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Long and Ruby Valley Watersheds Restoration Project Preliminary Environmental Assessment DOI-BLM-NV-L060-2019-0014-EA

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Chapter 1 Introduction/Purpose and Need

1.1 Introduction

The purpose of this Preliminary Environmental Assessment (EA) is to identify issues, analyze alternatives, and disclose the potential environmental impacts associated with the proposed Long and Ruby Valley Watersheds Restoration Project (Proposed Action). This EA fulfills the National Environmental Policy Act requirement for site-specific analysis of resource impacts. The analysis in this EA assists in making a determination of the significance of impacts to the human environment associated with the actions developed to meet the purpose and need. If a determination that impacts are significant is made, an Environmental Impact Statement (EIS) will be prepared. If impacts are not significant, a “Finding of No Significant Impact” will be prepared.

The Bureau of Land Management (BLM), Bristlecone Field Office is proposing various vegetation treatments, fencing, spring protections, rangeland developments (e.g., pipeline and fence installation), and other actions to meet land use plan objectives within the Long and Ruby Valley Watersheds (Project Area). The Proposed Action would occur over extended periods of time, as budgets allow.

1.2 Background

The Ely District Record of Decision and Approved Resource Management Plan (Ely RMP) (August 2008) divided the planning area into 61 watershed management units with the goal to manage watersheds to achieve and maintain resource functions and conditions required for healthy lands and sustainable uses. Within in the Ely RMP, Long Valley was identified as a high priority watershed and Ruby Valley was identified as a low priority watershed.

In March of 2019, the Bristlecone Field Office completed the Long and Ruby Valley Watershed Analysis (BLM 2019a). The watershed analysis characterized the human, physical and biological features, conditions, processes and interactions within these watersheds; provided a systematic approach to understand and organize ecosystem information; enhanced the BLM’s ability to estimate direct, indirect and cumulative effects of management activities; and guided the general type, location, and sequence of appropriate management activities within these watersheds towards the goal of improving or maintaining ecological function of the watershed. The watershed analysis was not an inventory process, nor was it a detailed study of everything in the watershed. The Long and Ruby Valley Watershed Analysis focused on the most important issues as identified by an interdisciplinary team of specialists.

1.3 Location of Project

The Project Area is located in northwest White Pine County, Nevada (Figure 1; Appendix A), approximately 30 to 60 miles west-northwest of Ely, Nevada. The Proposed Action would only address the portion of the watersheds within the Ely District administrative boundary. The portion of Long Valley located within the Ely RMP planning area (White Pine County) is approximately 404,235 acres. The portion of Ruby Valley within the Ely RMP planning area is approximately 105,017 acres. The combined watersheds Project Area covers approximately 509,252 acres, of which approximately 483,666 acres are managed by BLM. Within the BLM-administered area, vegetation treatments are proposed within 12 treatment units covering approximately 136,000 acres. The remaining acreage is managed by the U.S. Fish and Wildlife

Service (USFWS) or U.S. Forest Service (USFS), or owned by private citizens (see Figure 1; Appendix A). The Project Area is located within all or parts of the Public Land Survey System, Mount Diablo Baseline and Meridian Township, Range, and Sections presented in Table A.1 in Appendix A.

1.4 Purpose and Need for Action

1.4.1 Purpose and Need

A watershed analysis was completed (BLM 2019a) for Long and Ruby valleys where they occur in White Pine County, Nevada. Results indicated that vegetation communities and riparian areas that exist within the watershed analysis area are not attaining the desired range of conditions for each community as specified in the Ely RMP, as amended (BLM 2008). Vegetation communities are meeting Rangeland Health Standards in some areas, but not meeting the Standards in other areas.

The need for the Proposed Action is to improve or maintain watershed health in the Long and Ruby Valley Watersheds. The purpose of the Proposed Action is to restore natural site conditions to meet ecological objectives; reduce potential for large wildfires by reducing fuel loading; increase understory grass and forb species diversity; and, increase available wildlife habitat. Proposed restoration activities are responding to the moderate to high departure from natural conditions in areas across the Project Area, and are designed to meet Ely RMP goals and objectives. Several degraded riparian and spring systems would be protected to restore their function and water availability.

1.4.2 Objectives

The objectives for watershed health, including vegetation restoration, riparian restoration, and range developments include the following:

- Restore watershed health through treatments and developments that benefit soils, vegetation communities, and riparian areas.
- Create a mosaic of vegetation types and stand age classes that would create diverse shrub and herbaceous composition relative to potential, enhance vegetation community resilience and resistance to invasive species, slow potential fire progression, and aid in fire suppression.
- Move the landscapes within the watersheds towards Fire Regime Condition Class (FRCC) 1, with a mosaic of seral stages attaining the potential cover percentages of grasses and forbs for the respective biophysical settings (BpS).
- Improve the chemical, physical, and biological integrity of riparian areas to maintain healthy ecological systems and provide values that support multiple uses.
- Improve habitat for all wildlife, especially sage grouse and big game species.
- Improve habitat for wild horses within the Herd Management Areas.
- Improve distribution of livestock, wild horses, and wildlife by improving overall rangeland health.

1.4.3 Decision to be Made

The BLM will decide whether or not to implement all or part of the Proposed Action and under what conditions.

1.5 Relationship to Planning

The Proposed Action is in conformance with the Ely RMP and Record of Decision (BLM 2008), as amended. The Proposed Action under consideration in this EA would help achieve resource management goals and would be in conformance with specific objectives and management decisions identified in the Ely RMP, as amended, and the Nevada and Northeastern California Greater Sage-Grouse Approved Resource Management Plan Amendment (NVCA ARMPA; BLM 2019b). The goals, objectives, and management decisions are shown in Table B.1 of Appendix B.

