposed Action.

Sensitive Wildlife Species

Several BLM sensitive raptor, bird, bat, and other animal species have been observed or are likely to occur in the Project Area. The Proposed Action includes measures to avoid impacts to nesting migratory birds and raptors ([Section 2.1.13](#)); therefore, the destruction of active nests or disruption of breeding behavior of sensitive bird species would not occur as a result of the Proposed Action. Potential impacts to foraging habitat may occur as a result of exploration activities; however, disturbance would be created incrementally and dispersed throughout the Project Area and would be reclaimed and revegetated. Reclamation activities would be conducted concurrently with exploration activities when it has been determined that exploration disturbance is no longer needed. Reclamation would begin at the earliest practicable time ([Table 2.3, “Anticipated Exploration Reclamation Schedule”](#)) within exploration areas considered inactive, without potential, or completed. Reestablishment of vegetation would take place within three years of Project reclamation. No long-term impacts to sensitive raptor and bird habitat are likely to occur and the Proposed Action would have minimal direct impacts on sensitive raptor and bird species.

Golden eagles are protected by the MBTA and the Bald and Golden Eagle Protection Act, both of which prohibit take. The *Interim Golden Eagle Technical Guidance: Inventory and Monitoring Protocols; and Other Recommendations in Support of Golden Eagle Management and Permit Issuance* (USFWS 2010) provides guidance to conduct informed impact analyses and mitigation during the NEPA process. Removal of vegetation, increased human presence, and increased vehicular traffic would have minimal impact to golden eagle foraging habitat located in the area. A golden eagle nest is located on the southeastern border of the Project Area boundary. In order to avoid impacts to individual golden eagles and their habitat, implementation of the environmental protection measures outlined in [Section 2.1.13](#) stating that an eagle conservation plan would be prepared would help reduce impacts to golden eagles and their habitat and provide measures to limit the potential for take.

Greater sage-grouse, a BLM sensitive and upland game bird species are known to use the Project Area. Greater sage-grouse winter habitat occurs throughout the majority of the Project Area. Greater sage-grouse scat was identified in the Project Area in June and August 2011. A large area of the southern portion of the Project Area was burned and does not currently provide quality foraging or roosting habitat for greater sage-grouse; however, NDOW has observed greater sage-grouse using burned and rehabilitated areas. The northern portion of the Project Area provides more suitable foraging and nesting habitat for greater sage-grouse. Potential impacts to foraging habitat may occur as a result of exploration activities; however, disturbance would be created incrementally and dispersed throughout the Project Area and would be reclaimed and revegetated. A concentration of scat piles on an existing road and reclaimed drill site indicated a possible lek site. The lek site was verified during March and April 2012 surveys. Based on the presence of an active lek in the Project Area, potential impacts to greater sage-grouse could occur. SEL would practice complete avoidance of the lek during lek and nesting seasons, thereby further

reducing impacts. In addition, implementation of greater sage grouse and other environmental protection measures identified in [Section 2.1.13](#) would help further reduce potential impacts.

Bat species would likely utilize the Project Area for foraging. Suitable foraging habitat was detected in the Project Area for pallid bat, western small-footed myotis, and fringed myotis. There was no suitable roosting habitat identified in the Project Area. The Proposed Action includes approximately 200 acres of surface disturbance and could result in impacts to bat foraging habitat. Impacts to foraging bats would be reduced with revegetation following Project completion. With the implementation of phased and incremental disturbance in the Project Area, and reclamation following Project activities, impacts to sensitive bat species in the Project Area would be minimized.

No Action

Mineral exploration activities in the Project Area currently permitted through Notices on public land and activities on private land would continue. Impacts to special status species habitat could be caused by surface disturbing activities on approximately 25 acres within the Project Area. Impacts to special status species and their habitat under the No Action Alternative would be similar to but less than the Proposed Action (approximately 25 acres of surface disturbing activities versus approximately 200 acres).

4.1.10. Vegetation

Proposed Action

The Proposed Action would result in surface disturbance of approximately 200 acres, or approximately one percent of the Project Area, of Wyoming big sagebrush, sagebrush/perennial grass, Great Basin grassland, and riparian communities. The disturbance would be created incrementally and dispersed throughout the vegetation communities in the Project Area. Reclamation would begin as soon as practicable when exploration areas have been deemed inactive, without potential, or completed. Final reclamation would begin within two years of completion of exploration activities using a BLM approved seed mix. In addition, the disturbance would be mostly linear (roads) or patchy (drill pads) in form, and therefore highly likely to be recolonized by surrounding vegetation.

No Action

Mineral exploration activities in the Project Area currently permitted through Notices on public land and activities on private land would continue. The No Action Alternative could include disturbance or redisturbance of approximately 25 acres of land. Reclamation of surface disturbance including reseeding would minimize impacts to vegetation. Under the No Action Alternative, impacts to vegetation would be similar to, but less than the Proposed Action (approximately 25 acres of surface disturbing activities versus approximately 200 acres).

4.1.11. Wild Horses

Proposed Action

Approximately 200 acres of the 145,538-acre Snowstorm Mountains HMA and herd area would be disturbed by the Project, which equals approximately 0.14 percent of the HMA. There are no perennial water sources located within the Project Area that provide regular sources of drinking water. Impacts to wild horses could be caused by surface disturbing activities; however, it is expected wild horses would avoid drill sites during drilling operations. Water is available in areas within the HMA adjacent to the Project Area. Sumps on drill sites would be fenced until reclaimed, limiting the potential for wild horse access. No wild horse gathers are currently scheduled. Therefore, impacts to wild horses would be minimized.

No Action

Mineral exploration activities in the Project Area currently permitted through Notices on public land and activities on private land would continue. SEL would place fences around drill sumps, limiting impacts to wild horses. Impacts to wild horses could be caused by surface disturbing activities on approximately 25 acres within the Project Area; however, water sources would not be impacted and it is expected wild horses would avoid drill sites during drilling operations. Water is available in areas within the HMA adjacent to the Project Area. No wild horse gathers are currently scheduled. Impacts to wild horses under the No Action Alternative would be similar to the impacts associated with the Proposed Action.

4.1.12. Wildlife (General)

Proposed Action

Direct impacts to wildlife would consist of temporary habitat loss and disturbance from human activity and noise. Approximately 200 acres of existing wildlife habitat, or approximately one percent of the Project Area, would be temporarily impacted by exploration activities over a ten year period, with the actual length of time based on exploration results, and reclamation following exploration including revegetation.

Individual small mammals and upland game birds, displaced by Project-related disturbance or habitat loss might perish due to increased competition or predation. The number of losses, as a result of direct impacts, is minor compared to the populations of these species as a whole in the area. Larger, more mobile species would most likely remain in the vicinity of the Project Area, but increase their home range territory and return to their original home range once exploration activities have ceased (Stephenson et al 1996; Rogers et al 1978). Construction of roads and drill pads and the operation of drilling equipment could disturb wildlife due to the presence of humans and by creating noise and dust. Wildlife foraging activities within the Project Area could continue to be dispersed because up to ten drill rigs and their associated support equipment would be operating at one time within the 19,801-acre Project Area, allowing wildlife to move around and between Project activities. Concurrent reclamation and reestablishment of vegetation would take place in areas no longer needed for exploration and within two years of Project completion; therefore, no long-term impacts to wildlife habitat are likely to occur and the Proposed Action would have minimal direct impacts on wildlife species.

Indirect impacts to wildlife would occur as a result of short-term temporary loss of vegetation as a result of Project-related surface disturbance. Long-term improvement of habitat could occur in the Project Area as surface disturbance is reclaimed and revegetated and a greater amount of forb species became available for wildlife foraging.

Any disturbance to mule deer or pronghorn antelope would likely be limited to visual perturbation of individuals in or near the Project Area. Individual mule deer or pronghorn antelope foraging in the Project Area during exploration activities would most likely increase the size of their home range, resulting in a temporary spatial redistribution of individuals or habitat use patterns during the Project, then return to their original home range after exploration activities cease.

Occupied year-round mule deer and pronghorn antelope distribution occurs within the Project Area. The Project proposes to impact approximately 200 acres, or approximately one percent of the Project Area, and additional mule deer and pronghorn antelope year-round range is available in the vicinity of the Project Area; therefore, no long-term impacts to mule deer or pronghorn antelope year-round range are likely to occur and the Proposed Action would have minimal direct impacts on mule deer and pronghorn antelope.

Indirect impacts to game species would occur as a result of the temporary loss of vegetation from Project-related surface disturbance. Impacts to wildlife habitat in the Project Area would be reduced as surface disturbance is reclaimed and revegetated and a greater amount of native plant species become available for game species foraging and shelter. Therefore, no long-term impacts to game species habitat are likely to occur and the Proposed Action would have minimal impacts on game species.

No Action

Mineral exploration activities in the Project Area currently permitted through Notices on public land and activities on private land would continue. The No Action Alternative could include disturbance or redisturbance of approximately 25 acres, which could result in the temporary loss of approximately 25 acres of wildlife habitat. Reclamation of surface disturbance would gradually eliminate impacts to wildlife. Impacts to wildlife as a result of the No Action Alternative would be similar, but proportionally less than the Proposed Action (approximately 25 acres of surface disturbing activities versus approximately 200 acres).

