

**United States Department of the Interior  
Bureau of Land Management**

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**Environmental Assessment  
Huntington Valley 3D Seismic Project**

DOI-BLM-NV-E020-2013-0008-EA

File Number: NVE0200-NOI-2013-001

Elko District – Tuscarora Field Office  
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## **MISSION STATEMENT**

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# TABLE OF CONTENTS

CHAPTER 1 - INTRODUCTION .....	1
1.1 Identifying Information.....	1
1.1.1 Project Location.....	1
1.1.2 Name and Location of Preparing Office:.....	4
1.2 Purpose and Need.....	4
1.3 Plan Conformance Review .....	4
1.4 Public Participation .....	7
1.5 Decisions to Be Made .....	8
1.6 Federal, State and Local Permits or Required Consultation .....	9
CHAPTER 2 - PROPOSED ACTION AND ALTERNATIVES.....	10
2.1 Introduction .....	10
2.2 Alternative – Proposed Action .....	10
2.2.1 Location and Description of Proposed Facilities .....	10
2.2.1.1 Schedule, Workforce, Traffic .....	14
2.2.1.2 Seismic Land Survey .....	15
2.2.1.3 Cultural Survey .....	15
2.2.1.4 Native American Traditional Values Survey .....	15
2.2.1.5 Biological Survey .....	15
2.2.1.6 Project Design Features (Applicant-Committed Measures to Protect Resources) .....	15
2.2.2 No Action Alternative.....	19
2.3 Alternatives Considered but not Analyzed in Detail.....	19
CHAPTER 3 – AFFECTED ENVIRONMENT AND ENVIRONMENTAL EFFECTS .....	20
3.1 Air Quality and Climate .....	31
3.2 Cultural Resources .....	34
3.3 Fire Management.....	36
3.4 Hydrology, Floodplains, and Riparian/Wetlands.....	38
3.5 Invasive, Non-Native Species.....	40
3.6 Land Tenure, Rights of Way and Other Uses.....	42
3.7 Livestock Grazing/Rangeland Health .....	43
3.8 Migratory Birds.....	46
3.9 Native American Traditional Values.....	49
3.10 Recreation .....	51
3.11 Soils.....	52
3.12 Special Status Species .....	56
3.13 Transportation and Access .....	70
3.14 Vegetation .....	71
3.15 Visual Resources Management .....	76
3.16 Wilderness Study Areas and Lands with Wilderness Characteristics.....	77
3.17 Wildlife and Fisheries .....	79
CHAPTER 4 – TRIBES, INDIVIDUALS, ORGANIZATIONS OR AGENCIES CONSULTED.....	86
CHAPTER 6 – LIST OF PREPARERS.....	88

## List of Figures

Figure 1	Male Sage-Grouse Lek Attendance within the South Fork Population Management Unit Compared to Lek Attendance in all Population Management Units within Elko County, 2009 to 2012.....	59
Figure 2	Estimated Annual Production of Sage-Grouse Juveniles within the South Fork Population Management Unit from 2003 to 2012. The Production Trend is Not Significant ( $r^2 = 0.135$ , $P > 0.10$ ).....	60
Figure 3	Estimated Percent Nesting Success of Sage-Grouse within the South Fork Population Management Unit from 2002 to 2012. The Nesting Success Trend is Decreasing ( $r^2 = 0.327$ , $P = 0.066$ ) .....	61

## List of Maps

Map 1	General Location.....	5
Map 2	Surface Ownership.....	6
Map 3	Proposed Seismic Program .....	13
Map 4	Cumulative Effects Study Area for Air Quality and Climate .....	24
Map 5	Cumulative Effects Study Area for Migratory Birds, Special Status Species, Wildlife and Fisheries, Soils, and Vegetation .....	25
Map 6	Cumulative Effects Study Area for Livestock Grazing/Rangeland Health .....	26
Map 7	Cumulative Effects Study Area for Greater Sage-Grouse .....	27
Map 8	Cumulative Effects Study Area for Big Game with Pronghorn Seasonal Ranges .....	28
Map 9	Cumulative Effects Study Area for Big Game with Mule Deer Seasonal Ranges .....	29
Map 10	Cumulative Effects Study Area for Big Game with Elk Seasonal Ranges.....	30
Map 11	Prevention of Significant Deterioration Class I Areas .....	32
Map 12	Fire History.....	37
Map 13	Grazing Allotments.....	44
Map 14	Soils .....	53
Map 15	Greater Sage-Grouse Habitat Use.....	58
Map 16	Greater Sage-Grouse Habitat within the Project Area.....	62
Map 17	Pygmy Rabbit Burrow Locations within the Project Area.....	64
Map 18	Vegetation Types within the Project Area .....	73
Map 19	Wilderness Areas and Lands with Wilderness Characteristics within or near the Project Area .....	78

## List of Tables

Table 1	Potentially Affected Resources .....	20
Table 2	Cumulative Effects Rationale.....	22
Table 3	Acres Affected within Project Boundary Cumulative Effects Study Area.....	23
Table 4	Project Emissions (tons) .....	31
Table 5	Acres Affected within the Air Quality Cumulative Effects Study Area.....	33
Table 6	Weed Species Located in the Project Area .....	41
Table 7	Rights-of-Way within the Project Area .....	42
Table 8	Grazing Allotments Coinciding with the Project Area .....	45
Table 9	Acres Affected within Grazing Allotment Cumulative Effects Study Area.....	46
Table 10	Migratory Birds Observed in the Project Area .....	47
Table 11	Birds of Conservation Concern within Bird Conservation Region 9 (Great Basin) that Occur or Are Likely to Occur in the Project Area .....	47
Table 12	Acres Affected within Watershed Cumulative Effects Study Area.....	49
Table 13	Vegetation Types Affected by Vibroseis Trucks within Nevada Department of Wildlife Sage-Grouse Habitat Categories in Project Area .....	66
Table 14	Vegetation Types Affected by Vibroseis Trucks within BLM Sage-Grouse Habitat Categories on BLM-Administered Lands .....	67
Table 15	Acres Affected within Sage-Grouse South Fork Population Management Unit Cumulative Effects Study Area .....	69
Table 16	Vegetation Types, General Characteristics, and Coverages within the Project Area .....	71
Table 17	Vegetation Types Affected and Estimates of Maximum Effects to Shrub Components...	75
Table 18	Acres Affected in Pronghorn Ranges within Big Game Cumulative Effects Study Area ..	84
Table 19	Acres Affected in Mule Deer Ranges within Big Game Cumulative Effects Study Area ..	85
Table 20	Acres Affected in Elk Ranges within Big Game Cumulative Effects Study Area.....	85

## List of Appendices

Appendix A	Tables
	Table A-1 Noxious Weeds and Non-Native Plant Species Observed within Elko County/Project Area
	Table A-2 Oil and Gas Leases within the Project Area
	Table A-3 Bird Species Reported on National Biological Survey Breeding Bird Survey Routes within 100 Miles of the Huntington Valley 3D Seismic Project, 1992 to 2011
	Table A-4 Selected Soil Mapping Units and Characteristics in the Project Area
	Table A-5 BLM Sensitive Animal Species in the BLM Elko District and Elko County, with Potential for Occurrence within the Project Area
	Table A-6 BLM Sensitive Plant Species in the BLM Elko District and Elko County, with Potential for Occurrence within the Project Area
Appendix B	Summary of Big Game and Small Game Status
Appendix C	Common Names and Scientific Names for Animal and Plant Species Discussed in the Text and Included in Tables

## List of Abbreviations and Acronyms

AO	Authorized Officer
APE	Area of Potential Effect
ARPA	Archaeological Resources Protection Act
ATVs	all-terrain vehicles
AUMs	animal unit months
BCC	Birds of Conservation Concern
BCR	Bird Conservation Regions
BLM	Bureau of Land Management
BMPs	Best Management Practices
CESAs	Cumulative Effects Study Areas
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CRA	Cultural Resource Analysts, Inc.
CWA	Clean Water Act
DOI	U.S. Department of the Interior
DPS	Distinct Population Segment
DSL	Department of State Lands
EA	Environmental Assessment
EO	Executive Order
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
FHA	Federal Highway Administration
FLPMA	Federal Land Policy and Management Act
FMU	Fire Management Unit
GIS	Geographic Information System
GPS	Global Positioning System
HUC	Hydrologic Unit Code
HWA	Hayden-Wing Associates
IM	Instruction Memorandum
IPCC	Intergovernmental Panel on Climate Change
LCT	Lahontan cutthroat trout
LWC	Lands with Wilderness Characteristics
MBTA	Migratory Bird Treaty Act
MOU	Memorandum of Understanding
NAAQS	National Ambient Air Quality Standards

NAC	Nevada Administrative Code
NAGPRA	Native American Graves Protection and Repatriation Act
NHPA	Nation Historic Preservation Act
NAIP	National Agriculture Imagery Program
NDEP	Nevada Division of Environmental Protection
NDOA	Nevada Department of Agriculture
NDOT	Nevada Department of Transportation
NDOW	Nevada Department of Wildlife
NDWR	Nevada Division of Water Resources
NEPA	National Environmental Policy Act
NNHP	Nevada Natural Heritage Program
Noble	Noble Energy, Inc.
NOI	Notice of Intent
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NRS	Nevada Revised Statutes
OHV	off-highway vehicle
PGH	Preliminary General Habitat
PMU	Population Management Unit
PPH	Preliminary Priority Habitat
PSD	Prevention of Significant Deterioration
psi	pounds per square inch
RFFAs	Reasonably Foreseeable Future Actions
RMP	Resource Management Plan
ROD	Record of Decision
SHPO	State Historic Preservation Officer
SR	State Route
TMDL	Total Maximum Daily Load
USFWS	U.S. Fish and Wildlife Service
VRM	Visual Resource Management
WSA	Wilderness Study Area

# CHAPTER 1 - INTRODUCTION

## 1.1 IDENTIFYING INFORMATION

---

### **BACKGROUND:**

Noble Energy, Inc. (Noble) filed a Notice of Intent (NOI) to conduct Oil and Gas Geophysical Exploration Operations with the Bureau of Land Management (BLM) Elko District, Tuscarora Field Office on August 30, 2012. Noble proposes to conduct the Huntington Valley 3D Seismic Project (Proposed Action or Project) to evaluate possible hydrocarbon reserves underlying the project area in support of exploration of existing oil and gas leases.

The Huntington Valley 3D Seismic project area encompasses approximately 63,495 acres in Elko County, Nevada (see Map 1). Within the total project area, 34,999 acres (58 percent) are administered by the BLM Elko District, Tuscarora Field Office and 28,496 acres (42 percent) are private lands. Approximately 1,073 miles of source and receiver lines are proposed on public and private lands within the project area. The Project is proposed to begin in fall 2013, once all permits and approvals are obtained.

**NUMBER:** DOI-BLM-NV-E020-2013-0008-EA

**CASEFILE/PROJECT NUMBER:** NVE0200-NOI-2013-001

**PROJECT NAME:** Noble Energy – Huntington Valley 3D Seismic Project

**PLANNING UNIT:** Elko District, Tuscarora Field Office

### 1.1.1 PROJECT LOCATION

The proposed Project is located in Elko County, Nevada approximately 21 miles south of Elko, Nevada. General access from Elko is southeast on State Route (SR) 227 approximately 3.7 miles to SR-228, then south approximately 17.5 miles to the project area.

### **LEGAL DESCRIPTION (Surface Ownership) (see Map 2):**

Mount Diablo Meridian

#### **BLM-Administered Lands**

- T. 31 N., R. 55 E.,
  - Sec. 36, NW $\frac{1}{4}$ , W $\frac{1}{2}$ SW $\frac{1}{4}$
- T. 31 N., R. 56 E.,
  - Sec. 27, W $\frac{1}{2}$ , SW $\frac{1}{4}$ SE $\frac{1}{4}$
  - Sec. 28
  - Sec. 30, E $\frac{1}{2}$ , E $\frac{1}{2}$ SW $\frac{1}{4}$
  - Sec. 32, N $\frac{1}{2}$ , N $\frac{1}{2}$ SW $\frac{1}{4}$ , NW $\frac{1}{4}$ SE $\frac{1}{4}$
  - Sec. 33, N $\frac{1}{2}$
  - Sec. 34, NW $\frac{1}{4}$ , W $\frac{1}{2}$ NE $\frac{1}{4}$ , SE $\frac{1}{4}$ NE $\frac{1}{4}$ , N $\frac{1}{2}$ S $\frac{1}{2}$
- T. 30 N., R. 55 E.,
  - Sec. 12, W $\frac{1}{2}$ W $\frac{1}{2}$ , NE $\frac{1}{4}$ NE $\frac{1}{4}$ , W $\frac{1}{2}$ SE $\frac{1}{4}$ NE $\frac{1}{4}$ , W $\frac{1}{2}$ NE $\frac{1}{4}$ SE $\frac{1}{4}$ , SE $\frac{1}{4}$ SE $\frac{1}{4}$
  - Sec. 13, W $\frac{1}{2}$ W $\frac{1}{2}$ , W $\frac{1}{2}$ SE $\frac{1}{4}$ , E $\frac{1}{2}$ NE $\frac{1}{4}$
  - Sec. 24, W $\frac{1}{2}$ , W $\frac{1}{2}$ E $\frac{1}{2}$ , SE $\frac{1}{4}$ SE $\frac{1}{4}$

- Sec. 25
- T. 30 N., R. 56 E.,
- Sec. 3, S $\frac{1}{2}$
  - Sec. 4, S $\frac{1}{2}$
  - Sec. 5, S $\frac{1}{2}$ , W $\frac{1}{2}$ NW $\frac{1}{4}$
  - Sec. 6, N $\frac{1}{2}$ , N $\frac{1}{2}$ SW $\frac{1}{4}$ , SW $\frac{1}{4}$ SW $\frac{1}{4}$ , N $\frac{1}{2}$ NE $\frac{1}{4}$ SE $\frac{1}{4}$ SW $\frac{1}{4}$ , NW $\frac{1}{4}$ SW $\frac{1}{4}$ SE $\frac{1}{4}$ , SE $\frac{1}{4}$
  - Sec. 7, a portion of the NE $\frac{1}{4}$ NE $\frac{1}{4}$
  - Sec. 8, N $\frac{1}{2}$ , a portion of the N $\frac{1}{2}$ N $\frac{1}{2}$ SE $\frac{1}{4}$
  - Sec. 9, N $\frac{1}{2}$ , a portion of the N $\frac{1}{2}$ N $\frac{1}{2}$ SE $\frac{1}{4}$
  - Sec. 10
  - Sec. 15, NE $\frac{1}{4}$
  - Sec. 17, W $\frac{1}{2}$ NW $\frac{1}{4}$ SW $\frac{1}{4}$ , SE $\frac{1}{4}$ NE $\frac{1}{4}$ SW $\frac{1}{4}$ , S $\frac{1}{2}$ SW $\frac{1}{4}$ , SW $\frac{1}{4}$ SW $\frac{1}{4}$ SE $\frac{1}{4}$
  - Sec. 18, W $\frac{1}{2}$ NW $\frac{1}{4}$ , S $\frac{1}{2}$ NE $\frac{1}{4}$ NW $\frac{1}{4}$ , SE $\frac{1}{4}$ NW $\frac{1}{4}$ , W $\frac{1}{2}$ SW $\frac{1}{4}$ NE $\frac{1}{4}$ SW $\frac{1}{4}$ SW $\frac{1}{4}$ NE $\frac{1}{4}$ , SW $\frac{1}{4}$ SE $\frac{1}{4}$ SE $\frac{1}{4}$ , S $\frac{1}{2}$
  - Sec. 19, NE $\frac{1}{4}$ NW $\frac{1}{4}$ , E $\frac{1}{2}$ NE $\frac{1}{4}$ , SE $\frac{1}{4}$ NE $\frac{1}{4}$ , NE $\frac{1}{4}$ SE $\frac{1}{4}$
  - Sec. 20, All except the SW $\frac{1}{4}$ SW $\frac{1}{4}$  and NE $\frac{1}{4}$ NE $\frac{1}{4}$ NE $\frac{1}{4}$
  - Sec. 21, All except a portion of the N $\frac{1}{2}$ N $\frac{1}{2}$
  - Sec. 22, W $\frac{1}{2}$ W $\frac{1}{2}$ , E $\frac{1}{2}$ SW $\frac{1}{4}$
  - Sec. 27, W $\frac{1}{2}$ , NW $\frac{1}{4}$ NE $\frac{1}{4}$
  - Sec. 28, NW $\frac{1}{4}$ NE $\frac{1}{4}$ NW $\frac{1}{4}$ , E $\frac{1}{2}$ NE $\frac{1}{4}$ NW $\frac{1}{4}$ , NE $\frac{1}{4}$ , N $\frac{1}{2}$  SE $\frac{1}{4}$ , SE $\frac{1}{4}$ SE $\frac{1}{4}$
  - Sec. 34, a portion of the SW $\frac{1}{4}$ NW $\frac{1}{4}$ NW $\frac{1}{4}$ , N $\frac{1}{2}$ NW $\frac{1}{4}$ NW $\frac{1}{4}$ , SE $\frac{1}{4}$ NW $\frac{1}{4}$ NW $\frac{1}{4}$ , E $\frac{1}{2}$ SW $\frac{1}{4}$ NW $\frac{1}{4}$ , E $\frac{1}{2}$ NW $\frac{1}{4}$ SW $\frac{1}{4}$ , A portion of the NW $\frac{1}{4}$ SW $\frac{1}{4}$ SW $\frac{1}{4}$ , E $\frac{1}{2}$ SW $\frac{1}{4}$
- T. 29 N., R. 55 E.,
- Sec. 10, 11, 12
  - Sec. 13 All except the SE $\frac{1}{4}$ SE $\frac{1}{4}$
  - Sec. 14, 15, 22, 23
  - Sec. 24 W $\frac{1}{2}$ , W $\frac{1}{2}$  NE $\frac{1}{4}$ ,
  - Sec. 25 NW $\frac{1}{4}$ , N $\frac{1}{2}$  SW $\frac{1}{4}$ , SW $\frac{1}{4}$ SW $\frac{1}{4}$ , SE $\frac{1}{4}$ SE $\frac{1}{4}$
  - Sec. 26, 27, 34, 35
  - Sec. 36 E $\frac{1}{2}$ , W $\frac{1}{2}$  SW $\frac{1}{4}$ ,
- T. 29 N., R. 56 E.,
- Sec. 3 a portion of the SW $\frac{1}{4}$ SW $\frac{1}{4}$
  - Sec. 4 SW $\frac{1}{4}$ NW $\frac{1}{4}$ , NW $\frac{1}{4}$ SW $\frac{1}{4}$ , S $\frac{1}{2}$ S $\frac{1}{2}$
  - Sec. 5
  - Sec. 6 W $\frac{1}{2}$ SW $\frac{1}{4}$
  - Sec. 7 W $\frac{1}{2}$ NW $\frac{1}{4}$ , NW $\frac{1}{4}$ SW $\frac{1}{4}$ , E $\frac{1}{2}$ SE $\frac{1}{4}$
  - Sec. 8 & 9
  - Sec. 10 W $\frac{1}{2}$ NW $\frac{1}{4}$ , SW $\frac{1}{4}$
  - Sec. 15, W $\frac{1}{2}$ W $\frac{1}{2}$
  - Sec. 16 & 17
  - Sec. 18, E $\frac{1}{2}$ SW $\frac{1}{4}$ , E $\frac{1}{2}$
  - Sec. 19, E $\frac{1}{2}$ NW $\frac{1}{4}$ , SW $\frac{1}{4}$ , E $\frac{1}{2}$
  - Sec. 20
  - Sec. 21, W $\frac{1}{2}$ , W $\frac{1}{2}$ NE $\frac{1}{4}$ , SE $\frac{1}{4}$
  - Sec. 22, a portion of the W $\frac{1}{2}$ W $\frac{1}{2}$
  - Sec. 27, a portion of the W $\frac{1}{2}$  NW $\frac{1}{4}$
  - Sec. 28, 29, 30, 31, 32 & 33
  - Sec. 34, a portion of the S $\frac{1}{2}$ NW $\frac{1}{4}$  & SW $\frac{1}{4}$

- Sec. 35, SE $\frac{1}{4}$ SW $\frac{1}{4}$ , SW $\frac{1}{4}$ SE $\frac{1}{4}$
- T. 28 N., R. 55 E.,
  - Sec. 1 NW $\frac{1}{4}$ NW $\frac{1}{4}$ , E $\frac{1}{2}$ SW $\frac{1}{4}$ , E $\frac{1}{2}$
  - Sec. 2 W $\frac{1}{2}$ , W $\frac{1}{2}$ SE $\frac{1}{4}$ , NE $\frac{1}{4}$
  - Sec. 3
- T. 28 N., R. 56 E.,
  - Sec. 2, 3, 4, 5 & 6

**Private Lands**

- T. 31 N., R. 55 E.,
  - Sec. 25, E $\frac{1}{2}$ , E $\frac{1}{2}$ SW $\frac{1}{4}$
- T. 31 N., R. 56 E.,
  - Sec. 27, NE $\frac{1}{4}$ , N $\frac{1}{2}$ SE $\frac{1}{4}$ , SE $\frac{1}{4}$ SE $\frac{1}{4}$
  - Sec. 29
  - Sec. 30, NW $\frac{1}{4}$ NW $\frac{1}{4}$ , E $\frac{1}{2}$ NW $\frac{1}{4}$ , W $\frac{1}{2}$ SW $\frac{1}{4}$
  - Sec. 31
  - Sec. 32 S $\frac{1}{2}$ S $\frac{1}{2}$ , NE $\frac{1}{4}$ SE $\frac{1}{4}$
  - Sec. 33 S $\frac{1}{2}$
  - Sec. 34, NE $\frac{1}{4}$ NE $\frac{1}{4}$ , S $\frac{1}{2}$ S $\frac{1}{2}$
- T. 30 N., R. 55 E.,
  - Sec. 1
  - Sec. 12, E $\frac{1}{2}$ W $\frac{1}{2}$ , W $\frac{1}{2}$ E $\frac{1}{2}$ , E $\frac{1}{2}$ SE $\frac{1}{4}$ NE $\frac{1}{4}$ , E $\frac{1}{2}$ NE $\frac{1}{4}$ SE $\frac{1}{4}$
  - Sec. 13, E $\frac{1}{2}$ W $\frac{1}{2}$ , W $\frac{1}{2}$ NE $\frac{1}{4}$ , E $\frac{1}{2}$ SE $\frac{1}{4}$
  - Sec. 24, E $\frac{1}{2}$ NE $\frac{1}{4}$ , NE $\frac{1}{4}$ SE $\frac{1}{4}$
  - Sec. 34, 35 & 36
- T. 30 N., R. 56 E.,
  - Sec. 3, N $\frac{1}{2}$
  - Sec. 4, N $\frac{1}{2}$
  - Sec. 5, E $\frac{1}{2}$ NW $\frac{1}{4}$ , NE $\frac{1}{4}$
  - Sec. 6, W $\frac{1}{2}$ SE $\frac{1}{4}$ SW $\frac{1}{4}$ , S $\frac{1}{2}$ NE $\frac{1}{4}$ SE $\frac{1}{4}$ SW $\frac{1}{4}$ , SE $\frac{1}{4}$ SE $\frac{1}{4}$ SW $\frac{1}{4}$ , SW $\frac{1}{4}$ SE $\frac{1}{4}$ SW $\frac{1}{4}$
  - Sec. 7, All except a portion NE $\frac{1}{4}$ NE $\frac{1}{4}$
  - Sec. 8, SW $\frac{1}{4}$ , S $\frac{1}{2}$ SE $\frac{1}{4}$ , A portion of the N $\frac{1}{2}$ SE $\frac{1}{4}$
  - Sec. 9, A portion of the N $\frac{1}{2}$ S $\frac{1}{2}$ , S $\frac{1}{2}$
  - Sec. 15, W $\frac{1}{2}$ , SE $\frac{1}{4}$
  - Sec. 16
  - Sec. 17, N $\frac{1}{2}$ , NE $\frac{1}{4}$ NW $\frac{1}{4}$ SW $\frac{1}{4}$ , NE $\frac{1}{4}$ SW $\frac{1}{4}$ , N $\frac{1}{2}$ SE $\frac{1}{4}$ , N $\frac{1}{2}$ SW $\frac{1}{4}$ SE $\frac{1}{4}$ , E $\frac{1}{2}$ SW $\frac{1}{4}$ SE $\frac{1}{4}$ , SE $\frac{1}{4}$ SE $\frac{1}{4}$
  - Sec. 18, N $\frac{1}{2}$ NE $\frac{1}{4}$ NW $\frac{1}{4}$ , N $\frac{1}{2}$ NE $\frac{1}{4}$ , NE $\frac{1}{4}$ SW $\frac{1}{4}$ NE $\frac{1}{4}$ , N $\frac{1}{2}$ SE $\frac{1}{4}$ NE $\frac{1}{4}$ , SE $\frac{1}{4}$ SE $\frac{1}{4}$ NE $\frac{1}{4}$
  - Sec. 19, W $\frac{1}{2}$ NW $\frac{1}{4}$ , SE $\frac{1}{4}$ NW $\frac{1}{4}$ , SW $\frac{1}{4}$ NE $\frac{1}{4}$ , SW $\frac{1}{4}$ , W $\frac{1}{2}$ SE $\frac{1}{4}$ , SE $\frac{1}{4}$ SE $\frac{1}{4}$
  - Sec. 20, SW $\frac{1}{4}$ SW $\frac{1}{4}$ , NE $\frac{1}{4}$ NE $\frac{1}{4}$ NE $\frac{1}{4}$
  - Sec. 21, A portion of the N $\frac{1}{2}$ N $\frac{1}{2}$
  - Sec. 22, W $\frac{1}{2}$ NW $\frac{1}{4}$ , E $\frac{1}{2}$
  - Sec. 27, A portion of the W $\frac{1}{2}$ , NW $\frac{1}{4}$ NE $\frac{1}{4}$
  - Sec. 28, NW $\frac{1}{4}$ NW $\frac{1}{4}$ , SW $\frac{1}{4}$ NE $\frac{1}{4}$ NW $\frac{1}{4}$ , S $\frac{1}{2}$ NW $\frac{1}{4}$ , SW $\frac{1}{4}$ , WNW $\frac{1}{4}$ SE $\frac{1}{4}$ , SW $\frac{1}{4}$ SE $\frac{1}{4}$
  - Sec. 29, 30, 31, 32 & 33
  - Sec. 34, A portion of the SW $\frac{1}{4}$ NW $\frac{1}{4}$ NW $\frac{1}{4}$ , W $\frac{1}{2}$ SW $\frac{1}{4}$ NW $\frac{1}{4}$ , E $\frac{1}{2}$ NW $\frac{1}{4}$ , E $\frac{1}{2}$ , W $\frac{1}{2}$ NW $\frac{1}{4}$ SW $\frac{1}{4}$ , A portion of the NW $\frac{1}{4}$ SW $\frac{1}{4}$ SW $\frac{1}{4}$
  - Sec. 35
- T. 29 N., R. 55 E.,
  - Sec. 1, 2 & 3

T. 29 N., R. 56 E.,  
Sec. 2 & 3  
Sec. 4, NW $\frac{1}{4}$ NW $\frac{1}{4}$ , E $\frac{1}{2}$ NW $\frac{1}{4}$ , NE $\frac{1}{4}$ SW $\frac{1}{4}$ , NE $\frac{1}{4}$ , N $\frac{1}{2}$ SE $\frac{1}{4}$   
Sec. 6, NW $\frac{1}{4}$ , E $\frac{1}{2}$ SW $\frac{1}{4}$ , E $\frac{1}{2}$   
Sec. 7, E $\frac{1}{4}$ NW $\frac{1}{4}$ , NE $\frac{1}{4}$ , W $\frac{1}{2}$ SE $\frac{1}{4}$ , E $\frac{1}{4}$ SW $\frac{1}{4}$ , SW $\frac{1}{4}$ SW $\frac{1}{4}$   
Sec. 10, E $\frac{1}{2}$ NW $\frac{1}{4}$ , E $\frac{1}{2}$   
Sec. 11 & 14  
Sec. 15, E $\frac{1}{2}$ W $\frac{1}{2}$ , E $\frac{1}{2}$   
Sec. 18, NW $\frac{1}{4}$ , W $\frac{1}{2}$ SW $\frac{1}{4}$   
Sec. 19, W $\frac{1}{2}$ NW $\frac{1}{4}$   
Sec. 21, E $\frac{1}{2}$ NE $\frac{1}{4}$   
Sec. 22, A portion of the E $\frac{1}{2}$ W $\frac{1}{2}$ , E $\frac{1}{2}$   
Sec. 23 & 26  
Sec. 27, E $\frac{1}{2}$ NE $\frac{1}{4}$ , A portion of the W $\frac{1}{2}$ NE $\frac{1}{4}$ , A portion of the E $\frac{1}{2}$ SE $\frac{1}{4}$   
Sec. 34, E $\frac{1}{2}$ NE $\frac{1}{4}$ NE $\frac{1}{4}$ , S $\frac{1}{2}$ NE $\frac{1}{4}$ , SE $\frac{1}{4}$   
Sec. 35, N $\frac{1}{2}$ , N $\frac{1}{2}$ S $\frac{1}{2}$ , SW $\frac{1}{4}$ SW $\frac{1}{4}$ , SE $\frac{1}{4}$ SE $\frac{1}{4}$

### **1.1.2 NAME AND LOCATION OF PREPARING OFFICE:**

BLM Tuscarora Field Office, Elko District, Nevada

### **1.2 PURPOSE AND NEED**

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The need is for action on Noble's Notice of Intent to conduct Oil and Gas Geophysical Exploration Operation and is based on the BLM's legal responsibility to manage the public lands according to the Federal Land Policy and Management Act and the Mineral Leasing Act, as amended.

The purpose of the Project is to acquire data for exploration of existing oil and gas leases within the project area.

### **1.3 PLAN CONFORMANCE REVIEW**

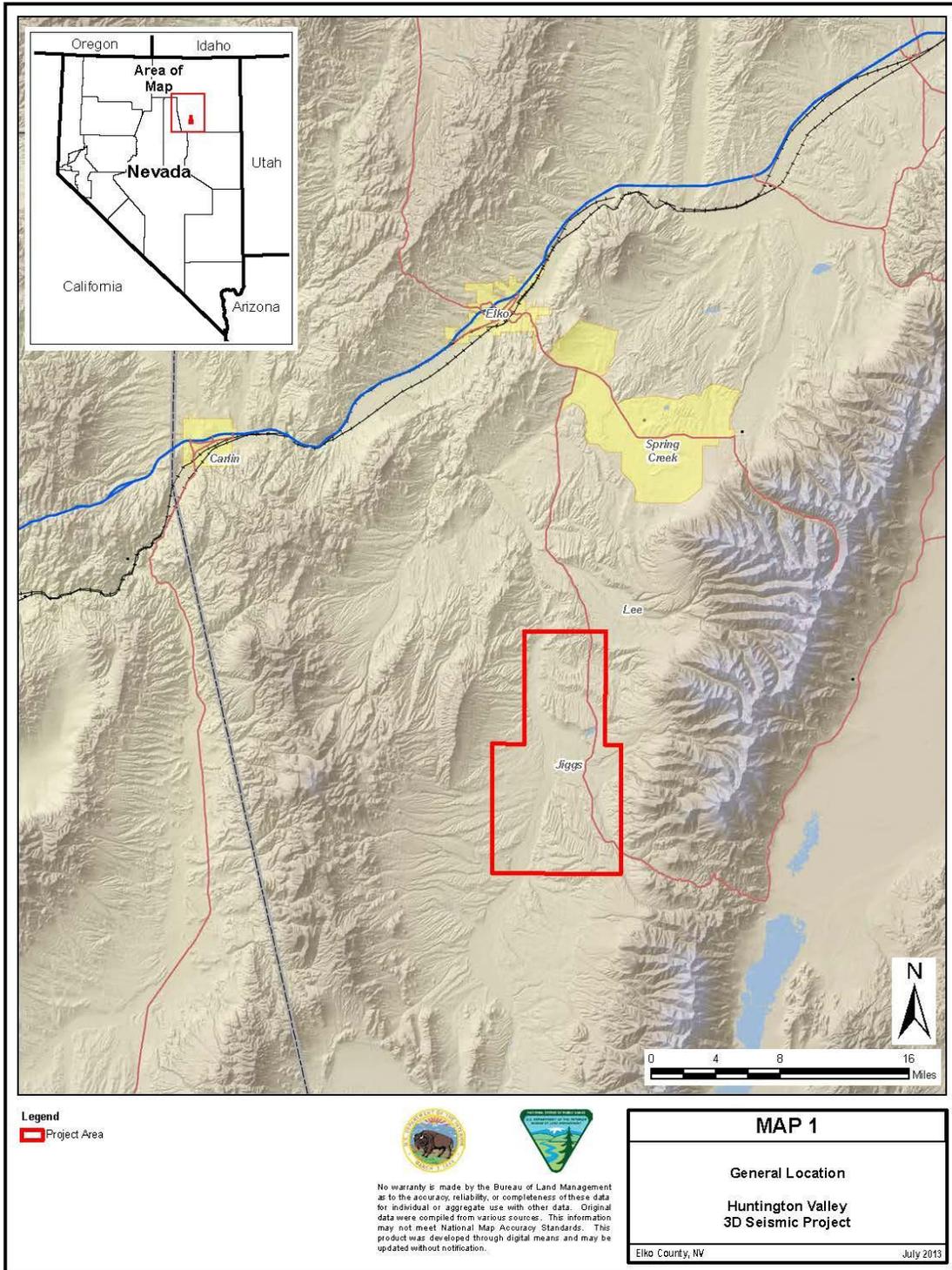
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The Project is subject to and has been reviewed for conformance with the following plan (43 CFR 1610.5, BLM 1617.3):

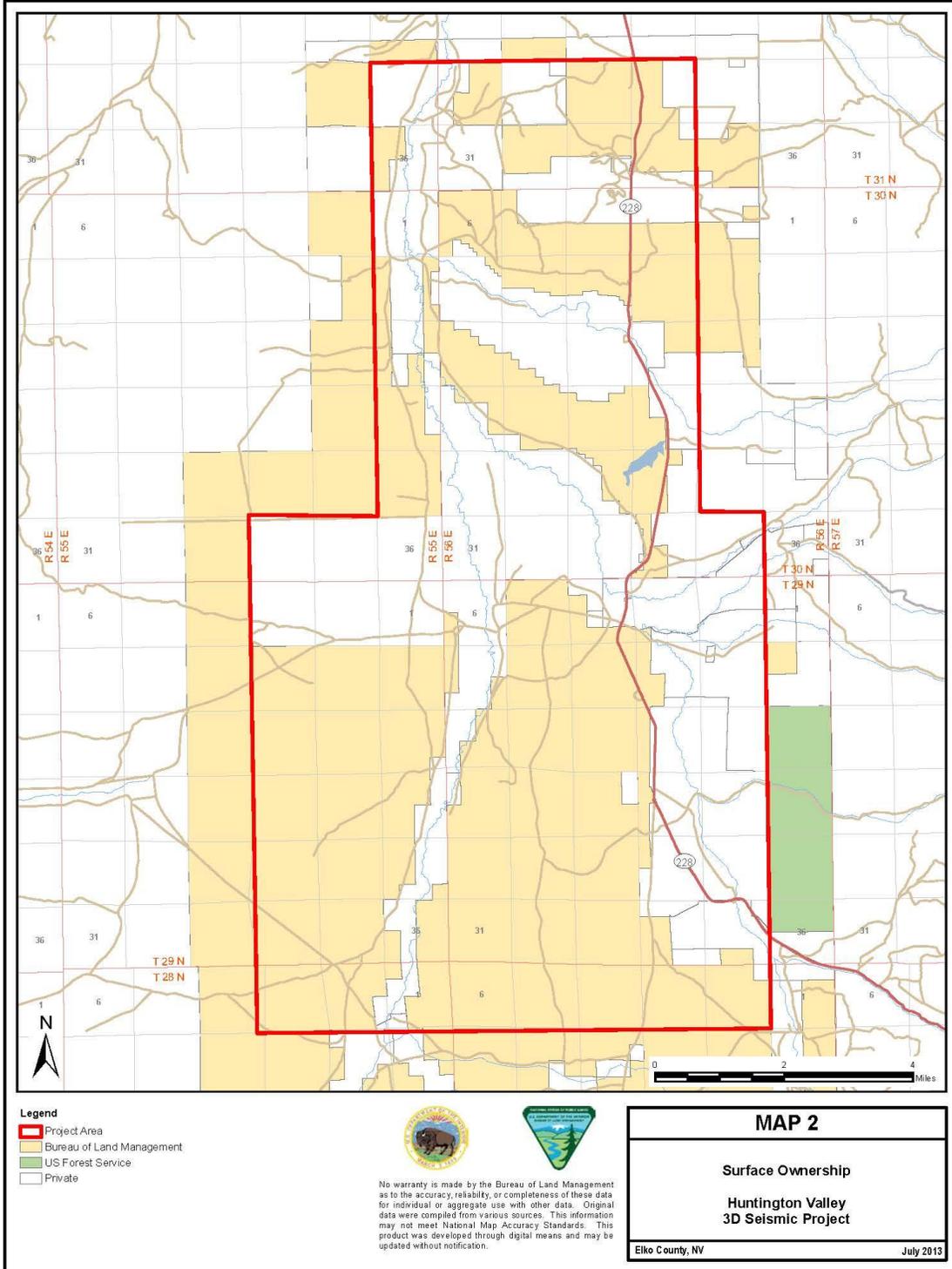
The Project is in conformance with the Elko Resource Management Plan, as approved March 11, 1987, and the December 2005 Oil & Gas Lease Sale Environmental Assessment, which amended the Resource Management Plan. The Record of Decision for the Elko Resource Management Plan, page 35, provides, "Maintain public lands open for exploration, development, and production of mineral resources while mitigating conflicts with wildlife, wild horses, recreation and wilderness resources." In the 1987 ROD for the Elko Resource Management Plan, page 3, provides that the public lands will be managed under four designations: 1) Limited-subject to no surface occupancy; 2) Limited-subject to seasonal restrictions; 3) Open-subject to standard leasing stipulations; and 4) Closed. The Project is within the area designated as Open-subject to standard leasing stipulations.

The Project is also consistent with other applicable federal, state and local land use policies and plans.

# Map 1 General Location



## Map 2 Surface Ownership



## 1.4 PUBLIC PARTICIPATION

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### **SCOPING AND IDENTIFIED ISSUES**

As part of the National Environmental Policy Act process, a press release outlining the Proposed Action as well as the BLM's intent to prepare an Environmental Assessment (EA) analyzing the request and proposal was prepared. The proposal, the press release, and a map were posted to the BLM Tuscarora Field Office website: <http://www.blm.gov/rv5c>. The BLM invited the public to provide comments on the proposal for 10 days beginning January 30, 2013 and ending February 8, 2013. The BLM sent initial project scoping letters to tribal agencies (Bureau of Indian Affairs) and tribal interest groups (Western Shoshone Committee, Western Shoshone Defense Project, Western Shoshone Descendants of Big Smoky) informing them of the proposed Project and seeking their input, recommendations, and concerns. Scoping letters with invitations to initiate government-to-government consultation were sent to 10 tribal and band governments. While none of the contacted tribe or band governments chose to participate in government-to-government level consultation, information sharing during tribal and band council meetings garnered several comments, concerns, and issues of interest (see Chapter 4).

During the scoping period, eight comments were received: the Nevada State Clearinghouse, Nevada Department of Transportation, Nevada Department of State Lands, Nevada Division of Water Resources, Nevada Department of Wildlife, Wild Nevada, Nevada Wilderness Project, and an individual. All comment letters were reviewed and considered in preparing the EA. A summary of the comments by topic follows:

**Cultural.** Class I and Class III cultural surveys will be required due to the number of historic sites including trails and homesteads in the project area. Nevada Wilderness Project expressed concern that cultural and historical resources need to be fully defined, define avoidance of impacts to be implemented, and define mitigation measures for on and off site unavoidable impacts.

**General.** One individual expressed a general concern about Project effects.

**Invasive, Non-Native Species.** Nevada Department of Transportation recommended that vehicles be washed frequently at appropriate facilities to prevent water quality problems or migration of invasive/noxious weeds.

**Livestock Grazing/Rangeland Health.** Potential effects to grazing allotments in the project area should be assessed.

**Native American Traditional Values.** During information sharing and consultation with Tribal and Band Governments, 6 of the 10 consulting tribal/band governments noted that the Project is planned within the aboriginal territory of the South Fork Band of the Western Shoshone, directing the BLM to consult directly with this Band government. The South Fork Band government expressed concerns about the protection of archaeological sites and the location and protection of traditional use plant species and other issues of importance for cultural survival. Surveys for traditional use plants and other issues of importance will be required prior to implementation of seismic operations.

**Policy/Process.** The Nevada Wilderness Project commented that the BLM should defer the Project until a collaborative Programmatic Environmental Impact Assessment can be developed to establish guidelines for fossil fuel exploration and development in the area. Concern included compliance with national energy and greenhouse gas policy.

**Special Status Species.** Comments expressed concern that the seismic activity would disturb sage-grouse habitat and pygmy rabbit burrows. Nevada Department of Wildlife recommended surveys and avoidance.

**Transportation and Access.** Nevada Department of Transportation expressed concern about access using SR-228 and recommended that the BLM and Noble meet with Nevada Department of Transportation District III staff to discuss the traffic effects on the various intersections with SR-228. Nevada Department of Transportation was also concerned about “track out” of mud and debris from the various accesses to SR-228 and recommended that the BLM require Best Management Practices to prevent traffic from carrying excessive amounts of mud onto State controlled facilities.

**Vegetation.** Nevada Department of Wildlife commented that the project area contains a significant sagebrush community that supports sage-grouse at various life stages and recommended that the proponent try to reduce the amount of disturbed habitat during seismic exploration.

**Visual.** Department of State Lands recommended that the BLM consider the cumulative visual effects from development activities and suggested mitigation measures to reduce the effects, such as, appropriate lighting, and utilizing building materials, colors and site placement that are compatible with the natural environment. *This comment is not addressed in this document because development activities involving lighting or building materials are not proposed.*

**Wetland and Water Resources.** Nevada Division of Water Resources stated that water diversions must comply with the permitting provisions of Nevada Revised Statutes and any water required in support of the Project from any source requires a permit or waiver issued by Nevada Division of Water Resources. Additionally, construction and abandonment of any well, monitoring well, borehole, instrumentation borehole, or any other type of borehole, including but not limited to any “shot” holes, must comply with the provision of Nevada Administrative Code Chapter 534 (Regulations for Water Well and Related Drilling). *This comment is not addressed in this document because the proposal does not include water diversions, wells, boreholes, or shot-holes.*

**Wildlife and Fisheries.** Nevada Department of Wildlife expressed concern regarding effects to fish and wildlife resources and habitat within the project area, specifically to raptors, sage-grouse, pronghorn, mule deer, and elk. It was noted that the project area is within and adjacent to mule deer and pronghorn winter and summer ranges. Recommendations included surveys, avoidance or mitigation, and Best Management Practices.

## **1.5 DECISIONS TO BE MADE**

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The BLM’s authority for approving oil and gas geophysical exploration operations is listed in 43 CFR 3151. The BLM’s approval of oil and gas activities is subject to conditions to prevent undue or unnecessary degradation of public lands and is consistent with the 1987 Elko Resource Management Plan and the District-wide Programmatic Environmental Assessment (BLMJJK/PL-2005/030) for oil and gas leasing completed in September 2005 (BLM, 2005).

This Environmental Assessment was prepared in conformance with the policy guidance provided in the BLM’s National Environmental Policy Act Handbook H-1790-1 (BLM, 2008a). The BLM Handbook provides instructions for compliance with the Council on Environmental Quality regulations for implementing the procedural provisions of National Environmental Policy Act (40 CFR §1500-1508) and U.S. Department of the Interior (DOI) Manual 516 DM 1-7 on National Environmental Policy Act compliance (DOI, 2005).

The BLM decision-makers will decide, based on the analysis contained in this EA, whether or not to authorize the Project by issuing an approved Notice of Intent with Conditions of Approval. The Decision Record associated with this Environmental Assessment may not constitute the final approval for all actions associated with the Project. It does, however, provide the BLM's Authorized Officer with an analysis from which to base the final approval for individual project components.

#### **1.6 FEDERAL, STATE AND LOCAL PERMITS OR REQUIRED CONSULTATION**

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The BLM will consult with the Nevada State Historic Preservation Officer concerning the possible effects to cultural resources found in the project area. No other state or local permits/approvals are required for the Project.

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

### **2.1 INTRODUCTION**

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The purpose of this chapter is to describe alternatives, both those analyzed in detail and those considered but not analyzed in detail. Alternatives analyzed in detail include the Proposed Action Alternative and the No Action Alternative.

### **2.2 ALTERNATIVE – PROPOSED ACTION**

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#### **2.2.1 LOCATION AND DESCRIPTION OF PROPOSED FACILITIES**

Noble proposes to conduct the 3D seismic study in the Huntington Valley area of Elko County, approximately 21 miles south of Elko, Nevada. General access from Elko is southeast on SR-227 approximately 3.7 miles to SR-228, then south approximately 17.5 miles to the project area (see Map 1).

Noble owns oil and gas leases in the area on both federal and private lands. The surface ownership in the project area consists of both lands administered by the BLM and private lands (see Map 2).

The purpose of the seismic exploration is to gain a better understanding of the subsurface geology to determine if there is oil and gas potential and to determine the best locations for exploratory drilling. The seismic exploration program would also provide information allowing identification of subsurface features that could impede drilling. Without the seismic program, the exploratory program would require substantially more exploratory wells to provide similar information. The Proposed Action would not result in the construction of roads, permanent lights, or permanent structures of any kind. The Proposed Action would not utilize shot-holes.

The Proposed Action includes the generation of acoustic energy transmitted into the ground by the use of vibroseis trucks (see Photo 1). The recording equipment includes a series of geophones, which are magnets with a copper coil surrounding the magnet (see Photos 2 and 3). Each set of geophones is connected to a recording box and battery at locations throughout the project area. When the coil is moved through the magnetic field by the acoustic energy, an electrical current is produced and recorded providing geophysical data.

Seismic data acquisition would begin with a land survey crew locating and placing paint spots or temporary pin flags for receiver and source points using a global positioning system (GPS) based surveying system. Several one- or two-person crews would establish and flag the receiver and source point locations as well as access routes. The survey crew(s) would be responsible for positioning receiver and source point stations such that they avoid all known and apparent cultural, natural, and existing land use features of importance. Vehicles bringing surveyors to and from the project area would remain on existing roads and trails. Crews would travel cross-country on all-terrain vehicles (ATVs) and on foot. Cutting of vegetation is not expected to be required.



**Photo 1 - Vibroseis Truck**



**Photo 2 – Receiver Line Layout**



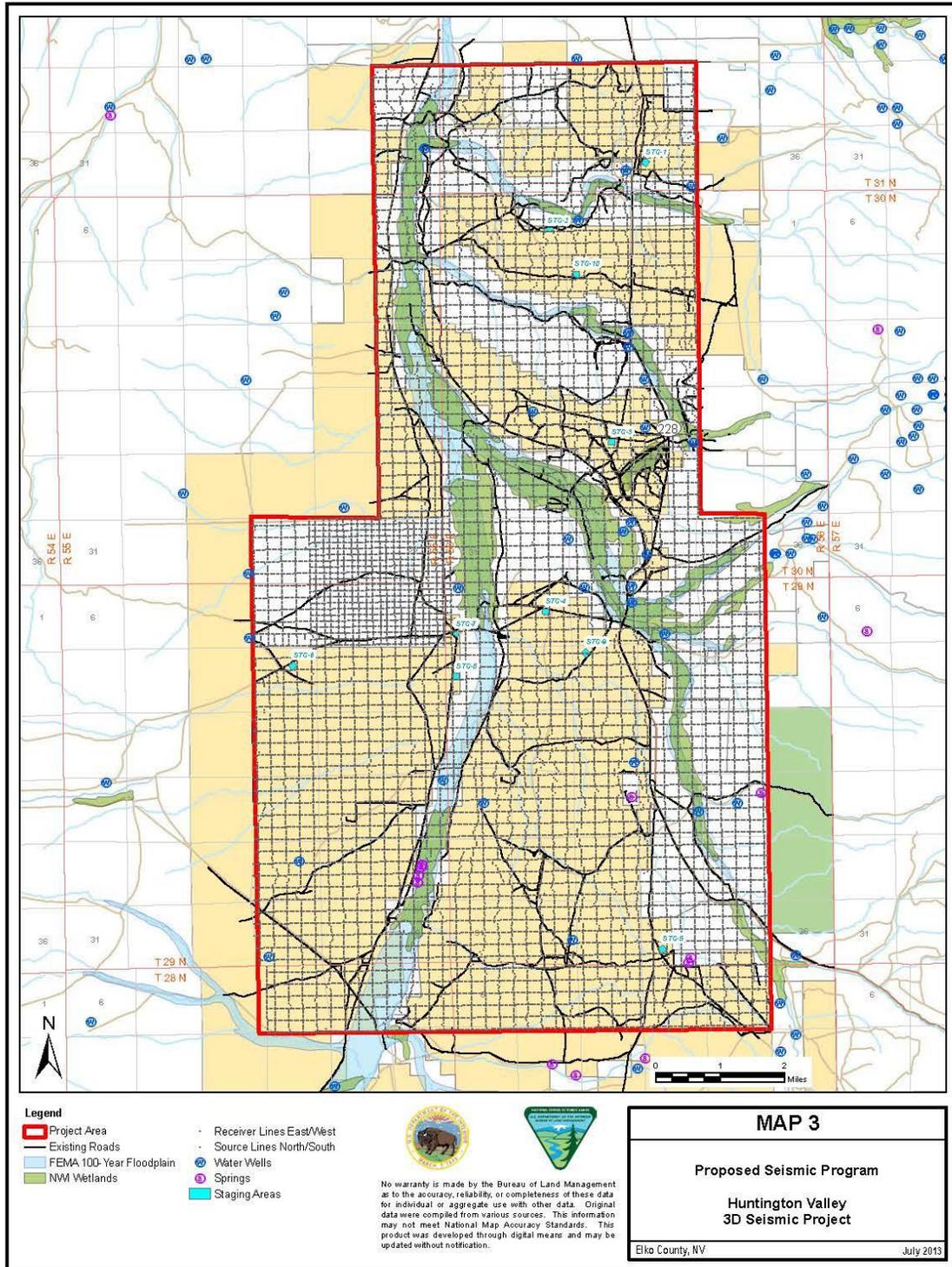
**Photo 3 – Geophone along Receiver Line**

The source and receiver lines would use a 165-foot station interval with receiver lines having a 990-foot interval and the source lines having a 1,155-foot interval (see Map 3). Helicopters and line trucks (pickup trucks) would be used to lay out the receiver lines in some areas while receivers in other areas may be deployed on foot or by ATV. In wet or saturated areas, receiver lines would be deployed on foot. The use of helicopters would allow for reduced disturbance and access. The deployment method for any individual area would be determined by access while considering how to minimize effects to resources in the area. Once the equipment is dropped off, crew members would walk to the first receiver on the receiver line and manually connect the recording box, battery, and geophones. The geophones would be laid out by hand around each station in a pre-determined pattern. They would be placed into the soil using foot pressure. Approximately 16 to 20 lines of receivers would be deployed at any one time.

The Project would involve a series of approximately 47 source lines oriented in a north/south pattern and 92 receiver lines oriented in an east/west pattern (see Map 3). Source and receiver lines total approximately 1,073 line miles (554/receiver and 519/source). Of the 554 miles of receiver lines, 290 miles would cross BLM-administered lands and 264 miles would cross private lands, and of the 519 miles of source lines, 277 miles would cross BLM-administered lands and 242 miles would cross private lands.

The Project design would include approximately 15,453 source points that run north/south in parallel lines and would be approximately 1,155 feet apart. The receiver operations would employ an array of approximately 17,829 receivers spaced in-line at approximately 990 feet apart. A set of geophones would be at each receiver station and each station would be connected to the next by lightweight cable. Vibroseis trucks would be used to produce seismic waves at the source points along the source lines.

# Map 3 Proposed Seismic Program



The locations of the source lines and their associated access routes were modified during initial project design to account for limited accessibility, such as around topographic hazards (e.g., drainage crossings, steep slopes); infrastructure (e.g., wells, pipelines, highways); habitat (e.g., pygmy rabbit burrows); and cultural resource sites (e.g., historic properties). Receiver lines can be deployed in most areas and would be installed and maintained by individuals on foot and on lightweight ATVs. Individual troubleshooters would repair any line issues that may arise during seismic data acquisition. Troubleshooting and line maintenance operations would use ATVs to minimize surface disturbance.

Four vibroseis trucks would make a single pass along each source line, traveling single file. Ground compaction below the vibrator pad is minimal on hard, dry ground normally resulting in little or no visible indentation of the ground other than crushed vegetation. When enough sources have been recorded such that a receiver line is no longer active, the receiver line would be picked up and moved from the trailing end of the active recording patch to the front edge of the patch in an assembly line fashion to allow recording to move smoothly across the project area. Each receiver line is expected to be on the ground for 1 to 2 weeks.

In order to access source lines, the vibroseis trucks may need to travel along a receiver line to the next source line. All potential access routes have been identified and surveyed (cultural and biological surveys), where survey permission was granted. A total of 971 miles, including the source lines (519 miles), have been identified where vibroseis trucks may travel. Of the 971 miles, 452 miles include receiver lines, existing roads, two-tracks, and fence lines. Noble estimates that only one-third (149 miles) to one-half (226 miles) of the 452 miles would be utilized to complete the seismic operations.

#### **2.2.1.1 Schedule, Workforce, Traffic**

Data acquisition is scheduled to begin in Fall 2013 and expected to last approximately 3 months or 90 operational days. The Project is anticipated to require 25 to 50 workers (depending on the contractor crew size). Seismic operations would be conducted 7 days per week and may continue on a 24-hour schedule. Workers would stay in Elko and travel to and from the site each day in carpool vans. Staging areas would be located on BLM-administered lands. Ten potential staging areas have been identified and culturally surveyed (see Map 3). Noble anticipates that the seismic contractor would utilize 3 of the 10 identified sites and up to 3 acres per site of the total area surveyed. The sites are flat and adjacent to existing roads.

<b>Site</b>	<b>Acres Surveyed</b>
STG-1	5.628
STG-2	5.561
STG-3	5.899
STG-4	5.987
STG-5	6.018
STG-6	5.533
STG-7	3.254
STG-8	5.809
STG-9	5.821
STG-10	5.398

Existing roads and trails would be used for access to the project area. Vehicles anticipated during seismic operations include 8 to 12 pickup trucks (e.g., line trucks, flatbed trucks, etc.), 1 fuel truck, 2 vans, 10 to 15 ATVs/kubotas, and up to 9 vibroseis trucks (2 teams of 4 plus a spare). All vibroseis trucks would be equipped with sand/flotation tires to minimize the surface disturbance along source lines (see Photo 1).

### **2.2.1.2 Seismic Land Survey**

To design the seismic program, Noble conducted a land survey to identify areas that need to be avoided (i.e., topographic hazards, structures, wells, etc.). The seismic design was adjusted following the resource-specific surveys described below.

### **2.2.1.3 Cultural Survey**

In compliance with Section 106 of the National Historic Preservation Act, a cultural resource inventory and Native American traditional values survey was conducted in accordance with applicable state and federal requirements on both lands administered by the BLM and on private lands, where permission could be obtained. BLM-approved archaeological contractors and Band Council and BLM-approved tribal independent contractors walked each source line, any receiver line required for access, access route, and staging area. In consultation with the BLM, adjustments to the proposed activities were made to avoid Historic Properties and issues of Native American traditional value.

### **2.2.1.4 Native American Traditional Values Survey**

A Native American traditional values survey was conducted in accordance with the stated needs of the South Fork Band of the Western Shoshone under applicable federal rules and regulations for Section 106 compliance on lands administered by the BLM and on private lands where permission could be obtained. South Fork Band government-approved independent tribal monitor/survey contractors cleared the areas that would be potentially affected by the project activities. In consultation with the BLM, adjustments to the proposed source and receiver lines and access routes would be made to avoid areas of tribal concerns.

### **2.2.1.5 Biological Survey**

Sage-grouse lek surveys were conducted for the project area plus a 3-mile buffer around the project area. Two surveys for new or undocumented leks (aerial fixed-wing flights) were conducted as well as three ground surveys of each lek to confirm activity status and record lek attendance numbers. Lek attendance numbers were used for monitoring trends and impacts, in accordance with standard BLM and Nevada Department of Wildlife survey protocols.

Pygmy rabbit block surveys were conducted on BLM-administered lands. Source and receiver lines were designed to accommodate 100-foot buffers around active pygmy rabbit burrows. Vegetation types (including weed species), wetlands and drainages, large game species, raptors, and general wildlife observations were also recorded. The results of the survey were utilized, in consultation with the BLM, to adjust the seismic source and receiver locations to minimize potential effects.

### **2.2.1.6 Project Design Features (Applicant-Committed Measures to Protect Resources)**

The following design features are included in the Project. They are specifically intended to reduce any potential damage to existing infrastructure, the natural environment, and Historic Properties.

#### **Cultural**

- If any previously unidentified archaeological sites or issues of Native American traditional value are identified during activities on BLM-administered lands, all activities would cease in the area of the discovery, and the BLM Authorized Officer would be notified of the find. Steps would be taken to protect the site from vandalism or further damage until the BLM Authorized Officer could evaluate the nature of the discovery. Activities would not resume in the area of the discovery until authorized by the BLM Authorized Officer.

- Prior to commencement of activities, all personnel (including contractors; new, added, or replaced personnel; etc.) involved in Project activities would be instructed (to a degree appropriate to their involvement in the Project) by Noble and its Consultants, on site avoidance and protection measures, including information on the statutes protecting Cultural Resources and Traditional Cultural Properties (National Historic Preservation Act, Archaeological Resources Protection Act, the Native American Graves Protection and Repatriation Act, and the Paleontological Resources Preservation Act) prior to being authorized to work in the Project area. At a minimum, all employees would receive written information sheet(s) that discuss the importance of Cultural Resources, items of Native American Traditional Value, and archaeological laws including penalties for violation.
- The Project would avoid all structures, water wells, springs, windmills, and other infrastructure by 300 feet.
- The seismic recording team would be provided surface ownership maps indicating when they are entering private land without archaeological survey access and where no data was collected for avoidance. Where possible, the seismic recording team would implement as little traffic on private land with no archaeological access and data as possible while still keeping the integrity of the seismic data.
- The vibroseis trucks would use low impact sand tires, sometimes called balloon tires, which reduce the force on the ground to less than that of a standard pickup truck. These tires have little tread which also limits the potential surface disturbance. Ground force from sand tires is estimated at about 12 pounds per square inch (psi).
- Operations would not be conducted when the ground is wet enough that rutting could occur. This includes shutting down operations in the event a rainstorm occurs during data acquisition.
- Operations would be scheduled for between early fall and mid-winter to minimize the chance of substantial rainfall, allowing operations to be conducted on dry ground to minimize the chances of rutting and ground damage.
- Source lines would avoid all wet or saturated areas.
- Layout of source and receiver lines would follow existing disturbance (roads/two tracks) whenever possible. Receiver line equipment would be deployed mostly with helicopters and line trucks (pickups), where necessary, and ATVs/kubotas. Actual deployment must be done by hand - connecting cables and stumping phones.
- Noble would discuss the location of any sensitive areas on private property with the landowner so that damage to these sites would be avoided. This includes the location of existing buildings, water wells, springs, canals, historic irrigation, historic sites, prehistoric sites, grave yards, or known burials. If the seismic crews discover these features, the features would be avoided by 300-foot buffers.

### **Native American Traditional Values**

- If previously unidentified issues of Native American traditional value are located during activities on BLM-administered lands or private lands, all activities would cease in the area of the discovery, and the BLM Authorized Officer would be notified of the find. Steps would be taken to protect the site from vandalism or further damage until the BLM Authorized Officer could evaluate the nature of the discovery. Activities would not resume in the area of the discovery until authorized by the BLM Authorized Officer.

### **Existing Facilities**

- A 300-foot buffer would be maintained from hazards (infrastructure, houses, barns, concrete pads, radio antennae, springs). Vibroseis trucks would not conduct operations within the buffer.

- Any facilities damaged in connection with this Project would be immediately restored to original condition or replaced with a similar facility.
- Fences would be avoided and gates would be used whenever possible. Gates would remain in the position found before going through them. If a fence must be crossed, it would be laid down or cut (as determined by the owner or BLM, depending on jurisdiction), crossed, and immediately put back up.
- Mud/debris would not be tracked onto roads or highways because the Project would be shutdown during rain events and vibroseis trucks would be routed to avoid wet areas. In the unanticipated event that the Project were to track mud/debris onto roads or highways, Noble would employ a crew to clean up the road/highway.

### **Fire Protection**

- Due to the sensitive nature of the sagebrush habitat in the project area and the past history of fire impacts to grazing and sage-grouse, Noble would prepare and implement a Fire Prevention Plan.
- Portable generators used in the project area would have spark arresters.
- In the event of a wildland fire, Noble would coordinate with appropriate fire-fighting personnel in the BLM Tuscarora Field Office and local authorities.
- Noble would discuss fire prevention during crew orientation and provide protocol on how to report a fire.
- Daily crew meetings would be conducted to facilitate communication and to keep the crew informed of any special areas of concern in the vicinity of that day's operation, including days with high fire danger (i.e., red-flag days).
- All vehicles (other than ATVs) would be equipped with fire extinguishers and a shovel to assist with first fire response in case of a fire, as well as a radio to facilitate communication on the Project site. Crews would only act on fires if they are small and manageable with the equipment available on their vehicles.
- Smoking would not be allowed in the project area.
- Adequate firefighting equipment would be kept at the staging areas, including shovels, extinguishers, and an ample water supply.
- Helicopters used for moving equipment would have firefighting water pick-up and drop capabilities.
- Vehicle catalytic converters would be inspected often and cleaned of all brush and grass debris.
- All vehicle undercarriages would be regularly inspected and kept free of potentially flammable debris.
- Wildland fires would be reported immediately to the Elko Interagency Dispatch Center (775)748-4000.
- No vehicles would be parked in direct contact with vegetation; all vehicles would be parked where there is no or minimal vegetation.
- All vehicles, with the exception of vibroseis trucks and ATVs in order to reduce soil and vegetation impacts, would be parked within the staging units overnight. Vehicles would be parked in areas with no or minimal vegetation.
- Vibroseis trucks would stay in the field; the potential for fire ignition from the trucks is very minimal because engines are mounted on the top of the trucks and no other hot parts are near the ground. Also, most trucks would be diesel, which have a cooler exhaust system and would minimize fire potential.
- Equipment and vehicles would be cleaned prior to entering BLM-administered lands to remove mud, dirt, and plant parts.

### **Noxious and Invasive Species**

- Noble would clean all equipment and vehicles prior to each entry into public lands in the project area to prevent the spread of noxious weeds. This process would be presented to the BLM for approval prior to commencement of operations.
- Early detection would be encouraged through the reporting and prompt treatment of weed infestations, particularly Category A species. Weed identification pamphlets, available from the Nevada Department of Agriculture, would be made available to Noble employees in the field.
- If weeds are located in an area proposed for vibroseis truck traffic, they would be treated prior to ground-disturbing activities. This may involve herbicide, or mechanical removal. Herbicide use on BLM-administered lands would be approved by the BLM prior to use.

### **Public Health and Safety**

- Vehicle traffic would be limited to existing roads.
- Noble would work with Nevada Department of Transportation to discuss traffic related to the Project and the need for Best Management Practices to reduce impacts on state highways.
- Vehicles would travel at speeds within set speed limits for main roads.
- Noble would have third-party oversight for permit compliance as well as internal oversight from Noble Operations personnel.
- Noble would conduct a Job Site Assessment meeting prior to kick off with the entire Project team and would have daily safety meetings each morning.
- All contractors would be required to have a Health and Safety Plan written and implemented specific to the Project's requirements, which would include emergency response protocol.

### **Soils**

- No truck traffic would be operated during periods or in areas of saturated ground when surface rutting could occur. This would also apply to soils which are deemed "sensitive" by the BLM.
- Low impact sand tires would be used to reduce ground surface disturbance.
- Layout of source and receiver lines would follow existing disturbance (roads/two-tracks) whenever possible. Receiver line equipment would be deployed mostly with helicopters and ATVs/kubotas and, where necessary, with line trucks (pickups). Actual deployment must be done on foot - connecting cables and using feet to insert the geophones.
- Fuel trucks would travel down the source or receiver lines to reduce the impact on soils and vegetation from repeated vibroseis truck trips to existing roads/two-tracks for refueling.

### **Vegetation**

- If operations cause surface rutting or have otherwise removed all surface vegetation, the area would be reclaimed and reseeded as directed by the landowner or BLM Authorized Officer.

### **Water Resources, Wetland and Riparian Areas**

- Seismic source activities would avoid wet or saturated areas (i.e., flowing streams, creeks, wetlands).
- Receiver lines would be deployed on foot through wet or saturated areas.
- Fueling of vibroseis trucks would not occur within 300 feet of any riparian areas or standing or flowing surface water including streams, ponds, springs, seeps, and stock reservoirs.
- In accordance with applicable requirements, Noble would prepare, implement, and follow a Spill Prevention Plan in accordance with state regulations.
- Noble would clean up diesel, hydraulic fuel, or other spills, including contaminated soils. All spill-related material would be hauled to an approved disposal site in accordance with

applicable requirements. Spills of a reportable quantity would be reported according to federal and state regulations.

### **Wildlife Resources**

- Project activities would occur outside the breeding season for sage-grouse (March 15 to May 30), outside the breeding seasons for raptor species (March 15 to July 31), and would maintain a 50-foot buffer from active pygmy rabbit burrows.
- Noble would inform employees and contractors that harassing (includes feeding or in any way enticing animals nearer to project activities) or shooting of wildlife would not be permitted; dogs would not be allowed in the project area; no firearms would be allowed on-site; and there would be no littering.

### **2.2.2 NO ACTION ALTERNATIVE**

In accordance with the National Environmental Policy Act and Council on Environmental Quality regulations, which require that a No Action Alternative be presented in all environmental analyses in order to serve as a “base line” or “benchmark” from which to compare all proposed “action” alternatives, a No Action Alternative is analyzed in this EA.

Under the No Action Alternative, the Tuscarora Field Manager would not approve the Notice of Intent to conduct Oil and Gas Geophysical Exploration Operations, and the proposed Project would not be conducted. Activities that are currently on-going (i.e., ranching, grazing, recreation, agriculture, hunting, etc.) would continue.

### **2.3 ALTERNATIVES CONSIDERED BUT NOT ANALYZED IN DETAIL**

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If an alternative is considered during the environmental analysis process but the agency decides not to analyze the alternative in detail, the agency must identify those alternatives and briefly explain why they were eliminated from detailed analysis (40 CFR 1502.14).

Concerns raised during scoping have been addressed through the environmental protection measures for each resource or were included in the Project design process; therefore, no alternatives were considered other than the Proposed Action and the No Action Alternative.

## CHAPTER 3 – AFFECTED ENVIRONMENT AND ENVIRONMENTAL EFFECTS

Resources specified by statute, regulation, or Executive Order (EO) are described and analyzed in this section. Any resource not present within the project area or any resource that would not be affected by the Proposed Action or No Action Alternative will not be analyzed in this document (see Table 1). Therefore, this section provides a description of the human and natural environmental resources that could be affected by the Proposed Action and the No Action Alternative and presents comparative analyses of the direct and indirect effects on the affected environment.

**Table 1  
Potentially Affected Resources**

<b>Resources*</b>	<b>Not Present</b>	<b>No Effect</b>	<b>Potentially Affected</b>	<b>Mitigation necessary</b>
Air Quality and Climate	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Cultural Resources	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Environmental Justice	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fire Management	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Forestry and Forest Products	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hydrology, Floodplains, and Riparian/Wetlands	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Invasive, Non-native Species	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Land Tenure, Right-of-Way, Other Uses	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Livestock Grazing/Rangeland Health	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Migratory Birds	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Mineral Resources	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Native American Traditional Values	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Paleontological Resources	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Public Health and Safety	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Recreation	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Socioeconomic	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Soils	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Special Designations, ACECs	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Special Status Species	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Transportation and Access	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Vegetation	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Visual Resources Management	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Wastes (Hazardous or Solid)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Wilderness Study Areas and Lands with Wilderness Characteristics	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Wild Horses	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Wildlife and Fisheries	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

\*See Statute: NV-2009-030, BLM Manual, regulation or order that may require an element be addressed in a NV BLM EA.

Seismic activities occur on the surface and would, therefore, not affect mineral or paleontological resources. The Project area is based on the location of existing leases; therefore, environmental justice is not included. Given the short duration of the Project, the beneficial effects to the local economy would be minimal and are not included in this EA.

Environmental effects analysis was based upon available data and literature from state and federal agencies, peer-review scientific literature, and resource studies conducted in the project area. Comparison of effects is intended to provide an impartial assessment to help inform the

decision-maker and the public. Actions resulting in adverse effects to one resource may impart a beneficial effect to other resources. For each resource analyzed, environmental consequences include:

- **direct effects** – effects that are caused by the action, and that occur at the same time and in the same general location as the action.
- **indirect effects** – effects that occur at a different time or in a different location than the action to which the effects are related.
- **cumulative effects** – effects on the environment that result from the incremental effect of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such actions.
- **short or long-term effects** – when applicable, the short-term or long-term aspects of effects are described. For the purposes of this EA, short-term effects occur during or after the activity or action and may continue for up to 2 years. Long-term effects occur beyond the first 2 years.

The predicted intensity and duration of effects from implementation of the Proposed Action for each resource were evaluated to determine how these effects could be avoided or reduced through the application of environmental protection measures. The design features included in Noble's Plan of Operations were evaluated for their ability to reduce expected effects. The need for additional protection measures was then determined for each resource, based on the expectation that potential effects could be further reduced or avoided. Additional environmental protection measures were included for each resource, if appropriate.

### **Cumulative Effects**

National Environmental Policy Act requires federal agencies to consider the cumulative effects of proposals under their review. Cumulative effects can result from individually minor, but collectively significant, actions taking place over a period of time.

This Environmental Assessment includes a cumulative effects analysis which is in conformance with the 2005 District Programmatic Oil & Gas Leasing EA, which included a Reasonably Foreseeable Development Scenario for geophysical operations (Appendix C to the 2005 EA). The 2005 Environmental Assessment completed a cumulative effects assessment for each resource expected to be affected by oil and gas development, including seismic activities, for the entire Elko District. That assessment evaluated a reasonably foreseeable development scenario and estimated an average of 110 miles of line would be surveyed per year over the 15-year projection with as many as 300 miles in any one year to 10 miles in another year. It also estimated that each year up to 182 acres would be disturbed from seismic surveys. Combining the Marys River Seismic Project, which was completed in 2012 in the Elko District, and the Proposed Action, a total of 1,046 acres have been or would be disturbed, which would be below the projected seismic disturbance of 1,638 acres for the ninth year (2005 to 2013). The projects' disturbance (or acres of effect) would be below that projected and have, therefore, been considered cumulatively.

Table 2 provides the rationale for the cumulative effects analysis by resource and identifies the Cumulative Effects Study Areas and associated acreages for each resource, where a Cumulative Effects Study Area is appropriate. Cumulative effects are analyzed within the specific resource sections below. Maps 4 through 10 depict five of the six Cumulative Effects Study Area boundaries described in Table 2, with the sixth being the project boundary. Maps 8, 9, and 10 depict the same Cumulative Effects Study Area boundaries, but provide the individual seasonal ranges for pronghorn, mule deer, and elk within the Cumulative Effects Study Area.

**Table 2  
Cumulative Effects Rationale**

Resource	Cumulative Effects Study Areas		
	Cumulative Effects Study Areas Boundary	Acres	Cumulative Effects Study Areas Rationale
Air Quality and Climate	Project Boundary with 5-km buffer	172,240	Fugitive dust from unpaved roads, the primary type and source of emissions from the Project, are localized and reduce considerably with distance. Air quality effects from Project sources would be expected to be negligible well within a 5 km distance from any emissions source. Therefore, the air quality Cumulative Effects Study Area was defined as the project area plus 5 km in all directions.
Cultural Resources; Native American Traditional Values	Project Boundary	63,495	Because the Project's effects would be minimal in both duration (90 operational days) and intensity (short-term, vehicular disturbance), the Project boundary provides the Cumulative Effects Study Area for these resources. Effects are not anticipated outside the Project boundary.
Fire Management			
Hydrology, Floodplains, and Riparian/Wetlands			
Invasive, Non-Native Species			
Land Tenure, Rights-of-Way and Other Uses			
Recreation			
Soils			
Transportation and Access			
Visual Resource Management			
Wilderness Study Areas and Lands with Wilderness Characteristics			
Livestock Grazing/Rangeland Health	Extent of Affected Grazing Allotments	186,684	The boundary is the extent of the grazing allotments affected by the Project. Effects to a portion of an allotment would cumulatively effect the entire allotment.
Migratory Birds; Special Status Species; Wildlife and Fisheries	Watershed	833,395	The boundary of the South Fork Humboldt watershed (Hydrologic Unit Code - HUC16040103), within the Upper Humboldt watershed, has been used as the geographic scope for the cumulative effects analysis for these resources. Potential effects of the Project would not be likely to result in any issues to these resources outside of this area.
Vegetation			
Special Status Species/Greater Sage-grouse <sup>1</sup>	South Fork PMU	1,396,251	The project area is located in the South Fork Population Management Unit for sage-grouse.
Wildlife/Pronghorn	Big Game Management Area 6 (Hunt Units 064, 065, and 068) and Management Area 10 (all Hunt Units)	6,150,470	Consideration of the units listed provides perspective of the seasonal range use in relation to the Project.
Wildlife/Mule Deer			
Wildlife/Elk			

Past and ongoing activities (natural and man-made) that have affected and are affecting the project area include wildland fire, drought, wildlife utilization, climate change, livestock grazing, dispersed recreation (i.e., hunting, camping, etc.), oil and gas exploration, and off-highway vehicle use (see Table 3). These activities have contributed to the current state of the project area and are taken into account in the resource-specific sections below.

**Table 3  
Acres Affected within Project Boundary Cumulative Effects Study Area**

Resources	Total Acres within Project Boundary (Project Effects)	Acres within Project Boundary Disturbed by Fire <sup>1</sup>	Acres of Disturbance within Cumulative Effects Study Area by Past, Present, and RFFA's <sup>2</sup>					Total Disturbance (%)
			Case Type	Authorized	Pending	Closed	Total	
Cultural Resources; Native American Traditional Values; Fire Management; Hydrology, Floodplains, and Riparian/Wetlands; Invasive, Non-Native Species; Land Tenure; Recreation; Soils; Transportation and Access; Visual; Wilderness	63,495 (650)	3,171 (5%)	Rights-of-Way: Powerlines, Fiber Optic Cable, Telephone Lines, Roads, Fences, Railroad	475	0	0	475	0.75%
			Mineral Material Sites: Sand, Gravel, topsoil sources and pits, includes Nevada Department of Transportation pits	0	0	1	1	<0.01%

<sup>1</sup> Source: BLM GIS Data. Historic Fires (1981-2008)

<sup>2</sup> Reasonably Foreseeable Future Actions (RFFA). Source: BLM GIS Data. Land Lines/Land Points and Mineral Material Sites data (2013). Acres are approximate.

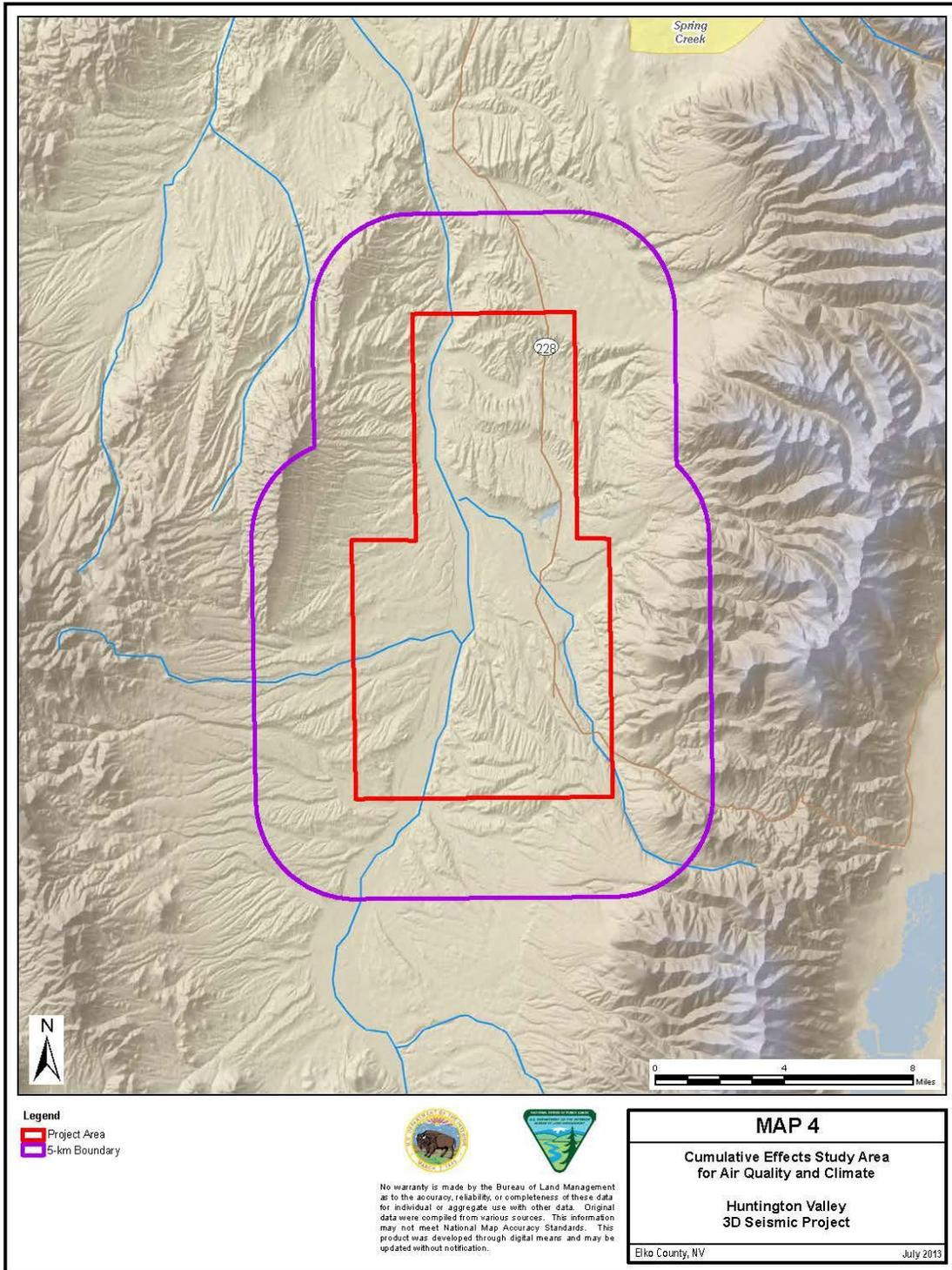
The Reasonably Foreseeable Future Actions describes existing facilities identified within and adjacent to the project area, as well as proposed projects which may be constructed in the area in the reasonably foreseeable future. To be included in the Reasonably Foreseeable Future Actions, a proposed future action must have a high probability of occurrence and be defined well enough to consider in any cumulative effects analysis. On BLM-administered lands, foreseeable projects are those for which the BLM has received applications.

Generally, past, present, and reasonably foreseeable activities within or in the vicinity of the project area that the BLM has determined could influence on the resources in the area include:

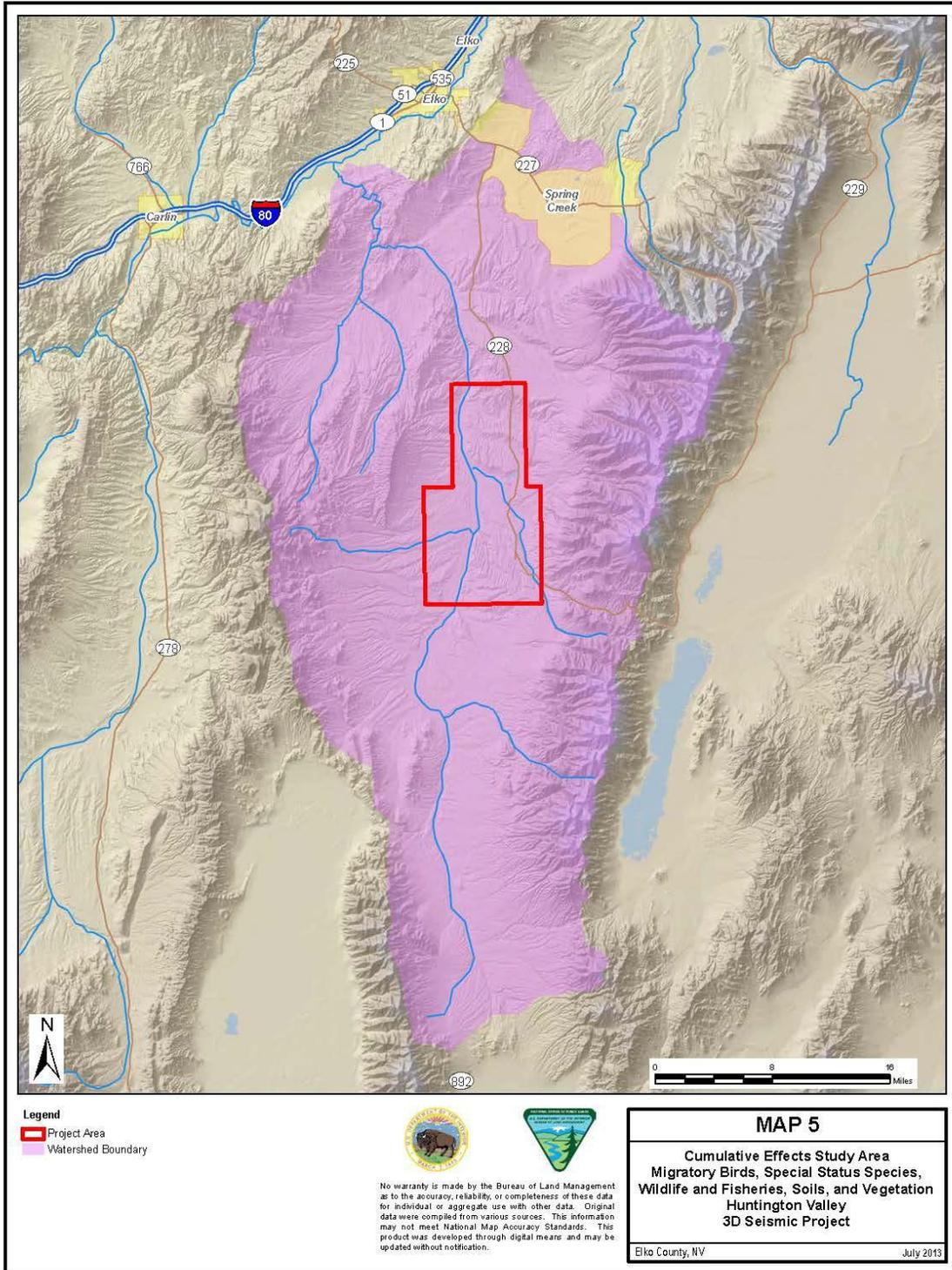
- Livestock grazing
- Oil and gas development
- Mining
- Dispersed motorized and mechanized recreation
- Fire

The identified past, present, and reasonably foreseeable actions were considered when analyzing cumulative effects in the individual resource sections.

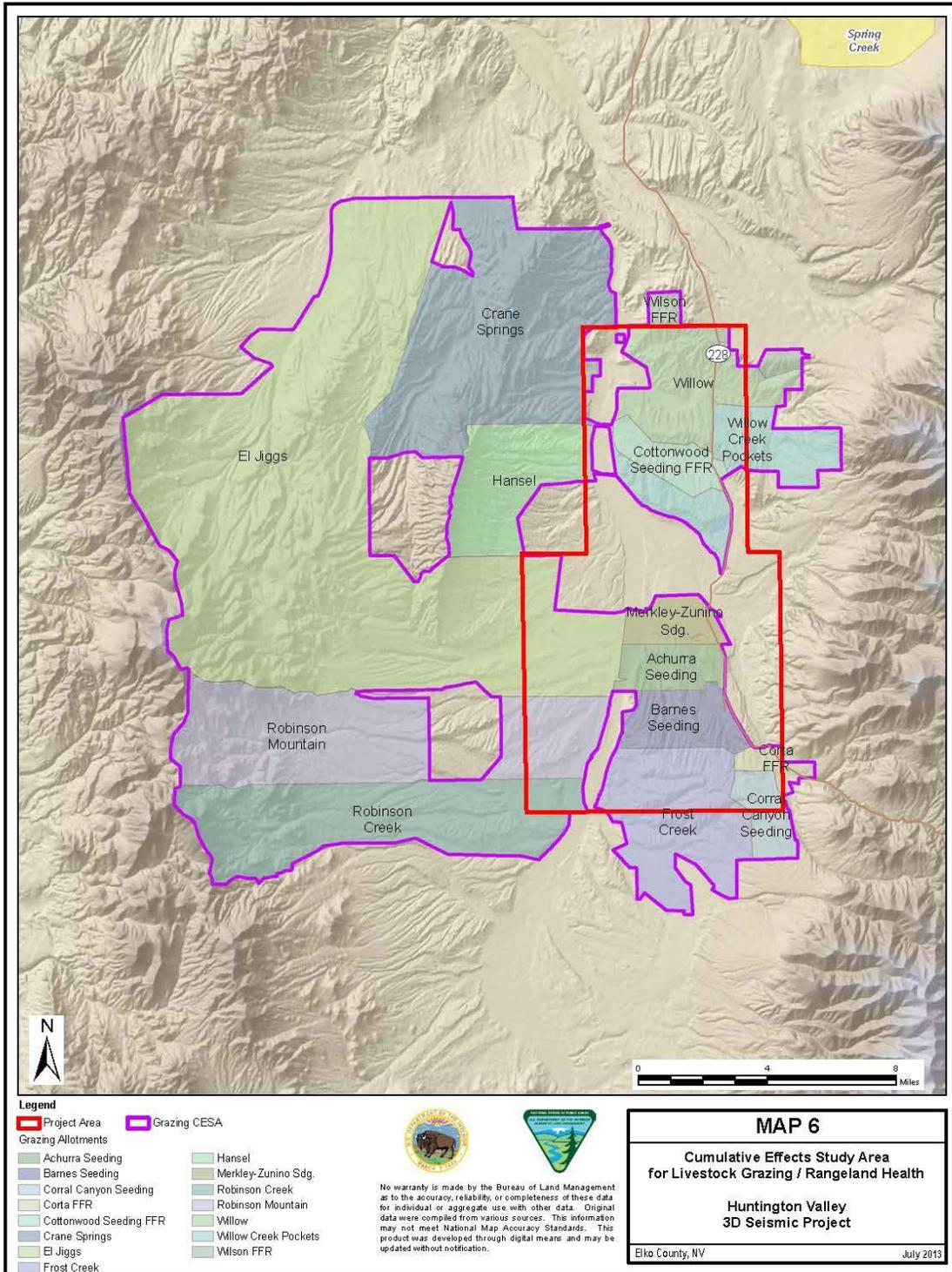
# Map 4 Cumulative Effects Study Area for Air Quality and Climate



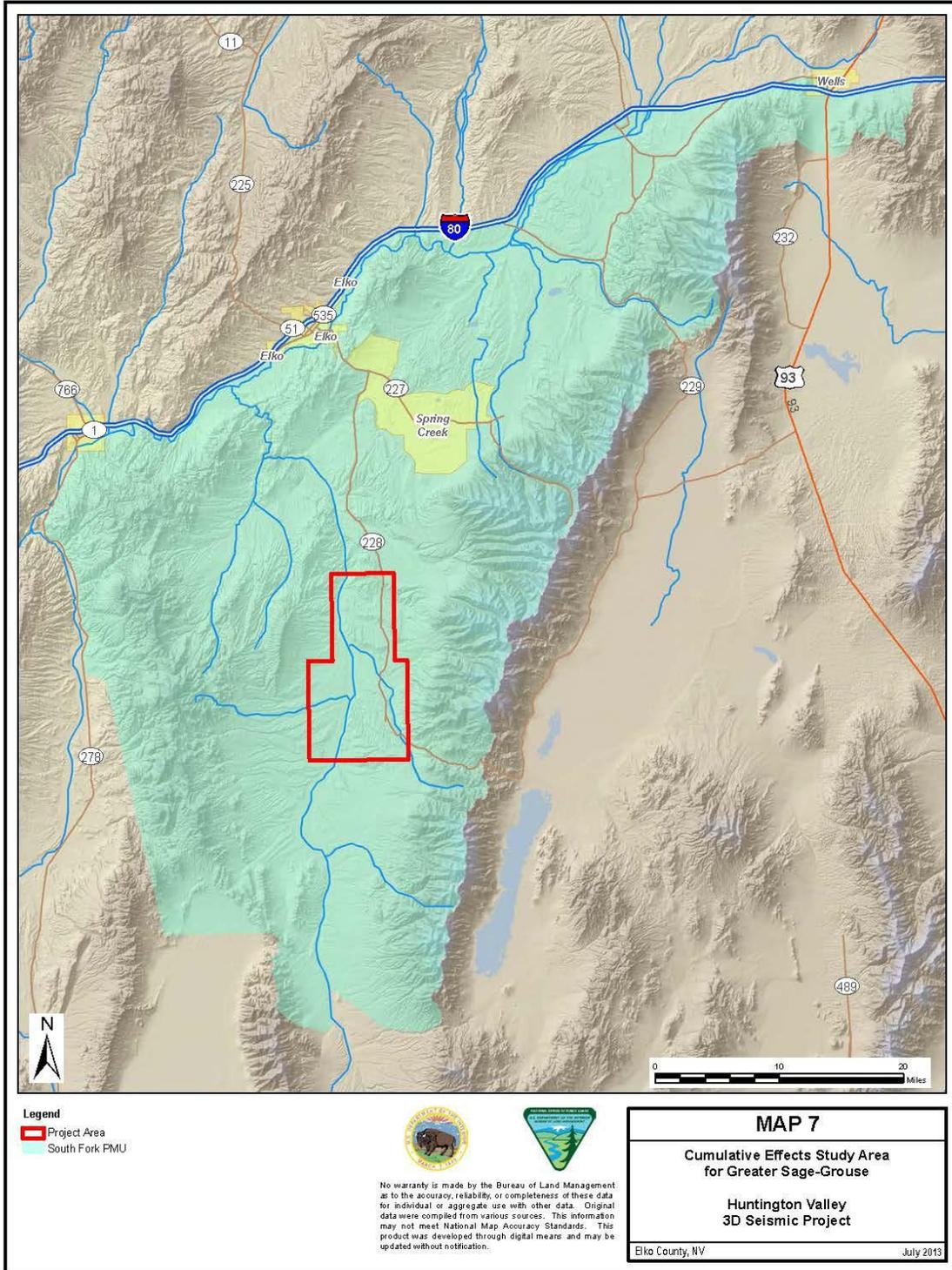
# Map 5 Cumulative Effects Study Area for Migratory Birds, Special Status Species, Wildlife and Fisheries, Soils, and Vegetation



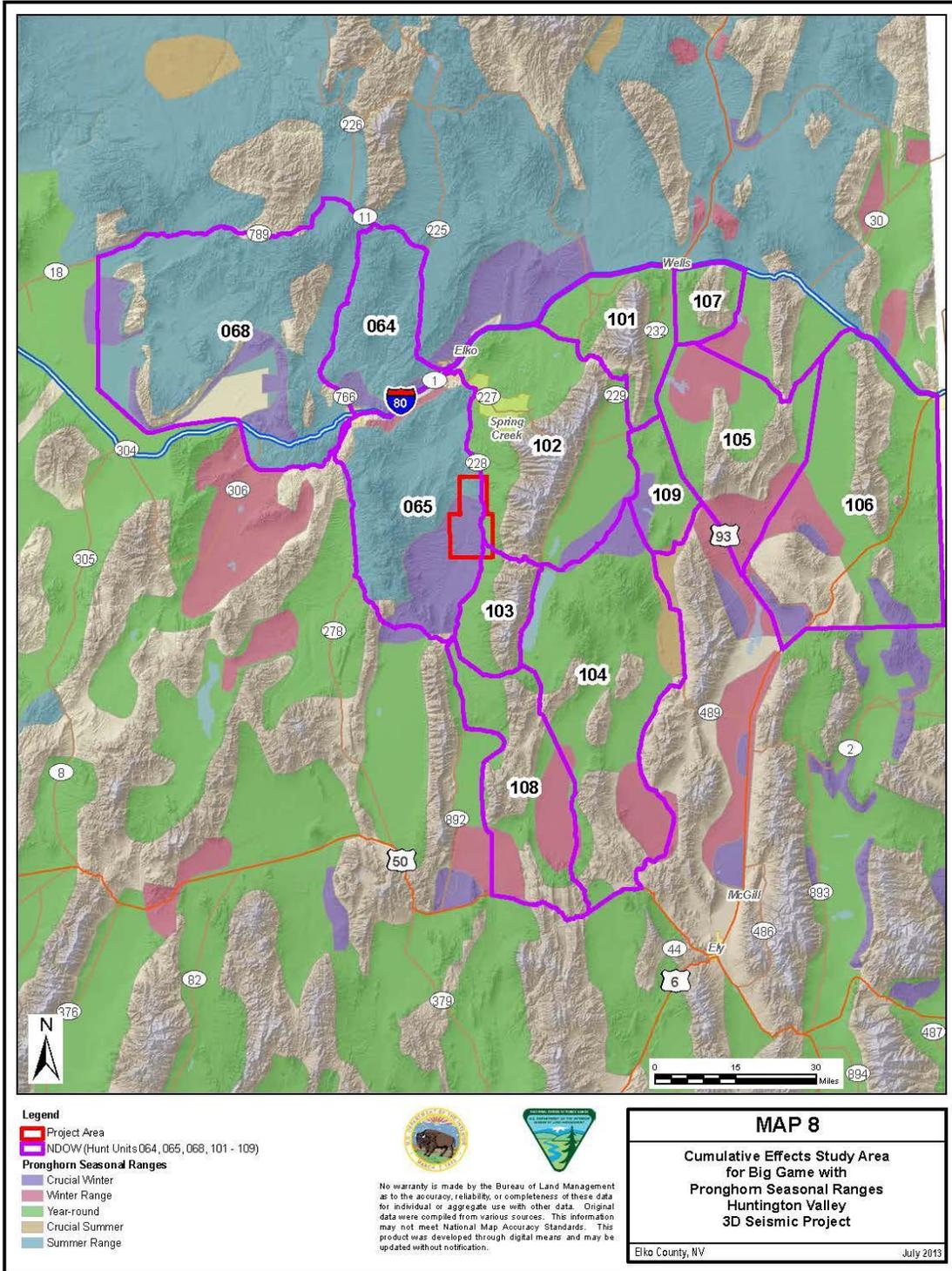
## Map 6 Cumulative Effects Study Area for Livestock Grazing/Rangeland Health



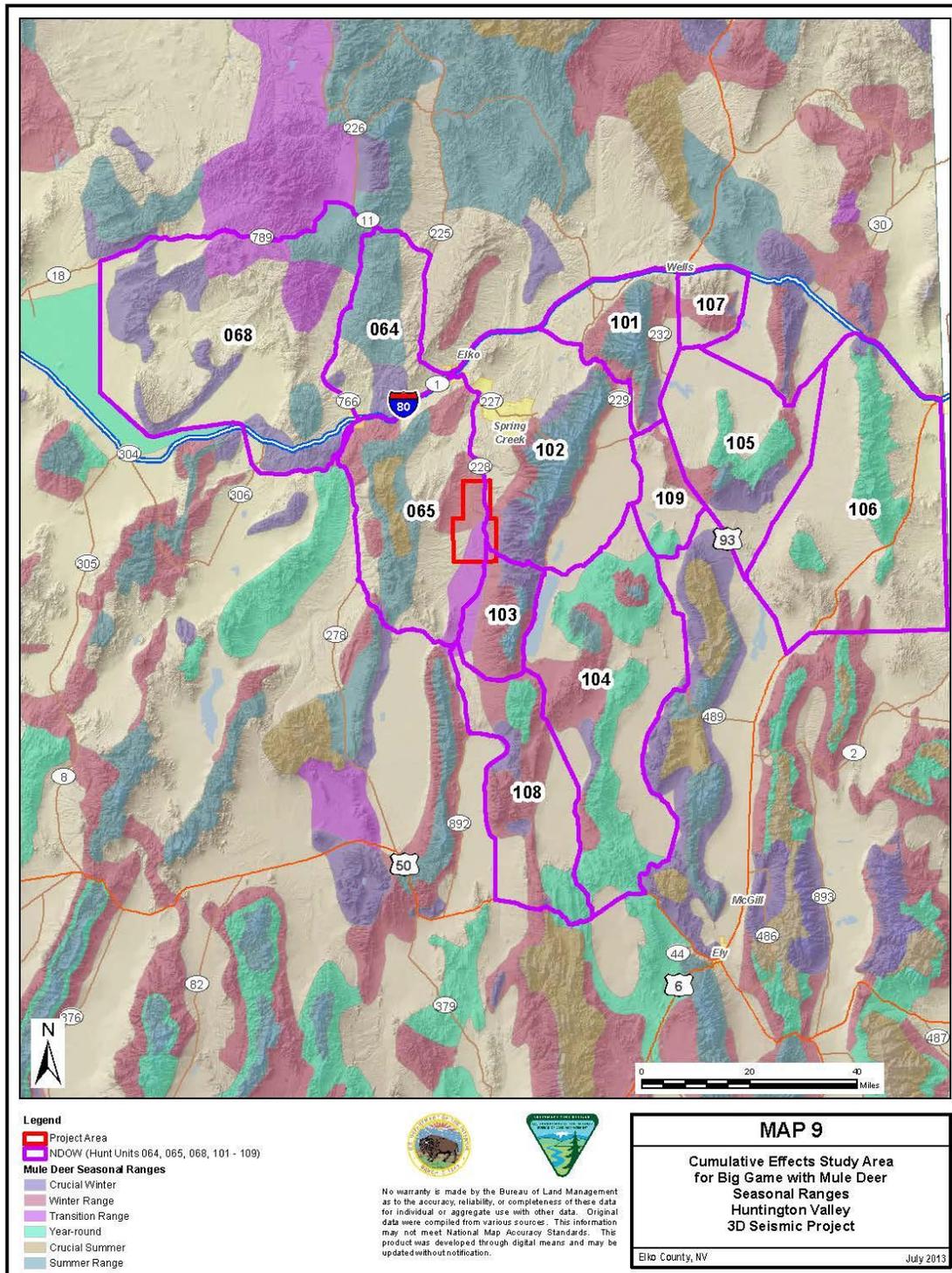
# Map 7 Cumulative Effects Study Area for Greater Sage-Grouse



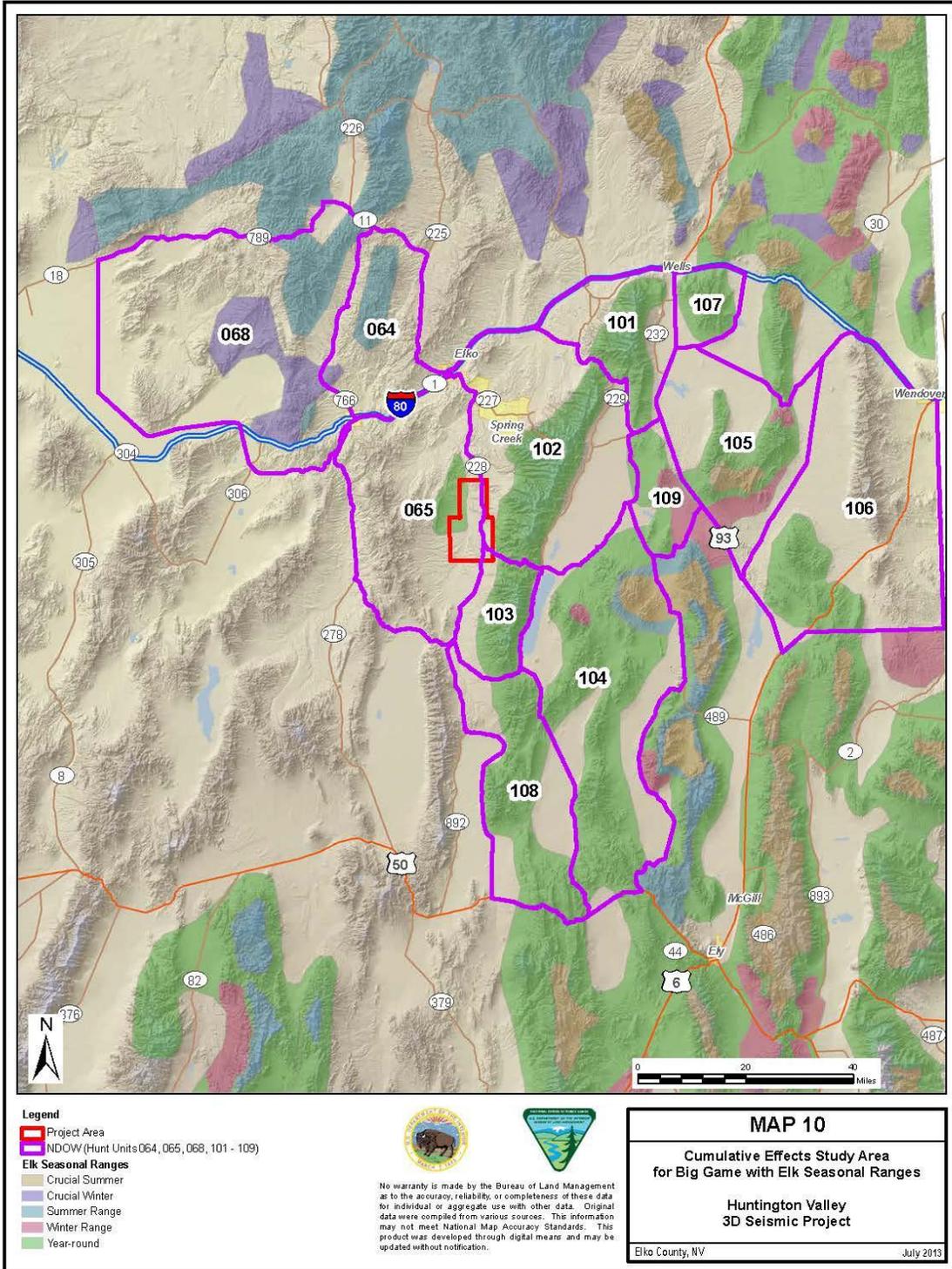
# Map 8 Cumulative Effects Study Area for Big Game with Pronghorn Seasonal Ranges



# Map 9 Cumulative Effects Study Area for Big Game with Mule Deer Seasonal Ranges



# Map 10 Cumulative Effects Study Area for Big Game with Elk Seasonal Ranges



### 3.1 AIR QUALITY AND CLIMATE

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#### 3.1.1 AFFECTED ENVIRONMENT

The project area is “in attainment” (Environmental Protection Agency - EPA, 2013). This means that the National Ambient Air Quality Standards for criteria pollutants are currently being met. High winds and vehicular traffic create exhaust and localized occurrences of dust but these activities have not resulted in violations of air quality standards for any criteria pollutants. The nearest Prevention of Significant Deterioration classified area is the Jarbidge Wilderness Area located approximately 120.3 kilometers (74.8 miles) north of the project area (see Map 11). The nearest air quality monitoring location is in Elko.

Climate is typical of the northern Great Basin with hot, dry summers and cold winters with some snow. Precipitation is fairly evenly distributed throughout the year, with a total average annual precipitation of 10.2 inches. The driest months are July and August.

Recent changes in global climate and atmospheric conditions have been documented by the Intergovernmental Panel on Climate Change. The Intergovernmental Panel on Climate Change concluded that “warming of the climate system is unequivocal” and “most of the observed increase in globally average temperatures since the mid-20th century is very likely due to the observed increase in anthropogenic greenhouse gas concentrations.” Several activities contribute to the phenomena of climate change, including emissions of Greenhouse Gases (especially carbon dioxide and methane) from fossil fuel development, large wildfires, and activities using combustion engines; changes to the natural carbon cycle; and changes to radiative forces and reflectivity (IPPC, 2007).

#### 3.1.2 ENVIRONMENTAL EFFECTS

##### 3.1.2.1 Proposed Action Alternative

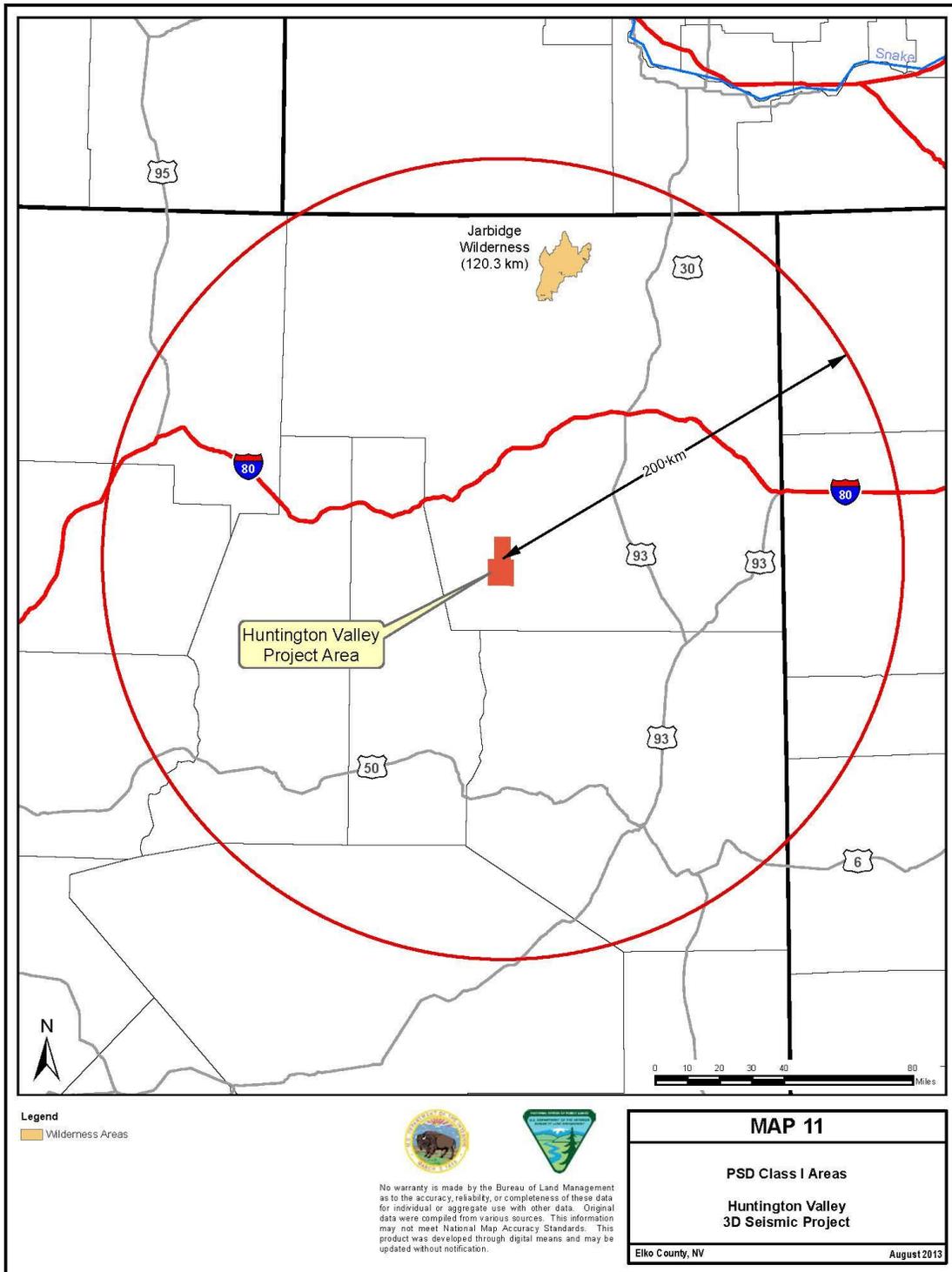
Vehicular travel would increase mobile source combustion emissions and could increase fugitive dust from travel on unpaved surfaces. Workers would travel on paved roads to the worksite minimizing commuter effects. All emissions would be short-term and temporary in nature and would not result in exceedances of the National Ambient Air Quality Standards. Greenhouse gas emissions from Project vehicles would represent a very small portion of the global budget of constituents which affect global climate change.

Air pollutant emissions were estimated for Project sources. These sources include fugitive dust from vehicle travel on unpaved roads, vehicle fuel combustion, and helicopter fuel combustion. Emissions were calculated for the life of the Project (90 days) using accepted Environmental Protection Agency emission factors and operator activity data. Total emissions estimated to occur over the life of the Project are shown in Table 4.

**Table 4**  
**Project Emissions (tons)**

Description	NOx	VOC	CO	PM10	PM2.5	SO2	Total CO2e
Vehicle Traffic, Light Duty	0.0089	0.0052	0.0644	0.7328	0.0730	0.0001	2.4477
Vehicle Traffic, Heavy Duty	0.0216	0.0020	0.0161	0.2227	0.0232	0.0001	2.8100
Helicopter Traffic	0.0117	1.35E-05	2.16	0.0426	0.0294	0.0018	--
<b>Total Traffic Emissions</b>	<b>0.0423</b>	<b>0.0072</b>	<b>2.2431</b>	<b>0.9981</b>	<b>0.1257</b>	<b>0.0019</b>	<b>5.2577</b>

# Map 11 Prevention of Significant Deterioration Class I Areas



The small quantity of emissions that would be generated is classified as mobile and fugitive sources. No stationary sources are proposed as part of the Project and as a result the Project would not be subject to Nevada Bureau of Air Pollution Control air permitting requirements. As a point of reference, Nevada Administrative Code 445B.310.1(a) requires a permit applicant to perform a modeling analysis for new sources that emit greater than 25 tons per year of any regulated air pollutant. Total Project emissions of PM<sub>10</sub> are estimated to be less than 4 percent of that modeling threshold.

### **Environmental Protection Measures**

In addition to the Project design features (see Section 2.2.1.6), the BLM would require the following to reduce effects to air quality:

- Posted speed limits would be obeyed and Noble would instruct personnel not to exceed 30 miles per hour on all dirt roads with no posted speed limits.
- Noble would use water trucks, where necessary, to control fugitive dust.

### **3.1.2.2 No Action Alternative**

Under the No Action Alternative, there would be no effects from the Proposed Action to air quality or climate in the project area.

### **3.1.3 CUMULATIVE EFFECTS**

Air quality and climate are influenced by a variety of natural and man-made factors such as weather, climate change, smoke from wildfires, exhaust from vehicles, agriculture, travel on native surfaces and blowing dust from disturbed and native surfaces (see Table 5). Even when under these influences air quality is generally good and considered to be in attainment (EPA, 2013). These described effects would continue under the No Action Alternative. As described above, the Project would result in minimal effects to air quality, and BLM knows of no other proposals within the Cumulative Effects Study Area boundary (see Map 4) that would increase air emissions; therefore, cumulative effects would be minor.

**Table 5  
Acres Affected within the Air Quality Cumulative Effects Study Area**

Total Acres within Cumulative Effects Study Area	Acres Within Cumulative Effects Study Area Disturbed by Fire <sup>1</sup>	Acres of Disturbance within Cumulative Effects Study Area by Past, Present, and RFFA's <sup>2</sup>					Total Disturbance (%)
		Case Type	Authorized	Pending	Closed	Total	
172,240	18,236	Rights of Way: Powerlines, Fiber Optic Cable, Telephone Lines, Roads, Fences, Railroad	486	0	0	<b>486</b>	0.28%
		Mineral Material Sites: Sand, Gravel, topsoil sources and pits	20	0	10	<b>30</b>	0.02%

<sup>1</sup> Source: BLM GIS Data. Historic Fires (1981-2008).

<sup>2</sup> Reasonably Foreseeable Future Actions (RFFA). Source: BLM GIS Data. Land Lines/Land Points and Mineral Material Sites data (2013). Acres are approximate.

## **3.2 CULTURAL RESOURCES**

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### **3.2.1 AFFECTED ENVIRONMENT**

The area of potential effect for Section 106 compliance is defined by the State Protocol as the geographical area sufficient to allow analysis and treatment of potential effects (to Historic Properties) associated with the undertaking (Project), and large enough to encompass all potential direct and indirect effects, including visual effects. Further, levels of intensity in identification, evaluation, and treatment are scaled by the scope of the undertaking and the nature of potential effects.

For this Project, the planned activities are considered transitory (no more than 3 months), of limited potential effect within the seismic and access route corridors, and of no lasting visual effect. Based on these criteria, the Section 106 area of potential effect includes only the seismic corridors, access routes, and staging areas within the permitted area and associated access routes. The permitted project boundary encompasses 63,495 acres, of which the area of potential effect for Section 106 compliance includes only 10,600 of those acres (6,345 acres BLM managed public lands, 4,255 acres private ownership). Cultural Resource Analysts, Inc., conducted both a Class I (literature search and historic context creation) inventory and Class III (physical cultural resource survey) inventory of the area of potential effect for Section 106 compliance.

In compliance with the Cultural Resource Inventory Needs Assessment signed 10/29/2012 and approved by the Nevada State Historic Preservation Officer, a “Class I existing information inventory” was compiled from sources including the Nevada Cultural Resource Inventory System database, BLM District cultural resource files, General Land Office maps, Master Title Plat records, and western history library collections. From these data, determinations were made concerning anticipated archaeological resources present within the project area and historic contexts were developed to address site evaluation for National Register of Historic Places eligibility determinations.

Under the National Historic Preservation Act, mandated Section 106 Tribal Consultation, potential issues of Native American Traditional Values were identified (see Section 3.9).

### **3.2.2 ENVIRONMENTAL EFFECTS**

#### **3.2.2.1 Proposed Action Alternative**

The cultural resource surveys recorded 121 sites and 48 isolated resources. Sixteen of the sites had been previously recorded. The recorded sites included 90 prehistoric, 28 historic, and 3 are multi-component. Of the sites, 17 are recommended as eligible for inclusion in the National Register of Historic Places and 14 sites are recommended as unevaluated for inclusion pending further research; 90 sites are recommended as not eligible. All isolated resources are by definition not eligible for inclusion in the National Register of Historic Places.

A relatively short segment of the California National Historic Trail’s California National Historic Trails Hastings Cutoff is identified east of Huntington Creek. No vehicle traffic would be permitted on this segment. Seismic vehicles would be allowed on the existing two-track roads within the site buffer but not on the intact part of the trail segment. Other segments of the Hastings Cutoff within the project area on the east side of the creek have likely been obliterated by the network of two-track roads through the area, ranching activity, and Huntington Creek. Further north, where the trail switched to the west side of the creek, it has been eradicated by a well-developed historic toll road, the historic Hamilton Stage road, and a modern improved two-track road.

All Historic Properties on BLM and private lands would be protected from adverse effects through project design (see Section 2.2.1.6) and/or redesign. Indirect effects could include an on-going, heightened awareness, and therefore an increased level of interference with Historic Properties within the project area after the termination of operations.

### **Environmental Protection Measures**

In addition to the Project design features (see Section 2.2.1.6), the BLM would require the following:

- All Historic Properties, sites not evaluated for nomination to the National Register of Historic Places, and components of linear Historic Properties which contribute to the linear sites' eligibility status would be avoided by a distance of 30 meters (~100 feet) by all activities associated with the Project, except where otherwise indicated. Historic Properties containing standing structures will be avoided by a distance of ~100 meters (300 feet).
- No vehicle traffic would be allowed on the intact portion of the Hastings Cutoff segment east of Huntington Creek.
- Project personnel may drive on existing roads through historic property buffers ONLY if no improvements (i.e., road grading, blading, ditching, building or construction) are made within the 30-meter buffer of the historic property, and there is no deviation from the road within 30 meters of that historic property.
- Noble shall not knowingly disturb, alter, injure, or destroy any archaeological site, structure, building, or object on public or private lands. If Noble discovers any previously unidentified cultural resource that might be altered or destroyed by the Project, Noble shall immediately stop all activities within 30 meters (~100 feet) of the discovery and the discovery shall be left intact and reported (775-753-0200) to the BLM Tuscarora Field Office (BLM Authorized Officer) and protect the site until notified to proceed by the BLM Authorized Officer.
- Pursuant to 43 CFR 10.4(g), Noble shall notify the BLM Authorized Officer, by telephone (775-753-0200), with written confirmation, immediately upon the discovery of human remains, funerary objects, sacred objects, or objects of cultural patrimony (as defined in 43 CFR 10.2). Further pursuant to 43 CFR 10.4(c) and (d), Noble shall immediately stop all activities in the vicinity of the discovery and protect it until notified to proceed by the BLM Authorized Officer.
- Appropriate in-field personnel will be made familiar with the *Unanticipated Discovery Plan for Cultural Resources and Native American Traditional Values*.

#### **3.2.2.2 No Action Alternative**

Under the No Action Alternative, there would be no effects to cultural resources from the Proposed Action. Effects to Historic Properties would be continued natural environmental changes and resultant decay to organic elements and displacement of surface materials.

#### **3.2.3 CUMULATIVE EFFECTS**

Historic Properties may be affected by increased human presence (see Table 3) in the form of greater exposure to illegal collection, vandalism, other illegal activities, and indirect effects from legal activities. Cumulative effects for Historic Properties under the No Action Alternative would be limited to continued natural degradation. As described above, the Project would avoid cultural resources. The BLM knows of no other proposals within the Cumulative Effects Study Area boundary (i.e., the project boundary) that would increase effects to Historic Properties; therefore cumulative effects would be minimal.

### **3.3 FIRE MANAGEMENT**

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#### **3.3.1 AFFECTED ENVIRONMENT**

Wildfire is an important issue on public and private lands in the region. The Elko District Office manages 7.5 million acres and is considered to be one of the highest fire load district offices within the BLM nationwide. In 2003, the BLM Elko District Office prepared an amendment to the 1987 Elko Resource Management Plan for fire management, providing an integrated approach for response to wildfires, rehabilitating burned areas, and reducing hazardous fuel loads. Fires in the sagebrush ecosystem have created opportunities for invasive species to change the vegetation type to cheatgrass or other invasive species which can burn rapidly and spread at a high rate of speed.

Approximately 75 percent of Elko County is considered to be at high threat levels for the occurrence of large wildland fires (Wildland Fire Associates, 2008). This assessment is based on the vegetation types present, climate, and topography, as well as proximity to agricultural communities, wildlife habitat, and the number of large-scale historic fires within Elko County. Over the past two decades, dozens of fires have burned within a 30-mile radius of the project area, several within the proposed boundaries (see Map 12). The fires ranged in size from less than 50 acres to more than 190,000 acres (BLM, 2012a). Within the project area, 3,171 acres have been affected (see Table 3). In 1999, the Hansel Fire burned approximately 2,500 acres in the northern portion of the proposed project area.

Although wildland fires may occur year-round in the BLM Tuscarora Field Office Area, the fire season is generally considered from May to September, with the height of the fire season in July and August (BLM, 2003).

Two BLM Fire Management Units occur within the project area, the Cortez Fire Management Unit and the Elko Wildland Urban Interface Fire Management Unit. The current fire management strategy in the BLM Elko District is full suppression of almost all fires (BLM, 2003). BLM fire management has been aggressively attacking and suppressing fires to prevent the establishment of invasive species. BLM Elko's seasonal operations include Interagency Hotshot Crews on staff through the fire season as a mitigation measure for addressing wildfires.

#### **3.3.2 ENVIRONMENTAL EFFECTS**

##### **3.3.2.1 Proposed Action Alternative**

Cheatgrass is prevalent in the project area (Hayden-Wing Associates - HWA, 2012a) and provides a large fuel load that can contribute to wildland fires. Once started, the fires tend to burn fast, cover large areas, and increase the frequency of fires in an area (Wildland Fire Associates, 2008). Based on the volume of cheatgrass present and the high risk of fire potential in the project area, the Project could either ignite a fire or be susceptible to potential wildland fires, especially in dry conditions during the fall. To decrease the potential for fire ignition and in preparation for a wildland fire, Noble and its contractors would implement the measures listed in Section 2.2.1.6.

##### **Environmental Protection Measures**

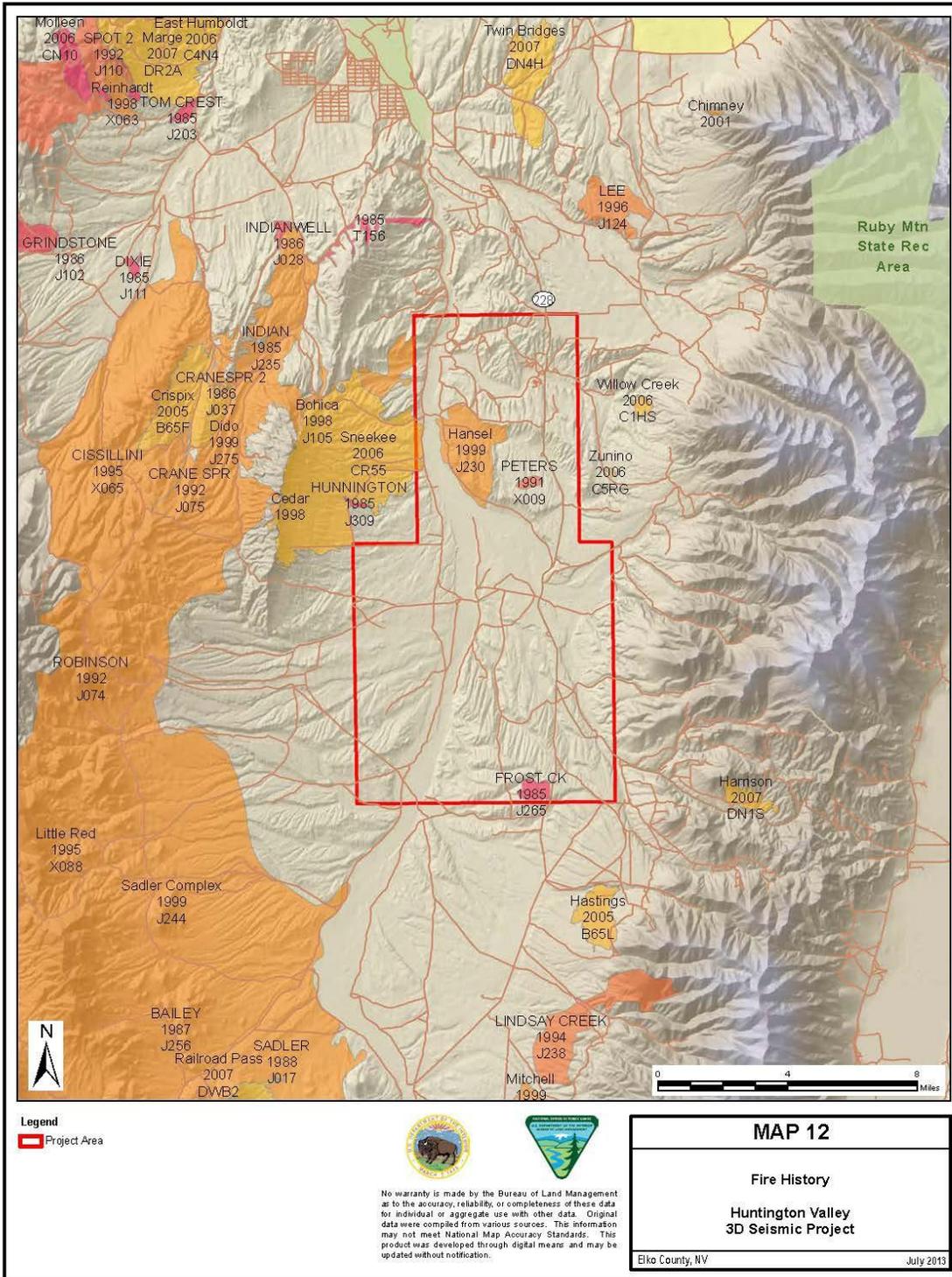
In addition to the Project design features (see Section 2.2.1.6), the BLM would require the following environmental protection measures to further reduce effects to fire management:

- All vehicles, including ATVs, would carry fire extinguishers.
- If a fire is caused by the Project, Noble would be responsible for fire suppression costs.

##### **3.3.2.2 No Action Alternative**

Under the No Action Alternative, there would be no effects to fire management from the Proposed Action.

# Map 12 Fire History



### **3.3.3 CUMULATIVE EFFECTS**

Based on the Project design features and the environmental protection measures, cumulative effects are not anticipated.

## **3.4 HYDROLOGY, FLOODPLAINS, AND RIPARIAN/WETLANDS**

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### **3.4.1 AFFECTED ENVIRONMENT**

The project area is located within the South Fork Humboldt watershed (HUC16040103) in the Upper Humboldt River Basin (HUC 160401) in the Great Basin Region. The project boundary intersects three subwatersheds, Lower Huntington Creek (HUC1604010306), Middle Huntington Creek (HUC1604010305), and Smith Creek (1604010304). Huntington Creek bisects the project area from north to south. Three perennial streams, Smith Creek, Cottonwood Creek, and Willow Creek flow from the east out of the Ruby Mountains and converge with Huntington Creek in the northwestern portion of the project area. Corral Creek, a perennial tributary, converges with Smith Creek in the southeastern portion of the project area. Numerous intermittent drainages collect runoff and channel it into these four perennial streams in the project area (see Map 3). Elevation within the project area ranges from 5,400 to 5,800 feet above sea level. Topography is variable and is comprised of lower elevation riparian areas, rolling hills, drainages, hilltops, draws, and eroded hillsides.

Hydrology within the project area is altered by agricultural practices. Hay fields (7,790 acres or 12 percent of project area) are present along the riparian corridors throughout the project area. The agriculture practices divert spring runoff for agricultural use in the area. This diversion alters a process associated with flooding which likely affects riparian vegetation and water quality within the project area.

A 100-year floodplain is defined by the Federal Emergency Management Agency (FEMA) as the area adjacent to a watercourse that has a one percent chance of becoming wet in any single year (FEMA, 1992). A 100-year floodplain has not been delineated for this area. Map 3 shows the extent of the floodplains associated with the perennial streams in the area. Approximately 1 percent of the project area is mapped as riparian, most of which is located on private lands adjacent to Huntington Creek and Smith Creek.

The U.S. Geological Survey topographic maps indicate that in the southern portion of the project area there are four springs on public lands associated with Huntington Creek, and three springs associated with a tributary to Huntington Creek on private lands. Additionally, the BLM Geographic Information System (GIS) data indicate there is a spring on Carville Creek near the southern edge of the project area. These springs are shown on Map 3. Riparian areas associated with spring sources represent a very small portion of the total riparian area within the project area. More information regarding riparian vegetation within the project area is presented in Section 3.14/Vegetation.

The State of Nevada has completed some analyses of water quality which apply to the project area. The Clean Water Act of 1972 requires that all states conduct a comprehensive analysis of water quality data associated with surface waters every two years to determine whether state surface water quality standards are being met and designated uses are being supported. The Nevada Division of Environmental Protection, Bureau of Water Quality Planning, with oversight from the EPA, implements the Clean Water Act in Nevada. According to the current EPA-approved water quality assessment for Nevada, the beneficial uses for the Humboldt River are aquatic life, industrial supply, irrigation, municipal and domestic supply, propagation of wildlife, contact and non-contact recreation, and watering of livestock (NDEP, 2010a). As a tributary to the Humboldt River, the beneficial uses are the same for Huntington Creek.

The Clean Water Act requires states to compile a list of waterbodies, known as the 303(d) list, that do not fully support their designated uses. According to the current 303(d) list, Huntington Creek in the southern portion of the project area, from the White Pine county line to its confluence with Smith Creek is listed as a Category 3, which indicates there is insufficient available data to make a use support determination. From its confluence with Smith Creek to its confluence with the Humboldt River, Huntington Creek is listed as a Category 5 (non-attaining for aquatic life, recreation involving contact with water, and municipal or domestic supply for the parameters total phosphorus and total dissolved solids) (NDEP, 2010b). Category 5 streams do not support all uses and a Total Maximum Daily Load requirement, to achieve compliance, is needed. Huntington Creek is listed as a low priority and no timeline for developing a Total Maximum Daily Load has been determined. No assessment data is available for the other perennial streams in the project area.

The Zunino/Jiggs Reservoir Recreation Area is located within the project area between Hamilton Stage Rd. and SR-228 (shown on Map 19). It is fed by intermittent drainages and is dry during drought years. No water quality assessment data is available from the NWDR.

A review of the Nevada Division of Water Resources well log GIS data (NDWR, 2012) indicates there are 52 water supply wells within 0.50 mile of the project area: 21 are domestic uses, 16 are for stock watering purposes, and other uses include irrigation and industrial use. Two municipal wells are within the project area; one is permitted to the Elko School District and one is permitted to Reed Ranching. One additional municipal well, permitted to Road and Highway Builders, is outside the project area but within 0.50 mile. Wells are shown on Map 3; some may not be currently functioning.

### **3.4.2 ENVIRONMENTAL EFFECTS**

#### **3.4.2.1 Proposed Action Alternative**

With the proposed project design features, the Project would not affect water resources. The Project would avoid all wet or saturated areas. The Project would avoid effects to springs and wells by not performing any seismic activities within 300 feet. Direct effects to hydrology, floodplains, drainages, and riparian/wetlands are not anticipated from the Project. Indirect effects could occur if recreation/livestock use were to increase along the source lines leading to or crossing water resources.

#### **Environmental Protection Measures**

In addition to the Project design features (see Section 2.2.1.6 – i.e., avoidance of wet/saturated areas, 300-foot fueling buffer) and the environmental protection measure in Section 3.14.2/Vegetation, the following environmental protection measures have been identified to reduce potential effects to water resources.

- Operations would be curtailed when wet or saturated ground conditions exist such that travel with seismic vehicles would result in ruts deeper than 3 inches.
- Vehicles would not drive in steep areas (greater than 30 percent slope) or across incised banks of 12 inches tall or more.
- BLM would require refueling to occur at pre-disturbed areas (i.e., existing roads) to prevent additional disturbance to vegetation and soils which could lead to effects to water resources. If refueling cannot occur at pre-disturbed locations, BLM-approval would be required.

### **3.4.2.2 No Action Alternative**

Under the No Action Alternative, there would be no effects from the Proposed Action to the hydrology and riparian/wetland resources in the project area.

### **3.4.3 CUMULATIVE EFFECTS**

As described above, the Project would not result in direct effects and could result in indirect effects to water quality and riparian/wetland areas based on possible increased use of the source lines from recreationists and livestock. Within the Cumulative Effects Study Area (i.e., the project boundary), oil and gas development, wildland fire, mining, recreational use, and agriculture activities could affect hydrologic resources. The BLM knows of no other proposals within the Cumulative Effects Study Area boundary that would increase effects to water resources; therefore cumulative effects would be expected to be minimal.

## **3.5 INVASIVE, NON-NATIVE SPECIES**

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### **3.5.1 AFFECTED ENVIRONMENT**

The Nevada Department of Agriculture (NDOA, 2013) has responsibility for jurisdiction, management, and enforcement of the state's noxious weed law; species on Nevada's noxious weed list should be controlled on private and public lands. The 47 noxious weed species included on Nevada's list are designated as Category A (30 species), B (9 species), or C (8 species) as defined under the Nevada Revised Statutes (NRS Chapter 555 – Control of Insects, Pests and Noxious Weeds). The Category A list includes species that are not found or are limited in distribution within Nevada that must be eradicated. Successful treatment options generally exist for these species. Category B listed species are those weeds that may be abundant in localized areas but generally are not well established in Nevada. Reasonable treatment options for these species exist and are generally required to be treated where possible, especially in areas where populations are not well established or previously unknown to occur. Category C listed species are generally widespread and established in many counties of the state, and treatment is done at the discretion of the state quarantine officer.

The Nevada Department of Agriculture (2001) mapped noxious weeds documented in Nevada during 1989 and 2001; Elko County had the highest density of weeds mapped. The BLM Elko District documented a rapid expansion of noxious weeds in Elko County in their Weed Inventory Report from 1998 to 2001; 13 species expanded by an average of 24 percent (BLM, 2001 as cited in Kadrmas, et al., 2002). Elko County (2008) indicated that acreage of infestations was increasing at an alarming rate. As of 2008, at least 29 noxious and invasive weed species have been documented in Elko County (see Table A-1 in Appendix A) (Elko County, 2008).

Opportunistic surveys for noxious weeds were conducted during biological surveys during October and November, 2012 (HWA, 2012a). A total of 10 weed species were recorded in the project area, with Scotch thistle being the most common (see Table 6). Weeds were most commonly found along roadsides, drainages, and on the edges of agricultural land. Weed data are summarized in Table 6 and shown on Map 18. Perennial pepperweed and hoary cress are both present in the project area. Several unconfirmed populations of dyer's woad were located with only basal leaves present, making it impossible to identify with certainty. The majority of weeds listed in Table 6 are listed by the State of Nevada as noxious (<http://agri.state.nv.us/>), with the exception of halogeton and bull thistle. Halogeton is relatively common throughout the project area. Russian thistle was not recorded during surveys but was observed at high densities along roadsides. Leafy spurge, spotted knapweed, Russian knapweed, diffuse knapweed, and salt cedar were not located during the 2012 surveys.

**Table 6  
Weed Species Located in the Project Area**

<b>Species</b>	<b>Nevada Department of Agriculture Category</b>	<b>Number of Populations</b>	<b>Estimated # Individuals</b>	<b>Average % Cover</b>	<b>Acres</b>
Bull Thistle	Not categorized	11	201-300	6-25	0.27
Canada Thistle	C	72	10,001-20,000	6-25	19.34
*Dyer's woad (unconfirmed)	A	5	10-50	1-5	0.12
Halogeton	Not categorized	38	>20,000	6-25	0.93
*Hoary cress	C	16	5,001-10,000	6-25	2.82
Houndstongue	A	1	51-100	1-5	0.02
Musk Thistle	B	3	101-200	1-5	14.31
*Perennial pepperweed	C	9	3,001-5,000	6-25	0.22
Poison Hemlock	C	9	301-1,000	6-25	0.22
*Scotch Thistle	B	182	10,000-20,000	6-25	27.52

\* Indicates priority species identified by the BLM.

A total of 2,439 acres of cheatgrass-dominated habitat was documented by Hayden-Wing Associates (2012a). Cheatgrass is likely present outside of these areas in lower densities. Cheatgrass-dominated areas often include sagebrush and other shrub species in the overstory. South-facing slopes tend to be most dominated by cheatgrass.

### **3.5.2 ENVIRONMENTAL EFFECTS**

#### **3.5.2.1 Proposed Action Alternative**

Surface disturbance, increased vehicle traffic to and from the project area, equipment placement and operation of vibroseis trucks, foot traffic, and ATV use in undeveloped areas could increase the disturbance within the project area, thereby creating habitat for expansion of noxious weeds and could introduce new invasive species. Noxious and invasive non-native weed species are common along major roadways and in disturbed areas. Use of existing roads and fence lines to move equipment and vehicles within the project area could result in the introduction of noxious weeds into uninfested areas. Minimizing soil disturbance and maintaining vegetation canopy to the extent practical would suppress weeds and prevent their establishment and growth. To minimize the spread or introduction of noxious weeds during seismic activities, Noble would implement the measures listed in Section 2.2.1.6.

#### **Environmental Protection Measures**

In addition to the Project design features (see Section 2.2.1.6), the BLM would require the following environmental protection measures to further reduce effects from invasive, non-native species:

- Noble would conduct a mandatory weed orientation prior to Project initiation.
- Noble would avoid all noxious weed infestations within the project area to the greatest extent possible.
- In consultation with the BLM, Noble would identify sites where equipment can be cleaned; seeds and plant parts from project equipment would be collected (on a plastic pad) and disposed of in a sanitary landfill. All equipment and vehicles would undergo an initial wash before their arrival on-site.
- Workers would inspect, remove, and properly dispose of weed seed and plant parts found on their clothing and equipment prior to leaving the project area.

- Where the Project creates bare ground, vegetation would be reestablished to prevent conditions to establish weeds; certified weed-free seed would be used.
- If gravel is necessary for the Project, weed-free gravel would be used.

### 3.5.2.2 No Action Alternative

Under the No Action Alternative, there would be no effects from invasive species associated with the Proposed Action in the project area. Under the No Action Alternative, maintenance and public use of the existing roads would continue. Public use of these roads would continue to spread invasive species.

### 3.5.3 CUMULATIVE EFFECTS

The Proposed Action, combined with past, present, and reasonably foreseeable surface disturbance, has the potential to create conditions favorable for the establishment/invasion of non-native invasive and noxious species. Disturbed sites and recently seeded areas are candidates for invasion by undesirable species. The current pattern of weed distribution (i.e., concentrated along roads and by water sources) indicates dispersal by vehicles and livestock. Increased vehicular traffic could increase noxious weed spread. Wildland fire poses the greatest risk for future invasion of non-native invasive and noxious species within the Cumulative Effects Study Area (i.e., the project boundary) (see Table 3). Other disturbance includes oil and gas exploration, dispersed recreation (i.e., hunting, camping, etc.), off-highway vehicle use, and mining. Implementation of the design features and environmental protection measures would minimize the likelihood of the Project spreading or introducing invasive species/noxious weeds within the project area. The BLM knows of no other proposals within the Cumulative Effects Study Area boundary that would increase the introduction or spread of noxious weeds; therefore cumulative effects would be expected to be minimal.

## 3.6 LAND TENURE, RIGHTS OF WAY AND OTHER USES

### 3.6.1 AFFECTED ENVIRONMENT

Table 7 lists the rights-of-way for roads, utilities, and communication sites that occur within the project area.

**Table 7  
Rights-of-Way within the Project Area**

Serial Number	Owner	Case Type
NVCC0004592	Owen Arnot	Irrigation Facility
NVN002111	Wells Rural Electric	Power Transmission Line
NVN010911	Wells Rural Electric	Power Transmission Line
NVN015715	Wells Rural Electric	Power Transmission Line
NVN019958	Citizens Comm	Telephone Line
NVN034915	Wells Rural Electric	Power Transmission Line
NVN037292	NV Dept. of Wildlife	Zunino Aeration Pipeline
NVN039144	Forest Service	Road
NVN043322	Wells Rural Electric	Power Transmission Line
NVN046530	Elko County	Road
NVN046531	Elko County	Road
NVN046532	Elko County	Road
NVN046533	Elko County	Road
NVN046534	Elko County	Road
NVN081091	Paris Pete Trust	Road
NVN088373	Citizens Comm	Power Transmission Line
NVN005117	NV Dept. of Transportation	Highway
NVN005233	NV Dept. of Transportation	Material Site/Jiggs Zunino Pit

Source: BLM, 2013.

The BLM completed an Oil & Gas Amendment to the Elko Resource Management Plan in 2005 which guides the issuance of future leases in the project area. The amendment noted that BLM would offer and issue fluid mineral leases to within 0.25 mile of a wilderness or Wilderness Study Area boundary. In addition, other stipulations were recommended for future leases to protect a variety of other resource issues (i.e. wildlife, recreation, etc.). Table A-2 in Appendix A lists the oil and gas leases within the project area. Currently the BLM has not received applications for development of these leases.

### **3.6.2 ENVIRONMENTAL EFFECTS**

#### **3.6.2.1 Proposed Action Alternative**

The Project would be completed within 90 operational days; effects (i.e., possible damage to existing roads) would be temporary to the various land uses, rights-of-way, or other uses. The Project would not preclude access to the project area.

#### **Environmental Protection Measures**

No environmental protection measures are proposed beyond the Project design features (see Section 2.2.1.6) and BLM standard stipulations.

#### **3.6.2.2 No Action Alternative**

Under the No Action Alternative, there would be no effects from the Proposed Action to land uses, rights-of-way, or other facilities in the project area.

### **3.6.3 CUMULATIVE EFFECTS**

The Project would not result in direct or indirect effects to land tenure, rights-of-way, or access; therefore no cumulative effects would occur.

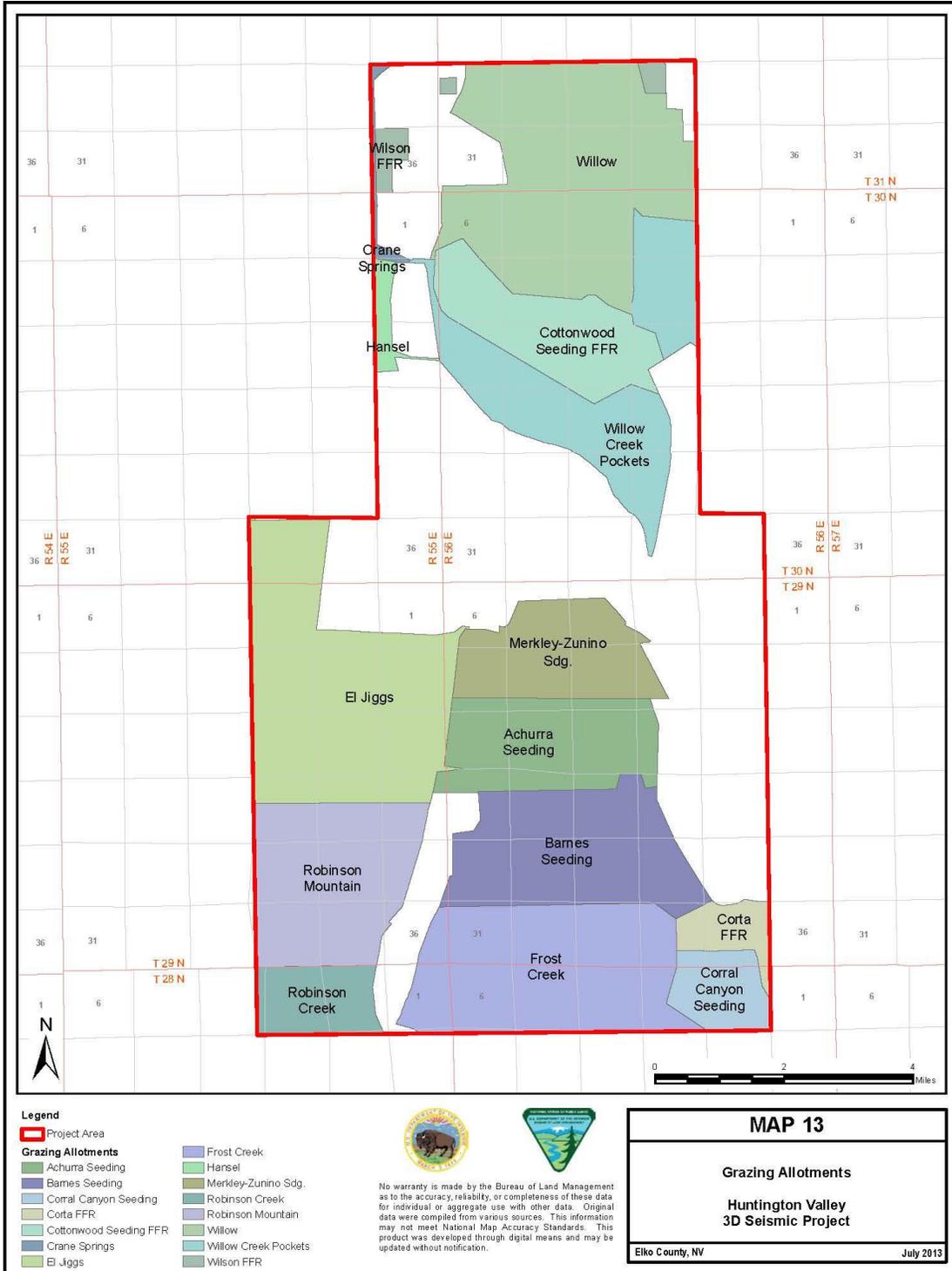
## **3.7 LIVESTOCK GRAZING/RANGELAND HEALTH**

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### **3.7.1 AFFECTED ENVIRONMENT**

There are 15 BLM grazing allotments that coincide with the project area (see Map 13), of which approximately 32,213 acres of public lands are on allotments within the project area boundary. Some of the allotment boundaries include private lands, but these are not factored into the public land acres or animal unit months (AUMs). Table 8 summarizes the period of use, animal unit months, and size of the allotments. Currently, the allotments are permitted to graze cattle.

# Map 13 Grazing Allotments



**Table 8  
Grazing Allotments Coinciding with the Project Area**

<b>Allotment</b>	<b>Total Allotment Public Acreage</b>	<b>Active Animal Unit Months</b>	<b>Period of Use <sup>1</sup></b>	<b>Allotment Public Acreage in Project Area</b>	<b>Acres Affected by Project</b>
Crane Springs	21,691	1,276	4/15-10/15	24	1.21
El Jiggs	46,716	5,597	4/1-11/15	4,598	64.74
Willow	5,238	546	4/10-10/1	4,508	82.27
Wilson FFR	1,398	188	5/1-8/10	362	4.59
Willow Creek Pockets	6,684	678	4/15-9/15	3,895	50.17
Cottonwood Seeding FFR	62	2	4/24-6/24	60	31.19
Hansel	7,781	1,553	4/10-11/30	266	4.14
Merkley-Zunino Seeding	1,950	137	4/15-10/31	1,950	22.64
Achurra Seeding	2,529	757	4/16-10/31	2,490	28.46
Barnes Seeding	3,932	342	4/16-10/30	3,345	37.97
Robinson Mountain	18,661	2,999	4/15-11/4	3,612	39.21
Corta FFR	60	92	4/20-6/20	25	4.13
Frost Creek	10,613	1,967	4/1-12/15	4,919	55.12
Corral Canyon Seeding	2,059	542	4/15-10/12	956	11.67
Robinson Creek	17,263	2,694	4/15-11/1	1,203	12.57
<b>Totals</b>	<b>146,637</b>	<b>19,370</b>		<b>32,213</b>	<b>450.08</b>

<sup>1</sup> Several of these allotments contain pastures through which cattle are rotated within this season of use.

### **3.7.2 ENVIRONMENTAL EFFECTS**

#### **3.7.2.1 Proposed Action Alternative**

The Project would take place when cattle are expected to be present on the coinciding grazing allotments. Vibroseis trucks, helicopters, and ATV use associated with the Project could potentially startle and scatter cattle. An increase in other human activity related to receiver line placement could cause cattle to avoid those areas of activity while vehicles are present; cattle would return when the seismic activities are completed.

An estimated 450.1 acres would be affected by the vibroseis trucks within the grazing allotments throughout the project area (see Table 8). While this includes the crushing of sagebrush, livestock forage would survive. The effects on forage grasses and other herbaceous vegetation are expected to last until the next growing season. The Project would not result in reduction of animal unit months and would not prevent allotment permittees from grazing and related activities. Livestock would be free to graze in areas where receiver lines are on the ground.

To minimize effects, Noble would implement the measures listed in Section 2.2.1.6.

#### **Environmental Protection Measures**

In addition to the Project design features (see Section 2.2.1.6), the BLM would require the following environmental protection measures to further reduce effects to grazing:

- Noble would consult with the BLM Rangeland Specialist and allotment permittees to communicate Project timing and locations of activities.
- Noble would close gates used for access immediately after passing through them.
- Fences and/or gates that are replaced would be in accordance with BLM stipulations.
- If BLM determines that animal unit months have been affected by vegetation loss, BLM would require reseeding of the disturbed areas.

### 3.7.2.2 No Action Alternative

Under the No Action Alternative, there would be no effects to grazing and rangeland resources from the Proposed Action within the project area.

### 3.7.3 CUMULATIVE EFFECTS

Past and present disturbance within the Cumulative Effects Study Area (see Map 6) is presented in Table 9. As described above, the Project may have a small effect on grazing. The BLM knows of no other proposals within the Cumulative Effects Study Area boundary (i.e., the project boundary) that would increase effects to grazing and rangeland health; therefore cumulative effects would be minimal.

**Table 9  
Acres Affected within Grazing Allotment Cumulative Effects Study Area**

Total Acres within Cumulative Effects Study Area	Acres within Cumulative Effects Study Area Disturbed by Fire <sup>1</sup>	Acres of Disturbance within Cumulative Effects Study Area by Past, Present, and RFFA's <sup>2</sup>					Total Disturbance (%)	Project Effects [Total Acres in Project Area]
		Case Type	Authorized	Pending	Closed	Total		
186,684	80,543 (43%)	Rights of Way: Powerlines, Fiber Optic Cable, Telephone Lines, Roads, Fences, Railroad	400	0	21	421	0.22%	450.1 [32,213]
		Mineral Material Sites: Sand, Gravel, topsoil sources and pits	10	0	50	60	0.03%	

<sup>1</sup> Source: BLM GIS Data. Historic Fires (1981-2008)

<sup>2</sup> Reasonably Foreseeable Future Actions (RFFA). Source: BLM GIS Data. Land Lines/Land Points and Mineral Material Sites data (2013). Acres are approximate.

## 3.8 MIGRATORY BIRDS

### 3.8.1 AFFECTED ENVIRONMENT

The Migratory Bird Treaty Act of 1918, as amended, implements treaties for the protection of migratory birds. Executive Order 13186, issued in 2001, directed actions that would further implement the Migratory Bird Treaty Act. As required by Migratory Bird Treaty Act and Executive Order 13186, BLM signed a Memorandum of Understanding (MOU) with the U.S. Fish and Wildlife Service (USFWS) in April 2010, which is intended to strengthen migratory bird conservation efforts by identifying and implementing strategies to promote conservation and reduce or eliminate adverse effects to migratory birds. The focus of BLM's conservation efforts is on migratory species and some non-migratory game bird species that are listed as Birds of Conservation Concern. Birds of Conservation Concern have been identified by the USFWS (2008) for different Bird Conservation Regions in the United States. The entire project area is in Bird Conservation Regions 9, the Great Basin region. Species' common and scientific names used in the text and tables are provided in Appendix C.

Migratory bird species that were observed in the project area during biological surveys are presented in Table 10 (HWA, 2012b). Birds of Conservation Concern that may occur in the project area are presented in Table 11. Migratory bird species with potential to occur in the area are listed in Table A-3 in Appendix A. Site-specific surveys to identify local populations were not conducted in the project area because the Project would be implemented outside of the breeding season.

**Table 10**  
**Migratory Birds Observed in the Project Area**

American Kestrel	Mallard
Black-billed Magpie	Mountain Bluebird
Brewer's Blackbird	Mountain Chickadee
Brewer's Sparrow	Mourning Dove
Brown-headed Cowbird	Northern Flicker
Burrowing Owl	Northern Harrier
Cassin's Finch	Prairie Falcon
Chipping Sparrow	Red-tailed Hawk
Common Raven	Red-winged Blackbird
Cooper's Hawk	Ruby-crowned Kinglet
Dark-eyed Junco	Sage Sparrow
European Starling	Sage Thrasher
Golden Eagle	Sandhill Crane
Great Blue Heron	Savannah Sparrow
Horned Grebe	Turkey Vulture
Horned Lark	Western Meadowlark
Loggerhead Shrike	White-crowned Sparrow
Long-billed Curlew	Yellow-rumped Warbler

**Table 11**  
**Birds of Conservation Concern within Bird Conservation Region 9 (Great Basin) that Occur or Are Likely to Occur in the Project Area**

<b>Common Name</b>	<b>Habitat <sup>1</sup></b>
Ferruginous hawk	Nests in isolated trees, rock outcrops, artificial structures, and ground near prey base.
Golden eagle	Nest on open cliffs and in canyons or in tall trees (cottonwoods) in open country and riparian zones.
Long-billed curlew	Nests in grassy areas close to marshes but also dry upland areas, alkali flats.
Loggerhead shrike	Present in desert shrublands, juniper woodlands; hunts over bare ground or short vegetation.
Sage thrasher	Valleys, foothills, mesas in big sagebrush shrublands; nests in shrub or ground beneath shrub.
Brewer's sparrow	Closely associated with big sagebrush shrublands; nests in sagebrush, forages on ground.
Pinon Jay	Dry mountain slopes and foothills; associated with pinyon-juniper forests.
Sage sparrow	Close associate of big sagebrush shrublands; nests in shrub close to ground, forages on ground.

<sup>1</sup> Based on Righter et al., 2004; Ryser, 1985.

## **3.8.2 ENVIRONMENTAL EFFECTS**

### **3.8.2.1 Proposed Action Alternative**

Loss of shrub cover for a period of time after implementing the Project could reduce nesting cover and substrate for birds, especially for sagebrush and shrub-nesting obligates such as the Birds of Conservation Concern and other passerine species noted above. As described in Section 3.14/Vegetation, 46.2 acres of shrub vegetation (including big sagebrush) would be expected to be crushed by vibroseis trucks. Reduction of vegetation structure in shrub stands would cause habitat fragmentation on a limited scale by altering habitat suitability.

As described in Section 3.17/Wildlife and Fisheries, noise from vibroseis trucks may attenuate to background levels 3,200 and 9,050 feet away and noise from pickup trucks would attenuate to background 800 and 1,600 feet away. Noise, vehicles/machinery, and human presence may displace birds away from home ranges although displacement would be after the nesting cycle, resulting in little to no effect to breeding success. Overland travel of vibroseis trucks, pickup trucks, and ATVs would temporarily fragment areas of contiguous shrub dominant vegetation types, but this fragmentation would not be expected to be as severe as fragmentation caused by surface clearing actions, such as roads and utility line corridors. Loss of shrub cover for some time after implementing the Proposed Action would reduce nesting cover and substrate for sagebrush and shrub-nesting obligates such as the Birds of Conservation Concern, and other passerine species noted above. Reduction of vegetation structure in shrub stands would cause habitat fragmentation on a limited scale by altering habitat suitability of approximately 46.2 acres of shrubs (see Table 17). Habitat fragmentation would affect subsequent nesting seasons for several years until shrubs recover, and could permanently affect areas where shrubs do not recover. Fragmentation of sagebrush and shrub-steppe habitats affects breeding densities, nesting success, and nest predation of nesting species (Knick and Rotenberry, 2002). Habitat fragmentation affects migratory birds by contributing to higher rates of nest predation in grasslands (Burger et al., 1994) and at habitat edges (Gates and Gysel, 1978; Marini et al., 1995). Corvids, including common ravens and American crows, are opportunistic predators and will prey on other species' nests. Prohibiting on-site trash within the project area would reduce attractions for corvids and other potential predators of migratory birds.

No unintentional take of migratory birds (defined in Executive Order 13186) would occur because the Project would begin in the fall, after the nesting periods for all species.

### **Environmental Protection Measures**

In addition to the Project design features (see Section 2.2.1.6), the following environmental protection measures have been identified to reduce potential effects to migratory birds:

- Noble would begin no earlier than September 1 in order to avoid disturbance to nests and any remaining juveniles.
- Noble would prohibit trash storage in the project area.

### **3.8.2.2 No Action Alternative**

Under the No Action Alternative, there would be no change from the Proposed Action to habitats used for nesting and shelter by Birds of Conservation Concern and other migratory birds within the project area.

## **3.8.3 CUMULATIVE EFFECTS**

Migratory birds (primarily passerine species plus waterfowl and shorebirds) are generally protected and/or avoided for any activities on public land but may not be protected for actions on private land. Past, present, and reasonably foreseeable activities within the Cumulative Effects Study Area (see Map 5) that could affect nesting habitats for migratory birds include:

community development, wildland fire, livestock grazing, noxious weed proliferation, oil and gas exploration, dispersed recreation (i.e., hunting, camping, etc.), and off-highway vehicle use (see Table 12). The BLM knows of no other proposals within the Cumulative Effects Study Area boundary but is aware of discussions regarding a Ruby Vista Ranch subdivision that would encompass approximately 300 acres and would be located near Spring Creek, more than 12 miles north of the project area. Changes in vegetative structure can extend over the long-term. Regional data for three Birds of Conservation Concern that are sagebrush obligate species indicate their populations are declining. Cumulative effects, including the Project and reasonably foreseeable actions, could contribute to habitat loss and/or alteration and could further affect populations of sagebrush obligate species.

**Table 12  
Acres Affected within Watershed Cumulative Effects Study Area**

Resource	Total Acres within Cumulative Effects Study Area	Acres within Watershed Disturbed by Fire <sup>1</sup>	Acres of Disturbance within Cumulative Effects Study Area by Past, Present, and RFFA's <sup>2</sup>				Total Disturbance (%)	Project Effects within Watershed	
			Case Type	Authorized	Pending	Closed			Total
Vegetation, Migratory Birds and Bird Special Status Species, Wildlife, Fisheries and Special Status Species	833,395	184,944 (22%)	Rights-of-Way: Powerlines, Fiber Optic Cable, Telephone Lines, Roads, Fences, Railroad	1,614	2	65	1,681	0.20%	650
			Mineral Material Sites: Sand, Gravel, topsoil sources and pits	1,628	0	734	2,362	0.30%	

<sup>1</sup> Source: BLM GIS Data. Historic Fires (1981-2008)

<sup>2</sup> Reasonably Foreseeable Future Actions (RFFA). Source: BLM GIS Data. Land Lines/Land Points and Mineral Material Sites data (2013). Also includes the Emigrant Mine Project (1,418 acres) and the Railroad Exploration Project (200 acres). Acres are approximate.

### 3.9 NATIVE AMERICAN TRADITIONAL VALUES

#### 3.9.1 AFFECTED ENVIRONMENT

Ethnographic resources (Native American Traditional Values) are associated with the cultural practices, beliefs, and traditional history of a community. These resources can span timeframes from pre-contact (prior to Euro-American contact), at-contact, and post-contact eras. Examples of ethnographic resources can include places known from oral histories; places of traditional use; large areas, such as landscapes and viewsapes; sacred sites and places used for religious practices; social or traditional gathering areas; natural resources such as plant materials or clay deposits; and places and natural resources traditionally used for non-ceremonial uses such as trails or camping locations.

The landscape in which the planned Project activities will occur is the traditional homeland of the Te-Moak of Western Shoshone, and by common understanding amongst the various Tribes and Bands of this region specifically the people of the South Fork Band who currently reside in Huntington Valley near the town of Lee.

The Descendants of the Ruby Valley were authorized by Resolution by the South Ford Band Council and contracted by Noble to conduct the work requested during consultation. The study area and Cumulative Effects Study Area for effects to Native American traditional values

encompasses the Project footprint and was determined based on discussions between the BLM and the Descendants of the Ruby Valley. The Project would avoid areas containing concerns of the South Fork Band.

The National Historic Preservation Act and National Environmental Policy Act mandated tribal consultation and information sharing has occurred since the inception of this analysis (see CHAPTER 4 – TRIBES, INDIVIDUALS, ORGANIZATIONS, OR AGENCIES CONSULTED).

### **3.9.2 ENVIRONMENTAL EFFECTS**

#### **3.9.2.1 Proposed Action Alternative**

Through consultation and information sharing with the appropriate Tribal and Band governments, and the utilization of Band government approved (by Resolution) monitor/contractors, all Native American Traditional Value issues of concerns were identified in the field and avoided by project design. Indirect effects may include an on-going heightened awareness, and therefore an increased level of interference with items of Native American traditional value within the project area after the termination of the Project.

#### **Environmental Protection Measures**

In addition to the Project design features (see Section 2.2.1.6), the following environmental protection measures have been identified to reduce potential effects to Native American Traditional Values:

- If any previously unidentified archaeological sites are discovered during construction on BLM-administered lands, all activities would cease in the area of the discovery, and the BLM Authorized Officer would be notified of the find. Steps would be taken to protect the site from vandalism or further damage until the BLM Authorized Officer could evaluate the nature of the discovery. Activities would not resume in the area of the discovery until authorized by the BLM Authorized Officer.
- If activities or other project personnel discover what might be human remains, funerary objects, or items of cultural patrimony on federal land, then construction would cease in the area of the discovery and the BLM Authorized Officer would be notified. Any discovered Native American human remains, funerary objects, or items of cultural patrimony found on federal land would be handled in accordance with the Native American Graves Protection and Repatriation Act. Non-Native American human remains would be handled in accordance with Nevada law. Activities would not resume in the area of the discovery until authorized by the BLM Authorized Officer. If human remains and associated artifacts are discovered on private land during project activities, all activities would cease within the area of the discovery and the county coroner or sheriff would be notified. Treatment of any discovered human remains and associated artifacts found on private land would be handled in accordance with the provisions of Nevada state law.

#### **3.9.2.2 No Action Alternative**

Under the No Action Alternative, there would be no effects from the Proposed Action to Native American Traditional Values in the project area. Effects to Native American Traditional Values would be continued natural environmental changes and resultant decay to organic elements and displacement of surface materials.

### **3.9.3 CUMULATIVE EFFECTS**

Increased human presence may affect items of Native American traditional value (including but not limited to Historic Properties) in the form of greater exposure to illegal collection, vandalism, other illegal activities, and indirect effects from legal activities. Cumulative effects for Native

American traditional values under the No Action Alternative would be limited to continued natural degradation. As described above, the Project would avoid items of Native American traditional value. The BLM knows of no other proposals within the Cumulative Effects Study Area boundary (i.e., the project boundary) that would affect items of Native American traditional value; therefore any cumulative effects would be minimal.

### **3.10 RECREATION**

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#### **3.10.1 AFFECTED ENVIRONMENT**

Recreation in the project area is focused on the BLM Zunino/Jiggs Reservoir Recreation Area (see Map 19) and on big game hunting and associated off-highway vehicle use. Pronghorn and mule deer are commonly hunted in the vicinity of the project area. It is uncertain how much hunting is done on BLM-administered and private lands within the project area. The hunting seasons in 2013 are: for pronghorn - August 1 to September 20, with a muzzleloader hunt September 25 to October 4; and for mule deer - August 10 to October 31, with late season hunts in November and December. The date ranges for the two species include different allotted days for bow and rifle hunting.

The BLM Zunino/Jiggs Reservoir Recreation Area and campground is in the project area immediately east of the Ruby Mountains, along the Hastings Cutoff of the California National Historic Trail. The reservoir remains accessible during winter months due to its close proximity to paved SR-228. The area offers trout fishing, and the Ruby Range is popular for mountain biking, hiking, hunting, skiing, snowmobiling, horse packing, and wildlife viewing. The area is a popular access point for the Humboldt National Forest and the Ruby Lakes National Wildlife Refuge. The area can be accessed using SR-227 and SR-228, which pass through the project area.

#### **3.10.2 ENVIRONMENTAL EFFECTS**

##### **3.10.2.1 Proposed Action Alternative**

The Project may coincide with hunting seasons in the project area. Hunter access to the area would not be restricted. It is likely that hunters would choose to temporarily avoid the area where seismic activities would be occurring because these activities could startle and displace big game and generally impede the sport of hunting. Project personnel/crews would wear blaze orange vests in the field during hunting seasons.

Visitors at the BLM Zunino/Jiggs Reservoir Recreation Area may be disturbed by vehicle traffic in the area but the disturbance would be short-term. If seismic lines are deployed in the recreation area some risk to visitors and vehicles could occur if they became entangled in the lines. Area roads and access to the Recreation Area would remain open during seismic operations.

##### **Environmental Protection Measures**

In addition to the Project design features (see Section 2.2.1.6), the following environmental protection measure has been identified to reduce potential effects to recreation resources:

- If seismic lines are placed in the recreation site at the reservoir, Noble would coordinate the placement with the BLM recreation staff to limit the effects to visitors using the site. Lines would be installed in such a manner to limit effects to visitors and ensure that a high degree of safety is provided. The amount of time the lines are deployed would be held to the minimum necessary to achieve the desired objectives.

### **3.10.2.2 No Action Alternative**

Under the No Action Alternative, there would be no effects from the Proposed Action to recreation resources in the project area.

### **3.10.3 CUMULATIVE EFFECTS**

As described above, the Project may have a small, temporary effect on recreation. The BLM knows of no other proposals within the Cumulative Effects Study Area boundary (i.e., the project boundary) that would increase effects to recreation resources; therefore cumulative effects would not be expected

## **3.11 SOILS**

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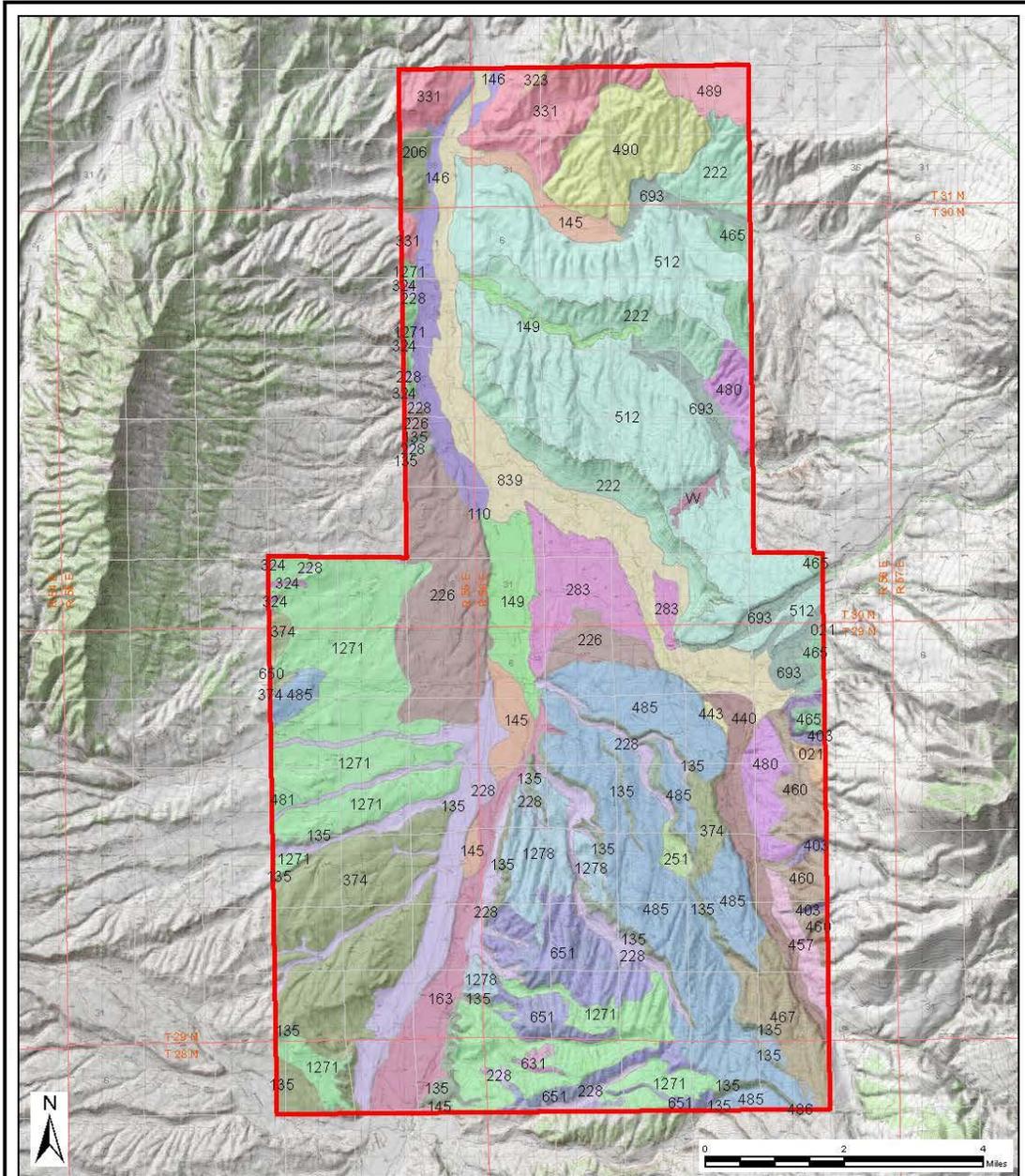
### **3.11.1 AFFECTED ENVIRONMENT**

Soils in the project area vary in depth, texture, erosion potential, and other characteristics based upon several soil forming factors. To identify and describe the soil types and characteristics within the project area, the Soil Survey of Elko County, Nevada, Central Part (Nevada 767) was evaluated. Tabular and spatial data for this soil survey area was downloaded from the Soil Survey Geographic Database (Natural Resource Conservation Service – NRCS 2012). Soil properties and limiting features are summarized by map unit in Table A-4 in Appendix A.

There are 39 soil mapping units and one miscellaneous landform (water) in the 63,495 acres within the project area (see Map 14). Each of these mapping units is generally comprised of two or more soil series which are the major soils that make up the mapping unit. All of the soil mapping units in the project area are soil “associations.” An "association" is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. During mapping it was not considered practical or necessary to map the soils separately and the pattern and relative proportion of the soils are somewhat similar. The dominant soil series that make up the mapping unit generally have similar characteristics and properties. Other minor soil components or inclusions that may have similar or contrasting characteristics also typically occur within the mapping units. Because of the map scale used during the soil survey these minor soil components were not mapped separately. The objective of soil mapping is to separate the landscape into landforms or landform segments that have similar use and management requirements.

In the project area the various soil mapping units can generally be grouped into three soil groups based on their landscape position. Two of these soil groups developed from alluvium (from mixed rocks) on floodplains, skirts, insets or on alluvial fan remnants and fan piedmonts. The third soil group developed in residuum on mountain sideslopes and hills from limestone and sedimentary rocks. Generally, the water erosion hazard of these soils is slight to moderate and the wind erosion hazard is slight. The water erosion hazard of the soils typically increases with slope. Details for each of the three soil groups are provided below.

# Map 14 Soils



**Legend**  
 Project Area  
 Soil Mapping Unit



No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual or aggregate use with other data. Original data were compiled from various sources. The information may not meet National Map Accuracy Standards. This product was developed through digital means and may be updated without notification.

<b>MAP 14</b>	
Soils	
Huntington Valley 3D Seismic Project	
Elko County, NV	July 2013

### **Soils on Fan Remnants and Fan Piedmonts**

The alluvial soils that developed on fan remnants or fan piedmonts make up approximately 79.7 percent of the project area (50,629.35 acres). There are 24 soil map units in this landscape category. These soils typically have slopes of 2 to 30 percent, are well-drained, very deep (greater than 60 inches) to moderately deep (20 to 40 inches) over a restrictive layer (duripan). The available water capacity is high to low depending on the depth to the duripan. These soils generally do not have a seasonal water table and are not flooded. The ecological site of these soils is Loamy. Generally, the water erosion hazard of these soils is slight to moderate and the wind erosion hazard is slight. The water erosion hazard of the soils in this group typically increases with slope. Two of these map units (323 and 490) have soils which are saline and or sodic at the surface.

### **Soils on Floodplains**

The alluvial soils on floodplains comprise approximately 19.6 percent (12,414.50 acres) of the project area. There are 13 soil map units in this landscape category. These soils typically have slopes between 0 and 2 percent, are very deep (greater than 60 inches), poorly drained and have a high available water content. A majority of these soils have a seasonal high water table and may be flooded in the late winter to early summer. Several of these alluvial soils are designated as hydric or have hydric soil inclusions within the mapping unit and some are saline and or sodic at the surface. The wind and water erosion hazard of the soils in this group is slight. The Ecological Site of these soils includes: Moist Floodplain Dry Floodplain, Loamy Bottom, Saline Meadow, and Wet Meadow.

The characteristic vegetation of the soil mapping units that formed on the floodplains is more varied than the soils on fans and fan piedmonts and differ by Ecological Site. The typical vegetation on the Moist Floodplain Ecological Site is generally characterized by wildrye, Nevada bluegrass, inland saltgrass, Sierra clover, and willows. The Dry Floodplain Ecological Site is generally characterized by Basin wildrye, alkali sacaton, basin big sagebrush, and black greasewood. The Loamy Bottom Ecological Site is generally characterized by basin wildrye, Nevada bluegrasses, and basin big sagebrush. The Saline Meadow Ecological Site is generally characterized by alkali muhly, alkali sacaton, inland saltgrass, alkali bluegrass, and alkali cordgrass. The Wet Meadow Ecological Site is generally characterized by, tufted hairgrass, Nevada bluegrass, alpine timothy, sedges, and perennial forbs.

### **Hills and Mountains**

The hills and mountains comprise 0.6 percent (363.84 acres) of the project area. There are two map units in this landscape category. These soils formed in residuum and slope colluvium and generally have slopes of 15 to 75 percent, are well-drained, very deep (greater than 60 inches) to shallow (10 to 20 inches) over limestone or sedimentary bedrock. The available water capacity is high to low depending on the depth to bedrock. These soils do not have a seasonal water table and are not flooded. The Ecological Site of these soils consists of pinyon pine, Utah juniper, with Wyoming big sagebrush or black sagebrush on the deeper soils. The Ecological site is a mix of pinyon pine and Utah Juniper or Shallow Calcareous Loam (black sagebrush, Indian ricegrass, and Thurber needlegrass) on the shallow soils. Generally, the water erosion hazard of these soils is slight to moderate and the wind erosion hazard is slight. The water erosion hazard of the soils in this group typically increases with slope.

### **Prime Farmland**

The Kelk-Sonoma association (map unit symbol 149) occurs on fan skirts, fan piedmonts, alluvial flats and is listed as "*Prime farmland if irrigated and reclaimed of excess salts and sodium*" in the Elko County, Nevada, Central Part (Nevada 767) soil survey. There is one delineation of the map unit (149) in the floodplain along Huntington Creek and another along

Cottonwood Creek. This map unit comprises 1,264.27 acres or 2 percent of the project area. Examination of the most recent National Agricultural Imagery Photography (NAIP, 2010) indicates that the delineation of map unit 149 along Huntington Creek may be used as irrigated pasture.

Nine soil map units are listed as “*Farmland of Statewide Importance*.” These areas do not meet the criteria for prime farmland, but may include important areas that produce forage for livestock and wildlife. Soil map units with this designation comprise 22,674.57 acres or 35.7 percent of the project area.

### **3.11.2 ENVIRONMENTAL EFFECTS**

#### **3.11.2.1 Proposed Action Alternative**

Under the Project, effects to soils would occur from vehicles, which could potentially cause soil compaction and may alter soil structure. Although some vegetation may be crushed, the affected/crushed vegetation would continue to provide soil cover that should effectively prevent any increase in wind and water erosion. Effects to soils by contamination would be minimized by implementation of Noble’s Spill Plan, which would require that any spills be cleaned up immediately. Overall effects to soils would be minimized by the use of helicopters (displacing the vehicles) and accessing areas from existing roads and trails.

The potential for soil compaction associated with placing and retrieving receiver lines, through the use of ATVs and foot traffic, is expected to be minor, short-term and incidental throughout the project area. Twelve map units comprise 14,515.05 acres (22.9 percent) with soils that are susceptible to potential compaction and rutting. A review of historic seismic line activity in the district has not shown soil damage from placing receiver lines using ATVs. In addition, the Resource Management Plan designates this area as open to off-road vehicle travel.

There are 7,865.37 acres, or 12.4 percent of the project area, that are associated with nine soil mapping units designated as hydric soils or have hydric soil inclusions within them. Seven of these mapping units are located on floodplains within the project area. Similarly, these seven soil mapping units typically have a seasonal high water table within 5 feet of the surface which generally occurs between about February and July. These seven mapping units have a hazard of potential flooding during various times of the year; typically flooding may occur between March and June although several of the mapping units have a flooding hazard all year. The flooding hazard duration (i.e., very brief to long) and frequency (rare to frequent) also varies by soil mapping unit. Two of the hydric soil map units have general landscape positions on fan piedmonts and fan remnants with inclusions of hydric soils (2 to 4 percent of map unit). The Project is proposed to begin in the fall (dry season) and avoid all streams, creeks, wetlands, and saturated ground, thereby minimizing the potential effects.

Unless the landowner requests a staggered configuration, vibroseis trucks would be driven single file. Agricultural and forestry soil compaction research indicates that approximately 75 percent of total compaction on a soil occurs with the first pass; an additional 10 percent occurs with the second pass; and only 5 percent more with the third pass. Therefore, reducing the width of the source lines by confining traffic to the same area (single file) would minimize the total area affected.<sup>1</sup> Although this would intensify the potential for compaction in a limited area, the effect would be localized.

No prime or unique farmlands occur in the district; therefore, no effects to prime farmland soils would occur.

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<http://www.soilsurvey.org/tutorial/page10.asp>

Implementation of the Project would begin in the fall and is expected to last approximately 3 months (90 operational days). During this period of the year, soils are dry, soil strengths are the highest, and soils are the least susceptible to compaction or rutting effects.

To minimize effects to soils, Noble would implement the measures listed in Section 2.2.1.6. The design features would prevent or minimize effects to soil resources within the project area, and, therefore, effects from the Project are expected to be short-term and minor. A review of historic seismic line activity in the district has not shown soil damage from seismic vehicles operating with balloon tires in dry conditions.

### **Environmental Protection Measures**

No environmental protection measures are proposed beyond the Project design features (see Section 2.2.1.6) and BLM standard stipulations.

#### **3.11.2.2 No Action Alternative**

Under the No Action Alternative, there would be no effects from the Proposed Action to soils in the project area.

#### **3.11.3 CUMULATIVE EFFECTS**

Cumulative effects to soils occur as a result of a variety of natural and man-made factors including livestock grazing, agriculture, drought, climate change, and physical disturbance (i.e., recreational use of ATVs and other off-road vehicles) (see Table 3). Soils are generally negatively affected by these activities but they have not resulted in any major or high intensity effects to soil quality on a large spatial or temporal scale. As described above, the Project would result in few additional effects to soil resources. The BLM knows of no other proposals within the Cumulative Effects Study Area boundary (i.e., the project boundary) that would increase effects to soil resources; therefore cumulative effects would be expected to be minimal.

### **3.12 SPECIAL STATUS SPECIES**

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#### **3.12.1 AFFECTED ENVIRONMENT**

##### **Special Status Animal Species**

**ESA-Listed Species.** U.S. Fish and Wildlife Service (2013) identified four species listed as threatened or endangered under the Endangered Species Act (ESA) as occurring within Elko County. They include the endangered Independence Valley speckled dace, endangered Clover Valley speckled dace, threatened bull trout in the Jarbidge River Distinct Population Segment, and threatened Lahontan cutthroat trout. In addition, there are three candidate species for listing as threatened or endangered: the yellow-billed cuckoo in the western United States Distinct Population Segment, the greater sage-grouse, and the Columbia spotted frog. Species' common and scientific names used in the text and tables are provided in Appendix C.

According to U.S. Fish and Wildlife Service (2011a), the gray wolf Northern Rocky Mountain Distinct Population Segment does not include Nevada, although the state is included in the species' historic range. Wolves may occur, but there are no known populations or packs in the state. The gray wolf is not considered further in this document.

Neither the Independence Valley speckled dace nor the Clover Valley speckled dace is expected in the project area; they occur approximately 40 miles to the northeast (USFWS, 1998). Bull trout occur within Elko County but are not expected in the project area.

Lahontan cutthroat trout observations have been documented in nearby Dixie and Pole creeks. These streams are not within the project area but are within the Cumulative Effects Study Area boundary (see Map 5). Cottonwood, Smith, Gilbert, McCutcheon, and Carville creeks all

previously supported Lahontan cutthroat trout, and all are within the project area. An observation on Smith creek occurred in the early 2000's. Though the exact status of the creeks potential is not known at this time, there could be a potential for Lahontan cutthroat trout use of these streams sporadically in high flow years.

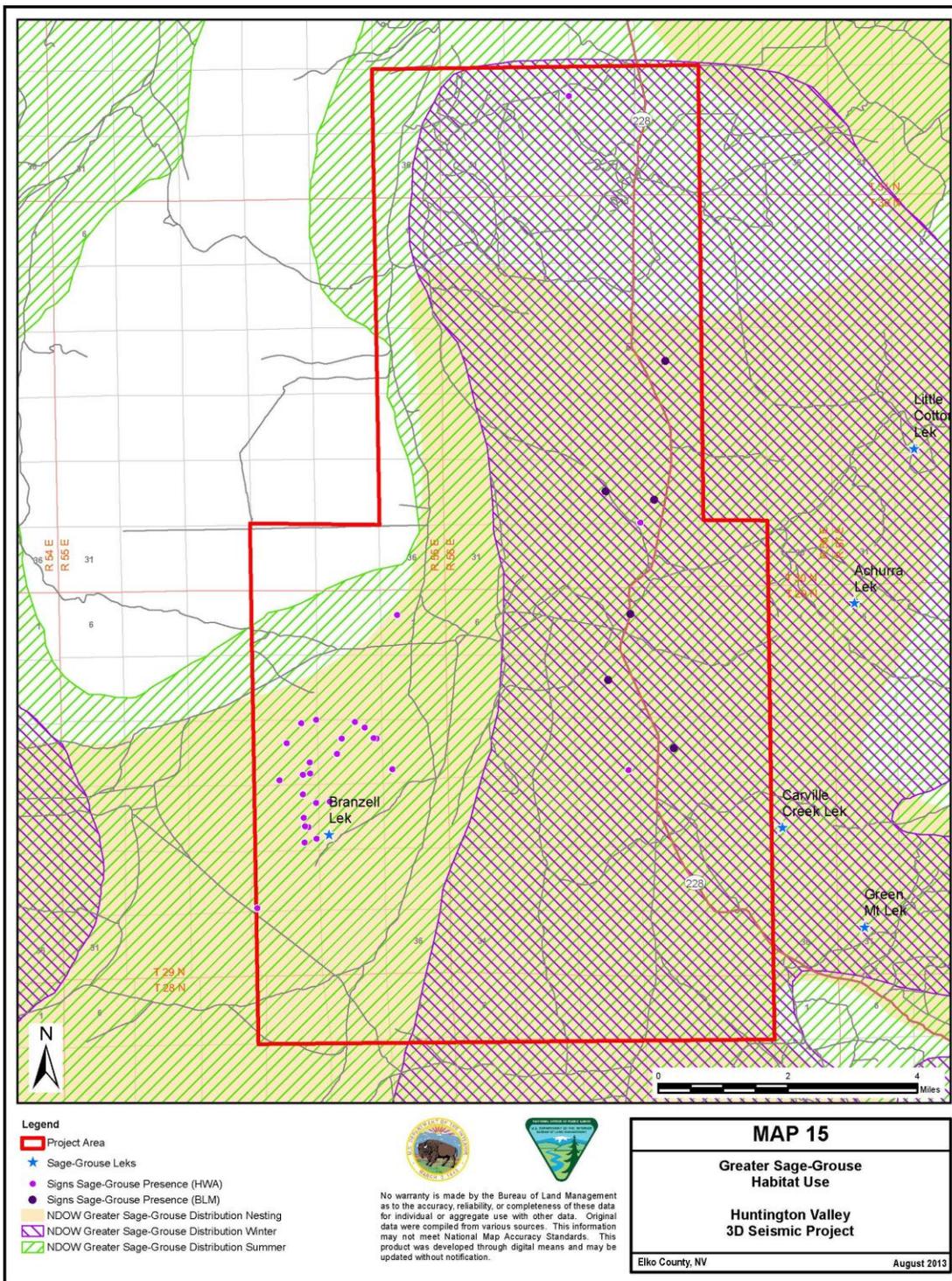
**ESA Candidate Species.** There is no suitable habitat present for yellow-billed cuckoos; they require large blocks of riparian woodland with cottonwoods and willows, with dense foliage in the understory (USFWS, 2011b).

Columbia Spotted Frog. Columbia spotted frogs were petitioned for listing under the Endangered Species Act in 1989 and populations, including those in Nevada, were found to be declining due to the extensive loss and alteration of wetland habitat (CSFTT, 2003). U.S. Fish and Wildlife Service (1993) found that listing the Great Basin population (and others) under the Endangered Species Act was warranted but precluded by other priorities and designated the species as a candidate. Though no Columbia spotted frogs have been recorded in the project area, they have been found in stream systems that have connectivity to the project area.

Greater Sage-Grouse. After a 12-month review, U.S. Fish and Wildlife Service (2010a) found that listing the greater sage-grouse as threatened or endangered under the Endangered Species Act throughout its range was warranted but precluded by higher priority listing actions. U.S. Fish and Wildlife Service indicated that listing the greater sage-grouse under the Endangered Species Act will be proposed in the future but for the present the species is a candidate for listing.

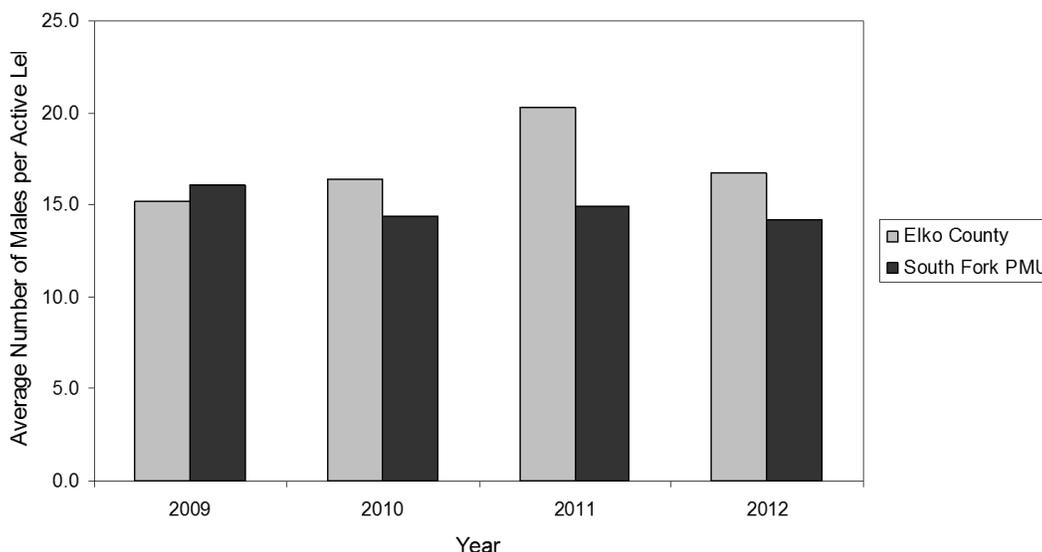
Greater sage-grouse are considered a sagebrush-obligate species (Connelly et al., 2004). Based on sightings of birds, feces, and nests with egg shells, greater sage-grouse are known to occur within the project area (HWA, 2012b). The project area coincides with sage-grouse nesting and early brood-rearing habitat, late-brood rearing habitat, and winter habitat (see Map 15). In Nevada, breeding and nesting habitats are occupied from March through May (BLM, 2000). Early brood-rearing habitat is used by female grouse with chicks for up to three weeks following hatching; whereas, definition and use of late brood-rearing habitat is dependent on many factors, including precipitation during spring and early summer and availability of forbs throughout the summer (Nevada Governor's Sage-grouse Conservation Team, 2010). In Nevada, brood-rearing habitats are used from April through August (BLM, 2000). Use of winter habitats depends on winter severity but generally winter habitats are occupied from October through March (BLM, 2000). Suitable sage-grouse nesting and brood-rearing habitat exists in portions of the sagebrush/grassland vegetation type within the project area, usually in areas with denser sagebrush (10-25% sagebrush cover) or areas with perennial grass and herbaceous cover (HWA, 2012a). However, many portions of the sagebrush/grassland vegetation type in the project area would be considered unsuitable due to low sagebrush cover and invasion by annual grasses and less desirable shrubs (i.e. broom snake weed - HWA, 2012). Although sage-grouse habitat quality was not evaluated during surveys, Hayden-Wing Associates noted that at least 15 percent of the project area is comprised of vegetation types largely viewed as low quality for sage-grouse nesting or brood-rearing (Sveum et al., 1998; Commons, 1999; Schroeder et al., 2004). These vegetation types include juniper, bare-ground, greasewood, rabbitbrush, and broom snakeweed mixed with sagebrush.

# Map 15 Greater Sage-Grouse Habitat Use



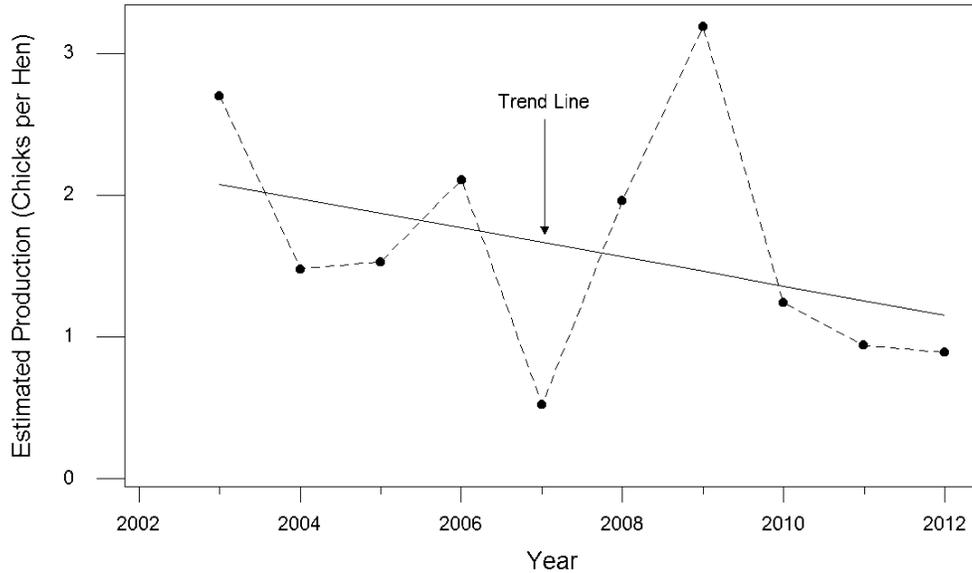
Sage-grouse populations in Nevada and throughout their range have shown substantial declines largely due to habitat loss. In addition to areas with low habitat quality for sage-grouse, the majority of the project area has been invaded by cheatgrass, with high densities on south-facing slopes (HWA, 2012). Cheatgrass is an invasive annual grass that has led to increased wildfire frequency and subsequent loss of sagebrush communities important to sage-grouse (Baker, 2011). Fire frequency is increased with cheatgrass invasion; the establishment of cheatgrass causes substantial competition for resources used by native shrubsteppe species (Whisenant, 1990; Knick and Rotenberry, 1997). The likelihood of future fires can lead to the loss of perennial grasses and shrubs (Crawford et al., 2004) that are needed for multiple life stages for sage-grouse. Declines in sage-grouse populations in the Great Basin region, including Nevada, have been greatly influenced by habitat loss caused by wildfire (BLM, 2012c). Corvids are effective nest predators of greater sage-grouse, taking eggs and possibly recently hatched chicks, and their abundance has been related to higher nest predation rates of sage-grouse (Hagen, 2009). Predation by red fox (Baxter et al., 2005) may be affecting sage-grouse populations, though no research has been conducted in the project area to confirm the level of effect.

The project area is within the South Fork Population Management Unit. Nine other PMUs occur in Elko County, which supports the highest density of leks in Nevada and supports some of the largest sage-grouse populations in the state. Recently (between 1999 and 2007), wildfires have reduced sage-grouse habitat in Elko County (NDOW, 2011). Wildfires have substantially diminished sage-grouse wintering habitats over the last ten years (NGSCT, 2010). After wildfires in 2007, male lek attendance in 2008 within the South Fork Population Management Unit decreased 30.4 percent from attendance in 2007 (NDOW, 2008). Since 2007, male attendance within all of Elko County has been increasing although male attendance within the South Fork Population Management Unit decreased in 2010 and has remained unchanged since (see Figure 1). Average attendance in the South Fork Population Management Unit has been lagging the average lek attendance within all Population Management Units in Elko County since 2010.



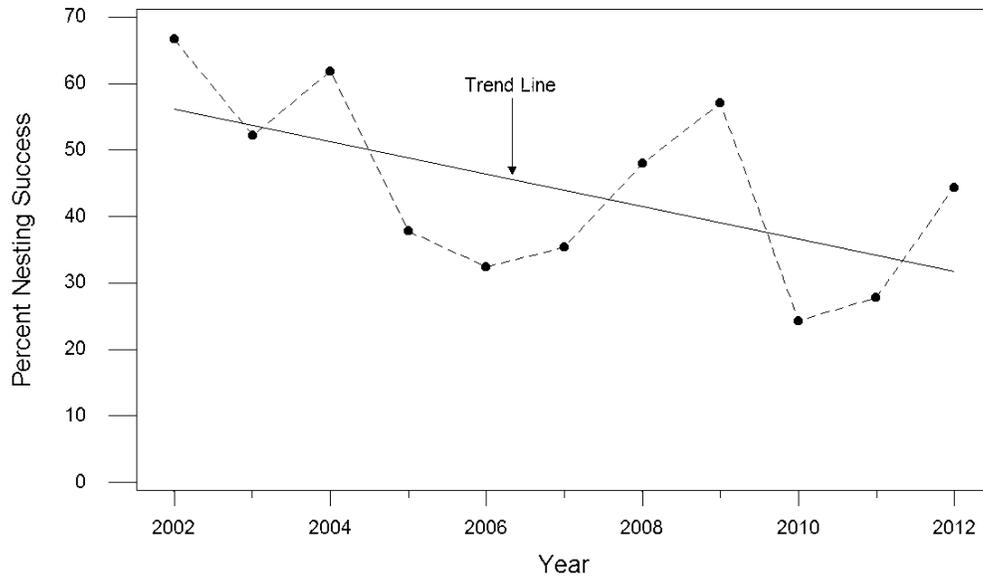
**Figure 1**  
**Male Sage-Grouse Lek Attendance within the South Fork Population Management Unit Compared to Lek Attendance in all Population Management Units within Elko County, 2009 to 2012**

Greater sage-grouse demographic trends within the South Fork Population Management Unit have been estimated from wings collected from hunters to estimate the annual production as chicks per hen. Data compiled since 2002 indicate that there has been no apparent trend in productivity (chicks per hen). For all years except 2004 and 2009 (see Figure 2), productivity in the Population Management Unit had been below 2.25 chicks per hen, the minimum productivity level required to maintain a stable or increasing population (Connelly et al., 2000).



**Figure 2**  
**Estimated Annual Production of Sage-Grouse Juveniles within the South Fork Population Management Unit from 2003 to 2012.**  
**The Production Trend is Not Significant ( $r^2 = 0.135$ ,  $P > 0.10$ )**

Production of juveniles in the South Fork Population Management Unit increased in 2009 but decreased since then and has not been to a level sufficient to produce population growth since 2004 (see Figure 2). In addition, nesting success of sage-grouse within the South Fork Population Management Unit has been variable but has been declining overall through 2012. (see Figure 3) Together, the demographic data for sage-grouse within the South Fork Population Management Unit are indicative of an overall declining population.

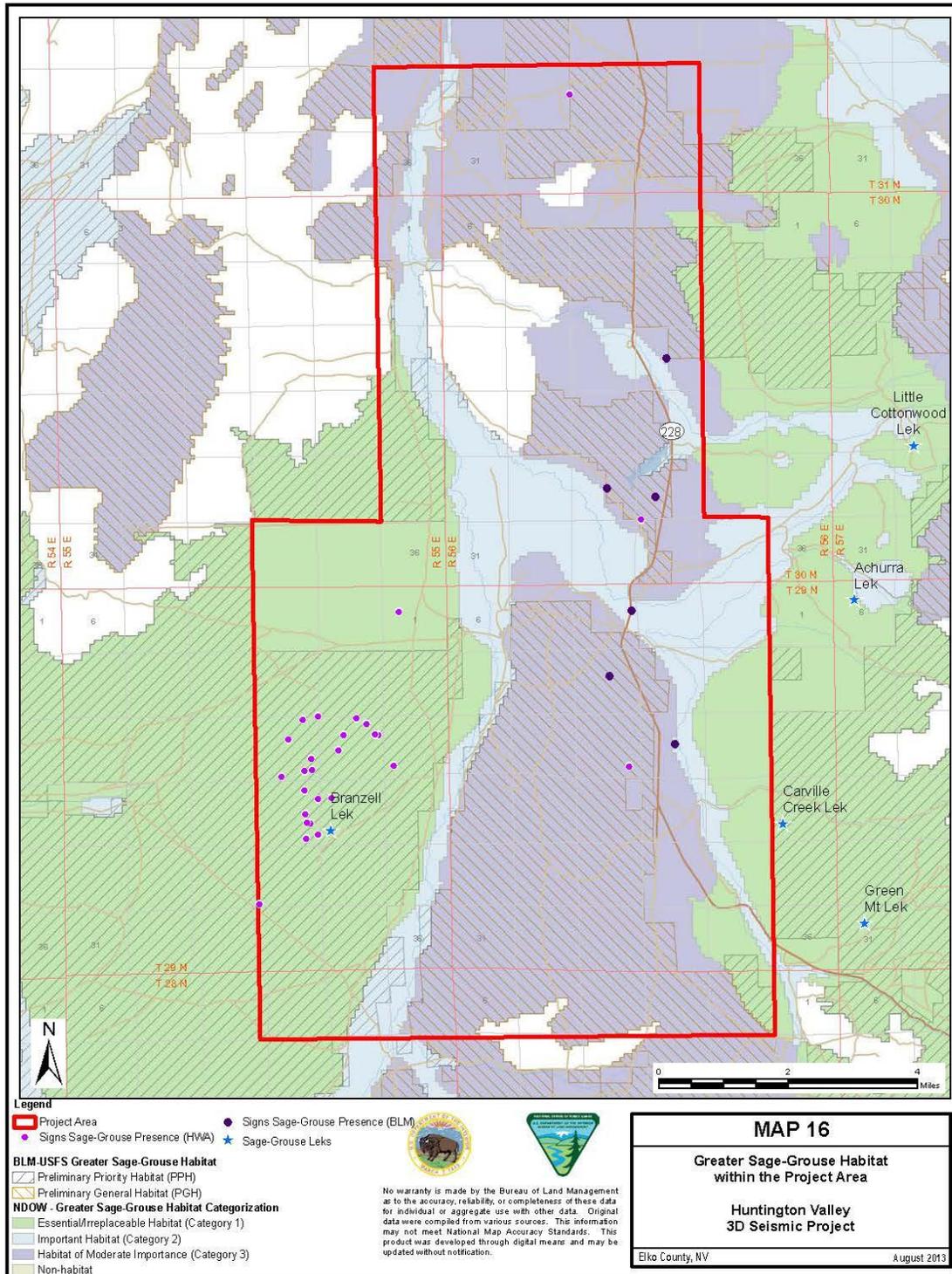


**Figure 3**  
**Estimated Percent Nesting Success of Sage-Grouse within the South Fork Population Management Unit from 2002 to 2012.**  
**The Nesting Success Trend is Decreasing ( $r^2 = 0.327$ ,  $P = 0.066$ )**

Nevada Department of Wildlife (2012a) has classified portions of the project area (see Map 16) as Category 1 - Essential and Irreplaceable Habitat (30 percent), Category 2 - Important Habitat (17 percent), Category 3 - Habitat of Moderate Importance (47 percent), and Non-habitat (6 percent). Category 1 and 2 habitats are the areas of highest conservation value to maintaining sustainable sage-grouse populations, and include breeding habitat (lek sites and nesting habitat), brood rearing habitat, and winter range generally consisting of sagebrush, but also riparian communities, perennial grasslands, agriculturally developed land, and restored habitat, including recovering burned areas Nevada Department of Wildlife (2012a). Nevada Department of Wildlife has not established management directives based on their habitat categorization; they promote the habitat categories as the best available information for use in planning and decision-making by land management agencies (NDOW, 2012b).

As required under Instruction Memorandum (IM) No. 2012-044, BLM (2012b) has classified Preliminary Priority Habitat (PPH) and Preliminary General Habitat in the project area on federal lands. PPH (47 percent) has the highest conservation values to sage-grouse, similar to Nevada Department of Wildlife’s Category 1 and Category 2 habitat that includes breeding, late brood-rearing, and winter concentration areas. Preliminary General Habitat (47 percent) includes seasonally or year-round occupied habitat outside of priority habitats and is similar to Nevada Department of Wildlife’s Category 3 habitat. IM No. 2012-043 (BLM, 2012d) sets conservation policies to minimize habitat loss in PPH and Preliminary General Habitat. In PPH, BLM’s policy is to maintain, enhance, or restore conditions for greater sage-grouse and its habitat. The BLM policy for issuing a proposed authorization for geophysical exploration activities in PPH includes “seasonal timing limitations and Best Management Practices as permit conditions of approval to eliminate or minimize surface-disturbing and disruptive activities within nesting and brood-rearing habitat and winter concentration areas.” In Preliminary General Habitat, BLM’s policy is “to reduce and mitigate adverse effects on greater sage-grouse and its habitat to the extent practical” (BLM, 2012d).

# Map 16 Greater Sage-Grouse Habitat within the Project Area



There are currently four known greater sage-grouse leks located in and within three miles of the project area (HWA, 2012b). They include the Achurra, Branzell, Carville Creek, and Green Mountain leks (see Maps 15 and 16). Branzell and Green Mountain leks represent trend leks which are monitored by Nevada Department of Wildlife. The Branzell lek is located within the southwest portion of the project area. Lek surveys were conducted by Hayden-Wing Associates (2012b) to establish baseline sage-grouse distribution in the project area. Additionally, the locations of sage-grouse droppings and sightings of individual birds were recorded as they were encountered while conducting pygmy rabbit surveys throughout the project area (see Maps 15 and 16) (HWA, 2012b). Hayden-Wing Associates documented 27 locations of sage-grouse sign during sage-grouse surveys in the project area, as well as two locations of females (HWA, 2012b).

**BLM-Sensitive Species.** The BLM (2003) identified 38 animal Species of Special Concern that may occur in the Elko BLM District. Other BLM-designated Sensitive Species were added based on lists of rare animals compiled by Nevada Natural Heritage Program (NNHP, 2004). Table A-5 in Appendix A lists the BLM sensitive species as well as species protected by Nevada State Law (Nevada Revised Statutes - NRS 501), which may occur within the project area. Some of the tabulated species were discussed above because they are also listed or candidates for listing under the ESA.

In addition to greater sage-grouse, western burrowing owls are present in the project area. Because activities would occur outside the breeding seasons for raptor species (March 15 to July 31), surveys for burrowing owls and nesting raptors were not required for the Proposed Action. However, opportunistic sightings of burrowing owls within the project area were recorded during biological surveys by Hayden-Wing Associates (2012b).

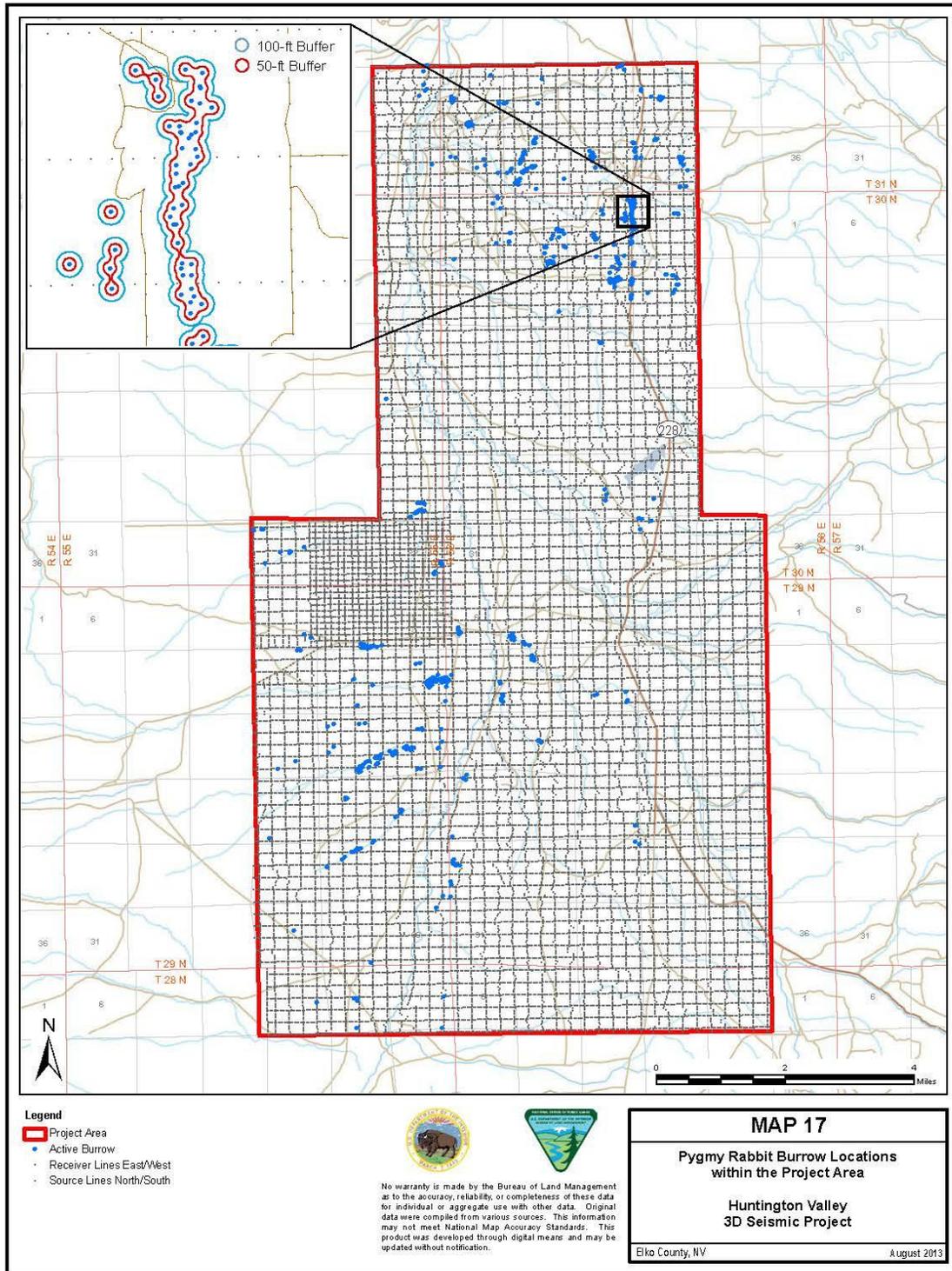
Pygmy rabbits are present as year-round residents in the project area (see Map 17). The U.S. Fish and Wildlife Service (2010b) reviewed a petition for listing pygmy rabbits under the Endangered Species Act but determined that listing the species (outside of the Columbia Basin) was not warranted. The U.S. Fish and Wildlife Service concluded that populations within the state appear to have expanded the known range of the species (USFWS, 2010b). A search for pygmy rabbit burrows and other sign (tracks, feces) was conducted in the project area during 2012 (HWA, 2012b). The survey revealed 1,647 pygmy rabbit active burrows within the project area, mostly in Sagebrush Grassland (51 percent of locations) and Sagebrush Rabbitbrush (38 percent) vegetation types. Pygmy rabbit colonies present in the project area were found in Sagebrush-Rabbitbrush habitat, rather than pure Sagebrush stands, as reported in most published accounts of pygmy rabbit biology.

In addition to the sensitive species known to occur (HWA, 2012b), several species included in Table A-5 in Appendix A could possibly occur, particularly mobile species such as Townsend's big-eared bat, big brown bat, and several species of myotis (see Table A-5 in Appendix A). Based on habitats present, species' habitat associations, and distributions (see Table A-5 in Appendix A), Fletcher dark kangaroo mouse, river otter, red fox, Swainson's hawk, prairie falcon, black tern, and short-eared owl could also be present in sagebrush-dominated vegetation, drainages and riparian areas within the project area.

### **Special Status Plant Species**

U.S. Fish and Wildlife Service (2012) identified the Goose Creek milkvetch as occurring within Elko County. The plant was petitioned for listing as threatened in 2004; however, in 2009 U.S. Fish and Wildlife Service found that listing the species was warranted but precluded by higher priority actions and was assigned candidate status under the Endangered Species Act (USFWS, 2009). It typically grows on dry volcanic ash soils from the Salt Lake Formation in sparsely vegetated sagebrush and juniper communities (USFWS, 2011c). The species is

# Map 17 Pygmy Rabbit Burrow Locations within the Project Area



restricted to the Goose Creek drainage in Cassia County, Idaho, Box Elder County, Utah, and extreme northeastern Elko County, Nevada (USFWS, 2011c). The headwaters of Goose Creek are in the Sawtooth National Forest in Idaho. The creek flows south through Elko County before turning east and north into Utah and then to the Snake River at Burley, Idaho. At its closest point, Goose Creek is over 90 miles northeast of the project area and Goose Creek milkvetch is not expected to occur within the project area.

The BLM designated sensitive plant species for Nevada are included on lists of rare plants compiled by the National Environmental Policy Act (2004). BLM policy is to provide sensitive species with the same level of protection as provided for candidate species (BLM Manual 6840.06 C) to “ensure that actions authorized, funded, or carried out do not contribute to the need for the species to become listed.” BLM (2003) identified 19 plant Species of Special Concern that may occur in the BLM Elko District area (BLM, 2003). These species and species protected by Nevada State Law (listed in NAC 537.010 and protected under NRS 527.260-.300) are included in Table A-6 in Appendix A.

Sensitive plant species’ associated habitats, elevational ranges, and distributions were evaluated from information in the Nevada Rare Plant Atlas (NNHP, 2001). All species in Table A-6 in Appendix A were judged to have no potential for occurrence in the project area because of their distributions, specific habitat associations, and expected elevation ranges did not coincide with the project area.

### **3.12.2 ENVIRONMENTAL EFFECTS**

#### **3.12.2.1 Proposed Action Alternative**

**ESA-Listed Species.** The only ESA-listed species with potential, but which is not expected, to be found in the project area is the Lahontan cutthroat trout. The Project would avoid wet or saturated areas, which would include standing or flowing surface water, which would eliminate effects to trout that might be present in the project area.

#### **ESA Candidate Species.**

Columbia Spotted Frog. Columbia spotted frogs that might occur in creeks within the project area would not be affected because the Project would avoid all wet or saturated areas and fueling of vibroseis trucks would not occur within 300 feet of any riparian areas or standing or flowing surface water.

Greater Sage-Grouse. Implementation of the Project would coincide with sage-grouse use of brood-rearing and wintering habitats. These seasonally used habitats are within Nevada Department of Wildlife’s Category 1 and Category 2 Habitats (public and private lands) and the BLM’s PPH and Preliminary General Habitat categories (public lands only).

Many of the effects to greater sage-grouse by seismic operations have been addressed in other wildlife sections and include 1) displacement from occupied habitats whether due to human presence, terrestrial and aerial machinery, or noise; 2) alteration of vegetation from vibroseis trucks, which includes short-term effects (until next growing season) to herbaceous vegetation and longer-term effects (two years or more) to sagebrush and other shrubs; 3) short-term effects to vegetation due to fugitive dust; 4) long-term effects to soils and vegetation due to soil compaction; 5) degradation of affected vegetation by invasive noxious weeds; 6) fragmentation of nesting and hiding cover; and 7) attracting predators of sage-grouse and nests to the project area.

Effects of energy development on sage-grouse, including crushing vegetation during seismic operations, have been reviewed and summarized by the U.S. Fish and Wildlife Service (2010b). The amount of vegetation affected by vibroseis trucks has been estimated in Section 3.14/Vegetation. The same approach was used to estimate effects to vegetation within each of the Nevada Department of Wildlife habitat categories that coincide with the project area. Vibroseis trucks traveling the estimated 971 miles of combined source lines and receiver lines/access routes (worst case scenario) would be expected to affect a total of 650.6 acres of ground surface (see Table 13), resulting in crushed vegetation; soils would not be damaged in the dry season.

Within Nevada Department of Wildlife Category 1 habitats, the maximum estimated total affected ground surface would be 196.6 acres (0.3 percent of the project area); in Category 2 habitats, the maximum estimated total affected ground surface would be 91.9 acres (0.2 percent of the project area) (see Table 13). This assumes all source lines and receiver lines/access routes would be driven. The combined areas from both habitat categories would be 288.5 acres (0.5 percent of the project area). Within Habitat of Moderate Importance (Category 3), the maximum estimated total affected ground surface would be 321.3 acres (0.5 percent of the project area) (see Table 13). Based on these estimates, there would be a 1 percent net loss of Nevada Department of Wildlife categorized sage-grouse habitat. Habitat fragmentation as a result of the 1 percent net loss is not expected to be substantial due to the linear and temporary nature of the disturbance. Source lines are separated by approximately 0.25 mile; therefore, the approximate 10-foot wide crushed areas that result from vibroseis travel are buffered by large contiguous tracts of habitat. Because disturbance would be temporary (i.e., until the vegetation regenerates), any fragmentation effects would be temporary.

**Table 13  
Vegetation Types Affected by Vibroseis Trucks within  
Nevada Department of Wildlife Sage-Grouse Habitat Categories in Project Area**

<b>Mapped Vegetation</b>	<b>Shrub Cover Characteristics</b>	<b>Category 1: Essential Irreplaceable Habitat (acres)</b>	<b>Category 2: Important Habitat (acres)</b>	<b>Category 3: Habitat of Moderate Importance (acres)</b>
Juniper	Shrub cover <5%	0.0	0.0	6.8
Juniper - Sagebrush	Shrub cover 10-20%	0.0	0.0	13.6
Big Basin Sagebrush	Shrub cover 10-30%	0.5	2.3	12.8
Sagebrush Community	Shrub cover 10-30%	4.4	0.2	0.9
Sagebrush-Rabbitbrush	Shrub cover 10-20%	15.9	10.9	15.6
Sagebrush-Grassland	Shrub cover 5%	170.9	20.8	240.7
Rabbitbrush-Grassland	Shrub cover 10-20%	0.0	0.0	0.4
Snakeweed - Sagebrush	Shrub cover 5-15%	0.0	0.9	13.2
Greasewood	Shrub cover 5-15%	1.1	1.4	1.1
Grassland	Shrub cover <5%	0.7	0.0	3.9
Disturbed	None	0.0	0.2	0.4
Bare ground	None	1.7	0.0	0.1
Riparian	Not Defined	0.2	3.1	0.1
Reservoir	None		0.0	0.8
Agriculture	None	1.2	52.0	10.9
<b>TOTAL</b>		<b>196.6</b>	<b>91.9</b>	<b>321.3</b>

Within the BLM’s mapped PPH, the estimated total affected ground surface would be 129.2 acres (0.2 percent of the project area) within the various vegetation types, and 234.3 acres (0.4 percent of the project area) within Preliminary General Habitat (see Table 14). Based on these estimates, there would be less than 1 percent net loss of BLM-categorized sage-grouse habitat.

**Table 14**  
**Vegetation Types Affected by Vibroseis Trucks within**  
**BLM Sage-Grouse Habitat Categories on BLM-Administered Lands**

<b>Mapped Vegetation</b>	<b>Shrub Cover Characteristics</b>	<b>Preliminary Priority Habitat (acres)</b>	<b>Preliminary General Habitat (acres)</b>
Juniper	Shrub cover <5%	0.0	5.8
Juniper - Sagebrush	Shrub cover 10-20%	0.0	11.9
Big Basin Sagebrush	Shrub cover 10-30%	0.7	5.5
Sagebrush Community	Shrub cover 10-30%	0.2	0.4
Sagebrush-Rabbitbrush	Shrub cover 10-20%	19.9	6.5
Sagebrush-Grassland	Shrub cover 5%	104.1	185.9
Rabbitbrush-Grassland	Shrub cover 10-20%	0.0	0.2
Snakeweed -Sagebrush	Shrub cover 5-15%	0.5	11.9
Greasewood	Shrub cover 5-15%	1.7	1.1
Grassland	Shrub cover <5%	0.4	3.4
Bare ground	None	1.7	0.1
Reservoir	None	0.0	0.7
Agriculture	None	0.0	0.9
<b>TOTAL</b>		<b>129.2</b>	<b>234.3</b>

A limited number of hunting tags are issued by Nevada Department of Wildlife annually for sage-grouse, resulting in minimal effect to adult birds. Nevada Department of Wildlife follows guidelines by the Western Association of Fish and Wildlife Agencies (Connelly, et al., 2004) which provide that hunting take below 10 percent of a Population Management Unit population is not an effect to the population as a whole. Elko County has closed PMUs to hunting where hunting resulted in take above 10 percent. The South Fork Population Management Unit is open to hunting because it has not exceeded the 10 percent take threshold. Section 3.17/Wildlife and Fisheries presents a summary of the effects of hunting on greater sage-grouse populations.

**BLM-Sensitive Species.** Effects to BLM-sensitive animal species would generally be similar to effects addressed in Section 3.8/Migratory Birds, in Section 3.17/Wildlife and Fisheries, and to other sensitive species discussed in this section.

The Proposed Action could affect bats by disturbing foraging habitats and generating noise that could interfere with echolocation. Noise from traffic and other sources is believed to interfere with bats’ echolocation of insect prey (Jones, 2008). Loss or reduction of foraging habitat can adversely affect bats (Adams, 2003). Vibroseis truck tires and seismic plates could crush Fletcher dark kangaroo mice. River otters would not be affected because disturbance would not

occur in wet areas. Red fox are mobile and would be able to move out of the way of slow moving vehicle traffic.

As discussed in Section 3.8/Migratory Birds, the BLM-sensitive birds that possibly nest in the project area (see Table A-5 in Appendix A) would have completed nesting and young would have fledged by the time of Project initiation.

Effects to other BLM-sensitive species that are known to occur within the project area are discussed below.

Western Burrowing Owls. Burrowing owls are protected by Nevada State Law and the Migratory Bird Treaty Act. In Utah, U.S. Fish and Wildlife Service (Romin and Muck, 2002) defined seasonal buffers for burrowing owls from March 1 to August 31, extending 0.25 mile from the nest burrow (Whittington and Allen, 2008). The temporal and spatial buffers apply to Nevada. The Project would occur outside the seasonal buffer and would not affect owls.

Pygmy Rabbits. Vibroseis trucks can affect pygmy rabbit burrows. According to one study, heights of burrows within 82 feet (25 meters) of seismic operations were substantially lower after seismic activities than before; burrows collapsed if rolled over by vibroseis truck tires or affected directly by seismic plates (Wilson, 2011). In these situations, damage to the burrow included infill of soil and splintered sagebrush blocking the entrance. Pygmy rabbits did not appear to be displaced from home ranges by seismic operations (Wilson, 2011). Based on available information, the BLM Elko District would require vibroseis trucks travelling along source lines to be at least 100 feet from active pygmy rabbit burrows found during surveys in 2012 (HWA, 2012b) (see Map 17). Pygmy rabbit colonies shift over time so colonies would need to be remapped two weeks prior to trucks entering the project area. In more densely populated pygmy rabbit areas (e.g., Section 3, T. 30 N., R. 56 E. and Section 12, T. 29 N., R. 55. E.), the BLM would also require a biological monitor to precede the vibroseis trucks to ensure that an adequate buffer is maintained.

Other effects to pygmy rabbits are expected to be similar to effects to greater sage-grouse and other wildlife. Pygmy rabbits are a sagebrush-obligate species and may be sensitive to direct loss or modification of sagebrush habitat by any number of causes, including energy exploration and development (USFWS, 2010b). As noted, source lines have been routed to avoid pygmy rabbit burrows by 100 feet or more. Vibroseis trucks may affect an estimated 650.6 acres of ground surface. Based on other energy projects, seismic exploration represents a low level impact endeavor, especially when environmental protection measures have been implemented to specifically address pygmy rabbit protection.

### **Environmental Protection Measures**

In addition to the Project design features (see Section 2.2.1.6), the following environmental protection measures have been identified to further reduce potential effects to Special Status Animal Species:

- Receiver lines would not be laid out using pickup trucks in the vicinity of active burrows.
- Vibroseis trucks would maintain a buffer of 100 feet from active pygmy rabbit burrows.
- Pygmy rabbit colonies would be remapped two weeks prior to trucks entering the project area.
- BLM-approved biological and cultural monitors would be required to walk in front of the vibroseis vehicles in designated pygmy rabbit colony areas to redirect vehicle traffic to maintain the 100-foot buffer from the pygmy rabbit sites and to remain within the culturally surveyed areas.

### 3.12.2.2 No Action Alternative

Under the No Action Alternative, there would be no change from the Proposed Action to current conditions for Special Status Animal Species within the project area.

### 3.12.3 CUMULATIVE EFFECTS

Special Status Species are generally protected and/or avoided for any activities on public lands but may not be protected for actions on private lands unless they are actually federally-listed or state-protected. There is special concern for some species (such as Greater sage-grouse, pygmy rabbits) although they are still hunted. These species and several others (such as sagebrush-obligates) have been subjected to a long period of incremental habitat loss and conversion of native vegetation to vegetation dominated by invasive species. This loss and conversion of habitat has occurred throughout the Cumulative Effects Study Areas (see Maps 5 and 7) and has reduced the value of habitats to sagebrush associated wildlife species. Nearly all sensitive species would be affected by the past, present, and reasonably foreseeable future actions (i.e., wildland fire, livestock grazing, noxious weed proliferation, oil and gas exploration, dispersed recreation, off-highway vehicle use, etc.) (see Tables 12 and 15) unless effects are avoided or mitigated. The BLM knows of no other proposals within the Cumulative Effects Study Area boundaries but is aware of discussions regarding a Ruby Vista Ranch subdivision that would encompass approximately 300 acres and would be located near Spring Creek, more than 12 miles north of the project area. Given the Project schedule, 90 operational days, and spatial buffers around pygmy rabbit burrows, cumulative effects to Special Status Species would be limited to vegetation/habitat (~650 acres) and would be small (less than 0.1 percent of the total acres) within the Cumulative Effects Study Areas (see Maps 5 and 7).

**Table 15  
Acres Affected within Sage-Grouse South Fork  
Population Management Unit Cumulative Effects Study Area**

Total Acres of Habitat within Cumulative Effects Study Area	Acres within Cumulative Effects Study Area Disturbed by Fire <sup>1</sup>	Acres of Disturbance within Cumulative Effects Study Area by Past, Present, and RFFA's <sup>2</sup>					Total Disturbance (%)	Project Effects (Total Acres in Project Area)
		Case Type	Authorized	Pending	Closed	Total		
Total Acres: 1,396,251  <u>BLM Habitat</u> PPH <sup>3</sup> : 185,709 PGH <sup>4</sup> : 191,293 <u>NDOW<sup>5</sup> Habitat</u> Essential: 144,925 Important: 78,610 Moderate: 231,342	<u>BLM Habitat</u> PPH 71,753 PGH 51,731  <u>NDOW Habitat</u> Essential 4,434 Important 67,667 Moderate 54,596	Rights of Way: Powerlines, Fiber Optic Cable, Telephone Lines, Roads, Fences, Railroad	2,860	2	249	<b>3,111</b>	0.22%	<u>BLM Habitat</u> PPH: 129 PGH: 234 <u>NDOW Habitat</u> Essential: 197 Important: 92 Moderate: 321
		Mineral Material Sites: Sand, Gravel, topsoil sources and pits	1,628	0	9,786	<b>11,424</b>	0.82%	

<sup>1</sup> Source: BLM GIS Data. Historic Fires (1981-2008)

<sup>2</sup> Reasonably Foreseeable Future Actions (RFFA). Source: BLM GIS Data. Land Lines/Land Points and Mineral Material Sites data (2013). Also includes the Emigrant Mine Project (1,418 acres) and the Railroad Exploration Project (200 acres). Acres are approximate.

<sup>3</sup> PPH = Preliminary Priority Habitat

<sup>4</sup> PGH = Preliminary General Habitat

<sup>5</sup> NDOW = Nevada Department of Wildlife

### **3.13 TRANSPORTATION AND ACCESS**

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#### **3.13.1 AFFECTED ENVIRONMENT**

Primary access to the project area from Elko would be south on SR-227, approximately 3.7 miles to SR-228, then south approximately 17.5 miles.

#### **3.13.2 ENVIRONMENTAL EFFECTS**

##### **3.13.2.1 Proposed Action Alternative**

Non-road Project vehicles (i.e., vibroseis trucks, ATVs/kubotas, etc.) would be trucked to and from the project area at the beginning of the Project and upon completion. Workers would stay in Elko and travel to and from the site each day in carpool vans (likely 15-passenger) and/or other project vehicles (likely to be pick-up trucks). Based on a maximum crew size of 50 workers, the Project would result in approximately ten additional daily vehicles trips between Elko and the project area during the 90 operational days. Existing roads and trails would be used for access to the project area. Given the minimal number of daily Project vehicles added to the transportation routes, damage to roads is not expected.

Vibroseis trucks would be left on site during project duration and would not be driven in wet and muddy conditions to minimize environmental effects. Mud/debris would not be tracked onto roads or highways because the Project would be shutdown during rain events and vibroseis trucks would be routed to avoid wet areas. In the unanticipated event that the Project were to track mud/debris onto roads or highways, Noble would employ a crew to clean up the road/highway.

##### **Environmental Protection Measures**

No environmental protection measures are proposed beyond the Project design features (see Section 2.2.1.6) and BLM standard stipulations.

##### **3.13.2.2 No Action Alternative**

Under the No Action Alternative, there would be no effects from the Proposed Action to transportation and access routes within the project area.

#### **3.13.3 CUMULATIVE EFFECTS**

Cumulative effects that could affect transportation and access routes include: wildland fire, oil and gas exploration, dispersed recreation (i.e., hunting, camping, etc.), and off-highway vehicle use (see Table 3). Traffic associated with these events/activities would continue under the No Action Alternative. As described above, the Project's effects would be small. The BLM knows of no other proposals within the Cumulative Effects Study Area boundary (i.e., the project boundary) that would affect transportation and access; therefore cumulative effects would be expected to be minimal.

### 3.14 VEGETATION

#### 3.14.1 AFFECTED ENVIRONMENT

Based on the Natural Resources Conservation Service ecological site descriptions (NRCS, 2013), the characteristic vegetation in the project area typically includes the following grass species: Bluebunch wheatgrass, Thurber's needlegrass, Sandberg bluegrass, Basin Wildrye, Indian ricegrass, Bottlebrush squirreltail and Western Wheatgrass. Inland saltgrass, Alkali sacaton, and mat muhly are common on saline bottoms. The dominant shrub species in the area include: Wyoming big sagebrush, Black sagebrush, Low sagebrush and Basin big sagebrush, Rubber rabbitbrush, Antelope bitterbrush and Black greasewood. Vegetation was mapped on-site with descriptions provided by Hayden-Wing Associates (2012a). Species' common and scientific names used in the text and tables are provided in Appendix C. Vegetation is dominated by big sagebrush communities that vary by associated shrub species components and amounts of vegetative cover provided by shrubs (see Map 18 and Table 16). The Sagebrush/grasslands predominates the project area, with Wyoming big sagebrush as the dominant species, usually in association with rubber rabbitbrush, and Douglas or green rabbitbrush. Sagebrush grasslands cover approximately 69 percent of the project area (HWA, 2012a).

**Table 16**  
**Vegetation Types, General Characteristics, and Coverages within the Project Area**

<b>General Vegetation Type<sup>1</sup></b>	<b>Dominant species<sup>1</sup></b>	<b>Description<sup>1</sup></b>	<b>Area (acres)</b>	<b>Percent of Total Area (acres)</b>
Juniper	Juniper, needle and thread, spiny phlox	Juniper forests on rocky, barren soils with sparse bunch grasses and forbs.	957.5	1.5
Juniper - Sagebrush	Juniper, Wyoming big sagebrush, Sandberg bluegrass, Indian ricegrass	Juniper intermixed with sagebrush, with more developed soils and denser grasses than the Juniper class.	1,555.8	2.5
Big Basin Sagebrush	Basin big sagebrush	Dominated by dense, tall sage; most prevalent in drainages and along riparian corridors.	1,380.6	2.2
Sagebrush Community	Wyoming big sagebrush, broom snakeweed, rabbitbrush, Sandberg bluegrass	Lower density of grasses compared to sagebrush/grassland, but otherwise similar.	514.8	0.8
Sagebrush-Rabbitbrush	Basin big sagebrush, rabbitbrush, cheatgrass	Common in drainages and low lying areas.	4,156.6	6.5
Sagebrush-Grassland	Wyoming big sagebrush, Sandberg bluegrass, broom snakeweed, rabbitbrush, Indian ricegrass, bluebunch wheatgrass, needle and thread, lupine, spiny phlox, Great Basin wild rye squirreltail, desert madwort, spineless horsebrush	Most common vegetation type on rolling hills throughout the project area.	43,296.5	68.2
Rabbitbrush-Grassland	Rabbitbrush, Indian ricegrass	Typically on ridges and hilltops, on sandier soils.	29.3	<0.05
Snakeweed - Sagebrush	Broom snakeweed, Wyoming big sagebrush, crested wheatgrass	Snakeweed co-dominant with sagebrush; crested wheatgrass common near agricultural areas.	1,966.7	3.1
Greasewood	Greasewood, basin big sagebrush	Low lying alkaline areas dominated by dense greasewood, with big basin	264.2	0.4

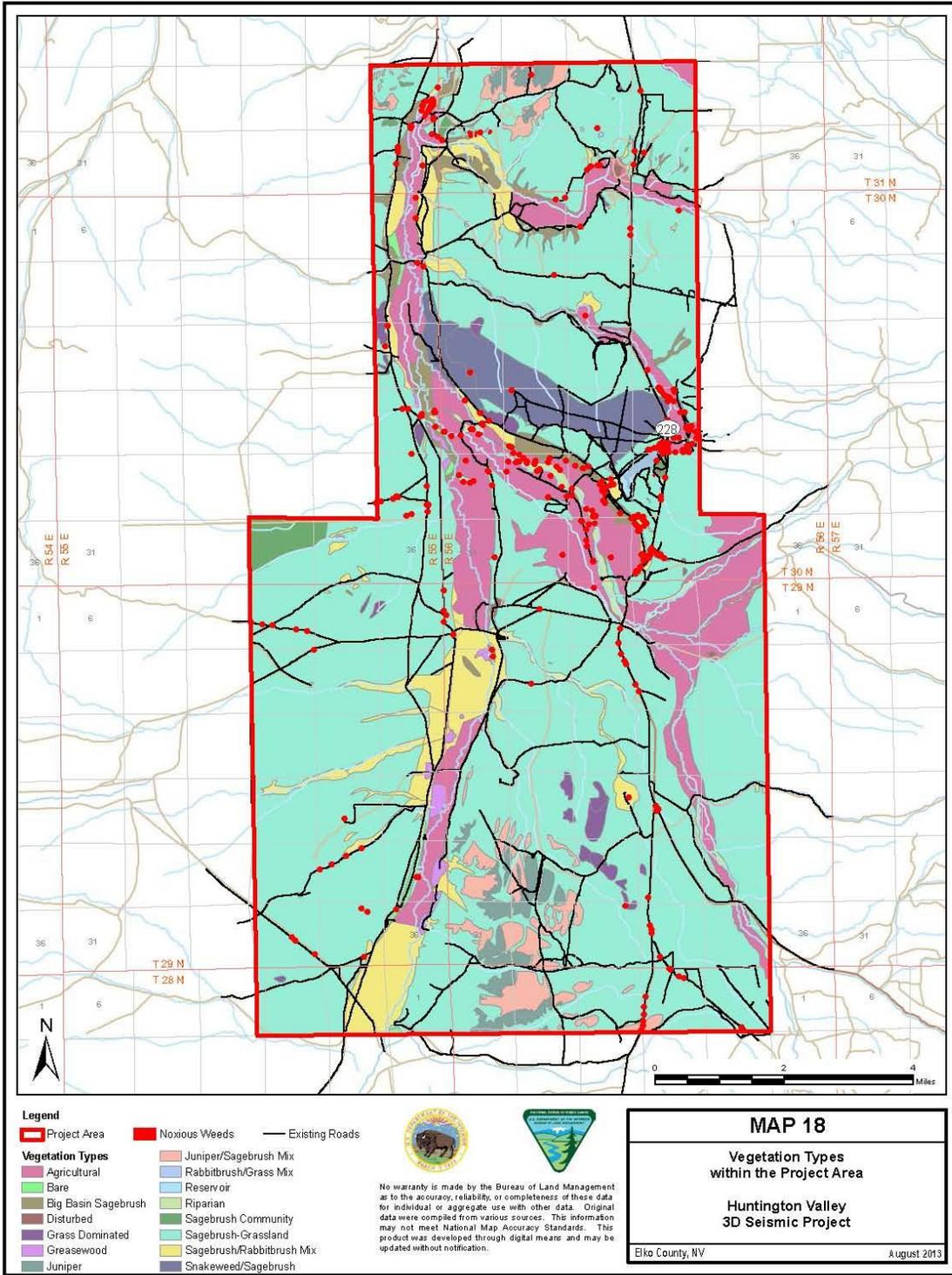
General Vegetation Type <sup>1</sup>	Dominant species <sup>1</sup>	Description <sup>1</sup>	Area (acres)	Percent of Total Area (acres)
		sagebrush sometimes co-dominant.		
Grassland	Cheatgrass, needle and thread	Dominated by cheatgrass with some bunch grasses present.	561.7	0.9
Disturbed	Russian thistle, Scotch thistle, curlycup gumweed, prostrate knotweed, horehound	Predominantly recreation areas near Zunino reservoir and ranches.	92.8	0.1
Bare ground	None	Either sand dunes or areas of high intensity livestock use.	159.7	0.3
Riparian	Sandbar willow, sedges, rushes, Canada thistle	Hydrology has been altered in some areas by agriculture.	665.1	1.0
Reservoir	Foxtail barely, sandbar willow, curly dock	Dry and mostly vegetated during surveys.	114.0	0.2
Agriculture	Orchardgrass, timothygrass, bluegrass	Hay fields present along riparian corridors throughout the project area.	7,779.4	12.3
<b>Total</b>			<b>63,494.7</b>	<b>100.0</b>

Hood's phlox was found in the understory of sagebrush-dominated vegetation along with native grasses including bluebunch wheatgrass and western wheatgrass (HWA, 2012a). Other native grasses that are generally associated with sagebrush-dominated vegetation include Indian ricegrass, thickspike wheatgrass, needle-and-thread, and Sandberg bluegrass (NatureServe, 2013). Hayden-Wing Associates (2012a) conducted a cheatgrass survey in the project area and reported a total of 2,439 acres of cheatgrass-dominated habitat within the various shrub and non-shrub vegetation types. Crested wheatgrass was also found to be widely spread throughout the project area. In the 1950s and 1960s, approximately 100,000 acres of allotments in the Spring Creek/Lamoille area (south of Jiggs) were converted to crested wheatgrass.

Approximately 1 percent of the project area was mapped as riparian vegetation, including areas along Huntington Creek and Smith Creek that intersect the project area from the north. Typical riparian vegetation, such as willows and sedges were reported, as well as non-native crested wheatgrass and invasive Canada thistle (HWA, 2012a). Numerous ephemeral drainages occur in the project area, although vegetation in the drainages is generally dominated by the same species that are found on adjacent upland sites: Wyoming big sagebrush, crested wheatgrass, and cheatgrass. Other sites that have been disturbed by agriculture and ranching/livestock operations would be classified as invasive annual grasslands (Lowry et al., 2005) and, if vegetated, are dominated by cheatgrass and crested wheatgrass.

Of the 63,495 acres in the project area, 68.2 percent (or 43,296.5 acres) are Sagebrush-Grassland, 12.3 percent (or 7,779.4 acres) are Agriculture, 6.5 percent (or 4,156.6 acres) are Sagebrush-Rabbitbrush, 3.1 percent (or 1,966.7 acres) are Snakeweed-Sagebrush, and the remaining 9.9 percent include Juniper, Sagebrush, Greasewood, and Riparian (see Table 16).

# Map 18 Vegetation Types within the Project Area



### **3.14.2 ENVIRONMENTAL EFFECTS**

#### **3.14.2.1 Proposed Action Alternative**

The Project would affect vegetation in the following ways: 1) may affect plants and plant structure if they are crushed, injured or killed; 2) may generate dust that could affect plants in the vicinity; and 3) may lead to increased infestations of noxious weeds (see Section 3.5/Invasive, Non-Native Species). Vibroseis trucks are equipped with low-tread, large tires (estimated 5 feet tall, 3 feet wide) to distribute the load on the ground to about 12 psi. Passage of four trucks single file would intensify but confine vegetation effects to single locations compared to effects by four trucks traveling on different paths. Vibroseis truck tires have been reported to damage or kill shrubs by crushing them (BLM, 2002). Menkens and Anderson (1985) found that vegetation structure was affected by vibroseis truck tires; vegetation crushed by tires showed effects of the disturbance for at least two years afterwards (Menkens and Anderson, 1985).

Greasewood, bitterbrush, and rabbitbrush re-sprout following fire or mechanical treatments (Church, 2009; Bunting, et al., 1987). Big sagebrush does not sprout back from similar effects but regenerates from seed (West, 1988). Big sagebrush may eventually re-grow from seed and/or survival of damaged plants, depending on precipitation (Yeo, 2009; Summers, 2005).

The Project would affect vegetation types along the source lines in almost the same proportions that they occur within the project area. Sagebrush/grassland (68 percent) is the most dominant vegetation type, with 69 to 70 percent of the disturbance occurring in this type (see Table 17). The second most affected vegetation type is sagebrush/rabbitbrush with 6.3 to 7.0 percent total disturbance. Effects to other sagebrush dominant communities would vary from 0.1 to 4.7 percent of the affected area. No shrub cover was estimated for the Riparian and Disturbed types so shrubs are assumed to be absent.

A total of 650.6 acres of vegetation communities could be affected by vibroseis trucks within the project area (see Table 17). The total acreage represents the estimated effects from driving all source lines and those receiver lines and other routes identified for access; however, it is expected that only about one-third to one-half of the receiver lines/access routes would be utilized. Direct effects from vibroseis plates would total 28.4 acres, or 0.05 percent of the project area. The analysis is based on the worst case scenario. Because the acreage estimates for receiver line effects are expected to be 33 to 50 percent greater than actual effects, the 28.4 acres of estimated plate effects have not been added separately to the total acres affected, nor has the anticipated disturbance associated with staging areas (9 acres).

Crushing effects to shrubs in the project area would be expected to persist for two years or more. Effects to the 604.4 acres of non-shrub vegetation (grasses, forbs) would be expected to last through the next growing season. Acreages of direct effects to shrub species are much less, owing to the fact that most of the disturbance occurs in the sagebrush/grassland community, which supports about five percent shrub cover. A discussion of direct effects to shrubs in relation to sagebrush obligate species, such as greater sage-grouse, is included in Section 3.12/Special Status Species.

**Table 17  
Vegetation Types Affected and Estimates of Maximum Effects to Shrub Components**

Mapped Vegetation	Shrub Cover Characteristics	Vegetation in Project Area		Estimated Maximum Acreage Affected by Vehicle Tracks			
		Total Area (acres)	Percent	Source Lines (acres)	Receiver Lines/ Access Routes (acres) <sup>1</sup>	Maximum Shrub Coverage Affected (acres) <sup>2</sup>	Non-Shrub Area Affected (acres)
Juniper	Shrub cover <5%	957.5	1.5	4.7	3.6	0.4	7.9
Juniper - Sagebrush	Shrub cover 10-20%	1,555.8	2.5	7.4	7	2.9	11.5
Big Basin Sagebrush	Shrub cover 10-30%	1,380.6	2.2	8.3	8.5	5.0	11.8
Sagebrush Community	Shrub cover 10-30%	514.8	0.8	4.0	1.6	1.7	3.9
Sagebrush-Rabbitbrush	Shrub cover 10-20%	4,156.6	6.5	22.3	22.5	9.0	35.8
Sagebrush-Grassland	Shrub cover 5%	43,296.5	68.2	244.3	209.4	22.7	431
Rabbitbrush-Grassland	Shrub cover 10-20%	29.3	0.0	0.1	0.3	0.1	0.3
Snakeweed - Sagebrush	Shrub cover 5-15%	1,966.7	3.1	10.4	13.8	3.6	20.6
Greasewood	Shrub cover 5-15%	264.2	0.4	1.6	2	0.5	3.1
Grassland	Shrub cover <5%	561.7	0.9	3.8	2.8	0.3	6.3
Disturbed	None	92.8	0.1	0.1	0.5	0.0	0.6
Bare ground	None	159.7	0.3	0.5	1.4	0.0	1.9
Riparian	Not Defined	665.1	1.0	3.0	0.4	0.0	3.4
Reservoir	None	114.0	0.2	0.6	0.9	0.0	1.5
Agriculture	None	7,779.4	12.3	40.9	23.9	0.0	64.8
<b>Total</b>		<b>63,494.7</b>	<b>100.0</b>	<b>352.0</b>	<b>298.6</b>	<b>46.2</b>	<b>604.4</b>
<b>Total</b>				<b>650.6</b>		<b>650.6</b>	

<sup>1</sup> Noble estimates that only one-third (149 miles) to one-half (226 miles) of the 452 miles of receiver line/access routes would be utilized to complete the seismic operations; analysis includes worst case scenario.

<sup>2</sup> Calculated by multiplying maximum shrub cover percentages listed in column 2 by the combined acreages of columns 5 (source lines) and 6 (receiver lines).

Fugitive dust could be generated by vibroseis trucks, pickup trucks, ATVs, and helicopter operations. If dust is generated during plants' growing season, damage or mortality to individual plants could occur as a result of decreased light transmission due to dust deposited directly on leaves or other photosynthetic surfaces. Dust from various sources could impair photosynthesis, gas exchange, transpiration, leaf morphology, and stomata function (Farmer, 1993; Sharifi et al., 1997; Rai et al., 2009). Dust from the Project could also interfere with plant reproduction by affecting pollinators during the late summer and autumn flowering season, such as rubber rabbitbrush, gray horsebrush, broom snakeweed, common yarrow, and various other members of the aster family (Asteraceae), if present. However, dust produced during periods of plant dormancy, especially for deciduous species, is not likely to generate the same effects as expected during the growing season. Winter precipitation would likely remove dust from plant surfaces.

Indirect effects from crushing the vegetation could include increased ATV use along the source lines, which could result in additional vegetation disturbance or removal of vegetation.

### **Environmental Protection Measures**

In addition to the Project design features (see Section 2.2.1.6), the BLM would require the following environmental protection measure to further reduce effects to vegetation:

- Should increased ATV use occur along source lines, the BLM would require reseeding and/or signage for reclamation areas.

#### **3.14.2.2 No Action Alternative**

Under the No Action Alternative, there would be no effects from the Proposed Action to vegetation within the project area.

#### **3.14.3 CUMULATIVE EFFECTS**

Cumulative effects that could affect vegetation include: wildland fire, oil and gas exploration, dispersed recreation (i.e., hunting, camping, etc.), grazing, increased noxious weed presence, and off-highway vehicle use (see Table 12). These effects would continue under the No Action Alternative. As described above, the Project's effects would be small, or less than 1 percent of the Cumulative Effects Study Area (see Table 12 and Map 5). The Project is not expected to add to or prolong any of the cumulative effects already occurring due to other forms of multiple use. The BLM knows of no other proposals within the Cumulative Effects Study Area boundary that would increase effects to vegetation but is aware of discussions regarding a Ruby Vista Ranch subdivision that would encompass approximately 300 acres and would be located near Spring Creek, more than 12 miles north of the project area. Cumulative effects would be expected to be minimal.

### **3.15 VISUAL RESOURCES MANAGEMENT**

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#### **3.15.1 AFFECTED ENVIRONMENT**

Visual resources are the visible physical features of a landscape that convey scenic value. Scenic values are classified according to the Visual Resource Management system, and the objectives are to minimize the visual effects of surface disturbing activities and to maintain scenic values on public lands.

The BLM-administered lands within the project area are designated as Visual Resource Management system Class III and IV. In Class III areas, the level of change to the characteristic landscape should be moderate. Management activities may attract attention but should not dominate the view of the casual observer. Management activities can consist of major modifications and may dominate the view of the casual observer. In Class IV areas, the level of change to the characteristic landscape can be high.

#### **3.15.2 ENVIRONMENTAL EFFECTS**

##### **3.15.2.1 Proposed Action Alternative**

Vehicular travel, crushed vegetation, fugitive dust from vehicular travel, and helicopter use in the project area would be temporary effects to visual resources. These activities would not conflict with the management objectives of the Visual Resource Management system Class III and IV areas in which the project area is located.

### **Environmental Protection Measures**

No environmental protection measures are proposed beyond the Project design features (see Section 2.2.1.6) and BLM standard stipulations.

### **3.15.2.2 No Action Alternative**

Under the No Action Alternative, there would be no effects from the Proposed Action to visual resources in the project area.

### **3.15.3 CUMULATIVE EFFECTS**

The BLM knows of no other proposals within the Cumulative Effects Study Area boundary (i.e., the project boundary) that would increase effects to visual resources; therefore cumulative effects would not be anticipated.

## **3.16 WILDERNESS STUDY AREAS AND LANDS WITH WILDERNESS CHARACTERISTICS**

### **3.16.1 AFFECTED ENVIRONMENT**

#### **Wilderness Study Areas**

Two Wilderness Study Areas border the project area on its west boundary (see Map 19). The Red Springs Wilderness Study Area contains 7,847 acres and borders the Project's northwest corner for approximately 2.25 miles. The 10,009-acre Cedar Ridge Wilderness Study Area borders the Project's west side for about 1.5 miles.

#### **Lands with Wilderness Characteristics**

Authority for conducting wilderness characteristics inventories on BLM lands are found under Section 201 of the Federal Land Policy and Management Act of 1976. Guidance for conducting inventories can be found in BLM Manual 6310-Conducting Wilderness Characteristics Inventory on BLM Lands. In Manual 6310 guidance on maintaining the inventory, the wilderness characteristics inventory process, and how to analyze wilderness characteristics is provided along with forms to complete when conducting the inventories.

The BLM Tuscarora Field Office has completed inventories around and within the project area for lands with wilderness characteristics. BLM identified six polygons that lay within the project area. Of the six polygons inventoried, two of the polygons were determined to possess wilderness characteristics: Indian Well (NV-EK-02-558) contains about 10,116 acres abutting the south side of the Red Spring Wilderness Study Area (see Map 19) and has approximately 1,441 acres within the project area; and Little Porter Creek (NV-EK-02-553) has 15,422 acres, of which approximately 181 acres fall within the project's western boundary.

The four other polygons within the project area were determined not to possess wilderness characteristics. They are Rose Well (NV-EK-02-048), Robinson Creek (NV-EK-02-049), Diamond Hills (NV-EK-02-546), and Huntington (NV-EK-02-817).

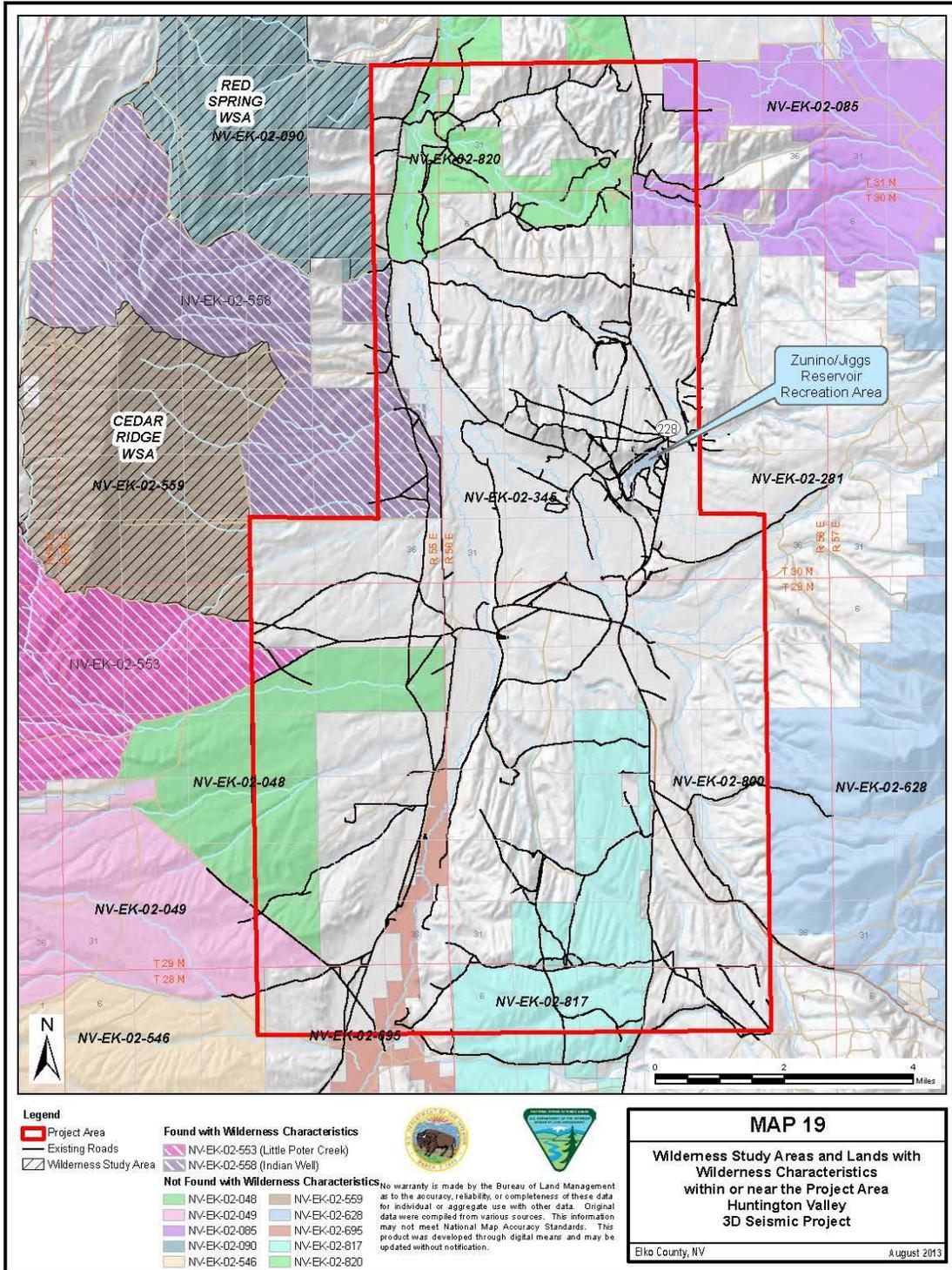
### **3.16.2 ENVIRONMENTAL EFFECTS**

#### **3.16.2.1 Proposed Action Alternative**

The Red Springs and Cedar Ridge Wilderness Study Areas border the project area along the northwest boundary for approximately 3.75 miles. No seismic lines would be placed within either Wilderness Study Area and as identified in the 2005 Oil & Gas Amendment to the Elko Resource Management Plan, new fluid mineral leases would not be issued within 0.25 mile of Wilderness Study Area boundaries.

Indian Well and Little Porter Creek Lands with Wilderness Characteristics s would be subject to temporary vibroseis truck traffic, receiver line placement, associated labor crews, as well as helicopter and ATV traffic. Vehicle and helicopter traffic could create dust and noise levels uncommon to the area.

# Map 19 Wilderness Areas and Lands with Wilderness Characteristics within or near the Project Area



Visible change would occur to the character of the naturalness and landscape caused by the linear truck tracks through the vegetation until the vegetation has recovered to the extent of the surrounding vegetation.

### **Environmental Protection Measures**

In addition to the Project design features (see Section 2.2.1.6), the following environmental protection measures have been identified to further reduce potential effects to adjacent Wilderness Study Areas and Lands with Wilderness Characteristics:

- No aircraft or vehicles would be allowed in the Red Springs or Cedar Ridge Wilderness Study Areas. Noble would utilize all appropriate means to inform project personnel of the Wilderness Study Area boundaries and the limitations.
- When seismic operations are occurring within 0.25 mile of the Red Springs or Cedar Ridge Wilderness Study Areas, Noble would provide an independent project monitor to inform project personnel of Wilderness Study Area boundaries and ensure that effects do not occur. If infringement upon the Wilderness Study Areas occurs, the monitor would immediately contact the BLM project lead with a description of the occurrence and report to the BLM Authorized Officer concerning the status and activities of the project and compliance with these measures.
- Seismic activities may be restricted within Lands with Wilderness Characteristics NV-EK-02-558 to existing roads/two-tracks.

#### **3.16.2.2 No Action Alternative**

Under the No Action Alternative, there would be no effects from the Proposed Action to wilderness study area or lands with wilderness characteristic resources in the project area.

#### **3.16.3 CUMULATIVE EFFECTS**

The BLM knows of no other proposals within the Cumulative Effects Study Area boundary (i.e., the project boundary) that would increase effects to wilderness study areas or lands with wilderness characteristics. With the Project's effects being temporary, cumulative effects would be minimal.

### **3.17 WILDLIFE AND FISHERIES**

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#### **3.17.1 AFFECTED ENVIRONMENT**

**Big Game.** Big game habitat within the project area consists of sagebrush grasslands (68 percent), usually in association with rubber rabbitbrush, and Douglas or green rabbitbrush (HWA, 2012a). This vegetation type provides year round forage and cover. Many portions of the sagebrush/grassland vegetation type are dominated by low sagebrush cover and invasion by annual grasses and less desirable shrubs (i.e., broom snake weed). The project area incorporates the following big game ranges:

- pronghorn summer, crucial winter, and year round range;
- mule deer winter, limited use, and transition range; and
- elk year-round range.

The majority of the project area is located within Nevada Department of Wildlife Management Area 6 (Hunt Unit 065), with the eastern portion located in Management Area 10 (Hunt Units 102 and 103). All three species were observed onsite during wildlife surveys in 2012 (HWA, 2012b). Species' common and scientific names used in the text and tables are provided in Appendix C. Summaries of herd status from the Nevada Department of Wildlife Big Game Status Book (NDOW, 2013a) are also presented in Appendix B.

**Pronghorn Antelope.** The majority of the pronghorn habitat in Nevada occurs in the northern desert shrub type. Preferred habitat types include table and bench lands in low sagebrush communities (NDOW, 2003). The breeding season commences with the rut in September. The peak of rutting activity occurs around mid-September and continues into October (NDOW, 2003). Currently, the Management Area 6 population estimate for 2013 is slightly lower than 2012 as a direct result of the low fawn ratio. Management Area 10 was estimated at 800 animals in 2013, down from the 2012 estimate of 950.

**Mule Deer.** Mule deer occupy almost all types of habitat within their range, yet they prefer arid, open areas and rocky hillsides, especially areas with bitterbrush and sagebrush which are common in the project area. Currently, the Management Area 10 population continues to account for approximately 20 percent of the statewide mule deer population and acts as a stronghold for Nevada's deer population.

**Elk.** Elk habitat consists of a mosaic of woodland cover and large open areas. Woodland habitat provides escape cover from human disturbance and predators, and wooded corridors provide travel lanes among seasonal habitats. Open areas provide necessary herbaceous forage. Currently, the Management Area 6 elk population continued to increase in 2012. At this time according to Nevada Department of Wildlife, it is believed that there are very few yearlong resident elk in these units.

**Upland Game and Small Game.** Furbearer species which have been seen in the project area include black-tailed jackrabbit, red fox, mink, beaver, and muskrat. Black-tailed jackrabbits are common in Nevada's desert and foothill landscapes. Jackrabbits live in the extreme environments of the desert and chaparral, where temperatures are hot during the day and cold at night, with low annual precipitation. They are common in brushlands, prairies, pasturelands, and meadows throughout much of the western United States. The red fox is a highly adaptable species found in many habitats, including agricultural and shrub dominant vegetation typical of the project area. Beavers, mink, and muskrats are semiaquatic mammals occurring in creeks and streams with ample vegetative cover and are herbivores. Partridges and doves are common in the sagebrush dominant vegetation type typical of the project area. Waterfowl in the project area are confined to areas with open surface water. Except for pygmy rabbits, the rabbit harvest and number of hunters decreased in 2012. The sage-grouse harvest and number of hunters also decreased. Three of the species most harvested in 2011 that are known or likely to occur in the project area include chukar partridge, mourning dove, and Hungarian (gray) partridge (NDOW, 2013c). Harvested migratory waterfowl also occur in the project area (HWA, 2012b), including Canada geese, mallard, and northern pintail. Appendix B provides more details.

**Non-Game Species.** Non-game bird species were discussed under Section 3.8/Migratory Birds. Other species observed in the area include sandhill cranes, trumpeter swans, ruffed grouse, blue grouse, California quail, marbled godwit, osprey, Himalayan snowcock, rough-legged hawk, and great horned owl nests. Ord's kangaroo rats and Townsend's ground squirrels are common to arid sagebrush and saltbush-greasewood communities, and porcupines inhabit shrubby stream bottomlands (Zaveloff, 1988). There are other non-game species that occur, including the common sagebrush lizard, Great Basin collared lizard, Great Basin whiptail, western fence lizard, western rattlesnake, horned lizard, bullsnake, gopher snake, and western terrestrial garter snake (NDOW, 2013b; Burton, 2013).

The following mammals have been observed in the project area (Burton, 2013): badger, striped skunk, black-tailed jackrabbit, mountain cottontail, coyote, Great Basin ground squirrel, raccoon, Uinta chipmunk, desert cottontail, American deer mouse, Great Basin pocket mouse, white-tailed jackrabbit, and weasel.

**Fish.** Fish species present in or around the project area include mountain sucker (Huntington Creek), redbreasted sunfish (Huntington Creek), Bass (Smith Creek), rainbow trout (Smith Creek), and minnows (Huntington Creek). Zunino/Jiggs Reservoir is stocked with trout when it contains water.

**Invertebrates.** Invertebrates documented in the project area include native snails in Cottonwood and McCutcheon creeks.

### **3.17.2 ENVIRONMENTAL EFFECTS**

#### **3.17.2.1 Proposed Action Alternative**

**Game and Non-game Species.** The Project may coincide with the 2013 harvest seasons within Hunt Units 65, 102, and 103 (Management Units 6, and 10) for big game, small game, and upland game species. The Project may also coincide with the early pronghorn and mule deer ruts, although males would establish and defend territories beginning in March or April (Kitchen, 1974). There is a spring mule deer migration corridor in the south and east of the project area that would not be affected during a fall project start date.

The presence of vibroseis trucks, pickup trucks, ATVs, helicopters, and people on foot is likely to displace pronghorns from home ranges and breeding territories in the vicinity of the activities (Reeve, 1984), but the effects are expected to be localized and temporary. The mule deer rut occurs during November (Mackie et al., 1998), so disruption of breeding may occur because deer in the vicinity could be displaced by Project activities (Horejsi, 1976; Ihsle, 1982). Other game and non-game wildlife would be expected to be displaced from home ranges by Project activities. Displaced individuals are often susceptible to increased predation, especially if they escape to habitats without suitable hiding cover. Wildlife displacement can be a response to noise, although noise and human presence coincide so the effects of either may not be separated. There is no single noise threshold that would apply to all wildlife, and species are affected and respond differently throughout the year during different stages in life cycles. Noise from vibroseis and pickup trucks would be detected by wildlife if above ambient background levels, assumed to range from 35 to 55 dBA (averaged for day and night in rural Nevada-see table 3, HWA, 2013) in a rural Nevada setting. A diesel-powered vibroseis truck is assumed to produce noise similar to other diesel powered construction trucks, 84 dBA at 50 feet. Using rules of noise addition (Federal Highway Administration - FHA, 1995), noise from two trucks would be 87 dBA, three trucks would be 89 dB, and four trucks would total 90 dBA. Pickup trucks produce noise 55 to 75 dBA at 50 feet (FHA, 2006). Noise from four vibroseis trucks would attenuate to background levels of 45 dBA between 3,200 and 9,050 feet away, depending on vegetation characteristics; noise from pickup trucks (75 dBA) would attenuate to background between 800 and 1,600 feet away, depending on vegetation and ground/topographic conditions. Displacement from noise and human presence would be short-term. Displacement means that specific animals will be forced to move to another location as a result of the proposed habitat disturbance. This implies that the surrounding undisturbed habitat is not at carrying capacity and can accommodate the displaced animals. Displacement implies that the removal of the disturbed wildlife is temporary and that the displaced animals can return to the disturbed habitat once the disturbance has ceased and the habitat has returned to a natural condition.

The habitat would be modified by crushing vegetation. The narrow and linear nature of the vibroseis tracks would have minimal effects on habitat use, but if operations cause surface rutting or otherwise remove all surface vegetation, the area would be reclaimed and reseeded as directed by the landowner or BLM Authorized Officer. Reclamation/reseeding would provide the same type of habitat following the disturbance. If the reclamation/reseeding does not reproduce the original habitat, a net loss to the original wildlife would be expected. Long lived, more mobile wildlife species may not be removed as a result of this Project. Shorter lived or

less mobile species may not be able to move to other locations due to habitat saturation and could die.

Timing of the project could also be critical to determining if individuals would be removed. Certain activities require individual wildlife to have an affinity to certain fixed locations. This affinity would result in the animals not being as mobile as they would be at other times of their lifecycles. This lack of mobility could cause the removal of individuals from a population as a result of the proposed disturbance.

All small game mammals, furbearers, nongame mammals, reptiles, and amphibians are susceptible to mortality by vehicles on or off roads. Species most susceptible to vehicle-related mortality include those that are inconspicuous (lizards, snakes, and small mammals), those with limited mobility, burrowing species (pocket gophers, ground squirrels, pygmy rabbits), wildlife with behavioral activity patterns (i.e., nocturnal/crepuscular activity) making them vulnerable, and wildlife that may scavenge carrion (Leedy, 1975; Bennett, 1991; Forman and Alexander, 1998; Trombulak and Frissel, 2000). Those species could be crushed by vibroseis tires and/or operation of seismic plates.

Loss of shrub cover for some time would reduce forage for some herbivores (pronghorn, mule deer, pygmy rabbits, sage-grouse), reduce hiding cover and thermal shelter (cottontails, jackrabbits, sage-grouse, horned lizards, and other reptiles, other game and non-game species), and reduce nesting cover and substrate for birds. Effects to sagebrush obligate species could extend over a period of several years since sagebrush killed by crushing would not regenerate from roots (see Section 3.14/Vegetation). Reduction of vegetation structure in shrub stands would cause habitat fragmentation on a limited scale but would not be as severe as fragmentation caused by surface clearing actions, such as roads and utility line corridors.

Should seismic activities continue on a 24-hour schedule, effects to nocturnal species could include mortality by vehicles, interference in species' communication, and susceptibility to predation.

**Fish.** The Project is scheduled after native fish species spawn. Because all wet/saturated areas (i.e., streams, creeks, wetlands) would be avoided and fueling of vibroseis trucks would not occur within 300 feet of any riparian areas or standing or flowing surface water, native and non-native fish that might occur in the project area would not be affected.

### **Environmental Protection Measures**

In addition to the Project design features (see Section 2.2.1.6), the following measure has been identified to further reduce effects to species:

- Depending on weather conditions, disturbance may be restricted between November 15 and March 16 for Pronghorn crucial winter range.

#### **3.17.2.2 No Action Alternative**

Under the No Action Alternative, there would be no change from the Proposed Action to current conditions for game and non-game wildlife species or habitats within the project area.

#### **3.17.3 CUMULATIVE EFFECTS**

Wildlife (game and non-game) would be affected by the past, present, and reasonably foreseeable future activities within the Watershed Cumulative Effects Study Area (see Map 5) and the Big Game Cumulative Effects Study Area, defined as Management Areas 6 (Hunt Units 064, 065, and 068) and 10 (all Hunt Units) (see Maps 8, 9, and 10) (see Tables 12, 18, 19, and 20). Nevada Department of Wildlife, along with land management agencies, has begun working on several largescale mule deer habitat enhancement projects in Management Area 10. One

such project, the Overland\Big Wash pinyon-juniper thinning project, was initiated in the vicinity of Overland Pass to improve mule deer winter and transitional range by setting back the successional stage of the area to a more browse dominated site. This effort will also increase wildlife diversity and reduce the potential of catastrophic wildfires by reducing the fuel load. The Overland Pass area is, and has been, an extremely important winter and transitional range for thousands of mule deer that reside in Management Area 10. Initial efforts will be aimed at conducting pinyon and juniper thinning on approximately 3,500 acres within the Overland Pass project boundary. The project is located 15 miles south of the project boundary within the Big Game Cumulative Effects Study Area. Also within the Big Game Cumulative Effects Study Area, the BLM is aware of discussions regarding a Ruby Vista Ranch subdivision that would encompass approximately 300 acres and would be located near Spring Creek, more than 12 miles north of the project area.

The primary effects to big game species from seismic activities are direct habitat loss or conversion, habitat fragmentation, or disturbance during critical seasons (rearing of young, and critical wintering) of their lifecycles. Cumulative effects, including the Project and reasonably foreseeable actions, would have a minor effect on big game population growth. The Project would be temporary and completed in 90 operational days; therefore, cumulative effects to wildlife would be minor within the scope of the Cumulative Effects Study Areas.

**Table 18**  
**Acres Affected in Pronghorn Ranges within Big Game Cumulative Effects Study Area**

Total Acres within Cumulative Effects Study Area	Acres within Cumulative Effects Study Area Disturbed by Fire <sup>1</sup>	Acres of Disturbance within Cumulative Effects Study Area by Past, Present, and RFFA's <sup>2</sup>						Project Effects [Total Acres in Project Area]
		Case Type	Authorized	Pending	Closed	Total	Total Disturbance (%)	
Total Acres: 6,150,470  Crucial Summer: 92,329 Crucial Winter: 273,225 Summer: 442,993 Winter: 14,910 Year Round: 1,690,764	Crucial Summer: 667 Crucial Winter: 81,037 Summer: 244,300 Winter: 10,585 Year Round: 66,056  Acres of habitat within Project Boundary disturbed by fire: Crucial Winter: 2,423 Summer: 2,839 Year Round: 0.06	Rights of Way: Powerlines, Fiber Optic Cable, Telephone Lines, Roads, Fences, Railroad	14,364.5	142	723	<b>15,229.5</b>	0.25%	Crucial Summer:  Crucial Winter: 433 [40,087]  Summer: 381 [33,817]  Winter: 0  Year Round: 106 [13,769]  Note: Crucial Winter and Summer ranges overlap, so combined acreage appears greater than total project disturbance acres.
		Mineral Material Sites: Sand, Gravel, topsoil sources and pits	20,711	2,891	20,344	<b>43,946</b>	0.72%	

<sup>1</sup> Source: BLM GIS Data. Historic Fires (1981-2008).

<sup>2</sup> Reasonably Foreseeable Future Actions (RFFA). Source: BLM GIS Data. Land Lines/Land Points and Mineral Material Sites data (2013). Also includes the Emigrant Mine (1,418 acres), the Railroad Exploration Project (200 acres), the Long Canyon Mine (1,631 acres), the Bald Mountain Mine (17,347 acres), the Arturo Mine (2,774 acres), the Hollister Mine (222 acres), and the Eureka and North Elko pipelines and a fiber optic line (241.5 acres). Acres are approximate.

**Table 19**  
**Acres Affected in Mule Deer Ranges within Big Game Cumulative Effects Study Area**

Total Acres within Cumulative Effects Study Area	Acres within Cumulative Effects Study Area Disturbed by Fire <sup>1</sup>	Acres of Disturbance within Cumulative Effects Study Area by Past, Present, and RFFA's <sup>2</sup>						Project Effects [Total Acres in Project Area]
		Case Type	Authorized	Pending	Closed	Total	Total Disturbance (%)	
Total Acres: 6,150,470  Crucial Summer: 40,442 Crucial Winter: 508,516 Summer: 674,924 Winter: 870,350 Year Round: 653,737	Crucial Summer: 10,842 Crucial Winter: 384,282 Summer: 241,499 Winter: 111,400 Year Round: 30,942  Acres of habitat within Project Boundary disturbed by fire: Winter Range: 2,839	Rights of Way: Powerlines, Fiber Optic Cable, Telephone Lines, Roads, Fences, Railroad	14,364.5	142	723	<b>15,229.5</b>	0.25%	Crucial Summer: 0  Crucial Winter: 0.1 [25]
		Mineral Material Sites: Sand, Gravel, topsoil sources and pits	20,711	2,891	20,344	<b>43,946</b>	0.72%	Summer: 0  Winter: 337 [32,600]  Year Round: 0

<sup>1</sup> Source: BLM GIS Data. Historic Fires (1981-2008)

<sup>2</sup> Reasonably Foreseeable Future Actions (RFFA). Source: BLM GIS Data. Land Lines/Land Points and Mineral Material Sites data (2013). ). Also includes the Emigrant Mine (1,418 acres), the Railroad Exploration Project (200 acres), the Long Canyon Mine (1,631 acres), the Bald Mountain Mine (17,347 acres), the Arturo Mine (2,774 acres), the Hollister Mine (222 acres), and the Eureka and North Elko pipelines and a fiber optic line (241.5 acres). Acres are approximate.

**Table 20**  
**Acres Affected in Elk Ranges within Big Game Cumulative Effects Study Area**

Total Acres within Cumulative Effects Study Area	Acres within Cumulative Effects Study Area Disturbed by Fire <sup>1</sup>	Acres of Disturbance within Cumulative Effects Study Area by Past, Present, and RFFA's <sup>2</sup>						Project Effects [Total Acres in Project Area]
		Case Type	Authorized	Pending	Closed	Total	Total Disturbance (%)	
Total Acres: 6,150,470  Crucial Summer: 67,142 Crucial Winter: 171,049 Summer: 277,788 Winter: 90,757 Year Round: 1,760,009	Crucial Summer: 5,335 Crucial Winter: 143,531 Summer: 82,375 Winter: 2,450 Year Round: 71,164  Acres of habitat within Project Boundary disturbed by fire: Year Round: 698	Rights of Way: Powerlines, Fiber Optic Cable, Telephone Lines, Roads, Fences, Railroad	14,364.5	142	723	<b>15,229.5</b>	0.25%	Crucial Summer: 0  Crucial Winter: 0  Summer: 0
		Mineral Material Sites: Sand, Gravel, topsoil sources and pits	20,711	2,891	20,344	<b>43,946</b>	0.72%	Winter: 0  Year Round: 132 [11,182]

<sup>1</sup> Source: BLM GIS Data. Historic Fires (1981-2008).

<sup>2</sup> Reasonably Foreseeable Future Actions (RFFA). Source: BLM GIS Data. Land Lines/Land Points and Mineral Material Sites data (2013). ). Also includes the Emigrant Mine (1,418 acres), the Railroad Exploration Project (200 acres), the Long Canyon Mine (1,631 acres), the Bald Mountain Mine (17,347 acres), the Arturo Mine (2,774 acres), the Hollister Mine (222 acres), and the Eureka and North Elko pipelines and a fiber optic line (241.5 acres). Acres are approximate.

## CHAPTER 4 – TRIBES, INDIVIDUALS, ORGANIZATIONS OR AGENCIES CONSULTED

The BLM sent letters to or consulted with the following:

### Agencies

Bureau of Indian Affairs Eastern Nevada Agency  
Nevada Department of Wildlife (Allen Jenne)

### Tribal Interest Groups

Western Shoshone Committee  
Western Shoshone Defense Project  
Western Shoshone Descendants of Big Smoky

### Tribes

Name of Tribe or Band	Date of contact	Type of Contact	Govt-to-Govt Info. Sharing	Comments/Notes
Te-Moak Tribe of Western Shoshone	2-27-2013	Letter from BLM	N N	Invitation to open government-to-government consultation
	3-6-2013	Council meeting	N Y	Comments concerning the complexity of the history and remains in the area, concern that the BLM will do what they want regardless of Tribal concerns. BLM offered government-to-government consultation on this issue – Council declined.
	3-18-2013	Letter from Council	N N	Verification of support of the South Fork Band taking the lead on this project, urging BLM to allow South Fork Band to participate in the cultural and botanical studies of Huntington Valley.
Battle Mountain Band	2-27-2013	Letter from BLM	N N	Invitation to open government-to-government consultation
	4-24-2013	Council Meeting	N Y	Defer to the South Fork Band. Questions concerning fracking and 3-D seismic exploration. BLM offered government-to-government consultation on this issue – Council declined.
Elko Band	2-27-2013	Letter from BLM	N N	Invitation to open government-to-government consultation
	4-17-2013	Council Meeting	N Y	Defer to the South Fork Band. Questions concerning fracking and 3-D seismic exploration.
South Fork Band	2-27-2013	Letter from BLM	N N	Invitation to open government-to-government consultation
	3-5-2013	Council meeting	N Y	Location is part of aboriginal territory. Need to have tribal monitors and a full survey for issues of Traditional value/culture

Name of Tribe or Band	Date of contact	Type of Contact	Govt-to-Govt Info. Sharing	Comments/Notes
	4-1-2013	Council meeting	N Y	Review and solidify the use of Tribal monitors/Tribal surveyors
	3-11-2013	Return Interest Notice	N N	Would like to conduct consultation on the project, request Tribal Monitors on the project.
	3-12-2013	Letter from Council	N N	Express a desire to conduct continued consultation on this project, requesting Tribal participation in the cultural and biological studies.
Wells Band	2-27-2013	Letter from BLM	N N	Invitation to open government-to-government consultation
	3-11-2013	Council meeting	N Y	No comments.
Shoshone Paiute Tribes of the Duck Valley Indian Reservation	2-27-2013	Letter from BLM	N N	Invitation to open government-to-government consultation
Confederate Tribes of the Goshute Indian Reservation	2-27-2013	Letter from BLM	N N	Invitation to open government-to-government consultation
	2-19-2013	Return Interest Notice	N N	Do not want to conduct consultation
	5-3-2013	Council meeting	N Y	Offered updated information sharing. Council deferred to the South Fork Band.
Duckwater Shoshone Tribe	2-27-2013	Letter from BLM	N N	Invitation to open government-to-government consultation
	2-11-2103	Letter from Council	N N	Directs BLM to contact Te-Moak Tribe of Western Shoshones as this project is within their traditional homelands.
Yomba Shoshone Tribe	2-27-2013	Letter from BLM	N N	Invitation to open government-to-government consultation
	3-8-2013	Council meeting	N Y	Will there be tribal monitors, when will fracking start, concerned about chemicals going onto the ground and into the water table. Defer to the South Fork Band. Need tribal monitors during the entire process. BLM offered government-to-government consultation at the beginning of the meeting – Council declined.
Ely Shoshone Tribe	2-27-2013	Letter from BLM	N N	Invitation to open government-to-government consultation

## CHAPTER 6 – LIST OF PREPARERS

### BLM INTERDISCIPLINARY REVIEW

NAME	TITLE	AREA OF RESPONSIBILITY
Rich Adams	Tuscarora Field Manager	Field Manager
Nycole Burton	Natural Resource Specialist	Migratory Birds/Special Status Species/Wildlife
Zack Pratt	Outdoor Recreation Planner	Recreation, Visual, Wilderness
Deb McFarlane	Assistant Field Manager	Non-Renewable Resources
Chris Morris	Assistant Field Manager	Renewable Resources
Elisabeth Puentes	Realty Specialist	Land use, right-of-way
Tom Schmidt	Geologist – Project Lead	Hazardous Wastes/Solid Wastes
Jerrie Bertola	Rangeland Management Specialist	Livestock Grazing/Rangeland Health/Vegetation
John Daniel	Geochemist/Hydrologist	Water/Air/Soil
Beth Bigelow	Archaeologist	Archaeology/Native American Traditional Values
Victoria Anne	Planning and Environmental Coordinator	National Environmental Policy Act

### Edge Environmental, Inc.

Name	Resource/Responsibility
Carolyn Last	Project Manager, Document Control and Review
Mary Bloomstran	Document Control and Review
Robert Long	Soils, Prime or Unique Farmlands
Nikie Gagnon	Water Resources, Land Tenure
Dwight Chapman	Invasive, Non-Native Species, Special Status Plants, Migratory Birds, Wildlife (Fish, Aquatic, and Terrestrial), Special Status Animal Species, Vegetation, Wetlands/Riparian
Josh Moro	Visual Resources, Recreation, Fire Management, Range Management, Special Designations, Wilderness and Lands with Wilderness Characteristics
Cultural Resource Analysts, Inc.	Cultural
Carter Lake Consulting, LLC	Air Quality

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