1.6 Relationship to Statutes, Regulations, or other Plans

The Proposed Action is also consistent and in conformance with applicable Federal, State, and local laws, statutes, regulations, plans, or decisions including, but not limited to, the following:

- The National Environmental Policy Act of 1969 (42 U.S.C. §§ 4321-4347, January 1, 1970, as amended 1975 and 1994)
- The Federal Land Policy and Management Act of 1976 (43 U.S.C. §§ 1701-1782, October 21, 1976, as amended 1978, 1984, 1986, 1988, 1990-1992, 1994 and 1996)
- Migratory Bird Treaty Act (16 U.S.C. §§ 703-712, July 3, 1918, as amended 1936, 1960, 1968, 1969, 1974, 1978, 1986 and 1989)
- The Endangered Species Act of 1973 (16 U.S.C. §§ 1531-1544, December 28, 1973, as amended 1976-1982, 1984, and 1988)
- Executive Order 13186: Responsibilities of Federal Agencies to Protect Migratory Birds (2001)

The Proposed Action is consistent with the following local plans:

- White Pine County Public Lands Policy Plan (2018)
- White Pine County Portion (Lincoln/White Pine Planning Area) Sage-grouse Conservation Plan (2004)
- White Pine County Elk Management Plan (2007 revision)

Archaeological

- State Protocol Agreement between the Bureau of Land Management (BLM), Nevada and the Nevada State Historic Preservation Office (2014)
- Section 106 and Section 110 of the National Historic Preservation Act (1966)

Pony Express Trail

- National Trails System Act (1968)
- P.L. 102-328 (1992)
- U.S.D.I. BLM Manual 6280 – Management of National Scenic and Historic Trails and Trails Under Study or Recommended as Suitable for Congressional Designation (2012)

The Proposed Action would facilitate the following National goals:

- The National Strategy: The Final Phase of the Development of the National Cohesive Wildland Fire Management Strategy (2014)
- The Healthy Forests Restoration Act (2003)

1.7 Tiering

This EA is tiered to the analysis and effects disclosed in:

- Nevada and Northeastern California Greater Sage-Grouse Proposed Land Use Plan Amendment and Final Environmental Impact Statement (BLM and U.S. Forest Service 2015), as amended in 2019
- The Ely Proposed RMP and Final EIS (BLM 2007a)
- Vegetation Treatments Using Herbicides on BLM Lands in 17 Western States, Final Programmatic EIS (PEIS) (BLM 2007b)
- Vegetation Treatments Using Aminopyralid, Fluroxypyr, and Rimsulfuron on Bureau of Land Management Lands in 17 Western States, PEIS and Record of Decision (BLM 2016a)
- Vegetation Treatments on BLM Lands in Thirteen Western States, Final EIS (BLM 1991)
- Ely District Integrated Weed Management Plan and EA (BLM 2010)

1.8 Scoping, Public Involvement, and Issues

1.8.1 Internal and External Scoping

The Proposed Action was scoped internally by the Bristlecone Field Office Interdisciplinary Team/Resource Specialists on February 19, 2019. BLM resource specialists reviewed the Proposed Action and developed potential issue statements for each resource potentially impacted.

External scoping included a 30-day public scoping period. Individuals and entities that had previously expressed interest in the watershed analysis process were notified by a scoping letter sent on March 19, 2019 for a scoping period ending on April 19, 2019. The scoping letter was also posted on the National Environmental Policy Act Register on March 19, 2019 (<https://eplanning.blm.gov/epl-front-office/eplanning/projectSummary.do?method=renderDefaultProjectSummary&projectId=120634>). The scoping letter solicited input regarding potential alternatives to affect change within the watershed to enhance the condition of the resources. One response letter was received from an interested public. Comments identifying issues are included below.

Key issues or potential impacts identified during the internal and external scoping process included the following:

- Cultural and Historic Resource Values
 - How will the Proposed Action directly and indirectly impact cultural and historic resources?
- Forest Resources
 - How will the Proposed Action directly and indirectly impact forest resources?

- How will the Proposed Action directly and indirectly impact pine nut harvest areas?
- Lands with Wilderness Characteristics
 - How will the Proposed Action directly and indirectly impact Lands with Wilderness Characteristics?
- Livestock Grazing
 - How will the Proposed Action directly and indirectly impact livestock grazing?
- Soil
 - How will the Proposed Action directly and indirectly impact soil resources?
- Vegetation and Rangeland Resources
 - How will the Proposed Action directly and indirectly impact vegetation communities?
 - Will a combination of native and non-native seed mixes be used when implementing the Proposed Action?
 - How will the Proposed Action directly and indirectly impact rangeland resources?
 - Will BLM consult with affected ranchers and County Commissions throughout the planning process?
- Visual Resources
 - How will the Proposed Action directly and indirectly impact visual resources?
- Wetlands/Riparian Zones
 - How will the Proposed Action directly and indirectly impact wetlands and riparian zones?
- Wild Horse Management
 - How will the Proposed Action directly and indirectly impact wild horse management?
 - How will wild horses be managed to meet resource goals for upland and riparian habitat?
- Wildlife and Wildlife Habitat/Special Status Species
 - How will the Proposed Action directly and indirectly impact wildlife and wildlife habitats, including game and special status species?
 - Will the White Pine County Sage Grouse Management Plan and 2018 EA (Note: Final amendment is dated 2019) BLM Greater Sage Grouse Management Plan be incorporated into the?

1.8.2 Tribal Consultation

On March 28, 2019, the BLM sent notification letters to tribes, including invitation to participate in government-to-government consultation and a request for scoping comments. No responses were received. Letters were sent to the following tribes:

- Confederated Tribes of the Goshute Reservation
- Duckwater Shoshone Tribe
- Ely Shoshone Tribe
- Yomba Shoshone Tribe

Chapter 2 Proposed Action and Alternatives

2.1 Introduction

This chapter describes the Proposed Action and the No Action Alternative. Alternatives were considered if presented during scoping and if they met the Purpose and Need for Proposed Action. The No Action Alternative reflects current management and is presented as comparison to impacts of the Proposed Action.