4.2. Cumulative Impacts

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

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

As required under the NEPA and the regulations implementing the NEPA, this chapter addresses those cumulative effects on the environmental resources in the Cumulative Effects Study Areas

(CESAs) which could result from the implementation of the Proposed Action and No Action Alternative. The extent of the CESA would vary with each resource, based on the geographic or biologic limits of that resource. As a result, the list of projects considered under the cumulative analysis may vary according to the resource being considered. In addition, the length of time for cumulative effects analysis would vary according to the duration of impacts from the Proposed Action on the particular resource.

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

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

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

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

4.2.1. Assumptions for Cumulative Analysis

Direct and indirect consequences of the Proposed Action were evaluated previously in [Section 4.1, “Direct and Indirect Impacts”](#) for the various environmental resources. Analyzed in this chapter are those resources from [Section 4.1, “Direct and Indirect Impacts”](#) that have the potential to be incrementally impacted by the Proposed Action within the identified CESAs. Based on the preceding analysis in [Section 4.1, “Direct and Indirect Impacts”](#), no cumulative impacts are expected for the following resources: cultural resources; Native American religious concerns; wastes, hazardous or solid; water quality, surface and ground; wetlands and riparian zones; geology and mineral resources; lands and realty; paleontological resources; public safety; recreation; social values and economics; and visual resources.

Description of CESA Boundaries

The geographical areas considered for the analysis of cumulative effects vary in size and shape to reflect each evaluated environmental resource and the potential area of impact ([Table 4.2, “Cumulative Effects Study Areas”](#)). The CESA boundaries are shown on [Map 4.2.1](#).

The Air Quality CESA (2,466,973 acres) has been identified as a 50 kilometer (an approximately 31 mile) radius around the Project Area ([Map 4.2.1](#)).

The Noxious Weeds CESA (97,229 acres) was developed to assess potential cumulative impacts to noxious weeds, invasive, and nonnative species, soils, and vegetation. The CESA was developed by following the northwestern portion of the South Fork Little Humboldt River watershed, and the southeastern portion of the Fairbanks Creek-Little Humboldt River watershed ([Map 4.2.1](#)).

The Range CESA (168,973 acres) has been identified as the Bullhead Grazing Allotment, and was developed to assess potential cumulative impacts to livestock grazing and range resources.

The Wild Horse CESA (259,231 acres) has been identified as the Snowstorm Mountains HMA and the Osgood Mountains Herd Area, with a small strip of private land in between the two areas. This CESA was developed to assess potential cumulative impacts to wild horses.

The Wildlife CESA (2,468,668 acres) is defined as a portion of the Tuscarora Population Management Unit (PMU), a portion of the Santa Rosa PMU, and a portion of the ten mile radius around the lek site within the Project Area that is not within the PMUs. This CESA was developed to assess potential cumulative impacts to migratory birds, special status wildlife species, and general wildlife.

Table 4.2. Cumulative Effects Study Areas

Resource	Cumulative Effects Study Area	CESA Name	CESA Size
Air Quality	A 50 kilometer (approximately 31 mile) radius around the Project Area	Air Quality CESA	2,466,973 acres
Noxious Weeds, Invasive, and Nonnative Species, Soils, Vegetation	Northwestern portion of the South Fork Little Humboldt River watershed and the southeastern portion of the Fairbanks Creek-Little Humboldt River watershed	Noxious Weeds CESA	97,229 acres
Livestock Grazing/Rangeland Management	Bullhead Grazing Allotment	Range CESA	168,973 acres
Wild Horses	Snowstorm Mountains HMA and Osgood Mountains Herd Area	Wild Horse CESA	259,231 acres
Migratory Birds, Special Status Wildlife Species, General Wildlife	A portion of the Tuscarora and Santa Rosa PMUs, and a portion of a ten mile radius around the lek site	Wildlife CESA	2,468,668 acres

4.2.2. Past and Present Actions

Past and present actions in the CESAs include the following: livestock grazing and range improvements; wildland fires and vegetation treatments; wildlife and game habitat management; dispersed recreation; utility and other rights-of-way (ROWs); mineral exploration; and mining. For most of the past and present actions, there are no data on the number of acres reclaimed. However, state and federal regulations now require reclamation; therefore, it is reasonable to assume that some areas have been reclaimed, have become naturally stabilized or have naturally revegetated over time, thereby reducing potential cumulative impacts.

Mineral Exploration and Mining

The BLM's Land & Mineral Legacy Rehost 2000 System (LR2000) (BLM 2012c) database was used to query the past and present mineral exploration or mining activities (authorized Notices, closed Notices, authorized and closed plans of operation) that have been issued in the five CESAs by section, township, and range. Past and present mineral development and exploration activities within the five CESAs include the following: mining and exploration plans of operation; and exploration Notices. [Table 4.3, "Past and Present Minerals Disturbance Acres in the CESAs"](#) is a summary of the past and present mineral activities within each CESA and is based on the LR2000 database used by the BLM. The LR2000 database was queried on September 17 and 18, 2012, for the Noxious Weeds, Range, Wild Horse, and Wildlife CESAs, and October 24, 2012, for the Air Quality CESA; therefore, any newly approved mineral exploration and mining activities that have been added to the LR2000 database after October 24, 2012, are not included in this analysis.

Table 4.3. Past and Present Minerals Disturbance Acres in the CESAs

CESA	Authorization Status	Total Acres of Disturbance
Air Quality CESA	Closed Notices (341)	608
	Authorized Notices (21)	66
	Authorized and Closed Plans of Operation (18)	20,634
	Air Quality CESA Total	21,308
Noxious Weeds CESA	Closed Notices (11)	33
	Authorized Notices (8)	32
	Authorized and Closed Plans of Operation (3)	13,664
	Noxious Weeds CESA Total	13,729
Range CESA	Closed Notices (36)	66
	Authorized Notices (9)	34
	Authorized and Closed Plans of Operation (5)	14,753
	Range CESA Total	14,853
Wild Horse CESA	Closed Notices (95)	138
	Authorized Notices (9)	34
	Authorized and Closed Plans of Operation (11)	15,543
	Wild Horse CESA Total	15,715
Wildlife CESA	Closed Notices (311)	708
	Authorized Notices (23)	69
	Authorized and Closed Plans of Operation (27)	35,987
	Wildlife CESA Total	36,764

Source: BLM 2012c

Livestock Grazing and Rangeland Improvements

Portions of 43 allotments are located within the Air Quality CESA, portions of three allotments are located in the Noxious Weeds CESA, portions of nine allotments are located in the Wild Horse CESA, and portions of 50 allotments are located in the Wildlife CESA. The allotments located in each of the CESAs are listed in [Table 4.4, “Allotments Located Within the CESAs”](#). The Range CESA is the entire Bullhead Grazing Allotment.

Table 4.4. Allotments Located Within the CESAs

Grazing Allotment Name	CESA ¹			
	Air Quality	Noxious Weeds	Wild Horse	Wildlife
Abel Creek	X			X
Andorno	X			X
Andrea				X
Antelope	X			X
Asa Moore	X			X
Bloody Run	X			X
Bucket Flat				X
Buffalo	X			X
Bullhead	X	X	X	X
Buttermilk	X			X
Chimney Creek	X			X
Eagle Rock				X

Grazing Allotment Name	CESA ¹			
	Air Quality	Noxious Weeds	Wild Horse	Wildlife
Eden Valley	X		X	
Eleven Mile Flat	X			X
Flat Creek				X
Fort McDermitt				X
Fort Scott	X			X
Golconda Butte	X		X	
Granite	X			X
Hanson Creek	X			X
Hot Springs Peak	X	X	X	X
Indian Creek	X			X
Iron Point	X			
Jake's Creek	X			X
Little Humboldt	X		X	X
Little Owyhee	X	X	X	X
Long Canyon	X			X
Martin Creek	X			X
Midas	X			X
Mori				X
Mullanix	X			X
Osgood	X		X	
Owyhee	X			X
Paradise Hill	X			X
Private	X			
Provo	X			X
Quarter Circle S				X
Quinn River				X
Rebel Creek				X
Sand Pass	X			
Scott Spring	X		X	X
Singus	X			X
Six Mile				X
Solid Silver	X			X
Spanish Ranch			X	
Spanish Spring	X			X
Spring Creek	X			X
Squaw Valley	X			X
Sugar Loaf	X			X
T Lazy S				X
Tall Corral	X			X
Taylor Canyon				X
Tuscarora	X			X
Twenty Five	X			X
U.C.				X
White House	X			
William Stock	X			X
Willow Creek				X

¹X indicates that the allotment is located within the identified CESA.

[Table 4.5, “Rangeland Improvements Located Within the CESAs”](#) includes the rangeland improvements located within the Air Quality, Noxious Weeds, Range, Wild Horse, and Wildlife CESAs.

Table 4.5. Rangeland Improvements Located Within the CESAs

CESA	Rangeland Improvement Type
Air Quality	Branding traps (3), cabin (1), catchments (2), cattle guards (30), corrals (14), dam (1), earth tanks (2), enclosure (1), exclosures (8), flowing wells (19), gates (2), guzzlers (22), non-flowing wells (11), pipelines (26), pit (1), ponds (8), reservoirs (160), seep/spring boxes (2), springs (66), spring box/trough (1), spring/trough (26), storage tanks (3), troughs (41), valve boxes (7), wells (20), windmills (2), allotment fences (396.9 miles), corral fences (6.3 miles), drift fences (35 miles), enclosure fences (26.4 miles), fences (870.3 miles), fire fences (22.9 miles), gap fences (0.8 mile), pasture fences (338.2 miles), protection fences (46 miles), seeding fences (74.8 miles), water pipelines (142.7 miles)
Noxious Weeds	Cattle guards (4), enclosure (1), reservoirs (7), allotment fences (11.1 miles), enclosure fences (4.5 miles), fences (57.1 miles), pasture fences (13 miles)
Range	Branding trap (1), cattle guards (4), enclosure (1), reservoirs (7), allotment fences (29.2 miles), enclosure fences (10.7 miles), fences (108.7 miles), pasture fences (22 miles), water pipelines (4.6 miles)
Wild Horse	Branding trap (1), cattle guards (4), corral (1), enclosure (1), pipelines (2), reservoirs (7), springs (8), allotment fences (8 miles), enclosure fences (9.9 miles), fences (147.6 miles), pasture fences (26.5 miles), water pipelines (6.7 miles)
Wildlife	Branding trap (1), cabin (1), catchment facilities (3), cattle guards (47), corrals (13), dike (1), earth tanks (4), enclosure (1), exclosures (8), flowing wells (20), gates (2), guzzlers (41), non-flowing wells (36), pipelines (18), ponds (13), reservoirs (158), seep/spring boxes (4), springs (73), spring box/trough (1), springs/troughs (26), storage tank (1), troughs (48), valve boxes (7), water holes (2), wells (24), windmill (1), allotment fences (281.2 miles), corral fences (3.2 miles), drift fences (68.5 miles), enclosure fences (23.6 miles), fire fences (60.3 miles), gap fences (0.8 mile), ownership fence (2 miles), pasture fences (359.3 miles), protection fences (31.5 miles), seeding fences (51.7 miles), fences (678.5 miles), water pipelines (106.8 miles)

Wildland Fires and Vegetation Treatments

Wildland fires burned approximately 989,262 acres within the Air Quality CESA, approximately 69,515 acres within the Noxious Weeds CESA, approximately 123,002 acres within the Range CESA, approximately 190,964 acres within the Wild Horse CESA, and approximately 1,085,466 acres within the Wildlife CESA between 1981 and 2011 ([Map 4.2.1](#)).

Vegetation treatments within the Air Quality CESA include the following: approximately 309,540 acres of aerial seeding; approximately 431 acres of broadcast seeding; approximately 109,111 acres of disk/drill seeding; approximately 3,012 acres of Gandy seeding; approximately 111 acres of greenstrip planting; approximately 338 acres of hand-planted bitterbrush; approximately 6,929 acres of other seeding activities; approximately 111 acres of chaining; approximately 21,701 acres of pesticide treatments; approximately 11,932 acres of mowing; and approximately 577 acres of prescribed burns.

Vegetation treatments within the Noxious Weeds CESA include the following: approximately 21,685 acres of aerial seeding; approximately 10,165 acres of drill seeding; and approximately 0.9 acre of pesticide treatments.

Vegetation treatments within the Range CESA include the following: approximately 36,510 acres of aerial seeding and approximately 14,253 acres of drill seeding.

Vegetation treatments within the Wild Horse CESA include the following: approximately 49,768 acres of aerial seeding and approximately 17,626 acres of drill seeding.

Vegetation treatments within the Wildlife CESA include the following: approximately 316,312 acres of aerial seeding; approximately 207 acres of broadcast seeding; approximately 123,779 acres of drill seeding; approximately 362 acres of hand-planted bitterbrush; approximately 15,590 acres of other planting activities; approximately 10,302 acres of herbicide treatments; approximately 1,720 acres of mowing; approximately 3,916 acres of prescribed burns; and approximately six acres of disking.

Wildlife and Game Habitat Management

Research and management of big game and wildlife are undertaken by the NDOW and BLM, and may include modification to existing habitat and rangeland facilities. Hunt Units 051 and 066 are included in the Noxious Weeds CESA and the Wild Horse CESA, and Hunt Units 035, 051, 062, 064, 066 through 068, and 152 are included in the Wildlife CESA, which would both be impacted by wildlife and game habitat management activities.

The Wildlife CESA is comprised mostly of the Tuscarora and Santa Rosa PMUs. The Noxious Weeds CESA includes portions of both of the Tuscarora and Santa Rosa PMUs.

Rights-of-Way

The LR2000 database was used to query the various types of ROWs that have been applied for or approved in the four CESAs by section, township, and range, and include the following: roads and highways; telecommunications; power transmission; communication sites; oil and gas pipelines; irrigation/water facilities and pipelines; mineral material disposal sites; material sites; wind energy facilities; railroads; and other ROWs. The acreage of surface disturbance associated with these ROWs cannot be precisely quantified; however, it is assumed that these types of ROWs and the construction and maintenance associated with these facilities would create a level of surface disturbance that would contribute to cumulative impacts to various resources. In addition, certain types of ROWs can fragment habitat or create barriers or hazards for wildlife passage. The LR2000 database was queried on September 17 and 18, 2012, for the Noxious Weeds, Range, Wild Horse, and Wildlife CESAs, and October 24, 2012 for the Air Quality CESA; therefore, any newly approved mineral exploration and mining activities that have been added to the LR2000 database after October 24, 2012 are not included in this analysis. The approximate acreage of each ROW within each CESA associated with these ROWs is listed in [Table 4.6, “Past and Present ROW Acreages in the CESAs”](#).

Table 4.6. Past and Present ROW Acreages in the CESAs

ROW Type	Air Quality CESA (acres)	Noxious Weeds CESA (acres)	Range CESA (acres)	Wild Horse CESA (acres)	Wildlife CESA (acres)
Roads and Highways	7,074	109	223	1,685	5,091
Telecommunications	2,482	680	680	1,349	3,677
Power Transmission	2,164	0	92	828	6,438
Communication Sites	27	0	0	0	78
Oil and Gas Pipelines	755	97	97	97	753
Irrigation/Water Facilities and Pipelines	384	219	278	295	458

ROW Type	Air Quality CESA (acres)	Noxious Weeds CESA (acres)	Range CESA (acres)	Wild Horse CESA (acres)	Wildlife CESA (acres)
Mineral Material Disposal Sites	183	0	0	0	62
Material Sites	897	0	0	40	296
Wind Energy Facilities	66,060	1	1	15,001	67,229
Railroads	2,866	0	0	613	340
Other	49	0	0	0	69
Total	82,941	1,106	1,371	19,908	84,491

Source: BLM 2012c

Recreation

Dispersed recreation, such as hunting, rock hounding, wildlife viewing, fishing, primitive camping, and limited offroad vehicle travel, occurs throughout all the CESAs; however, there are no data on the level of use.

4.2.3. Reasonably Foreseeable Future Actions

Activities/events that would continue to occur in the Air Quality CESA include the following: livestock grazing; wildlife and game habitat management; mineral exploration and mining; ROW management; vegetation treatments; wildland fires; and dispersed recreation. RFFAs in the Air Quality CESA include approximately 204 acres of mineral exploration and mining activities and approximately 9,124 acres of ROW construction.

Activities/events that would continue to occur in the Noxious Weeds CESA include the following: livestock grazing; wildlife and game habitat management; mineral exploration and mining; ROW management; vegetation treatments; wildland fires; and dispersed recreation. RFFAs in the Noxious Weed CESA include approximately 201 acres of mineral exploration activities.

Activities/events that would continue to occur in the Range CESA include the following: livestock grazing; wildlife and game habitat management; mineral exploration and mining; ROW management; vegetation treatments; wildland fires; and dispersed recreation. RFFAs in the Range CESA include approximately 201 acres of mineral exploration activities.

Activities/events that would continue to occur in the Wild Horse CESA include the following: livestock grazing; wildlife and game habitat management; mineral exploration and mining; ROW management; vegetation treatments; wildland fires; dispersed recreation; and wild horse management. RFFAs in the Wild Horse CESA include approximately 201 acres of mineral exploration activities and approximately two acres of road construction.

Activities/events that would continue to occur in the Wildlife CESA include the following: livestock grazing; wildlife and game habitat management; mineral exploration and mining; ROW management; vegetation treatments; wildland fires; and dispersed recreation. RFFAs in the Wildlife CESA include approximately 2,554 acres of mineral exploration and mining activities and approximately 521 acres of ROW construction.

4.2.4. Cumulative Impacts to Affected Resources

4.2.4.1. Air Quality

The CESA for air quality is the Air Quality CESA, which encompasses approximately 2,466,973 acres and is shown on [Map 4.2.1](#).

Past and Present Actions: Present actions within the Air Quality CESA that are likely contributing to air quality impacts include wildland fire, dispersed recreation, minerals exploration and mining activities, industrial operations (i.e., construction facilities, power generation facility, generator), and transportation networks. These activities are principally contributing point source particulate matter emissions and fugitive dust to the air quality impacts; however, products of combustion are also emitted. Impacts from wildland fires would be of short duration and localized. [Table 4.7, “Air Quality Emissions within the Air Quality CESA”](#) provides a summary of the emissions within the CESA. These emissions include those sources that have a permit from the Nevada BAPC and vehicle travel on I-80 and U.S. Highway 95. Other emissions occur on smaller roadways throughout the CESA; however, these emissions are not readily quantifiable.

Table 4.7. Air Quality Emissions within the Air Quality CESA

Emission Source	Emissions (tons per year)					
	PM ₁₀	PM _{2.5}	SO ₂	NO _x	CO	VOC
Facilities	2,109.79	2,109.79	7,173.53	14,336.50	73,302.75	505.87
Vehicles	13.64	14.08	0.33	335.44	21,094.95	16.39
Totals	2,123.43	2,123.87	7,173.87	14,671.94	94,397.70	522.26
Project's Incremental Impact to Cumulative Environment	0.46%	0.18%	0.01%	0.37%	0.05%	0.57%

RFFAs: RFFAs within the Air Quality CESA that may contribute to impacts to air quality include dispersed recreation, mineral exploration, transportation, industrial operations, and wildland fires, which would likely be of a similar magnitude as the present actions within the CESA. These impacts to air quality result from the emissions of point source particulate matter, fugitive dust, and the products of combustion.

Cumulative Impacts

Proposed Action

Cumulative impacts to air quality within the Air Quality CESA would result from the past and present actions and RFFAs when combined with the Proposed Action. The incremental contribution of the Proposed Action's particulate and combustion emissions and fugitive dust on the cumulative environment would be on the order of 0.46 percent for PM₁₀, 0.18 percent for PM_{2.5}, 0.01 percent for SO₂, 0.37 percent for NO_x, 0.05 percent for CO, and 0.57 percent for VOC. Stationary sources would be regulated by the BAPC under individual permits to ensure that impacts would be reduced to levels that are consistent with the ambient air quality standards. The Dust Control Plan for the Project and speed limits are measures that would minimize the potential effects of fugitive dust on air quality. Reclamation of Project-related proposed surface disturbance would gradually eliminate fugitive dust from wind erosion.

No Action

The cumulative impacts to air resources within the CESA from this alternative would result from the combination of this alternative with past and present actions and RFFAs. The incremental contribution of this alternative is less than the incremental contribution of the Proposed Action and would be minimal. Cumulative emissions are generally dispersed and stationary sources from other facilities would be regulated by the BAPC to ensure that impacts would be reduced to levels that are consistent with the ambient air quality standards.

4.2.4.2. Migratory Birds

The CESA for migratory birds is the Wildlife CESA, which encompasses approximately 2,468,668 acres and is shown on [Map 4.2.1](#).

Past and Present Actions. Past and present actions that could have impacted and may be currently impacting migratory birds and their habitat include livestock grazing, wildlife and game habitat management, wildland fires, dispersed recreation, utility and other ROW management and maintenance, mineral exploration, and mining. Impacts to migratory birds and their habitat have resulted from the following: 1) indirect impacts from the destruction of habitat associated with building roads and clearing vegetation; 2) indirect impacts from the disruption from human presence or noise from drill rigs, water trucks and four-wheel drive pickups; and 3) direct impacts or harm to migratory birds that result from the removal of trees and shrubs containing viable nests or ground nests destroyed by construction or ranching equipment. There are no specific data that quantify impacts to migratory birds and their habitat as a result of livestock grazing or recreation. However, impacts to migratory birds and their habitat from grazing include trampling of vegetation or nesting areas near streams, springs, or riparian areas within the Wildlife CESA. Impacts to migratory birds and their habitat from recreation activities include destruction of native vegetation or nesting areas from offroad vehicles that traveled off of established roadways.

Historic fires (1981 – 2011) have burned approximately 1,085,466 acres in the Wildlife CESA (approximately 44 percent of the CESA). Authorized or closed mineral exploration and mining Notices or plans of operation total approximately 36,764 acres (approximately 1.5 percent of the CESA) of surface disturbance. Approximately 84,491 acres of ROWs were issued within the Wildlife CESA that had the potential to create surface disturbance and disturb migratory bird habitat and vegetation. The CESA is also comprised of the NDOW Hunt Units 035, 051, 062, 064, 066 through 068, and 152, which had the potential to create noise and disturbance to migratory birds, or remove or alter habitat. The Wildlife CESA encompasses portions of 50 grazing allotments, as shown in [Table 4.4, “Allotments Located Within the CESAs”](#). Livestock grazing and associated management could have contributed to the spread of noxious weeds, invasive and nonnative species, which could have had an indirect effect on migratory birds. The past and present actions that are quantifiable have disturbed approximately 1,206,721 acres or approximately 49 percent of the CESA.

RFFAs: Potential impacts to migratory birds and their habitat from livestock grazing, wildlife and game habitat management, dispersed recreation, mineral exploration, mining, or loss of native vegetation associated with potential wildland fires could occur. There are no specific data to quantify impacts to migratory birds or their habitat as a result of livestock grazing, wildlife and game habitat management, dispersed recreation, or potential wildland fires within the CESA. There are approximately 521 acres of disturbance for pending ROWs and approximately 2,554 acres of disturbance for pending minerals projects reported in LR2000 in the Wildlife

CESA. These pending projects are all required to incorporate protection measures for migratory birds and, therefore are not expected to directly harm migratory birds, but may result in habitat removal or alteration.

Cumulative Impacts

Proposed Action

The Proposed Action would impact approximately 0.008 percent of the CESA. Quantifiable past and present actions and RFFA disturbance in the Wildlife CESA is approximately 1,209,796 acres, which is an impact to approximately 49 percent of the total Wildlife CESA. However, based on the above analysis and findings, incremental impacts to migratory birds and their habitat as a result of the Proposed Action, when combined with the impacts from the past and present actions and RFFAs, are expected to be minimal.

No Action

A total of the quantifiable past and present actions and RFFA disturbance within the Wildlife CESA is 1,209,796 acres, which is an impact to approximately 49 percent of the CESA. This alternative (approximately 25 acres) would incrementally add surface disturbance to approximately 0.001 percent of the Wildlife CESA. Impacts to migratory birds and their habitat from this alternative, in combination with past and present actions and RFFA disturbance, would be minimal.

4.2.4.3. Noxious Weeds, Invasive, and Nonnative Species

The CESA for noxious weeds, invasive and nonnative species is the Noxious Weeds CESA, which encompasses approximately 97,229 acres and is shown on [Map 4.2.1](#).

Past and present actions: Past and present actions with impacts created from noxious weeds, invasive, and nonnative species could have included and may currently include livestock grazing, wildland fires, dispersed recreation, utility and other ROW management and maintenance, mineral exploration, and mining. These actions could have disturbed vegetation and soils creating an opportunity for invasive plant colonization and the introduction of noxious weed, invasive or nonnative species seeds. There are no specific data to quantify impacts from noxious weeds, invasive and nonnative species that resulted from livestock grazing or dispersed recreation.

Historic fires (1981 – 2011) have burned approximately 69,515 acres in the Noxious Weeds CESA (approximately 72 percent of the CESA). Authorized or closed mineral exploration and mining Notices or plans of operation total approximately 13,729 acres (approximately 14 percent of the CESA) of surface disturbance. Approximately 1,106 acres of ROWs were issued within the Noxious Weeds CESA that had the potential to introduce noxious weeds, invasive and nonnative species. At the time of the LR2000 database search, there were three authorized road projects, one authorized telecommunications project, one authorized irrigation facility, and one authorized oil and gas pipeline. The past and present actions that are quantifiable have disturbed approximately 84,350 acres or approximately 87 percent of the CESA.

RFFAs: Potential impacts from noxious weeds, invasive and nonnative species as a result of livestock grazing, dispersed recreation, mineral exploration, mining, utility and other ROW management and maintenance, or loss of native vegetation associated with potential wildland fires are expected to continue. There are no specific data to quantify impacts from noxious weeds,

invasive and nonnative species as a result of livestock grazing, dispersed recreation, or wildland fires. There are approximately 201 acres of disturbance from pending minerals projects in the Noxious Weeds CESA, and no pending ROW projects.

Cumulative Impacts

Proposed Action

The Proposed Action would impact approximately 0.2 percent of the CESA. Quantifiable past and present actions and RFFA disturbance in the Noxious Weeds CESA is approximately 84,551 acres, which is an impact to approximately 87 percent of the total Noxious Weeds CESA. Based on the above analysis and findings, incremental impacts from noxious weeds, invasive and nonnative species as a result of the Proposed Action, when combined with the impacts from the past and present actions and RFFAs, are expected to be minimal.

No Action

A total of the quantifiable past and present actions and RFFA disturbance within the Noxious Weeds CESA is 84,551 acres, which is an impact to approximately 87 percent of the CESA. This alternative (approximately 25 acres) would impact approximately 0.03 percent of the Noxious Weeds CESA. Due to the small impact within the Noxious Weeds CESA, the incremental impacts from noxious weeds, invasive, and nonnative species from this alternative, in combination with past and present actions and RFFA disturbance, would be minimal.

Additional Affected Resources

4.2.4.4. Rangeland Management

The CESA for rangeland management is the Range CESA, which encompasses approximately 168,973 acres and is shown on [Map 4.2.1](#). Authorized use in the CESA is 12,050 AUMs. Based on potential active use AUMs there are approximately seven acres per AUM.

Past and present actions: Past and present actions that could have impacted and may be currently impacting rangeland management include wildlife and game habitat management, wildland fires, dispersed recreation, utility and other ROW management and maintenance, mineral exploration, and mining. There are no specific data to quantify impacts from wildlife and game habitat management or dispersed recreation. Building of sumps, fences or other linear features, or offroad traveling could have destroyed habitat or disrupted the movement of grazing animals.

