BLM

Battle Mountain District Office

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

Toiyabe Fingers Mule Deer Habitat Treatment Project

Draft

Environmental Assessment

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1.1 Introduction

The Nevada Department of Wildlife (NDOW) and United States Department of the Interior (DOI) Bureau of Land Management (BLM) are proposing a vegetation treatment project on approximately 7,722 acres of BLM Mount Lewis Field Office (MLFO) Battle Mountain District (BMD) public lands in Lander County, Nevada, to enhance habitat for mule deer (*Odocoileus hemionus*) and other sagebrush-obligate species (Proposed Action). The majority of the project area is mapped by NDOW as crucial winter habitat for mule deer. Mule deer tracking studies by NDOW have documented that mule deer from the Cortez, Toiyabe, Simpson Park, and Shoshone ranges use the project area. Much of the lower elevations have been impacted by fire and invasion of cheatgrass (*Bromus* spp), an exotic annual grass. In addition, in the southern and eastern portions of the project area, pinyon pine (*Pinus*) and juniper (*Juniperus*) (PJ) trees are encroaching into adjacent shrublands at an increasing density. The increase in cheatgrass and PJ distribution and densities have degraded the quantity and quality of mule deer crucial winter habitat. The proposed project is intended to increase the quantity and quality of this important mule deer crucial winter habitat, which will also enhance the habitat quality for other sagebrush-obligate species.

Implementation of the Proposed Action is evaluated in this Environmental Assessment (EA). This EA was prepared in compliance with the National Environmental Policy Act (NEPA), and is consistent with applicable regulations and guidance including the Council on Environmental Quality (CEQ) regulations implementing NEPA (40 Code of Federal Regulations [C.F.R.] Part 1500), DOI NEPA regulations (43 C.F.R. Part 46), BLM's NEPA Handbook H-179001 (BLM 2008), Secretarial Order 3355 (BLM 2017a) and Deputy Secretary's Memorandum "Additional Direction for Implementing Secretary's Order 3355 Regarding Environmental Assessments," dated August 6, 2018 (BLM 2018a).

Secretarial Order 3355 emphasizes that the purpose of NEPA is not the generation of paperwork, but the adoption of sound decisions based on an informed understanding of environmental consequences. To that end, CEQ's NEPA regulations encourage agencies to focus on issues that truly matter rather than amassing unnecessary detail, emphasize the portions of the environmental analysis that are useful to decision makers and the public, reduce emphasis on background material, discuss only briefly issues that are not significant and prepare analytic rather than encyclopedic documents (40 C.F.R. §1500.4).

BLM has adopted changes in the format of this EA to follow this direction from the CEQ regulations and Secretarial Order 3355 while remaining consistent with NEPA. The subject of this EA – vegetation treatments to enhance habitat for mule deer and other sagebrush-obligate species, is very familiar to the BLM, other federal agencies, local governments and the public. Habitat improvements have been the subject of numerous reports and studies, including many other NEPA documents. This EA emphasizes the key factors in decision making by placing background detail in a series of supplemental environmental reports (SERs), which are incorporated by reference in this EA and are available for public review and comment.

This EA includes a description of the Proposed Action and a summary of the affected environment and anticipated environmental consequences. It is designed to provide reviewers with an understanding of the decision that the BLM is considering and the potential direct, indirect and cumulative effects of that decision. Reviewers who are interested in specific resource issues, including background data and detailed analysis of potential impacts, may refer to the SERs. The SERs are available in the project record and on the BLM ePlanning website: https://eplanning.blm.gov.

1.2 Project Area

The project encompasses approximately 7,722 acres in Lander County, Nevada, in the southern portion of Crescent Valley and the northeast flank of the Toiyabe Range. The project is on public land administered by the BLM MLFO BMD (**Figure 1**).

1.3 Purpose and Need for Action

The purpose of the Proposed Action is to meet the management decisions for wildlife habitat management of the Shoshone-Eureka Resource Management Plan (RMP), as amended 1987 (BLM 1987).

The need is to improve crucial winter mule deer habitat in the project area consistent with the Shoshone-Eureka RMP (BLM 1987). The Proposed Action specifically addresses some of the threats to mule deer in Nevada, including invasive species and PJ invasion, which result in loss or alteration of crucial winter mule deer habitat.

1.4 Decision to be Made

The decision to be made is whether the BLM should approve the Proposed Action, and if so, under what conditions. Approval of the Proposed Action would authorize the BLM and NDOW, as the proponents, to implement vegetation treatments to enhance mule deer crucial winter habitat, which will also enhance the habitat quality for other sagebrush-obligate species.

1.5 Scoping Issues Identified

The BLM Interdisciplinary (ID) Team identified the supplemental authority elements and other resources to be addressed in this document, as outlined in Section 3.1. Issues and resources which could be affected were identified during an ID Team meeting held in May 2018 and an Interagency NEPA kickoff meeting held on October 3, 2019 (**Table 3-1**).

1.6 Conformance to Plans, Statutes and Regulations

Public lands administered by the BLM BMD MLFO within the project area are currently managed in accordance with the Shoshone-Eureka RMP (BLM 1987), the 2015 Nevada and Northeastern California Greater Sage-Grouse Approved Resource Management Plan Amendment (ARMPA) (BLM 2015), and the Lander County Policy Plan for Federally Administered Lands (Lander County 2005). The RMPs comply with the Federal Land Policy and Management Act of 1976 (FLPMA). The Proposed Action is in conformance with the RMPs and Lander County Policy Plan for Federally Administered Lands. Additional plans, statutes, and regulations applicable to a particular resource are detailed in each SER.

The Shoshone-Eureka RMP implements the BLM's management decisions, which include objectives, management actions, standard operating procedures (SOPs), and implementation strategies for the management of approximately 4.4 million acres of public land within the Shoshone-Eureka Resource Area (BLM 1987). The Shoshone-Eureka RMP establishes management decisions for wildlife habitat management, including for big game. The Proposed Action would be in conformance with these wildlife habitat management decisions.

The Nevada and Northeastern California Greater Sage-Grouse ARMPA implements the BLM's National Greater Sage-Grouse Conservation Strategy (BLM 2011) by incorporating greater sage-grouse (*Centrocercus urophasianus*; GRSG or sage-grouse) conservation measures into land use plans (BLM 2015). The Nevada and Northeastern California Greater Sage-Grouse ARMPA establishes management decisions (MDs) for protecting and preserving GRSG habitat on BLM land, and includes Required Design Features (RDFs) for certain activities in GRSG habitat. The Proposed Action would adhere to applicable MDs and RDFs. The Nevada and Northeastern California Greater Sage-Grouse ARMPA RFDs and MDs that are applicable to the Proposed Action are summarized in the Wildlife, Migratory Birds, Fish and Other Aquatic Resources, and Special Status Animals SER (Wildlife Resources SER) (BLM 2015).

Consistent with the Shoshone-Eureka RMP and Nevada and Northeastern California Greater Sage-Grouse ARMPA, implementation of the Proposed Action would improve the sagebrush ecosystem and the habitat upon which mule deer and other sagebrush-obligate species (e.g. GRSG) rely, resulting in a positive effect on mule deer and other sagebrush-obligate species.

Additionally, implementation of the Proposed Action would help to fulfill BLM's multiple-use mandate under the FLPMA to help protect, maintain and enhance resources in a sustainable way.

The Lander County Policy Plan for Federally Administered Lands (Lander County 2005) is intended to be used as a positive guide for federal land management agencies in their implementation of federal plans and management actions. The plan provides a framework whereby the Lander County Board of Commissioners can coordinate and influence the implementation of federal policies within the county (Lander County 2005). The Proposed Action is in conformance with the plan policies related to improving wildlife habitat (Lander 2005).

2.0 Management Alternatives

This chapter discusses the management alternatives analyzed in this EA. Two management alternatives are analyzed: the Proposed Action and the No Action.

2.1 Proposed Action: Toiyabe Fingers Mule Deer Habitat Treatment Project

The Proposed Action analyzed in this EA is the implementation of vegetation treatments in the project area to restore and enhance crucial winter mule deer habitat. The project area is in the southern portion of Crescent Valley and the northeastern foothills of the Toiyabe Range, in all or portions of section 1, 12 Township 26 North Range 46 East; section 24, 25, 36 Township 27 North Range 46 East; section 3, 4, 5, 6, 7, 8, 9, 10, 16, 17, 18 Township 26 North Range 47

East; and section 19, 28, 29, 30, 31, 32, 33, 34 Township 27 North Range 47 East Mount Diablo Meridian. The entire project area is located on BLM administered lands and a portion of the area lies within Nevada Gold Mines LLC (NGM) Cortez Mine Plan of Operations boundary (**Figure 1**). NGM is a supporting partner in this project.

Vegetation treatments include aerial herbicide application of cheatgrass areas, aerial seeding and drill seeding, and PJ thinning (hand lop and scatter).

The proposed acreages of vegetation treatments are as follows:

- Aerial herbicide application: 5,164 acres
- Aerial seeding: 2,452 acres
- Drill seeding: 2,712 acres
- Pinyon-juniper thinning (hand lop and scatter): 800 acres.

2.1.1 Vegetation Treatments

2.1.1.1 Aerial Herbicide Application

The BLM is currently authorized to apply herbicides using fixed-winged aircraft and helicopters to control cheatgrass, as authorized by the Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Impact Statement (17-States PEIS) (BLM 2007a) and Record of Decision (ROD) (BLM 2007b).

Imazapic and/or glyphosate herbicide would be sprayed at the recommended rates using a fixed-wing aircraft within the aerial seeding and drill seeding areas to support reseeding efforts. Imazapic is a relatively selective herbicide that is used to target cheatgrass. Aerial application would be done in late fall (September and October) before cheatgrass starts to germinate. Aerial and drill seeding would occur one year after the herbicide treatments. Treatments would be conducted in compliance with all federal, state, and local regulations and in consultation with the BLM. Herbicides must be applied by Nevada-licensed personnel and used in accordance with label directions. The use of herbicides would follow the direction and SOPs provided in the 17-States PEIS (BLM 2007a) and ROD (BLM 2007b), and the Integrated Weed Management Plan Battle Mountain District Nevada Mount Lewis Field Office and Tonopah Field Office EA (BLM 2009). In addition, herbicide use would follow guidance in H-9011 Chemical Pest Control Handbook (BLM 1988) and 9011 Chemical Pest Control Manual (BLM 1992).

2.1.1.2 Aerial Seeding

The project proposes to aerially seed up to approximately 2,452 acres with a mixture of native and non-native seeds (**Table 2-1**). The primary purpose of the selected seed mixture is to stabilize the soil, compete with exotics such as cheatgrass and to facilitate forage requirements for wintering mule deer.

Aerial seeding would occur in the winter or early spring to promote spring growth. Seeding would be planned to occur before snowfall or between snowstorms so that the snow will help incorporate the seed into the soil. Aerial seeding would follow one year after any herbicide treatments. **Figure 1** shows the area where aerial seeding is proposed.

Table 2-1. Seed Mix

Species	Rate Bulk lbs/acre
Wyoming Big Sagebrush (*Artemisia tridentata* ssp. *wyomingensis*)	1.5
Immigrant Forage Kochia (*Bassia prostrata* = *Kochia prostrata*)	1.0
Siberian Wheatgrass (*Agropyron fragile*)	2.5
Snowstorm Forage Kochia (*Bassia prostrata grisea*)	1.0
Sandberg Bluegrass (*Poa secunda*)	0.75

2.1.1.3 Drill Seeding

The project proposes to drill seed with a rangeland drill up to approximately 2,712 acres (**Figure 1**). A mixture of native and non-native plants would be used (**Table 2-1**). Seeding would occur in the winter and early spring shortly before anticipated snowfall to assist with propagation. Drill seeding would occur one year after any herbicide treatments.

2.1.1.4 Pinyon-Juniper Thinning

Thinning of individual PJ trees would occur on approximately 800 acres of the 2,558-acre area shown in **Figure 1**. Tree thinning would be accomplished on foot by crews using chainsaws. Felled trees would remain in place without further treatment (hand lop and scatter).

2.1.1.5 Implementation Schedule

The proposed project would be implemented upon BLM authorization with signing of a Decision Record. Aerial herbicide application would be done in the fall of Year 1. Aerial and drill seeding would occur one year after the herbicide treatments. Effectiveness of first year application of herbicides, and of seedings, will be qualitatively assessed in the following year. The need for subsequent applications will be discussed in consultation with BLM and NDOW.

2.1.1.6 Standard Operating Procedures and Best Management Practices

Vegetation treatments would follow direction provided in BLM manuals for vegetation treatments and the authorizations for use of herbicides. SOPs provided in the 17-States PEIS (BLM 2007a) and ROD (BLM 2007b), and the Integrated Weed Management Plan Battle Mountain District Nevada Mount Lewis Field Office and Tonopah Field Office EA (BLM 2009) would be followed. In addition, herbicide use would follow guidance in H-9011 Chemical Pest Control Handbook (BLM 1988) and 9011 Chemical Pest Control Manual (BLM 1992). The SOPs and Best Management Practices (BMPs) will be followed to protect air, water, and land resources; minimize erosion and disturbance; avoid sensitive biological resources, soils, and cultural areas; and minimize the chance of undesirable plant species from becoming established.

2.2 No Action Alternative

Under the No Action Alternative, the BLM would not approve the Proposed Action. The BLM and NDOW would not implement the vegetation treatments on public lands administered by the BLM MLFO BMD in the project area.

2.3 Alternatives Considered but Eliminated from Detailed Analysis

No other alternatives were considered, as not implementing the Proposed Action would not meet the purpose and need.

3.0 Affected Environment and Environmental Consequences

This chapter describes the natural, cultural, and social environment of public lands in the project area that would be affected by the Proposed Action and No Action Alternative. The SERs include detail on the affected environment for each resource identified as present, may be affected (**Table 3-1**). The SERs have been made available for public comment and are incorporated by reference. The detail in the SERs is summarized in this EA, but not repeated, in order to meet federal direction on streamlining NEPA reviews, found in Executive Order 13807 and Secretarial Order 3355.

3.1 Resources and Issues Considered for Analysis

Supplemental authorities that are subject to requirements specified by statute or executive order must be considered in all BLM environmental documents. The elements associated with the supplemental authorities are listed in **Table 3-1**. The table lists the elements and their status in the project area as well as the rationale used to determine whether an element present in the project area would be affected by the Proposed Action or No Action Alternative. Those elements listed under the supplemental authorities that do not occur in the project area and would not be affected are not discussed further in this EA. The elimination of non-relevant issues follows CEQ policy, as stated at 40 CFR Part 1500.4. Also, according to Section 6.4.2 of the BLM NEPA Handbook, resources determined to be “Not Present” or “Present/Not Affected” do not need to be carried forward for analysis (BLM 2008).

In addition to the elements listed under supplemental authorities, the BLM considers other resources and uses that occur on public lands and the effects on these resources and uses that may result from the implementation of the Proposed Action or No Action Alternative. Other resources or uses of the human environment that have been considered for this EA are also listed in **Table 3-1**.

Table 3-1. Resources Considered in this EA

Supplemental Authority Element (Resource)	Not Present	Present/ Not Affected	Present/ May Be Affected	Section / Rationale
Air Quality		X		Air quality in Nevada is regulated by the Nevada Division of Environmental

Supplemental Authority Element (Resource)	Not Present	Present/ Not Affected	Present/ May Be Affected	Section / Rationale
				Protection, Bureau of Air Pollution Control as delegated by the U.S. Environmental Protection Agency. Vegetation treatments would be subject to the same standards.
Areas of Critical Environmental Concern (ACEC)	X			Would not be affected. No ACECs are present in the project area.
Cultural Resources			X	3.6
Environmental Justice	X			There are no minority or low-income populations present in the project area or that would be disproportionately affected by the proposed action.
Farm Lands (Prime or Unique)	X			Would not be affected. There are no prime or unique farm lands located on the BLM BMD lands.
Floodplains			X	3.9
Forests and Rangelands (Healthy Forests Restoration Act (HFRA) of 2003 only)	X			Category applies to HFRA only, which do not occur in the BMD.
Geology and Minerals	X			Would not be affected. Geology and minerals present in the project area would not change.
Human Health and Safety (Herbicide Projects)			X	3.15
Land Use Authorization		X		Would not be affected. Current land use authorizations in the project area would not change.
Livestock Grazing			X	3.8
Migratory Birds			X	3.12
Native American Traditional Values			X	3.7
Noxious Weeds, Invasive, and Non-native Species			X	3.11

Supplemental Authority Element (Resource)	Not Present	Present/ Not Affected	Present/ May Be Affected	Section / Rationale
Paleontological Resources		X		Would not be affected. Any paleontological resources that may exist in the project area would not be affected by the vegetation treatments.
Recreation		X		Would not be affected. Current recreation activities in the project area would not change or be affected.
Socioeconomics		X		Would not be affected. Socioeconomics in the region would not change.
Soils			X	3.10
Special Status Animal Species			X	3.12
Special Status Plant Species			X	3.11
Threatened and Endangered Animal Species			X	3.12
Threatened and Endangered Plant Species			X	3.11
Vegetation			X	3.11
Visual Resources		X		Would not be affected.
Wastes, Hazardous or Solid	X			Would not be affected. No waste, hazardous or solid would be generated or used.
Water Quality, Surface/Ground Water			X	3.9
Wetlands/Riparian Zones			X	3.9
Wild and Scenic Rivers	X			Would not be affected. No wild and scenic rivers occur in Nevada.
Wilderness		X		Would not be affected. Wilderness or Wilderness Study Areas are not present within the project area; however, a portion of the project area is located within a Lands with Wilderness Characteristics (LWC) area. The BLM

Supplemental Authority Element (Resource)	Not Present	Present/ Not Affected	Present/ May Be Affected	Section / Rationale
				manages LWCs for multiple use. Therefore, the proposed project would not affect LWCs.
Wild Horses and Burros			X	3.13
Wildland Fire and Fire Management			X	3.14
Wildlife			X	3.12

3.2 Cumulative Effects: Past, Present, and Reasonably Foreseeable Future Actions

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

Projects and actions considered in the cumulative effects analysis are defined for this EA as those past, present, and RFFAs that could interact with the Proposed Action in a manner that would result in cumulative effects (**Table 3-2** and **Figure 2**). These projects and actions include other habitat improvement projects, including the Barrick Bank Enabling Agreement (BEA) Public Land Project Plan and Private Land Project Plan (Bank Project), the 3 Bars Ecosystem and Landscape Restoration Project (The 3 Bars Project), the Roadside Fuel Break Hazardous Fuels Reduction Project (Roadside Fuel Break Project), and the Sagebrush Ecosystem Management Project (SEM Project). Projects and actions considered in this cumulative analysis also include other past, present, and reasonably foreseeable future mining, exploration, utilities/community, and other activities with surface disturbance.

The Barrick BEA Public Land Project Plan and Private Land Project Plan identify the conservation actions, and associated credits and schedule, that Barrick would undertake within the Bank Property (**Figure 2**) to restore and/or enhance habitat to benefit GRSG and sagebrush ecosystems in exchange for mitigation credit. Through implementation of the Bank Project, Barrick will initiate a voluntary management program to improve sagebrush ecosystems consistent with the Nevada and Northeastern California Greater Sage-Grouse ARMPA (BLM 2015). Of the 238,192 acres in the Bank Property, 189,005 acres are public land administered by the BLM MLFO BMD and the BLM Tuscarora Field Office Elko District, and 49,187 acres are privately owned land managed by Barrick. Of this total area, conservation actions have been identified to occur on an average of 37,006 acres of public land and 9,924 acres of private land over 35 years.

The 3 Bars Project encompasses 725,000 acres and overlaps the southern portion of the Bank Property. It includes portions of three major mountain ranges (Roberts Mountain, Simpson Park

Range, and Sulphur Springs Range). The project would allow for treatments from several acres to several thousand acres with the goal of maintaining sagebrush steppe habitat and restoring fragmented habitat for at-risk wildlife species.

The Roadside Fuel Break Project would allow for the establishment and maintenance of fuel breaks along existing roads on approximately 30,000 acres of public lands within the administrative boundary of the BLM BMD, specifically in the Shoshone-Eureka and Tonopah Planning Areas in Lander, Eureka, Nye, and Esmeralda counties, Nevada. The public lands are managed by the MLFO and the Tonopah Field Office. A variety of fuels treatment methods will be implemented in a phased manner over multiple years with treatments on approximately 500 to 3,000 acres implemented annually.

The SEM Project would implement sagebrush treatments within the BLM BMD on a total of 20,000 acres per year to improve and enhance sagebrush ecosystems and sage-grouse habitat. Treatments would include PJ thinning, herbicide applications, seeding and planting of native plants, and collecting native seed.

Table 3-2. Past, Present, and Reasonably Foreseeable Future Actions

Action	Past and Present Approved Disturbance (acres)	RFFA Projected Disturbance (acres)	Total Approved/ Projected Disturbance (acres)
Mining Projects			
Black Rock Canyon Mine	117	0	117
NGM Buckhorn Mine	820	0	820
Clipper Mine	400	0	400
NGM Cortez Gold Mine (CGM) Operations Area	20,498	500	20,998
NGM Goldrush Project[1]	0	2,720	2,720
NGM Robertson Project	12	1,500	1,512
NGM Horse Canyon Mine	425	0	425
Cortez Silver Mining District[2]	92	0	92
Elder Creek Mine	143	0	143
Fox Mine	4	0	4
Greystone Mine	242	0	242
Grey Eagle Project	5	0	5
Gold Bar Mine	1,154	0	1,154
Hot Springs Sulfur Mine	5	0	5
Fire Creek Mine	285	5	290
May Mine	1	0	1
NGM Mill Canyon	18	0	18

Action	Past and Present Approved Disturbance (acres)	RFFA Projected Disturbance (acres)	Total Approved/ Projected Disturbance (acres)
Mt. Hope Mine	420	7,887	8,307
Mud Spring Gulch	10	0	10
South Silicified Project	31	0	31
Utah Mine and Camp	6	0	6
Other Mining Projects[3]	97	210	307
Subtotal	*24,785*	*12,822*	*37,607*
Exploration			
Notices BLM-BMD Office: 118 expired, 8 pending, and 30 authorized[4]	265	0	265
Plans (7) BLM-BMD Office[4]	306	0	306
Notices (10) BLM-Ely Field Office[4]	50	0	50
NGM Horse Canyon/Cortez Unified Exploration Project (HC/CUEP)[5]	549	0	549
NGM West Pine Valley	150	0	150
NGM Hilltop Exploration/Mine	92	0	92
NGM Pipeline/South Pipeline/Gold Acres Exploration Project	50	0	50
Dean Mine	67	0	67
Mud Springs	0	10	10
NGM Robertson Exploration Project[6]	294	0	294
South Roberts	0	3	3
Toiyabe Project	40	0	40
Uhalde Lease	100	0	100
Mill Canyon Exploration	250	0	250
Other Mining Exploration[7]	32	1,564	1,596
Subtotal	*2,245*	*1,577*	*3,822*
Utilities/Community			
State Route (SR) 306 and roads in Northern Crescent Valley (100 feet wide)	422	0	422
Gravel Roads in Crescent Valley and Northern Carico Lake Valley (50 feet wide)	1,558	0	1,558
Dirt Roads in Crescent Valley and Northern Carico Lake Valley (30 feet wide)	776	0	776
Power lines in Crescent Valley (60 feet wide)	364	0	364

Action	Past and Present Approved Disturbance (acres)	RFFA Projected Disturbance (acres)	Total Approved/ Projected Disturbance (acres)
NGM Fiber Optic Cable (20 feet wide)[8]	53	0	53
NGM Jeremy's Knob Communications Tower and right-of-way (ROW)[9]	0.5	0	0.5
NGM transportation corridor	0	2,000	2,000
Towns of Crescent Valley and Beowawe[10]	900	0	900
Other Utilities (electric, communications, federal aviation administration)	1,176	2	1,178
Other ROWs (roads, mining)	27	161	188
Subtotal	*5,276.5*	*2,163*	*7,439.5*
Other Development and Actions			
BLM Fuels Reduction Projects[11]	5,641	900	6,541
Wildfires[12]	351,220	0	351,220
Recreation[13]	0	0	0
Livestock[14]	10	53	63
Agriculture Development[15]	18,774	0	18,774
NGM Additional Irrigation Pivots at Dean Ranch[16]	0	640	640
Lodge at Pine Valley[17]	30	0	30
Crescent Valley Water Supply	2	0	2
NGM Cottonwood Infiltration Basins[16]	104	0	104
NGM BEA Project Plans[18]	46,930	0	46,930
Subtotal	*422,711*	*1,593*	*424,304*
Total	**455,017.5**	**18,155**	**473,172.5**

Source: BLM 2019b

[1] Disturbance acreage from NGM's Goldrush Mine Plan of Operations, Table 4-1; total disturbance of 1,724 acres less existing disturbance of 622 acres equals new disturbance of 1,102 acres. Existing disturbance is included in the disturbance for NGM's HC/CUEP and West Pine Valley exploration projects

[2] Historic mining- and exploration-related disturbance first began in 1862, prior to the promulgation of surface land management laws and regulations governing mining activities on public lands (e.g., Federal Land Policy and Management Act (FLPMA) and 40 CFR 3809). Since there were no laws or regulatory programs in place at that time, there were no regulatory or administrative approvals granted. Therefore, the identified disturbance acreage does not include all historic mining-related disturbance in the area.

[3] Includes gold and barium/barite mines.

[4] Plans and notices outside of the general Crescent Valley area have not been quantified.

[5] The approved plan provides for surface exploration activities and development of twin declines for underground exploration (BLM 2016b).

[6] NGM's Robertson Exploration Project boundary is located immediately north of, and partially within, the CGM Operations Area as shown in Appendix A, Figure 2-19 of the Deep South Environmental Impact Statement.

[7] Includes projects by Barrick Cortez Exploration, Nu Legacy Gold, and 777 Minerals Inc.

[8] ROW runs from the Lodge at Pine Valley to the southeast boundary of the CGM Operations Area.

[9] NGM facility located in Township 28 North, Range 47 East, Section 18 SESE just north of the CGM Operations Area; ROW N-092170.

[10] Surface disturbance associated with the towns of Crescent Valley and Beowawe is assumed to be 640 and 160 acres, respectively, with approximately 100 acres of private developed land peripheral to the towns.

[11] Inclusive of acreage associated with the Crescent Valley Wildland Urban Interface Fire Defense System, Tonkin Hazardous Fuels Reduction Project, and Red Hills Hazardous Fuels Reduction Project. Of the total acreage, planned prescribed burns would affect up to 2,537 acres of pinyon-juniper woodland, and 800 acres of pinyon-juniper woodland would be thinned. Also includes future treatment of 900 acres of encroaching pinyon-juniper woodland for enhancement of greater sage-grouse habitat in the approved HC/CUEP Plan of Operations.

[12] Reflects acreage of vegetation affected by wildland fires from 1999 through 2019 within the Goldrush vegetation CESA.

[13] Surface disturbance associated with recreation activities has occurred; however, acreage has not been quantified.

[14] Existing livestock-related surface disturbance is associated with water developments. The surface disturbance associated with the livestock RFFAs is based on 0.5 acre per water development activity and 43 acres for fencing and cattle guards. Livestock-related activities outside of the Carico Lake Allotment have not been quantified.

[15] Surface disturbance associated with agricultural development is based on United States Department of Agriculture cropland statistics. Acreage reflects all crops within the Eureka County in 2018. https://nassgeodata.gmu.edu/CropScape/

[16] Surface disturbance located on private (Barrick-owned) land outside of the CGM Operations Area.

[17] This facility is located on the JD Ranch Road approximately 4 miles west of SR 278 at the NGM-owned JD Ranch.

[18] Includes conservation actions modeled to occur on an average of 37,006 acres for the BEA Public Land Project Plan and 9,924 acres for the BEA Private Land Project Plan. Conservation actions that will be implemented to restore and enhance greater sage-grouse habitat would include tree removal, seeding and planting, establishment of fuel breaks, and improving wet meadows.

3.3 Documents Incorporated by Reference

This EA incorporates by reference the 17-States PEIS (BLM 2007a) and ROD (BLM 2007b), and the Integrated Weed Management Plan Battle Mountain District Nevada Mount Lewis Field Office and Tonopah Field Office EA (BLM 2009). The SERs are also incorporated by reference. Sections and page numbers incorporated from the SERs are included under the individual resource subsections of Chapter 3.

3.4 Intensity, Duration, and Context Definitions

Preparation of an EA involves determining the significance of likely environmental impacts. Three variables are considered in this evaluation: intensity, duration, and context. The definitions of these variables as applied to each resource considered for detailed analysis are described in the resource sections below or in the SERs, as applicable.

3.5 Regulatory Framework

There are numerous regulations that have been issued by the federal and state government to protect natural resources. Regulations that are applicable to each resource are detailed in the SERs, which are available in the project record.

3.6 Cultural Resources

A Cultural Resources Inventory Needs Assessment (CRINA) form was submitted to the Nevada State Historic Preservation Office (SHPO) for concurrence in May 2018 (BLM 2018b). The CRINA evaluates the need and extent of cultural resource inventory required for the Proposed Action. The area of potential effect (APE) for direct effects to cultural resources includes the approximately 2,712 acres identified for drill seeding (**Figure 1**). The drill seeding area is located on BLM administered lands. No APE for indirect effects is necessary, since the vegetation treatments are temporary and would result in no permanent changes to the landscape (BLM 2018b). The cumulative effects study area (CESA) for cultural resources includes the project area and considers other vegetation treatment projects and other past, present, and RFFAs that include surface disturbance (**Table 3-2** and **Figure 2**). The Cultural Resources SER (BLM 2019c) details the regulatory framework and affected environment (Section 2.0, pgs. 4-6) and analysis of effects (Section 3.0, pgs. 7-8). It is incorporated by reference and available in the project record.

3.6.1 Affected Environment

3.6.1.1 Literature Search

A literature search was completed for the project area to aid in characterizing cultural resource expectations. All relevant, existing cultural resource data was reviewed. The file search included data from the BLM BMD, SHPO-administered Nevada Cultural Resources Information System (NVCRIS) database, and National Register of Historic Places (NRHP) (Summit 2018). Five previous inventories have been conducted in or near the project area (Summit 2018).

3.6.1.2 Class III Cultural Resource Inventory

The BLM required a Class III cultural resources inventory only in the area slated for drill seeding, which was originally approximately 3,014 acres (Summit 2018). Since the inventory was completed, portions of the original project area were burned by the Copper Wildfire and the Francis Wildfire in July and August of 2018. These burned areas were later excluded from the project area and have been treated and seeded under a BLM Emergency Stabilization and Rehabilitation program. The drill seeding portion of the project area as currently proposed encompasses 2,712 acres.

Eighteen isolated finds were identified, which included six prehistoric and 12 historic artifacts. Isolated finds are categorically not eligible for the NRHP per §V.B.1.a.(1) of the Protocol (Summit 2018).

Two historic archaeological sites were identified, both of which are dirt roads. One road (CrNV-62-9392) was previously recorded, and one road (CrNV-62-21209) is newly recorded. BLM has determined that these roads do not meet the requirements of eligibility to the NRHP (BLM 2018b).

3.6.2 Environmental Consequences

Compliance with Section 106 of the National Historic Preservation Act (NHPA) calls for implementation of a four-step process that includes consultation with appropriate parties (36

CFR 800.3); identifying historic properties in the APE of an undertaking (36 CFR 800.4); assessing adverse effects of the undertaking on historic properties within the APE (36 CFR 800.5); and resolving any adverse effects (36 CFR 800.6). The effects determinations possible under this four-step process are described in the Cultural Resources SER (BLM 2019c).

3.6.2.1 Proposed Action

Direct and Indirect Effects

All historic properties, unevaluated resources, and eligible architectural resources known and identified within the APE will be avoided during ground disturbing activities (drill seeding) using the standard measures outlined in the Protocol Part 1.V.D.2. Avoidance measures may include institution of a 30-meter protective buffer around historic properties where no disturbance is authorized without the presence of a permitted archaeological monitor to ensure no inadvertent damage to historic properties occur.

All historic properties identified, or unevaluated cultural resources identified, would be avoided. Therefore, there would be no historic properties affected as a result of implementing the Proposed Action.

Cumulative Effects

There would be no historic properties affected from implementation of the Proposed Action. Therefore, implementation of the Proposed Action combined with other treatment projects and other past, present, and RFFAs that include surface disturbance would not have any cumulative effects on cultural resources.

3.6.2.2 No Action

Direct and Indirect Effects

Under the No Action Alternative, none of the proposed vegetation treatments would occur in the project area. There would be no historic properties affected.

Cumulative Effects

Under the No Action Alternative, the vegetation treatments would not be implemented. Cumulative effects would not occur, as there would be no direct or indirect effects.

3.7 Native American Traditional Values

The analysis area for direct and indirect effects to Native American Traditional Values includes the project area (**Figure 1**). The CESA for Native American Traditional Values is shown in **Figure 3**. It includes the regional cumulative effects study area analyzed in the Cortez Gold Mines Deep South Expansion Project FEIS; that analysis is incorporated by reference (BLM 2019b). The Native American Traditional Values SER (BLM 2019d) details the regulatory framework and affected environment (Section 2.0, pgs. 4-6) and analysis of effects (Section 3.0, pgs.6-7). It is incorporated by reference and available in the project record.

3.7.1 Affected Environment

Federally recognized tribes and tribal organizations consulted for the proposed project are:

- Battle Mountain Band of the Te-Moak Tribe of Western Shoshone,
- South Fork Band of the Te-Moak Tribe of Western Shoshone,
- Duckwater Shoshone Tribe,
- Bureau of Indian Affairs, Eastern Nevada Agency
- Elko Band of the Te-Moak Tribe of Western Shoshone,
- Ely Shoshone Tribe,
- Shoshone-Paiute Tribes of Duck Valley,
- Te-Moak Tribe of the Western Shoshone,
- Wells Band of the Te-Moak Tribe of Western Shoshone, and
- Yomba Shoshone Tribe.

3.7.2 Environmental Consequences

Compliance with Section 106 of the NHPA calls for implementation of a four-step process that includes consultation with appropriate parties (36 CFR 800.3); identifying historic properties in the APE of an undertaking (36 CFR 800.4); assessing adverse effects of the undertaking on historic properties within the APE (36 CFR 800.5); and resolving any adverse effects (36 CFR 800.6). The three possible effects determinations possible under this four-step process are described in the Native American Traditional Values SER (BLM 2019d).

3.7.2.1 Proposed Action

Direct and Indirect Effects

The BLM sent consultation letters to Native American tribes associated with the project area. Any questions or concerns will be addressed.

Project activities would avoid Native American Traditional Values. All historic properties, unevaluated resources, and eligible architectural resources known and identified within the APE will be avoided during potentially ground disturbing activities (drill seeding) using the standard measures outlined in the *Protocol Agreement between the Bureau of Land Management, Nevada and the Nevada State Historic Preservation Officer for Implementing the National Historic Preservation Act* (Protocol), Part 1.V.D.2. Avoidance measures may include institution of a 30-meter protective buffer around historic properties where no disturbance is authorized without the presence of a permitted archaeological monitor to ensure no inadvertent damage to historic properties occur.

All historic properties identified, or unevaluated cultural resources identified, would be avoided. Therefore, there would be no historic properties affected as a result of implementing the Proposed Action.

Though the possibility of disturbing Native American gravesites is low, inadvertent discovery procedures would be followed. If a discovery occurs in connection with an authorized use, the activity would cease, and the BLM would be notified so that they can protect the material. In addition, persons implementing the proposed vegetation treatments would be alerted that they are not allowed to collect cultural properties, items, or artifacts.

PJ thinning for tree removal will occur only in Phase I areas.

Cumulative Effects

The BLM would identify and avoid Native American Traditional Values prior to implementing vegetation treatments. As a result, there would be no historic properties affected. Therefore, implementation of the Proposed Action would not result in cumulative effects on Native American Traditional Values.

3.7.2.2 No Action

Direct and Indirect Effects

Under the No Action Alternative, none of the proposed vegetation treatments would occur in the project area. There would be no Native American Traditional Values or historic properties affected.

Cumulative Effects

Under the No Action Alternative, the vegetation treatments would not be implemented. Cumulative effects would not occur, as there would be no direct or indirect effects.

3.8 Rangeland Resources (Grazing Management)

The analysis area for direct and indirect effects to rangeland resources includes the pastures of the Carico Lake allotment which overlap the project area. The CESA for rangeland resources is the project area and entire Carico Lake allotment (**Figure 4**). The Rangeland Resources SER (BLM 2019e) details the regulatory framework and affected environment (Section 2.0, pgs. 4-5) and analysis of effects (Section 3.0, pgs. 5-7). It is incorporated by reference and available in the project record.

3.8.1 Affected Environment

The project occurs entirely within the Carico Lake allotment. The allotment totals 599,217 acres (36,752 acres private and 562,465 acres public lands) and includes 24,954 active AUMs (1,640 acres private and 26,594 acres public lands). The project area comprises 1.3 percent of the Carico Lake allotment. There are two pastures (sub-allotments of Carico Lake) in the project area: Toiyabe Mountain and Cortez Joint Venture). The pastures are shown in Figure 3 in the Rangeland Resources SER (BLM 2019e). The Toiyabe Mountain pasture encompasses 61,258 acres, of which approximately 6,185 acres (10.1 percent) intersect the project area. The Cortez Joint Venture pasture encompasses 94,027 acres, of which 1,534 acres (1.6 percent) intersect the project area. Active AUMs and other details associated with these pastures are included in Table 3 of the Rangeland Resources SER (BLM 2019e).

The Carico Lake allotment is in the “improve” management approach category. Allotments in the improve category generally have the potential for increasing resource production or conditions but are not producing at that potential. There may be conflicts or controversy involving resource conditions and uses, and there are opportunities to improve resource conditions.

3.8.2 Environmental Consequences

Definitions of intensity, duration, and context level of effects for rangeland resources are defined in Rangeland Resources SER (BLM 2019e).

3.8.2.1 Proposed Action

Direct and Indirect Effects

A combination of all proposed vegetation treatments would occur in the Toiyabe Mountain pasture. Work in the Cortez Joint Venture pasture would primarily consist of the PJ thinning treatment.

Effects Common to All Vegetation Treatments

The BLM land managers would ensure that activities associated with the vegetation treatments would not compromise the health and safety of livestock and would have minimal impacts on livestock operations. Permittees would be notified prior to implementation of the vegetation treatments. Livestock may need to be temporarily excluded from an area during treatment implementation, for example during tree removal activities, aerial applications of herbicides, or after seedings. Livestock grazing use, where practical, may be deferred for at least two growing seasons in newly seeded areas to allow plant establishment (BLM 1987). Reductions in AUMs are not proposed and large portions of the Toiyabe Mountain and Cortez Joint Venture pastures occur outside of the project area and would be available for use. Therefore, implementation of the Proposed Action would have localized, long-term, minor adverse effects on livestock grazing.

Over the long-term, vegetation treatments would improve forage quality and availability, resistance and resilience to wildfire, and rangeland health, leading to localized minor beneficial effects to rangeland resources. Vegetation treatments would contribute to the current management goals of the Carico Lake allotment grazing management category (Improve).

Aerial Herbicide Application

The use of herbicides to control cheatgrass would be implemented one year prior to seeding. Possible direct effects to livestock from the use of herbicides would be avoided by pre-implementation coordination with permittees. Possible short-term indirect effects include temporary exclusions from aerial herbicide vegetation treatment areas, and a temporary reduction in the amount of forage. BLM would adhere to weed control methods established in the Integrated Weed Management Plan Battle Mountain District Nevada Mount Lewis Field Office and Tonopah Field Office EA (BLM 2009) and the chemical-specific analyses and SOPs of the 17-States PEIS (BLM 2007a) and ROD (BLM 2007b), which are incorporated by reference. The following SOPs from Appendix B of the 17-States PEIS ROD (BLM 2007b) would be implemented to minimize direct and indirect effects to livestock:

- Whenever possible and whenever needed, schedule treatments when livestock are not present in the treatment areas. Design treatments to take advantage of normal livestock grazing rest periods, when possible.
- As directed by the herbicide product label, remove livestock from treatment areas prior to herbicide application, where applicable.
- Use herbicides of low toxicity to livestock, where feasible.