2.2 Adaptive Management

Adaptive management, as defined by the Natural Resources Conservation Service (NRCS), whose definition was adopted by the Department of Interior, is a decision-making process that promotes flexible decision making that can be adjusted in the face of uncertainties as outcomes from management actions and other events become better understood. Careful monitoring of these outcomes advances scientific understanding and helps adjust policies or operations as part of an iterative learning process. Adaptive management also recognizes the importance of natural variability in contributing to ecological resilience and productivity. Adaptive management does not represent an end in itself, but rather a means to achieve more effective decisions and enhanced benefits. Its true measure is in how well it helps meet environmental, social, and economic goals, increases scientific knowledge, and reduces tensions among stakeholders.

Given the long-term objectives and implementation period of this project and the need to be flexible in how treatments are applied in given areas, adaptive management would be used for implementation of the Proposed Action. Adaptive management would be used within the bounds of this analysis to achieve the objectives specified for treatments conducted based on pre and post-monitoring data. The Ely District Office has been using this adaptive management process for approximately 11 years and has been able to adjust vegetation treatments, resulting in improved treatment scenarios that reduce invasive weeds and allow vegetation communities to respond more favorably after treatments, while achieving the goals identified in each specific treatment.

2.3 Description of the Proposed Action

2.3.1 Biophysical Setting

Primary vegetation communities are based on BpS from LANDFIRE (LANDFIRE 2013), which are the primary environmental descriptors used for determining a landscape's natural fire regimes, vegetation characteristics, and resultant FRCC classification. Treatment objectives are based on succession classes within each BpS, based on succession (seral) stage, composition, and structure (Table 2.1). Reference conditions for each BpS are based on as many as five characteristic classes (A through E); current conditions might have additional classes (called "uncharacteristic").

BpS models were used to identify treatment areas. BpS model reference data was used and reviewed by a fuels treatment specialist. BpS models are developed through a literature review and a peer review process by scientists that are familiar with each vegetation community and how this community is impacted by fire (The Nature Conservancy 2019).

Table 2.1 Successional Class Descriptions

Succession Class Code	Succession Class Description	Forests and Woodlands	Shrublands and Grasslands
A	Early-seral, post replacement	Single layer; fire response shrub, graminoids*, and forbs; typically less than 10 percent tree canopy cover; standing dead and down	Fire response forbs; re-sprouting shrubs; re-sprouting graminoids
B	Mid-seral, closed canopy	One to two upper layer size classes; greater than 35 percent canopy cover (crown closure estimate); standing dead & down; litter/duff	Upper layer shrubs or grasses; less than 15 percent canopy cover (line intercept)
C	Mid-seral, open canopy	One size class in upper layer; less than 35 percent canopy cover; fire-adapted understory; scattered standing dead and down	Upper layer shrubs or grasses; greater than 15 percent canopy cover shrubs
D	Late-seral, closed canopy	Single upper canopy tree layer; one to three size classes in upper layer; less than 35 percent canopy cover; fire-adapted understory; scattered standing dead and down	Upper layer shrubs or grasses; less than 15 percent canopy cover
E	Characteristic; late-seral, closed canopy	Multiple upper canopy tree layers; multiple size classes; greater than 35 percent canopy cover; shade-tolerant understory; litter/duff; standing dead and down	Upper layer shrubs or grasses; greater than 15 percent canopy cover shrubs
UN	Uncharacteristic native vegetation cover or structure or composition	Example: conifer established in shrublands	
UE	Uncharacteristic exotic vegetation	Example: cheatgrass (<i>Bromus tectorum</i>) dominated community	
Source: LANDFIRE 2013			
* herbacious plants with grass-like features			

2.3.2 Treatment Units

The watershed analysis revealed the following vegetation types (BpS) have departed from the natural range of variability, and are in need of treatment to meet Ely RMP goals:

- Great Basin Xeric Mixed Sagebrush Shrubland (black sagebrush; BpS 1079);
- Inter-Mountain Basins Big Sagebrush Shrubland (Wyoming big sagebrush; BpS 1080);
- Inter-Mountain Basins Montane Sagebrush Steppe (mountain big sagebrush; BpS 1126);
- Pinyon/Juniper Woodlands (pinyon/juniper woodlands; BpS 1019), and
- Inter-Mountain Basins Curl-leaf Mountain Mahogany Woodland and Shrubland (mountain mahogany; BpS 1062).

The Proposed Action is to utilize various proposed treatment methods within 12 treatment units covering approximately 136,000 acres within the Project Area. In addition, range development projects have been identified that need repairs or require reconstruction, reconfiguration, or new construction. These range projects would improve grazing management and protect riparian resources to meet or work towards meeting vegetation objectives.

The 12 treatment units within the Project Area identified as areas targeted for proposed treatment are listed below in Table 2.2, and shown in Figure 2 (see Appendix A). Treatment units were developed based on analysis of vegetation departure from historic reference conditions, vegetation monitoring data, and Ely RMP objectives. The treatment methods would be employed

in designated areas to achieve the overall objectives for the watershed and the treatment-specific objectives for each treatment unit (Table 2.2). The type of treatment within each unit varies depending on the successional phase of the existing vegetation and the desired range of conditions. While primary treatments are listed, any treatment could be implemented in any unit as part of adaptive management process. Treatment types selected for each unit are dependent on ecological state and succession. Woodland expansion into sagebrush sites in the Project Area were characterized using woodlands development phases described by Miller et al. (2008, page 5). The phases were described as follows:

- Phase I: Early succession stage with pinyon/juniper trees present but shrubs and herbs are the dominant vegetation that influence ecological processes.
- Phase II: Mid-succession stage with trees co-dominant with shrubs and herbs and all three vegetation layers influence ecological processes.
- Phase III: Late succession stage with trees dominant and are the primary plant layer influencing ecological processes. Phase III generally lacks a healthy understory of shrubs, forbs and grasses.

2.3.3 Vegetation Treatment Methods

Treatment methods being considered under the Proposed Action include hand thinning (lop/scatter and cut/pile), chaining, mastication, mulching/chipping, and prescribed fire (pile burning), and fuelwood harvest. Additionally, select areas would be seeded and treated for noxious and invasive weeds. Treatment methods are detailed in Appendix C. Treatments may require maintenance in the future in order to maintain achieved or desired vegetation conditions. Any maintenance treatments would be held to the same Design Features as initial treatment design (Appendix D). Following treatments, fuelwood may be available for harvest.