Historic fires (1981 – 2011) have burned approximately 123,002 acres in the Range CESA (approximately 73 percent of the CESA). Authorized or closed mineral exploration and mining Notices or plans of operation total approximately 14,853 acres (approximately nine percent of the CESA) of surface disturbance. Approximately 19,908 acres of ROWs were issued within the Range CESA that had the potential to affect livestock movement and disturb habitat. The past and present actions that are quantifiable have disturbed approximately 157,753 acres or approximately 93 percent of the CESA.

RFFAs: Potential impacts to rangeland management from wildlife and game habitat management, dispersed recreation, mineral exploration, mining, or loss of native vegetation associated with potential wildland fires are expected to continue. There is no way to quantify potential impacts to rangeland management as a result of wildlife and game habitat management, dispersed recreation,

or potential wildland fires within the CESA. There are approximately 201 acres of disturbance for pending minerals projects reported in LR2000 in the Range CESA.

Cumulative Impacts

Proposed Action

The Proposed Action would impact approximately 0.1 percent of the CESA and up to 1,400 AUMs. Based on the above analysis and findings, incremental impacts to livestock grazing/rangeland management as a result of the Proposed Action, when combined with the impacts from the past and present actions and RFFAs, are expected to be minimal.

No Action

A total of the quantifiable past and present actions and RFFA disturbance within the Range CESA is 157,964 acres, which is an impact to approximately 94 percent of the CESA. This alternative (approximately 25 acres) would impact approximately 0.02 percent of the Range CESA. Due to the small impact within the Range CESA, the incremental impacts to livestock grazing/rangeland management from this alternative, in combination with past and present actions and RFFA disturbance, would be minimal.

4.2.4.5. Soils

The CESA for soils is the Noxious Weeds CESA, which encompasses approximately 97,229 acres and is shown on [Map 4.2.1](#).

Past and Present Actions: Past and present actions that have impacted and are currently impacting soils include livestock grazing/rangeland management, dispersed recreation, utility and other ROW management and maintenance, vegetation treatments, mineral exploration, soil compaction due to travel by heavy equipment on unpaved roads, loss of BSCs, and mining. These actions may have directly disturbed or impacted soils, or increased erosion or sedimentation potential. Soil disturbance has also been associated with wildland fires; however, fire rehabilitation and natural revegetation has occurred, stabilizing soil loss. Impacts from these activities include loss of soils productivity due to changes in soil physical properties, soil fertility, soil movement in response to water and wind erosion, and loss of soil structure due to compaction. There are no specific data to quantify impacts to soils from livestock grazing/rangeland management or dispersed recreation in the Noxious Weeds CESA.

Historic fires (1981 – 2011) have burned approximately 69,515 acres in the Noxious Weeds CESA (approximately 72 percent of the CESA). Authorized or closed mineral exploration and mining Notices or plans of operation total approximately 13,729 acres (approximately 14 percent of the CESA) of surface disturbance. Approximately 1,106 acres of ROWs were issued within the Noxious Weeds CESA. There are also ongoing revegetation treatments within the Noxious Weeds CESA which total approximately 31,851 acres, including aerial seeding, drill seeding, and pesticide treatments. The past and present actions that are quantifiable have disturbed approximately 84,350 acres or approximately 87 percent of the CESA.

RFFAs: Livestock grazing, dispersed recreation, mineral exploration, mining, utility and other ROW management and maintenance, soil compaction due to travel by heavy equipment on unpaved roads, or loss of native vegetation associated with potential wildland fires are expected to continue. There are no specific data to quantify impacts from livestock grazing, dispersed

recreation, or wildland fires. There are approximately 201 acres of disturbance from pending minerals projects in the Noxious Weeds CESA, and no pending ROW projects.

Cumulative Impacts

Proposed Action

The Proposed Action would impact approximately 0.2 percent of the CESA. Quantifiable past and present actions and RFFA disturbance in the Noxious Weeds CESA is approximately 84,551 acres, which is an impact to approximately 87 percent of the total Noxious Weeds CESA. Based on the above analysis and findings, incremental impacts to soils as a result of the Proposed Action, when combined with the impacts from the past and present actions and RFFAs, are expected to be minimal.

No Action

A total of the quantifiable past and present actions and RFFA disturbance within the Noxious Weeds CESA is 84,551 acres, which is an impact to approximately 87 percent of the CESA. This alternative (approximately 25 acres) would impact approximately 0.03 percent of the Noxious Weeds CESA. Due to the small impact within the Noxious Weeds CESA, the impacts to soils from this alternative, in combination with past and present actions and RFFA disturbance, would be minimal.

4.2.4.6. Special Status Species

The CESA for special status species is the Wildlife CESA, which encompasses approximately 2,468,668 acres and is shown on [Map 4.2.1](#).

Past and present actions: Past and present actions that have impacted and are currently impacting special status species include livestock grazing, wildland fires, dispersed recreation, utility and other ROW management and maintenance, mineral exploration, and mining. Impacts to special status species from these activities include loss of forage, cover, and habitat as well as disturbance of mating and brood rearing practices. There are no specific data to quantify impacts to special status species from livestock grazing or dispersed recreation, or to greater sage-grouse as a result of the reduction in greater sage-grouse habitat. Noise and surface disturbance have impacted special status wildlife species.

Historic fires (1981 – 2011) have burned approximately 1,085,466 acres in the Wildlife CESA (approximately 44 percent of the CESA). Authorized or closed mineral exploration and mining Notices or plans of operation total approximately 36,764 acres (approximately 1.5 percent of the CESA) of surface disturbance. Approximately 84,491 acres of ROWs were issued within the Wildlife CESA. The past and present actions that are quantifiable have disturbed approximately 1,206,721 acres or approximately 49 percent of the CESA.

RFFAs: Potential impacts to special status species from livestock grazing, dispersed recreation, mineral exploration, mining, or loss of native vegetation associated with potential wildland fires are expected to continue. There are no specific data to quantify impacts to special status species or their habitat as a result of livestock grazing, dispersed recreation, or potential wildland fires within the CESA. There are approximately 521 acres of disturbance for pending ROWs and approximately 2,554 acres of disturbance for pending minerals projects reported in LR2000 in the Wildlife CESA. These pending projects are all required to incorporate protection measures for

special status species and therefore, are not expected to directly harm special status species, but may result in habitat removal or alteration.

Cumulative Impacts

Proposed Action

The Proposed Action would impact approximately 0.008 percent of the CESA. Quantifiable past and present actions and RFFA disturbance in the Wildlife CESA is approximately 1,209,796 acres, which is an impact to approximately 49 percent of the total Wildlife CESA. Based on the above analysis and findings, incremental impacts to special status species and their habitat as a result of the Proposed Action, when combined with the impacts from the past and present actions and RFFAs, are expected to be minimal.

No Action

A total of the quantifiable past and present actions and RFFA disturbance within the Wildlife CESA is 1,209,796 acres, which is an impact to approximately 49 percent of the CESA. This alternative (approximately 25 acres) would impact approximately 0.002 percent of the Wildlife CESA. Due to the small impact within the Wildlife CESA, the impacts to special status species and their habitat from this alternative, in combination with past and present actions and RFFA disturbance, would be minimal.

4.2.4.7. Vegetation

The CESA for vegetation is the Noxious Weeds CESA, which encompasses approximately 97,229 acres and is shown on [Map 4.2.1](#).

Past and Present Actions: Past and present actions that have impacted and are currently impacting vegetation include livestock grazing, dispersed recreation, utility and other ROW management and maintenance, wildland fires, and vegetation treatments that altered the structure, composition, and ecology of plant communities, mineral exploration, and mining. There are no specific data to quantify impacts to vegetation from livestock grazing or dispersed recreation. Impacts caused by hunting activities and associated offroad vehicle travel include the introduction of noxious weeds, invasive or nonnative species and trampled vegetation.

Historic fires (1981 – 2011) have burned approximately 69,515 acres in the Noxious Weeds CESA (approximately 72 percent of the CESA). Authorized or closed mineral exploration and mining Notices or plans of operation total approximately 13,729 acres (approximately 14 percent of the CESA) of surface disturbance. Approximately 1,106 acres of ROWs were issued within the Noxious Weeds CESA that had the potential to create surface disturbance. There are also ongoing revegetation treatments within the Noxious Weeds CESA which total approximately 31,851 acres, including aerial seeding, drill seeding, and pesticide treatments. The past and present actions that are quantifiable have disturbed approximately 84,350 acres or approximately 87 percent of the CESA.

RFFAs: Potential impacts to vegetation from livestock grazing, dispersed recreation, mineral exploration, mining, utility and other ROW management and maintenance, or loss of native vegetation associated with potential wildland fires are expected to continue. There are no specific data to quantify impacts from livestock grazing, dispersed recreation, or wildland fires. There are

approximately 201 acres of disturbance from pending minerals projects in the Noxious Weeds CESA, and no pending ROW projects.

Cumulative Impacts

Proposed Action

The Proposed Action would impact approximately 0.2 percent of the CESA. Quantifiable past and present actions and RFFA disturbance in the Noxious Weeds CESA is approximately 84,551 acres, which is an impact to approximately 87 percent of the total Noxious Weeds CESA. Based on the above analysis and findings, incremental impacts to vegetation as a result of the Proposed Action, when combined with the impacts from the past and present actions and RFFAs, are expected to be minimal.

No Action

A total of the quantifiable past and present actions and RFFA disturbance within the Noxious Weeds CESA is 84,551 acres, which is an impact to approximately 87 percent of the CESA. This alternative (approximately 25 acres) would impact approximately 0.03 percent of the Noxious Weeds CESA. Due to the small impact within the Noxious Weeds CESA, the impacts to vegetation from this alternative, in combination with past and present actions and RFFA disturbance, would be minimal.

4.2.4.8. Wild Horses

The CESA for wild horses is the Wild Horse CESA, which encompasses approximately 259,231 acres and is shown on [Map 4.2.1](#).

Past and Present Actions: Past and present actions that have impacted or are currently impacting wild horses include wildland fires, dispersed recreation, utility and other ROW management and maintenance, mineral exploration, and mining. Impacts to wild horses from these activities include loss of forage, increased traffic, and noise from drilling and mining activities. The extent of these impacts varies with the type of activity. There are no specific data to quantify impacts to wild horses from dispersed recreation. The Owyhee Complex Wild Horse Gather was initiated in November 2012 and has removed approximately 800 animals.

Historic fires (1981 – 2011) have burned approximately 190,964 acres in the Wild Horse CESA (approximately 74 percent of the CESA). Authorized or closed mineral exploration and mining Notices or plans of operation total approximately 15,715 acres (approximately six percent of the CESA) of surface disturbance. Approximately 19,908 acres of ROWs were issued within the Wild Horse CESA that had the potential to create surface disturbance and disturb wild horse foraging habitat and vegetation. The past and present actions that are quantifiable have disturbed approximately 226,587 acres or approximately 87 percent of the CESA.

RFFAs: Potential impacts to wild horses from dispersed recreation, mineral exploration, mining, or loss of native vegetation associated with potential wildland fires are expected to continue. There are no specific data to quantify impacts to wild horses as a result of livestock grazing, dispersed recreation, or potential wildland fires within the CESA. There are approximately 201 acres of disturbance from pending minerals projects reported in LR2000 in the Wild Horse CESA, and approximately two acres of disturbance for pending ROW projects.

Cumulative Impacts

Proposed Action

The Proposed Action would impact approximately 0.08 percent of the CESA. Quantifiable past and present actions and RFFA disturbance in the Wild Horse CESA is approximately 226,788 acres, which is an impact to approximately 88 percent of the total Wild Horse CESA. Based on the above analysis and findings, incremental impacts to wild horses as a result of the Proposed Action, when combined with the impacts from the past and present actions and RFFAs, are expected to be minimal.

No Action

A total of the quantifiable past and present actions and RFFA disturbance within the Wild Horse CESA is 226,788 acres, which is an impact to approximately 88 percent of the CESA. This alternative (approximately 25 acres) would impact approximately 0.01 percent of the Wild Horse CESA. Due to the small impact within the Wild Horse CESA, the impacts to wild horses from this alternative, in combination with past and present actions and RFFA disturbance, would be minimal.

4.2.4.9. Wildlife (General)

The CESA for wildlife is the Wildlife CESA, which encompasses approximately 2,468,668 acres and is shown on [Map 4.2.1](#).

Past and present actions: Past and present actions that have impacted and are currently impacting wildlife include livestock grazing, wildland fires, dispersed recreation, utility and other ROW management and maintenance, mineral exploration, and mining. Impacts to wildlife from these activities include loss of forage, cover, and habitat as well as disturbance of mating and brood rearing practices. There are no specific data to quantify impacts to wildlife from livestock grazing or dispersed recreation.

Historic fires (1981 – 2011) have burned approximately 1,085,466 acres in the Wildlife CESA (approximately 44 percent of the CESA). Authorized or closed mineral exploration and mining Notices or plans of operation total approximately 36,764 acres (approximately 1.5 percent of the CESA) of surface disturbance. Approximately 84,491 acres of ROWs were issued within the Wildlife CESA that had the potential to create surface disturbance and disturb wildlife habitat and vegetation. The past and present actions that are quantifiable have disturbed approximately 1,206,721 acres or approximately 49 percent of the CESA.

RFFAs: Potential impacts to wildlife from livestock grazing, dispersed recreation, mineral exploration, mining, or loss of native vegetation associated with potential wildland fires are expected to continue. There are no specific data to quantify impacts to wildlife or their habitat as a result of livestock grazing, dispersed recreation, or potential wildland fires within the CESA. There are approximately 521 acres of disturbance for pending ROWs and approximately 2,554 acres of disturbance for pending minerals projects reported in LR2000 in the Wildlife CESA.

Cumulative Impacts

Proposed Action

The Proposed Action would impact approximately 0.008 percent of the CESA. Quantifiable past and present actions and RFFA disturbance in the Wildlife CESA is approximately 1,209,796 acres, which is an impact to approximately 49 percent of the total Wildlife CESA. Based on the above analysis and findings, incremental impacts to wildlife and their habitat as a result of the Proposed Action, when combined with the impacts from the past and present actions and RFFAs, are expected to be minimal.

No Action

A total of the quantifiable past and present actions and RFFA disturbance within the Wildlife CESA is 1,209,796 acres, which is an impact to approximately 49 percent of the CESA. This alternative (approximately 25 acres) would impact approximately 0.002 percent of the Wildlife CESA. Due to the small impact within the Wildlife CESA, the impacts to wildlife and their habitat from this alternative, in combination with past and present actions and RFFA disturbance, would be minimal.

Chapter 5. Recommended Mitigation

5.1. Proposed Action

No mitigation measures were recommended beyond those environmental measures committed to by SEL in [Section 2.1.13](#), which are reiterated below as a reference.

5.2. Environmental Protection Measures from [Section 2.1.13](#)

Air Quality

- Emissions of fugitive dust from disturbed surfaces would be minimized by the application of water from a water truck as a method of dust control. A SAD Permit (Permit No. AP1041-3262) was obtained for the Project and approved by the BAPC on October 30, 2012 because the proposed surface disturbance exceeds 20 acres. A Dust Control Plan is included in the SAD Permit (BAPC 2012).

Cultural and Paleontological Resources

- Pursuant to 43 CFR 10.4(g), SEL would notify the BLM authorized officer, by telephone, and with written confirmation, immediately upon the discovery of human remains, funerary objects, sacred objects, or objects of cultural patrimony (as defined in 43 CFR 10.2). Further pursuant to 43 CFR 10.4 (c) and (d), the operator would immediately stop all activities in the vicinity of the discovery and not commence again until notified to proceed by the BLM authorized officer.
- SEL would avoid all NRHP eligible sites and/or contributing elements of eligible cultural sites by a buffer zone of 30 meters. Prior to SEL initiating activities under each phase, the BLM would review the work plan for each phase to ensure the protection of all NRHP-eligible sites and/or contributing elements of eligible sites. If deemed necessary by the BLM, SEL would place a qualified archaeologist on site during surface disturbing activities near known cultural resources to inspect the area prior to disturbance to ensure eligible cultural sites are avoided.
- SEL would inform all field personnel of the Archaeological Resources Protection Act of 1979 and the NAGPRA responsibilities and their associated penalties.
- Any cultural resource discovered by the permit holder, or any person working on their behalf, during the course of activities on federal land would be immediately reported to the authorized officer by telephone, with written confirmation. The permit holder would suspend all operations in the immediate area of such discovery and protect it until an evaluation of the discovery can be made by the authorized officer. This evaluation would determine the significance of the discovery and what mitigation measures are necessary to allow activities to proceed. The holder is responsible for the cost of evaluation and mitigation. Operations may resume only upon written authorization to proceed from the authorized officer.
- Pursuant to 43 CFR 3809.420(b)(8)(ii), SEL would notify the BLM authorized officer, by telephone, and with written confirmation, immediately upon the discovery of paleontological resources that are discovered as the result of surface disturbing activities, the item(s) or condition(s) would be left intact and immediately brought to the attention of the BLM. Further pursuant to 43 CFR 10.4 (c) and (d), the operator would immediately stop all activities in the vicinity of the discovery and not commence again for 30 days of when notified to proceed by

the BLM authorized officer. If significant paleontological resources are found, avoidance, recordation, and data recovery would be required.

Migratory Birds

- In order to avoid potential impacts to breeding migratory birds (including golden eagles [*Aquila chrysaetos*] and western burrowing owls [*Athene cuniculari hypugaea*]), a nest survey would be conducted by a qualified biologist within potential breeding habitat prior to any surface disturbance associated with exploration activities during the avian breeding season (February 1 through August 31 for raptors and March 1 through July 31 for other avian species). Pre-disturbance surveys would be required to be conducted no more than ten days and no less than three days prior to initiation of disturbance. If the disturbance for the specific location does not occur within ten days of the survey, another survey would be conducted. If active nests are located, or if other evidence of nesting (i.e., mated pairs, territorial defense, carrying nest material, transporting food) is observed, a protective buffer (the size depending on the habitat requirements of the species) would be delineated after consultation with the BLM biologist and the buffer area avoided to prevent destruction or disturbance to nests or birds until they are no longer actively breeding or rearing young, or until the young have fledged. The site characteristics to be used to determine the size of the buffer area are as follows: a) topographic screening; b) distance from disturbance to nest; c) the size and quality of foraging habitat surrounding the nest; d) sensitivity of the species to nest disturbances; and e) the protection status of the species.
- In order to avoid impacts to western burrowing owls, no surface disturbance would occur within 250 feet of active burrows year-round or within one-quarter mile of active nest burrows during the breeding season of February 1 through August 31.
- Prior to surface disturbing activities and to the issuance of a FONSI and Decision Record, the client would prepare an Eagle Conservation Plan to be submitted to and be concurred with by the USFWS. Based on the USFWS determination of potential Project impacts and if a take permit is necessary, the client would obtain a take permit prior to surface disturbing activities that could have an impact on nesting activity.

Noxious Weeds

- Noxious weeds would be controlled through implementation of the following BMPs: concurrent reclamation efforts; operator control; removal of invasive, nonnative, and noxious weeds on reclaimed areas; and avoiding areas of known invasive, nonnative, and noxious weeds during periods when the weeds could be spread by vehicles.
- To eliminate the transport of vehicle-borne noxious weed seeds, roots, or rhizomes, all vehicles and heavy equipment used for the completion, maintenance, inspection, or monitoring of ground disturbing activities, for emergency fire suppression, or for authorized offroad driving within the Project Area, would be free of soil and debris capable of transporting weeds. All such vehicles and equipment would be cleaned with high power or high pressure equipment prior to entering the Project Area. Vehicles and equipment would not drive through known populations of noxious weeds or invasive species following the vehicle washing and prior to entering the Project Area. Vehicles used for emergency fire suppression would be cleaned as part of check-in and demobilization procedures. Cleaning efforts would concentrate on tracks, feet and tires, and on the undercarriage. Special emphasis would be applied to axles, frames, cross members, motor mounts, on and underneath the steps, running boards, and

front bumper/brush guard assemblies. Vehicle cabs would be swept out and refuse would be disposed of in waste receptacles. There would be no cleaning sites in the Project Area.

Public Safety

- Public safety would be maintained throughout the duration of the Project. All equipment and other facilities would be maintained in a safe and orderly manner.
- Any survey monuments, witness corners, or reference monuments would be protected to the extent economically and technically feasible.
- All solid wastes would be disposed of in a state, federal, or local designated site.
- Pursuant to 43 CFR 8365.1-1(b)(3), no sewage, petroleum products, or refuse would be dumped from any trailer or vehicle.
- SEL would comply with all applicable state and federal fire laws and regulations and all reasonable measures would be taken to prevent and suppress fires in the Project Area.
- SEL would post traffic signs, such as heavy equipment operation and safety turnout areas. Project-related vehicles would also maintain appropriate speeds on Project access roads to ensure public safety.

Special Status Species

- In order to avoid potential impacts to pygmy rabbits, annual pre-disturbance surveys would be conducted by a qualified biologist within the two identified areas of pygmy rabbit habitat within the Project Area. If burrows or burrow complexes are identified within suitable sagebrush habitat in these two identified areas, a 400-foot buffer around the burrows or burrow complexes would be applied per IM-NV 2003-064(P) to ensure the burrows would not be impacted by Project activities.
- In order to reduce potential impacts to greater sage-grouse within the Project Area, the following stipulations would be followed:
 - Sumps would be constructed with slopes of 2h:1v or flatter on one side to allow for safety of personnel and wildlife;
 - Once a drill site is no longer occupied, any associated drill sump would be fenced with highly visible temporary safety barriers that would eliminate the hazard for entanglement and would remain in place until reclamation of the sump has been completed;
 - Corner posts would be secured in undisturbed ground rather than loose spoil material; and
 - Excess fence material would be removed upon completion of Project activities.
- Within the proposed Project Area, vehicular travel would be permitted on existing roads only from 10 a.m. through 4 p.m. daily between March 1 and June 30 within a 3.2-mile buffer around the active lek site. All vehicles being actively used (including ATVs, OHVs, and UTVs) must be outside the 3.2-mile buffer area prior to 10 a.m. and after 4 p.m. Equipment and vehicles not in use may be left on site but must be shut down. No other mechanical disturbance activities (i.e., drilling, offroad travel, ATV use, grading) would be permitted on BLM-administered land during this time frame in order to avoid potential impacts to the

greater sage-grouse lek within the proposed Project Area. An exception to these restrictions: Shelton Lane (also known as the Little Humboldt River Road), a Humboldt County road, may be used for vehicular travel within the Project Area at any time ([Map 2.1.2](#)).

Vegetation and Soils

- BMPs would be followed for sediment control and would be utilized during construction, operation, and reclamation to avoid negative impacts to the riparian scrub community resulting from surface disturbance activities. BMPs would include the use of one or all of the following: sediment traps or sumps; straw bales (certified weed-free); silt fences; the distribution of clarified water from sediment traps through perforated pipes in order to minimize erosion from channeling; and the use of common, centrally located sediment sumps. If needed, the use of a sand separation system would be used in conjunction with the sumps so that the recirculation of drilling fluids can be maximized.
- In order to avoid impacts to sagebrush habitat and BSCs, to the greatest extent feasible, SEL would utilize existing roads and trails, bare ground, burned areas, or other areas devoid of sagebrush as much as possible. Overland travel would be utilized to the greatest extent feasible.

Water Quality

- All drill holes would be plugged in accordance with NRS 534, NAC 534.4369, and NAC 534.4371 with the exception of drill holes collared with a mud rotary or reverse circulation drill rig and completed with a core rig, which would be plugged prior to the core rig moving from the drill site. If any drill hole produces artesian flow, the drill hole would be contained pursuant to NRS 534.060 and NAC 534.378 and would be sealed by the method described in Subsection 2 of NAC 534.4371. If the casings are set in a drill hole, either the drill hole must be completed as a well and plugged pursuant to NAC 534.420 or the casings would be completely removed from the drill hole and then be plugged in accordance with NAC 534.4369 and NAC 534.4371.
- Storm water BMPs would be used at construction sites to minimize storm water erosion.
- BMPs such as weed-free straw bales to slow and disseminate discharge water from pump tests to decrease erosion and sedimentation to surface waters, would be used.
- Drill cuttings would be contained on site and fluids managed utilizing appropriate control measures. Sediment traps would be used as necessary and filled at the end of the drill program.
- SEL would follow the Spill Contingency Plan included in Appendix D of the Plan (SEL 2012).
- Only nontoxic fluids would be used in the drilling process.
- Surface disturbance in all riparian areas, would be avoided except for travel on existing road crossings. A buffer of 500 feet will be utilized for new surface disturbance near riparian areas.

5.2.1. No Action Alternative

There are no mitigation measures or monitoring recommended as part of the No Action Alternative.

Chapter 6. Tribes, Individuals, Organizations, or Agencies Consulted:

6.1. Native American Consultation

On June 4, 2012, consultation initiation/invitation letters were mailed from the BLM HRFO administrative area to the following: the Te-Moak Tribal Council; the Battle Mountain, Elko, South Fork, and Wells Bands of the Te-Moak Tribe of Western Shoshone; the Fort McDermitt Paiute/Shoshone Tribe; and the Shoshone-Bannock Tribes. In addition, on June 6, 2012, a consultation initiation/invitation letter was sent to the Shoshone Paiute Tribes of the Duck Valley Indian Reservation. Phone calls were made to the above listed tribes on July 5th and 6th, 2012.

6.2. Coordination and Consultation (Agencies)

Nevada Department of Wildlife – On August 9, 2012, a letter inviting the NDOW to be a cooperating agency on the EA was sent by the BLM to Mark Freese, the Western Region Supervising Habitat Biologist. The acceptance letter was signed on October 12, 2012.

Humboldt County – On August 9, 2012, a letter inviting Humboldt County to be a cooperating agency on the EA was sent by the BLM to Bill Deist, the Humboldt County Commissioner. The acceptance letter was signed on November 19, 2012.

USFWS – On November 13, 2012, a letter inviting the USFWS to be a cooperating agency on the EA was sent by the BLM to Ed Koch, USFWS Nevada State Supervisor. No response has been received to date.

6.3. Public Outreach

The preliminary EA has been made available for public review and comment through the NEPA Register for 30 days from the date of posting. The NEPA Register is accessible through the Winnemucca District NEPA homepage: http://www.blm.gov/nv/st/en/fo/wfo/blm_information/nepa0.html.

Chapter 7. List of Preparers

BLM Interdisciplinary Team and Area of Responsibility

BLM Interdisciplinary Team Member	Title	EA Area(s) of Responsibility
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Zwaantje Rorex	Planning and Environmental Coordinator	NEPA Coordinator; Environmental Justice
David Jones	Physical Scientist (Air Quality)	Air Quality
Calvin Jennings	Archaeologist	Cultural Resources; Paleontological Resources
Josh Sidon	Economist	Environmental Justice
Sandra Brewer	Natural Resource Specialist	Special Status Species; T&E Species; General Wildlife
Robert Bunkall	GIS Specialist	GIS
Eric Baxter	Natural Resource Specialist	Noxious Weeds, Invasive and Nonnative Species
Mark Hall	Archaeologist	Native American Religious Concerns; Environmental Justice
Kristine Struck	Wilderness Specialist	Wilderness; Lands with Wilderness Characteristics
Wes Barry	Rangeland Management Specialist	Rangeland Management
Julie McKinnon	Realty Specialist	Lands and Realty
Joey Carmosino	Outdoor Recreation Planner	Recreation; Social Values; Visual Resource Management
Rob Burton	Natural Resource Specialist	Soils; Vegetation; Wetlands and Riparian Zones
John Callan	Environmental Protection Specialist	Wastes, hazardous and solid; Public Health and Safety
Melanie Mirati	Wild Horse and Burro Specialist	Wild Horses and Burros

Enviroscientists, Inc.

Name	Title	Responsible for the Following Section(s) of this Document
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Chapter 8. List of References

- Bureau of Land Management (BLM). 1982. *Paradise-Denio Management Framework Plan*. Amended in January 1999.
- _____. 1986. *Visual Resource Inventory*. BLM Manual Handbook 8410-1.
- _____. 1992. *Solid Minerals Reclamation Handbook*. BLM Manual Handbook H-3042-1.
- _____. 1999. *Revised Guidelines for Successful Mining and Exploration Revegetation*. BLM, USFS, and NDEP.
- _____. 2001. *Biological Soil Crusts: Ecology and Management*. Technical Reference 1730-2. Denver, Colorado.
- _____. 2007. *Potential Fossil Yield Classification (PFYC) System for Paleontological Resources on Public Lands*. Instruction Memorandum 2008-009.
- _____. 2008a. BLM NEPA Handbook H-1790-1. October 25, 1988.
- _____. 2008b. *Assessment and Mitigation of Potential Impacts to Paleontological Resources*. Instruction Memorandum 2009-011.
- _____. 2008c. *Special Status Species Management*. BLM Manual Handbook 6840.
- _____. 2011a. *Road Design*. BLM Manual Handbook H-9113-1.
- _____. 2011b. *Greater Sage-Grouse Interim Management Policies and Procedures*. Instruction Memorandum 2012-043.
- _____. 2011c. *BLM National Sage-Grouse Land Use Planning Strategy*. Instruction Memorandum 2012-044.
- _____. 2012a. *Surface Management Handbook*. BLM Manual Handbook H-3809-1.
- _____. 2012b. *Revised Direction for Proposed Activities within Greater Sage-Grouse Habitat*. Instruction Memorandum NV-2012-058.
- _____. 2012c. *Bureau of Land Management's Land & Mineral Legacy Rehost 2000 System - LR2000*. <http://www.blm.gov/lr2000/>. Accessed September/October 2012.
- _____. 2013. *Invasive & Noxious Weeds (Invasive Species) webpage*. <http://www.blm.gov/wo/st/en/prog/more/weeds.html>. Accessed February 7, 2013.
- Crafford, A.E.J. 2007. *Geologic Map of Nevada: U.S. Geological Survey Data Series 249, scale 1:250,000*. 1 CD-ROM, 46p., 1 plate
- Cronquist, A., A.H. Holmgren, N.H. Holmgren, and J.L. Reveal. 1972. *Intermountain Flora: Vascular Plants of the Intermountain West U.S.A.* 7 vols. The New York Botanical Garden. Bronx, NY.
- Department of Employment, Training, and Rehabilitation (DETR). 2012. Nevada Workforce Informer website. <http://www.nevadaworkforce.com/>. Accessed August 2, 2012.
- Enviroscientists. 2012a. *Snowstorm Project Biological Survey Report*. Humboldt County, Nevada.

_____. 2012b. *Paleontological Resources Evaluation, Snowstorm Exploration Project, Humboldt County, Nevada*. August 9, 2012.

_____. 2012c. Emissions Inventory for the Snowstorm Exploration Project

Giambastiani, Mark A., Pat Barker, and William Bloomer. 2012. *A Cultural Resources Inventory of 16,055 Acres for the Snowstorm Exploration Project, East-Central Humboldt County, Nevada*. BLM Report CR2-3148(P), on file at BLM Winnemucca District Office, Winnemucca, Nevada.

Great Basin Bird Observatory (GBBO). 2010. *Nevada Comprehensive Bird Conservation Plan, Version 1.0*. Reno, Nevada. Available online at www.gbbo.org/bird_conservation_plan.html.

Hand, L. 1975. *Chimney Creek Irrigation Reservoir Reconnaissance*. BLM Cultural Resources Short Report CR2-11(P). Report on file at Bureau of Land Management, Winnemucca, Nevada.

Humboldt County. 2005. Humboldt County, Nevada website. <http://www.hcnv.us/>. Accessed August 2, 2012.

McCabe, A. 1994. *Cultural Resources Inventory of 4,903 Acres for the Twin Creeks Exploration Project, Northern Kelly Creek Valley, Humboldt County, Nevada*. BLM Report CR22567(P). Report on file at Bureau of Land Management, Winnemucca, Nevada.

NatureServe. 2012. *NatureServe Explorer: An Online Encyclopedia of Life*. <http://www.natureserve.org/explorer>.

Natural Resources Conservation Service (NRCS). 2012a. MLRA Explorer Custom Report. <http://ceiwin5.cei.psu.edu/MLRA/pdf/rep634795059682235786.pdf>. Accessed August 2, 2012.

_____. 2012b. *Web Soil Survey*. <http://websoilsurvey.nrcs.usda.gov/app/>.

Nevada Department of Wildlife (NDOW). 2011. *RE: Snowstorm Mineral Exploration Project*. April 28, 2011.

_____. 2012. *Nevada Wildlife Action Plan: Public Review Draft*. January 25, 2012.

Nevada Division of Environmental Protection, Bureau of Air Pollution Control (BAPC). 2012. *Class II Air Quality Operating Permit Surface Area Disturbance*. Permit No. AP1041-3262.

Nevada Natural Heritage Program (NNHP). 2011. Data Request Received 12 December 2011. December 12, 2011.

Nevada State Conservation Commission. 1994. *Best Management Practices Handbook*. <http://www.cicacenter.org/pdf/NVBMPHandbook.pdf>.

Nevada State Demographer (NSD). 2012. *Nevada 2000 Census Data: Humboldt Primary Geographic Profile*. <http://nvdemography.org/confirmation/>. Accessed August 2, 2012.

Rodgers, Kenneth J., Peter F. Ffolliott, David R. Patton. 1978. *Home Range and Movement of Five Mule Deer in a Semidesert Grass-shrub Community*. Rocky Mountain Forest and Range Experiment Station, United States Forest Service.

Schroeder, M. A., J. R. Young, and C. E. Braun. 1999. *Sage-grouse (Centrocercus urophasianus)*. A. Poole and F. Gill, editors. Number 425, The birds of North America, The Academy of Natural

Sciences, Philadelphia, Pennsylvania and The American Ornithologists' Union, Washington, D.C., USA.

Smith, R., and P. McGuckian. 1977. *Chimney Creek Dam Recreational Project*. BLM Cultural Resources Report CR2-192(P): Report on file at Bureau of Land Management, Winnemucca, Nevada.

Snowstorm Exploration LLC (SEL). 2012. *Plan of Operations NVN-090649/Nevada Reclamation Permit Application*. Prepared by: Enviroscientists, Inc. Reno, Nevada.

Stephenson T., M. Vaughan, and D. Anderson. 1996. *Mule deer movements in response to military activity in southeast Colorado*. The Journal of Wildlife Management, Volume 60, Number 4, pgs. 777-787.

United States Census Bureau (U.S. Census Bureau). 2012a. *State & County Quick Facts: Humboldt County, Nevada*. <http://quickfacts.census.gov/qfd/states/32/32013.html>. Accessed August 2, 2012.

_____. 2012b. *State & County Quick Facts: Winnemucca (city), Nevada*. <http://quickfacts.census.gov/qfd/states/32/3284800.html>. Accessed August 2, 2012.

United States Fish and Wildlife Service (USFWS). 2010. *Interim Golden Eagle technical guidance: inventory and monitoring protocols; and other recommendations in support of eagle management and permit issuance*. Prepared by J.E. Pagel, D.M. Whittington, and G.T. Allen. <http://www.wildlife-research.org/U.S.%20Fish%20and%20Wildlife%20Service%202010,%20Interim%20Golden%20Eagle%20Technical%20Guidance>. Accessed October 12, 2012.

_____. 2011. *Species List Request for the Snowstorm Project, Humboldt County, Nevada*. May 23, 2011.

Wallace, Alan R., Perkins, Michael E., and Fleck, Robert J. 2008. *Late Cenozoic Paleogeographic Evolution of Northeastern Nevada: Evidence from the Sedimentary Basins*. Geosphere, v. 4, no. 1, p. 36-74.

Walsh, L., V. L. Clay, T. D. Burke, and L. L. Hause. 1996. *This Side of Paradise or East of Eden? The Archaeology of Kelly Creek Valley – A BLM Class I Overview for the Twin Creeks Project, Humboldt County, Nevada*. BLM Report CR2-2601. Report on file at Bureau of Land Management, Winnemucca, Nevada.

Willden, Ronald. 1964. *Geology and Mineral Deposits of Humboldt County, Nevada*. Nevada Bureau of Mines and Geology Bulletin 59, 154 p.

Western Regional Climate Center (WRCC). 2010. *Paradise Valley Ranch S, Nevada Period of Record Monthly Climate Summary*. <http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?nv6005>.

Chapter 9. Maps

Map 1.1.1: Project Location and Access. ([Map 1.1.1](#))

Map 2.1.1: Project Location, Existing Disturbance, and Proposed Phase I Exploration Activities. ([Map 2.1.1](#))

Map 2.1.2: Shelton Lane in the Project Area. ([Map 2.1.2](#))

Map 3.2.1: Pre-1981 Roads in the Project Area. ([Map 3.2.1](#))

Map 3.8.1: Riparian and Hydrologic Features. ([Map 3.8.1](#))

Map 3.10.1: Soil Associations in the Project Area. ([Map 3.10.1](#))

Map 4.2.1: Cumulative Effects Study Areas. ([Map 4.2.1](#))

Appendix A. Emissions Inventory

[Emissions Inventory](#)