- Take into account the different types of application equipment and methods, where possible, to reduce the probability of contamination of non-target food and water sources.
- Notify permittees of the herbicide treatments to improve coordination and avoid potential conflicts and safety concerns during implementation of the treatments.
- Notify permittees of livestock grazing, feeding, or slaughter restrictions, if necessary.
- Provide alternative forage sites for livestock, if possible.

Direct and indirect effects to livestock would be minimized by adhering to herbicide use SOPs and guidelines in the above referenced documents. Therefore, the use of herbicides would cause localized, short-term, and negligible effects to livestock.

Cumulative Effects

Past, present, and RFFAs which may have affected or may affect rangeland resources in the CESA include mining; exploration; utilities, community, and road developments; oil and gas development; habitat restoration; fuels reduction projects; wildfires; wild horse and wildlife use; and agricultural activities.

Vegetation treatments would not conflict with grazing uses or require a change in permitted AUMs. Implementing the Proposed Action combined with past, present, and RFFAs would not result in adverse cumulative effects on rangeland resources. Cumulative beneficial minor effects over the long-term would be realized as restoration success is achieved, and wildfire risk reduced.

3.8.2.2 No Action

Direct and Indirect Effects

Under the No Action Alternative, the proposed vegetation treatments would not be implemented. Therefore, there would be no effects on rangeland resources or livestock grazing. However, beneficial effects of improving forage quality, resistance and resilience to wildfire, and rangeland health, would also not occur. No improvements would be implemented to contribute to management goals for the Carico Lake allotment, which is currently designated as Improve.

Cumulative Effects

Under the No Action Alternative, the proposed vegetation treatments would not occur in the project area. The project would not contribute long-term beneficial effects to rangeland health, reduce the risk of wildfire, or support allotment management goals. There would be no cumulative effects under the No Action Alternative.

3.9 Water Resources

The analysis area for direct and indirect effects to water resources includes the hydrographic areas defined by the Nevada Division of Water Resources (NDWR) that overlap the project area; and streams, riparian areas, and wetlands (including seeps/springs) within the project area, as identified by public data sources and baseline surveys (ERM 2018) (**Figure 5** and

Figure 6). The CESA for water resources is the project area and the NDWR hydrographic area that overlaps the project (Figure 6). All water resources information provided below is from the Toiyabe Fingers Biological Baseline Report (biological baseline report) (ERM 2018) unless otherwise cited. The Water Resources SER (BLM 2019f) details the regulatory framework and affected environment (Section 2.0, pgs. 4-7) and analysis of effects (Section 3.0, pgs. 7-9). These reports are incorporated by reference and available in the project record.

3.9.1 Affected Environment

3.9.1.1 Regional Basin Hydrology

The project area is wholly within the Crescent Valley hydrologic area (HA), which is part of the larger Humboldt River Basin. Records from the climate station at Beowawe (ID 260795) located just north of Crescent Valley (30 miles to the northeast of the project area and at similar elevation of 4,700') show the average annual precipitation totals 7.53 inches per year, with less than one inch in most months, and the highest amounts occurring in winter and spring (WRCC 2019, period of record 1893-2016). The low humidity and low amount of precipitation results in little surface water being present in the lower elevations of Crescent Valley. The mountainous areas in the Crescent Valley HA receive higher amounts of precipitation due to the higher elevations (Zones 1961).

Water enters the Crescent Valley HA primarily through precipitation. However, a small amount of water enters the basin as surface and ground water flow out of the adjacent Carico Lake Valley, where Cooks Creek drains out of Rocky Pass (Zones 1961). Crescent Valley is a semi-closed basin because there is little groundwater discharge or surface runoff from Crescent Valley into the Humboldt River, except in years of extremely high precipitation when intermittent streams, such as Coyote Creek, may drain out the northern part of the valley (Zones 1961).

Surface water resources in the Crescent Valley HA consist primarily of ephemeral and intermittent streams that drain from the mountain watersheds toward the extensive alkali flats (playas) in the lowermost valley. These streams usually run dry before reaching the valley due to evaporation and infiltration. On the valley floor, the playas are intermittently wet from precipitation, occasional runoff, and from natural fluctuations of groundwater levels beneath the playas. Groundwater recharge to Crescent Valley is from snowmelt runoff from higher elevations and infiltration of precipitation falling directly in the valley. The majority of recharge is seepage from streams flowing down from surrounding mountains and crossing the alluvial fans around the valley. The majority of the groundwater is consumed through evapotranspiration (evaporation and plant use), but some discharge occurs through seeps/springs; domestic, municipal, industrial, and agricultural uses; and a small amount (700-750 acre-feet/year) that outflows to the Humboldt River (Zones 1961, BLM 2019b).

3.9.1.2 Water Resources

Streams

The National Hydrography Dataset (NHD) maps 17.9 miles of streams in the project area, all of which are unnamed and have ephemeral flow. These streams drain to the north and northwest towards or into Cooks Creek. Cooks Creek is an intermittent stream that enters

Crescent Valley from the west and flows for about a mile before becoming dry (**Figure 5**). During the baseline survey, NHD stream lines were walked to document the presence or absence of any water, riparian vegetation, and other characteristics indicating a perennial system (e.g., defined bed and bank or wetted sediments) (ERM 2018). Some portions of the NHD lines in the Toiyabe Range were not walked due to the steep topography and/or thick vegetation. All streams were confirmed as ephemeral (ERM 2018). Streams in the lower elevations west of the Toiyabe Range were dry, without distinctive mesic vegetation or other characteristics that would indicate intermittent or perennial water flows. Some stream segments exhibited a sandy bottom, but most stream beds were vegetated with upland vegetation (ERM 2018). Two small stream reaches in the higher elevations of the project area in the Toiyabe Range showed evidence of recent water flows. One of these had flowing water present in late July (labeled Rip 2.3 on **Figure 5**) and riparian vegetation; the other area exhibited pooled water in a rocky area of the drainage, but the source of water was unknown.

Seeps and Springs

There are eight seeps and springs in the eastern portion of the project area in the Toiyabe Range, clustered in three separate drainages. Two springs were previously known from ongoing monitoring at the Cortez Mine (**Figure 5**, labeled as Rip 1.2/Cortez 27-47-33-42 and Rip 4.4/Cortez 26-47-16-121). An additional six seeps and springs were identified (**Figure 5**, labeled as Rip 1.1, Rip 2.3, Rip 4.1, Rip 4.2, Rip 4.3, and Rip 4.5), some of which were ephemeral (dry during baseline surveys late June to late July) and some had water present. Vegetation varied depending on the spring, but species include milkweed, willow, and moss. Rip 1.2/Cortez Spring 27-47-33-42 has been altered for livestock management, and two water troughs are present.

Riparian Areas

Limited riparian vegetation was documented along one short reach in the Toiyabe Range (labeled Rip 2.3 on **Figure 5**). Moving water was present in late July, and the vegetation consisted of wild rose (*Rosa woodsii*) and mesic forbs. Water was present in other areas of the stream corridors where springs occur, but the water was either pooled around the local spring area or flowed for only a short distance (ERM 2018).

Wetlands

There are no wetlands in the project area (ERM 2018).

3.9.2 Environmental Consequences

Definitions of intensity, duration, and context level of effects for water resources are defined in Water Resources SER (BLM 2019f).

3.9.2.1 Proposed Action

Direct and Indirect Effects

Vegetation treatments would not include any activities that may affect groundwater resources. The project would not require the use of water. Vegetation treatments would not include any

activities that may affect floodplains. No treatments would occur directly in the floodplain. For these reasons, there would be no impact on groundwater or floodplains.

The project does not include perennial surface waters, therefore, the potential for impacts to surface waters due to sedimentation or herbicide use is low. Furthermore, springs and riparian vegetation in the project do not occur where drill seeding or aerial herbicide application is proposed. BMPs for erosion control and spill prevention would be implemented, and treatments would not occur near springs. Weed control methods would follow guidelines established in the Integrated Weed Management Plan Battle Mountain District Nevada Mount Lewis Field Office and Tonopah Field Office EA (BLM 2009) and 17-States PEIS (BLM 2007a) and ROD (BLM 2007b), including appropriate buffers specified for the proposed herbicides. Effects to surface waters would be localized, negligible, and short-term.

Cumulative Effects

Effects of the Proposed Action are negligible and would not combine with other past, present, and RFFAs to result in adverse cumulative effects.

3.9.2.2 No Action

Direct and Indirect Effects

Under the No Action Alternative, the proposed vegetation treatments would not be implemented. Effects to water resources would not occur.

Cumulative

Under the No Action Alternative, the vegetation treatments would not be implemented. Cumulative effects would not occur.

3.10 Soils

The analysis area for direct and indirect effects to soils is the approximately 2,712 acres within the project area where drill seeding will occur (**Figure 1**). The CESA for soils includes the project area and considers other vegetation treatment projects and other past, present, and RFFAs that include surface disturbance (**Table 3-2** and **Figure 2**). All soils information provided below is from the biological baseline report (ERM 2018) unless otherwise cited. The Soils SER (BLM 2019g) details the regulatory framework and affected environment (Section 2.0, pgs. 4-5) and analysis of effects (Section 3.0, pgs. 5-7). These reports are incorporated by reference and available in the project record.

3.10.1 Affected Environment

The U.S. Department of Agriculture (USDA) Natural Resource Conservation Service (NRCS) has designated Major Land Resource Areas (MLRA) for resource planning and soil mapping (NRCS 2006). MLRAs are geographically associated land resource units with similar soils, climate, and land use activities. The majority (98 percent) of the project area is in MLRA 24 (Humboldt Area). The remaining two percent (on the southeast edge) is in MLRA 28B (Central Nevada Basin and Range). Both MLRAs lie in the Great Basin Section of the Basin and Range

Province of the Intermontane Plateaus, which consists of a series of widely spaced north-south trending mountain ranges separated by wide valleys filled with alluvium and lacustrine materials. The dominant soil orders in the MLRAs are Aridisols, Entisols, Inceptisols, and Mollisols. The soils generally have an aridic soil moisture regime (NRCS 2006).

The NRCS Soil Survey Geographic Database (SSURGO) delineates different types of soil map units depending on the soils size and shape, degree of contrast with adjacent soils, and their geographic relationships (NRCS 2017). Types of map units include consociations, complexes, associations, and undifferentiated groups. Based on the SSURGO map data (NRCS 2019), there are 14 soil map units in the project area, all of which are either associations or consociations. An association consists of two or more dissimilar major components occurring in a regular and repeating pattern on the landscape. In a consociation, delineated map units are dominated by a single soil component. Soil map units may consist of more than one soil series. A soil series is the lowest level and most homogenous category in the U.S. system of soil taxonomy (NRCS 2017). The 14 soil map units in the project area are listed in Table 3 and shown on Figure 3 in the Soils SER (BLM 2019g).

Field surveys were conducted in 2018 to verify the SSURGO map units. Fifteen points were sampled in the field by excavating a soil pit and describing the soil horizons to verify whether soils corresponded to the identified map units from SSURGO. Field verification further identified which series was observed within each soil map unit. Field methods are included in the Toiyabe Fingers Baseline Report (ERM 2018), available in the project record. The study area used for the 2018 soil survey was more general than the final project area, resulting in some of the field verification points falling outside the project area. However, due to the proximity, the adjacent plot data are included in the project data.

The field verification confirmed that the soil map units were correctly mapped by SSURGO. Field verification identified twelve different soil series (see Table 3 in the Soils SER). The Old Camp, Golconda, Jung, and Bojo soil series are the most prevalent soils in the project area. Together they comprise 7,230 acres or 94 percent of the project area. Table 4 in the Soils SER provides a summary of the soil descriptions for each of the soil series in the project area. The complete official soil series descriptions are provided in the Toiyabe Fingers Baseline Report (ERM 2018). In general, the Bojo, Atlow, Punchbowl, Genaw, Old Camp, and Jung soil series consists of shallow, well-drained soils found on sideslopes, summits, and crests of mountains and hills. The Golconda, Orovada, Whirlo, Zineb, Wieland, and Creemon soil series consist of very deep, well-drained soils found on fan piedmonts, skirts, aprons, and insets, and stream terraces.

Creemon silt loam, 0 to 8 percent slopes is a Farmland of Statewide Importance. There are 6 acres of this soil on the northern edge of the project area. The remainder of the soils are not prime, unique, or important farmland.

3.10.2 Environmental Consequences

Definitions of intensity, duration, and context level of effects for soil resources are defined in Soils SER (BLM 2019g).

3.10.2.1 Proposed Action

Direct and Indirect Effects

Aerial Herbicide Application

Herbicide treatment would prevent germination of cheatgrass and therefore in areas where cheatgrass dominates, the ground cover would be reduced in the following growing season. This would increase the risk of soil erosion until the seeding treatments are applied the following year, and would have a moderate, short-term, adverse, localized effect on soils. However, this temporary effect has been determined to be necessary to increase the potential for the seeds to set and germinate in the seeding treatment areas. Eliminating cheatgrass may also be beneficial to soils by increasing the diversity and abundance of soil organisms and spring soil moisture.

Aerial Seeding

Promoting the growth of shrubs and grasses would have a beneficial effect on soils by reducing the risk of wildfire from cheatgrass infestations. In addition, soils would be positively affected in the long-term because, in contrast with the shallow roots of cheatgrass, sagebrush shrubs have deep root systems that are beneficial to soil health by promoting nutrient cycling. Also, a beneficial effect is expected as shrubs and grasses grow and stabilize the soils. Effects on soils would be moderate, localized, and long-term.

Drill Seeding

Approximately 2,712 acres of soil would be disturbed by the drill seeding treatment. The soil types that would be impacted include Golconda, Old Camp, Bojo, and Creemon soils. The use of a rangeland drill would cause minor disturbance and compaction to the soil surface, but the amount of disturbance has been determined to be necessary to increase the potential for seeds to set and germinate. Adverse effects on soils would be minor, localized, and short-term. In the long-term, a moderate beneficial effect is expected as shrubs and grasses will establish, grow, and stabilize the soils in the project area.

The drill seeding treatment would not result in an irreversible conversion of the 6 acres of important farmland in the project area to a non-agricultural use. The land use in the project area would be maintained in its current use as rangeland and wildlife habitat. For these reasons, the Proposed Action would have no effect on prime, unique, or important farmland.

Pinyon-Juniper Thinning

As pinyon-juniper trees increase in density, shrub and grass cover is reduced and the percent of bare ground increases. Areas that lack an understory are more susceptible to soil erosion and increases in soil aridity. Removing trees from sagebrush systems before the understory is gone would promote the re-growth of shrubs and grasses, and therefore would reduce the potential for soil erosion in the long-term. Tree removal would also reduce fuel loads, lessening the risk of intense, destructive wildfires that could damage soils. For these reasons, the effects on soils would be beneficial, moderate, and localized over the long-term.

Cumulative Effects

Past, present, and RFFAs which may have affected or may affect soils in the project area are few, but may include mining; exploration; utilities, community, and road developments; oil and gas development; recreation; habitat restoration and fuels reduction projects; wildfires; livestock grazing; and agricultural activities (**Table 3-2**).

Due to the level of intensity, duration, and context of effects from the Proposed Action relative to other past, present, and future projects, effects of the Proposed Action would not combine to result in adverse cumulative effects. Adverse cumulative effects to soils would not occur.

Beneficial cumulative effects to soils would occur over the long-term as vegetation treatments and habitat improvement projects are successfully implemented across the landscape. Ecological systems would be restored and the risk of damage due to fire would be lessened.

3.10.2.2 No Action

Direct and Indirect Effects

Under the No Action Alternative, none of the proposed vegetation treatments would occur in the project area. There would be no direct and indirect effects to soils.

Cumulative

Adverse cumulative effects would not occur under the No Action Alternative. The Proposed Action would not contribute to the long-term beneficial effects of improving the performance standards of ecological systems and reducing wildfire risk.

3.11 Vegetation Resources, including General Vegetation, Forest/Woodland Products, Special Status Plants, and Noxious Weeds, Invasive, and Non-native Species

The analysis area for direct and indirect effects to vegetation, forest/woodland products, special status plants, and noxious weeds and invasive, non-native species includes the project area (**Figure 1**). The CESA includes the project area and considers other vegetation treatment projects and other past, present, and RFFAs that include surface disturbance (**Table 3-2** and **Figure 2**). All vegetation resources information provided below is from the biological baseline report (ERM 2018) unless otherwise cited. The Vegetation Resources SER (BLM 2019h) details the regulatory framework and affected environment (Section 2.0, pgs. 4-10) and analysis of effects (Section 3.0, pgs. 10-16). These reports incorporated by reference and available in the project record.

3.11.1 Affected Environment

The topography in the project area ranges from steep mountain hillsides and drainages in the Toiyabe Range to relatively flat in Crescent Valley. Elevations range from approximately 4,890 feet in the valley to 6,630 feet in the Toiyabe Range.

The climate is arid with hot summers and cold winters. Records from the climate station at Beowawe (ID 260795) located just north of Crescent Valley (30 miles to the northeast of the project area and at similar elevation of 4,700 feet) show the average annual precipitation totals 7.53 inches per year, with less than one inch in most months, and the highest amounts occurring in winter and spring (WRCC 2019, period of record 1893-2016). The low humidity and low amount of precipitation results in little surface water being present in the lower elevations of Crescent Valley (Zones 1961).

3.11.1.1 Vegetation

Ecological Systems are plant communities that tend to co-occur on the landscape with similar ecological processes, substrates and/or environmental gradients (Comer et al. 2003). Based on the Southwest Regional GAP (SWReGAP) map (Lowry et al. 2005) and information from field reconnaissance (ERM 2018), the predominant Ecological Systems in the project area include Intermountain Big Sagebrush Shrubland, Great Basin Xeric Mixed Sagebrush Shrubland, Great Basin Pinyon-Juniper Woodland, Introduced Upland Vegetation - Annual Grassland, and Intermountain Basins Salt Desert Scrub (**Table 3-3**) (see Figure 3 in the Vegetation SER). Approximately 78 percent of the project area is sagebrush. Pinyon-juniper woodland comprises approximately 10 percent and occurs in the higher elevations of the Toiyabe Range. Smaller microsites observed during field work include riparian shrubland of Woods rose (*Rosa woodsii*) and other mesic forbs, which was present along a short stretch of a drainage in the Toiyabe Range. In addition, mesic vegetation is present around localized spring sites in three drainages in the Toiyabe Range.

Table 3-3. Vegetation Communities in Project Area

Vegetation Community (Ecological System)[1]	Acres in Project Area[1]	Percent of Project Area
Inter-mountain Basins Big Sagebrush Shrubland	3,680	48
Great Basin Xeric Mixed Sagebrush Shrubland	2,338	30
Great Basin Pinyon-Juniper Woodland	769	10
Introduced Upland Vegetation – Annual Grassland	445	6
Inter-mountain Basins Mixed Salt Desert Scrub	296	4
Inter-Mountain Basins Semi-Desert Grassland	118	2
Inter-Mountain Basins Cliff and Canyon	48	<1

Vegetation Community (Ecological System)[1]	Acres in Project Area[1]	Percent of Project Area
Inter-Mountain Basins Big Sagebrush Steppe	25	<1
Inter-Mountain Basins Greasewood Flat	2	<1
Inter-Mountain Basins Montane Sagebrush Steppe	1	<1

[1] Based on SWReGAP

Based on a map of PJ Phases in Nevada (Coates et al. 2018), approximately 59 percent of the PJ in the project area is in a Phase I stage. Phase I woodlands are characterized by the presence of younger trees (tree canopy is <20%) and shrubs and grasses being the dominant vegetation that influence ecological processes (Tausch et al. 2009). There are 1,641 acres of Phase I, 695 acres of Phase II, and 462 acres of Phase III PJ woodlands in the project area (see Figure 4 in the Vegetation SER). Areas mapped by SWReGAP as PJ were generally the Phase II and Phase III areas.

3.11.1.2 Ecological Site Descriptions

Ecological Site Descriptions (ESDs) were developed by the USDA NRCS to provide a consistent framework for classifying land units that share similar capabilities and responses to management activities or disturbance. An ESD consists of a specific combination of soils and vegetation that have existed over the long term as a result of landscape position, elevation, aspect, precipitation levels, and geologic substrate (NRCS 2019). Field surveys were conducted to verify the NRCS-mapped ESDs in the project area (ERM 2018). Five ESDs were confirmed in the project area (**Table 3-4** and **Figure 7**). ESD types, approximate acreages, and conditions based on the 15 field verification sites are shown in **Table 3-4** and **Table 3-5**.

Based on the mapped ESDs, most of the vegetation in the project area would be classified as sagebrush under a “natural” disturbance regime, with *Artemisia* species dominating the canopy cover and grasses in the understory (including Wyoming big sagebrush and black sagebrush systems). Salt desert scrub (shadscale) communities would also occur. Based on the ESDs, no PJ woodlands would occur in the project area under a natural disturbance regime. In general, the ESDs in the project area have low resilience to disturbance and low resistance to invasion by non-native species, such as cheatgrass (Stringham et al. 2017).

Field verification found that in general the vegetation states were departed from the reference conditions described by the NRCS (ERM 2018). This means the vegetation is not what would be expected under a natural disturbance regime (i.e., pre-European settlement conditions) or is not in proper functioning condition or potential natural vegetation state. Examples of departed conditions in the project area include disproportionately high percentage of bare ground or annual non-natives, disproportionately low percentage of native grasses or forbs, and tree encroachment into shrublands. Overall, vegetation communities in the project area west of the Toiyabe Range consisted of annual grasslands (dominated by cheatgrass), or basin big

sagebrush (*Artemisia tridentata* ssp.*tridentata*) communities with a significant understory of cheatgrass. Within the Toiyabe Range, PJ trees were noted to be dominating the overstory and encroaching upon sagebrush communities in areas (ERM 2018). **Table 3-5** summarizes the reference condition and observed ESDs at each sample location in accordance with Stringham et al. (2017).

Most field verification sites in the northern and western part of the project area are in a departed Shrub State or Annual State. In shrub areas, the dominant overstory has shifted from Wyoming big sagebrush (*Artemisia tridentata* ssp. *wyomingensis*) to basin big sagebrush (*A. t. tridentata*) with rabbitbrush (*Chrysothamnus* spp.), winterfat (*Krascheninnikovia lanata*), and/or bitterbrush (*Purshia tridentata*) present intermittently. Greater than 20% of the understory is annual grass with relatively few native grasses, and forbs are generally lacking. Sandberg bluegrass (*Poa secunda*) represents the majority of cover by the few native grasses present. The areas in an Annual State are dominated by annual grasslands with cheatgrass cover of over 50% and sagebrush or other shrub species lacking. However, one site consisted of a mix of bud sagebrush (*Artemisia spinescens*) (15% cover) and cheatgrass (25% cover).

Field verification sites in the Toiyabe Range included areas of a Tree State or Shrub State trending to Tree State. The reference state in these areas is a shrubland system, but PJ trees currently dominate the overstory and are encroaching on the adjacent sagebrush communities. The PJ trees often co-dominate with black sagebrush (*Artemisia nova*). The herbaceous layer is typically Idaho fescue (*Festuca idahoensis*) with a small amount of Sandberg blue grass and other forbs and perennial grasses. The field verification sites that were found to be in either a Reference State or Current Potential State (at risk) were in the southern and southwestern portion of the project area.

The large parts of the project area that have converted to annual grassland were likely burned in the relative near term (ERM 2018). More recently, areas adjacent to the project area burned in July and August of 2018, including the Copper Wildfire and the Francis Wildfire (see Figure 3 in the Vegetation SER). Portions of these burned areas were originally part of the project area but were excluded following the fires. These recently burned areas have instead been treated and seeded separately under a BLM Emergency Stabilization and Rehabilitation program. The other main disturbance in the project area is from livestock grazing.

Fire return intervals in the Great Basin have been reduced from 20-100 years to 2-15 years on average, which has reduced the perennial grass and forb understory and facilitated invasion of annual grasses (McAdoo et al. 2003). In addition, fires have become more intense and widespread compared to the patchy, low fuel load fires that historically burned a mosaic pattern in the sagebrush (Stringham et al. 2017). The annual grasses result in a perpetual grass-fire cycle reduces the restoration potential of the sagebrush community (Shinneman et al. 2018).

Table 3-4. Ecological Site Descriptions Confirmed in Project Area

ESD Name	ESD ID	Reference Plant Community	Acres in Project Area[1]
Shallow Loam 8-10" P.Z.[2]	024XY047NV	Wyoming big sagebrush / Thurber's needlegrass-Indian ricegrass	2,865
Shallow Calcareous Loam 8-10" P.Z.	024XY030NV	Black sagebrush / Thurber's needlegrass-Indian ricegrass	2,128
Loamy 5-8" P.Z.	024XY002NV	Shadscale saltbush-bud sagebrush / Indian ricegrass	2,019
Droughty Loam 8-10" P.Z.	024XY020NV	Big sagebrush-spiny hopsage / Thurber's needlegrass-Indian ricegrass	545
Loamy 8-10" P.Z.	024XY005NV	Wyoming big sagebrush / Thurber's needlegrass	165
		TOTAL	**7,722**

[1] Based on field confirmed/modified NRCS-mapped ESD polygons; [2] Precipitation Zone

Table 3-5. Current Condition of Ecological Site Descriptions at Field Verification Sites

Sample Site	ESD	Reference State Condition	Current Ecological Condition	Current Condition Description	Cover %	Annual %	Soil
1	Droughty Loam 8-10" P.Z.	Wyoming sagebrush and Thurber's needlegrass, with lesser amounts of Indian ricegrass, Sandberg bluegrass, and spiny hopsage.	Shrub State 3.1	Big sagebrush co-dominates with spiny hopsage (each 15% cover). Dominant grasses include Sandberg bluegrass (10%) and cheatgrass (7%). No notable forb presence. (Area was within the recent burn footprint.)	50	7	Bojo
2	Loamy 5-8" P.Z.	Shadscale with a sub-dominant of bud sagebrush and an herbaceous understory dominated by Indian ricegrass and bottlebrush squirreltail.	Annual State 4.1/4.2	Annual grassland dominated by cheatgrass (65%), with a minor (10%) component of shadscale saltbush. Most frequent forbs observed include desert madwort (4%) and sandmat (1%).	79	65	Golconda

Sample Site	ESD	Reference State Condition	Current Ecological Condition	Current Condition Description	Cover %	Annual %	Soil
3	Droughty Loam 8-10" P.Z.	Wyoming sagebrush and Thurber's needlegrass, with lesser amounts of Indian ricegrass, Sandberg bluegrass, and spiny hopsage.	Shrub State 3.1	Big sagebrush dominates the overstory (35%), with cheatgrass (10%) and Sandberg bluegrass (8%) present in the understory. No notable forb presence.	53	10	Orovada
4	Loamy 8-10" P.Z.	Wyoming sagebrush and Thurber's needlegrass, with lesser amounts of Indian ricegrass, Sandberg bluegrass, and spiny hopsage.	Shrub State 3.1	Annual grassland dominated by cheatgrass (38%), with big sagebrush present at 20% cover. Desert madwort occasionally observed (2%).	60	38	Whirlo
5	Loamy 8-10" P.Z.	Wyoming sagebrush and Thurber's needlegrass, with lesser amounts of Indian ricegrass, Sandberg bluegrass, and spiny hopsage.	Shrub State 3.1	Big sagebrush dominates the overstory (30%), with cheatgrass dominating the understory (40%).	73	40	Zineb

Sample Site	ESD	Reference State Condition	Current Ecological Condition	Current Condition Description	Cover %	Annual %	Soil
6	Shallow Calcareous Loam 8-10” P.Z.	Black sagebrush dominates the shrub component, with Thurber's needlegrass and Indian ricegrass dominating the herbaceous component.	Current Potential State 2.3 (At Risk) or Shrub State 3.1	Although community composition is similar to the reference condition, black sagebrush cover is denser than desired at 49% cover; the herbaceous understory is dominated by Sandberg bluegrass at a lower than desired amount (7%). Minor components of big sagebrush (5%) and squirreltail (1%) observed.	49	<1	Atlow
7	Shallow Calcareous Loam 8-10” P.Z.	Black sagebrush dominates the shrub component, with Thurber's needlegrass and Indian ricegrass dominating the herbaceous component.	Shrub State 3.1 trending toward Tree State 4.1	Black sagebrush dominates (20%) but significant encroachment of pinyon pine was observed (15%). The understory is dominated by Idaho fescue (10%) and Sandberg bluegrass (5%). No notable forbs present.	50	<1	Punchbowl
8	Loamy 8-10" P.Z.	Wyoming sagebrush and Thurber's needlegrass, with lesser amounts of Indian ricegrass, Sandberg bluegrass, and spiny hopsage.	Shrub State 3.1	Big sagebrush dominates the overstory (15%), with cheatgrass dominating the understory (25%) and minor amounts of green rabbitbrush (10%) and Sandberg bluegrass present (4%). Nearby encroachment of pinyon-juniper trees is observed in the distance.	56	27	Weiland

Sample Site	ESD	Reference State Condition	Current Ecological Condition	Current Condition Description	Cover %	Annual %	Soil
9	Shallow Loam 8-10” P.Z.	Wyoming sagebrush and Thurber's needlegrass, with lesser amounts of Indian ricegrass, Sandberg bluegrass, and spiny hopsage.	Shrub State 3.1	Big sagebrush dominates the overstory (20%), with cheatgrass dominating the understory (40%) and minor amounts of green rabbitbrush (4%) and various perennial grasses present (4%). Buckwheat forb species observed throughout the area (2%). Sagebrush cover exceeds site concept and some decadence is noted, reflecting stand maturity and lack of seedling establishment due to competition with mature plants.	70	40	Old Camp
10	Shallow Calcareous Slope 8-10" P.Z.	Black sagebrush is dominant with Indian ricegrass and needle and thread grass in the understory.	Reference State 1.3	Black sagebrush dominates (30%) with understory cover of Sandberg bluegrass (12%), where cover of this species is greater than the ideal reference condition. Minor components of cheatgrass (5%), and Idaho fescue (2%). Utah juniper trees noted in the background (cover ~1%). Mormon tea (3%) observed sporadically.	52	5	Jung

Sample Site	ESD	Reference State Condition	Current Ecological Condition	Current Condition Description	Cover %	Annual %	Soil
11	Loamy 5-8” P.Z.	Shadscale with a sub-dominant of bud sagebrush and an herbaceous understory dominated by Indian ricegrass and bottlebrush squirreltail.	Annual State 4.2	Cheatgrass dominates groundcover (25%) but with significant bud sagebrush in the overstory (15%). Minor amounts of winterfat (3%) and shadscale saltbush (1%) present. Other invasive species noted include western tansymustard (3%).	47	28	Creemon
12	Loamy 8-10" P.Z.	Wyoming sagebrush and Thurber's needlegrass, with lesser amounts of Indian ricegrass, Sandberg bluegrass, and spiny hopsage.	Current Potential State 2.3 (At Risk)	Big sagebrush dominates the overstory (14%), with a minor overstory component of green rabbitbrush (5%). The understory is dominated by cheatgrass (15%). Other understory species include Sandberg bluegrass (7%) and Indian ricegrass (3%).	44	15	Geneaw
13	Shallow Loam 8-10" P.Z.	Wyoming sagebrush and Thurber's needlegrass, with lesser amounts of Indian ricegrass, Sandberg bluegrass, and spiny hopsage.	Shrub State 3.1	Big sagebrush dominates the overstory (20%), with relatively significant components of horsebrush (12%) and winterfat (5%). The understory is dominated by cheatgrass (25%) with minor amounts of Indian ricegrass (4%) and Sandberg bluegrass (2%). Buckwheat forb species observed (<1%).	68	25	Old Camp

Sample Site	ESD	Reference State Condition	Current Ecological Condition	Current Condition Description	Cover %	Annual %	Soil
14	Droughty Loam 8-10" P.Z.	Wyoming sagebrush and Thurber's needlegrass, with lesser amounts of Indian ricegrass, Sandberg bluegrass, and spiny hopsage.	Annual State 4.1	Annual grassland dominated by cheatgrass (65%). No sagebrush observed in this area. Minor amounts of rubber rabbitbrush (2%) observed. Other invasive species observed includes Russian thistle (2%).	69	67	Bojo
15	Shallow Calcareous Loam 8-10” P.Z.	Black sagebrush dominates the shrub component, with Thurber's needlegrass and Indian ricegrass dominating the herbaceous component.	Tree State 4.2	Co-dominated by pinyon-juniper trees (10%) and black sagebrush (10%), with an understory of Idaho fescue (25%) and Sandberg bluegrass (2%). Various perennial and annual forbs present throughout (3%).	50	1	Jung

Source: ERM 2018

3.11.1.3 Forest/Woodland Products

Pinyon-juniper woodlands occur in the project area. Additional information on pinyon-juniper communities in the project area is included in the Toiyabe Fingers Biological Baseline Report (ERM 2018).

The BLM allows the public access to designated areas for the harvest of a variety of woodland products, including Christmas trees, fuel wood, trees for fence posts, pine nuts, and native seeds. Fuel wood includes deadwood (dead branches or wood) and greenwood (living branches or wood). Juniper trees are commonly harvested for use as fence posts. The majority of woodland product harvest is wood cutting by private individuals. For commercial users, the BLM issues a permit for the harvest of Christmas trees or fuel wood and assigns the user to a specific area where pinyon-juniper occurs. Commercial harvest is handled on a case-by-case basis and requires site-specific NEPA documentation and a permit from the managing BLM field office. According to the BLM BMD 2017/2018 Year End Report, 402 vegetative (fuel wood) permits were sold and 5 commercial native seed collection permits were processed (BLM 2019i).

3.11.1.4 Special Status Plants

No federally listed plants occur in Lander County, Nevada (USFWS 2019). There are 33 plant species designated as BLM special status species on the BLM BMD. Table 6 in the Vegetation SER describes each of these plant's physiologies, their preferred habitat characteristics, and potential to occur in the project area. Field surveys were conducted for species identified during the desktop review as having potential habitat in the project area (ERM 2018).

No special status plant species were found during the field surveys. Areas identified as potential habitat during the desktop review were included in the search. Areas designated as non-habitat during the desktop review were inspected in the field to confirm no additional potential habitat was present. Special status species associated with wet meadows were searched for at seeps, springs, and wetted areas (ERM 2018). In addition, the Nevada Natural Heritage Program (NNHP) has no records of BLM special status species in the project area (ERM 2018).

As summarized in Table 6 of the Vegetation SER, potential habitats were confirmed to occur in the project area for most of the plant species initially identified as having a moderate likelihood of occurrence during the desktop review. The following species were identified as having potential habitat in the project area during the desktop review, but field surveys determined no habitat is present (ERM 2018):

- Volcanic outcrops, on which Beatley buckwheat (*Eriogonum beatleyae*) often is associated, were not found in the project area.
- Barren areas within PJ woodlands, which is associated with low feverfew (*Parthenium ligulatum*), were not found.
- Outcrops and knolls associated with several of the special status plant species were relatively scarce in the project area; those encountered were surveyed for special status plant species, but none were found.

3.11.1.5 Noxious Weeds and Invasive, Non-native Species

The BLM defines a noxious weed as, “a plant that interferes with management objectives for a given area of land at a given point in time”. An “invasive species” is defined as a species that has the potential to become dominant or co-dominant without management intervention and is either exotic, or normally a minor component of the plant community if native (BLM 2007a). Noxious weeds and invasive, non-native species are species that are highly competitive, aggressive, and spread easily. They typically establish and infest disturbed sites, along roadsides and waterways. Changes in plant community composition from native species to non-native species can change fire regimes, adversely affect wildlife habitat quality, biodiversity, and ecosystem structure and function. The BMD recognizes the current noxious weed list designated by the Nevada Department of Agriculture (NDA) statute, found in the Nevada Administrative Code (NAC) 555.010. The NDA, with approval of the Board of Agriculture, designates a species as a noxious weed. Upon listing, the NDA assigns a rating of "A", "B", or "C" to the species. The rating reflects the NDA view of the statewide importance of the noxious weed, the likelihood that eradication or control efforts would be successful, and the present distribution of noxious weeds within the state.

Information about the presence and distribution of noxious weeds and invasive, non-native vegetation was obtained from baseline surveys conducted for the project (ERM 2018). A noxious weed survey was conducted along roadsides, seeps, springs, and stream corridors. In addition, incidental observations of noxious or invasive weeds were also recorded during other baseline surveys conducted in the project area. Noxious weeds observed during the field surveys included white top (*Cardaria draba*), pepperweed (*Lepidium perfoliatum*), and Scotch thistle (*Onopordum acanthium*). These species were dispersed throughout many of the ESDs. Cheatgrass, a non-native and invasive species, was present throughout the survey area (ERM 2018). Flowering for this species typically occurs in the early summer and germination occurs in fall or spring. Dormancy usually occurs in summer. Cheatgrass invades rangelands, pastures, prairies, and other open areas. This species has the potential to completely alter the ecosystems it invades. Cheatgrass can completely replace native vegetation and change fire regimes (BLM 2016a). Other invasive, non-native vegetation species observed included halogeton (*Halogeton glomeratus*), kochia (*Kochia scoparia*), mustard (*Brassica* spp.), and thistle species (*Cirsium* spp. and *Salsola tragus*), among others. Some introduced but non-invasive grass species, such as crested wheatgrass (*Agropyron cristatum*) and annual wheatgrass (*Eremopyrum triticeum*), were observed, suggesting the area may have been seeded in the past (ERM 2018).

3.11.2 Environmental Consequences

Definitions of intensity, duration, and context level of effects for vegetation resources are defined in the Vegetation Resources SER (BLM 2019h).

3.11.2.1 Proposed Action

Direct and Indirect Effects

Vegetation

Effects Common to All Vegetation Treatments

The project would enhance mule deer crucial winter habitat as well as habitat for other sagebrush-obligate species. The habitat in the project area is currently in an altered state from reference conditions described by the ESDs. To meet the project goal, a series of herbicide and seeding treatments were identified to improve the current condition. In the lower elevations, the objective is to remove exotic invasive species and reseed with vegetation species that would stabilize the area, out-compete cheatgrass, and provide winter forage for mule deer. In the higher elevations (west and south parts of the project area) the objective is to remove pinyon-juniper trees that are encroaching into sagebrush communities to promote a denser and diverse understory, including species that are used by mule deer for browsing.

The proposed project incorporates SOPs and BMPs, which would be followed to minimize potential negative effects on vegetation, such as minimizing the potential for further establishment or spread of undesirable plant species and maintaining buffers around springs. Given the current degraded condition of the native vegetation communities, implementation of the treatments would have a beneficial effect on vegetation. Vegetation treatments would alter the plant community composition and are anticipated to move sites currently in a departed state (i.e., Annual State and Shrub State, Tree State) to a reference state over time, as identified in the state and transition model for the ESD of the particular treatment site. Implementation of vegetation treatments would result in a moderate beneficial localized effect on vegetation over the short-term and long-term. Adverse impacts to vegetation are not anticipated. Although treatments may not successfully move the current vegetation state to a reference state, implementing treatments are anticipated to improve the current condition of vegetation by decreasing the cover of invasive species and increasing cover of other species that are more desirable to mule deer as browse and cover.

Aerial Herbicide Application

Imazapic has been shown to target annual and perennial broadleaf weeds and grasses and improve the chances of establishment of native grassland plants when applied in the pre-emergent/fall period (BLM 2007a). Imazapic is approved for BLM use in fuels reduction programs because of its effectiveness against cheatgrass (BLM 2007a). However, despite the selectivity, studies have found some plants may be injured if directly sprayed at a typical application rate (BLM 2007a). Overall, studies found that application of imazapic at the typical rate with buffers greater than 300 feet during aerial applications should not pose a risk to non-target plants (BLM 2007a). Glyphosate herbicide is non-selective and is best for use in areas where few non-target plants occur (BLM 2007a).

Herbicide use may have a negligible, localized, short-term adverse effect on non-target species due to chemical drift onto non-target vegetation species during applications, but this effect would be negligible with implementation of proper application techniques, SOPs, and BMPs, as directed in the 17-States PEIS (BLM 2007a) and ROD (BLM 2007b), and the Integrated Weed Management Plan Battle Mountain District Nevada Mount Lewis Field Office and Tonopah Field Office EA (BLM 2009), H-9011 Chemical Pest Control Handbook (BLM 1988) and 9011 Chemical Pest Control Manual (BLM 1992).

Removing or minimizing the presence of cheatgrass and other invasive non-native plant species would open the understory and make resources available for the growth of native, more desirable species, especially when combined with the proposed seeding activities. Reducing the spread of undesirable invasive species would halt the further degrade of vegetation communities and reducing fire risk. This would be especially important for areas that are not yet fully in an annual state. Herbicide treatment would increase the likelihood that the aerial and drill seeding treatments would be successful by interrupting the annual cheatgrass growing cycle. Cheatgrass would be treated before it germinates in the fall, and therefore would not be growing in the early spring and out-competing the seeded species for water and nutrients.

Aerial herbicide application would support the growth of desirable grass and forb species, resulting in a moderate beneficial, localized effect on vegetation in the short-term. Long-term localized and possibly regional effects would be realized when conducted with the seeding to ensure eradication has been successful.

Aerial Seeding

The seed mix of native and non-native species were selected because of their ability to rapidly grow and stabilize the area while also providing forage for mule deer. Non-native species are used because of the difficulty in reestablishing native communities due to the arid growing conditions in the project area. The surrounding intact native vegetation would have greater chance of colonizing the project area over the long term because seeding would stabilize the soils and promote growth of species that are not as competitive with native vegetation as cheatgrass. Overall, aerial seeding would result in a moderate, beneficial effect on vegetation over the short-term and long-term.

Drill Seeding

Surface disturbance and use of equipment associated with drill seeding has the potential to adversely affect vegetation by spreading weeds. This risk has been deemed necessary, given the current degraded condition of the vegetation community, but would be minimized with SOPs and BMPs proposed. Seeding would promote the growth of favorable grasses, forbs, and shrubs resulting in an improvement in the vegetation state in the short and long term. As seeded species become established, a moderate beneficial effect would be realized over the long term.

Pinyon-juniper Thinning

Phase I pinyon-juniper areas would be targeted for tree removal using lop and scatter methods (see Figure 4 in Vegetation SER). Removal of individual trees from sagebrush systems and Phase I pinyon-juniper areas would open the canopy to promote growth and increased cover of desirable understory species. PJ thinning would have a direct moderate, beneficial effect on vegetation in the short-term and the long-term, by moving the area from a tree-state towards reference condition for the ESD, and returning the current state of mid to late successional and uncharacteristic vegetation classes to a class consistent with the recognized sagebrush system described by the ESD for a particular site. Tree removal would reduce fuel loads and, in combination with the improvement in understory vegetation, reduce the likelihood of intense,

destructive wildfire. Indirect effects of tree removal may also include an increase in soil moisture and water availability and reduced potential for erosion and sedimentation.

The long-term indirect effect of tree thinning would be to improve native grasses, forbs, and shrubs, and ultimately improve mule deer habitat in areas currently changing from sagebrush to pinyon-juniper communities.

Forest/Woodland Products

Only the PJ thinning treatment would affect forest and woodland products since trees are rare in the aerial seeding, drill seeding, and herbicide treatment areas. The PJ thinning treatment would target only Phase I PJ stands within the defined treatment polygon. There would be no reduction in acreage of Pinyon-Juniper Woodland ecological systems. No large trees valuable for Christmas trees would be impacted. The cut trees would be lopped and scattered but available for firewood. Juniper berry production and pinyon seed production are low in Phase I woodlands (Tausch et al. 2009); therefore, loss of these resources would be negligible. Adverse effects on forest and woodland products would be negligible and localized, but would occur over the long-term since removal of pinyon-juniper trees would reduce the future availability of forest and woodland products in the project area.

Special Status Plants

Effects Common to All Vegetation Treatments

There would be no effect on special status plants because they do not occur in the project area. No threatened or endangered plant species occur in Lander County, and no BLM Sensitive plant species were found during field reconnaissance surveys of suitable habitats.

Noxious Weeds and Invasive, Non-native Species

Effects Common to All Vegetation Treatments

Ground disturbance and the use of mobile equipment could cause the spread of existing populations, or new infestation of, noxious weeds and invasive, non-native species. The SOPs and BMPs found in the 17-States PEIS (BLM 2007a) and ROD (BLM 2007b), the Integrated Weed Management Plan Battle Mountain District Nevada Mount Lewis Field Office and Tonopah Field Office EA (BLM 2009) and guidance in H-9011 Chemical Pest Control Handbook (BLM 1988) and 9011 Chemical Pest Control Manual (BLM 1992) would be followed to minimize the potential for noxious weeds and invasive, non-native species to infest and/or spread.

The process of herbicide application followed by seeding would remove target weeds and replace weeds with desirable species. The result would be a moderate, beneficial effect on noxious weeds and invasive, non-native species over the short and long-term.

Cumulative Effects

The proposed project would result in beneficial effects on vegetation resources in the region by improving the health and resiliency of sagebrush ecosystems and reducing wildfire risk and severity. However, cumulative effects on vegetation and noxious and invasive species are not anticipated due to the level of intensity, duration, and context of effects from the proposed project relative to other past, present, and future projects. Effects of the proposed project would not combine to result in adverse cumulative effects. Cumulative effects on forest/woodland products and special status plant species would not occur.

3.11.2.2 No Action

Direct and Indirect Effects

Under the No Action Alternative, the BLM would not approve the project and vegetation treatments would not be implemented. At a minimum, there would be no change to current general vegetation conditions. However, some areas within the project could continue to deteriorate and may cross thresholds into more degraded states if treatments are not implemented. There would be no effects to forest/woodland products or special status plants under the No Action Alternative. Cheatgrass and other noxious weeds and invasive, non-native species in the project area would continue to spread if left untreated posing a risk of additional wildfires due to continued buildup of fine fuels. The beneficial effects of improving vegetation conditions in the project area would not be realized, particularly for the sagebrush that is currently in an altered state. Adverse effects of the No Action Alternative on general vegetation would be moderate and long-term.

Cumulative Effects

Under the No Action Alternative, the vegetation treatments would not be implemented. The proposed project would not contribute to the long-term beneficial effects of improving the health and resiliency of vegetation communities and reducing wildfire risk and severity. Cumulative effects would not occur under the No Action Alternative.

3.12 Wildlife, Fish and Other Aquatic Species, and Special Status Animals including Migratory Birds

The analysis area for direct and indirect effects to general terrestrial wildlife and special status animals is the project area (**Figure 1**). For raptor species, the analysis area for direct and indirect effects is a 1-mile buffer around the project area. For GRSG, a 4-mile buffer around the project area was analyzed for direct, indirect, and cumulative effects. For aquatic species (includes general and special status fish and invertebrates), the analysis area for direct and indirect effects is the aquatic habitat within the project area. The CESA for terrestrial and aquatic wildlife, raptors, and special status animals (except GRSG) is the project area plus a 10-mile buffer (**Figure 8**). A baseline assessment was completed in June and July 2018. Methods and results are documented in the biological baseline report (ERM 2018). All wildlife resources information provided below is from the biological baseline report unless otherwise cited. The Wildlife Resources SER (BLM 2019a) details the regulatory framework and affected

environment (Section 2.0, pgs. 4-13), and analysis of effects (Section 3.0, pgs. 13-19). These reports are incorporated by reference and available in the project record.

3.12.1 Affected Environment

This analysis used the best available data to describe the current condition of wildlife habitat in the project area. The SWReGAP map is used to quantify the habitat types in the project area; however, this map does not provide a precise view of current ground conditions because of the scale of the map and changes that have occurred (e.g., wildfires). Therefore, habitat conditions are also described qualitatively based on data collected during the baseline field surveys, which included field verification points of mapped ESDs (**Figure 7** and **Table 3-5**). See **Section 3.11** and the Vegetation SER for additional information.

3.12.1.1 Wildlife and Aquatic Habitats

The Nevada Wildlife Action Plan (WAP) defines key habitats in Nevada for conserving wildlife species (WAPT 2012). It generalizes habitats across the state into 22 key habitats using the SWReGAP land cover map (Lowry et al. 2005) and other supplementary sources. Based on SWReGAP, the predominant key habitats in the project area are Sagebrush (78 percent) and Lower Montane Woodland and Chaparral (pinyon-juniper) (10 percent). Six percent of the project area is mapped as an altered cover type in the form of annual grasslands, which is not a key habitat. Other key habitat types are present in much smaller proportions (see Wildlife Resources SER Table 4 and Figure 3).

Field verification of ESDs found that in general the vegetation states were departed from the reference conditions described by Natural Resources Conservation Service (NRCS) (ERM 2018). The lower elevations of the project area west of the Toiyabe Range consist of either annual grasses or big sagebrush (*Artemisia tridentata*) communities with cheatgrass comprising a significant portion of the understory. Most field verification sites in this area are in a departed Shrub State or Annual State. Two field verification sites in the Toiyabe Range are in a Tree State or Shrub State trending to Tree State. The field verification sites that were found to be in either a Reference State or Current Potential State (at risk) were in the southern and southwestern portion of the project area. Based on a map of PJ Phases in Nevada (Coates et al. 2018), approximately 59 percent of the PJ in the project area is in a Phase I stage. Phase I woodlands are characterized by the presence of younger trees (tree canopy is <20%) with shrubs and grasses being the dominant vegetation that influence ecological processes (Tausch et al. 2009). Areas mapped by SWReGAP as PJ were generally in the Phase II and Phase III areas as mapped by Coates et al. (see Vegetation SER Figure 4). The locations in the project area that have converted to annual grassland were likely burned in the relative near term (ERM 2018).

3.12.1.2 General Wildlife

Terrestrial Wildlife Species

General wildlife species with known or potential occurrence in the project area are listed in the biological baseline report along with detailed information on habitat associations (ERM 2018).

Reptiles

A variety of snakes, lizards, and skinks occur in Lander County (NNHP 2019), including species designated by the BLM as sensitive species in the BMD (BLM 2017b), and have distributions and suitable habitat in the project area. See Wildlife Resources SER Table 5.

Birds

A variety of bird species occur in Lander County, and are found in the project area during breeding, wintering, and migration seasons, with some species occurring year-round, including BLM Sensitive species. Based on the key habitats in the project area, the species that are expected to occur most abundantly are birds associated with sagebrush and PJ communities. Baseline field surveys for migratory birds were conducted during the 2018 summer breeding season. The surveys documented 51 species of birds in the project area (ERM 2018). A list of all birds observed is provided in the biological baseline report (ERM 2018).

Raptor nest data were acquired from aerial nest surveys conducted for the nearby Cortez Mine (Stantec 2018 cited in ERM 2018), which encompassed the analysis area (1-mile buffer around the project area). NDOW records contained 45 raptor nest sites within 10 miles of the project area (see Wildlife Resources SER). Additional ground inspections occurred during the baseline field surveys for the project. The following raptor species successfully nested (fledged young) in the analysis area in 2018: 2 golden eagle nests, 1 red-tailed hawk (*Buteo jamaicensis*) nest, 2 prairie falcon (*Falco mexicanus*) nests, and 1 ferruginous hawk nest. Other raptors observed using the analysis area but not associated with a specific nest include great-horned owl (*Bubo virginianus*), short-eared owl, American kestrel (*Falco sparverius*, northern harrier (*Circus cyaneus*), and turkey vulture (*Cathartes aura*).

Big Game

Big game that use the project area include mule deer (*Odocoileus hemionus*) and pronghorn (*Antilocapra americana*). There is no elk (*Cervus canadensis*) range in the project area. Big horn sheep (*Ovis canadensis*) do not currently occupy the project area, though NDOW considers it potential/historic range.

The entire project area is mule deer range, most of which is classified by NDOW as crucial winter range (7,646 acres, or 99 percent of the project area) (see Wildlife Resources SER Figure 4). Approximately one percent of the project area is general winter range (19 acres) and year-round range (57 acres) (NDOW 2017). “Crucial” range means the habitat is necessary to sustain the population at a critical period of the year (in this case winter). The project area also overlaps a mule deer movement corridor (see Wildlife Resources SER Figure 4). Mule deer winter range typically consists of lower elevation sagebrush, pinyon-juniper, and mountain shrub (e.g., bitterbrush, mountain mahogany) communities where snow depths allow for easier movement, often on south-facing slopes. Important browse species vary by elevation, but include shrubs such as sagebrush, bitterbrush, serviceberry, snowbrush, and snowberry.

Mule deer density and distribution in Nevada is affected primarily by interrelated habitat factors (NDOW 2006, Wasley 2004). Forage quality and quantity on winter range is one of the primary factors limiting populations in some areas (Cox et al. 2009). Because of learned behavior, deer migrate into the same area every year for winter regardless of the availability or condition of forage on the range. Factors negatively affecting mule deer habitat include

plant senescence, overgrazing, fire and conversion of habitat type, exotic invasive species (mainly cheatgrass and tansy mustard), and PJ encroachment. Drought and human impacts from land use change (e.g., housing, roads, mining, and impediments to migration) also affect habitat. Habitat loss and degradation has translated into population declines due to the reduced carrying capacity of the affected areas (Wasley 2004, Cox et al. 2009).

Sagebrush communities on intact mule deer winter range are characterized by sagebrush and other shrub browse species with a diversity of grasses and forbs in the spaces between shrubs. Encroachment of PJ and cheatgrass into areas that were historically dominated by sagebrush reduces the quality of winter range by out competing other valuable forage plants. Open stands of PJ are used as winter range, and PJ stands provide thermal cover to help deer withstand temperature extremes. However, as trees become dense the community is less functional as deer winter habitat (Wasley 2004). In dense trees, the understory is characterized by reduced ground cover, reduced plant productivity and diversity, and increased site aridity and soil erosion. As the understory is lost, this reduces the availability of important winter browse species, such as sagebrush and bitterbrush.

The mule deer herds in the project area (Toiyabe Herd and Shoshone Herd, NDOW Units 141, 152, 154) tend to follow a “boom or bust” population cycle as a result of varying amounts and timing of precipitation. Extended periods of spring and summer drought and harsh winters with deep snow and cold temperatures have resulted in a general decline in the number of deer in these herds over the past few years (NDOW 2019). The primary management concerns for the crucial winter range intersecting the project area include domestic livestock use, pinyon-juniper encroachment, and mineral extraction/exploration (NDOW 2017). In addition, invasive exotic vegetation (including cheatgrass) and historic and recent wildfires have adversely impacted the winter range in the project area (Lutz 2019). The project area is important habitat for multiple mule deer herds in the region. NDOW’s tracking data from radio-collared deer have demonstrated that deer seasonally migrate from four different mountain ranges (Toiyabe, Shoshone, Cortez, and Simpson Park mountain ranges) to use this area as winter range.

There are 5,920 acres of pronghorn habitat, comprising 77% of the project area. Pronghorn habitat in the project area is broken down into year-round range (5,634 acres) and winter range (286 acres). The project area also overlaps a movement corridor that is used by pronghorn throughout the year for daily movements through Crescent Valley (see Wildlife Resources SER Figure 5). In Nevada, pronghorn use open habitats on wide open flats to gentle rolling hills, including salt desert scrub, greasewood, sagebrush, sagebrush-steppe, and mountain brush (Tsukamoto et al. 2003).

Other Mammals

Baseline acoustic monitoring surveys found that bats occur in the project area and likely occur throughout all habitat types. See the biological baseline report (ERM 2018) and Wildlife Resources SER for the list of bat species that were positively identified and for the list of other bats that could occur based on range and habitat requirements.

Pygmy rabbit (*Brachylagus idahoensis*) is a BLM Sensitive species that occurs in sagebrush communities. Surveys were conducted for pygmy rabbits in suitable soils and sagebrush habitat in the project area, but none were detected. In general, the habitat in the project area is not optimal for pygmy rabbits due to the widespread occurrence of cheatgrass and lack of rabbitbrush species (ERM 2018).

Surveys were also conducted for dark kangaroo mouse (*Microdipodops megacephalus*) and pale kangaroo mouse (*Microdipodops pallidus*). These mice are BLM Sensitive species that occur in shadscale and sagebrush communities. The survey determined that most of the habitat in the project area has been invaded by cheatgrass and lacks Indian ricegrass and other native grasses that these species prefer. Two small areas in the southern portion of the project area provide suitable sandy soils and sagebrush with higher densities of Indian rice grass, and several small burrows were observed there, though the species using them was not determined (ERM 2018).

A variety of other generalist mammals are likely to be present in the project area, including rodents, ground squirrels, weasels, lagomorphs, and carnivores.

Aquatic Wildlife and Fish

The project area contains limited and isolated aquatic habitat to support amphibians. The suitable amphibian habitat consists of 8 small springs/seeps (one has been developed into two cattle troughs), all of which are in three drainages on the eastern portion of the project area in the Toiyabe Range. Short reaches of these drainages were wet during July baseline field surveys. No amphibians are known to occur in the project area based on records from NNHP and NDOW and field reconnaissance in 2018, though specific surveys targeting amphibians have not been conducted. BLM Sensitive species (see Wildlife Resources SER Table 5) that could occur based on habitat requirements include western toad (*Anaxyrus boreas*).

Fish do not occur in the project area. Fish habitat is limited due to the lack of perennial streams or lakes/ponds (ERM 2018).

The 8 springs/seeps in the project area may provide habitat for aquatic invertebrates. No surveys have been conducted at these springs specifically for aquatic species. Most BLM sensitive mollusks (gastropods or bivalves) occur in a specific drainage or spring outside the project area (see **Section 3.12.1.3** below and Wildlife Resources SER Table 5).

3.12.1.3 Special Status Species

Threatened and Endangered Species

A list of threatened, endangered, or candidate wildlife species protected under the Endangered Species Act (ESA) were obtained for Lander County through the USFWS Information for Planning and Consultation (IPaC) planning tool (https://ecos.USFWS.gov/ipac/) (see Wildlife Resources SER Appendix C). The Lahontan cutthroat trout (*Oncorhynchus clarkia henshawi*) is the only species listed in Lander County. This fish species occurs in perennial streams/rivers and lakes, which are not present in the project area. Therefore, the Lahontan cutthroat trout does not occur in the project area. There are no other threatened or endangered species or critical habitat in the project area.

Nevada BLM Sensitive and Special Status Species

The BLM 2017 list of Nevada sensitive and special status species (BLM 2017b) was finalized in 2018 per NV-IM-2018-003. Table 5 in the Wildlife Resources SER provides a summary of the BLM sensitive and special status wildlife species that are known to occur or have potential to

occur in the project area based on the species' geographic range and presence of suitable habitat. This table also indicates the key habitats that are present in the project area and each species' associations with these habitat types. GRSG is discussed in detail below because the proposed vegetation treatments are focused on habitat improvements in sagebrush communities that are designated as BLM Habitat Management Areas.

Greater Sage-grouse

GRSG are associated with a variety of sagebrush systems in Nevada, particularly sagebrush steppe habitats that include bunchgrass and forb components and where mosaics with wet meadows and aspen are present (WAPT 2012). Leks are located on open sites surrounded by sagebrush. Nest sites are selected in thick cover of sagebrush.

Table 2-2 in the ARMPA describes site-specific habitat conditions for the various GRSG seasonal uses and the BLM objectives for managing such habitat. Habitat attributes relevant to this project's proposed vegetation treatments include the following desired conditions:

- For nesting cover and security at the landscape level, >65% of the landscape in sagebrush cover; annual grass cover of <5%; Phase I PJ in less than 3% of the habitat (Phase I means trees comprise <25% of the total cover) and no Phase II or Phase III PJ.
- For winter cover and food at the landscape level, >85% of the landscape in sagebrush cover; Phase I PJ in less than 5% of the habitat and no Phase II or Phase III PJ.
- In nesting habitat, sagebrush cover of at least 20%, residual and live perennial grasses (native bunchgrasses) at least 10% if shrub cover is <25%; annual grass cover <5%; total shrub cover at least 30%; perennial grass height that provides overhead and lateral concealment from predators.
- In winter habitat, sagebrush cover of at least 10% above snow, sagebrush height >9.8 inches above snow depth.

The BLM tracks anthropogenic disturbance and conservation gains in GRSG habitat by population boundaries known as biologically significant units (BSU). A BSU is a delineation of GRSG habitat based on sage-grouse interactions between population management units (PMUs) to represent local sage-grouse population habitat and use areas within the subregion. The project area is in the Central Great Basin BSU. According to NDOW's database, there are no leks in the analysis area (i.e., within 4 miles of the project area). Tracking studies have documented at least two radio-marked sage-grouse in the analysis area (see Wildlife Resource SER Appendix C).

The BLM and Forest Service have developed a National Greater Sage-Grouse Planning Strategy (BLM 2011) for identifying important sage-grouse habitat. The BLM uses the following habitat classifications to guide land use decisions: Priority Habitat Management Area (PHMA), General Habitat Management Area (GHMA) and Other Habitat Management Area (OHMA). The 2015 GRSG habitat management areas in the project and analysis area are shown on the Wildlife Resources SER Figure 6. Approximately 77 percent of the project area contains BLM habitat management areas, including 856 acres of GHMA and 5,086 acres of OHMA. There

is no PHMA in the project area. The analysis area for sage-grouse (4-mile buffer around the project area) encompasses 80,474 acres, of which 32,047 acres (40 percent) is non-habitat. GRSG habitat in the analysis area includes 9,714 acres of PHMA (12 percent of analysis area), 13,191 acres of GHMA (16 percent), and 25,522 acres of OHMA (32 percent). The highest value habitat (i.e., PHMA) in the analysis area is located to the west of the project area (Shoshone Range and Carico Lake Valley).

A seasonal habitat suitability model has been produced by the U.S. Geological Survey (USGS) and the State of Nevada using telemetry data. The model predicted that portions of the project area are suitable winter habitat and spring (breeding/nesting) habitat, but none of the project area is suitable summer (brood-rearing) habitat (Coates et al. 2016).

3.12.2 Environmental Consequences

Definitions of intensity, duration, and context level of effects for wildlife resources are defined in the Wildlife Resources SER (BLM 2019a). It should be noted that effects language used in this EA for special status species is for the purpose of analyzing the project effects under NEPA, not to make a finding under the ESA or to infer Section 7 determinations.

3.12.2.1 Proposed Action

Direct and Indirect Effects

Big Game, Migratory Birds, and Other General Wildlife

Effects Common to All Vegetation Treatments

The project would enhance mule deer crucial winter habitat as well as habitat for other sagebrush-obligate species. In the lower elevations, the objective is to remove exotic invasive species and reseed with vegetation species that would stabilize the area, out-compete cheatgrass, and provide winter forage for mule deer. In the higher elevations (eastern and southern parts of the project area) the objective is to remove pinyon-juniper trees that are encroaching into sagebrush communities to promote a denser and more diverse understory. Although treatments may not successfully move the current altered vegetation state to a reference state, the treatments are anticipated to improve the current condition of vegetation by decreasing the cover of invasive species and increasing cover of other species that are more desirable to mule deer as browse and cover.

The treatments would reduce the risk of severe wildfires by increasing the cover of native shrubs and perennial grass and forb species, and decreasing the presence of invasive nonnative plants, such as cheatgrass. This would improve the resiliency of sagebrush habitat to wildfire and the resistance to spread of invasive species.

The Proposed Action would have an overall beneficial effect to wildlife species associated with sagebrush. Considering the current habitat conditions and the size of the project area, the improvement resulting from these treatments together are expected to have moderate beneficial effects in the short and long-term in the localized project area.

Potential adverse effects common to all proposed vegetation treatments include temporary disturbance from noise, human presence, and the use of ground and aerial vehicles and equipment during the treatments. Disturbance could displace wildlife from the work area. Treatments would occur in the late fall or winter. Should treatments be proposed to occur during the migratory bird breeding or nesting season, clearance surveys would be conducted. Buffers would be established in coordination with BLM and NDOW if work was to proceed. Disturbance effects resulting from implementing the treatments would therefore be minor, short-term, and localized to the area where the work is taking place.

Aerial Herbicide Treatment

The aerial herbicide treatment would affect 5,164 acres of sagebrush and desert scrub habitat in the project area. Imazapic has been shown to target annual and perennial broadleaf weeds and grasses and improve the chances of establishment of native grassland plants when applied in the pre-emergent/fall period (BLM 2007a). Herbicide application may have a localized, short-term adverse effect on habitat due to chemical drift onto non-target vegetation species during applications. However, the effect would be negligible with implementation of proper application techniques, SOPs, and BMPs, as directed in the 17-States PEIS (BLM 2007a) and ROD (BLM 2007b), and the Integrated Weed Management Plan Battle Mountain District Nevada Mount Lewis Field Office and Tonopah Field Office EA (BLM 2009), H-9011 Chemical Pest Control Handbook (BLM 1988) and 9011 Chemical Pest Control Manual (BLM 1992).

The aerial herbicide treatment would be completed in the fall (September or later). This is outside the breeding season for raptors and other migratory birds, outside the pollinator season for most species, and outside the season when mule deer would be using their winter range. Therefore, direct impacts to these species would be avoided since they will not be present during the treatment. For resident wildlife species, adverse toxicological effects are possible from direct exposure and indirect exposure through contact with foliage or consumption of foliage after the treatment. The BLM has determined that exposure to approved herbicides under properly applied conditions does not pose a significant risk to wildlife species (BLM 2007a). No springs are present in the herbicide treatment area.

Aerial herbicide treatment would result in temporary loss of some ground cover until the seeding occurs the following year, which could negatively affect wildlife. However, this has been deemed necessary because the herbicide treatment would improve the likelihood of success for the seeding treatments. Treatment of cheatgrass and other undesirable plant species would be beneficial to species associated with sagebrush habitat by promoting the development of native grasses and forbs (or other desirable species) in the interspaces between shrubs. Controlling cheatgrass allows growth of desirable seed plants in the understory that otherwise cannot compete with cheatgrass once it is present. Reducing the spread of undesirable invasive species would halt the further degradation of vegetation communities and reduce fire risk. This would be especially important for areas that are not yet fully in an Annual State. Overall, the aerial herbicide treatment would have a moderate beneficial, localized effect on wildlife habitat in the short -term and long-term.

Aerial Seeding

The aerial seeding treatment would affect 2,452 acres of sagebrush and desert scrub habitat in the project area. There are no springs or riparian habitat in the aerial seeding treatment area. This treatment would be completed in the fall (September or later) or winter, which is outside the breeding season for raptors and other migratory birds and therefore avoids direct impacts to these species since they will not be present during the treatment.

In cheatgrass dominated areas and dry sites such as the project area, a seed mix of native (Wyoming sagebrush, bluegrass) and non-native (forage kochia, wheatgrass) species is needed to successfully reduce the dominance of cheatgrass, as recommended by the Mule Deer Working Group (Cox et al. 2009). The mix can compete well and establish in the presence of cheatgrass, and also provide forage for mule deer. Wildlife would benefit from an increase in sagebrush cover where it is sparse and introduction of younger age classes of sagebrush and other shrubs. Successful seeding will break the cheatgrass cycle and stabilize the area, allowing native species that are present to thrive, and promote recolonization of more native species in the long-term. This would increase the amount and quality of cover and foraging habitat for species that inhabit sagebrush habitat by providing a diversity of plants for seeds, herbaceous forage, and browse. Mule deer and pronghorn would benefit from improved forage conditions and improved stability of the vegetation community over the long term because the current cheatgrass-infested shrublands provide low quality winter forage and lack important browse species. Overall, aerial seeding would have a moderate beneficial, long-term, localized effect on wildlife.

Drill Seeding

Beneficial effects would be the same as described for aerial seeding. There are no springs or riparian habitat in the drill seeding treatment area. Adverse effects are possible from use of drill seeding equipment and vehicles across the ground surface, which may result in mortality or injury of small wildlife and collapsing of burrows. The ground disturbance may further spread undesirable species; however, herbicide treatment and adherence to SOPs and BMPs to reduce the chance for weeds to spread would minimize this risk. Timing drill seeding to avoid the breeding and nesting season for migratory birds would minimize disturbance effects.

Pinyon-juniper Thinning

The PJ thinning treatment would affect up to 800 acres of Phase I PJ in the project area. There would be no reduction in acreage of woodland and chaparral habitat types because trees would be removed only from areas where individual trees have encroached into sagebrush shrublands (i.e., Phase I PJ – see Vegetation SER Figure 4 for these areas). There would be no loss of old growth stands or woodlands that provide winter cover for big game. Juniper berry production and pinyon seed production are low in Phase I woodlands (Tausch et al. 2009); therefore, loss of these resources would be negligible. Overall, adverse effects to species that are primarily associated with pinyon-juniper or montane chaparral habitat (e.g., birds that forage on pinyon nuts and bats that roost in trees) would be negligible, short-term, and localized. Wildlife would experience the same temporary and localized noise disturbance

common to all treatments with additional noise from the use of chain saws. Timing PJ thinning to avoid the breeding and nesting season for migratory birds would minimize disturbance effects.

PJ thinning would promote growth of shrubs, forbs, and grasses through competitive release and increased availability of soil moisture. This would help preserve sagebrush habitat over the long-term by preventing further succession into a woodland community. Removing trees also reduces fuel loads, reducing the risk of severe wildfires and further cheatgrass invasion. PJ thinning would not affect springs or the small patch of riparian habitat.

Wildlife would benefit from the development of desirable grasses, forbs, and shrubs, which would increase the amount and quality of forage and cover for species that inhabit sagebrush habitat. Pinyon-juniper thinning would enhance range conditions for mule deer and pronghorn by improving forage (herbaceous understory and browse). This is particularly important for the crucial mule deer winter range in the project area, which supports deer populations migrating down from four different mountain ranges. The cut trees would be lopped and scattered, having a minor beneficial effect by providing cover for small wildlife.

Removal of conifer trees from sagebrush systems would have a moderate, beneficial effect on sagebrush habitat by returning the community to an open shrubland or shrub-steppe system. Overall, PJ thinning would have a moderate beneficial, localized effect on wildlife over the long-term.

Special Status Animals

Effects Common to All Vegetation Treatments

Adverse effects to special status species from all vegetation treatments would be the same as those described above for general wildlife. Effects would be to those special status species that are primarily associated with sagebrush and PJ habitat. Short-term, localized disturbance would occur from noise, human presence, and the use of equipment. In the long-term, the Proposed Action would benefit shrubland-nesting birds and other special status species associated with open habitat types by improving and restoring sagebrush habitat, improving foraging and security habitat, and reducing the risk of severe wildfire. Overall, there would be moderate, long-term, beneficial effects to special status species in the project area.

The vegetation treatments are intended to improve mule deer winter range but would also benefit sagebrush-associated species like GRSG because sagebrush communities would be improved from their current degraded state. The vegetation treatments would move the habitat towards the desired habitat conditions for winter and spring habitat that are outlined in the ARMPA. No PHMA would be treated. Treatments would affect a total of 5,945 acres of sage-grouse habitat (7 percent of the 4-mile analysis area), including 855 acres of GHMA and 5,090 acres of OHMA This could improve the local habitat and result in a net conservation gain in the long-term. Overall, there would be moderate, short-term and long-term beneficial effects to GRSG in the project area.

Aerial Herbicide Treatment

The aerial herbicide treatment would improve 4,420 acres of sage-grouse habitat by removing cheatgrass and other invasive species. This would promote an understory of desirable grasses and forbs preferred by sage-grouse and reduce the risk of catastrophic fire in areas with cheatgrass invasion. Control of invasive species is expected to have moderate, long-term, beneficial effect on special status species, including sage-grouse habitat.

Aerial and Drill Seeding

The aerial and drill seeding treatments would affect 4,420 acres of sage-grouse habitat. Although the seed mix is not preferred for sage-grouse, it was selected to include species able to establish in a relatively harsh site (low annual precipitation) and which would quickly stabilize the soil while allowing for recolonization from adjacent areas where native shrubs, grasses, and forbs are still present.

Seeding would enhance sage-grouse habitat and achieve greater resistance to fire. Seeding would improve habitat in areas where existing cover is insufficient, such as areas dominated by non-native annuals. Seeding would also increase the diversity of sagebrush in the project area in terms of structure and age classes, support the development of an understory of desirable foraging plants, and improve security cover. In the long-term, improving habitat through seeding is expected to have a minor beneficial localized effect on sage-grouse.

Pinyon-juniper Thinning

PJ Thinning would affect up to 1,525 acres of sage-grouse habitat. Tree removal in sagebrush habitat would improve conditions for sage-grouse by releasing the understory and promoting growth of sagebrush shrubs and an understory of desirable grasses and forbs. This treatment would also decrease fuel loads thereby reducing the risk of severe wildfire-damaging habitat. In addition, removing trees reduces perch sites for raptors and may reduce predation rates on sage-grouse. PJ thinning is expected to have a moderate, beneficial, localized, short and long-term effect on sage-grouse.

Cumulative Effects

Adverse cumulative effects would not occur due to the level of intensity, duration, and context of effects from the Proposed Action relative to other past, present, and future projects. The proposed project would result in beneficial effects on wildlife in the region by improving the health and resiliency of sagebrush ecosystems and reducing wildfire risk and severity. However, cumulative effects on wildlife are not anticipated due to the spatial scale of this and other habitat improvement projects.

3.12.2.2 No Action

Direct and Indirect Effects

Under the No Action Alternative, none of the proposed vegetation treatments would occur in the project area. Disturbance to mule deer, pronghorn, raptors, migratory birds, other general wildlife, greater sage-grouse and other special status animals and their habitat would not occur. These species would not benefit from the improved habitat conditions. There would be a minor localized increased risk of severe wildfire and continued degradation of sagebrush habitat from the spread of cheatgrass and PJ encroachment in the project area over the long-term.

Cumulative Effects

Under the No Action Alternative, the vegetation treatments would not be implemented. Cumulative effects would not occur, as there would be no direct or indirect effects.

3.13 Wild Horses

The analysis area for direct and indirect effects to wild horses includes portions of the Bald Mountain Herd Management Area (HMA) within the project area (**Figure 9**). The CESA for wild horses includes the Bald Mountain HMA (**Figure 9**). The Wild Horses SER (BLM 2019j) details the regulatory framework and affected environment (Section 2.0, pgs. 4-5) and analysis of effects (Section 3.0, pgs. 6-8). It is incorporated by reference and available in the project record.

3.13.1 Affected Environment

Wild horses are present in the project area, but no wild burros are present. A portion of the project area falls within the Bald Mountain HMA (**Figure 9**). The Bald Mountain HMA is approximately 139,875 acres (BLM 2019k). Approximately 5,161 acres of the Bald Mountain HMA occur within the project area. The total acreage per vegetation treatment is: 3,649 acres for aerial herbicide application, 2,136 acres for aerial seeding, 1,520 acres for drill seeding, and consideration of 1,505 acres for PJ thinning (no more than 800 acres of the project would be treated with PJ thinning).

The Bald Mountain HMA Appropriate Management Level (AML) is 129 to 215 wild horses (personal communication, S. Richardson, Oct. 9, 2019). Annual populations estimates are based on either direct counts or adjusted direct counts from aerial inventories, with an average annual increase of 19% applied during years when an inventory was not conducted. Based on the most recent aerial survey completed in 2018, the current post-foaling population is 359 wild horses. There have been no Core Use Areas identified in the project. No gathers are currently planned for the Bald Mountain HMA (personal communication, S. Richardson, Oct. 9, 2019).

The Bald Mountain HMA is just a few miles east of the South Shoshone HMA and shares its southern boundary with the Callaghan HMA. It is suspected that a great deal of movement occurs among the horses from the Bald Mountain HMA and the South Shoshone and Callaghan HMAs. The Bald Mountain population tends to congregate in the area of Red Mountain to the west and Bald Mountain to the east (personal communication, S. Richardson,

Oct. 9, 2019). The portion of the Bald Mountain HMA where the project occurs is not considered an important area of use, but rather likely move through the project as incidental use.

3.13.2 Environmental Consequences

Definitions of intensity, duration, and context level of effects for wild horses are defined in Wild Horses SER (BLM 2019j).

3.13.2.1 Proposed Action

Direct and Indirect Effects

Increased human activity and equipment and fixed-wing airplane noise during implementation of vegetation treatments could disturb wild horses and may cause temporary dispersal into adjacent habitat or changes in movement patterns. Utilization would decrease near vegetation treatment areas and would increase in other areas. These effects would be present where the vegetation treatments were being completed and for the duration of activities (days to weeks). Wild horses are typically accustomed to some level of human activity. Activities would be of short-duration and adjacent suitable habitat is available. Furthermore, the project is not considered an important area of use for wild horses. Direct and indirect adverse effects to wild horses due to human activity and noise disturbance associated with implementation of the vegetation treatments would be localized, minor, and short-term.

The general use of herbicides may cause adverse direct effects including death, damage to vital organs, change in body weight, decreases in healthy offspring, and increased susceptibility to predation. However, these effects are largely dependent on the sensitivity of exposed animals to the herbicide used and timing of herbicide use. Newborn horses would be most susceptible to herbicides, with the March through June foaling season being a critical period. The impacts analysis of BLM-evaluated herbicides documented in 17-States PEIS (BLM 2007a) is incorporated by reference. Imazapic and/or glyphosate would be applied to control cheatgrass. These herbicides are considered low risk to wild horses (BLM 2007a). Herbicide would be sprayed at the recommended rate in September and October before cheatgrass starts to germinate. This timing would minimize the risk of exposure to foals.

Possible indirect effects of herbicide use include temporary reduction in the amount of forage. Wild horses may temporarily move out of the Bald Mountain HMA and onto lands that are not legally designated for wild horse management. However, the project is not considered an important use area and other regional sources of forage and water area available. Movement between the Bald Mountain HMA and the other adjacent HMAs is common. The use of herbicides would cause localized, negligible, short-term adverse effects on wild horses and their habitat.

Overall, vegetation treatments could affect wild horses by disturbing utilization, distribution and movement patterns; disturbing the forage resource; and risking exposure to herbicides. These effects would be limited to portions of the Bald Mountain HMA where vegetation treatments would take place. Effects would be localized, negligible to minor, and short-term.

The portion of the Bald Mountain HMA in the project area has been impacted by fire and invasion of cheatgrass, and PJ trees are encroaching into adjacent shrublands. Use of herbicides and seeding is anticipated to increase desirable, usable forage and reduce highly flammable fuels (i.e., annual grasses). Removal of PJ trees would open up more habitat area for horse use and would remove fuel loads.

Wild horses would benefit from implementation of the vegetation treatments. Improving the health of sagebrush ecosystems would enhance habitat for wild horses and improve the resiliency of the herd. Improved sagebrush ecological systems would also improve resiliency of the range, which is especially important in periods of drought. The reduction of fuel loads would minimize the risk of wildfire in the Bald Mountain HMA. Beneficial effects to wild horses would be minor, regional, and long-term.

Cumulative Effects

Past, present, and RFFAs in the CESA (i.e. Bald Mountain HMA) are few, but may include development projects, livestock grazing, and wild horse management activities such as gathers and removals, and populations growth suppression (fertility control). These activities may result in isolated vegetation disturbance or loss, competition for forage, disturbance caused by noise and human presence, and changes in the population. However, the proposed vegetation treatments would not be of the duration or intensity to result in cumulative adverse effects.

The proposed vegetation treatments would improve habitat quantity and quality for wild horses over time, thus alleviating competition for forage and demands on water sources. Beneficial local and regional moderate cumulative effects would be realized over the long-term as improvements occur in the quantity and quality of forage for livestock, horses, and wildlife.

3.13.2.2 No Action

Direct and Indirect Effects

Under the No Action Alternative, none of the proposed vegetation treatments would occur in the project area. There would be no direct or indirect effects on wild horses due to disturbance. However, the beneficial effects on habitat and forage quality and quantity would also not be realized.

Cumulative Effects

Under the No Action Alternative, the vegetation treatments would not be implemented. There would be no direct or indirect effects to wild horses, and therefore, no cumulative effects.

3.14 Wildland Fire and Fire Management

The analysis area for direct and indirect effects to the environment from wildland fire and fire management includes the project area (**Figure 1**). The CESA for wildland fire and fire management is the BMD and considers other vegetation treatments and other past, present, and RFFAs (see **Table 3-2**).

3.14.1 Affected Environment

Portions of the project area that have converted to annual grassland were likely burned in the relative near term (ERM 2018). Fire return intervals in the Great Basin have been reduced from 20-100 years to 2-15 years on average, which has reduced the perennial grass and forb understory and facilitated invasion of annual grasses (McAdoo et al. 2003). Once annual grasses are present, a perpetual grass-fire cycle often occurs (Shinneman et al. 2018). The Copper wildfire (late July 2018) and the Francis wildfire (August 2018) burned 716 and 1,275 acres, respectively, in two portions of the baseline study area (**Figure 7**). These areas were excluded from the project area and have been treated and seeded under a BLM Emergency Stabilization and Rehabilitation program (ERM 2018).

In 2002, the BLM BMD prepared an amendment to the Shoshone-Eureka RMP (BLM 2002) in response to the 1999 wildfire season, when 279,990 acres burned within the BMD. Under the Shoshone-Eureka Fire Land Use Plan Amendment Decision Record, the BLM BMD decided to improve fire management within the planning area by restoring fire as an integral part of the ecosystem, improving the diversity of vegetation, and reducing fire fuel hazards. This would be accomplished through the use of prescribed fire and fire use for resource benefit, and by using mechanical treatments such as green strips, shaded fuel breaks, and tree thinning to reduce wildfire fuel hazards. By taking these actions, it was expected that the size and severity of future wildfires would be reduced.

The Battle Mountain District Fire Management Plan (BMD FMP) (BLM 2016b) supports the initiating of district-wide planning documents with the intention of coordinating across jurisdictional boundaries to create a series of strategic fuel breaks and sagebrush ecosystem enhancement projects.

Fuels projects in the BMD are prioritized based upon the current national priorities, tiered down to the district level (BLM 2016b). The project area is not located in a Fire and Invasive Assessment Tool (FIAT) Project Planning Area (PPA).

3.14.2 Environmental Consequences

3.14.2.1 Definitions of Intensity, Duration, and Context Level of Effects for Wildland Fire and Fire Management

Intensity

Negligible: Effects on wildland fire and fire management would not be detectable.

Minor: Effects on wildland fire and fire management would occur, however, BMPs would offset adverse effects.

Moderate: Effects on wildland fire and fire management would be readily apparent. Additional mitigation would be necessary to reduce adverse effects.

Major: Effects on wildland fire and fire management would occur. Additional mitigation would be necessary to reduce adverse effects, and its success could not be guaranteed.

Duration
Short- term: Effects would last for up to 1 year or less, or may affect wildland fire and fire management for the project duration.
Long- term: Effects would last for longer than 1 year and may affect wildland fire and fire management for longer than the project duration.

Context
Localized: Affecting the project area or individual vegetation treatment site.
Regional: Affecting an area beyond the project area or individual vegetation treatment site.

3.14.2.2 Proposed Action

Direct and Indirect Effects

The project area has been impacted by fire and invasion of cheatgrass, and PJ trees are encroaching into adjacent shrublands. Vegetation treatments are anticipated to increase native vegetation and reduce highly flammable fuels (i.e., annual grasses). The removal of PJ trees would also remove fuel loads. Thus, these vegetation treatments would reduce wildfire risk. Local and regional, short and long-term, moderate beneficial effects on wildland fire risk and wildland fire management would be realized.

The drill seeding and PJ thinning vegetation treatments would involve the use of a rangeland drill and chainsaw, respectively, which could cause a spark that results in a wildfire or contribute to the spread of noxious and invasive weeds. The BMPs for general safety guidelines and noxious weed control would be followed, which require that crews have proper fire-suppression tools and that power cutting tools have approved spark arresters. Adverse effects would be minimized to localized, short-term, and negligible.

Cumulative Effects

Adverse effects of the drill seeding and PJ thinning vegetation treatments would be negligible and would not result in adverse cumulative effects. Vegetation treatments help improve ecosystem health and reduce wildland fire risk. The reduction in fire frequency and intensity achieved through successful implementation of individual vegetation treatments combined with other vegetation treatments in the CESA would have regional, long-term, moderate cumulative beneficial effects on wildland fire management.

3.14.2.3 No Action

Direct and Indirect Effects

Under the No Action Alternative, the proposed vegetation treatments would not be implemented. The risk of fires starting from equipment use would not occur. Beneficial effects on wildland fire management would not be realized. The risk of wildfires would continue.

Cumulative Effects

Under the No Action Alternative, the proposed vegetation treatments would not occur in the project area. There would be no direct or indirect effects, and therefore, no cumulative effects.

3.15 Human Health and Safety

The analysis area for direct and indirect effects to human health and safety is the project area (**Figure 1**). The CESA includes the project area and considers other vegetation treatments and other past, present, and RFFAs (see **Table 3-2** and **Figure 2**).

3.15.1 Affected Environment

The BLM must comply with federal laws and regulations that are protective of human health and safety. Numerous federal statutes, including the Clean Air Act (CAA), Clean Water Act (CWA), the Safe Drinking Water Act, and the Resource Conservation and Recovery Act (RCRA) have been established to regulate actions that may directly pose human health risks through degradation of air and water quality and land pollution. In the case of spills of hazardous materials, requirements for agency notification and clean-up procedures are regulated under the Comprehensive Environmental Response, Compensation, and Liability Act.

Under the Occupational Safety and Health Act of 1970 (OSHA), employers are responsible for providing a safe and healthful workplace. In addition to complying with all applicable OSHA standards, employers must also comply with the General Duty Clause of the OSHA, which requires employers to keep their workplace free of serious recognized hazards.

Nevada state regulations related to air and water are outlined in NAC and Nevada Revised Statutes (NRS) 445A and 445 B, respectively. Nevada's laws regarding occupational diseases and occupational safety and health are set for the in NAC and NRS 617 and 618, respectively. The regulation of environmental effects potentially affecting human health and safety fall under the Nevada Division of Environmental Protection (NDEP) which enforces statewide standards for air and water quality and the handling of wastes (hazardous or solid).

3.15.2 Environmental Consequences

3.15.2.1 Definitions of Intensity, Duration, and Context Level of Effects for Human Health and Safety

Intensity

Negligible: Effects are barely noticeable and resolve within a few minutes with little to no intervention needed; resumption of work activities can occur almost immediately.

Minor: Effects are noticeable; minimal intervention would be needed and could be provided on-site with a resumption of work activities within a few minutes to an hour.

Moderate: Effects are noticeable and may need a few hours to be resolved. Intervention would be needed and could be provided on-site. Resumption of work activities could occur the next day or within two days.

Major: Effects are very noticeable and long-term and professional medical intervention would be needed and would likely be provided off-site. Resumption of work activities would not occur for two or more days.

Duration

Short-term: One day or less.
Long-term: Two or more days.

Context

Localized: Affecting persons working directly on the project and within the project area.
Regional: Affecting persons beyond the project area.

3.15.2.2 Proposed Action

Direct and Indirect Effects

Implementation of the vegetation treatments have the potential to affect human health and safety due to potential exposure to environmental hazards, equipment, and chemicals. Effects would be localized, since they would be limited to the area immediately surrounding the vegetation treatments and would primarily affect the workers implementing the vegetation treatments. Effects related to the potential exposure to environmental hazards, equipment, and chemicals would be minimized with SOPs and BMPs, and herbicide handling procedures directed in BLM Integrated Weed Management Plan Battle Mountain District Nevada Mount Lewis Field Office and Tonopah Field Office (BLM 2009) and 17-States PEIS (BLM 2007a) and ROD (BLM 2007b), which are incorporated by reference. Potential effects to human health and safety would be reduced to short-term, negligible, and localized.

Cumulative Effects

Direct and indirect effects of the Proposed Action would be negligible and would not combine with other past, present, or RFFAs to result in cumulative effects.

3.15.2.3 No Action

Direct and Indirect Effects

Under the No Action Alternative, none of the proposed vegetation treatments would occur in the project area. Effects to human health and safety would not occur.

Cumulative Effects

Under the No Action Alternative, the vegetation treatments would not be implemented. Cumulative effects would not occur, as there would be no direct or indirect effects.

4.0 Consultation and Coordination

This EA was prepared by Tetra Tech, Inc. on behalf of the BLM MLFO BMD. Federally recognized tribes and tribal organizations consulted for the proposed project are:

- Battle Mountain Band of the Te-Moak Tribe of Western Shoshone,
- South Fork Band of the Te-Moak Tribe of Western Shoshone,
- Duckwater Shoshone Tribe,
- Bureau of Indian Affairs, Eastern Nevada Agency
- Elko Band of the Te-Moak Tribe of Western Shoshone,
- Ely Shoshone Tribe,
- Shoshone-Paiute Tribes of Duck Valley,
- Te-Moak Tribe of the Western Shoshone,
- Wells Band of the Te-Moak Tribe of Western Shoshone, and
- Yomba Shoshone Tribe.

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FIGURES

Figure 1. Project Location

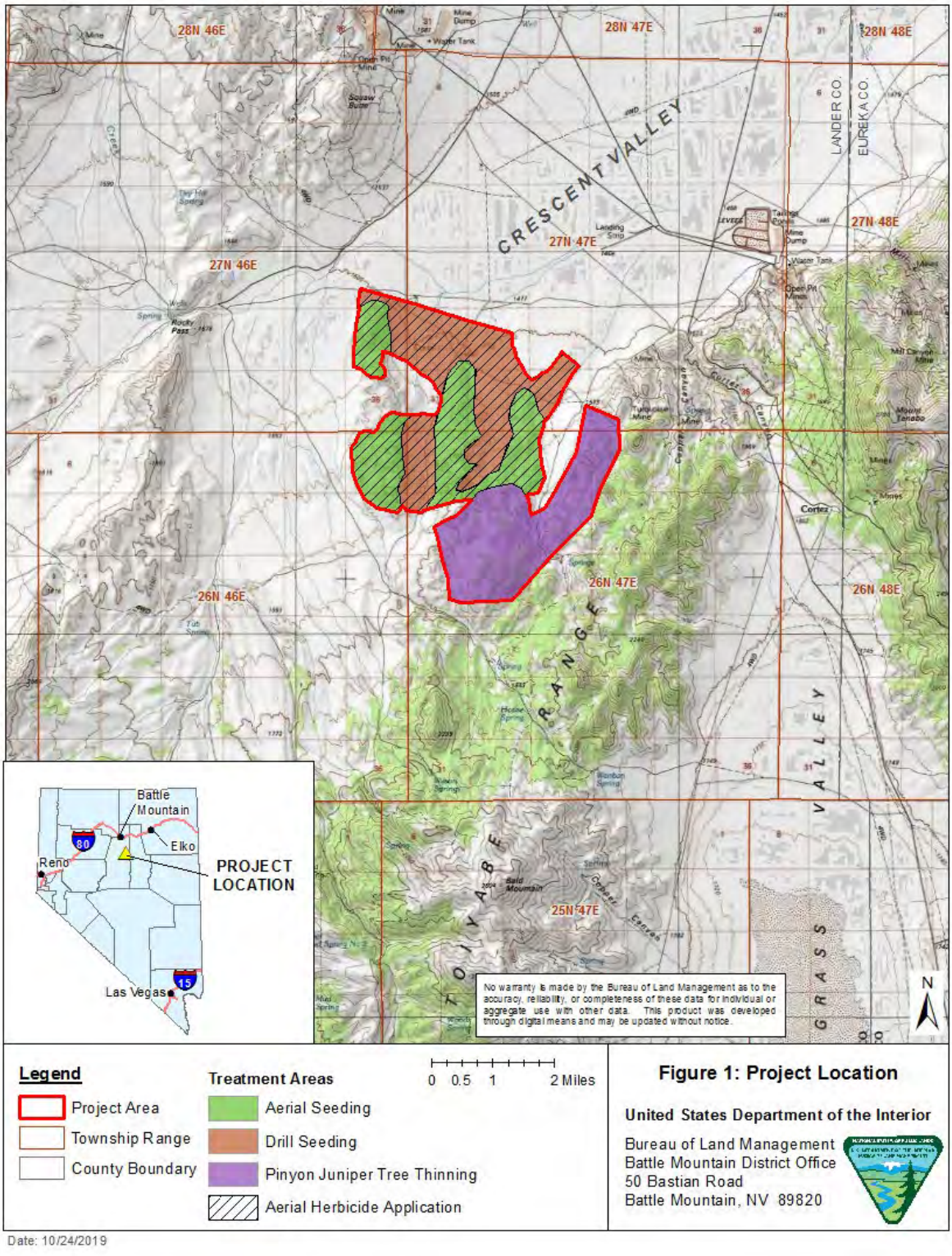

Figure 2. CESAs and Past, Present, and RFFAs - Other Resources

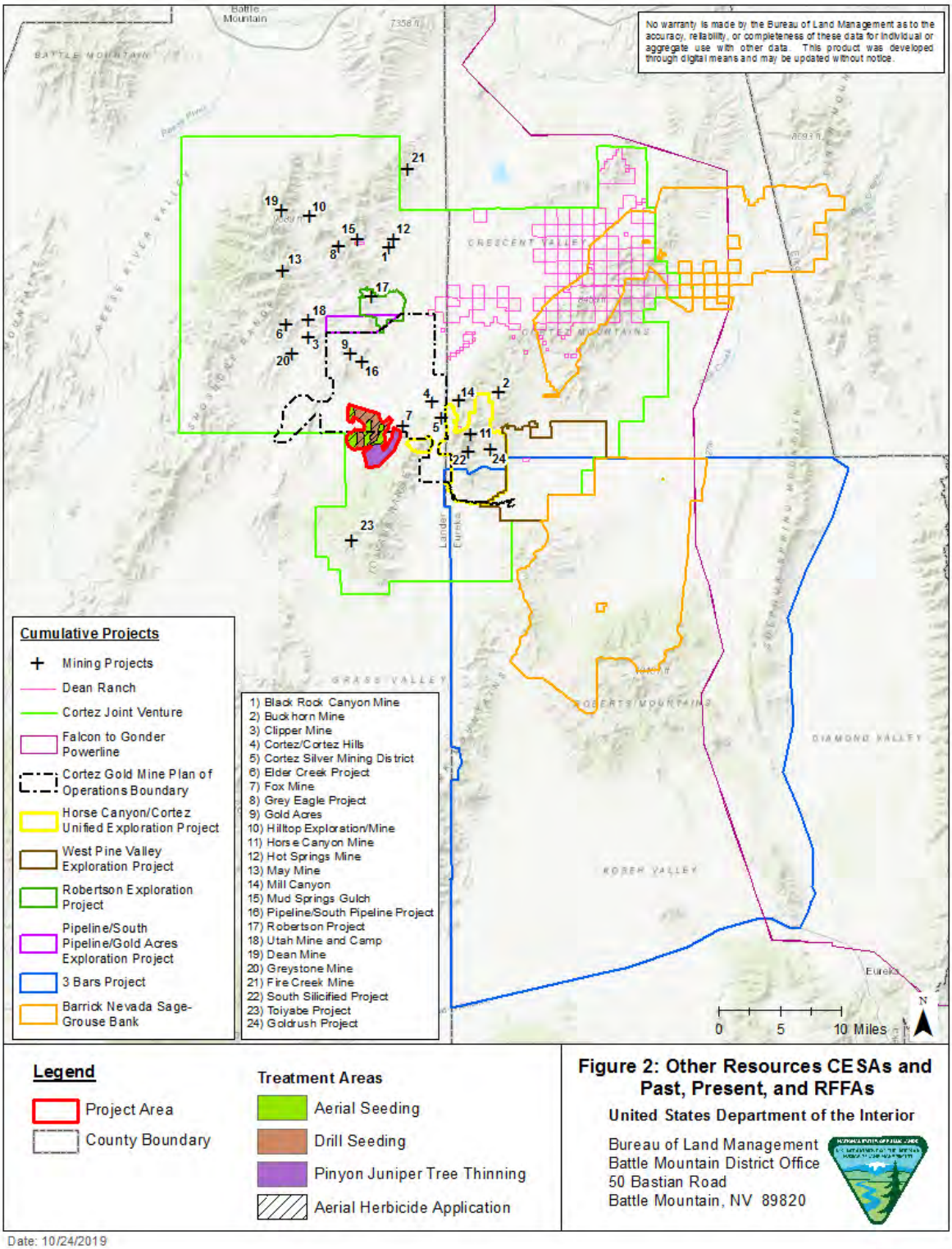

Figure 3. Native American Traditional Values CESA and Past, Present, and RFFAs

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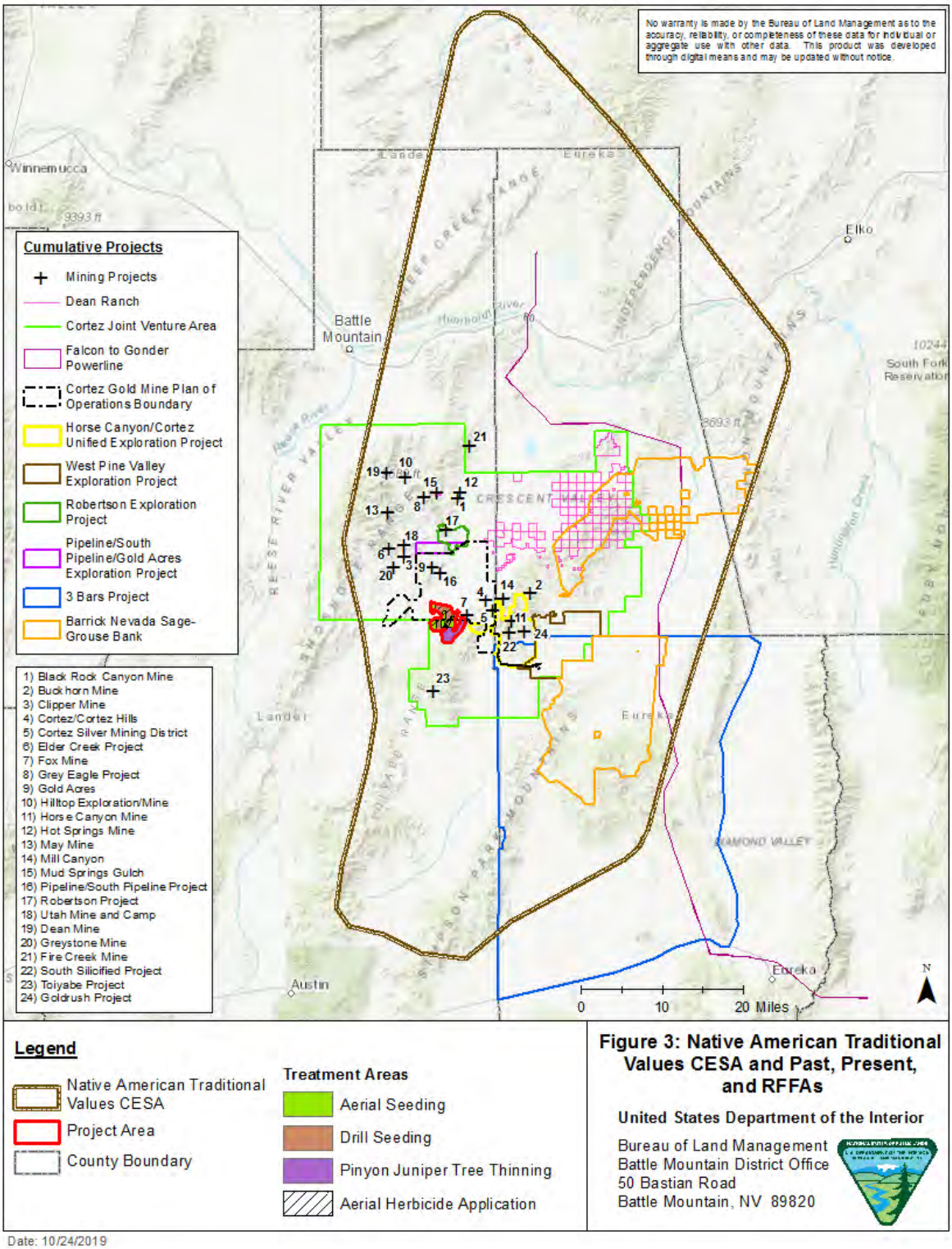

Figure 4. Rangeland Resources CESA and Past, Present, and RFFAs

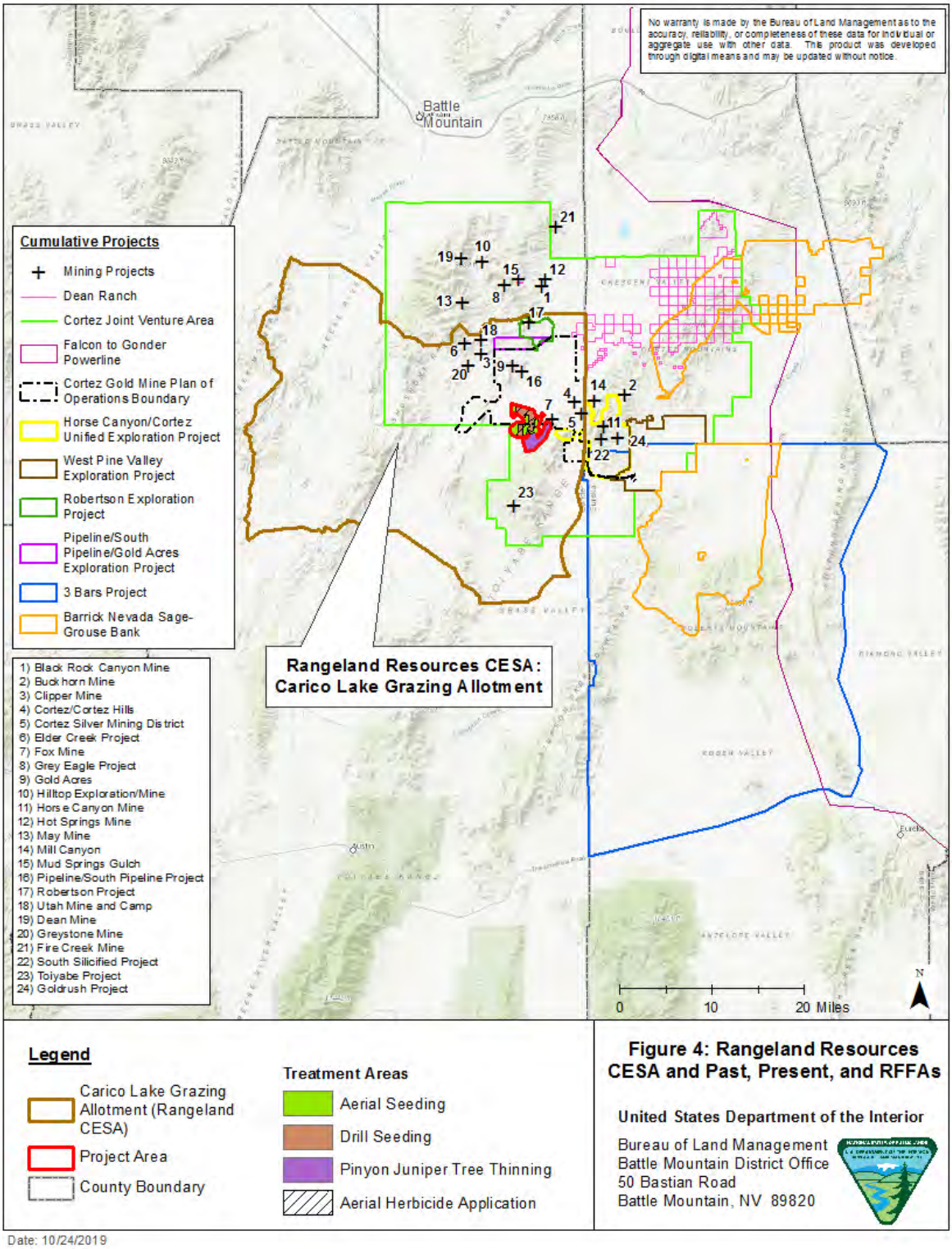

Figure 5. Water Resources

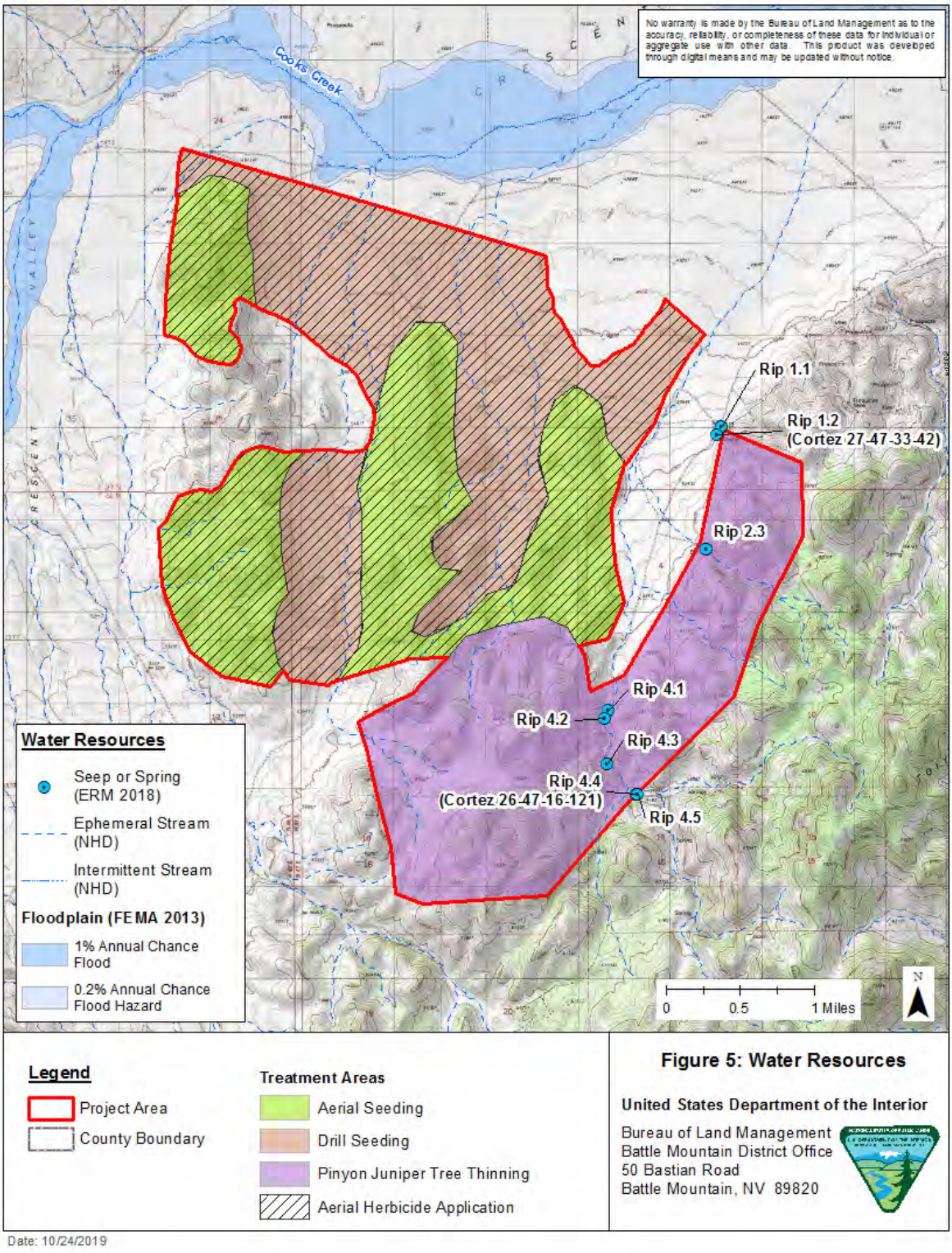

Figure 6. Water Resources CESA and Past, Present, and RFFAs

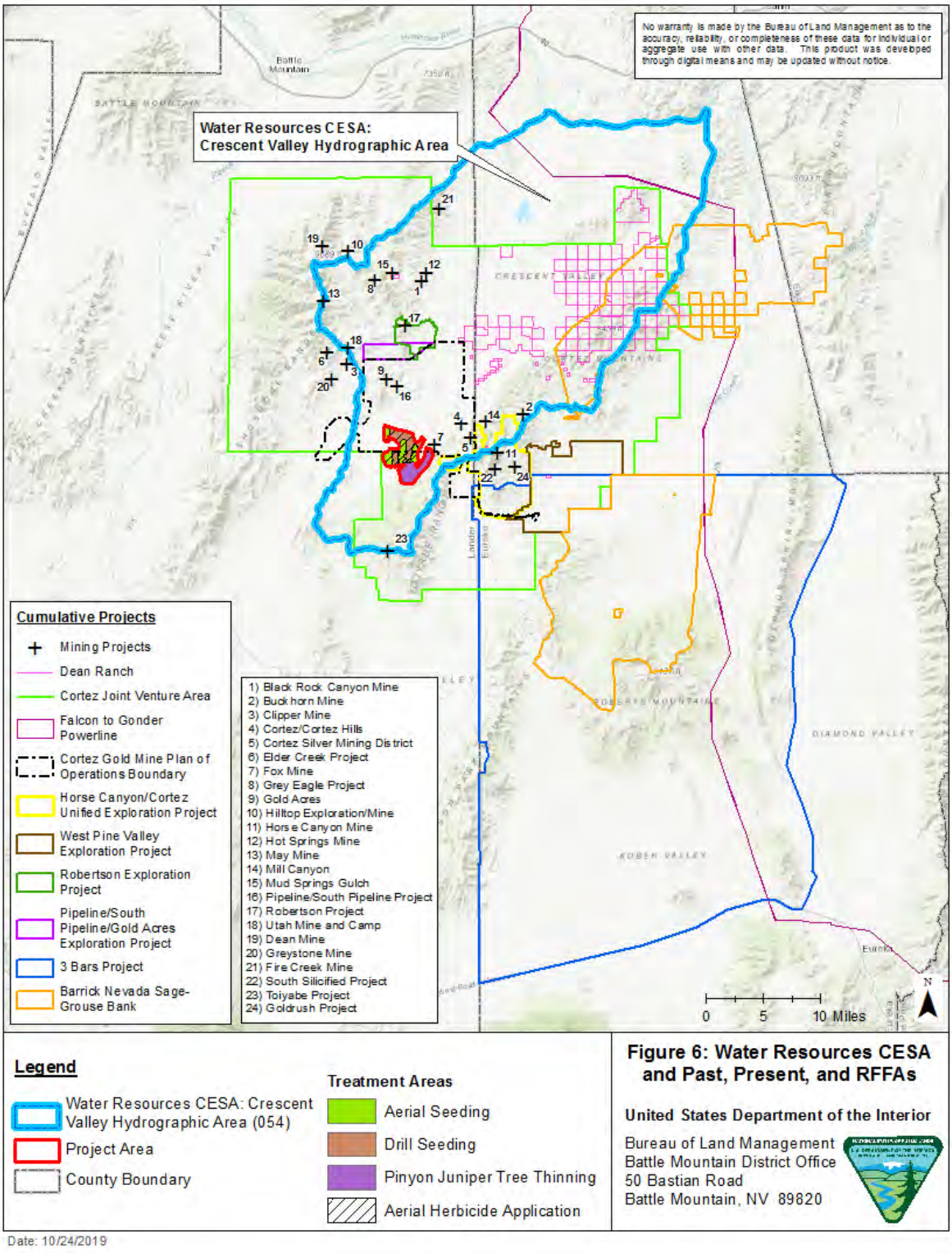

Figure 7. Ecological Site Descriptions and Field Verification Points

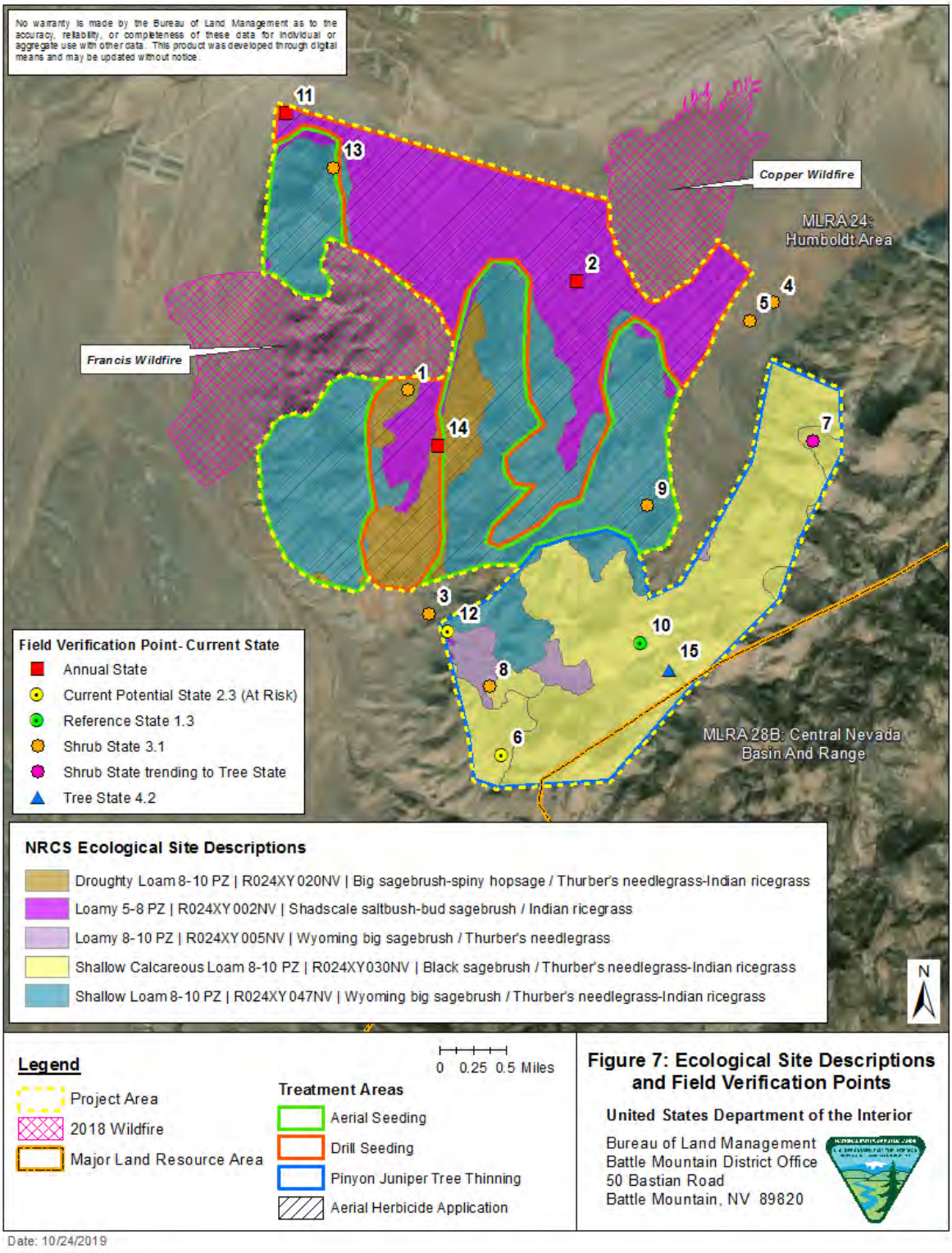

Figure 8. Wildlife Resources CESA and Past, Present, and RFFAs

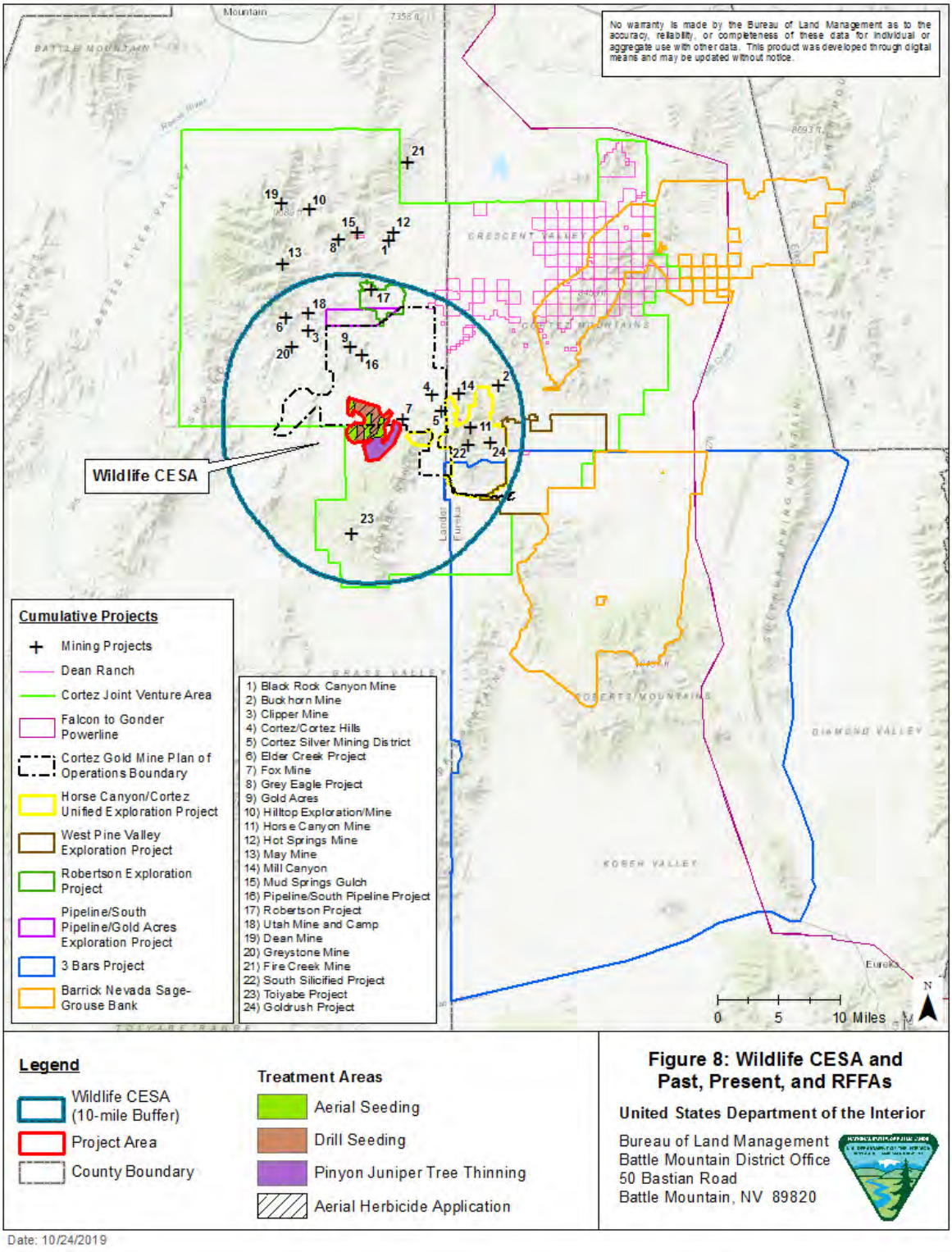

Figure 9. Wild Horses CESA and Past, Present, and RFFAs