Tree thinning would consist of thinning pinyon/juniper trees from the sagebrush and woodland sites. Methods for thinning trees would consist of both hand-felling (e.g., chainsaw) and mechanical methods (e.g., mastication, chaining). The mechanical methods would occur in the areas that exhibit higher tree density (e.g., Phase II and III areas). A large portion of pinyon/juniper trees would be thinned from sagebrush ecological sites within the Project Area. Single trees, small patches, larger islands and stringers of trees would be left so that the treatment appears as a natural as possible and to provide for wildlife habitat.

To reduce the visual impact on the landscape, edges of mechanical treatments would follow natural contours, avoid straight lines and mimic natural patterns across the landscape. Units would be irregular and curvilinear (not a straight line), following natural vegetation and topographic boundaries as much as possible. Islands of vegetation would be left to create a mosaic.

Mechanical tree thinning would consist of selective and group tree thinning as well as creating larger clearings and openings through mastication or chaining. Mechanical methods would require the use of heavy equipment such as a masticator, bull hog, feller-buncher, or similar piece of equipment that would selectively remove or shred the trees, or using an Ely chain (ship anchor chain with railroad iron welded perpendicular to the links) pulled by two bulldozers to thin/remove trees (Equipment Photos-Appendix E). Biomass resulting from the thinning of the pinyon/juniper would be available to the public for fuelwood, remain on-site, or piled and burned to remove excess fuel from the sites.

2.3.4 Proposed Range and Riparian Developments

Proposed range and riparian development projects shown in Table 2.3 and Figure 3 (see Appendix A) would be constructed or reconstructed to assist with improving vegetation and hydrological conditions, and grazing management.

2.4 No Action Alternative

The No Action Alternative is the current management situation. Under the No Action Alternative, no treatments to change the current vegetation would be conducted, and no new range developments would be constructed in the Long and Ruby Valley Watersheds. Vegetation treatments would most likely occur only after wildfire. Currently, existing range developments would continue to be maintained according the cooperative agreements, and may be reconstructed within their existing footprint. Most all treatments would occur after disturbance, without consideration of the current vegetation departure from historic range of variability.

Table 2.2 Long and Ruby Valley Watersheds Treatment Units, Treatment Objectives, and Preferred Treatment Methods

Unit Number and Name	BLM Acres	Primary Vegetation Communities	Specific Treatment Area Objectives/Comments*	Preferred Treatment Methods**
Unit 1: Satos Spring	2,889	Black Sagebrush, Pinyon/Juniper Woodland	Create mosaic openings, reduce fuel loading and enhance shrub, forb and grass composition within Phase II and III areas. Reduce tree cover in Phase I areas and along boundary with other treatments.	Mastication and seeding of shrubs, forbs and grasses within Phase II and III. Lop/Scatter in lower benches in Phase I areas.
Unit 2: Maverik	26,707	Wyoming Big Sagebrush, Black Sagebrush, Pinyon/Juniper Woodland	Create mosaic openings by reducing excessive tree cover in sagebrush. Reduce excessive shrub cover in Wyoming big sagebrush sites. Increase understory grasses and forbs within all sites. Reduce fuel loading and enhance shrub, forb and grass composition within dense pinyon/juniper woodlands and in Phase II and III sagebrush areas. Reduce tree cover in Phase I area and along boundary of other treatments.	Mowing and drill seeding in Wyoming big sagebrush areas with excessive shrub cover. Mastication and seeding of shrubs, forbs and grasses within Phase II and III, and in Pinyon/Juniper Woodlands. Hand cutting in Phase I areas and along edges of mechanical treatments.
Unit 3: Long Valley Wash	6,337	Wyoming Big Sagebrush Black Sagebrush	Create mosaic openings, reduce fuel loading and excessive shrub cover while increasing forb and grass composition within Wyoming big sagebrush and black sagebrush sites. Reduce tree cover in Phase I areas.	Hand cutting in Phase I areas. Mowing and drill seeding in Wyoming big sagebrush areas with excessive shrub cover.
Unit 4: Cabin Spring	1,200	Black Sagebrush, Mountain Big Sagebrush	Increase forb and grass composition in sagebrush sites. Reduce tree cover and fuel loading in mountain big sagebrush sites, and create mosaic openings.	Cut/Pile/Burn and seed in Phase II or Phase III areas and around springs. Hand thin (lop/scatter) in Phase I.
Unit 5: Small Canyon	451	Black Sagebrush, Pinyon/Juniper Woodland, Mountain Mahogany	Create mosaic openings in lower bench and canyon areas within pinyon/juniper woodlands to improve understory species. Reduce pinyon/juniper within mountain mahogany. Reduce conifer fuel loading and improve understory in black sagebrush.	Cut/Pile/Burn or masticate followed by seeding in mountain mahogany sites and pinyon/juniper woodlands. Masticate and seed in Phase II and III black sagebrush sites, and complete hand thinning in Phase I areas.
Unit 6: Butte Mountain	12,902	Black sagebrush, Pinyon/Juniper Woodland, Mountain Sagebrush	Reduce fuel loading and conifer establishment in black and mountain sagebrush. Reduce overstory tree canopy and fuel loading on lower benches and canyon area of pinyon/juniper woodlands.	Mastication and cut/pile/burn and seeding of pinyon/juniper woodlands and Phase II and III sagebrush areas. Hand thinning in Phase I areas.

Unit Number and Name	BLM Acres	Primary Vegetation Communities	Specific Treatment Area Objectives/Comments*	Preferred Treatment Methods**
Unit 7: Southern Long Valley	28,167	Black Sagebrush Wyoming Big Sagebrush Mountain Sagebrush Pinyon/Juniper	Reduce fuel loading and conifer establishment in sagebrush areas. Improve understory species in sagebrush sites. Create mosaic openings and improve understory in pinyon/juniper woodlands.	Masticate and/or chaining followed by seeding in Phase II and III areas. Prescribed burning in mountain sagebrush areas. Hand thin and/or pile burn in Phase I and Phase II areas. Mastication and seeding or cut/pile/burn and seed in pinyon/juniper woodland areas.
Unit 8: Buck Mountain	20,642	Black Sagebrush Mountain Sagebrush, Mountain Mahogany	Reduce fuel loading and conifer cover in sagebrush sites. Maintain mid-size pinyon trees (nut bearing trees) within 1/3 mile of main roads for pine nut production. Improve understory forbs and grasses in sagebrush sites. Reduce or suppress invasive species within sagebrush sites.	Hand thin in Phase I areas. Masticate or chain followed by seeding in Phase II and III areas. Apply herbicide in areas dominated by invasive species. Cut/pile/burn in mountain mahogany areas. Cut/pile/burn or masticate in areas where maintaining pine nut production.
Unit 9: Alligator Ridge	8,310	Black Sagebrush	Reduce fuel loading and established pinyon/juniper, and improve understory grasses and forbs within sagebrush sites.	Hand thin Phase I and open areas. Masticate or chain Phase II and III areas followed by seeding forbs, grasses or shrubs.
Unit 10: Mooney Basin	9,866	Black Sagebrush Mountain Sagebrush Pinyon/Juniper Woodland	Thin establishing pinyon/juniper from sagebrush dominated areas. Increase shrub, forb and grass competition by removing trees from Phase I and Phase II areas. Create mosaic openings and improve understory in Phase III areas and pinyon/juniper woodland.	Chaining or mastication followed by seeding in Phase II and Phase III areas and upper slopes of boundary. Hand thin and mechanical thin lower areas and Phase I and II areas.
Unit 11: Long Valley Wash East Bench	5,646	Wyoming Big Sagebrush, Black Sagebrush	Reduce excessive tree cover within sagebrush sites. Increase grass and forb understory and reduce excessive tree cover within sagebrush sites. Reduce excessive shrub cover and increase understory forbs and grasses for wildlife.	Mastication or chaining in Phase II and Phase III areas followed by seeding. Hand thinning in Phase I areas. Mowing and drill seeding in dense sagebrush cover areas.
Unit 12: Long Valley North	13,179	Wyoming big Sagebrush, Black Sagebrush	Improve understory grasses and forbs within sagebrush sites. Reduce tree cover in sagebrush sites. Improve understory diversity in existing seedings (e.g., Paris Seeding).	Mow and drill seed in mosaic pattern within sagebrush sites. Consider fencing in existing seedings. Hand thin in Phase I pinyon/juniper areas. Masticate and seed within Phase II and III areas.
<p>* All areas would potentially be seeded and treated for non-native species. Biomass in treated areas would be available for public purchase for fuelwood. All units would be maintained in the future with treatments identified in the Proposed Action dependent on need and funds available. In some areas, biomass would be piled and burned.</p> <p>** All treatment methods would be available in all units and is not limited to preferred treatment methods described above.</p>				

Table 2.3 Proposed Range and Riparian Development Projects

Location	Description	Project Objectives
Maverick Springs Allotment - Red Hill Spring Pipeline Replacement/Rebuild, Fence Installation and Pipeline Extension (T25N, R59E, Section 14, NESW & SESW)	Replace the existing spring collection box, pipeline and troughs. Replace the existing riparian protection fence around the spring. Construction would be with galvanized pipe-rail. The footprint of the enclosure fence would be approximately 10,000 square feet. Install a new pipeline extension (approximately 0.8 mile in length), extending from the existing troughs, to a storage tank and additional trough. The location is a disturbed area at a Y-junction of two existing roads.	Protect spring and riparian area from grazing impacts. Provide water to wildlife and livestock outside the enclosure area.
Maverick Springs Allotment - Twin Spring #1 and #2 Pipeline Replacement and Rebuild & Fence Installation (T24N, R58E, Section 28, NWSE)	Replace the existing spring collection boxes and pipelines. Install pipeline extension from Twin Spring #2 to trough at #1. Replace trough at end of pipeline below Twin Spring #1 and install water storage tank. Install riparian protection fence around the Twin Spring #1. Construction would be of galvanized pipe-rail. The footprint of the fence would be approximately 500 square feet.	Protect the spring source and potential riparian area from grazing impacts. Provide water to wildlife and livestock outside the enclosure area.
Maverick Springs Allotment - J.G. Willow Spring (T24N, R58E, Section 32, NWNE)	Replace existing spring collection box and pipeline to existing trough location. Construct riparian protection fence. The footprint of the enclosure fence would be approximately 500 square feet. Replace existing trough; install pipeline extension between existing trough and new trough approximately 0.25 mile to the south on the Warm Springs allotment. Install an additional pipeline extension from the existing trough approximately 0.5 mile to the northwest on the Maverick Springs allotment.	Protect the spring source and potential riparian area from grazing impacts. Provide water to wildlife and livestock outside the enclosure area.
Medicine Butte Allotment - Paris Seeding Restoration/Protection (T25N, R60E, Sections 2, 3, 4, 9, 10, 15, and 16; T26N, R60E, Sections 26, 34, and 35)	Restore the Paris Seeding [1,700 acres of crested wheatgrass (<i>Agropyron cristatum</i>)]. Restoration of the seeding would include mechanical treatment of approximately 70 percent of the area in a mosaic pattern to reduce shrub cover, followed by seeding to increase perennial grass and forb density. Areas adjacent to the seeding and within Treatment Unit 12 would be treated in a similar manner. A 4-strand barbed/smooth wire fence with gates would be installed to protect the treatment from wild horses and manage livestock grazing.	Restore vegetation community to provide diversity of grasses, forbs, and shrubs create a mosaic of vegetation communities across the landscape, and improve grazing management. The fence would manage grazing intensity and timing within the treatment area.
Moorman Ranch and Thirty Mile Spring Allotment - Division Fence (T19N, R59E, Sections 1, 12, 13, 14, 23, 26; T20N, R59E, Sections 10, 15, 22, 23, 26, 35, and 36)	Install new fence along the eastern boundary of the Moorman Ranch and Thirty Mile Spring grazing allotments. The fence would be approximately 11.5 miles long.	Manage livestock distribution and prevent drift between allotments.

Location	Description	Project Objectives
Moorman Ranch Allotment - Divide Spring (T18N R58E, Section 23)	Replace existing spring box, pipeline and troughs. Install above-ground storage tank and pipeline from storage tank to two additional troughs. Pipeline extension from the storage tank to the troughs would be approximately 220 feet.	Protect the spring source and potential riparian area from grazing impacts. Provide water to wildlife and livestock outside the enclosure area.
Moorman Ranch Allotment - Jack's Well (T20N, R59E, Section 28)	Install a stockwater well with a mobile solar pump to be on-site and used only during the permitted livestock grazing season (10/15 to 4/15). Install two troughs close to the well head site.	Manage livestock distribution and provide an additional water source for wildlife and livestock.
Moorman Ranch Allotment - Campbell Sheep Swan Spring #2 (T19N, R59E, Section 32, SESE)	Repair and replace existing pipeline and troughs. Install riparian protection fence (approximately 10,000 square feet). Extend pipeline from trough outside fenced area to provide water for wildlife and livestock.	Protect the spring source and potential riparian area from grazing impacts. Provide water to wildlife and livestock outside the enclosure area.
Horse Haven – Medicine Butte Allotments Boundary Fence Extension(s) (North and South) (North – T26N, R60E, Sections 21, 28, and 33) (South - T25N, R60E, Sections 28, 32, 33 and T24N, R60E, Section 5)	Extend the existing allotment boundary fence (Romeo Allotment Fence) between allotments. Fence extension would be approximately three miles to the north and approximately two miles to the south. Install cattleguards along the extended fences where they cross roads.	Manage livestock distribution and prevent drift between allotments.
Ruby Valley Allotment - Rosenlund-Ruby Valley Well #2 (T26N, R58E, Section 36, NENE)	Install a stockwater well with a solar pump and enclosure fence. Install a pipeline approximately 50–100 feet to two troughs.	Provide an additional water source for wildlife and livestock and to distribute livestock grazing.
Thirty Mile Spring Allotment - Robber's Roost Spring #2 (T19N, R59E, Section 24)	Replace existing spring collection box and pipeline to existing trough. Construct riparian protection fence. The footprint of the enclosure fence is approximately 10,000 square feet. Fence constructed of galvanized pipe-rail. Extend pipeline from trough outside fenced area to provide water for wildlife and livestock.	Protect the spring source and potential riparian area from grazing impacts. Provide water to wildlife and livestock outside the enclosure area.

Chapter 3 Affected Environment and Environmental Consequences

3.1 Project Area Description

The Project Area is located in northwest White Pine County, Nevada (see Figure 1; Appendix A), approximately 30 to 60 miles west-northwest of Ely, Nevada. Both Long and Ruby valleys are bounded by mountains to the east and west. Mountain ranges surrounding Long Valley include the Butte Mountains to the east, Maverick Springs Range to the west, and the White Pine Range to the south. Mountain ranges surrounding Ruby Valley include the Maverick Springs Range to the east, and the Ruby Mountains to the west and south. Elevations within the Ruby Valley Watershed range from approximately 5,970 feet in Ruby Valley to 10,322 feet (Sherman Mountain) in the Ruby Mountains. Elevations within the Long Valley Watershed range from approximately 6,105 feet in Long Valley to 9,304 feet (Big Bald Mountain on the west side of Long Valley). Annual average precipitation in the Project Area ranges from 5 to 8 inches in the playa area of Long Valley to greater than 24 inches in the Ruby Mountains.

The Long Valley Watershed portion of the Project Area is approximately 404,235 acres. The Ruby Valley portion of the Project Area is approximately 105,017 acres within White Pine County. The combined watersheds Project Area covers approximately 509,252 acres, of which approximately 483,666 acres are managed by BLM. Within the BLM-administered area, vegetation treatments are proposed within 12 treatment units covering approximately 136,000 acres.

3.2 Resources/Concerns Considered for Analysis

Resources have been evaluated for the potential of significant impacts to occur, either directly, indirectly, or cumulatively, due to implementation of the Proposed Action and No Action Alternative (Appendix F). Consideration of some of these resources is to ensure compliance with laws, statutes, or Executive Orders that impose certain requirements upon all Federal actions. Other resources are relevant to the management of public lands in general and to the BLM Ely RMP planning area in particular. Resources requiring further analysis were also identified as issues during public scoping or during the BLM resource specialist internal review period. Resources evaluated and determined to be unaffected by the Proposed Action or No Action Alternative were dismissed from further analysis (see Appendix F).

Resources requiring further analysis include Fish and Wildlife, Fire Management, Migratory Birds, Rangeland Health and Livestock Grazing, Special Status Species-Wildlife, Soil Resources, Vegetative and Rangeland Resources, Visual Resources, Lands with Wilderness Characteristics, Wetlands/Riparian Zones, and Wild Horses. These resources are analyzed below.

The Pony Express Trail crosses the Project Area. All proposed activities along the Pony Express would follow the Pony Express National Historic National Trail Comprehensive Management and Use Plan Final Environmental Impact Statement (National Park Service [NPS] 1999). Visual analysis may be required up to five miles from the Pony Express Trail. Analysis would be completed in consultation with the National Trails Office.

All historic properties would be avoided during any surface disturbing activities, which typically would be incorporated with planned vegetative mosaic patterns with a minimum 50-meter buffer. Potential impacts would be adequately mitigated Design Features (see Appendix D).

The magnitude of potential effects is described as being major, moderate, minor, negligible, or no effect, and interpreted as follows:

- Major effects have the potential to cause substantial change or stress to an environmental resource or resource use. Effects generally would be long-term and/or extend over a wide area.
- Moderate effects are apparent and/or would be detectable by casual observers, ranging from insubstantial to substantial. Potential changes to or effects on the resource or resource use would generally be localized and short-term.
- Minor effects could be slight but detectable and/or would result in small but measurable changes to an environmental resource or resource use.
- Negligible effects have the potential to cause an indiscernible and insignificant change or stress to an environmental resource or use.
- No effect means there would be no discernible effect on the resource.

3.3 Fish and Wildlife

3.3.1 Affected Environment

General Wildlife and Big Game Species

The Ruby and Long Valley Watersheds support a wide variety of wildlife species. The Project Area supports year-round habitat for mule deer (*Odocoileus hemionus*), as well as crucial summer and crucial winter habitat (Figure 4; see Appendix A) (Nevada Department of Wildlife [NDOW] 2004 and NDOW 2019a). Mule Deer occupy almost all types of habitat within their range, with preference for arid, open areas and rocky hillsides. Typical habitat consists of areas with bitterbrush and sagebrush. Mule deer prefer a mosaic of various-aged vegetation that provides woody cover, meadow and shrubby openings, and available sources of water (NDOW 2019b).

The Project Area also has year-round and crucial habitat for pronghorn antelope (Figure 5; see Appendix A), and Rocky Mountain elk habitat (Figure 6; see Appendix A) (NDOW 2019). Pronghorn prefer open rangeland types that support a variety of vegetation types and areas with low shrubs for summer habitat with a diversity of native grasses and forbs (Gregg et al. 2001). Elk habitat consists of a mosaic of woodland cover that provides escape and travel corridors, and large open areas that provide necessary herbaceous forage (NRCS 1999).

Common wildlife species that are known or expected to occur in the Project Area include coyote (*Canis latrans*), American badger (*Taxidea taxus*), rabbit species, small mammals, reptiles, and aquatic gastropods.

Migratory Birds

The USFWS Information for Planning and Consultation (IPaC) tool was used to create a Migratory Bird Resource List comprised of Birds of Conservation Concern and other species that may warrant special attention within the Project Area (Table 3.1); however, this list does not include all migratory birds that could be found in the Project Area. The Migratory Bird Resource List is derived from data provided by the Avian Knowledge Network, which is based on collections of survey, banding, and citizen science datasets queried for the Project Area.

Additional migratory birds that are likely found in the Project Area are listed in Appendix G, Table G.1.

Bald eagle may occur in the northern portion of the project area during the winter, near Ruby Lake; however, the Project Area overall has minimal bald eagle habitat such as forested areas adjacent to large bodies of water. Golden eagle (*Aquila chrysaetos*) favor partially or completely open country around mountains, hills, and cliffs, and are more likely to occur in the Project Area.

**Table 3.1 Migratory Birds of Conservation Concern
Potentially Found in the Project Area**

Common Name	Scientific Name
Bald Eagle	<i>Haliaeetus leucocephalus</i>
Brewer's Sparrow	<i>Spizella breweri</i>
Golden Eagle	<i>Aquila chrysaetos</i>
Long-billed Curlew	<i>Numenius americanus</i>
Pinyon Jay	<i>Gymnorhinus cyanocephalus</i>
Sage Thrasher	<i>Oreoscoptes montanus</i>
Source: USFWS 2019a	

3.3.2 Direct and Indirect Effects of Proposed Action

General Wildlife and Big Game Species

Vegetation Treatments: Under the Proposed Action, treatment activities would likely result in temporary disturbance and displacement of wildlife to adjacent areas of suitable habitat. Heavy equipment use may result in harm or mortality to less mobile species. The Proposed Action would likely result in short-term negligible to minor adverse impacts to wildlife in or adjacent to treatment areas. Once treatment activities are completed, some species of wildlife would likely return to treated areas while others would use adjacent suitable habitat. The removal of pinyon/juniper trees would create suitable conditions for many wildlife species by increasing forage and browse vegetation as well as maintaining vegetative cover (BLM 2008; Davies et al. 2011; Bates et al. 2005; Monsen et al. 2004). Islands and stringers of trees left after treatment activities would provide security and thermal cover for wildlife adjacent to open forage areas, which most wildlife need for appropriate habitat structure. Increasing forage in the Project Area would also reduce conflicts between wildlife, wild horses, and livestock.

Treatment activities would occur within portions of year-round and crucial habitat for mule deer, pronghorn and elk (Figures 7, 8, and 9; see Appendix A). The Proposed Action would create a more diverse mixture of grasses, forbs, and shrubs from the reduction of pinyon/juniper and mountain mahogany. Open pinyon/juniper stands with high understory herbaceous cover are particularly favorable to deer, elk, and many other wildlife species. Fire treatments would remove some browse vegetation; however, shrubs, grasses, and herbaceous species would return over time and provide suitable habitat. Seeding treatments as well as reductions in pinyon/juniper would result in increased forage of newly emerging vegetation that is high in digestible nutrients (Bombaci and Pejchar 2016). Pronghorn prefer open sagebrush vegetation, which would be increased with vegetation treatments under the Proposed Action.

Research has indicated that although large-scale clearings increased forage production, they were not attractive to deer or elk due to the loss of protective cover. However, smaller woodland

reduction patches that existed within a matrix of protective cover were used more by deer and elk (Bombaci and Pejchar 2016). Under the Proposed Action, loss of thermal and screening cover would occur due to reductions in pinyon/juniper stands. However, impacts would likely be minimal due to treatments occurring in mosaic patterns that would retain trees and other woody cover.

Range and Riparian Developments: Range developments under the Proposed Action may result in short-term disturbance to wildlife during construction activities. Where possible, pipelines would follow existing roads or trails, minimizing the removal of vegetation as much as possible. Proposed trough, pond, and well developments would provide drinking water for wildlife and would be equipped with wildlife escape ramps. Riparian developments under the Proposed Action may result in short-term disturbance to wildlife during construction activities. Proposed developments to riparian areas could result in an increase of riparian species, possibly also increasing the amount of water available in the riparian zone.

New proposed fences may result in adverse impacts to wildlife, particularly large mammals. Fences can contribute to injury and mortality when wildlife run into fencing. Fences may also act as a barrier to daily movement or seasonal migration, and lead to entanglement. New fencing would be installed according to BLM Handbook H-1741-1 (Fencing) standards for wildlife (BLM 1989) to minimize potential adverse impacts. Wildlife, including large mammals, would continue to have access to rangeland and water resources during construction and after range and riparian developments are completed. Fencing would help disperse cattle throughout allotments within the Project Area, which would reduce grazing pressure within some areas. However, grazing pressure would increase within new areas where cattle disperse. Cattle grazing in new areas could result in competition for resources with wildlife.

Range and riparian developments are not anticipated to result in direct or indirect impacts to springsnails. Impacts to areas where springsnails may occur would be avoided during development activities. The Proposed Action would not result in a reduction of population viability, change the existing distribution, or result in a downward trend in habitat capability for springsnails.

Any development within riparian areas that includes piping from the water source into a trough could lead to a reduction of water and loss of riparian habitat, if there is not sufficient water at the source (i.e., spring) to support the development.

Range and riparian developments described in the Proposed Action would result in short-term negligible adverse impacts during construction/development activities. Long-term impacts would provide proper functioning riparian conditions for wildlife dependent on riparian habitat.

Migratory Birds

Vegetation Treatments: Under the Proposed Action, vegetation treatment activities may result in direct effects such as mortality, and displacement from foraging, roosting, or breeding habitat due to noise, heavy equipment, and human activity in treatment areas. Direct impacts during the breeding/nesting season would be avoided as described under the Design Features (see Appendix D). The potential for mortality of migratory birds is minimal as most birds would be able to

disperse from treatment areas and range development sites during activities. Displaced birds would likely return once activities are completed.

Vegetation treatments would result in the reduction of the pinyon/juniper vegetation community, resulting in long-term adverse impacts to migratory birds using this vegetation community type. However, pinyon/juniper vegetation would remain within and adjacent to treatment areas, allowing migratory birds to disperse. Vegetation treatments would result in increased shrub and understory vegetation from pinyon/juniper removal, which would provide escape, nesting, and foraging habitat for some migratory bird species.

Vegetation treatment design would leave single trees, small patches, larger islands, and stringers of trees throughout treated areas. This treatment design would provide raptors with foraging and nesting habitat while also improving sagebrush vegetation, which would increase raptor prey base (such as small mammals) as well as increase the insect population smaller birds prey on. These conditions would increase available habitat and use areas for raptors and smaller migratory bird species.

The Proposed Action would result in short-term negligible adverse impacts during treatment activities and increase habitat components for migratory birds that utilize shrub communities. Long-term reduction of predator perches would also occur. Impacts would be negligible to migratory bird population viability, existing distribution, and generally would not result in a downward trend in habitat capability. Additionally, the Proposed Action would be in compliance with the Migratory Bird Treaty Act (MBTA), as no take of migratory birds, nests, eggs, or nestlings would be anticipated.

Range and Riparian Developments: Range developments under the Proposed Action may result in short-term disturbance to migratory birds during construction activities. Where possible, pipelines would follow existing roads or trails, minimizing the removal of vegetation as much as possible. Proposed troughs would provide drinking water for migratory birds, and would be equipped with wildlife escape ramps. Proposed fencing would provide perching for many migratory bird species but would also result in potential bird collisions with new fencing. Overall, impacts to migratory birds would be negligible.

Any development within riparian areas that includes piping from the water source into a trough could lead to a reduction of water and loss of riparian habitat, if there is not sufficient water at the source (i.e., spring) to support the development. A reduction in riparian habitat could adversely impact some migratory species.

Riparian developments under the Proposed Action may result in short-term disturbance to migratory birds during construction activities. Proposed developments to riparian areas would result in a long-term increase of riparian habitats, possibly also increasing the amount of water available in the riparian zone.

3.3.3 Direct and Indirect Effects of No Action Alternative

General Wildlife and Big Game Species

Under the No Action Alternative, treatment activities and range/riparian developments would not occur and wildlife habitat would remain in its current condition; however, the available forage

may be reduced through the continued move within the Project Area toward FRCC 2 and FRCC 3 conditions (Davies et al. 2011; Pyke 2011; Miller and Tausch 2001). Wildlife forage habitat would likely continue to decline and become reduced over time. A reduction in forage could create conflicts between wildlife, wild horses, and livestock, which could cause stress to some wildlife species.

Forage habitat for mule deer, pronghorn, and elk would continue to be reduced as pinyon/juniper encroachment would reduce grass, forb, and shrub vegetation. Decreased open sagebrush vegetation would have a greater impact on pronghorn as this species prefers more open habitat. Pinyon/juniper stands would continue to provide thermal and protective cover for mule deer and elk; however, over the long-term, pinyon/juniper encroachment resulting in forage reduction may reduce suitable habitat.

The No Action Alternative would result in long-term minor to major adverse impacts to wildlife in the Project Area.

Migratory Birds

Under the No Action Alternative, vegetation treatments and range/riparian developments would not occur within the Project Area. Existing pinyon/juniper vegetation would not be reduced and shrub and understory vegetation would not increase. Long-term minor to moderate adverse impacts to shrub-obligate migratory bird species would continue to occur. Migratory bird species dependent on pinyon/juniper habitat would likely become more common as sagebrush vegetation is displaced.

3.4 Fish and Wildlife - Special Status Species

3.4.1 Affected Environment

BLM Special Status Species that are known and likely to occur within White Pine County and potentially within the Project Area include, but are not limited to: Greater sage-grouse (*Centrocercus urophasianus*; GRSG); pygmy rabbit (*Brachylagus idahoensis*); relict dace (*Relictus solitarius*); northern leopard frog (*Lithobates pipiens*); as well as numerous other avian, bat, fish, reptile and mollusk species listed in Appendix G. There are also several species of special status invertebrates that may occur within the Project Area that have not yet been surveyed or identified. Bald and golden eagles are discussed under Migratory Birds, