BLM
Tonopah Field Office, Nevada

ENVIRONMENTAL ASSESSMENT

DOI-BLM-NV-B020-2015-0060-EA

Golden Arrow Exploration Project

May 2016

U.S. Bureau of Land Management
Tonopah Field Office
Battle Mountain District
1553 South Main Street
Tonopah, Nevada 89049

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DOI-BLM-NV-B020-2015-0060-EA

INTOR RESOURCES CORPORATION
GOLDEN ARROW EXPLORATION PROJECT
NYE COUNTY, NEVADA

Environmental Assessment

#DOI-BLM-NV-B020-2015-0060-EA

May 2016

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Tonopah Field Office
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INTOR RESOURCES CORPORATION
GOLDEN ARROW EXPLORATION PROJECT
ENVIRONMENTAL ASSESSMENT

TABLE OF CONTENTS

Page

1 INTRODUCTION / PURPOSE OF AND NEED FOR ACTION 1-1
1.1 Introduction 1-1
1.2 Purpose and Need 1-4
1.3 Decision to be Made 1-4
1.4 BLM Responsibilities and Relationship to Planning 1-5
1.4.1 Conformance with Land Use Plans 1-5
1.4.2 Local Land Use Planning and Policy 1-5
1.4.3 Relationship to Other Laws, Policies, and Plans 1-7
1.5 Scoping and Issues 1-7
1.5.1 Scoping 1-7
1.5.2 Issues 1-7
2 DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES 2-1
2.1 Proposed Action 2-1
2.1.1 Equipment and Personnel 2-3
2.1.2 Overland Travel and Constructed Roads 2-4
2.1.3 Improvements to Existing Access Roads 2-4
2.1.4 Laydown Area, Drill Sites, and Drilling Procedures 2-5
2.1.5 Subsequent Phases 2-6
2.1.6 Hazardous Materials 2-6
2.1.7 Water Management Plan 2-6
2.1.8 Surface Occupancy 2-7
2.1.9 Reclamation Plan 2-7
2.1.10 Monitoring 2-11
2.1.11 Applicant-Committed Environmental Protection Measures 2-12
2.1.12 Applicable Greater Sage-Grouse Required Design Features 2-17
2.2 No Action Alternative 2-22
2.3 Alternatives Considered but Eliminated from Detailed Analysis 2-22
2.3.1 Cross Country/Overland Travel Only Alternative 2-22
2.3.2 Use Only Existing Roads Alternative 2-22
3 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES 3-1
3.1 Introduction 3-1
3.2 Effects of the Proposed Action 3-4
3.2.1 Air Quality 3-4
3.2.2 Cultural Resources 3-6
3.2.3 Fire Management 3-7
3.2.4 Geology and Minerals 3-7
3.2.5 Lands, Realty, and Access 3-8
3.2.6 Migratory Birds 3-9
3.2.7 Native American Concerns 3-11
3.2.8 Noxious Weeds, Invasive and Non-native Species 3-11
3.2.9 Public Safety 3-12
3.2.10 Rangeland Management/Livestock Grazing 3-13
3.2.11 Recreation 3-13
3.2.12 Socioeconomics 3-14

3.2.13 Soils 3-14
3.2.14 Special Status Species 3-18
3.2.15 Vegetation 3-26
3.2.16 Visual Resources 3-31
3.2.17 Wastes, Solid or Hazardous 3-32
3.2.18 Water Quality 3-33
3.2.19 Wild Horses 3-34
3.2.20 Wildlife 3-36
3.3 Effects of the No Action Alternative 3-37
3.3.1 Air Quality 3-38
3.3.2 Cultural Resources 3-38
3.3.3 Fire Management 3-38
3.3.4 Geology and Minerals 3-38
3.3.5 Lands, Realty, and Access 3-38
3.3.6 Migratory Birds 3-38
3.3.7 Native American Concerns 3-39
3.3.8 Noxious Weeds, Invasive and Non-native Species 3-39
3.3.9 Public Safety 3-39
3.3.10 Rangeland Management 3-39
3.3.11 Recreation 3-39
3.3.12 Socioeconomics 3-39
3.3.13 Soils 3-40
3.3.14 Special Status Species 3-40
3.3.15 Vegetation 3-40
3.3.16 Visual Resources 3-40
3.3.17 Wastes, Hazardous or Solid 3-40
3.3.18 Water Quality 3-40
3.3.19 Wild Horses 3-41
3.3.20 Wildlife 3-41
4 CUMULATIVE IMPACT ANALYSIS 4-1
4.1 Introduction 4-1
4.2 Cumulative Effects Study Areas 4-1
4.2.1 Past, Present, and Reasonably Foreseeable Future Actions 4-4
4.3 Evaluation of Potential Cumulative Impacts 4-6
4.3.1 Cultural Resources 4-6
4.3.2 Migratory Birds 4-7
4.3.3 Noxious Weeds, Invasive and Non-native Species 4-8
4.3.4 Socioeconomics 4-10
4.3.5 Soils 4-10
4.3.6 Special Status Species 4-11
4.3.7 Vegetation 4-13
4.3.8 Visual Resources 4-14
4.3.9 Water Quality 4-15
4.3.10 Wild Horses 4-16
4.3.11 Wildlife 4-18
5 CONSULTATION and COORDINATION 5-1
5.1 Persons, Groups, and Agencies Consulted 5-1

5.2 List of Preparers and Reviewers 5-1
6 REFERENCES 6-1

LIST OF FIGURES

Page
Figure 1.1.1: Project Location, Access, and Land Status 1-2
Figure 1.1.2: Notice-Level Disturbance 1-3
Figure 1.1.3: Greater Sage-Grouse Habitat Management Areas 1-6
Figure 2.1.1: Proposed Phase I Surface Disturbance in the Project Area 2-2
Figure 3.2.13: Soil Associations within the Project Area 3-16
Figure 3.2.15: Ecological Sites within the Project Area 3-27
Figure 4.2.1: Cumulative Effects Study Areas 4-3

LIST OF TABLES

Page
Table 2.1-1: Acreage of Notice-Level and Proposed Project Surface Disturbance 2-1
Table 2.1-2: Anticipated BLM Seed Mix 2-8
Table 2.1-3: Anticipated Reclamation Schedule 2-9
Table 3.1-1: Elements Associated with Supplemental Authorities and Rationale for Detailed Analysis for the Proposed Action 3-1
Table 3.1-2: Resources or Uses Not Associated with Supplemental Authorities 3-3
Table 3.2-1: Fugitive Dust and Combustion Emissions Associated with the Project, Tons per Year 3-5
Table 3.2-2: Annual Average Daily Traffic 3-8
Table 3.2-3: Migratory Bird Species Detected in the Project Area 3-9
Table 3.2-4: Summary of Soil Mapping Units and Characteristics 3-17
Table 3.2-5: Potential Surface Disturbance to each Soil Series in the Project Area ... 3-18
Table 3.2-6: Potential Surface Disturbance to Ecological Sites within the Project Area 3-30
Table 3.2-7: BLM Visual Resource Management Classes 3-31
Table 4.2-1: Cumulative Effects Study Areas 4-2
Table 4.2-2: Rangeland Improvements Located Within the CESAs 4-4
Table 4.2-3: Past and Present Rights-of-Way Acres in the CESAs 4-5
Table 4.2-4: Past and Present Minerals Disturbance Acres in the CESAs 4-5

LIST OF APPENDICES

Appendix A: Golden Arrow Exploration Project Environmental Assessment Responses to Public Comments

LIST OF ACRONYMS AND ABBREVIATIONS

°	degrees
4WD	four-wheel drive
AADT	annual average daily traffic
amsl	above mean sea level
APE	area of potential effects
ARPA	Archaeological Resources Protection Act of 1979
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
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (Superfund)
CESA	cumulative effects study area
CFR	Code of Federal Regulations
CO	carbon monoxide
DETR	Department of Employment, Training, and Rehabilitation
DOE	Department of Energy
EA	Environmental Assessment
EO	Executive Order
EPMs	Environmental Protection Measures
ESA	Endangered Species Act of 1973, as amended
ESD	Ecological Site Description
F	Fahrenheit
FLPMA	Federal Land Policy and Management Act of 1976
FR	Federal Register
GAMD	Golden Arrow Mining District
GHG	greenhouse gas
GHMA	General Habitat Management Area
GPS	Global Positioning System
H	horizontal
HFRA	Healthy Forests Restoration Act of 2003
HMA	Herd Management Area
HUC	Hydrologic Unit Code
IM	Instruction Memorandum
IRC	Intor Resources Corporation
LR2000	Land & Mineral Legacy Rehost 2000 System
Master Plan	2011 Nye County Comprehensive/Master Plan
MBTA	Migratory Bird Treaty Act of 1918
Mining Law	General Mining Law of 1872, as amended
MOU	Memorandum of Understanding
MSHA	Mine Safety and Health Administration
NAAQS	National Ambient Air Quality Standards
NAC	Nevada Administrative Code
NAGPRA	Native American Graves Protection and Repatriation Act of 1990

NDOA	Nevada Department of Agriculture
NDOT	Nevada Department of Transportation
NDEP	Nevada Division of Environmental Protection
NDOW	Nevada Department of Wildlife
NDWR	Nevada Division of Water Resources
NEPA	National Environmental Policy Act of 1969
NNHP	Nevada Natural Heritage Program
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NRS	Nevada Revised Statute
NSAAQS	Nevada State Ambient Air Quality Standards
NWHR	Nevada Wild Horse Range
OHMA	Other Habitat Management Area
OHV	off-highway vehicle
PHMA	Priority Habitat Management Area
P.L.	Public Law
Plan	Plan of Operations NVN-093516/Nevada Reclamation Permit Application
PLO	Public Land Order
PLS	pure live seed
$PM_{2.5}$	particulate matter less than 2.5 microns in size
PM_{10}	particulate matter less than ten microns in size
POD	Plan of Development
Project	Golden Arrow Exploration Project
PSD	Prevention of Significant Deterioration
RC	reverse circulation
RDFs	Required Design Features
REA	Rapid Ecoregional Assessment
RFFAs	reasonably foreseeable future actions
RMP	Resource Management Plan
GRSG Plan Amendment	Nevada and Northeastern California Greater Sage-Grouse Approved Resource Management Plan Amendment and Record of Decision
ROD	Record of Decision
ROW	right-of-way
SAD	Surface Area Disturbance
SHPO	State Historic Preservation Office
SIP	State Implementation Plan
SO_2	sulfur dioxide
TCPs	Traditional Cultural Properties
TFO	Tonopah Field Office
TTR	Tonopah Test Range
US	United States
USDA	US Department of Agriculture
USFWS	US Fish and Wildlife Service
USGS	US Geological Survey
V	vertical

VOCs	volatile organic compounds
VRM	Visual Resource Management
WRCC	Western Regional Climate Center
WSA	Wilderness Study Area

1 INTRODUCTION / PURPOSE OF AND NEED FOR ACTION

1.1 Introduction

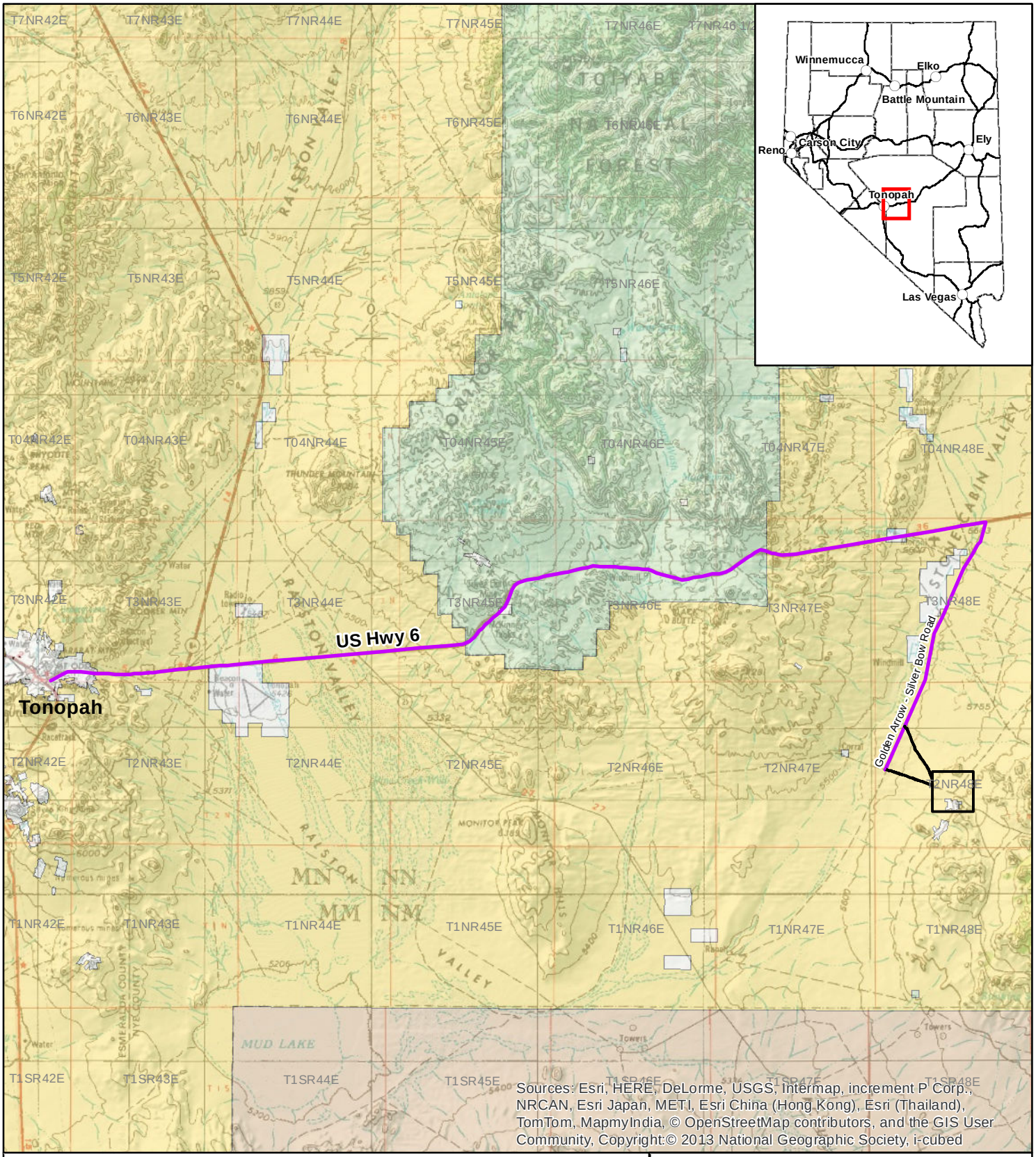
Intor Resources Corporation (IRC) proposes to conduct mineral exploration and access road widening activities at the Golden Arrow Exploration Project (Project), located approximately 60 miles southeast of Tonopah, Nevada, in Nye County. The Project is located on public lands administered by the Bureau of Land Management (BLM), Tonopah Field Office (TFO). The specifics of the Project are outlined in the combined Golden Arrow Plan of Operations N-93516/Nevada Reclamation Permit Application (Plan), which is on file and available for review at the BLM TFO in Tonopah, Nevada, during normal business hours.

Public Land Order (PLO) 7653, effective December 28, 2005, withdrew approximately 308,600 acres of public lands within the Caliente Rail Corridor in Nevada from surface entry and the location of new mining claims, subject to valid existing rights, for a period of ten years to allow the Department of Energy (DOE) to evaluate the lands for the potential construction, operation, and maintenance of a rail line that would be used to transport spent nuclear fuel and high-level radioactive waste to the proposed Yucca Mountain Repository (70 Federal Register [FR] 76854). The PLO expired December 2015. Two existing roads that are needed to access the Project traverse the rail corridor. A right-of-way (ROW) action is required for the two access roads. Therefore, a ROW application with Plan of Development (POD) N-94261 for the improvement of the two existing roads has been filed. The ROW application and POD are available for review at the BLM TFO in Tonopah, Nevada, during normal business hours. Expiration of the PLO would not preclude the need to obtain the ROW.

The Project is located in parts of Sections 8, 16 through 22, 27, and 28, Township 2 North (T2N), Range 48 East (R48E), Mount Diablo Base and Meridian (Project Area). The Project Area is accessed from Tonopah, Nevada, by traveling approximately 40 miles east from Tonopah on United States (US) Highway 6, then south on Golden Arrow-Silver Bow Road (Nye County Standard Gravel Road #665) for approximately nine miles to either of the two access roads. Figure 1.1.1 shows the Project location, access, and land status.

IRC proposes to expand existing Notice-level activities beyond the Notice-level threshold for surface disturbance to include phased exploration activities within the 1,481-acre Project Area. There is existing surface disturbance in the Project Area that was conducted under three Notices N-81866, N-88961, and N-90701 (Figure 1.1.2). These Notices have expired.

IRC proposes to conduct mineral exploration and access road widening activities that would create approximately 91 acres of new surface disturbance for a total Project-related disturbance of approximately 100 acres. Exploration activities would be conducted in phases, with approximately 25.6 acres of surface disturbance occurring under Phase I. Access road widening, which would consist of widening approximately 4.2 miles of two roads from eight to 14 feet, would also be conducted as a Phase I activity.



Explanation

- Project Area
- Access Route

Land Status

- Bureau of Land Management
- Department of Defense
- Forest Service
- Private

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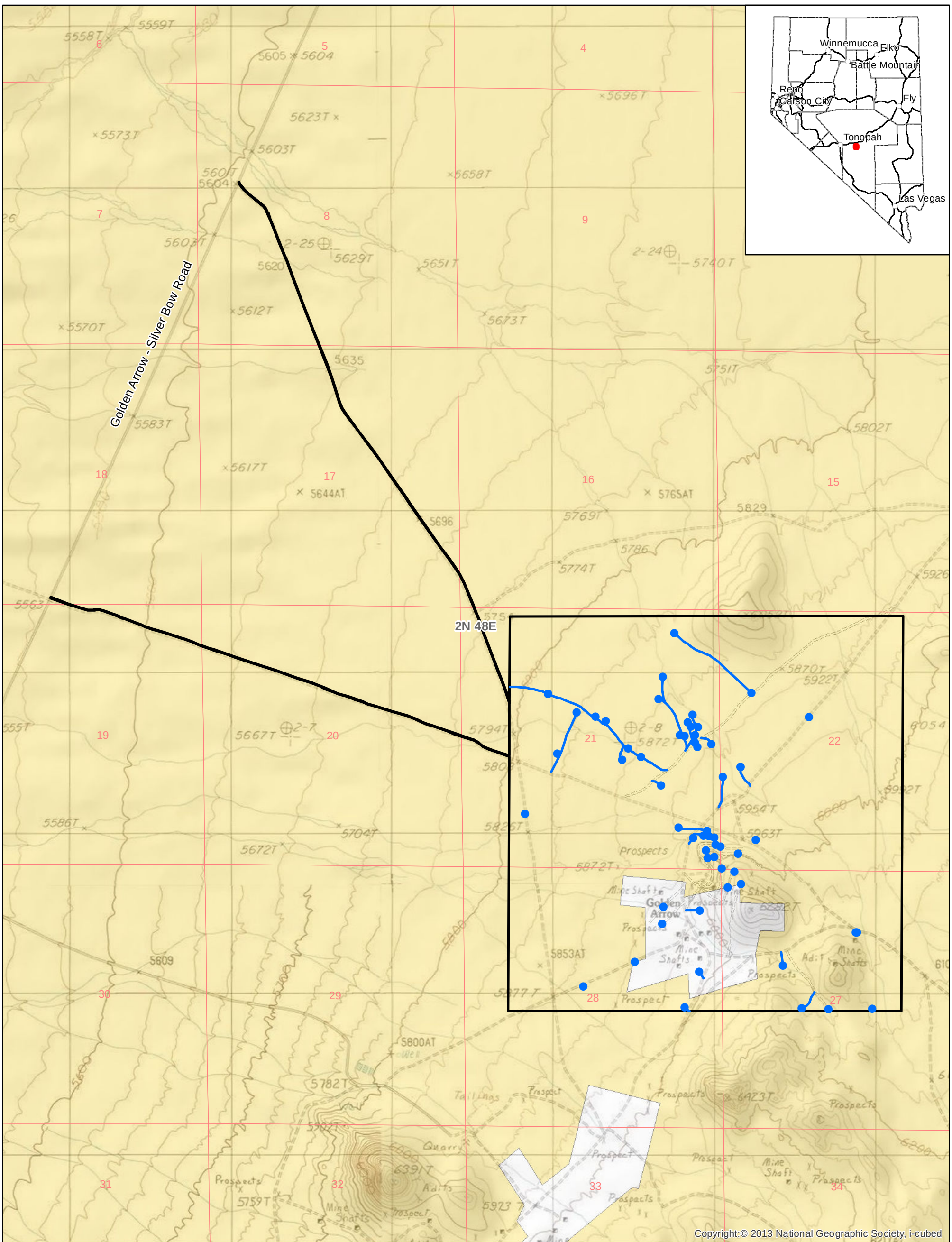
BUREAU OF LAND MANAGEMENT

GOLDEN ARROW EXPLORATION PROJECT

Project Location, Access, and Land Status

Figure 1.1.1

10/06/2015



Explanation

- Project Area
- Notice Level Drill Sites
- Notice Level Overland Travel

Land Status

- Bureau of Land Management
- Private

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GOLDEN ARROW EXPLORATION PROJECT

Notice Level Disturbance

Figure 1.1.2

10/06/2015

The Plan was submitted to the BLM and the Nevada Division of Environmental Protection (NDEP) Bureau of Mining Regulation and Reclamation (BMRR) in January 2015 (revised March 2015), in accordance with BLM Surface Management Regulations 43 Code of Federal Regulations (CFR) 3809, as amended, and Nevada reclamation regulations at Nevada Administrative Code (NAC) 519A. IRC proposes to conduct the following activities associated with the Project: reverse circulation (RC) and/or core drilling; constructed roads; constructed drill sites with corresponding sumps; a laydown area; geologic and geophysical mapping; overland travel; construction of trenches for the collection of bulk samples and ground condition testing; potential installation and operation of ground water monitoring wells and production well test sites; geotechnical test pits, trenches, and corings; potential installation and operation of a meteorological station; and reclamation of Project-related surface disturbance.

The POD was submitted to the BLM in July 2015, in accordance with 43 CFR 2800. Activities associated with the POD include the widening of two existing roads that provide access to the mineral exploration activities.

1.2 Purpose and Need

On lands open to location under the General Mining Law of 1872, as amended (Mining Law), the BLM administers the surface of public land and federal subsurface mineral estate under the Mining Law and the Federal Land Policy and Management Act of 1976 (FLPMA). The FLPMA also governs BLM's administration of public land not open to location under the Mining Law.

The purpose of BLM's Proposed Action is to respond to IRC's Plan of Operations to explore, locate, and delineate precious metal (gold and silver) deposits on its mining claims on public lands, as provided under the Mining Law. The need for the action is established by the BLM's responsibility under Section 302 of the FLPMA and the BLM Surface Management Regulations at 43 CFR 3809, to respond to a plan of operations to allow an operator to prospect, explore, and assess locatable mineral resources on public lands, and to take any action to prevent unnecessary or undue degradation of the public lands.

As authorized under Section 501 of FLPMA, the BLM issues ROW grants for roads, trails, power lines, communication towers and other facilities that are in the public interest. BLM's purpose is to respond to IRC's application for a ROW to widen the two access roads. The need for the action is established by FLPMA and BLM's responsibility to respond to the proponent's application for a ROW grant.

1.3 Decision to be Made

The decision the BLM would make, based on the National Environmental Policy Act of 1969 (NEPA), includes the following options: 1) approve the Plan and ROW with no modifications; 2) approve the Plan and ROW with additional mitigation measures that are needed to prevent unnecessary or undue degradation of public lands and reduce or eliminate the effects of the proposed action or alternatives; or 3) deny the approval of the Plan and ROW as currently written and not authorize the Project if it is found that the Proposed Action does not comply with the 3809 and 2800 regulations and the FLPMA mandate to prevent unnecessary or undue degradation.

1.4 BLM Responsibilities and Relationship to Planning

The BLM is responsible for the preparation of this Environmental Assessment (EA), which was prepared in conformance with NEPA, applicable laws and regulations passed subsequently, including the President's Council on Environmental Quality regulations implementing NEPA (40 CFR 1500-1508), U.S. Department of Interior requirements, and the policy guidance provided in the BLM NEPA Handbook H-1790-1 (BLM 2008a).

1.4.1 Conformance with Land Use Plans

The Proposed Action, as described in Chapter 2, conforms with the BLM's Tonopah Resource Management Plan (RMP) Record of Decision (ROD) dated October 1997 (BLM 1997). Specifically, on page 23 the RMP ROD identifies the following locatable mineral objective:

> "To provide opportunity for exploration and development of locatable minerals such as gold, silver, copper, lead, zinc, molybdenum, etc. consistent with the preservation of fragile and unique resources in areas identified as open to the operation of mining laws" (BLM 1997).

A standard operating procedure specified in the RMP ROD on page 36 states:

> "Reclamation of disturbed areas to meet BLM standards is required for all levels of activity: casual use, notice, or plans of operation" (BLM 1997).

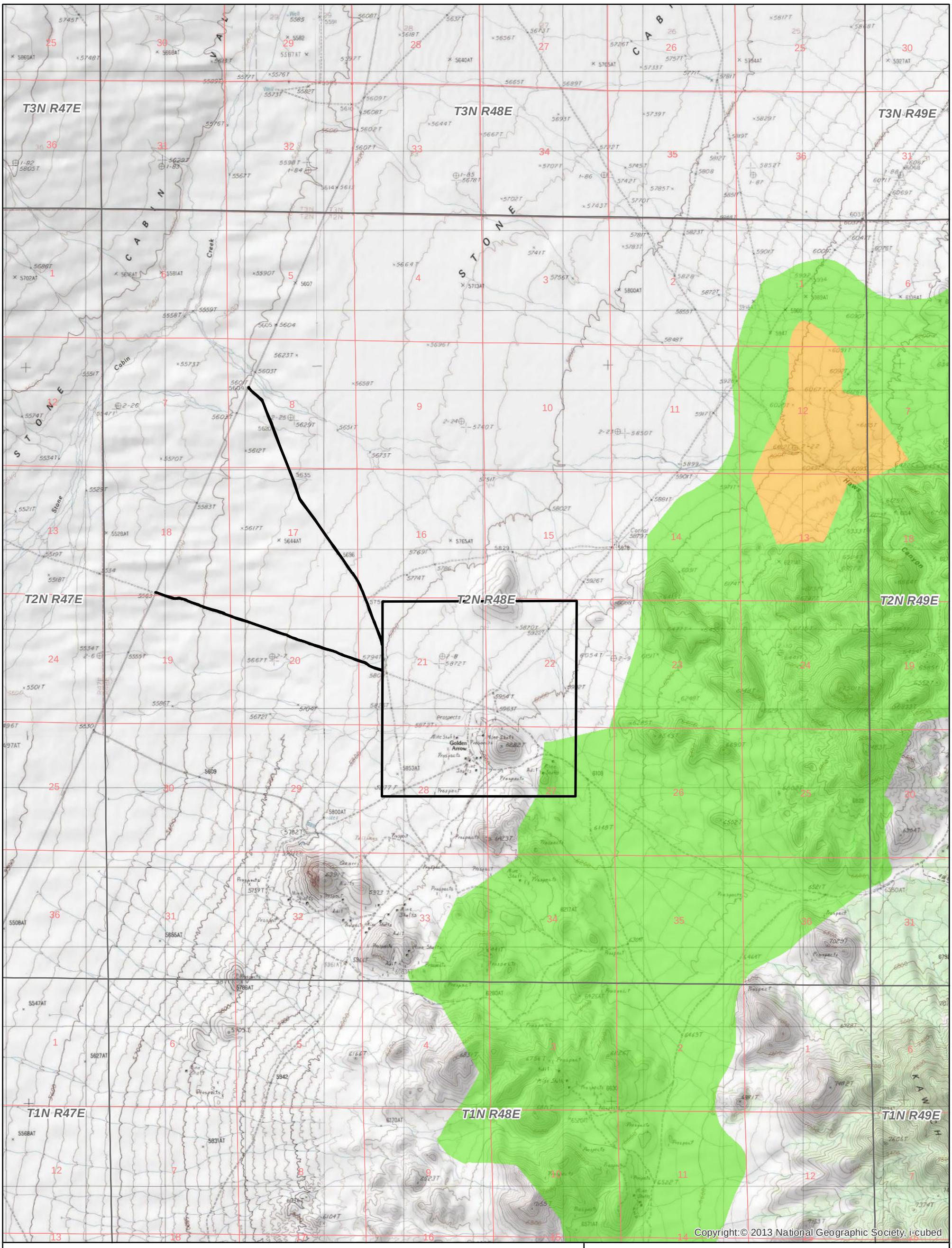
The Proposed Action conforms with BLM's Nevada and Northeastern California Greater Sage-Grouse (GRSG) Approved Resource Management Plan Amendment and Record of Decision – September 2015 (GRSG Plan Amendment) (BLM 2015a). An approximately 78-acre portion of the Project Area (Figure 1.1.3) is located in an area identified by the GRSG Plan Amendment as Other Habitat Management Area (OHMA), defined as containing seasonal or connectivity habitat areas for GRSG. No Project activities are currently proposed within the OHMA. Any future activities within the OHMA would be required to comply with GRSG Plan Amendment management direction for the OHMA.

GRSG Plan Amendment management decisions that only apply to Priority Habitat Management Areas (PHMAs) or General Habitat Management Areas (GHMAs) would not apply to this Project, because neither are delineated in the Project Area. Also inapplicable to this Project are decisions that only apply to specified distances from GRSG leks, up to four miles, since the nearest known lek site is approximately 22 miles away.

Applicable GRSG Plan Amendment Management Decisions and Required Design Features are listed in Section 2.1.12 of this EA.

1.4.2 Local Land Use Planning and Policy

The 2011 Nye County Comprehensive/Master Plan (Master Plan) contains a description of land uses, restrictions on development, and recommendations for future land use planning. Within the Master Plan, the Land Use Plan is intended to provide goals, objectives and implementation strategies in order to guide public land management in a manner that is fiscally responsible and



Explanation

Project Area

GRSG Plan Amendment Habitat Management Areas

General Habitat Management Areas (GHMA)

Other Habitat Management Areas (OHMA)

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GOLDEN ARROW EXPLORATION PROJECT

Greater Sage-Grouse Habitat Management Areas

Figure 1.1.3

02/11/2016

consistent with the vision of the Board of County Commissioners and the citizens of the County. Federal and state land management policies and procedures, land transactions, and their compatibility with county and local land use plans, are of critical importance to the county's residents. A portion of Public Land Management Goal – 17 intends to "promote the development of mineralized lands" (Nye County 2011).

1.4.3 Relationship to Other Laws, Policies, and Plans

The Proposed Action is consistent with other federal, state, and local laws, regulations, and plans including FLPMA, BLM's 43 CFR 3809 surface management regulations, State of Nevada mining statutes and regulations, and BLM's 43 CFR 2800 regulations.

The surface management regulations recognize that BLM is required to comply with NEPA through preparation of an environmental document, in this case an EA, which analyzes the potential impacts of the Proposed Action and any consultation required under other laws including the National Historic Preservation Act of 1966 (54 United States Code (U.S.C.) § 300101 et seq.) and the Endangered Species Act of 1973, as amended (ESA).

1.5 Scoping and Issues

1.5.1 Scoping

The Project was internally scoped by the BLM interdisciplinary team at a meeting held on June 9, 2015, at the BLM office in Tonopah. The BLM commenced Native American consultation on November 14, 2014, by contacting the Timbisha Shoshone Tribe, the Yomba Shoshone Tribe, and the Duckwater Shoshone Tribe. BLM conducted a site visit on December 17, 2014, with the Environmental Coordinator from the Duckwater Shoshone Tribe, and a meeting occurred with the Environmental Coordinator from the Yomba Shoshone Tribe on February 4, 2015. No concerns were identified. See Section 3.2.7.1.

1.5.2 Issues

During this meeting, BLM resource specialists identified the elements associated with supplemental authorities and other resources and uses to be addressed in this document as outlined in Chapter 3. Issues and potential impacts related to specific resources associated with the Proposed Action were identified:

- Air Quality;
- Cultural Resources;
- Fire Management;
- Geology and Mineral Resources;
- Lands, Realty, and Access;
- Migratory Birds;
- Native American Concerns;
- Noise;
- Noxious Weeds, Invasive and Non-native Species;
- Public Safety;

- Rangeland Management;
- Recreation;
- Socioeconomics;
- Soils;
- Special Status Species;
- Vegetation;
- Visual Resources;
- Wastes, Hazardous and Solid;
- Water Quality, Surface and Ground;
- Wild Horses; and
- Wildlife.

2 DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

2.1 Proposed Action

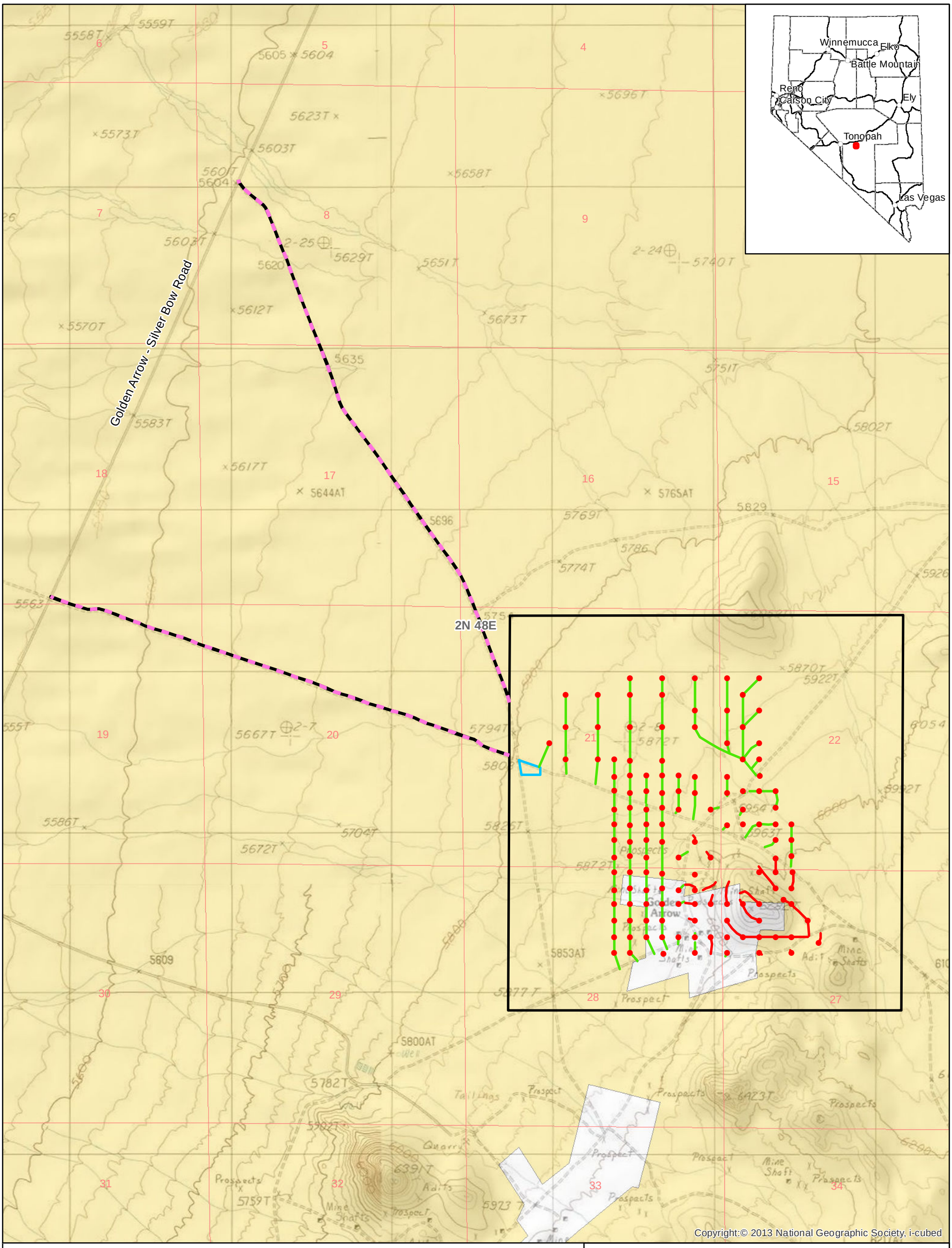
The Proposed Action consists of expanding existing Notice-level exploration activities on public land and widening of two existing access roads within the 1,481-acre Project Area on public land. Activities associated with the Project consist of the following: RC and/or core drilling; constructed roads; constructed drill sites with corresponding sumps; a laydown area; geologic and geophysical mapping; overland travel; construction of trenches for the collection of bulk samples and ground condition testing; potential installation and operation of ground water monitoring wells and production well test sites; geotechnical test pits, trenches, and corings; potential installation and operation of a meteorological station; reclamation of Project-related surface disturbance; and access road widening. Figure 2.1.1 shows proposed Phase I surface disturbance.

IRC proposes to conduct mineral exploration and access road widening activities that would create approximately 91 acres of new surface disturbance, which includes approximately 25.6 acres of proposed Phase I disturbance. Approximately 16 percent of Phase I surface disturbance, and approximately 29 percent of disturbance in subsequent phases, would occur on private land. Including up to nine acres of existing Notice-level disturbance, surface disturbance would total approximately 100 acres. Table 2.1-1 displays the disturbance details.

Table 2.1-1: Acreage of Notice-Level and Proposed Project Surface Disturbance

Surface Disturbing Activity	Disturbance					
	Notice-Level (Acres)[1]	Proposed Phase I		Subsequent Phases		Total Area (Acres)
		Private Land (Acres)	Public Land (Acres)	Private Land (Acres)	Public Land (Acres)	
Constructed Roads	-	1.1	2.0	5.1	11.0	19.2
Overland Travel	-	1.0	7.0	4.0	9.0	21.0
Constructed Drill Sites[2]	-	1.9	7.4	10.0	20.0	39.3
Laydown Area	-	-	2.0	-	-	2.0
Bulk Sample Excavations	-	-	-	-	2.5	2.5
Soil and Geotechnical Test Pits	-	-	-	-	1.5	1.5
Water Monitoring Well Sites	-	-	-	-	1.0	1.0
Water Extraction Well Sites	-	-	-	-	1.0	1.0
Meteorological Station	-	-	-	-	0.3	0.3
Notice-Level	9.0	-	-	-	-	9.0
Access Road Widening	-	-	3.2	-	-	3.2
LAND STATUS SUBTOTAL	**9.0**	**4.0**	**21.6**	**19.1**	**46.3**	**100.0**
TOTAL	**9.0**	**25.6**		**65.4**		**100.0**

[1]Includes the estimated as-built surface disturbance conducted under the now-expired Notices.
[2]Includes geotechnical drill sites and sump disturbance.



Explanation

- Project Area
- Proposed Laydown
- Proposed Constructed Drill Sites
- Proposed Constructed Roads
- Proposed Overland Travel
- Proposed Rights-of-Way (N-94261)

Land Status

- Bureau of Land Management
- Private

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Proposed Phase I Surface Disturbance in the Project Area

Figure 2.1.1

11/30/2015

Specific locations of surface disturbance under subsequent phases cannot be identified at this time because the specific locations for subsequent activities would be based on the results of Phase I activities, including the current and ongoing exploration work. Under subsequent phases, IRC would continue with the same types of surface disturbance shown in Table 2.1-1 for Phase I, with the exception of the access road widening. Installation of water extraction wells, water monitoring wells, and a meteorological station could occur under subsequent phases, as well as bulk sample excavations and soil and geochemical test pits.

In order to provide the BLM and BMRR relevant data concerning subsequent phases of surface disturbance, IRC would provide documentation on the areas of planned exploration at least one month in advance, with specific locations of roads and drill sites for review and approval prior to commencing exploration. In addition, IRC would provide the BLM and BMRR an annual report on or before April 15th of each year that documents surface disturbance locations and the amount of surface disturbance delineated with a Global Positioning System (GPS) unit, types of surface disturbance, and any completed concurrent reclamation including photos.

2.1.1 Equipment and Personnel

Generally, up to eight personnel would be on site during Project activities, including one IRC geologist and two to three contract drill operators per drill rig. Exploration drilling equipment could include a track-mounted RC drill rig and/or a core rig (during Phase I up to two drill rigs may be on site at any time), four-wheel drive (4WD) pickup trucks, a backhoe, and a combination water truck/pipe truck for drill support. Under subsequent phases, baseline collection equipment would include small rotary drills for geotechnical testing and a backhoe or an excavator for trenching and bulk sampling.

IRC would take steps to prevent fires by ensuring 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. All portable equipment, including drill rigs, support vehicles, and drilling supplies, would be removed from the Project Area during extended periods of non-operation.

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

All activities would be conducted in conformance with applicable federal and state health and safety requirements. All Project-related refuse would be disposed of on a weekly basis consistent with applicable regulations. No refuse would be disposed on site. Exploration drill sites, which require earth moving, would be located and constructed using standard construction practices for temporary mineral exploration roads to minimize surface disturbance, erosion and visual contrast, and to facilitate reclamation.

All Project-related traffic would observe prudent speed limits to enhance public safety, protect wildlife, wild horses and livestock, and minimize dust emissions.

2.1.2 Overland Travel and Constructed Roads

IRC plans to utilize overland travel access whenever possible. Under Phase I, IRC proposes to utilize approximately 34,672 linear feet of overland travel routes. Overland travel routes would be approximately ten feet wide to accommodate the track widths on a track-mounted drill rig.

IRC proposes to construct approximately 7,655 linear feet of exploration roads under Phase I with an average running width of 16 feet. Safety berms, if needed, would be constructed within the 16-foot running width. Exploration roads that require earth-moving would be located and constructed using standard construction practices for temporary mineral exploration roads to minimize surface disturbance, erosion, and visual contrast, and to facilitate reclamation. The downslope side of the cut and fill would be at the angle of repose.

Balanced cut and fill construction would be used to the extent possible to minimize the exposed cut slopes and the volume of fill material. Since the depth of the cut would be kept to a minimum, growth media removed during construction would be stockpiled as the fill slope to be used during reclamation. Road construction within drainages would be avoided where possible. When drainages must be crossed by a road, Best Management Practices (BMPs) established by the NDEP and Nevada Contractors Field Guide for Construction (2008) would be followed to minimize surface disturbance and erosion potential. Blasting or the use of a rock breaker may be necessary to construct roads in areas of outcrop. Routine road maintenance could be required and would consist of smoothing ruts, filling holes with fill material, grading, and re-establishing water bars when necessary. Road construction would be completed with a Cat D7, D8 dozer, or equivalent equipment.

2.1.3 Improvements to Existing Access Roads

Activities associated with the two access roads (N-94261) include widening two roads from eight feet to 14 feet. The estimated length of the northern access road to be widened is approximately 12,069 feet (2.3 miles), and the estimated length of the southern access road to be widened is approximately 9,896 feet (1.9 miles). The road widening activities would result in a total surface disturbance of approximately 1.7 acres associated with the northern access road, and approximately 1.4 acres associated with the southern access road.

Both access road segments would follow existing road footprints through BLM-administered land. The roads need to be widened to safely accommodate drill rigs and other construction equipment. The proposed road design would be consistent with the BLM Roads Design Handbook (BLM 2011).

The widened roads would have a 14-foot disturbance width, and would tie into the up-slope existing grade. Aggregate surfacing would be conducted during wet conditions, if necessary. Aggregate size, type, amount, and application method would meet specifications referenced in the BLM Roads Design Handbook (BLM 2011). Subgrade analysis may be required to determine load-bearing capacities.

Drainage ditches would be constructed along the roadway, as necessary. In areas where drainage ditches are not necessary, the improved road would tie into the up-slope existing grade. If the BLM determines culverts, bridges, or low water crossings are necessary, IRC would coordinate

with the BLM prior to construction to develop design and construction specifications that comply with the BLM Roads Design Handbook (BLM 2011). It is not anticipated that borrow areas for fill and removal of excess materials would be required on BLM-administered land.

2.1.4 Laydown Area, Drill Sites, and Drilling Procedures

The laydown area would be located on the west side of the Project Area along the junction of the two access roads (Figure 2.1-1) to stage equipment and materials such as an equipment van trailer, backhoe, dozer, water truck, and drilling supplies. The laydown area would cover approximately two acres.

The standard drill sites would be constructed with the average dimensions of 30 feet wide by 100 feet long. Sumps would be constructed within the footprint of the drill sites to contain cuttings and manage drilling fluids and would typically measure approximately ten feet wide by 15 feet long by seven feet deep. Sumps would be constructed with a sloped end for easy egress by humans or animals with a recommended slope angle of 3 horizontal (H) to 1 vertical (V) [3H:1V].

Exploration drill holes would be drilled to an average depth of approximately 1,000 feet by a LF 70 diamond core drill or equivalent size track-mounted core rig, or a Foremost Drills MPD 1500 or equivalent size track-mounted RC drill rig. IRC would conduct exploration drilling with up to two RC or core drill rigs, or with a combination of both. Up to two drill holes (one per active drill rig) may remain open at any one time. Drill holes would be vertical or angled and drilled with an RC and/or core drill rig. Drill holes would be abandoned per NAC 534.4369 and NAC 534.4371. If ground water is encountered, the hole would be plugged pursuant to NAC 534.420. Based on existing drill hole data in the Project Area, the depth to ground water ranges between 650 and 700 feet depending on the surface elevation.

For each drill rig (RC or core), support equipment would include the following: one water truck (rubber tired) of up to a 3,800-gallon capacity; one general support all-terrain buggy (track or rubber tired); a one-ton flatbed truck; and two pickup trucks. A double axle pipe trailer or other similar support rig and a double axle equipment box trailer or van would be kept at the staging area. A single axle box trailer or similar equipment would be used to store drill core on site at the staging area. Sample bins would be kept at the staging area to store RC drill samples.

IRC would follow standard drilling procedures and require a geologist to be on site throughout drilling activities. The duties of the geologist would include sitting the drill rig, logging each hole according to the geologic features encountered, determining the maximum depth of each hole, and advising the drill operator as needed. The geologist would travel to and from the drill site in a separate 4WD pickup truck. Two pickup trucks would be on site, and up to two flatbed trucks of approximately ten-ton capacities would make routine trips to the site to pick up both RC and core samples for delivery to the assay lab.

Standard drill rig crews would consist of a drill operator and one or two helpers. The helpers normally remove and box the recovered core samples and the cuttings from RC rigs, mix drilling fluids in the portable mud tank, operate the water truck, assist with drilling operations, and conduct maintenance as necessary. The crew would be transported to and from the drill site in up to three 4WD vehicles per drill rig. Three additional people may be on site for other duties.

2.1.5 Subsequent Phases

IRC may install ground water monitoring wells under subsequent phases to track water levels and water quality. In addition, IRC may drill up to three wells prospecting for extraction water in subsequent phases. When possible, existing exploration drill sites would be used for the monitoring and production well sites so the site dimensions would typically be 30 feet wide by 70 feet long. All ground water monitoring wells and water production test wells would be plugged in accordance to NAC 534.420. No ground water monitoring or production test wells are planned under Phase I.

Geotechnical drill borings may be completed with an auger drill under subsequent phases. No geotechnical borings are planned under Phase I.

Test pits, or trenches, to study geology or soil may be constructed as necessary for geologic mapping and sampling, geotechnical sampling, and collection of bulk samples under subsequent phases. No trenches are planned under Phase I.

Under the subsequent phases and in consultation with BLM, a meteorological station may be installed. This installation would include the station itself, a pan evaporation tank, solar planes, a propane generator, a propane tank, and a six-foot chain-link fence surrounding the entire facility. The meteorological station would be constructed on existing disturbance.

Construction parameters for activities proposed under subsequent phases would be provided to BLM and BMRR in a Work Plan/Plan Amendment for review and approval prior to commencing with the proposed activities, along with an updated reclamation cost estimate.

2.1.6 Hazardous Materials

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. Up to 250 gallons of propane would potentially be stored in the propane tank at the meteorological station. All containers of hazardous substances would be labeled and handled in accordance with the Nevada Department of Transportation (NDOT) and Mine Safety and Health Administration (MSHA) guidelines. 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 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 cleanup, the oil, toxic fluids, or chemicals and any contaminated material would be removed from the site and disposed of at an approved disposal facility.

2.1.7 Water Management Plan

Daily water requirements would depend on the type of drill and the number of drills active at any time. A RC drill rig requires approximately 3,000 gallons per 12-hour shift while a core drill rig uses approximately 5,000 gallons of water per 12-hour shift. RC rigs would work only one shift per day whereas the core rig would run two shifts; therefore, the daily drill water requirement

could be as much as 13,000 gallons per day. In addition, depending on conditions, water may be required to control dust on the roads. This could be as much as 5,000 gallons per day depending on the location of the drills. Therefore, daily water requirements could total as much as 18,000 gallons per day. IRC is currently obtaining water from a nearby ranch as has been done in prior drill programs. IRC would file a Mining and Milling "M/M" waiver for review and approval by the Nevada Division of Water Resources (NDWR).

Drill fluids would be managed with the use of sumps at each drill site. BMPs that may be used for sediment control during construction, operation, and reclamation to minimize sedimentation from disturbed areas include fabric or certified weed-free straw bale filter fences, siltation or filter berms, mud pits, and downgradient drainage channels in order to prevent unnecessary or undue degradation to the environment. Sediment traps, constructed as necessary within the drill pad disturbance, would be used to contain drill cuttings and manage fluids. Proposed construction and drilling activities would avoid springs and seeps, if present. In order to facilitate drainage and prevent erosion, all bladed roads would have water bars constructed, as needed, at BLM-recommended spacing.

2.1.8 Surface Occupancy

Under 43 CFR 3710 Subpart 3715.0-5, occupancy is defined as full or part-time residence on the public lands. It also encompasses activities that involve residence; the construction, presence, or maintenance of temporary or permanent structures that may be used for such purposes; or the use of a watchman or caretaker for the purpose of monitoring activities. Residence or structures include, but are not limited to, barriers to access, fences, tents, motor homes, trailers, cabins, houses, buildings, and storage of equipment or supplies. Surface occupancy activities under this Plan, including those activities covered under 43 CFR 3710 Subpart 3715.0-5, may include the following:

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

The development of a monitoring well system, exploration for potential water supplies, and construction of the meteorological station would be implemented under subsequent phases of the Project.

2.1.9 Reclamation Plan

Reclamation would be completed to the standards described in 43 CFR 3809.420 and NAC 519A. Reclamation would meet the reclamation objectives outlined in the U.S. Department

of Interior Solid Minerals Reclamation Handbook #H-3042-1 (BLM 1992a), revegetation success standards per BLM/NDEP "Revised Guidelines for Successful Mining and Exploration Revegetation" (BLM 1999), and Surface Management Handbook H-3809-1 (BLM 2012). Overland travel and existing roads would be utilized as much as possible, minimizing the need for road construction. All IRC drill sites, sumps, overland travel, and road construction would be recontoured and reseeded.

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

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

After exploration activities are completed, reclamation would involve regrading disturbed areas related to this Project to their approximate original contour and seeding using the anticipated reclamation seed mixture and application rates furnished by the BLM (Table 2.1-2). If any species in the seed mix is not available for purchase by IRC, IRC would consult BLM on an acceptable seed mix with available species. Overland travel routes would be scarified and reseeded, if necessary. The two existing access roads would be recontoured and reclaimed to their pre-Project conditions. Yearly visits to the site would be conducted to monitor the success of the revegetation for a period of up to three years or until revegetation success has been achieved.

Table 2.1-2: Anticipated BLM Seed Mix

Species		Application Rate (pounds Pure Live Seed [PLS]/acre)
Common Name	**Scientific Name**	
Winterfat	*Krascheninnikovia lanata*	1.0
Four-wing saltbush	*Atriplex canescens*	3.0
Forage kochia	*Kochia prostrata*	0.25
Nevada Mormon tea	*Ephedra nevadensis*	4.0
Scarlet globemallow	*Sphaeralcea coccinea*	2.0
Palmer penstemon	*Penstemon palmeri*	0.5
Lewis flax	*Linum lewisii*	1.0
Indian ricegrass	*Achnatherum hymenoides*	3.0
Squirreltail	*Elymus elymoides*	2.0
James' galleta	*Pleuraphis jamesii*	3.0
Desert prince's plume	*Stanleya pinnata*	1.0
Tufted evening primrose	*Oeneothera caespitosa*	1.5
Shadscale saltbush	*Atriplex confertifolia*	2.0
Total		**24.25**

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

Project activities would occur over approximately ten years. Exploration activities for subsequent phases are unknown as they are dependent on results from each previous phase. Reclamation work would be conducted concurrently as practicable and feasible for the Project. IRC would conduct concurrent reclamation of disturbed areas once it is determined that the disturbance is no longer required for Project activities. Project disturbance would be reclaimed (earthwork and seeding) no later than two years after the completion of Project activities. However, the revegetation portion of the reclamation may take longer to complete as it is dependent upon precipitation, weather patterns, and time of seeding, among other variables that affect germination and plant growth. The revegetation portion of the reclamation may not be acknowledged as complete by the BLM and BMRR until sufficient criteria of revegetation success are documented as being met.

Table 2.1-3 outlines the anticipated reclamation schedule on a monthly basis, which would be followed to achieve the reclamation goals set forth above. Regrading would occur between April and December and would be done within two years of Project completion. Revegetation activities are limited by the time of year during which they could be effectively implemented. Seeding would be completed between October and December and would occur within two years of Project completion. Site conditions and/or yearly climatic variations could require that this schedule be modified to achieve revegetation success. Monitoring could occur between April and the end of September to determine revegetation success. In general, monitoring would be conducted within three years following regrading and reseeding. Additional reclamation activities include the abandonment of the water wells and the removal of all equipment, supplies, and materials brought onto public land at the end of the Project life.

Table 2.1-3: Anticipated Reclamation Schedule

Techniques	Quarter				Year(s)
	1st Jan – Mar	2nd April – June	3rd July – Sept	4th Oct - Dec	
Regrading					Within two years of Project completion
Seeding					Within two years of Project completion
Monitoring					Three years beyond grading and reseeding

2.1.9.1 Wildlife Habitat Rehabilitation

Through successful revegetation utilizing the seed mix provided by the BLM (Table 2.1-2), wildlife habitat would be restored and enhanced. Also, reclamation would meet the objectives as outlined in revegetation success standards per the "Nevada Guidelines for Successful Revegetation for Nevada Division of Environmental Protection, the BLM, and the USDA Forest Service," September 1998.

2.1.9.2 Noxious Weed Control Measures

To prevent and control the introduction and spread of noxious weeds within the Project Area during reclamation activities, IRC would implement the following prevention and control practices:

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

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

- The seed mixture would be certified PLS and weed free. Straw bales used for erosion control would also be certified as weed free (Section 2.1.9).

- All heavy equipment would be washed and inspected before entering BLM-administered lands (Section 2.1.1).

- BLM and IRC would cooperate to inventory and monitor for noxious weed infestations, treat any infestations, and monitor the treatments' effectiveness (Section 2.1.10).

2.1.9.3 Drill Hole Plugging

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

If the casings are set in a borehole, either the boreholes would be completed as wells and plugged pursuant to NAC 534.420, or the casings would be completely removed from the boreholes and then be plugged pursuant to NAC 534.4369 and NAC 534.4371. The upper portion of the borehole may be permanently cased if the annulus is completely sealed from the casing shoe to surface pursuant to NAC 534.380. Geotechnical auger holes would be backfilled with leftover auger samples and surface material.

2.1.9.4 Regrading and Reshaping

Regrading and reshaping of all constructed drill sites, including sumps, water well sites, monitoring well sites, constructed roads, and test pits would be completed to approximate the surrounding topography. Fill material would be pulled onto the roadbeds to fill the road cuts and restore the slope to natural contours. Roads and drill sites would be regraded and reshaped with an excavator. Overland travel routes are estimated to have a ten-foot travel width (the width of two tracks). For overland travel routes, 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 approximate the pre-construction contours. The resulting channels would be of the same capacity as upstream and downstream reaches and would be made to resist erosion and ultimately revegetated. Following completion of earthwork, all disturbed areas would be broadcast seeded.

2.1.9.5 Handling of Topsoil

The depth of cut for newly constructed exploration roads would be minimal. Soils capable of serving as growth media would be salvaged and stockpiled as the fill slope. In addition to the soils, as much of the soil organic matter as possible would be salvaged to minimize compaction

and promote aeration. Soil amendments are not considered necessary in those areas where sufficient growth media are available.

2.1.9.6 Revegetation

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

The seed list, provided by the BLM and shown in Table 2.1-2, is based on known soil and vegetative conditions and was selected to establish a plant community that would support the post-exploration land use. The mix is designed to promote plant species that can exist in the environment of southwestern Nevada, or are native species found in the plant communities prior to disturbance. Seeding would be at a rate of approximately 24.25 pounds of PLS per acre. Changes or adjustments to the reclamation plant list or application rate would be completed in consultation with and approval by the BLM and BMRR. The seed mixture would be certified PLS and weed free. Straw bales used for erosion control would also be certified as weed free.

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

2.1.10 Monitoring

Monitoring of the drill sumps includes periodic visual inspections during drilling operations to ensure that the drill cuttings are contained. Should the observed condition indicate the sump containment is inadequate, additional sump capacity would be built and/or incorporated into the drilling fluid management system. Monitoring associated with reclamation activities is addressed in the Reclamation Plan (Section 2.1.7).

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

Monitoring would include periodic visual inspections during road and drill site construction, drill operations, and reclamation.

2.1.11 Applicant-Committed Environmental Protection Measures

IRC would commit to the following Environmental Protection Measures (EPMs) 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, and water quality, air quality and other environmental protection regulations and guidelines.

Air Quality

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

Cultural Resources

- Pursuant to 43 CFR 10.4(g) and Section VI.C. of the *State Protocol Agreement between the Bureau of Land Management and the Nevada State Historic Preservation Office for Implementing the National Historic Preservation Act* (*Protocol*) (BLM and Nevada State Historic Preservation Office [SHPO] 2014), IRC 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 the *Protocol*, IRC would immediately stop all activities within 100 meters of the discovery, and not recommence work within this location until a notice to proceed is issued by the BLM authorized officer.

- IRC would not knowingly disturb, alter, injure, or destroy any historical or archaeological site, structure, building, or object eligible for the National Register of Historic Places (NRHP). If IRC discovers any cultural resource that might be altered or destroyed by operations, the procedures outlined in Section VI.B. of the *Protocol* would be implemented.

- IRC would inform all field personnel of the Archaeological Resources Protection Act of 1979 (ARPA) and the Native American Graves Protection and Repatriation Act of 1990 (NAGPRA) (Public Law [P.L.] 101-601) responsibilities and their associated penalties.

- In order to prevent impacts to historic properties, IRC would avoid the known unevaluated cultural site within the Project Area. IRC would ensure the unevaluated cultural site within the Project Area is mapped and flagged by a qualified cultural resource specialist with a GPS unit prior to surface disturbing activities.

- Pursuant to Section VI.B of the *Protocol*, any cultural resource discovered by the permit holder, or any person working on their behalf, during the course of Project activities, would be immediately reported to the BLM-authorized officer. The permit holder would

suspend all operations within an exclusion zone of 100 meters (approximately 330 feet) of the discovery and protect it until an evaluation of the discovery can be made by the authorized officer. Any activities related to avoidance, recordation, data recovery, or other treatment the BLM determines is appropriate for the discovered resources would be at the expense of the permit holder. Operations within the exclusion zone of the discovered resource would resume only upon a written notice to proceed from the BLM authorized officer.

Erosion and Sediment Control

- Final reclamation of overland travel routes, constructed roads, sumps, and drill sites would consist of scarification or fully recontouring disturbances to their original grade and reseeding in the fall season immediately following completion of Project activities.

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

Fire Management

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

- In the event that the Project should start a wildland fire, IRC would be responsible for all the costs associated with the suppression. The following precautionary measures would be taken to prevent and report wildland fires:

    - All vehicles would carry fire extinguishers and a minimum of ten gallons of water;

    - Adequate fire-fighting equipment (i.e., shovel, Pulaski, extinguishers), and a minimum ten gallons of water would be kept at each drill site;

    - Vehicle catalytic converters would be inspected often and cleaned of brush and grass debris;

    - Welding operations would be conducted in an area free from or mostly free from vegetation. A minimum of ten gallons of water and a shovel would be on hand to extinguish any fires created from the sparks. Extra personnel would be at the welding site to watch for fires created by welding sparks. Welding aprons would be used when conditions warrant (i.e., during red flag warnings);

    - Wildland fires would immediately be reported to the BLM Central Nevada Interagency Dispatch Center at (775) 623-3444. Information reported would include the location (latitude and longitude if possible), fuels involved, time started, who or what is near the fire, and the direction of fire spread; and

    - When conducting operations during the months of May through September, the BLM Battle Mountain District Office, Division of Fire and Aviation would be

contacted at (775) 635-4000 to determine if any fire restrictions are in place for the Project and to provide approximate beginning and ending dates for Project activities.

Hazardous or Solid Wastes

- Pursuant to 43 CFR 8365.1-1(b)(3), no sewage, petroleum products, or refuse would be dumped from any trailer or vehicle.
- Regulated wastes would be removed from the Project Area and disposed of in a state, federal, or local designated area.
- No solid waste would be permitted in sumps.
- Only nontoxic fluids would be used in the drilling process.
- If a spill of a petroleum constituent is considered to meet the reportable quantity per the NDEP's guidelines (greater than 25 gallons or greater than three cubic yards of impacted material or any quantity if a water body is impacted), or a reportable quantity for hazardous waste is released based on the Federal Environmental Protection Agency guidelines established under Title III List of Lists (40 CFR Part 302), the NDEP would be notified within 24 hours, and the appropriate remedial actions and confirmation sampling would be conducted under direction of the NDEP.

Migratory Birds

- Land clearing or other surface disturbance associated with the activities within the Project Area would be conducted outside the avian breeding season, whenever feasible, to avoid potential destruction of active bird nests or young birds in the area. If surface disturbance must be created during the avian breeding season (March 1 through July 31), a qualified biologist would survey the area prior to surface disturbing activities. Pre-disturbance surveys for migratory birds are only valid for ten days. If the disturbance for the specific location does not occur within ten days of the survey, another survey would be needed. However, if the vegetation has been fully cleared from the work area within the ten-day clearance survey time frame, no additional clearance survey would be required for the disturbed area because it would no longer consist of potential migratory bird nesting habitat. 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 and location of the nest) would be delineated after consultation with BLM, 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.

  IRC's biologist would recommend to the BLM a protective buffer around the nest which the BLM, in coordination with the Nevada Department of Wildlife (NDOW) and the US Fish and Wildlife Service (USFWS), would review and approve prior to surface disturbance. IRC's biologist would inform IRC when the birds have left the nest. IRC

would not conduct any drilling or surface disturbing activities within the buffer zone until the biologist determines that the birds are no longer nesting.

Night Skies

- To minimize effects from lighting, IRC would utilize hooded stationary lights and light plants. Lighting would be directed onto the pertinent site only and away from adjacent areas not in use, with safety and proper lighting of the active work areas being the primary goal. Lighting fixtures would be hooded and shielded as appropriate. IRC would utilize lighting designed to reduce the impacts to night skies.

Noxious Weeds, Invasive and Non-native Species

- Noxious weeds would be controlled through implementation of the following BMPs: concurrent reclamation efforts; schedule weed management activities to maximize the effectiveness of control efforts on reclaimed areas; washing heavy equipment prior to entering the Project Area; and avoiding areas of known invasive, non-native, and noxious weeds during periods when the weeds could be spread by vehicles.

- Noxious weeds can readily invade disturbed areas associated with exploration projects. IRC would be responsible for the following: 1) identifying noxious weeds in the Project Area (noxious weed information would be provided by the BLM); 2) excluding noxious weeds from disturbed areas until reclamation has been accepted and released; and 3) ensuring that all equipment is "weed free" before traveling to and from the Project Area so that noxious weeds are not spread to new locations. All vehicles originating from outside southern Nevada would be cleaned in a power wash in Tonopah. When noxious weeds are encountered in the Project Area, documentation of their location and extent would be provided to the BLM as soon as possible. IRC would obtain approval from the BLM-authorized officer prior to any herbicide application. IRC would contact the BLM's noxious weed program lead regarding any issues concerning noxious weeds.

- To minimize the introduction of noxious weeds into the Project Area, the following preventative measures would be implemented by IRC: 1) stay on existing roads to and from the Project Area; 2) use a certified weed-free seed mix during reclamation; 3) conduct concurrent reclamation when feasible; and 4) implement a weed monitoring and control program. The BLM would provide IRC with a color brochure, "Nevada Noxious Weed Field Guide," a publication by the University of Nevada Cooperative Extension. Through Early Detection/Rapid Response, IRC would survey the Project Area annually to reduce the risk that invasive species become established. Control method(s) would be determined by a range of factors, even for small infestations. For more intensive infestations, IRC would consult with the BLM on containment or eradication measures.

Paleontological Resources

- IRC would not knowingly disturb, alter, injure, or destroy any scientifically important paleontological deposits. In the event that previously undiscovered paleontological

resources are discovered by IRC in the performance of any surface disturbing activities, the item(s) or condition(s) would be left intact and immediately brought to the attention of the authorized officer of the BLM. If significant paleontological resources are found, avoidance, recordation, and/or data recovery would be required.

Public Safety

- Public safety would be maintained throughout the life of the Project. All equipment and other facilities would be maintained in a safe and orderly manner.
- If any survey monuments, witness corners, or reference monuments are encountered in the Project Area, IRC would consult with BLM to ensure adequate protection.
- In the event that any existing roads are damaged as a result of IRC activities, IRC would return them to their original condition.

Special Status Species (also see Section 2.1.12 for measures addressing Greater Sage-Grouse)

- IRC would not conduct surface disturbing activities within 200 feet of the one existing adit and 11 existing shaft openings within the Project Area that have been identified as potential bat habitat, to prevent any impacts to bat species potentially residing in or near these features. If a qualified biologist surveys the site and determines that bats are not residing in or near these features, this 200-foot exclusion zone would not apply. If evidence of maternity use by a BLM Sensitive bat species is found in the future, BLM may designate a larger exclusion zone and/or other measures to avoid disturbance during the breeding season, April 1 through August 31.
- If any surface disturbing activities would occur within 0.25 mile of the western burrowing owl burrows identified in the 2014 Baseline Biological Survey Report prepared for the Project during the nesting season of April 1 through July 31, an occupational/nesting survey would be required in early to mid-April. If any nest is found to be active, then a no disturbance buffer of 0.25 mile would be applied to each active nest until the nestlings fledge, or nest abandonment occurs. A secondary nesting success survey would be required in mid to late July should occupation of a burrow be documented during the initial survey effort.
- In order to avoid or minimize impacts to sand cholla (*Grusonia pulchella*), a BLM sensitive plant species, IRC would completely avoid the individual plants or avoid them by employing angle/directional drilling techniques if plants are located within or near proposed disturbance areas. If avoidance is not possible, IRC would transplant the sand cholla to an area within or adjacent to the Project Area that supports the habitat requirements of the species, and monitor each transplanted individual plant for survival.

Water Quality

- All drill holes would be plugged in accordance with NRS 534, NAC 534.4369 and NAC 534.4371. 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 NAC 534.4371. If 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 plugged in accordance with NAC 534.4369 and NAC 534.4371.

- Storm water BMPs would be used at the construction sites to minimize storm water erosion (see EA Section 2.1.7 Water Management Plan).
- Drill cuttings and fluids would be contained on site utilizing appropriate control measures. Sediment traps would be used as necessary and filled at the end of the drill program.
- IRC would follow the Spill Contingency Plan in Appendix D of the Plan.
- Only nontoxic fluids would be used in the drilling process.

Wildlife

- All trenches, sumps, and other small excavations that pose a hazard or nuisance to the public, wildlife, or livestock would be constructed with a sloped end for easy egress with a recommended slope angle of 3H:1V.

Vegetation

- Reseeding would be consistent with all BLM recommendations for seed mix constituents, application rate, and seeding methods.

2.1.12 Applicable Greater Sage-Grouse Required Design Features

A 78-acre portion of the Project Area (Figure 1.1.3) intersects habitat identified by BLM's GRSG Plan Amendment (BLM 2015a) as OHMA for GRSG. IRC does not currently propose to conduct any Project activities within the OHMA. If any such activities are proposed in the future, those activities would be required to comply with GRSG Plan Amendment management direction for OHMA.

For locatable minerals projects in OHMAs, the GRSG Plan Amendment (Management Decision [MD] MR 15, page 2-30) directs that Objective SSS 4 is reviewed and MDs SSS 1 through SSS 4 be reviewed and analyzed for projects and activities proposed in GRSG habitat. The only applicable MD for this Project would be MD SSS 4, which directs that authorized/permitted activities conform with Required Design Features (RDFs) (GRSG Plan Amendment Appendix C) where they are applicable to the site-specific conditions of the project/activity, unless a specific RDF would provide no additional protection to GRSG or its habitat or an alternative RDF is determined to provide equal or better protection (MD SSS 4, GRSG Plan Amendment page 2-10).

Potentially applicable RDFs or portions of RDFs are listed below, along with any further details, if needed, of how they would be applied to any future Project activities within the OHMA. Some

design features that conform with the RDFs were previously included in the design for the entire Project and are included in other EA sections, as indicated.

General Required Design Features (GRSG Plan Amendment Appendix C)

- RDF Gen 1: Locate new roads outside of GRSG habitat to the extent practical.

- RDF Gen 2: Avoid constructing new roads within riparian areas and ephemeral drainages. Construct low-water crossings at right angles to ephemeral drainages and stream crossings.

    - There are no riparian areas or perennial streams in the Project Area. Road construction within ephemeral drainages would be avoided wherever possible (EA Section 2.1.2). When drainages must be crossed by a road, BMPs established by the NDEP and Nevada Contractors Field Guide for Construction (2008) would be followed to minimize surface disturbance and erosion potential.

- RDF Gen 3: Limit construction of new roads where roads are already in existence and could be used or upgraded to meet the needs of the project or operation. Design roads to an appropriate standard, no higher than necessary, to accommodate intended purpose and level of use.

    - Any necessary new roads would be designed to the standards outlined in the BLM Roads Design Handbook (BLM 2011).

- RDF Gen 5: During project construction and operation, establish and post speed limits in GRSG habitat to reduce vehicle/wildlife collisions or design roads to be driven at slower speeds.

- RDF Gen 6: Newly constructed project roads that access valid existing rights would not be managed as public access roads. Proponents will restrict access by employing traffic control devices such as signage, gates, and fencing.

- RDF Gen 7: Require dust abatement practices when authorizing use on roads.

    - The Project is required to obtain a Surface Area Disturbance Permit, including Dust Control Plan, through the NDEP BAPC once the Project disturbs 20 acres. 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. See EA Section 2.1.11, Air Quality.

- RDF Gen 9: Upon project completion, reclaim roads developed for project access on public lands unless, based on site-specific analysis, the route provides specific benefits for public access and does not contribute to resource conflicts.

    - All constructed roads would be reclaimed when no longer needed for access. The two access roads to be widened would be reclaimed to pre-Project conditions. See EA Sections 2.1.9.4 and 2.1.11.

- RDF Gen 10: Design or site permanent structures that create movement to minimize impacts on GRSG habitat.
    - The proposed meteorological station is the only proposed permanent structure, and would be sited outside the OHMA.
- RDF Gen 11: Equip temporary and permanent aboveground facilities with structures or devices that discourage nesting and perching of raptors, corvids, and other predators.
    - The proposed meteorological station would be located outside the OHMA. Due to the noise and vibration of drill rigs, avian predators would not perch on the drill rigs while they are in operation. Within the OHMA, during times greater than 24 hours with no exploration activities, the drill mast would be lowered to minimize the potential for perching avian predators.
- RDF Gen 12: Control the spread and effects of nonnative, invasive plant species (e.g., by washing vehicles and equipment, minimize unnecessary surface disturbance). All projects would be required to have a noxious weed management plan in place prior to construction and operations.
    - See Section 2.1.9.2 for noxious weed management measures.
- RDF Gen 13: Implement project site-cleaning practices to preclude the accumulation of debris, solid waste, putrescible wastes, and other potential anthropogenic subsidies for predators of GRSG.
    - 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. See EA Sections 2.1.1, Equipment and Personnel, and 2.1.11, Hazardous or Solid Wastes. Portable chemical toilets would be available in the Project Area for use by Project personnel.
- RDF Gen 15: When interim reclamation is required, irrigate site to establish seedlings more quickly if the site requires it.
- RDF Gen 16: Utilize mulching techniques to expedite reclamation and to protect soils if the site requires it.
    - If mulch is required, it would be certified weed free. See EA Section 2.1.9.2.
- RDF Gen 17: Restore disturbed areas at final reclamation to the pre-disturbance landforms and desired plant community.
    - See EA Section 2.1.9.4. Project-related disturbance would be revegetated with the BLM approved seed mix as shown in Table 2.1-2.
- RDF Gen 18: When authorizing ground-disturbing activities, require the use of vegetation and soil reclamation standards suitable for the site type prior to construction.

  - See EA Section 2.1.9.

- RDF Gen 19: Instruct all construction employees to avoid harassment and disturbance of wildlife, especially during the GRSG breeding (e.g., courtship and nesting) season. In addition, pets shall not be permitted on site during construction.

- RDF Gen 20: To reduce predator perching in GRSG habitat, limit the construction of vertical facilities and fences to the minimum number and amount needed and install anti-perch devices where applicable.

- RDF Gen 21: Outfit all reservoirs, pits, tanks, troughs or similar features with appropriate types and number of wildlife escape ramps.

  - See EA Section 2.1.11, Wildlife.

- RDF Gen 22: Load and unload all equipment on existing roads to minimize disturbance to vegetation and soil.

Inapplicable General RDFs pertain to ROWs (no existing ROWs in the Project Area) and temporary housing sites (none are proposed for the Project) and are not listed here.

Locatable Mineral Required Design Features (GRSG Plan Amendment Appendix C)

- RDF LOC 2: Cluster disturbances associated with operations and facilities as close as possible, unless site-specific conditions indicate that disturbances to GRSG habitat would be reduced if operations and facilities locations would best fit a unique special arrangement.

  - Specific locations of disturbances associated with phased exploration projects are unknown, as the drill site locations in subsequent phases are based on results from previous phases. For any proposed future phases of disturbance within OHMA, IRC would coordinate with the BLM to determine if clustering disturbance would be practicable or determine site-specific conditions conducive to a unique special arrangement.

- RDF LOC 3: Restrict pit and impoundment construction to reduce or eliminate augmenting threats from West Nile virus.

  - No pits are proposed. Sumps that collect water and/or nontoxic drilling fluids as part of drilling activities would be small, quickly evaporated, and filled in when no longer needed.

- RDF LOC 4: Remove or re-inject produced water to reduce habitat for mosquitoes that vector West Nile virus. If surface disposal of produced water continues, use the following steps for reservoir design to limit favorable mosquito habitat (Doherty 2007):

  • Overbuild size of ponds for muddy and non-vegetated shorelines

• Build steep shorelines to decrease vegetation and increase wave actions

• Avoid flooding terrestrial vegetation in flat terrain or low lying areas

• Construct dams or impoundments that restrict down slope seepage or overflow

• Line the channel where discharge water flows into the pond with crushed rock

• Construct spillway with steep sides and line it with crushed rock.

• Treat waters with larvicides to reduce mosquito production where water occurs on the surface.

- Exploration drilling does not normally produce enough water that it would need to be removed or reinjected. If any drill hole produces artesian flow, the drill hole would be sealed and plugged. See EA Section 2.1.11, Water Quality. Water associated with drilling activities would be contained in sumps and would generally be expected to quickly evaporate and/or permeate into the soil. When the weekly average of the daily high ambient temperature is greater than 60° F, if any water stands for more than seven days in a sump, IRC would inspect for mosquito larvae on a weekly basis. If mosquito larvae are found, IRC would treat the water with a BLM-approved larvicide and/or adopt other appropriate measures in consultation with BLM. Standing water that has been treated would be monitored based on the duration (efficacy) of the larvicide; if mosquito larvae are found the sump would be treated again.

- RDF LOC 5: Address post reclamation management in reclamation plan such that goals and objectives are to protect and improve sage-grouse habitat needs.
  - Any reclamation required in the OHMA would be geared to GRSG habitat needs. The Project's reclamation plan includes revegetation monitoring that would be completed no later than two years after the completion of activities under this Project; however, revegetation may take longer, and BLM would not release the reclamation bond until revegetation success has been achieved. See EA Section 2.1.9.

- RDF LOC 6: Maximize the area of interim reclamation on long-term access roads and well pads including reshaping, topsoiling and revegetating cut and fill slopes.
  - Constructed roads and drill sites would be concurrently reclaimed when practicable, and would include regrading and reshaping, growth media placement where necessary, and revegetation. See EA Section 2.1.9, Reclamation Plan.

Inapplicable Locatable Mineral RDFs that are not listed here pertain to noise restrictions which apply to PHMAs or GHMAs (GRSG Plan Amendment MD SSS 2.F, 3.E, 7), and pits and tanks (none are planned for the Project).

2.2 No Action Alternative

In accordance with BLM 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 all other alternatives can be measured.

Under the No Action Alternative, the Project 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. IRC could obtain new authorizations with Notices and continue mineral exploration activities in the Project Area on public land. The area would remain available for future mineral exploration and mining activities or for other purposes, as approved by the BLM.

2.3 Alternatives Considered but Eliminated from Detailed Analysis

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 much of the exploration area due to topographic constraints. However, the Proposed Action incorporates the use of cross country travel and would utilize this method where feasible.

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 access to portions of the exploration area and would thus deny the claimant the opportunity to fully evaluate and characterize the mineral potential.

3 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

3.1 Introduction

The purpose of this section of the EA is to describe the existing environment of the Project Area, as well as environmental consequences from implementation of the Proposed Action or any of the listed alternatives.

There have been up to nine acres of surface disturbance associated with three expired Notices (N-81866, N-88961, and N-90701) in the Project Area. The Notice-level surface disturbance includes overland travel, constructed roads, and constructed drill sites. This existing baseline condition of the Project Area serves as the basis for the analysis of the Proposed Action.

Supplemental Authorities that are subject to requirements specified by statute or Executive Order (EO) must be considered in all BLM environmental documents. The elements associated with the supplemental authorities listed in the NEPA Handbook (BLM 2008a, Appendix 1) and in the Nevada Instruction Memorandum (IM) 2009-030, Change 1, are listed in Table 3.1-1. The table lists the elements and the determination whether the element is present in the Project Area and whether the element would be affected by the Proposed Action.

Table 3.1-1: Elements Associated with Supplemental Authorities and Rationale for Detailed Analysis for the Proposed Action

Supplemental Authority Element	Not Present	Present/ Not Affected	Present/May Be Affected	Rationale/Reference Section
Air Quality			X	See Section 3.2.1.
Areas of Critical Environmental Concern	X			This element is not present within the Project Area or vicinity and is not further analyzed in this EA.
Bald and Golden Eagles	X			There were no bald or golden eagle individuals, nests, or potential nesting habitat identified within the Project Area or four-mile buffer; therefore, this element is not further analyzed in this EA.
Cultural Resources			X	See Section 3.2.2.
Environmental Justice	X			Based on a review of existing baseline data, no minority or low-income groups would be disproportionately affected by health or environmental effects as a result of the Proposed Action. This element is not present within the Project Area or vicinity and is not further analyzed in this EA.
Farm Lands (Prime or Unique)	X			This element is not present within the Project Area or vicinity and is not further analyzed in this EA.
Fish Habitat	X			Native fish habitat is not present within the Project Area or vicinity and is not further analyzed in this EA.

Supplemental Authority Element	Not Present	Present/ Not Affected	Present/May Be Affected	Rationale/Reference Section
Floodplains	X			There are no floodplains mapped by the Federal Emergency Management Agency in the Project Area. In addition, EO 11988, "Floodplain Management," defines the term floodplain as "the lowland and relatively flat areas adjoining inland and coastal waters including flood prone areas of offshore islands, including at a minimum, that area subject to a one percent or greater chance of flooding in any given year." Based on this definition, the Project Area does not contain any floodplains.
Forests and Rangelands (Healthy Forests Restoration Act [HFRA] projects only)	X			This Project does not meet the requirements to qualify as an HFRA project; therefore, this element is not further analyzed in this EA.
Human Health and Safety (Herbicide Projects)	X			The Project may use herbicides to eradicate noxious weeds; however, EO 13045, "Protection of Children from Environmental Health Risks and Safety Risks," would not apply to this Project as there would be no children on the site during application of the herbicides.
Migratory Birds			X	See Section 3.2.6.
Native American Concerns		X		See Section 3.2.7.
Noxious Weeds, Invasive and Non-native Species			X	See Section 3.2.8.
Threatened or Endangered Species	X			Federally-listed threatened and endangered species have been determined not to be present within the Project Area. See Section 3.2.14 (Special Status Species) for a further discussion.
Wastes – Hazardous/Solid		X		See Section 3.2.17.
Water Quality, Surface and Ground			X	See Section 3.2.18.
Wetlands and Riparian Zones	X			This element is not present within the Project Area or vicinity and is not further analyzed in this EA.
Wild and Scenic Rivers	X			This element is not present within the Project Area or vicinity and is not further analyzed in this EA.

Supplemental Authority Element	Not Present	Present/ Not Affected	Present/May Be Affected	Rationale/Reference Section
Wilderness/Wilderness Study Areas (WSAs)/lands with wilderness characteristics	X			Wilderness or WSAs are not present within the Project Area or vicinity. The BLM conducted a wilderness characteristics inventory of the Project Area on August 7, 2015, and determined there are no lands with wilderness characteristics in the Project Area. These elements are not further analyzed in this EA.

Elements present are analyzed in Section 3.2, including justification for the elements present and determined not affected by the Proposed Action. Those elements listed under the supplemental authorities that do not occur in the Project Area and would not be affected are not evaluated further in this EA, based on the rationale provided in Table 3.1-1.

In addition to the elements listed under supplemental authorities, the BLM considers other resources and uses that occur on public lands and the issues that may result from the Proposed Action. Other resources or uses of the human environment considered for this EA are listed in Table 3.1-2 below.

Table 3.1-2: Resources or Uses Not Associated with Supplemental Authorities

Other Resources or Uses	Not Present	Present/ Not Affected	Present/May Be Affected	Rationale/Reference Section
Fire Management		X		See Section 3.2.3.
Forestry and Woodland Resources	X			This element is not present within the Project Area or vicinity and is not further analyzed in this EA.
Geology and Mineral Resources		X		See Section 3.2.4.
Lands, Realty, and Access		X		See Section 3.2.5.
Noise			X	The Proposed Action may result in noise impacts. Noise impacts are discussed in Sections 3.2.14, 3.2.19, and 3.2.20.
Paleontological Resources	X			This element is not present within the Project Area or vicinity and is not further analyzed in this EA. However, Section 2.1.11 includes a protection measure for undiscovered paleontological resources.
Public Safety		X		See Section 3.2.9.
Rangeland Management			X	See Section 3.2.10.
Recreation		X		See Section 3.2.11.
Socioeconomics			X	See Section 3.2.12.
Soils			X	See Section 3.2.13.

Other Resources or Uses	Not Present	Present/ Not Affected	Present/May Be Affected	Rationale/Reference Section
Special Status Species			X	See Section 3.2.14.
Vegetation			X	See Section 3.2.15.
Visual Resources			X	See Section 3.2.16.
Wild Horses and Burros			X	See Section 3.2.19.
Wildlife			X	See Section 3.2.20.

Present resources or uses are discussed and analyzed in Section 3.2, including justification for the resources present and determined not affected by the Proposed Action. Those other resources listed that do not occur in the Project Area and would not be affected are not evaluated further in this EA, based on the rationale provided in Table 3.1-2.

The potential effect of the No Action Alternative on both supplemental authorities and other resources or uses is discussed in Section 3.3.

3.2 Effects of the Proposed Action

3.2.1 Air Quality

3.2.1.1 Affected Environment

Air Quality

The Federal Clean Air Act is the primary controlling legislation over air quality. Ambient air quality and the emission of air pollutants are regulated under both federal and state laws and regulations. Regulatory air standards that are potentially applicable to the Project include the following: National Ambient Air Quality Standards (NAAQS) and the Nevada State Ambient Air Quality Standards (NSAAQS).

The Bureau of Air Pollution Control (BAPC) is the agency in the State of Nevada delegated with the responsibility for implementing a State Implementation Plan (SIP) (excluding Washoe and Clark Counties, which have their own SIP). Included in a SIP are the State of Nevada air quality permit programs (NAC 445B.001 through 445B.3791, inclusive). Also part of a SIP are the NSAAQS. The NSAAQS are generally identical to the NAAQS with the exception of the following: a) an additional one-hour ozone standard for Lake Tahoe Basin #90; b) an additional standard for carbon monoxide (CO) in areas with an elevation in excess of 5,000 feet above mean sea level (amsl); and c) a hydrogen sulfide standard. The amendment to NAC 455B.22097 effective January 1, 2015, sets the NSAAQS for particulate matter of aerodynamic diameter less than 2.5 microns ($PM_{2.5}$), revokes the annual standard for particulate matter of aerodynamic diameter less than ten microns (PM_{10}), and sets the one hour standards for sulfur dioxide (SO_2) and nitrogen dioxide. 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.

The attainment status relative to the NSAAQS within the Project Area is determined by monitoring ambient levels of criteria pollutants. An attainment or unclassified designation means that no violations of NSAAQS or NAAQS have been documented in the region. The Project Area is located in the Stone Cabin Valley hydrographic basin, which 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 US with limited sources of pollutants.

3.2.1.2 Environmental Consequences

The Project has the potential to disturb approximately 100 acres; however, this disturbance would be completed in phases. Travel on access roads and Project-related activities within the Project Area would create emissions, which would have a potential impact on air quality. Fugitive dust, in the form of PM_{10} and $PM_{2.5}$, would be caused by the operation of the following equipment: up to two drill rigs; one bulldozer; one backhoe; one motor graders; one excavator; one low impact tractor; two service trucks; two pipe trucks; two support trucks; two water trucks; six light pickup trucks; and two crew trucks. Vehicle emissions, in the form of SO_2, nitrogen oxide, CO, and volatile organic compounds (VOCs), would occur any time the internal combustion engines on the vehicles are operating. Table 3.2-1 shows the tons of emissions of the identified pollutants.

Table 3.2-1: Fugitive Dust and Combustion Emissions Associated with the Project, Tons per Year

Project Emissions Summary						
Emission Type	**PM_{10}**	**$PM_{2.5}$**	**SO_2**	**NOx**	**CO**	**VOCs**
Fugitive Emissions (Dust)	49.70	6.40	--	--	--	--
Combustion and Tailpipe	1.50	1.50	0.16	21.86	18.32	2.47
Total	**51.20**	**7.90**	**0.16**	**21.86**	**18.32**	**2.47**

In addition to the criteria listed in Table 3.2-1, there would be a total of approximately 0.13 ton per year of hazardous air pollutants (HAPs) and approximately 3,218 tons per year of GHGs. All exploration activities with surface disturbance exceeding 20 acres are required to obtain a Surface Area Disturbance (SAD) permit from the BAPC, which includes a Dust Control Plan. 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. BMPs identified in the Dust Control Plan include limiting vehicle speeds to ten to 15 miles per hour and watering roads and other disturbed areas to suppress dust, as necessary, to minimize the potential effects of fugitive dust on air quality. The amount of emissions associated with combustion of a maximum of two drill rigs and their support vehicles over a 12-hour period would be equivalent to eight vehicles traversing from one side of Nevada to the other on Interstate 80. In addition, the emissions associated with the exploration Project would occur in a rural area where there are minimal emissions generated from other activities.

Combustion emissions from motor vehicles are regulated by the US Environmental Protection Agency through the limiting of emissions during the manufacture of the vehicles and then regular maintenance of the vehicles. The amount of emissions from the Project would be inconsequential. Through the implementation of the EPMs, there would be no appreciable impacts to air quality. Therefore, this resource element is not carried forward in additional analysis.

3.2.2 Cultural Resources

3.2.2.1 Affected Environment

Direct Effects Area

The BLM established an area of potential effects (APE) for direct effects for cultural resources that encompasses approximately 1,523 acres, and includes the entire Project Area. A Class III cultural resources inventory was conducted for the entire direct effects APE (Mahoney and Giambastiani 2015). As a result of the inventory, 70 newly identified archaeological sites, the northern portion of the historic Golden Arrow Mining District (GAMD), and 84 isolated finds, were recorded. With the exception of one archaeological site, the BLM determined that no cultural resources identified within the direct effects APE are eligible for listing in the NRHP.

Indirect Effects Area

The BLM established an indirect effects APE that included a one-mile radius beyond the Project Area. The BLM further identified specific analysis areas for visual, audible, and atmospheric effects, within the indirect effects APE. A Class I cultural resources literature search that included the entire indirect effects APE was conducted by Mahoney and Giambastiani (2015).

3.2.2.2 Environmental Consequences

Direct Effects

Per Section V.D.2 of the *Protocol*, and compliance with the Standard Measures listed in Section V.D.2.a. and Section III.B.of the *Protocol*, there would be no effect to the one historic property located within the direct effects APE. The BLM has determined that the remaining cultural resources identified during the Class III inventory are not eligible for the NRHP; as such, these resources are not historic properties that would be subject to an adverse effect by the Project.

As stated in Section 2.1.11 of this EA, and in compliance with Section V.D.2 of the *Protocol*, IRC would avoid the unevaluated archaeological site during all Project activities. Avoidance would include fencing the perimeter of the site to prevent access and damage to the site until exploration and reclamation activities are complete. In addition, pursuant to State Protocol Agreement Section VI.B, any cultural resource discovered by the permit holder, or any person working on their behalf, during the course of the Project, would be immediately reported to the BLM authorized officer by telephone, with written confirmation. The permit holder would suspend all operations within 100 meters (approximately 330 feet) of the discovery and protect it until an evaluation of the discovery can be made by the BLM authorized officer. IRC would also implement EPMs for cultural resources, as outlined in Section 2.1.11, which protect historic

properties and outline the requirements for avoidance in the event cultural resources are discovered during the course of Project activities.

Indirect Effects

One historic property, an unevaluated resource the BLM is treating as eligible for the NRHP pending formal evaluation, was identified within the indirect effects APE. The BLM determined any visual, audible, and atmospheric effects resulting from the Project be would intermittent, negligible, and/or temporary and would not alter any characteristics of the resource that would make it eligible for the NRHP.

3.2.3 Fire Management

3.2.3.1 Affected Environment

No fuel reduction or habitat enhancement projects have been conducted or are proposed within the Project Area; however, the BLM has ongoing hazardous fuels reduction and habitat enhancement projects in the Project Area vicinity.

3.2.3.2 Environmental Consequences

Implementation of the Proposed Action would be coordinated with the BLM's TFO Manager in order to ensure the safety of IRC personnel during all periods of prescribed fire activity in the area. Based on the EPMs outlined in Section 2.1.11, and the fact that the Project Area would continue to be accessible, impacts to fire management are not anticipated. In addition, reclamation measures include seeding with vegetation types that may be more favorable than other vegetation types to fire avoidance and suppression in the long term.

No impacts to fire management from the Proposed Action are anticipated; therefore, fire management is not carried forward for additional analysis.

3.2.4 Geology and Minerals

3.2.4.1 Affected Environment

The Project Area is situated along the northeastern margin of the Walker Lane Structural Belt, a geologic terrain dominated by northwest-striking, right-lateral transcurrent faulting. The Project Area is also located along the western rim of the Kawich Range volcanic caldera. The Project Area is underlain by a suite of Oligocene to Miocene andesitic to rhyolitic volcanic and volcaniclastic lithologies erupted from the Kawich volcanic center. The oldest rocks exposed are andesite, andesite volcanic breccia, and andesite volcaniclastic sedimentary rocks. The andesite is overlain by a thick sequence of rhyolite ignimbrite sheets, which are intruded by rhyolite domes and associated phreatomagmatic diatremes. These rocks are overlain by rhyolitic maar volcaniclastic sedimentary rocks. All of these units are overlain by Pliocene basalt flows and Quaternary alluvial deposits. Faulting associated with late caldera collapse and later Walker Lane deformation cuts all rock units (Killin 2014).

3.2.4.2 Environmental Consequences

The Proposed Action would not involve the removal of large volumes of earth that could potentially lead to structural instability. Only a small amount of material would be removed from drill holes and bulk sample excavations and would not affect potential mineral resources in the ground. Compared to the overall ore deposition in Nye County and Nevada, the amount of minerals extracted as a result of these exploration activities is in effect miniscule and would not have any appreciable impact on geology and minerals. Therefore, this resource is not carried forward in additional analysis.

3.2.5 Lands, Realty, and Access

3.2.5.1 Affected Environment

The Project Area is located on public lands administered by the BLM TFO, consisting of unpatented claims controlled by IRC and private land. Figure 1.1.1 shows the Project Area location, access, and land status. The current land uses in the Project Area and vicinity consist primarily of mineral exploration, wildlife habitat, dispersed recreational use, and facilities associated with the Tonopah Test Range (TTR). As described in Section 1.1, PLO 7653, effective December 28, 2005, withdrew approximately 308,600 acres of public lands within the Caliente Rail Corridor in Nevada from surface entry and the location of new mining claims, subject to valid existing rights, for a period of ten years to allow the DOE to evaluate the lands for the potential construction, operation, and maintenance of a rail line that would be used to transport spent nuclear fuel and high-level radioactive waste to the proposed Yucca Mountain Repository (70 FR 76854). Two roads required to access the Project traverse the rail corridor.

The Project is accessed from Tonopah, Nevada, by traveling approximately 40 miles east from Tonopah on US Highway 6, then south on Golden Arrow-Silver Bow Road (Nye County Standard Gravel Road #665) for approximately nine miles to either of the two access roads. The NDOT publishes an annual traffic report providing details on the amount of traffic on certain locations on Nevada roads. Table 3.2-2 details annual average daily traffic (AADT) levels from 2011 to 2014 at monitoring Station 0230060 (US Highway 6, Great Basin Boulevard, 0.2 mile east of State Route 376 [Tonopah-Austin Road]), which is the closest monitoring station to the Project Area.

Table 3.2-2: Annual Average Daily Traffic

Station	Route/Location	2011	2012	2013	2014
0230060	US 6, Great Basin Boulevard, 0.2 mile east of State Route 376 (Tonopah-Austin Road)	500	750	600	650

Source: NDOT 2014

3.2.5.2 Environmental Consequences

Roads constructed as part of the Proposed Action could change land use in the Project Area and may increase OHV activity within the Project Area; however, any road disturbance resulting from the Proposed Action would be temporary and subject to reclamation. Therefore, impacts

from increased OHV usage in the Project Area would be negligible. There would be an incremental increase of traffic on US Highway 6 and Golden Arrow-Silver Bow Road. The Project would consist of up to eight people being on site at any one time. It is anticipated there would be approximately five daily trips for pickup trucks carrying drill crews and geologists to the Project, and approximately two daily trips for the water trucks. The increase in daily traffic is not expected to affect traffic conditions on US Highway 6, which had a 2014 AADT of 650 trips at traffic count station 0230060, or cause a shift in AADT on Golden Arrow-Silver Bow Road, which is currently used for access to the TTR. Traffic impacts would be temporary, and would only occur during Project activities. The increase in traffic generation resulting from the Proposed Action would not result in an appreciable impact to US Highway 6 or Golden Arrow-Silver Bow Road. In addition, no residual impacts from traffic generation resulting from the Proposed Action would occur after Project activities cease. The additional traffic generated from the Proposed Action would result in a short-term, negligible increase in traffic generation on US Highway 6 and Golden Arrow-Silver Bow Road. Therefore, this resource is not carried forward in additional analysis.

3.2.6 Migratory Birds

3.2.6.1 Affected Environment

"Migratory bird" means any bird listed in 50 CFR 10.13. All native birds found commonly in the US, with the exception of native resident game birds that do not migrate, are protected under the Migratory Bird Treaty Act of 1918 (MBTA). The MBTA prohibits the 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 into projects.

Additional direction comes from a Memorandum of Understanding (MOU) between the BLM and USFWS, signed January 17, 2010. 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.

Enviroscientists, Inc. (Enviroscientists) conducted baseline surveys for wildlife species, including migratory birds and raptors, in August and October 2014 for the Project Area (Enviroscientists 2015). No nesting raptors or evidence of nesting was observed during the surveys; however, the surveys were not conducted within the typical nesting season for migratory birds or raptors in this region. Table 3.2-3 lists all migratory bird species observed within the Project Area during the surveys.

Table 3.2-3: Migratory Bird Species Detected in the Project Area

Common Name	Scientific Name
Black-throated sparrow	*Amphispiza bileneata*
Common raven	*Corvus corax*

Common Name	Scientific Name
Horned lark	*Eremophila alpestris*
Lark sparrow	*Chondestes grammacus*
Loggerhead shrike	*Lanius ludovicianus*
Mourning dove	*Zenaida macroura*
Red-tailed hawk	*Buteo jamaicensis*
Rock wren	*Salpinctes obsoletus*
Sage sparrow	*Amphispiza belli*
Western burrowing owl	*Athene cunicularia hypugaea*
Western kingbird	*Tyrannus verticalis*

In addition, the NDOW, Nevada Natural Heritage Program (NNHP), and the USFWS were contacted to request information regarding wildlife use and nesting raptors in the area. In a response letter provided on June 17, 2014, for the proposed Project, the NDOW identified the following additional migratory birds as being known to reside in the vicinity (four-mile buffer) of the Project Area: American kestrel (*Falco sparverius*); bald eagle (*Haliaeetus leucocephalus*); barn owl (*Tyto alba*); Cooper's hawk (*Accipiter cooperii*); ferruginous hawk (*Buteo regalis*); golden eagle (*Aquila chrysaetos*); great horned owl (*Bubo virginianus*); long-eared owl (*Asio otus*); merlin (*Falco columbarius*); northern goshawk (*Accipiter gentilis*); northern harrier (*Circus cyaneus*); northern saw-whet owl (*Aegolius acadicus*); osprey (*Pandion haliaetus*); peregrine falcon (*Falco peregrinus*); rough-legged hawk (*Buteo lagopus*); sharp-shinned hawk (*Accipiter striatus*); short-eared owl (*Asio flammeus*); Swainson's hawk (*Buteo swainsoni*); turkey vulture (*Cathartes aura*); and western screech-owl (*Megascops kennicottii*). The NDOW stated burrowing owl, common poorwill (*Phalaenoptilus nuttallii*), golden eagle, and northern harrier have been directly observed in the vicinity of the Project Area. The NDOW has identified the bald eagle, burrowing owl, ferruginous hawk, golden eagle, northern goshawk, peregrine falcon, and short-eared owl, as NDOW species of special concern and are target species for conservation. The NDOW also stated 20 known raptor nest sites occur within ten miles of the Project Area (NDOW 2014).

Migratory bird species that have additional protection or management attention are discussed in detail in Section 3.2.15, "Special Status Species." These species include the loggerhead shrike and Western burrowing owl.

3.2.6.2 Environmental Consequences

The Proposed Action would create surface disturbance and associated removal of vegetation, which could potentially result in the destruction of active nests or disturb the breeding behavior of migratory bird species. Vegetation removal and ground disturbance would result in a temporary reduction of 100 acres of foraging and breeding habitat for migratory birds and foraging habitat for raptors within the Project Area. This acreage would not be disturbed all at one time due to the phased nature of the exploration activities associated with the Proposed Action. All surface disturbance associated with Project-related activities would be reclaimed, and post-exploration land use is expected to return disturbed land to a level of productivity comparable to pre-exploration levels. As outlined in the EPM in Section 2.1.11, IRC has

committed to providing a qualified biologist to conduct nest surveys prior to any surface disturbing activities associated with exploration activities during the avian breeding season. This measure would ensure that no direct impacts to migratory birds are likely to occur under the Proposed Action. Indirect impacts, as a result of the Project, and vegetation removal could lead to temporary spatial redistribution of individuals or habitat-use patterns during the life of the Project. It is unlikely that implementing the Proposed Action would result in a decline in local or regional migratory bird populations because birds would be able to redistribute. In addition, undisturbed and suitable habitat exists outside of the Project Area.

3.2.7 Native American Concerns

3.2.7.1 Affected Environment

The Proposed Action is located within the traditional territory of the Western Shoshone. The BLM Tonopah Field Office initiated consultation for the Proposed Action with the Timbisha Shoshone Tribe, Yomba Shoshone Tribe, and the Duckwater Shoshone Tribe by letter on November 14, 2014.

At the request of the Duckwater Shoshone Tribe, the BLM participated in a site visit with the Tribe's Environmental Coordinator on December 17, 2014. The BLM Battle Mountain District Native American Coordinator participated in a follow-up meeting with the Tribe on February 4, 2015. The Tribe identified no concerns with the Proposed Action; however, consultation is ongoing.

3.2.7.2 Environmental Consequences

No impacts regarding Native American concerns have been identified as a result of tribal consultation; however, in the event any prehistoric artifacts are encountered during implementation of the Proposed Action, the EPMs related to Native American concerns and cultural resources would be immediately implemented.

3.2.8 Noxious Weeds, Invasive and Non-native Species

3.2.8.1 Affected Environment

Noxious weeds, invasive and non-native species are species that are highly competitive, aggressive, and spread easily. They typically establish and infest disturbed sites and sites along roadsides and waterways. Changes in plant community composition from non-native plants into areas of native plant communities can change fire regimes and negatively affect habitat quality, biodiversity, and ecosystem structure and function.

Noxious weeds and invasive plant species have been defined as pests by law or regulation. The BLM defines a noxious weed as "a plant that interferes with management objectives for a given area of land at a given point in time" (BLM 2013a). The Federal Noxious Weed Act of 1974 (as amended by Section 15, Management of Undesirable Plants on Federal Lands, 1990) authorizes cooperation among federal and state agencies in the control of weeds. The BLM Battle Mountain District recognizes the current noxious weed list designated by the State of Nevada Department of Agriculture (NDOA) statute, found in NAC 555.010. Currently the list contains 47 noxious

weed species. When considering whether to add a species to the list, the NDOA makes a recommendation after consulting with outside experts and a panel comprising Nevada Weed Action Committee members. Per NAC 555.055, if a species is found probable to be "detrimental or destructive and difficult to control or eradicate," the NDOA, with approval of the Board of Agriculture, designates the species as a noxious weed. The species is then added to the noxious weed list in NAC 555.010. Upon listing, the NDOA would also assign a rating of "A," "B," or "C" to the species. The rating reflects the NDOA's view of the statewide importance of the noxious weed, the likelihood that eradication or control efforts would be successful, and the present distribution of noxious weeds within the state.

An "invasive species" is defined as a species that is non-native 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, signed February 3, 1999).

The BLM's policy relating to the management and coordination of noxious weed and invasive plant species is set forth in the BLM Manual 9015 – Integrated Weed Management (BLM 1992b). The BLM'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 2013b).

According to the 2014 field surveys and the baseline report prepared for the Project, no noxious weeds were detected within the Project Area. Invasive and non-native plant species observed within the Project Area but not classified as noxious weeds in the State of Nevada included: cheatgrass; prickly Russian thistle (*Salsola tragus*); redstem stork's bill (*Erodium cicutarium*); and saltlover (*Halogeton glomeratus*). These four invasive and non-native plant species were observed throughout the Project Area but were predominantly located in the western portion of the Project Area on the valley flats, as the valley flats were more degraded by cattle and wild horse grazing in comparison to the foothills within the eastern portion of the Project Area (Enviroscientists 2015).

3.2.8.2 Environmental Consequences

New surface disturbance of approximately 100 acres within the Project Area, as a result of the Proposed Action, could increase the potential for the spread and establishment of noxious weeds, invasive and non-native species. These impacts would be mitigated based on implementation of the EPMs outlined in Section 2.1.11. In addition, should a new population of noxious weeds be detected, IRC would coordinate with the BLM on methods for weed management.

3.2.9 Public Safety

3.2.9.1 Affected Environment

Primary public safety concerns in the Project Area would involve vehicle collisions between public vehicles traveling on Project access roads and Project-related vehicles, and any open excavations or mine workings. In the Project Area vicinity, the road surfaces are unpaved; curves are generally not banked, and not designed for high-speed travel.

3.2.9.2 Environmental Consequences

The EPMs in Section 2.1.11 state all equipment and other facilities would be maintained in a safe and orderly manner. Project-related vehicles would maintain appropriate speeds to ensure public safety. In addition, sumps would be constructed with a sloped end for easy egress with a recommended slope angle of 3H:1V. Any open mine shafts would be fenced or BLM-approved signs would be posted warning of open shafts. Therefore, impacts to public safety are not anticipated. This resource is not carried forward in additional analysis.

3.2.10 Rangeland Management/Livestock Grazing

3.2.10.1 Affected Environment

The Project Area is located within the Stone Cabin Grazing Allotment. The allotment contains 389,499 acres on BLM-administered public land, 7,552 acres on other federal land, and 3,665 acres on private land. The active permitted animal unit months (AUMs) on BLM-administered land total 13,963. The number of acres per AUM is 27. An AUM represents the amount of forage required to support one cow and her calf for one month. The Project Area contains 1,481 acres or 0.4 percent of the entire allotment. The current permittees in the Stone Cabin Allotment are Colvin & Son LLC and Stone Cabin Ranch LLC. The current authorization for cattle grazing for Colvin & Son LLC is from March 1, 2011, through February 28, 2021, and the current authorization for cattle grazing for Stone Cabin Ranch LLC is from March 1, 2013, to February 28, 2023. No cattle guards, fences, or other rangeland improvements are present within the Project Area. There are also no ponded areas within the Project Area that would attract livestock.

3.2.10.2 Environmental Consequences

The Project would disturb 100 acres or 0.03 percent of the entire allotment. This disturbance would equal approximately four AUMs or approximately 0.03 percent of the total AUMs in the allotment. The impacts associated with this Project are temporary. Disturbance would be created incrementally and dispersed throughout the Project Area and would be reclaimed and revegetated concurrently, when feasible.

3.2.11 Recreation

3.2.11.1 Affected Environment

Recreational uses of the public land in the vicinity of the Project Area consist primarily of dispersed recreation activities including: motorcycle and OHV riding; horseback riding; hunting; mountain bicycling; camping; driving for pleasure; hiking; and star-gazing (Nye County 2011). The Project Area is located within NDOW Hunt Unit 251. Hunting of mule deer, pronghorn antelope, small mammals and upland and migratory game birds occurs in this hunt unit.

3.2.11.2 Environmental Consequences

The Proposed Action would result in up to 100 acres of temporary surface disturbance, which would reduce opportunities for dispersed recreation within the Project Area. However, no

impacts are anticipated as a result of the Proposed Action, since there is other similar land available to dispersed recreational visitors in the vicinity of the Project Area. In addition, all roads would remain open during Project activities, and there would be no fencing to preclude use. Therefore, this resource is not carried forward in additional analysis.

3.2.12 Socioeconomics

3.2.12.1 Affected Environment

The Project Area is located in Nye County approximately 60 miles southeast of Tonopah, Nevada. Nye County is located in south central Nevada and encompasses approximately 18,147 square miles. Nye County's southern border is shared with Inyo County, California. Eight other Nevada counties surround Nye County including Esmeralda and Mineral Counties to the west, Churchill, Lander, Eureka, and White Pine Counties to the north, and Lincoln and Clark Counties to the east. The federal government administers approximately 98 percent of the land in Nye County (Nye County 2011). US Highway 6 traverses the county in a southwest to northeast direction, from Tonopah, Nevada, to the White Pine County border. US Highway 95 travels through the County from Tonopah, Nevada, southeast towards Amargosa Valley.

Unincorporated towns in Nye County include Amargosa Valley, Beatty, Gabbs, Manhattan, Pahrump, Round Mountain and Tonopah. According to the US Census Bureau, the population of Nye County in 2014 was 42,282, with over 80 percent of the population living in Pahrump, Nevada. The estimated median household income in Nye County between 2009 and 2013 was approximately $39,876 (US Census Bureau 2015). The labor force was 16,320 in 2014, with a ten percent unemployment rate (Department of Employment, Training, and Rehabilitation [DETR] 2015a). The largest employment industries in Nye County include mining (Round Mountain Gold Corp.); engineering (National Securities Technologies); and local government (e.g., Nye County School District and Nye County) (DETR 2015b).

3.2.12.2 Environmental Consequences

A temporary workforce of up to eight employees or contractors could work in the Project Area at any given time. Such personnel would be temporary and would not be likely to impact public schools, the permanent housing market, or other public or private services associated with permanent workers. The workers would most likely stay in Tonopah and would contribute positively to the local economy through increased spending for construction goods, retail trade, accommodations, and other services. This would have a small, temporary positive effect on local businesses in Nye County.

3.2.13 Soils

3.2.13.1 Affected Environment

Information regarding soils within the Project Area was obtained from the US Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS). The soil associations within the Project Area consist of the following: Unsel-Hollywell-Lyx association; Unsel-Watoopah association; Stewval-Downieville-Rock outcrop association; Stewval-Rock

outcrop association; and Eastgate-Lyx-Stumble association. Soil associations within the Project Area are shown on Figure 3.2.13 and listed in Table 3.2-4.

The Unsel-Hollywell-Lyx association is comprised of 40 percent Unsel gravelly fine sandy loam, 25 percent Hollywell gravelly loamy sand, and 25 percent Lyx gravelly loamy sand. This association occurs in approximately 1,000 acres of the Project Area. The Unsel series consists of very deep, well-drained soils that formed in mixed alluvium. The Hollywell series consists of very deep, well-drained soils that formed in alluvium from mixed extrusive igneous rocks. The Lyx series consists of very deep, somewhat excessively drained soils that formed in mixed alluvium of dominantly volcanic rock sources (NRCS 2002).

The Unsel-Watoopah association is comprised of 70 percent Unsel gravelly fine sandy loam, and 15 percent Watoopah gravelly loamy sand. This association occurs in approximately 258 acres of the Project Area. The Watoopah series consists of very deep, well-drained soils that formed in alluvium from tuff and related volcanic rocks (NRCS 2002).

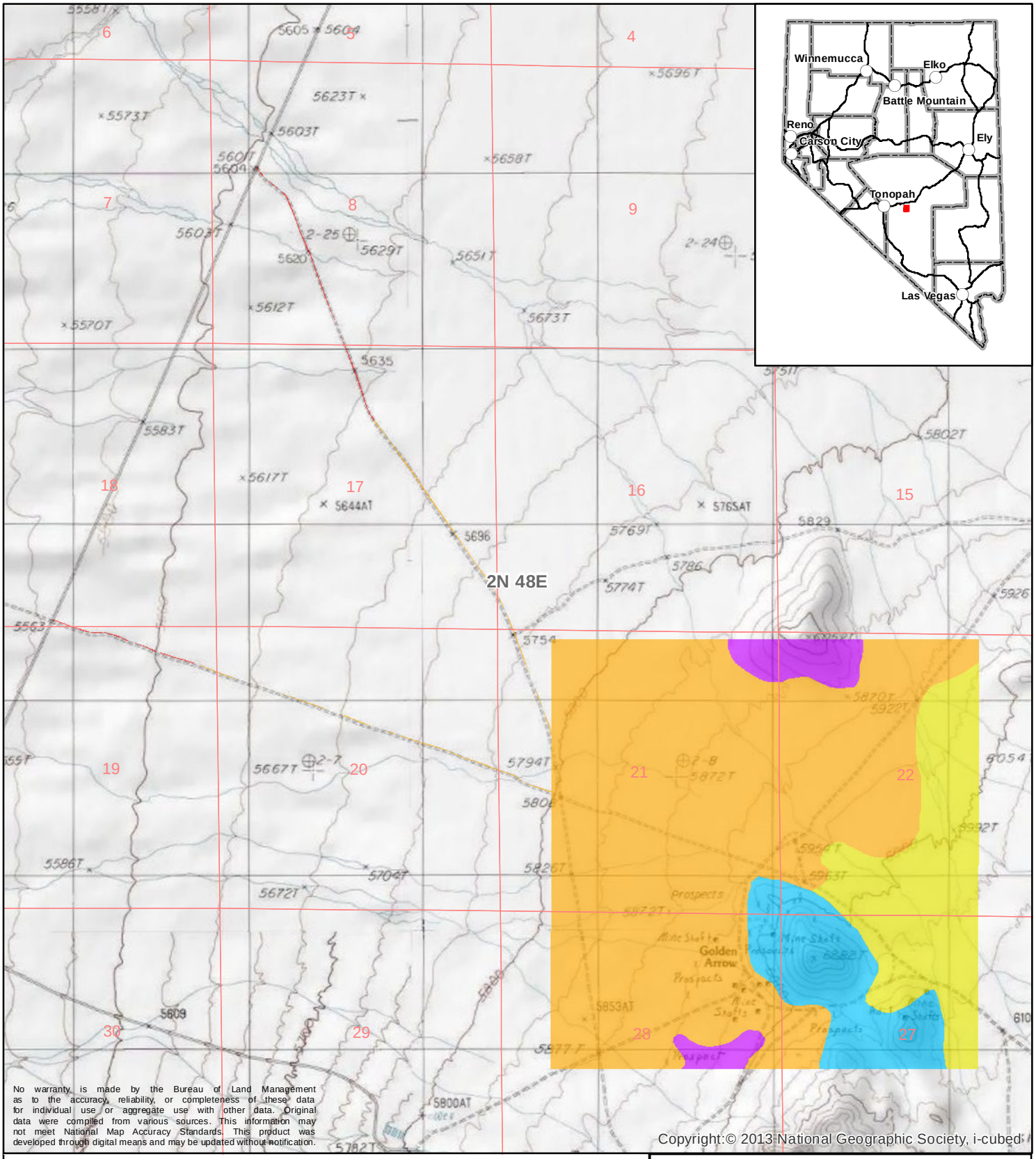
The Stewval-Downieville-Rock outcrop association is comprised of 35 percent Stewval very cobbly fine sandy loam, 35 percent Downieville very cobbly fine sandy loam, and 15 percent rock outcrop. This association occurs in approximately 160 acres of the Project Area. The Stewval series consists of shallow and very shallow, well-drained soils that formed in residuum and colluvium from rhyolite and related rocks. The Downieville series consists of very shallow and shallow, well-drained soils that formed in residuum and colluvium from andesite, rhyolite, and metavolcanic rock (NRCS 2002).

The Stewval-Rock outcrop association is comprised of 70 percent Stewval very gravelly fine sandy loam, and 15 percent rock outcrop. This association occurs in approximately 60 acres of the Project Area.

The Eastgate-Lyx-Stumble association is comprised of 40 percent Eastgate loamy sand, 35 percent Lyx gravelly loamy sand, and 20 percent Stumble loamy sand. This association occurs in approximately three acres of the Project Area. The Eastgate series consists of very deep, well-drained soils that formed from mixed alluvium and aeolian deposits on nearly level to gently sloping alluvial fans, fan skirts, and fan piedmonts often with sand sheets. The Lyx series consists of very deep, somewhat excessively drained soils that formed in mixed alluvium of dominantly volcanic rock sources. The Stumble series consists of very deep, somewhat excessively drained soils that formed in mixed sandy alluvium and aeolian deposits (NRCS 2002).

3.2.13.2 Environmental Consequences

The total surface disturbance associated with the Proposed Action would impact up to 100 acres, or approximately 6.7 percent of the Project Area, and could occur in any of the soil series within the Project Area (Table 3.2-4). Wind erosion hazard is moderate to high for all soil classifications. Erosion hazard from water is low for all soil classifications. The potential surface disturbance to each soil series as a result of the Proposed Action is shown in Table 3.2-5.



Explanation

- Eastgate-Lyx-Stumble association (1035)
- Stewval-Downeyville-Rock outcrop association (1227)
- Stewval-Rock outcrop association (1223)
- Unsel-Hollywell-Lyx association (1134)
- Unsel-Watoopah association (1135)

BATTLE MOUNTAIN DISTRICT OFFICE
Tonopah Field Office
1553 South Main Street
Tonopah, Nevada 89049

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BUREAU OF LAND MANAGEMENT

GOLDEN ARROW EXPLORATION PROJECT

Soil Associations within the Project Area

Figure 3.2.13

10/06/2015

Table 3.2-4: Summary of Soil Mapping Units and Characteristics

Association	Soil Series	Range in Depth to Restrictive Surface	Landscape position/ % Slope	Profile Soil Texture	Permeability	Erosion Hazard by Water	Erosion Hazard by Wind
Unsel-Hollywell-Lyx (1134)	Unsel	More than 80 inches	Fan remnants 2 to 8%	Gravelly fine sandy loam	Moderately rapid	Low	Moderate
	Hollywell	More than 80 inches	Inset fans 4 to 8%	Gravelly loamy sand	Rapid	Low	High
	Lyx	More than 80 inches	Inset fans 0 to 8%	Gravelly loamy sand	Rapid	Low	High
Unsel-Watoopah (1135)	Unsel	More than 80 inches	Fan remnants 2 to 4%	Gravelly fine sandy loam	Moderately rapid	Low	Moderate
	Watoopah	More than 80 inches	Fan remnants 2 to 8%	Gravelly loamy sand	Rapid	Low	High
Stewval-Downieville-Rock outcrop (1227)	Stewval	4 to 14 inches (lithic bedrock)	Hillsides 4 to 30%	Very cobbly fine sandy loam	Moderately rapid	Low	Moderate
	Downieville	4 to 14 inches (lithic bedrock)	Hillsides 8 to 30%	Very cobbly fine sandy loam	Moderately rapid	Low	Moderate
	Rock outcrop	--	Peaks	--	--	--	--
Stewval-Rock outcrop (1223)	Stewval	4 to 14 inches (lithic bedrock)	Hillsides 4 to 8%	Very gravelly fine sandy loam	Moderately rapid	Low	Moderate
	Rock outcrop	--	Peaks	--	--	--	--
Eastgate-Lyx-Stumble (1035)	Eastgate	More than 80 inches	Inset fans 0 to 8%	Loamy sand	Rapid	Low	High
	Lyx	More than 80 inches	Inset fans 2 to 8%	Gravelly loamy sand	Rapid	Low	High
	Stumble	More than 80 inches	Inset fans 0 to 4%	Loamy sand	Rapid	Low	High

Source: NRCS 2002

Table 3.2-5: Potential Surface Disturbance to each Soil Series in the Project Area

Soil Series	Acres in the Project Area	Potential Surface Disturbance	
		Acres	Percent
Unsel-Hollywell-Lyx (1134)	1,000	0 to 100	0 to 10
Unsel-Watoopah (1135)	258	0 to 100	0 to 39
Stewval-Downieville-Rock outcrop (1227)	160	0 to 100	0 to 63
Stewval-Rock outcrop (1223)	60	0 to 60	0 to 100
Eastgate-Lyx-Stumble (1035)	3	0 to 3	0 to 100

Potential impacts to soils would be reduced by the EPM outlined in Section 2.1.11 requiring the use of BMPs to limit soil erosion and to reduce sediment runoff from disturbed areas during construction and operations. Topsoil cut for new exploration roads could result in the mixing of soil associations and the loss of soil characteristics. Soils would be cut and used as temporary construction fill as part of the road and drill pad construction. Subsequent reclamation efforts would place the soils back in the temporary cuts. Furthermore, as a result of reclamation of all drill sites, sumps, overland travel and road construction, the post-exploration topography is expected to be similar to pre-Project conditions, which would reestablish the site characteristics of slope and aspect of soil associations within the Project Area.

3.2.14 Special Status Species

3.2.14.1 Affected Environment

The BLM's policy for management of special status species is in the BLM Manual Section 6840 (BLM 2008b). Special status species include the following:

- Federally-listed Threatened or Endangered Species: Any species the USFWS has listed as an endangered or threatened species under the ESA throughout all or a significant portion of its range;

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

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

- Delisted Species: Any species in the five years following their delisting;

- BLM Sensitive Species: Species designated as Sensitive by the BLM State Director because they meet the following criteria: Native species found on BLM-administered lands for which the BLM has the capability to significantly affect the conservation status of the species through management, and either: 1) there is information that a species has undergone, is undergoing, or is predicted to undergo a downward trend such that the viability of the species or a distinct population segment of the species is at risk across all or a significant portion of the species range; or 2) the species depends on ecological refugia or specialized or unique habitats on BLM-administered lands, and there is

evidence that such areas are threatened with alteration such that the continued viability of the species in that area would be at risk (BLM 2008b); and

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

To further support the preparation of this EA, the USFWS, NNHP, and NDOW were contacted to obtain a list of threatened, endangered, and sensitive species that have the potential to occur within the Project Area (USFWS 2014; NNHP 2014; and NDOW 2014). In addition, the most recent BLM Sensitive Species List, which includes threatened and endangered species, was evaluated to determine if any species had the potential to occur within the Project Area (Enviroscientists 2015). Information from the NNHP indicates no federally threatened or endangered plant or animal species have the potential to occur within the Project Area; however, potential habitat may be available for the Nevada dune beardtongue (*Penstemon arenarius*), the bashful beardtongue (*Penstemon pudicus*), and the pale kangaroo mouse (*Microdipodops pallidus*), all BLM sensitive species (NNHP 2014). The BLM has indicated there also may be potential habitat for dark kangaroo mouse (*Microdipodops megacephalus*), also a BLM sensitive species. The USFWS reported the following Threatened, Endangered, or Candidate species may be affected by Project activities: southwestern willow flycatcher (*Empidonax traillii extimus*) (entire population), an Endangered species; yellow-billed cuckoo (*Coccyzus americanus*) (Western US Distinct Population Segment), a Threatened species; and greater sage-grouse (*Centrocercus urophasianus*) (entire population), a Candidate species (USFWS 2014). In September 2015, USFWS made a determination to remove greater sage-grouse from the Candidate list (USFWS 2015). No riparian habitat or perennial drainages exist within the Project Area; therefore, there is no suitable habitat for southwestern willow flycatcher or yellow-billed cuckoo within the Project Area.

Botanical surveys were conducted for the Project Area May 31 through June 4, 2014, by Enviroscientists. Wildlife and bat surveys were conducted August 20 to 23, 2014, by Wildlife Resource Consultants. The surveys included the following: a vegetation community assessment; verification of ecological sites; a sensitive plant species survey and habitat assessment; a noxious weed inventory; a general wildlife habitat assessment and species inventory; a pygmy rabbit (*Brachylagus idahoensis*) survey and habitat assessment; bat habitat assessment and acoustic survey; a greater sage-grouse habitat assessment; a burrowing owl habitat assessment; a rodent habitat assessment; an ungulate survey; a raptor survey; and a golden eagle survey.

BLM Sensitive Plant Species

Plants

One BLM Sensitive plant species, sand cholla, was identified and 160 occurrences were recorded within the Project Area during the May/June 2014 field surveys. The majority of the 160 sand cholla occurrences within the Project Area were located on the valley flats of the Inter-Mountain Basins Mixed Salt Desert Scrub vegetation community where the dominant plant species within the vegetation community were generally yellow rabbitbrush (*Chrysothamnus viscidiflorus* ssp. *puberulus*), bud sagebrush (*Picrothamnus desertorum*), and James' galleta (*Pleuraphis jamesii*). Occasionally, sand cholla cacti were documented along the interface between the Inter-Mountain Basins Mixed Salt Desert Scrub vegetation community and sagebrush dominated vegetation

community (i.e., Great Basin Xeric Mixed Sagebrush Shrubland and Inter-Mountain Basins Big Sagebrush Shrubland). Within these ecotonal landscapes, sagebrush species may also have been classified as dominant plant species.

Bashful beardtongue was ruled out in the Biological Assessment Protocol (Enviroscientists 2014) as having suitable habitat in the Project Area. Nevada dune beardtongue was not identified in plant surveys, and BLM personnel determined that although it has been found in the north end of the valley, and the Project Area includes portions of the same ecologic site, the location of the plant and the Project Area have different soil types.

Four additional cactus species were observed within the Project Area: 1) Engelmann's hedgehog cactus (*Echinocereus engelmannii*); 2) plains prickly pear (*Opuntia polyacantha*); 3) spinystar (*Escobaria vivipara* var. *vivipara*); and 4) Wiggins' cholla (*Cylindropuntia echinocarpa*). Engelmann's hedgehog cactus, plains prickly pear cactus, and Wiggins' cholla were present sporadically throughout the Project Area, while the distribution of spinystar was generally concentrated in the southern portion of the Project Area.

BLM Sensitive Wildlife Species

Bats

Acoustic bat surveys were conducted August 20 through 22, 2014. A visual review of the United States Geological Survey (USGS) Stone Cabin Ranch SE and Stinking Spring quadrangles showed nine mapped mineshafts and one adit in the Project Area (USGS 1987a; USGS 1987b). Six additional mineshafts, one missed on the USGS quadrangle and five that were not mapped on the USGS quadrangles, were located during the wildlife survey. Of the 16 abandoned mine workings within the Project Area, 12 were identified to provide suitable day roosting bat habitat, including one adit and 11 shaft openings. The adit and all but one of the shafts are fenced.

Acoustic bat detectors were placed in front of these 12 features. Bats were recorded at the adit and six of the shafts. The sample near the adit recorded high and consistent numbers of the BLM Sensitive long-eared myotis (*Myotis evotis*). The BLM Sensitive small-footed myotis (*Myotis ciliolabrum*) was recorded at five of the six shafts sampled. The big brown bat (*Eptesicus fuscus*) and Townsend's big-eared bat (*Corynorhinus townsendii*), both BLM Sensitive species, were also detected during the acoustic surveys within the Project Area. The Yuma myotis (*Myotis yumanensis*) and/or the California myotis (*Myotis californicus*) were potentially detected within the Project Area. Unless the call quality is very good, the shape of the sonogram for these species can be difficult to differentiate from one another. Due to the poor quality of the recording, it was not possible to confirm the presence of either species with certainty.

The four shafts that did not provide suitable day roosting habitat were either too shallow (less than 20 feet deep) or are slightly deeper but have no locations where bats could roost during the day (e.g., the sides of the shafts are smooth and lack wood collars or other timber within the shaft, whereas shallow shafts with wood collars could provide potential roost sites for bats). No abandoned mine features were observed within a 0.25-mile buffer surrounding the Project Area.

Dark Kangaroo Mouse

Potentially suitable habitat for the dark kangaroo mouse is present in the central eastern portion of the Project Area and another area close to the Project Area north central boundary. The habitat requirements for the dark kangaroo mouse are broad, and the presence of potential habitat does not specifically indicate this species is present in the Project Area. The isolated patches of gravelly, sandy soil are small; however, dark kangaroo mouse is known to occupy small isolated patches with much gravel overlay (Hafner and Upham 2011). There were no dark kangaroo mice observed within the Project Area during field surveys.

Pale Kangaroo Mouse

There is also potentially suitable habitat for the pale kangaroo mouse, which occupies similar habitat but with sandier and/or loamier soil which occurs in the western part of the Project Area. This species was also not observed during field surveys.

Western Burrowing Owl

Suitable western burrowing owl habitat consists of annual and perennial grasslands and scrubland characterized by low-growing vegetation, and contains burrows created by fossorial mammals or man-made structures such as cement culverts that can provide protection, shelter, and nests. Potentially suitable habitat is present throughout the lower elevation portions of the Project Area in the Inter-Mountain Basins Mixed Salt Desert Scrub community. Two western burrowing owl active burrows and one potential burrow were detected during the August 2014 field surveys. The first burrow had whitewash and an owl pellet near the entrance. The second active burrow measured approximately eight inches wide by five inches tall with several western burrowing owl pellets at the entrance, along with insect remains and fur. A third burrow that could potentially be utilized by a western burrowing owl was observed. No sign of activity was observed. A western burrowing owl feather was observed near a small rock outcrop with raptor white wash present. The sparse sign in the Project Area suggests casual or migratory use by western burrowing owls. No evidence of nesting, such as prey remains and molted feathers, was observed in any of the burrows within the Project Area (Enviroscientists 2015).

Loggerhead Shrike

Loggerhead shrikes are typically associated with greasewood and sagebrush communities. They also frequent open country in valleys and foothills. Dense stands of trees and shrubs are used for nesting and roosting sites, as well as for hunting perches (NatureServe 2015). Loggerhead shrikes were observed every day in the Project Area and in various locations throughout the Project Area; however, behaviors indicative of nesting, such as transporting food, feeding young, carrying nesting material, copulations, and auditory calls of chicks, were not observed (Enviroscientists 2015).

Greater Sage-Grouse

No GRSG or GRSG scat was observed in the Project Area during the 2014 field survey. The nearest known GRSG lek is approximately 22 miles from the Project Area and is of unknown

active/inactive status; the nearest known active lek is approximately 42 miles from the Project Area (NDOW 2014). BLM's GRSG Plan Amendment (BLM 2015a) identifies and provides management direction for a total of over 20 million acres of GRSG habitat as PHMA, GHMA, or OHMA. As identified in the GRSG Plan Amendment, BLM-administered lands in the Battle Mountain District include 3,727,500 acres of GRSG habitat, of which 1,163,600 acres are designated as OHMA, defined as containing seasonal or connectivity habitat areas for GRSG (BLM 2015a, p. 1-6, 1-7). The southeastern portion of the 1,481-acre Project Area intersects approximately 78 acres of OHMA (Figure 3.2.14). Approximately 51 acres, or 65 percent, is within the Unsel-Watoopah soil association and Loamy 5-8 PZ ecological site, with approximately 27 acres (35 percent) in the Stewval-Downeyville-Rock outcrop association and Shallow Calcareous Loam 8-12 P.Z. ecological site. None of the currently proposed Project activities, including drill site or access road surface disturbance would occur within OHMA. Depending on results of early phases of exploration, in the future IRC may propose to expand activities into OHMA. Applicable GRSG Plan Amendment Management Decisions and Required Design Features for OHMA are included in the Proposed Action (EA Section 2.1.12).

Golden Eagle

There is no golden eagle nesting habitat within the Project Area, but potential golden eagle nesting habitat exists within the southeastern portion of the four-mile buffer of the Project Area. No golden eagles or their sign were observed during the August 2014 golden eagle survey within the Project Area or four-mile buffer; however, it is acknowledged that the surveys were not conducted during the appropriate time of year to appropriately observe breeding or nesting behavior. NDOW did locate a golden eagle nest but the nest was located outside the four-mile buffer required by the USFWS for golden eagle surveys for mineral exploration projects.

3.2.14.2 Environmental Consequences

Sand cholla

The BLM Sensitive plant sand cholla was identified in the Project Area during 2014 field surveys, with approximately 160 occurrences being recorded. Based on the locations of the sand cholla mapped during the surveys, sand cholla occur in areas of proposed Phase I disturbance. In order to minimize impacts to sand cholla, IRC would conduct angle/directional drilling in the locations where sand cholla occur within proposed disturbance areas. If angle/directional drilling is not possible, then IRC would transplant the individual plants to other areas within or adjacent to the Project Area that satisfy the habitat requirements of the species and monitor their survival.

Bats

Direct and indirect impacts to BLM Sensitive bat species could occur from drilling activities. Angle/directional drilling could intersect with the underground mine workings and result in change of airflow patterns, and the vibrations from drilling could impact the stability of the mine workings. Bats could also be displaced by noise and Project activity. In order to avoid impacts to BLM Sensitive bats and their habitat, as stated in the EPM outlined in Section 2.1.11, IRC would not conduct surface disturbing activities within 200 feet of the existing adit and 11 shaft openings that have been identified as potential bat habitat, unless a qualified biologist determines that bats are not residing in or near these features. If evidence of maternity use is found, BLM

may identify additional measures to avoid disturbance during the breeding season. With these measures, impacts to BLM Sensitive bat species should be minor.

Dark Kangaroo Mouse and Pale Kangaroo Mouse

Ground-disturbing activities may destroy burrows of any kangaroo mouse that may be present, and may potentially cause direct mortality. Reducing vegetation would reduce the amount of forage available in the immediate area. The magnitude of these effects would depend on the size and density of any kangaroo mouse population in the area. The Project Area represents a small percentage of the available habitat throughout the range; therefore, the effects on a range-wide scale would be minor.

Loggerhead shrike and Western burrowing owl

Loggerhead shrike was observed and two active and one potential western burrowing owl burrows were observed in the Project Area during 2014 field surveys. Approximately 100 acres of habitat would be disturbed over the potential ten-year Project life as a result of surface disturbing activities associated with the Proposed Action. Of the 100 acres of disturbance proposed, approximately nine acres of surface disturbance was associated with Notice-level exploration activities. Approximately 91 acres of proposed surface disturbance activities are associated with phased mineral exploration activities that could occur anywhere throughout the Project Area. Vegetation removal, including ground disturbance, would result in a temporary reduction of breeding habitat for sensitive avian species in the Project Area. Project-related disturbance would result in a temporary loss of foraging habitat for sensitive avian species. This acreage would not all be disturbed at one time due to the phased nature of mineral exploration activities. In addition, noise and disturbance activities generated from Project operations would have the potential to cause sensitive avian species to avoid utilizing specific locations within the Project Area, or the entire Project Area itself, for foraging and other activities.

The Proposed Action includes EPMs to avoid nesting migratory birds, including sensitive avian species (Section 2.1.11); therefore, the destruction of active nests or disruption of breeding behavior would not occur as a result of surface disturbing activities associated with the Proposed Action. In addition, no surface disturbing activities would occur between April 1 and July 31 within 0.25 mile of an active burrowing owl nest.

Reclamation would begin at the earliest practicable time within the areas considered inactive, without favorable mineral potential, or completed. Reestablishment of vegetation would take place within three years of Project reclamation. Although improvement of disturbed habitat could occur in the Project Area as surface disturbance is reclaimed and revegetated and a greater amount of habitat becomes available for loggerhead shrike, short-term indirect impacts to loggerhead shrike would occur due to the short-term temporary loss of vegetation as a result of Project-related surface disturbance.

Surface disturbing activities may also increase the spread of noxious weeds and invasive plant species. Cheatgrass, prickly Russian thistle, redstem stork’s bill, and saltlover, all invasive and non-native species, were observed within the Project Area. The quality of the habitat may be reduced for loggerhead shrike if noxious weeds and invasive plant species increase within the

Project Area. IRC would utilize BMPs, as outlined in Section 2.1.11, to reduce the potential for the increase of noxious weeds and invasive plant species both during surface disturbance and reclamation.

Greater Sage-Grouse

None of the currently proposed Phase I Project activities, including drill site and access road construction, would occur within OHMA. If in the future IRC were to propose to expand activities into OHMA, those activities would be required to comply with GRSG Plan Amendment management direction for OHMA, including all applicable management decisions and the applicable RDFs provided in GRSG Plan Amendment Appendix C and listed in Section 2.1.12 of this EA.

Potential direct effects to GRSG of any future Project-related activities in OHMA could include harassment, disturbance/displacement, vehicle impacts, and drowning in sumps. Potential indirect effects to GRSG could include: increasing predation by attracting predators with refuse or by providing perches for avian predators; increasing disease by creating standing water where mosquitoes that vector West Nile virus could breed; and any effects that would degrade habitat quantity, quality or connectivity, which could include ground-disturbing activities, increasing weeds, or igniting wildfires.

Any GRSG using the area would likely be temporarily displaced by noise and human presence during Project activities. Direct mortality to any GRSG using the area would be minimized per GRSG Plan Amendment RDFs by vehicle speed limits, limiting public access, and by constructing sumps with a sloped end for ease of egress at a recommended slope angle of 3H:1V. Project personnel would be instructed to avoid harassment and disturbance of wildlife, and pets would not be permitted on site; this would help minimize direct injury and mortality. The potential to indirectly increase mortality due to predation would be minimized by installing anti-perching devices on tall structures, which would limit perching opportunities for avian predators, and prohibiting refuse disposal on site, which would prevent attracting scavengers that can also prey on GRSG. The likelihood of increased mortality due to West Nile virus would be minimal because most of OHMA is within the permeable Unsel-Watoopah soil association where water contained in sumps is unlikely to stand long enough for mosquitoes to breed. If any water stands for more than seven days in a sump in water temperatures above 80° F, IRC would inspect for mosquito larvae. If mosquito larvae are found, IRC would treat the water with a BLM-approved larvicide and/or adopt other appropriate measures in consultation with the BLM. See EA Section 2.1.12.

Applicable GRSG Plan Amendment RDFs addressing habitat effects during Project activities include several measures to minimize disturbance to vegetation and soils and to prevent the spread of weeds (EA Section 2.1.12). Clustering disturbances to the extent possible would help avoid fragmentation of the 78 acres of OHMA within the Project Area (Figure 1.1.3). These RDFs, together with EPMs that minimize the effects of wildfire (EA Section 2.1.11), would help limit effects to GRSG habitat during any future Project activities in OHMA. The Project would not contribute to larger-scale habitat fragmentation because the Project Area is not surrounded by GRSG habitat but is at the edge of an outlying part of some of the southernmost mapped habitat in Nevada (Figure 1.1.3).

Any future drilling in the OHMA would impact vegetation and soils, with the total surface disturbance dependent upon on the number of drill sites, access routes required, etc. Maximum surface disturbance on public land throughout the Project Area (Table 2.1-1), excluding the laydown area and access road widening (planned for Phase I outside OHMA) and meteorological station (not allowed in OHMA), would be 16.4 acres for Phase I and 46 acres for subsequent phases, totaling 62.4 acres. It is assumed that not all 46 acres to be potentially disturbed in subsequent phases would occur in OHMA; specific locations of drill sites and roads to occur in subsequent phases would be determined from the results of previous phases. The actual acreage proposed to be disturbed within OHMA under subsequent phases would be determined prior to each phase.

Project activities would occur over approximately ten years, following which IRC would restore any surface disturbance in OHMA to meet GRSG habitat needs appropriate to the OHMA designation per GRSG Plan Amendment RDFs GEN 9, 16 and 17 and LOC 5 and 6 (EA Section 2.1.12), returning disturbed land to a pre-Project level of productivity (EA Section 2.1.9). Regrading and reseeding would occur within two years of Project completion, and monitoring would be conducted three years beyond regrading and reseeding or until revegetation success is achieved (EA Section 2.9.1).

The BLM is currently developing an MOU with the State of Nevada's Sagebrush Ecosystem Technical Team (SETT) reflecting the GRSG Plan Amendment decision to consider the State 's Conservation Credit System as a means of mitigating impacts to GRSG habitat with off-site restoration projects. The Credit System uses a Habitat Quantification Tool to quantify functional acres in terms of percent habitat function and area in acres. Credits and debits represent the difference between baseline and post-project functional acres, adjusted by other relevant factors including distance between the debit site and offsetting credit site(s) within Nevada (NNHP and SETT 2014).

The GRSG Plan Amendment does not require application of Credit System mitigation or a net conservation standard in OHMA, but BLM has the discretion to apply mitigation through the NEPA process (BLM 2015b). No off-site mitigation is proposed at this time, because no work is currently proposed within OHMA and habitat function is required to be fully restored post-Project regardless of location within the Project Area. The MOU would determine the specific factors of how and when BLM and applicants would use the Credit System (BLM 2015c). If any future Project activity is proposed within the OHMA, it would be evaluated for Credit System applicability under the terms of any MOU in place at that time.

Golden Eagle

Project activities would not directly affect any potential golden eagle nesting habitat, as the potential nesting habitat is located approximately one mile southeast of the Project Area. Although the field surveys were conducted in an inappropriate time of the season to adequately detect nesting and breeding behavior, there were no nests observed in the habitat located southeast of the Project Area. In order to reduce any potential impacts to the golden eagle nesting habitat, the EPM outlined in Section 2.1.11 states that clearance surveys would be conducted during nesting season (March 1 through July 31). If an active golden eagle nest is found, BLM and NDOW would coordinate to determine an appropriate buffer around the nest, and

appropriate restrictions and/or monitoring to ensure that the nesting birds' behavior is not disrupted, all of which may vary according to factors such as terrain and the location and type of potential disturbance. IRC's biologist would inform IRC when the eagles have left the nest. IRC would not conduct any drilling or surface disturbing activities within the buffer zone until the biologist determines that the eagles are no longer nesting.

3.2.15 Vegetation

3.2.15.1 Affected Environment

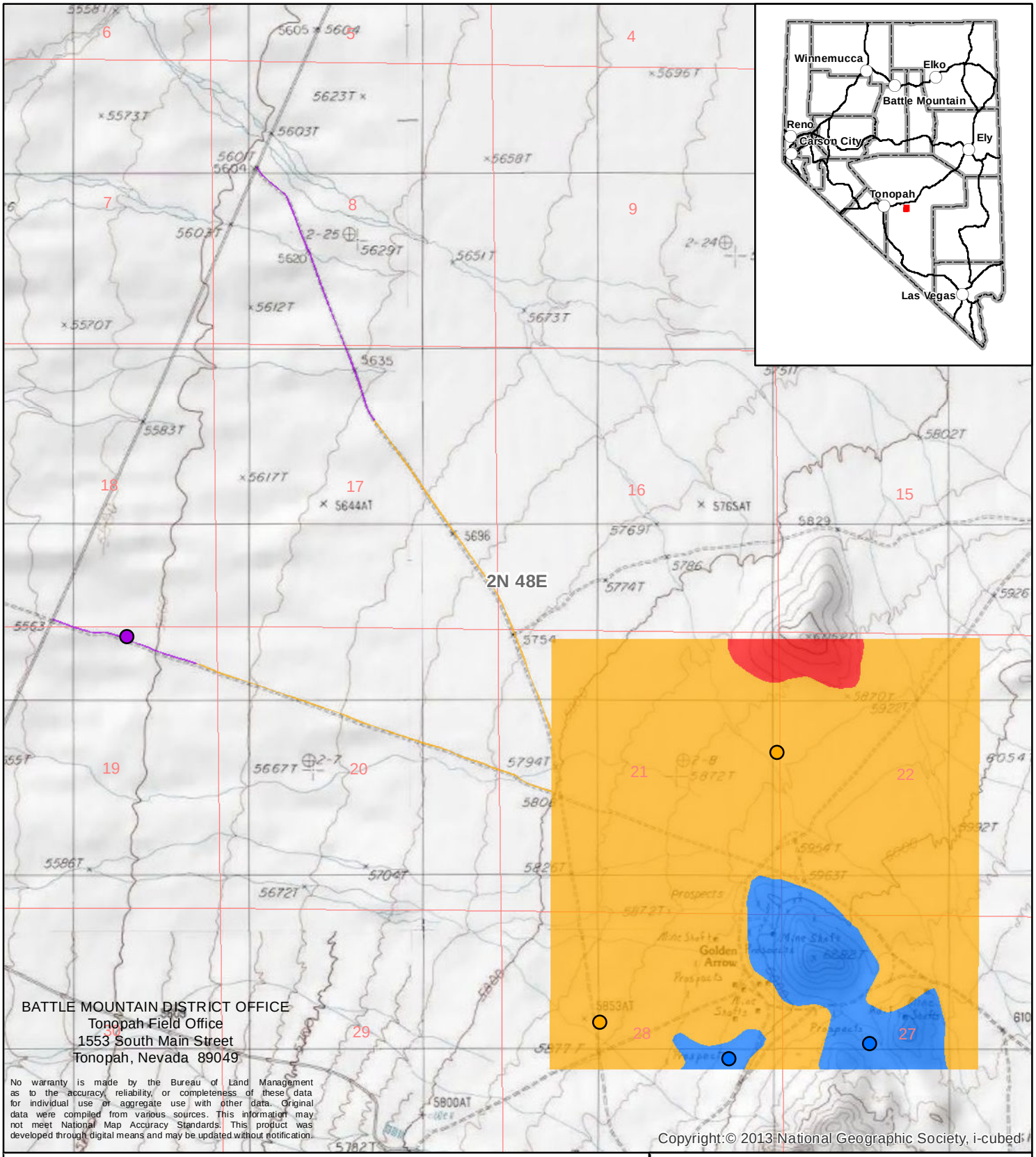
The Project Area is within the Intermountain Region, Great Basin Division, Central Great Basin Section floristic zone (Cronquist et al. 1972). The following four ecological sites were observed within the Project Area during the May/June 2014 field surveys: Loamy 5-8" P.Z. (Ecological Site ID No. R029XY017NV); Sandy Loam 5-8" P.Z. (Ecological Site ID No. R029XY046NV); Shallow Calcareous Loam 8-12" P.Z. (Ecological Site ID No. R029XY008NV); and Loamy Slope 5-8" P.Z. (Ecological Site ID No. R029XY022NV) (Figure 3.2.15).

Loamy 5-8" P.Z.

The Loamy 5-8" P.Z. ecological site (#R029XY017NV) covers the majority of the Project Area (including large portions of both access roads) at approximately 1,258 acres. Two reference locations were sampled within this ecological site, both on alluvial plains with one percent slopes, corresponding with the topographic features described in the ecological site description (ESD) for this ecological site and within the elevation range described for the site (i.e., 4,400 to 6,500 feet amsl). The reference locations also matched the ESD in terms of surface soil textures (gravelly) and rooting depths (14 inches or greater) (NRCS 2003a).

The two reference locations also matched the vegetation community described by the ESD fairly well. The plant composition at both reference locations was approximately 76 percent shrubs, 22 percent grasses, and two percent forbs while the ESD describes 50 percent shrubs, 45 percent grasses, and five percent forbs.

The dominant shrub species at both reference locations were yellow rabbitbrush and shadscale saltbush (*Atriplex confertifolia*). Other prevalent shrub species at both reference locations were bud sagebrush, spiny hopsage (*Grayia spinosa*), green molly (*Bassia americana*), and winterfat (*Krascheninnikovia lanata*). Additional shrub species at the first reference location were littleleaf horsebrush (*Tetradymia glabrata*) and black sagebrush (*Artemisia nova*); and at the second, Nevada jointfir *(Ephedra nevadensis*). All of these shrubs except for littleleaf horsebrush are included in the ESD. However, the ESD describes the dominant shrub species as shadscale saltbush and bud sagebrush and states that a shift to dominance of yellow rabbitbrush and shadscale saltbrush can occur in response to grazing pressure by cattle and horses (NRCS 2003a), as may be the case in the Project Area which overlaps the Stone Cabin grazing allotment and the Stone Cabin Herd Management Area. Similar deviations from the ESD observed at the other three ecological sites also may be attributable to grazing pressure (NRCS 2003b, c, d). Vegetation communities may also have been affected by four years of drought prior to the time of this analysis.



Explanation

- LOAMY 5-8 P.Z. (R029XY017NV)
- LOAMY SLOPE 5-8 P.Z. (R029XY022NV)
- SHALLOW CALCAREOUS LOAM 8-12 P.Z. (R029XY008NV)
- SANDY LOAM 5-8 P.Z. (R029XY046NV)

Ecological Site Reference Location

- Loamy 5-8 P.Z.
- Shallow Calcareous Loam 8-12 P.Z.
- Sandy Loam 5-8 P.Z.

0 1,000 2,000 Feet

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BUREAU OF LAND MANAGEMENT

GOLDEN ARROW EXPLORATION PROJECT

Ecological Sites
within the Project Area

Figure 3.2.15

10/09/2015

Wyoming big sagebrush (*Artemisia tridentata* ssp. *wyomingensis*) was prevalent in drainages that traversed this ecological site in the Project Area but was not at either reference location nor listed in the ESD. Two cactus species were observed: sand cholla (see Special Status Species); and Wiggins' cholla, which is in the ESD.

Dominant native perennial grass species at both reference locations, James' galleta and Indian ricegrass, match those listed as dominant in the ESD. Also observed and in the ESD were squirreltail (*Elymus elymoides*), sand dropseed (*Sporobolus cryptandrus*), and King's eyelashgrass (*Blepharidachne kingii*). The non-native, invasive annual cheatgrass was also observed. The only specific forb species listed in the ESD for the Loamy 5-8" P.Z. ecological site is the genus globemallow (*Sphaeralcea*) (NRCS 2003a); desert globemallow (*Sphaeralcea ambigua*) was recorded in this ecological site.

At this site, additional forb species at the first reference location included northwestern Indian paintbrush (*Castilleja angustifolia* var. *dubia*), whitestem blazingstar (*Mentzelia albicaulis*), Douglas' dustymaiden (*Chaenactis douglasii*), nodding buckwheat (*Eriogonum cernuum*), and prickly Russian thistle; and at the second, nodding buckwheat and saltlover. Prickly Russian thistle and saltlover are non-native, invasive plants.

Sandy Loam 5-8" P.Z.

The Sandy Loam 5-8" P.Z. ecological site (#R029XY046NV) spans a small area of approximately three acres along the northern portion of the northern access road and along the western portion of the southern access road. One reference location was sampled within this ecological site, at 531230E, 4207548N, on an alluvial fan of a basin floor with a one percent slope (matching the ESD) and at 5,615 feet elevation amsl (just outside the ESD range of 4,000 to 5,500 feet amsl). The ESD describes soils as having coarse textured surfaces, while the surface soil texture at the reference location was gravelly fine sandy loam. The ESD also described the soils as moderately deep to deep and generally underlain at shallow depths by a layer restrictive to root development (NRCS 2003b). At the reference location, the soil depth was determined to be shallow (ten to 20 inches) when a restrictive soil layer was reached, and the actual soil depth likely continued past this layer.

The vegetation community composition at the reference location, approximately 49 percent shrubs, 49 percent grasses, and two percent forbs, generally corresponded to that described by the ESD: 50 percent shrubs, 45 percent grasses, and five percent forbs. The ESD states that the dominant shrub species are fourwing saltbush (*Atriplex canescens*) and winterfat, while the dominant shrub species at the reference location was yellow rabbitbrush; fourwing saltbush and winterfat were also present. Other shrub species observed at the reference location and listed in the ESD were shadscale saltbush, littleleaf horsebrush, and green molly. Mojave rabbitbrush (*Ericameria paniculata*) was the only shrub species identified at the reference location that was not included in the ESD.

All of the grass species observed at the reference location were listed in the ESD: spike dropseed (*Sporobolus contractus*), sand dropseed, Indian ricegrass, James' galleta, and needle and thread (*Hesperostipa comata*). The dominant grass species at the reference location was spike dropseed, while the dominant grass species listed in the ESD was Indian ricegrass.

Along with desert globemallow, other forbs observed within this ecological site were the non-native, invasive annuals prickly Russian thistle and saltlover.

Shallow Calcareous Loam 8-12" P.Z.

The Shallow Calcareous Loam 8-12" P.Z. ecological site (#R029XY008NV) spans approximately 178 acres in the southern half of the Project Area. Two reference locations were sampled within the Sandy Loam 5-8" P.Z. ecological site in the southeastern portion of the Project Area at 535469E, 4205225N and in the south-central portion at 534666E, 4205140N. Both were on sideslopes of fan piedmonts with five percent slopes, corresponding with topographic features described in the ESD (NRCS 2003c), and also matched the ESD elevation range of 5,200 to 7,000 feet amsl, surface soil textures of cobbly and/or gravelly loam, and very shallow soil depth.

The two reference locations were very similar to each other in vegetation community composition with 85 versus 87 percent shrubs, 12.5 versus 11 percent grasses, and 2.5 versus two percent forbs, but differed from the ESD which describes 45 percent shrubs and trees, 50 percent grasses, and five percent forbs. Both reference locations were dominated by low sagebrush (*Artemisia arbuscula*) and black sagebrush, while the dominant shrub species listed in the ESD is black sagebrush and low sagebrush is not even listed as occurring. Other shrub species observed at both reference locations were winterfat, shadscale saltbush, spiny hopsage and yellow rabbitbrush, all of which are listed in the ESD; plus littleleaf horsebrush and Mormon tea (*Ephedra viridis*). Additional shrub species were bud sagebrush at the first reference location, and green molly and broom snakeweed (*Gutierrezia sarothrae*) at the second. The second location also included two cacti, Engelmann's hedgehog cactus and spinystar, not listed in the ESD.

The dominant grass species listed in the ESD are Indian ricegrass and needle and thread, with James' galleta also listed as an important species associated with this ecological site. Indian ricegrass and James' galleta were common perennial grass species at both reference locations; needle and thread, however, was not observed. Another perennial grass species observed at both reference locations and listed in the ESD was squirreltail. Cheatgrass was observed at both reference locations.

Along with desert globemallow, other forbs observed at the first reference location were Torrey's desertdandelion (*Malacothrix torreyi*) and northwestern Indian paintbrush; and at the second, shaggy fleabane (*Erigeron pumilus*) and browneyes (*Camissonia claviformis*). Saltlover was abundant at both.

Loamy Slope 5-8" P.Z.

The Loamy Slope 5-8" P.Z. ecological site (#R029XY022NV) in the northern portion of the Project Area resembles the adjacent Loamy 5-8" P.Z. ecological site in vegetation community composition and surface soil texture, but occupies the summit and sideslopes of a low hill in the Project Area with slopes of ten to 20 percent, in accordance with the ESD (NRCS 2003d). A soil pit was not established for this ecological site, but the soils were visually assessed. The ESD describes the soil surface layers as typically having either a vesicular soil crust or high amounts

of rock fragments. Although vesicular soil crusts were not observed, rock fragments and gravel were abundant at the surface. As rock outcrops and bedrock were prevalent throughout, the soils are assumed to be very shallow to shallow and restrictive to root penetration, matching the ESD (NRCS 2003d).

The vegetation community composition – 53 percent shrubs, 45.5 percent grasses, and 1.5 percent forbs – generally corresponded to that described by the ESD: 65 percent shrubs, 30 percent grasses, and five percent forbs (NRCS 2003d). The ESD lists shadscale saltbush as the dominant shrub species, with bud sagebrush and winterfat as other important shrub species. Although all three were common throughout the ecological site in the Project Area, the dominant shrub species were yellow rabbitbrush and Nevada jointfir, which are also listed in the ESD. Also both present on site and listed in the ESD are spiny hopsage, green molly, and littleleaf horsebrush (NRCS 2003d). Although no cacti are included in the ESD, one species, Wiggins' cholla, was observed.

The ESD lists James' galleta and Indian ricegrass as dominant grass species, and these were the dominant grass species within the site. Other grass species listed in the ESD and observed at the site were squirreltail, King's eyelashgrass, and low woollygrass (*Dasyochloa pulchella*) (NRCS 2003d). Cheatgrass was also observed throughout the site.

Along with desert globemallow, other native forbs observed were white four o'clock flower (*Mirabilis albida*), freckled milkvetch (*Astragalus lentiginosus*), pallid milkweed (*Asclepias cryptoceras*), northwestern Indian paintbrush, and scalebud (*Anisocoma acaulis*).

3.2.15.2 Environmental Consequences

Approximately 100 acres would be disturbed over the ten-year Project life as a result of the Proposed Action. Of the 100 acres of proposed disturbance, nine acres of disturbance has occurred from Notice-level exploration activities on public lands. Approximately 91 acres of proposed disturbance is associated with phased surface exploration activities that could occur anywhere within the Project Area. The surface exploration disturbance would be created incrementally and would be dispersed throughout the Project Area.

The potential surface disturbance to each ecological site as a result of the Proposed Action is shown in Table 3.2-6. The surface disturbance would be reclaimed and reseeded concurrently whenever feasible. Any surface disturbance related to the Proposed Action would not result in the loss of any unique vegetation community, but would still result in a temporary loss of vegetation. Reclamation would begin upon completion of Project activities using the BLM-approved seed mixture shown in Table 2.1-2. Monitoring activities are included in the Proposed Action to help ensure that the revegetation meets reclamation standards.

Table 3.2-6: Potential Surface Disturbance to Ecological Sites within the Project Area

Ecological Site	Acres in Project Area	Potential Surface Disturbance	
		Acres	Percent
Loamy 5-8" P.Z. (#R029XY017NV)	1,258	0 to 100	0 to 8

Ecological Site	Acres in Project Area	Potential Surface Disturbance	
		Acres	Percent
Sandy Loam 5-8" P.Z. (#R029XY046NV)	3	0 to 3	0 to 100
Shallow Calcareous Loam 8-12" P.Z. (#R029XY008NV)	178	0 to 100	0 to 56
Loamy Slope 5-8" P.Z. (#R029XY022NV)	42	0 to 42	0 to 100

3.2.16 Visual Resources

3.2.16.1 Affected Environment

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 3.2-7). Each management class portrays the relative value of the visual resources and serves as a tool that describes the visual management objectives (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. Previous surface disturbance from mining, mineral exploration, and road construction in the Project Area are part of the existing visual landscape.

Table 3.2-7: 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

3.2.16.2 Environmental Consequences

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 concurrent and successful reclamation and revegetation of exploration

roads and drill sites, long-term visual impacts would be reduced and would remain within BLM management objectives for VRM Class IV (Table 3.2-7).

3.2.17 Wastes, Solid or Hazardous

3.2.17.1 Affected Environment

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 chemical toilets would be available in the Project Area for use by Project personnel.

3.2.17.2 Environmental Consequences

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 2.1.5 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 EPMs outlined in Section 2.1.11 of this EA, no impacts to the environment from wastes are anticipated as a result of the Proposed Action. This resource will not be carried forward for further analysis.

3.2.18 Water Quality

3.2.17.1 Affected Environment

Surface Water

Surface water within the Project Area is mainly dependent upon seasonal precipitation. The average annual precipitation is approximately five inches and tends to peak during the month of April (WRCC 2014). Most of the rainfall in this portion of Nevada occurs as high-intensity, convective thunderstorms in spring and autumn (NRCS 2006).

The Project is located within the Stone Cabin Valley hydrographic basin. This hydrographic basin is typical of arid drainage basins in northern Nevada, where precipitation is generally insufficient to support perennial stream flow except where spring fed.

There are no perennial drainages, springs, or riparian habitats in the Project Area. The National Hydrography Dataset identified 14 ephemeral drainages within the Project Area (USGS 2012). These drainages traverse the Project Area in a southeast-northwest trend and were all dry during the May/June 2014 field surveys. Surface water runoff from the Project Area flows west and northwest into Stone Cabin Creek in Stone Cabin Valley.

Ground Water

The Stone Cabin Valley hydrographic basin is considered a designated ground water basin by the NDWR, which means it is a basin where permitted ground water rights approach or exceed the estimated average annual recharge and the water resources are being depleted or require additional administration. The Stone Cabin Valley hydrographic basin encompasses approximately 985 square miles. The perennial yield is 2,000 acre feet per year. The total permitted withdrawal for the basin is 10,979 acre feet per year. Total allocated water rights exceed the perennial yield. Water use within the basin is largely for irrigation and quasi-municipal purposes (NDWR 2015).

No ground water allocation occurs within the Project Area, and no other beneficial use ground water wells have been identified in the Project Area. Based on previous exploration drilling in the Project Area, the discovered ground water depth ranged between 650 and 700 feet depending on the surface elevation. Anticipated drill hole depth associated with the Project would be on average 1,000 feet below ground surface. No ground water quality data are available from water encountered in drill holes during previous drilling activities within the Project Area.

3.2.18.1 Environmental Consequences

Surface Water

Surface water features within the Project Area are limited to ephemeral drainages, and flow in ephemeral drainages occurs in response to storm events; therefore, the only potential impacts to surface water quality would result from spills and sedimentation or erosion from surface disturbing activities. The potential impacts to surface water quality from spilled petroleum products would be minimized by the implementation of the Spill Contingency Plan included in

Appendix D of the Plan. The potential impacts to surface water quality from sedimentation would be minimized by the implementation of the EPMs outlined in Section 2.1.11.

Ground Water

No hydrological areas would be affected by the Proposed Action. The Proposed Action would be expected to require water only for dust suppression and drilling fluids, and could total up to 18,000 gallons per day. IRC would obtain water from a nearby ranch as in prior drill programs, and would acquire written authorization from the owner. This source has existing valid water rights; therefore, IRC would file a Mining and Milling "MM" Waiver for review and approval by the NDWR. No new water developments or water rights applications are anticipated associated with the Project.

The Proposed Action is not expected to impact ground water quality because if ground water is encountered, the holes would be plugged in accordance with NAC 534.420. All drill holes would be abandoned in accordance with NRS 534, NAC 534.4369 and NAC 534.4371. No drill holes would be left open at the end of the Project. In addition, only water or nontoxic fluids would be used during drilling. No further analysis is required for this element in this EA.

3.2.19 Wild Horses

3.2.19.1 Affected Environment

The BLM manages wild horses under the authority of the Wild Free-Roaming Horses and Burros Act of 1971 as amended (P.L. 92-195), which states the BLM "shall manage wild free-roaming horses and burros in a manner that is designed to achieve and maintain a thriving natural ecological balance on the public lands." The Project Area lies within the Stone Cabin Herd Management Area (HMA). The size of the HMA totals approximately 403,736 acres.

The Stone Cabin HMA is contiguous with the Reveille HMA to the east, portions of the Nevada Wild Horse Range (NWHR) to the south, and part of the Saulsbury HMA to the west. Some movement between HMAs is expected, particularly between the Stone Cabin and Reveille HMAs due to the terrain, discontinuous fencing, and known trailing and wild horse movement patterns. Movement has been documented between the Stone Cabin HMA and the NWHR. Prior to 2009, the US Highway 6 ROW was not fenced, allowing unrestricted movement between the north and south portions of the Stone Cabin HMA. Currently the HMA is divided by the fence, with the Project Area in the approximately 189,545-acre portion south of the highway.

Samples were collected for genetic analysis during the 2007 gather. The analysis revealed genetic variation and allelic diversity of the Stone Cabin HMA is high, indicating interchange of animals from neighboring HMAs, and low risk for inbreeding.

The Appropriate Management Level (AML) for the Stone Cabin HMA was established through the Consent Decision signed by Administrative Law Judge David Torbet on May 11, 1992, through the Department of Interior Office of Hearings and Appeals, Hearings Division. The Consent Decision established an AML for the Stone Cabin HMA of 364 wild horses.

The BLM completed a helicopter inventory of the Stone Cabin HMA in March 2014, which resulted in a direct count of 287 wild horses, with 102 horses located in the portion south of US Highway 6. The Stone Cabin HMA has an estimated annual growth rate of 19 percent based on past inventory flights. This places the current estimated population (post-foaling season 2015) of the Stone Cabin HMA at 406 with 144 for the southern portion.

It is anticipated the age structure of the wild horses in the Stone Cabin and Saulsbury HMAs resembles a normal age structure with ages ranging from foals to animals in excess of 20 years. The estimated sex ratio is approximately 60 percent mares and 40 percent stallions with variations ten percent below or above these levels.

Stone Cabin HMA wild horses are mild tempered and have become accustomed to humans and vehicle traffic over the years. The access by road and the distribution of the wild horses have made these HMAs prime viewing areas for the public, and a wild horse viewing destination for travelers.

There are no perennial water sources located in the Project Area to provide regular sources of drinking water to wild horses. Water sources are available in adjacent parts of the HMA.

3.2.19.2 Environmental Consequences

Impacts to wild horses could be caused by increased human activity, increased vehicle traffic on Project roads, and noise associated with drilling and construction activities. It is expected wild horses would avoid drill sites during drilling activities and increase use in other portions of the HMA, which could result in changes to usage patterns and distribution within the HMA.

Approximately 100 acres of the approximately 189,545-acre south portion of the Stone Cabin HMA would be disturbed by the Project, which equals approximately 0.5 percent. The 1,481-acre Project Area within which the increased human disturbance would take place represents approximately 0.8 percent of the south portion of the HMA. Impacts to the wild horses through human disturbance could cause them to reduce or eliminate use of a larger land area than the Project Area itself, increasing use of other portions of the HMA over the life of the Project.

Potential impacts to the normal distribution and movement patterns of wild horses would likely be temporary in nature and would not result in permanent displacement, but would occur over the ten-year life of the Project. Since the Project would be phased, and no more than two drill rigs would be present within the Project Area at any one time, some wild horses may avoid the area while others may tolerate the noise and continue foraging and breeding activities in the vicinity of the Project Area.

Sumps would be constructed with a sloped end so entrapped animals could easily exit the sump with a recommended slope angle of 3H:1V.

During the phased approach of the Project and planned reclamation, there would be no expected substantial or permanent impacts to forage availability for wild horses in the HMA.

3.2.20 Wildlife

3.2.20.1 Affected Environment

A total of four reptiles and nine mammals were directly observed or detected in the Project Area by tracks, scat, feathers, call, prey remains, or burrows during the August and October 2014 surveys (Enviroscientists 2015). The general wildlife species detected in the Project Area are common throughout the Great Basin region. The reptiles observed in the Project Area included the following: common side-blotched lizard (*Uta stansburiana*); desert horned lizard (*Phrynosoma platyrhinos*); racer (*Coluber constrictor*); and western fence lizard (*Sceloporus occidentalis*). There is no habitat for amphibians in the Project Area. Mammals detected in the Project Area included the following: American badger (*Taxidea taxus*); black-tailed jackrabbit (*Lepus californicus*); coyote (*Canis latrans*); kangaroo rat (*Dipodomys* spp.); kit fox (*Vulpes macrotis*); mountain cottontail (*Sylvilagus nuttallii*); pronghorn antelope (*Antilocapra americana*); white-tailed antelope ground squirrel (*Ammospermophilus leucurus*); and woodrat (*Neotoma* spp.).

Big game species

Pronghorn antelope was the only big game species observed within the Project Area during the August and October 2014 field surveys (Enviroscientists 2015). Pronghorn antelopes were observed within the Project Area every day of the wildlife survey. While pronghorn antelope scat and tracks were noted throughout the Project Area, areas of extensive scat deposition were noted, particularly in the drainages.

3.2.20.2 Environmental Consequences

Direct impacts to wildlife would consist of temporary habitat loss and disturbance from human activity and noise. Approximately 100 acres would be disturbed over the potential ten-year Project life as a result of the Proposed Action. Of the 100 acres of disturbance proposed, up to nine acres of disturbance have occurred from Notice-level exploration activities. Approximately 91 acres of proposed disturbance associated with surface exploration activities could occur anywhere within the Project Area. The surface exploration disturbance would be created incrementally and would be dispersed throughout the Project Area.

No long-term impacts to wildlife habitat are likely to occur within the Project Area since reclamation would be designed to return disturbed lands to a level of productivity comparable to pre-exploration levels. After exploration activities have been terminated, reclamation would involve regrading disturbed areas related to this Project to their approximate original contour and would be completed no later than two years after the completion of activities under the Proposed Action. Additionally, sumps associated with drill sites would be built with an incline on one end so entrapped animals could easily exit the sump with a recommended slope angle of 3H:1V.

Exploration activities, including the construction of roads and overland travel, could disturb wildlife due to the presence of humans and by creating noise and dust. However, wildlife foraging activities within the Project Area could continue since the proposed surface disturbance activities only cover approximately 6.8 percent of the entire Project Area (100 acres out of a total

of 1,481 acres). Indirect, short-term impacts to wildlife would occur due to the temporary loss of vegetation as a result of Project-related surface disturbance.

No noxious weeds were identified in the Project Area. Cheatgrass, prickly Russian thistle, redstem stork's bill, and saltlover, all invasive non-native species, were observed within the Project Area. These species were observed throughout the Project Area but were predominantly located in the western portion of the Project Area on the valley flats, as the valley flats were more degraded by cattle and wild horse grazing in comparison to the foothills within the eastern portion of the Project Area. These invasive non-native species reduce the quality of habitat for wildlife. Project-related activities increase the potential for the spread of these species, further reducing the quality of wildlife habitat in the Project Area. IRC would implement EPMs for noxious weeds, outlined in Section 2.1.11, which would mitigate or reduce the impact of noxious weeds and invasive species to wildlife habitat.

Impacts to specific wildlife groups are discussed in more detail below.

Small mammals

As a result of ground disturbing activities, there would be a potential of direct mortality to small mammals (e.g., being crushed by vehicles or equipment). Ground disturbing activities would also impact small mammal habitat by removing vegetation and rocks, and disturbing burrows. These impacts would be short term, and habitat could be restored during reclamation.

Large mammals

Large mammals, such as pronghorn antelope, may avoid the Project Area due to noise and human activity while others, such as coyotes, may adapt more readily to the disturbance. These impacts would temporarily reduce the available habitat area for large mammals.

Amphibians and Reptiles

Reptiles would be impacted by surface disturbing activities, which would remove vegetation and disturb soil. Surface disturbance would remove potential areas for the common side-blotched lizard, desert horned lizard, racer, and western fence lizard to lay their eggs or could destroy eggs laid within disturbance areas. Loss of vegetative cover and burrows could result in greater mortality due to predators. Temporary disturbance would reduce the foraging area. Impacts would be temporary, and vegetation would be restored subsequent to reclamation.

3.3 Effects of the No Action Alternative

Under the No Action Alternative, none of the impacts associated with the Proposed Action would occur. Authorization of the ROW associated with the widening of the two access roads would not occur. However, IRC could obtain new authorizations with Notices and continue mineral exploration (Notice-level) activities that could create up to five acres of surface disturbance per Notice in the Project Area.

3.3.1 Air Quality

In any future Notice-level activities associated with the No Action Alternative, IRC would control dust by minimizing surface disturbance and observing prudent speed limits. Dust would be generated by travel on dirt roads and emissions would be generated from drill rigs, support equipment, and vehicles during exploration activities. These emissions would cause minimal impacts to air quality. The reclamation of surface disturbance would gradually eliminate long-term impacts to air quality from wind erosion of disturbed soils. Under the No Action Alternative, impacts would be similar but proportionally less than under the Proposed Action, as there could be approximately 85 fewer acres of new surface disturbance under the No Action Alternative.

3.3.2 Cultural Resources

Under the No Action Alternative, current uses in the Project Area would continue, including casual public use and Notice-level mineral exploration activities; therefore, impacts to the one historic property under the No Action Alternative would be the same as under the Proposed Action.

3.3.3 Fire Management

Under the No Action Alternative, no impacts to fire management would occur, as there are no active fuel treatment areas within the existing Project Area boundary. Therefore, impacts under the No Action Alternative would be the same as under the Proposed Action.

3.3.4 Geology and Minerals

Under the No Action Alternative, exploration drilling would be conducted, which would only result in the removal of small amounts of rock from the borings. Fewer holes would be drilled under the No Action Alternative, so impacts to geology and minerals would be similar, but proportionally less than impacts associated with the Proposed Action.

3.3.5 Lands, Realty, and Access

There would be fewer roads constructed under the No Action Alternative subject to reclamation. There would be fewer employees associated with Notice-level activities under the No Action Alternative, which would result in fewer vehicle trips on access roads. Therefore, impacts associated with the No Action Alternative would be similar but less than those associated with the Proposed Action.

3.3.6 Migratory Birds

Notice-level activities associated with the No Action Alternative could result in the temporary loss of approximately nine acres of migratory bird nesting or foraging habitat. Reclamation of surface disturbance would gradually eliminate potential impacts to migratory birds. Impacts to migratory birds under the No Action Alternative would be similar, but proportionally less than

the Proposed Action (approximately 15 acres of surface disturbing activities versus approximately 100 acres associated with the Proposed Action).

3.3.7 Native American Concerns

The BLM TFO has continual consultation with the local Tribes regarding ongoing and proposed projects and land management activities. No concerns pertaining to the existing Notice-level exploration activities have been brought to the BLM's attention; therefore, at this time there would be no impacts to Native American Concerns under the No Action Alternative.

3.3.8 Noxious Weeds, Invasive and Non-native Species

Impacts associated with Notice-level activities under the No Action Alternative could result in the establishment of noxious weeds, invasive and non-native species. Reclamation of surface disturbance, including reseeding, associated with Notice-level exploration activities would gradually decrease potential impacts of noxious weeds, invasive and non-native species.

3.3.9 Public Safety

The same issues pertaining to public safety that would occur under the Proposed Action would continue to occur with Notice-level activities associated with the No Action Alternative. Sumps would be sloped on one end for easy egress, and prudent speed limits would be observed on Project roads to ensure public safety. There would be fewer Project-related vehicles associated with Notice-level activities under the No Action Alternative which would result in less potential for vehicle collisions with public vehicles.

3.3.10 Rangeland Management

Impacts to rangeland management under the No Action Alternative would be similar, but proportionally less than the Proposed Action (a loss of approximately 0.6 AUM under the No Action Alternative versus a loss of approximately four AUMs associated with the Proposed Action).

3.3.11 Recreation

The same recreational activities that would occur under the Proposed Action would continue to occur under the No Action Alternative. Impacts would be similar under the No Action Alternative as under the Proposed Action, as all roads would remain open and there would be no fencing of the Project Area to preclude use.

3.3.12 Socioeconomics

The No Action Alternative would result in beneficial impacts to the local economies, as the workers associated with Notice-level activities would obtain lodging, meals, and supplies in these local communities. There would be approximately four employees requiring services in impacted communities compared to eight employees under the Proposed Action.

3.3.13 Soils

The potential for wind and water erosion of disturbed soils would be similar but proportionally less than the Proposed Action (approximately 15 acres of disturbed soils versus 100 acres associated with the Proposed Action).

3.3.14 Special Status Species

Impacts to special status species and their habitat under the No Action Alternative would be similar to but proportionally less than under the Proposed Action (approximately 15 acres of surface disturbing activities versus approximately 100 acres associated with the Proposed Action).

3.3.15 Vegetation

Reclamation of surface disturbance, including reseeding, associated with Notice-level exploration activities would minimize impacts to vegetation. Under the No Action Alternative, impacts would be similar to but proportionally less than under the Proposed Action (approximately 15 acres of surface disturbing activities versus approximately 100 acres associated with the Proposed Action).

3.3.16 Visual Resources

Under the No Action Alternative, no facilities or structures would be constructed and reclamation of the temporary disturbance from drill pads and roads would occur shortly after disturbance. The impacts caused by the No Action alternative to the existing environment would be less than the impacts created by the Proposed Action. The No Action Alternative would also meet Class IV management objectives.

3.3.17 Wastes, Hazardous or Solid

The generation of wastes and the use of hazardous materials as a result of Notice-level activities under the No Action Alternative may result in the release of these wastes or materials. The No Action Alternative only involves surface exploration drilling and does not include the storage of hazardous or regulated materials. The source of spills or leaks would be from the drill rigs operating at the site. Therefore, the No Action Alternative has less potential for spills than the Proposed Action.

3.3.18 Water Quality

Under the No Action Alternative, up to nine acres of surface disturbance would continue within the Project Area under Notice-level exploration activities. With the use of BMPs to prevent erosion and sediment transport, impacts to water quality would not be anticipated. Should the drill holes encounter ground water, the holes would be plugged in accordance with NAC 534.420.

3.3.19 Wild Horses

Impacts to wild horses under the No Action Alternative would be similar to, but less than the impacts associated with the Proposed Action.

3.3.20 Wildlife

Reclamation of existing surface disturbance would gradually eliminate impacts to wildlife. Impacts to wildlife under the No Action Alternative would be similar to but proportionally less than under the Proposed Action (approximately 15 acres of surface disturbing activities versus approximately 100 acres associated with the Proposed Action).

4 CUMULATIVE IMPACT ANALYSIS

4.1 Introduction

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

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

As required under the NEPA and regulations implementing the NEPA, this chapter addresses those cumulative effects on the environmental resources in the Cumulative Effects Study Areas (CESAs) that could result from the Proposed Action and reasonable alternatives, past actions, present actions, and RFFAs. The extent of the CESAs varies by each resource, based on the geographic or biological 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 varies 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 CESAs for each resource evaluated in this chapter.

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

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

4.2 Cumulative Effects Study Areas

Environmental consequences of the Proposed Action were previously evaluated in Chapter 3 for the various environmental resources. Discussed in the following sections are the resources with the potential to be cumulatively impacted by the Proposed Action within the identified CESAs. The discussions are based upon the analyses in Chapter 3. Based on these, the Proposed Action would not impact the following resources and would therefore not have cumulative impacts: Air Quality; Fire Management; Geology and Mineral Resources; Lands, Realty, and Access; and Wastes (hazardous and solid). These resources are not further discussed in the cumulative impacts section.

The following 12 elements or resources have been brought forward for cumulative impact analysis: Cultural Resources; Migratory Birds; Noxious Weeds, Invasive and Non-native Species; Rangeland Management; Socioeconomics; Soils; Special Status Species; Vegetation; Visual Resources; Water Quality; Wild Horses; and Wildlife (General). The geographic areas considered for further analysis of cumulative effects vary in size and shape to reflect each evaluated environmental resource and the potential area of impact to each from the Proposed Action as determined through the analysis in Chapter 3.

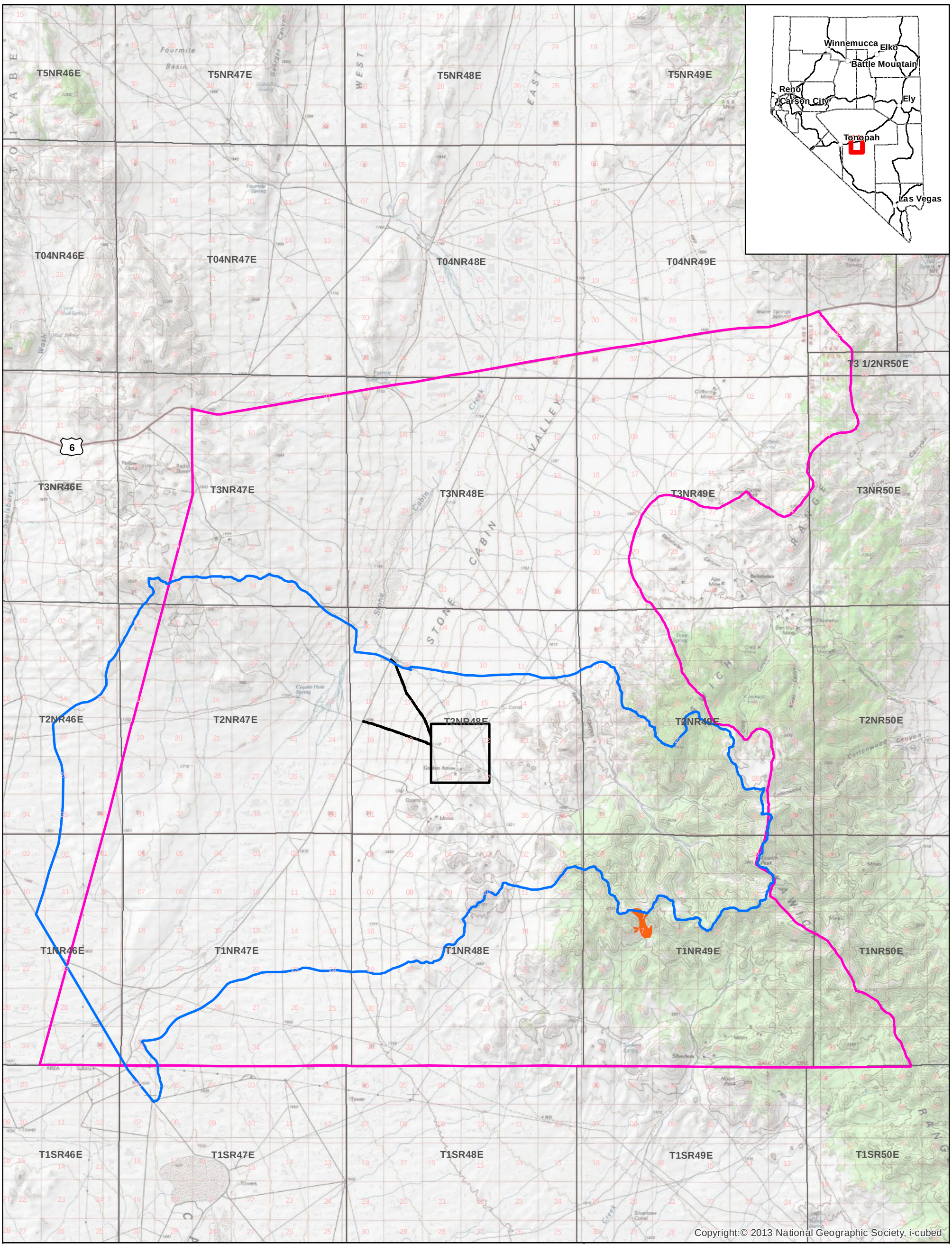
The Wildlife CESA is comprised of the southern portion of the Stone Cabin Allotment where it coincides with NDOW Hunt Unit 251. This CESA boundary is used to analyze cumulative impacts to the following resources: Cultural Resources; Migratory Birds, Noxious Weeds, Invasive and Non-native Species; Rangeland Management; Soils; Special Status Species; Vegetation; Visual Resources; Wild Horses; and Wildlife (General).

The Watershed CESA is comprised of Haws Canyon Hydrologic Unit Code (HUC) 12 watershed and the northeastern portion of the Stone Cabin Creek-Frontal Ice Plant Spring-Mud Lake HUC 12 watershed. This CESA demonstrates the maximum extent of cumulative impacts to water resources.

Table 4.2-1 describes each CESA by resource. Figure 4.2.1 shows the CESA boundaries.

Table 4.2-1: Cumulative Effects Study Areas

Resources Analyzed	CESA	Description of CESA	Size of CESA (acres)
Cultural Resources; Migratory Birds; Noxious Weeds, Invasive and Non-native Species; Rangeland Management; Soils; Special Status Species; Vegetation; Visual Resources; Wild Horses; and Wildlife (General)	Wildlife CESA	The southern portion of the Stone Cabin Allotment where it coincides with NDOW Hunt Unit 251	193,371
Water Quality	Watershed CESA	Haws Canyon HUC 12 Watershed and the northeastern portion of the Stone Cabin Creek-Frontal Ice Plant Spring-Mud Lake HUC 12 Watershed	89,819
Socioeconomics	Socioeconomic CESA	Nye County	11,614,080



Explanation

- Project Area
- Watershed CESA
- Wildlife CESA
- Fire History (2000-2014)

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BUREAU OF LAND MANAGEMENT

GOLDEN ARROW EXPLORATION PROJECT

Cumulative Effects Study Areas

Figure 4.2.1

10/06/2015

4.2.1 Past, Present, and Reasonably Foreseeable Future Actions

4.2.1.1 Past and Present Actions

Past and present actions in the two CESAs include the following: livestock grazing; wildland fires; wildlife habitat management; utility and other ROW construction and maintenance; mineral exploration (including expired surface exploration within the Project Area) and mining; wild horse gathers; and dispersed recreation.

Livestock Grazing

A portion of the Stone Cabin allotment makes up the Wildlife CESA, and portions of the Ralston, Reveille, and Stone Cabin allotments intersect the Watershed CESA.

Table 4.2-2 lists the rangeland improvements located within the Watershed and Wildlife CESAs.

Table 4.2-2: Rangeland Improvements Located Within the CESAs

CESA	Rangeland Improvement Type
Watershed	Corral (1), trough (1)
Wildlife	Corrals (2), trough (1)

Wildland Fires

Although there are no recorded wildland fires within the Project Area, there has been wildland fire disturbance within the two CESAs. The wildland fire disturbance in the CESAs is shown on Figure 4.2.1. Between 2000 and 2013, there were approximately six acres of wildland fire disturbance in the Watershed CESA, and approximately 93 acres of wildland fire disturbance in the Wildlife CESA.

Wildlife Habitat Management/Restoration/Hazardous Fuel Treatment

Research and management of big game and other wildlife and their habitats are undertaken by the NDOW and the BLM and may include modification to existing habitat and rangeland facilities. The Watershed and Wildlife CESAs contain a portion of NDOW Hunt Unit 251.

Rights-of-Way

The BLM's Land & Mineral Legacy Rehost 2000 System (LR2000) database (BLM 2015d) was used to query the various types of ROWs that have been authorized or constructed within the CESAs by Section, Township, and Range, and includes the following: roads and highways; telecommunications; power transmission facilities; communication sites; irrigation and water facilities; and other ROWs. The exact acreage of surface disturbance associated with these ROWs cannot be quantified; however, it is assumed 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 July 8, 2015, for the Watershed CESA, and July 22, 2015, for the Wildlife CESA. Any newly approved ROWs added to the LR2000 database after these dates are not included in the analysis. The approximate total acreages of existing and approved ROWs within each CESA are listed in Table 4.2-3.

Table 4.2-3 Past and Present Rights-of-Way Acres in the CESAs

ROW Type	Watershed CESA (approximate acres)	Wildlife CESA (approximate acres)
Roads and Highways	492	1,407
Telecommunications	0	5
Power Transmission	79	872
Communication Sites	5	205
Irrigation/Water Facilities and Pipelines	61	61
Total	**637**	**2,550**

Source: BLM 2015b

Mineral Exploration and Mining

The LR2000 database (BLM 2015d) was queried by Section, Township, and Range to show the past and present mineral exploration or mining activities (i.e., authorized and closed Notices, authorized and closed plans of operation, and mineral material disposal sites) that have been issued within the two CESAs. Past and present mineral exploration activities in the two CESAs include historic and current mineral exploration operations. Table 4.2-4 shows the results of the LR2000 query, in acres, of the mineral exploration activities within each CESA. The LR2000 database was queried on July 8, 2015, for the Watershed CESA, and July 22, 2015, for the Wildlife CESA. Any newly authorized Notices or plans of operation added to the LR2000 database after these dates are not included in the analysis.

Table 4.2-4: Past and Present Minerals Disturbance Acres in the CESAs

CESA	Authorization Status	Total Acres of Disturbance
Watershed CESA	Authorized, Closed, and Expired Notices	28
	Watershed CESA Total	**28**
Wildlife CESA	Authorized, Closed, and Expired Notices	82
	Mineral Material Disposal Sites	84
	Wildlife CESA Total	**166**

Source: BLM 2015b

Dispersed Recreation

Historical and present recreational activities that have occurred and are occurring within the CESAs primarily include these dispersed recreation activities: motorcycle and OHV riding; horseback riding; hunting; mountain bicycling; camping; driving for pleasure; hiking; and star-gazing (Nye County 2011).

4.2.1.2 Reasonably Foreseeable Future Actions

RFFAs in both the Wildlife and the Watershed CESA include livestock grazing, wildland fires, wildlife habitat management, utility and other ROW construction and maintenance, mineral exploration, and dispersed recreation.

4.3 Evaluation of Potential Cumulative Impacts

4.3.1 Cultural Resources

The CESA for cultural resources is the Wildlife CESA. This CESA encompasses approximately 193,371 acres and is shown on Figure 4.2.1.

Past and Present Actions: Past and present actions that could have impacted and may be currently impacting cultural resources include livestock grazing, wildland fires, wildlife habitat management, ROW construction and maintenance, mineral exploration, and dispersed recreation. Some historic mining operations have become cultural sites, which increases the number of cultural resources.

Historic fires (2000-2013) have burned approximately 93 acres in the Wildlife CESA (approximately 0.05 percent of the CESA). Authorized, closed, and expired mineral exploration Notices, as well as mineral material disposal sites, total approximately 166 acres (approximately 0.09 percent of the CESA) of surface disturbance. Approximately 2,550 acres of ROWs were issued within the Wildlife CESA with the potential to create surface disturbance that would impact cultural resources.

RFFAs: Potential impacts to cultural resources from livestock grazing, wildlife habitat management, ROW construction and maintenance, mineral exploration activities, dispersed recreation, and wildland fires are expected to continue. There are approximately 628 acres of pending ROW projects reported in LR2000 in the Wildlife CESA. There are no pending minerals projects. All pending minerals projects are required to incorporate protection measures for cultural resources and therefore, are not expected to directly impact cultural resources.

4.3.1.1 Proposed Action

The Proposed Action (approximately 100 acres) would impact approximately 0.05 percent of the CESA. Quantifiable past and present actions and RFFA disturbance in the Wildlife CESA total approximately 2,809 acres, which results in an incremental impact from the Proposed Action of approximately 3.6 percent. Since there are limited quantifiable data for all activities within the CESA, this calculation is a conservative analysis of the potential incremental impact of the Proposed Action. Project-related impacts would be localized and minimized due to

implementation of the EPMs outlined in Section 2.1.11. Therefore, based on the above analysis and findings, incremental impacts to cultural resources 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.

4.3.1.2 No Action Alternative

The total of the quantifiable past and present actions and RFFA disturbance within the Wildlife CESA is approximately 2,809 acres, which is an impact to approximately 1.5 percent of the CESA. Notice-level disturbance under this alternative (approximately nine acres) would result in an incremental impact of approximately 0.3 percent. Impacts to cultural resources from this alternative, in combination with past and present actions and RFFAs disturbance, would be minimal.

4.3.2 Migratory Birds

The CESA for migratory birds is the Wildlife CESA. This CESA encompasses approximately 193,371 acres and is shown on Figure 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, wildland fires, wildlife habitat management, ROW construction and maintenance, mineral exploration, mining, and dispersed recreation. 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 disruption from human presence or noise from drill rigs, water trucks, and 4WD 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. Impacts to migratory birds from livestock 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 off-road vehicles that traveled off established roadways.

Historic fires (2000-2013) have burned approximately 93 acres in the Wildlife CESA (approximately 0.05 percent of the CESA). Authorized, closed, and expired mineral exploration Notices, as well as mineral material disposal sites, total approximately 166 acres (approximately 0.09 percent of the CESA) of surface disturbance. Approximately 2,550 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 a portion of NDOW Hunt Unit 251; activities associated with hunting have the potential to create noise and disturbance to migratory birds, or remove or alter habitat. The Wildlife CESA encompasses a portion of the Stone Cabin grazing allotment. Livestock grazing and associated management could have contributed to the establishment and spread of noxious weeds, invasive and non-native species, which could have had an indirect effect on migratory birds and their habitat. However, disturbance to migratory birds from past and present actions would have been reduced through reclamation and seeding of disturbed areas and natural recolonization of native species. The past

and present actions that are quantifiable have disturbed approximately 1.5 percent of the CESA. There are no data on the number of acres reclaimed. State and federal regulations require reclamation; therefore, it is reasonable to assume some areas have been reclaimed, have become naturally stabilized, or have naturally revegetated over time.

RFFAs: Potential impacts to migratory birds and their habitat from livestock grazing, wildlife habitat management, ROW construction and maintenance, mineral exploration activities, dispersed recreation, or loss of native vegetation associated with potential wildland fires are expected to continue. There are no specific data to quantify impacts to migratory birds or their habitat within the CESA as a result of dispersed recreation, livestock grazing, wildlife habitat management, or potential wildland fires. There are approximately 628 acres of pending ROW projects reported in LR2000 in the Wildlife CESA. There are no pending minerals projects. All pending minerals projects are 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.

4.3.2.1 Proposed Action

The Proposed Action (approximately 100 acres of temporary nesting and/or foraging habitat removal) would impact approximately 0.05 percent of the CESA. Quantifiable past and present actions and RFFA disturbance in the Wildlife CESA total approximately 2,809 acres, which results in an incremental impact from the Proposed Action of approximately 3.6 percent. Since there are limited quantifiable data for all activities within the CESA, this calculation is a conservative analysis of the potential incremental impact of the Proposed Action. Project-related impacts would be localized and minimized due to implementation of the EPMs outlined in Section 2.1.11 and concurrent reclamation. Therefore, 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.

4.3.2.2 No Action Alternative

The total of the quantifiable past and present actions and RFFA disturbance within the Wildlife CESA is approximately 2,809 acres, which is an impact to approximately 1.5 percent of the CESA. Notice-level disturbance under this alternative (approximately nine acres) would result in an incremental impact of approximately 0.3 percent. Impacts to migratory birds and their habitat from this alternative, in combination with past and present actions and RFFAs disturbance, would be minimal.

4.3.3 Noxious Weeds, Invasive and Non-native Species

The CESA for noxious weeds, invasive and non-native species corresponds with the Wildlife CESA. This CESA encompasses approximately 193,371 acres and is shown on Figure 4.2.1.

Past and Present Actions: Past and present actions with impacts created from noxious weeds, invasive, and non-native species could have included and may currently include livestock grazing, wildland fires, wildlife habitat management, ROW construction and maintenance, mineral exploration, mining, and dispersed recreation. These actions could have disturbed

vegetation and soils, creating an opportunity for invasive plant colonization and the introduction of noxious weed, invasive or non-native species seeds. There are no specific data to quantify impacts from noxious weeds, invasive and non-native species that resulted from wildlife habitat management, livestock grazing, or dispersed recreation.

Historic fires (2000-2013) have burned approximately 93 acres in the Wildlife CESA (approximately 0.05 percent of the CESA). Authorized, closed, and expired mineral exploration Notices, as well as mineral material disposal sites, total approximately 166 acres (approximately 0.09 percent of the CESA) of surface disturbance. Approximately 2,550 acres of ROWs were issued within the Wildlife CESA that had the potential to introduce noxious weeds, invasive and non-native species. The past and present actions that are quantifiable have disturbed approximately 1.5 percent of the CESA.

RFFAs: Potential impacts from noxious weeds, invasive and non-native species as a result of livestock grazing, wildlife habitat management, dispersed recreation, ROW construction and maintenance, mineral exploration activities, 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 non-native species as a result of dispersed recreation, livestock grazing, wildlife habitat management, or potential wildland fires. There are approximately 628 acres of pending ROW projects reported in LR2000 in the Wildlife CESA. There are no pending minerals projects.

4.3.3.1 Proposed Action

The Proposed Action (approximately 100 acres) would impact approximately 0.05 percent of the CESA. Quantifiable past and present actions and RFFA disturbance in the Wildlife CESA total approximately 2,809 acres, which results in an incremental impact from the Proposed Action of approximately 3.6 percent. Since there are limited quantifiable data for all activities within the CESA, this calculation is a conservative analysis of the potential incremental impact of the Proposed Action. Project-related impacts would be minimized due to implementation of the EPMs outlined in Section 2.1.11 and concurrent reclamation. Therefore, based on the above analysis and findings, incremental impacts from noxious weeds, invasive, and non-native 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.

4.3.3.2 No Action Alternative

The total of the quantifiable past and present actions and RFFA disturbance within the Wildlife CESA is approximately 2,809 acres, which is an impact to approximately 1.5 percent of the CESA. Notice-level disturbance under this alternative (approximately nine acres) would result in an incremental impact of approximately 0.3 percent. Impacts from noxious weeds, invasive, and non-native species from this alternative, in combination with past and present actions and RFFAs disturbance, would be minimal.

4.3.4 Socioeconomics

The CESA for socioeconomics is Nye County, which encompasses approximately 18,147 square miles, or approximately 11,614,080 acres. The TTR covers approximately 525 square miles in Nye County, and is eliminated from multiple use.

Past and Present Actions: Past and present actions within the Socioeconomics CESA include the following: grazing and agriculture; utilities and infrastructure; wildland fires; dispersed recreation; mining; and mineral development and exploration. Impacts to socioeconomics from these activities include increased population, increased demand for public services, increased employment opportunities, increased revenues within the CESA, and increased expenditures by the communities within the CESA. The extent of these impacts varies with the type of activity and has not been quantified; however, the majority of these impacts from past and present activities are considered to be part of the existing social and economic climate within the CESA.

RFFAs: Socioeconomic impacts would result from the following RFFAs: grazing and agriculture; utilities and infrastructure; wildland fires; dispersed recreation; mining; and mineral development and exploration.

4.3.4.1 Proposed Action

As outlined in Section 3.2.12.2, the Proposed Action does not induce substantial growth or a concentration of population, displace a large number of people, cause a substantial reduction in employment, reduce wage and salary earnings, cause a substantial net increase in county expenditures, or create a substantial demand for public services. In the volatile economy of the foreseeable future, it is expected that the cumulative and incremental socioeconomic effects of the Proposed Action would be beneficial.

4.3.4.2 No Action Alternative

Under the No Action Alternative, the Proposed Action would not be approved and ongoing Notice-level mineral exploration activities in the Project Area would continue. The cumulative impacts resulting from the No Action Alternative would be less that those associated with the Proposed Action because the authorized operations would result in the need for fewer employees than the Proposed Action, which would reduce the overall socioeconomic effects from the activities.

4.3.5 Soils

The CESA for soils is the Wildlife CESA. This CESA encompasses approximately 193,371 acres and is shown on Figure 4.2.1.

Past and Present Actions: Past and present actions that could have impacted and may be currently impacting soils include livestock grazing, wildland fires, wildlife habitat management, ROW construction and maintenance, mineral exploration, mining, soil compaction due to travel by heavy equipment on unpaved roads, and dispersed recreation. 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, wildlife habitat management, or dispersed recreation in the Wildlife CESA. Historic fires (2000-2013) have burned approximately 93 acres in the Wildlife CESA (approximately 0.05 percent of the CESA). Authorized, closed, and expired mineral exploration Notices, as well as mineral material disposal sites, total approximately 166 acres (approximately 0.09 percent of the CESA) of surface disturbance. Approximately 2,550 acres of ROWs were issued within the Wildlife CESA that had the potential to create surface disturbance. The past and present actions that are quantifiable have disturbed approximately 1.5 percent of the CESA.

RFFAs: Potential wildland fires, wildlife habitat management, ROW construction and maintenance, mineral exploration, livestock grazing, soil compaction due to travel by heavy equipment on unpaved roads, and dispersed recreation are expected to continue. There are no specific data to quantify impacts to soils as a result of dispersed recreation, livestock grazing, wildlife habitat management, or potential wildland fires. There are approximately 628 acres of pending ROW projects reported in LR2000 in the Wildlife CESA. There are no pending minerals projects.

4.3.5.1 Proposed Action

The Proposed Action (approximately 100 acres) would impact approximately 0.05 percent of the CESA. Quantifiable past and present actions and RFFA disturbance in the Wildlife CESA total approximately 2,809 acres, which results in an incremental impact from the Proposed Action of approximately 3.6 percent. Since there are limited quantifiable data for all activities within the CESA, this calculation is a conservative analysis of the potential incremental impact of the Proposed Action. Project-related impacts would be localized and minimized due to implementation of the EPMs outlined in Section 2.1.11 and concurrent reclamation. Therefore, 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 and with implementation of the BMPs and EPMs, are expected to be minimal.

4.3.5.2 No Action Alternative

The total of the quantifiable past and present actions and RFFA disturbance within the Wildlife CESA is approximately 2,809 acres, which is an impact to approximately 1.5 percent of the CESA. Notice-level disturbance under this alternative (approximately nine acres) would result in an incremental impact of approximately 0.3 percent. Impacts to soils from this alternative, in combination with past and present actions and RFFAs disturbance, would be minimal.

4.3.6 Special Status Species

The CESA for special status species is the Wildlife CESA. This CESA encompasses approximately 193,371 acres and is shown on Figure 4.2.1.

Past and Present Actions: Past and present actions that could have impacted and may be currently impacting special status species and their habitat include livestock grazing, wildland fires, wildlife habitat management, ROW construction and maintenance, mineral exploration, mining, and dispersed recreation. These activities have the potential to result in direct impacts to individual species in travel routes, to cause loss of forage, cover, and habitat, or to disturb mating and brood rearing practices.

Historic fires (2000-2013) have burned approximately 93 acres in the Wildlife CESA (approximately 0.05 percent of the CESA). Authorized, closed, and expired mineral exploration Notices, as well as mineral material disposal sites, total approximately 166 acres (approximately 0.09 percent of the CESA) of surface disturbance. Approximately 2,550 acres of ROWs were issued within the Wildlife CESA that had the potential to create surface disturbance and disturb special status species and their habitat. The CESA is also comprised of a portion of NDOW Hunt Unit 251; activities associated with hunting have the potential to create noise and disturbance to special status wildlife species, or remove or alter habitat for plant and wildlife species. The Wildlife CESA encompasses a portion of the Stone Cabin grazing allotment. Livestock grazing and associated management could have contributed to the establishment and spread of noxious weeds, invasive and non-native species, which could have had an indirect effect on special status wildlife and plant species. However, disturbance to special status wildlife and plant species and their habitat from past and present actions would have been reduced through reclamation and seeding of disturbed areas and natural recolonization of native species. The past and present actions that are quantifiable have disturbed approximately 1.5 percent of the CESA. There are no data on the number of acres reclaimed. State and federal regulations require reclamation; therefore, it is reasonable to assume some areas have been reclaimed, have become naturally stabilized, or have naturally revegetated over time.

RFFAs: Potential impacts to special status species and their habitat from livestock grazing, wildlife habitat management, dispersed recreation, ROW construction and maintenance, mineral exploration activities, 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 within the CESA as a result of dispersed recreation, livestock grazing, wildlife habitat management, or potential wildland fires. There are approximately 628 acres of pending ROW projects reported in LR2000 in the Wildlife CESA. There are no pending minerals projects.

4.3.6.1 Proposed Action

The Proposed Action (approximately 100 acres of temporary habitat removal) would impact approximately 0.05 percent of the CESA. Quantifiable past and present actions and RFFA disturbance in the Wildlife CESA total approximately 2,809 acres, which results in an incremental impact from the Proposed Action of approximately 3.6 percent. Since there are limited quantifiable data for all activities within the CESA, this calculation is a conservative analysis of the potential incremental impact of the Proposed Action. Project-related impacts would be localized and minimized due to implementation of the EPMs outlined in Section 2.1.11 and concurrent reclamation. Therefore, 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 and with the implementation of the BMPs and EPMs, are expected to be minimal.

4.3.6.2 No Action Alternative

The total of the quantifiable past and present actions and RFFA disturbance within the Wildlife CESA is approximately 2,809 acres, which is an impact to approximately 1.5 percent of the CESA. Notice-level disturbance under this alternative (approximately nine acres) would result in an incremental impact of approximately 0.3 percent. Impacts to special status species and their habitat from this alternative, in combination with past and present actions and RFFAs disturbance, would be minimal.

4.3.7 Vegetation

The CESA for vegetation is the Wildlife CESA. This CESA encompasses approximately 193,371 acres and is shown on Figure 4.2.1.

Past and Present Actions: Past and present actions that could have impacted and may be currently impacting vegetation include livestock grazing, wildland fires, wildlife habitat management, ROW construction and maintenance, mineral exploration, mining, and dispersed recreation. Impacts caused by hunting activities and associated off-road vehicle travel include the introduction of noxious weeds, invasive or non-native species and trampled vegetation. There are no specific data to quantify impacts to vegetation from livestock grazing, wildlife habitat management, or dispersed recreation including hunting.

Historic fires (2000-2013) have burned approximately 93 acres in the Wildlife CESA (approximately 0.05 percent of the CESA). Authorized, closed, and expired mineral exploration Notices, as well as mineral material disposal sites, total approximately 166 acres (approximately 0.09 percent of the CESA) of surface disturbance. Approximately 2,550 acres of ROWs were issued within the Wildlife CESA that had the potential to create surface disturbance. The past and present actions that are quantifiable have disturbed approximately 1.5 percent of the CESA.

RFFAs: Potential wildland fires, wildlife habitat management, ROW construction and maintenance, mineral exploration, livestock grazing, and dispersed recreation are expected to continue. There are no specific data to quantify impacts to vegetation as a result of dispersed recreation, livestock grazing, wildlife habitat management, or potential wildland fires. There are approximately 628 acres of pending ROW projects reported in LR2000 in the Wildlife CESA. There are no pending minerals projects.

4.3.7.1 Proposed Action

The Proposed Action (approximately 100 acres) would impact approximately 0.05 percent of the CESA. Quantifiable past and present actions and RFFA disturbance in the Wildlife CESA total approximately 2,809 acres, which results in an incremental impact from the Proposed Action of approximately 3.6 percent. Since there are limited quantifiable data for all activities within the CESA, this calculation is a conservative analysis of the potential incremental impact of the Proposed Action. Project-related impacts would be localized and minimized due to implementation of the EPMs outlined in Section 2.1.11 and concurrent reclamation. Therefore,

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.

4.3.7.2 No Action Alternative

The total of the quantifiable past and present actions and RFFA disturbance within the Wildlife CESA is approximately 2,809 acres, which is an impact to approximately 1.5 percent of the CESA. Notice-level disturbance under this alternative (approximately nine acres) would result in an incremental impact of approximately 0.3 percent. Impacts to vegetation from this alternative, in combination with past and present actions and RFFAs disturbance, would be minimal.

4.3.8 Visual Resources

The CESA for visual resources is the Wildlife CESA. The CESA encompasses approximately 193,371 acres and is shown on Figure 4.2.1.

Past and Present Actions: Past and present actions that could have impacted and may be currently impacting visual resources include wildland fires, ROW construction, and mineral exploration. These actions as well as the existing disturbance in the Project Area have impacted the line, color, texture, and form of the landscape with the CESA. There are no specific data to quantify impacts to soils from livestock grazing, wildlife habitat management, or dispersed recreation in the Wildlife CESA.

Historic fires (2000-2013) have burned approximately 93 acres in the Wildlife CESA (approximately 0.05 percent of the CESA). Authorized, closed, and expired mineral exploration Notices, as well as mineral material disposal sites, total approximately 166 acres (approximately 0.09 percent of the CESA) of surface disturbance. Approximately 2,550 acres of ROWs were issued within the Wildlife CESA that had the potential to create surface disturbance. The past and present actions that are quantifiable have disturbed approximately 1.5 percent of the CESA. There are no data on the number of acres reclaimed. State and federal regulations require reclamation; therefore, it is reasonable to assume some areas have been reclaimed, become naturally stabilized, or have naturally revegetated over time, which would reduce the long-term visual impact from past and present disturbance.

RFFAs: Potential wildland fires, ROW construction, and mineral exploration are expected to continue. There are no specific data to quantify impacts to visual resources as a result of potential wildland fires. There are approximately 628 acres of pending ROW projects reported in LR2000 in the Wildlife CESA. There are no pending minerals projects.

4.3.8.1 Proposed Action

The Proposed Action (approximately 100 acres) would impact approximately 0.05 percent of the CESA. Quantifiable past and present actions and RFFA disturbance in the Wildlife CESA total approximately 2,809 acres, which results in an incremental impact from the Proposed Action of approximately 3.6 percent. Since there are limited quantifiable data for all activities within the CESA, this calculation is a conservative analysis of the potential incremental impact of the Proposed Action. Project-related impacts would be minimized by concurrent reclamation. In

addition, the implementation of the night skies EPM outlined in Section 2.1.11 would reduce visual impacts resulting from night operations. After reclamation, the disturbed areas associated with the Proposed Action, as well as past and present actions and RFFAs, may result in visual contrasts with the existing landscape as the vegetation is reestablishing; however, native vegetation would gradually reestablish within the disturbed areas to minimize visual contrasts. Therefore, based on the above analysis and findings, incremental impacts to visual resources 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.

4.3.8.2 No Action Alternative

The total of the quantifiable past and present actions and RFFA disturbance within the Wildlife CESA is approximately 2,809 acres, which is an impact to approximately 1.5 percent of the CESA. Notice-level disturbance under this alternative (approximately nine acres) would result in an incremental impact of approximately 0.3 percent. Impacts to visual resources from this alternative, in combination with past and present actions and RFFAs disturbance, would be minimal.

4.3.9 Water Quality

The CESA for surface water quality is the Watershed CESA. This CESA encompasses approximately 89,819 acres and is shown on Figure 4.2.1.

Past and Present Actions: Past and present actions that could have impacted and may be currently impacting surface water quality include wildland fires, wildlife habitat management, ROW construction and maintenance, mining, mineral exploration, and dispersed recreation. There are no specific data to quantify impacts to surface water quality from livestock grazing, wildlife habitat management, or dispersed recreation.

Historic fires (2000-2013) have burned approximately six acres in the Watershed CESA (approximately 0.007 percent of the CESA). Authorized, closed, and expired mineral exploration Notices total approximately 28 acres (approximately 0.03 percent of the CESA) of surface disturbance. State and federal regulations require reclamation; therefore, it is reasonable to assume that some areas have been reclaimed, have become naturally stabilized, or have naturally revegetated over time. Approximately 637 acres of ROWs were issued within the Watershed CESA that had the potential to create surface disturbance. The CESA is also comprised of a portion of NDOW Hunt Unit 251; activities associated with hunting, in particular off-road vehicle use, have the potential to create soil erosion and sedimentation of surface water features. The past and present actions that are quantifiable have disturbed approximately 0.8 percent of the CESA.

RFFAs: Potential wildland fires, wildlife habitat management, ROW construction and maintenance, mineral exploration, livestock grazing, and dispersed recreation are expected to continue. There are no specific data to quantify the amount of sedimentation that could result from these activities. However, mineral exploration activities would be required to comply with spill contingency plans, NDOT, and MSHA regulations for the handling of hazardous substances, thus minimizing impacts to surface water quality. There are approximately 621 acres

of pending ROW projects reported in LR2000 in the Watershed CESA. There are no pending minerals projects.

4.3.9.1 Proposed Action

The Proposed Action (approximately 100 acres) would impact approximately 0.1 percent of the CESA. Quantifiable past and present actions and RFFA disturbance in the Water Quality CESA is approximately 1,392 acres, which results in an incremental cumulative impact from the Proposed Action of approximately seven percent. Since there are limited quantifiable data for all activities within the CESA, this calculation is a conservative analysis of the potential incremental impact of the Proposed Action. However, based on the above analysis and findings, incremental impacts to surface water quality as a result of the Proposed Action, when combined with the impacts from the past and present actions and RFFAs, would be minimal.

4.3.9.2 No Action Alternative

A total of the quantifiable past and present actions and RFFA disturbance within the Watershed CESA is approximately 1,392 acres, which is an impact to approximately 1.5 percent of the CESA. Notice-level disturbance under this alternative (approximately nine acres) would result in an incremental impact of approximately 0.6 percent. Impacts to surface water quality from this alternative, in combination with past and present actions and RFFAs disturbance, would be minimal.

4.3.10 Wild Horses

The CESA for wild horses the Wildlife CESA. This CESA encompasses approximately 193,371 acres and is shown on Figure 4.2.1.

Past and Present Actions: Past and present actions that could have impacted and may be currently impacting wild horses include livestock grazing, wildland fires, wildlife habitat management, ROW construction and maintenance, mineral exploration, mining, wild horse gathers, and dispersed recreation. Impacts to wild horses from these activities include loss of forage, human disturbance, and changes to use patterns and distribution within the HMA. The extent of these impacts varies with the type of activity. There are no specific data to quantify impacts to wild horses from livestock grazing, wildlife habitat management, and dispersed recreation.

Historic fires (2000-2013) have burned approximately 93 acres in the Wildlife CESA (approximately 0.05 percent of the CESA). Authorized, closed, and expired mineral exploration Notices, as well as mineral material disposal sites, total approximately 166 acres (approximately 0.09 percent of the CESA) of surface disturbance. Approximately 2,550 acres of ROWs were issued within the Wildlife CESA that had the potential to introduce noise and increased traffic from human disturbance activities. The past and present actions that are quantifiable have disturbed approximately 1.5 percent of the CESA. These past and present actions have contributed to changes in the distribution and use patterns within the CESA.

RFFAs: Potential wildland fires, wildlife habitat management, ROW construction and maintenance, mineral exploration, livestock grazing, wild horse gathers, and dispersed recreation

are expected to continue. There are no specific data to quantify impacts to wild horses as a result of dispersed recreation, livestock grazing, wildlife habitat management, or potential wildland fires. There are approximately 628 acres of pending ROW projects reported in LR2000 in the Wildlife CESA. There are no pending minerals projects.

4.3.10.1 Proposed Action

The impacts considered for cumulative analysis were those that result in increased fragmentation of wild horse habitat, and cumulative increases in vegetation and soil disturbances, which result in incremental losses in availability of quality habitat used for wild horses.

Fences restrict free movement within the HMA, and prevent the HMA from being utilized uniformly. When considered with other ongoing and future exploration within the Stone Cabin HMA, the usable habitat may be reduced, and wild horses may at least temporarily avoid areas due to human disturbance, particularly in the heavily used areas.

Over time, disturbed areas in the CESA may cumulatively increase and impact the quality and quantity of habitat available to wild horses, as well as increase risks for erosion and noxious weed invasion. Each activity may result in incremental restrictions to free roaming behavior and over time may influence utilization patterns, genetic interchange, and use of water sources.

The Proposed Action (approximately 100 acres) would impact soils and vegetation within approximately 0.05 percent of the CESA. Quantifiable past and present actions and RFFA disturbance in the Wildlife CESA is approximately 2,809 acres, which results in an incremental impact from the Proposed Action of approximately 3.6 percent. The 1,481-acre Project Area in which the disturbance would occur equates to approximately 0.8 percent of the southern portion of the HMA. Since there are limited quantifiable data for all activities within the CESA, this calculation is a conservative analysis of the potential incremental impact of the Proposed Action. However, disturbance to wild horses due to increased human presence, vehicles, noise, etc., could extend beyond the Project Area over the anticipated ten-year Project life, and contribute to cumulative impacts by adding to the changes in distribution and use patterns, and increasing restless behavior and flight response.

Project-related impacts would be localized and minimized due to implementation of the EPMs outlined in Section 2.1.11 and concurrent reclamation, as well as the phased nature of the Project and minimal amount of equipment and workers within the Project Area at any one time over the anticipated ten-year Project life. Therefore, 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.

The implementation of BMPs, EPMs, and reclamation requirements would reduce the loss of habitat and water sources and the incremental effects to wild horses as a result of the Proposed Action would be minimal.

4.3.10.2 No Action Alternative

The total of the quantifiable past and present actions and RFFA disturbance within the Wildlife CESA is approximately 2,809 acres, which is an impact to approximately 1.5 percent of the

CESA. Notice-level disturbance under this alternative (approximately nine acres) would result in an incremental impact of approximately 0.3 percent. Impacts to wild horses from this alternative, in combination with past and present actions and RFFAs disturbance, would be minimal.

4.3.11 Wildlife

The CESA for wildlife is the Wildlife CESA. This CESA encompasses approximately 193,371 acres and is shown on Figure 4.2.1.

Past and Present Actions: Past and present actions that could have impacted and may be currently impacting wildlife and their habitat include livestock grazing, wildland fires, wildlife habitat management, ROW construction and maintenance, mineral exploration, mining, and dispersed recreation. These activities have the potential to impact water resources and wildlife habitat, or result in direct impacts to individuals in travel routes, or loss of forage, cover, and habitat, as well as disturbance of mating and brood rearing practices.

Historic fires (2000-2013) have burned approximately 93 acres in the Wildlife CESA (approximately 0.05 percent of the CESA). Authorized, closed, and expired mineral exploration Notices, as well as mineral material disposal sites, total approximately 166 acres (approximately 0.09 percent of the CESA) of surface disturbance. Approximately 2,550 acres of ROWs were issued within the Wildlife CESA that had the potential to create surface disturbance and disturb wildlife species and their habitat and vegetation. The CESA is also comprised of a portion of NDOW Hunt Unit 251; activities associated with hunting have the potential to create noise and disturbance to wildlife, or remove or alter habitat. The Wildlife CESA encompasses a portion of the Stone Cabin grazing allotment. Livestock grazing and associated management could have contributed to the establishment and spread of noxious weeds, invasive and non-native species, which could have had an indirect effect on wildlife. However, disturbance to wildlife and their habitat from past and present actions would have been reduced through reclamation and seeding of disturbed areas and natural recolonization of native species. The past and present actions that are quantifiable have disturbed approximately 1.5 percent of the CESA. There are no data on the number of acres reclaimed. State and federal regulations require reclamation; therefore, it is reasonable to assume some areas have been reclaimed, have become naturally stabilized, or have naturally revegetated over time.

RFFAs: Potential impacts to wildlife and their habitat from livestock grazing, wildlife habitat management, dispersed recreation, ROW construction and maintenance, mineral exploration activities, 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 within the CESA as a result of dispersed recreation, livestock grazing, wildlife habitat management, or potential wildland fires. There are approximately 628 acres of pending ROW projects reported in LR2000 in the Wildlife CESA. There are no pending minerals projects.

4.3.11.1 Proposed Action

The Proposed Action (approximately 100 acres of temporary breeding and/or foraging habitat removal) would impact approximately 0.05 percent of the CESA. Quantifiable past and present actions and RFFA disturbance in the Wildlife CESA is approximately 2,809 acres, which results

in an incremental impact from the Proposed Action of approximately 3.6 percent. Since there are limited quantifiable data for all activities within the CESA, this calculation is a conservative analysis of the potential incremental impact of the Proposed Action. Project-related impacts would be localized and minimized due to implementation of the EPMs outlined in Section 2.1.11 and concurrent reclamation. Therefore, based on the above analysis and findings, incremental impacts to wildlife 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.

4.3.11.2 No Action Alternative

The total of the quantifiable past and present actions and RFFA disturbance within the Wildlife CESA is approximately 2,809 acres, which is an impact to approximately 1.5 percent of the CESA. Notice-level disturbance under this alternative (approximately nine acres) would result in an incremental impact of approximately 0.3 percent. Impacts to wildlife species and their habitat from this alternative, in combination with past and present actions and RFFAs disturbance, would be minimal.

5 CONSULTATION AND COORDINATION

This EA was prepared at the direction of the BLM, TFO, Battle Mountain District, Nevada, by Enviroscientists, under a contract with IRC. The following is a list of persons, groups, and agencies consulted, as well as a list of individuals responsible for the preparation of this EA.

5.1 Persons, Groups, and Agencies Consulted

Federal Agencies

United States Fish and Wildlife Service

State Agencies

Eric Miskow, NNHP
Timothy Herrick, NDOW

Native Americans

Timbisha Shoshone Tribe
Yomba Shoshone Tribe
Duckwater Shoshone Tribe

Intor Resources Corporation

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5.2 List of Preparers and Reviewers

BLM

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Juan Martinez	Native American Consultation
Jeremy Sykes	Rangeland Management, Vegetation, Soils
Kent Bloomer	Noxious Weeds, Invasive and Non-native Species
Wendy Seley	Lands and Realty
Jon Kramer	Recreation, Visual Resources, lands with wilderness characteristics
David Price	Wildlife, Migratory Birds, Special Status Species
Austin Brewer	Special Status Species, Wild Horses
Christine McCollum	Cultural Resources
Alden Shallcross	Water Quality

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Richard DeLong	Project Manager
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APPENDIX A

GOLDEN ARROW EXPLORATION PROJECT
ENVIRONMENTAL ASSESSMENT
RESPONSES TO PUBLIC COMMENTS

Appendix A
Responses to Public Comments

The EA was made available for a 30-day public comment period ending on March 21, 2016. Notifications of the EA's availability were sent to persons and agencies on the Project mailing list, and the EA was posted on the BLM National NEPA Register and the Battle Mountain District website. The BLM also issued a press release the same day with a link to the EA and instructions on how to comment. The BLM received six comment letters, including one from the public and five from state agencies. The BLM evaluated substantive comments during the decision making process, and made minor corrections and clarifications to the EA as a result of this review. The BLM determined that the comments did not identify or present any significant new information or changed circumstances that would warrant additional NEPA analysis. Responses to substantive comments are provided in this appendix. While not every comment letter is included in its entirety, individual substantive or actionable comments that were identified in each letter have been included in the following table.

Golden Arrow Exploration Project Environmental Assessment Responses to Public Comments			
Commenter	**Comment Number**	**Comment**	**Response**
Nevada Division of Environmental Protection, Bureau of Water Pollution Control	A-1	The project may be subject to BWPC permitting. Permits are required for discharges to surface waters and groundwater's of the State (Nevada Administrative Code NAC 445A.228). BWPC permits include, but are not limited to, the following: • Stormwater Industrial General Permit • De Minimis Discharge General Permit • Pesticide General Permit • Drainage Well General Permit • Temporary Permit for Discharges to Groundwater's of the State • Working in Waters Permit • Wastewater Discharge Permits • Underground Injection Control Permits • Onsite Sewage Disposal System Permits • Holding Tank Permits Please note that discharge permits must be issued from this Division before construction of any treatment works (Nevada Revised Statute 445A.585). For more information on BWPC Permitting, please visit our website at: http://ndep.nv.gov/bwpc/index.htm. Additionally, the applicant is responsible for all other permits that may be required, which may include, but not be limited to: • Dam Safety Permits – Division of Water Resources	Intor Resources Corporation (IRC) is aware of the required NDEP BWPC and Nevada Division of Water Resources (NDWR) permits. Many of the listed permits are required for sites and activities occurring within or adjacent to Waters of the U.S (Stormwater Industrial General Permit, De Minimis Discharge General Permit, Pesticide Permit, Working in Waters Permit, 401 Water Quality Certification, and 404 Permits). There are no Waters of the U.S. in the Project Area. The Project does not involve discharges to surface or groundwater. Therefore, permits involving discharges are not applicable to the site (Drainage Well General Permit, Temporary Permit for Discharge to Groundwaters of the State, Wastewater Discharge Permits, and Underground Injection Control Permits). The Project does not include any onsite sewage disposal systems or holding tanks. No dams have been authorized for the Project; therefore, dam safety permits are not required. Groundwater monitoring and production wells have been included as part of the

		• Well Permits – Division of Water Resources • 401 Water Quality Certification – NDEP • 404 Permits – U.S. Army Corps of Engineers • Air Permits – NDEP • Health Permits – Local Health or State Health Division • Local Permits – Local Government	Project for potential inclusion into subsequent phases of the Project. IRC would obtain the appropriate water rights and permits prior to construction. IRC has obtained a Mining and Milling waiver from the Nevada Division of Water Resources to obtain water from a private well for the Project life. IRC would obtain a Class II Air Quality Operating Permit Surface Area Disturbance. Any other necessary permits would be obtained as applicable.
Nevada Division of Water Resources	B-1	Proposal supported as written.	Comment noted.
Nevada Department of Wildlife	C-1 (Section 2.1.3)	In the spirit of minimizing new ground disturbance, would it be feasible to widen only one of the two access roads while still meeting project goals?	IRC would widen the northern access road as the main access to the Project Area and use it as much as possible. However, because the other road may be needed in the event of a washout caused by an extreme storm, or for safe two-way vehicle passage, the EA also analyzes the potential widening of the southern access road. No change has been made to the EA to address this comment.
	C-2 (Section 2.1.9)	The Department recommends additional species consideration for inclusion in the Anticipated Seed Mix presented in Table 2.1-2. While the native species named are hardy and appropriate, additional shrubs and forbs in the mix would likely enhance rates of reclamation and utility to a broader wildlife base by: 1) offering greater selection to herbivores and relieving pressure on key grass species, and 2) attracting a greater diversity of winged insects	The seed mix has been changed to reflect the habitat and known revegetation success of species in the area. Refer to Table 2.1-2 of the Final EA.

		than do grasses, providing enhanced selection for bats and other insectivorous wildlife. Forbs also attract pollinators including hummingbirds. Additional shrubs and forbs to consider may include spiny hopsage (*Grayia spinosa*), winterfat (*Krascheninnikovia lanata*), Booth's evening primrose (*Camissonia boothii*), Browneyes (*Camissonia claviformis*), Tufted evening primrose (*Oeneothera caespitosa*) and Yellow beeplant (*Cleome lutea*).	
	C-3 (Section 2.1.9.6)	Drill seeding is recommended as the area supports a fair number of kangaroo rats, pocket mice, and ants that will likely collect and cache seeds.	Broadcast seeding is the BLM's preferred method of seeding, as drill seeding is more difficult in the areas with steep terrain, and would result in more disturbance than broadcast seeding, given the very small disturbance areas. The BLM recommends to drag a chain mat behind the broadcaster to assist in covering the seeds. No change has been made to the EA to address this comment.
	C-4 (Table 3.1-1)	Regarding golden eagles, we believe this species should be further analyzed in the EA as: • Golden eagles do nest in the Kawich Range, an example of which is a nest (status unknown) located approximately 0.5 miles outside the 4-mile golden eagle buffer. • Potential golden eagle nesting habitat does occur within the 4-mile project buffer as documented in the Golden Arrow Baseline Biological Survey Report, January 21, 2015, Prepared by Enviroscientists, Inc. (Page 32 and Appendix C, Photo Plate 57). • And, eagle surveys for this EA were performed on August 22, 2014 which is	Text has been included in EA Section 3.2.14 Special Status Species to describe the habitat in the four-mile buffer and to refer to the EPM in EA Section 2.1.11 to help reduce any potential impacts. Text has also been added clarifying that clearance surveys would be done during the nesting season and nest clearance surveys would cover the one location identified as nest habitat within the four-mile buffer of the Project Area. If an active nest is found, BLM and NDOW would coordinate to determine an appropriate buffer around the nest, and appropriate restrictions and/or

		not the optimal time for detecting nesting eagles.	monitoring to ensure that the nesting birds' behavior is not disrupted, all of which may vary according to factors such as terrain and the location and type of potential disturbance.
	C-5 (Section 3.2.14.1)	A dark kangaroo mouse was trapped by the Department just north of the project area near Haws Canyon in September 2012. Given there is potential suitable habitat for this species within the proposed Phase I exploration, we recommend potential suitable dark kangaroo mouse habitat be avoided or that small mammal trapping be conducted this spring for determination of this species' presence and local habitat identification. Should occupied habitat be found, and avoidance not feasible, we recommend further coordination between the BLM and NDOW.	BLM and NDOW wildlife biologists, in conversation subsequent to receiving this comment, concurred that avoidance and trapping were probably not feasible, since potential suitable habitat exists throughout the Project Area. A reclamation seed mix is included (see EA Section 2.1.9) that includes plants that produce a large amount of seed which would provide adequate feed for dark kangaroo mouse, such as Indian rice grass.
State Historic Preservation Office	D-1	The SHPO has reviewed the subject document and does not recommend any changes.	Comment noted.
American Wild Horse Preservation Campaign	E-1	AWHPC urges the BLM Tonopah Field Office to reject Golden Arrow's proposed Exploration Project. This proposed Exploration Project will further jeopardize the well-being of wild horses and exacerbate the loss of the resources in this area. The proposal, if implemented, will cause destruction of the sensitive desert landscape and would likely the increase pollution of wells, surface and subsurface areas. This proposal will further harm wildlife, including federally-protected wild horses, and will have a negative impact to the human environment. The creation/maintenance of roads and increased heavy equipment traffic in this area will further harm this landscape and the wild animals that	The Project Area consists of approximately 1,481 acres in a portion of the HMA that measures 189,545 acres, which totals approximately 0.8 percent of the southern portion of the Stone Cabin HMA. Impacts to forage would not be substantial or permanent. Please refer to Chapter 3 of the EA, Affected Environment and Environmental Consequences, for a discussion of potential effects on renewable resources. Horses are not managed as wildlife, per the 43 CFR 4700. Sumps would be constructed with slope angles of 3H:1V to enable horses and

		inhabit the area. The BLM would be derelict in this mandate to protect public lands and manage them for multiple use by permitting the Exploration Project due to potential for contamination of land and water resources from exploration activities and the increased heavy equipment activity which will endanger not only wild horses, but all wildlife.	wildlife to exit easily. Reclamation is required of all minerals projects and would include wildlife habitat restoration no more than two years after the completion of the Project. Lastly, mineral exploration and extraction are an integral part of the BLM's multiple-use mandate.
	E-2	While the proposal is to conduct exploration, the EA fails to outline the environmental consequences of mineral mining, which is the ultimate objective of the proposed exploration, it is necessary prior to issuing the decision on this proposed action to fully consider and analyze whether this site-specific land is appropriate for mining operations. Current mining technology in Nevada is based upon large open pit mines that may extend 800 feet below the water table and cover over 500 acres of surface area. Such technology requires enormous quantities of water to be discharged from the pits to allow mining to continue. The proposed Exploration Project will further drain water from aquifers and water sources for this large-scale operation. By draining water from aquifers, mining operations directly and indirectly impact surface water. In fact, government scientists have estimated that it could take more than 200 years to replenish the groundwater removed by mining operations. Mining unearths lead and mercury naturally or can produce it as a byproduct. Data shows that metal mining is the single largest source of	The Proposed Action is a mineral exploration project, not a mining project. If in the future a development project were proposed in the Project Area, that proposal would be subject to its own NEPA analysis and would include the project-specific details needed for a meaningful analysis. No change has been made to the EA to address this comment.

		toxic chemical releases into the environment. According to the EPA's Toxic Release Inventory, mines are a leading source of toxic mercury air pollution in the U.S. Mercury is a naturally occurring element in some gold ore, which is primarily released into the air during the ore-heating stage of gold extraction. Airborne mercury can travel great distances, ultimately settling in lakes and rivers. Exposure to mercury can cause significant neurological and developmental problems such as attention and language deficits, impaired memory and impaired vision and motor function. (Source: Earthworks.) Mercury, arsenic and other heavy metal contamination is a common byproduct of mining operations. New studies indicate that mining operations have the potential to spread mercury in the environment in highly mobile and highly reactive forms – meaning the negative environmental impacts have more far-reaching effects than previously thought. The spread of such toxins will negatively impact wild horse herds in the area – not to mention all wildlife including Endangered Species and those animals facing ESA listing.	
	E-3	The site-specific destruction and impact to the surrounding areas makes clear that the proposed project area would negatively impact wild horse herds. Due to the documented and unavoidable contamination which results from mining operations and further disturbance to the humane environment, AWHPC and its supporters would suffer if this proposal is approved due to the negative impacts such an operation would have on individual wild horses and wild horse herds as a whole. Despite	See the response to comment E-2. BLM has the authority and responsibility to permit minerals exploration if there would not be unnecessary and undue degradation (43 CFR 3809). The Proposed Action is consistent with federal, state and local laws, regulations and plans including FLPMA, BLM's 43 CFR 3809 surface management regulations, State of Nevada mining statutes and regulations, and BLM's 43

		permitting such mining and exploratory activities for decades, the BLM has failed to collect or conduct research on the impact, both physical or behavioral, of such mining-related activities on wild horses. The BLM must deny the Exploration Project in order to fulfill its mandate to protect wild horses in the designated HMAs who would be directly or indirectly impacted by this mining Exploration Project. The BLM's "multiple use" mandate does not require the agency to permit each mining permit request that is submitted. It is well documented that mining operations, much like the proposed Exploration Project, contaminate land and water in and around the mining operation. The EA fails to take a hard look at the above mentioned issues. As such, we strongly urge you to revise the EA and make the appropriate analysis and determination that this proposed action is in conflict with the BLM's responsibility to protect the public lands and manage for multiple use. Please do not choose the interests of Golden Arrow over protection of the public lands, the interests of the American public and America's wild horses.	CFR 2800 regulations. The EA (Chapters 3 and 4) shows anticipated direct, indirect and cumulative effects of the Proposed Action to be minor and/or temporary.
	E-4	NEPA requires federal agencies to conduct environmental analyses that "include all potentially affected resources, ecosystems and human communities." There can be no question here that wild horses, protected under the WFRHBA as an "integral part of the natural system of public lands," are affected resources within the project area.	Item #5 refers to the impacts that the Project itself would have on the availability of wild horse foraging habitat due to the phased approach of the Project, which means only a small amount of disturbance would occur at any one time, and the reclamation activities associated with the Project would occur concurrently when feasible.

		Further, the BLM's NEPA Handbook advises on page 42: "Is there disagreement about the best way to use a resource, or resolve an unwanted resource condition, or potentially significant effects of a proposed action or alternative?" If the answer is "yes," you may benefit from subjecting the issue to analysis. Entire resources cannot be issues by themselves, but concerns over how a resource may be affected by the proposal can be issues." According to the EA, the impacts to wild horses from the Proposed Action could include: 1. Impacts to wild horses could be caused by increased human activity, increased vehicle traffic on Project roads, and noise associated with drilling and construction activities. It is expected wild horses would avoid drill sites during drilling activities and increase use in other portions of the HMA, which could result in changes to usage patterns and distribution within the HMA. 2. The 1,481-acre Project Area within which the increased human disturbance would take place represents approximately 0.8 percent of the south portion of the HMA. [HOWEVER], Impacts to the wild horses through human disturbance could cause them to reduce or eliminate use of a larger land area than the Project Area itself…[and] would occur over the ten-year life of the Project. 3. When considered with other ongoing and future exploration within the Stone Cabin HMA, the usable habitat may be	Therefore, the current statement in the EA that Project activities would not be expected to result in substantial or permanent impacts to forage availability for wild horses in the HMA is accurate. Item #4 refers to a discussion in the Cumulative Impacts section that describes potential impacts to wild horse habitat over time if disturbance were to increase in the CESA from other projects that may occur in the future. Therefore, items #4 and #5 are not contradictory. The small amount of disturbance that would occur at one time from the Project would not result in substantial or permanent impacts to forage availability for wild horses in the HMA. Over time, future disturbance in the HMA may result in an impact to the quality and quantity of habitat; however, there is no way to quantify impacts to unforeseen future projects. No change has been made to the EA to address this comment. In regards to water quality impacts, the following responses are provided: • There would be no reduction in ground water. In the event that ground water is encountered, the drill hole would be plugged pursuant to applicable state regulations (NAC 534.420) (See EA Section 2.1.9.3).

		reduced, and wild horses may at least temporarily avoid areas due to human disturbance, particularly in the heavily used areas. 4. Over time the areas of disturbance would cumulatively increase and impact the quality and quantity of habitat available to wild horses. 5. During the phased approach of the Project and planned reclamation, there would be no expected substantial or permanent impacts to forage availability for wild horses in the HMA. 6. Each activity may result in incremental restrictions to free roaming behavior over time may influence utilization patterns, genetic interchange, and use of water sources. The EA must be corrected as the above quotes #4 and #5 from the EA contradict each other. Obviously removal of habitat, scaring horses away from thousands of acres of public lands will negatively impact wild horses' access to resources. Yet, the EA appears to try to sweep this negative impact under the rug. The EA must be amended to address this serious negative impact and the strong controversy regarding this Proposed Action. In addition, the following potential impacts to water quality are not addressed by the EA and must be analyzed, including the impact these consequences would have on wild horses: • reduction in ground water • increased siltation in streams and rivers resulting from surface disturbances	• There are no water features identified as a stream or river in the Project Area or vicinity. • In the event of a spill of a reportable quantity of diesel fuel, gasoline, or lubricating grease, measures would be taken to control the spill, and appropriate agencies would be notified. If any hazardous materials are spilled, they would be cleaned up in a timely manner, removed from the site, and disposed of at an approved disposal facility (see EA Section 2.1.6). In addition, IRC would follow the measures outlined in the Project's Spill Contingency Plan (see EA Section 2.1.11). • The Project does not include alteration to natural drainage paths or channel morphology. • Appropriate BMPs would be used to reduce impacts from increased sedimentation (see EA Sections 2.1.7 and 2.1.11). • There would be no impervious surfaces created by the construction of the drill sites and roads. Based on the above rationale, the Proposed Action's impacts have been fully disclosed. No changes have been made to the EA to address this comment.

		• hazardous waste pollution • degradation of surface water quality and groundwater quality from point source pollution, non-point source pollution, increased surface water runoff and increased erosion • alternation of natural drainage paths and channel morphology • removal of vegetation and subsequent erosion leading to loss of channel stability and increased sedimentation • effects on peak flow and low flow of perennial streams, ephemeral, intermittent rivers and streams and their associate due to increase in impervious surfaces resulting from the construction of the well pad and road. The above mentioned impacts were not adequately analyzed and the EA must be revised to take these impacts into consideration prior to issuing a final decision. We hope the BLM, after adequately analyzing these impacts agrees the Proposed Action is not appropriate for this specific wild horse habitat.	
	E-5	The National Environmental Policy Act (NEPA) (42 USC § 4321 et seq.), requires that cumulative impacts of the proposed action be examined. NEPA defines a cumulative impact as an impact on the environment which results from the incremental impact of the action when added to past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-federal) or person undertakes such other actions (40 CFR 1508.7). The BLM must seriously consider the cumulative impacts of the Proposed Action	EA Section 4.3.10 analyzes the incremental impacts the Proposed Action would have on wild horse habitat within the HMA when added to past, present, and RFFAs. Where possible, all quantifiable impacts were discussed and impacts to the loss of habitat in the HMA were analyzed. No changes have been made to the EA to address this comment.

		with past, present and reasonably foreseeable future actions. This should include any potential impacts to individual wild horses or wild horse herds – both physical and behavioral – and the impact to resources utilized by wild horses. The BLM must consider all wild horse roundups that have occurred within the project zone or are scheduled or anticipated to occur in the future. Further, the BLM should disclose and analyze the cumulative impacts of other activities that affect wild horses in the area, including livestock grazing, other mining activities, oil and gas exploration and/or extraction operations, etc. The BLM must disclose, consider and analyze all permitted activities within the affected area in order to determine the current stress on the public lands at issue.	

Nevada Division of State Lands	F-1	As always requested by this agency, please consider the cumulative visual impacts from development activities (temporary and permanent), including proliferation of improper lighting. Thank you for including language on page 2-15 regarding the following mitigation measures: <u>Utilize appropriate lighting</u>: • Utilize consistent lighting mitigation measures that follow "Dark Sky" lighting practices. • Effective lighting should have screens that do not allow the bulb to shine up or out. All proposed lighting shall be located to avoid light pollution onto any adjacent lands as viewed from a distance. All lighting fixtures shall be hooded and shielded, face downward, located within soffits and directed on to the pertinent site only, and away from adjacent parcels or areas. • A lighting plan should be submitted indicating the types of lighting and fixtures, the locations of fixtures, lumens of lighting, and the areas illuminated by the lighting plan. • Any required FAA lighting should be consolidated and minimized whenever possible.	Comment noted.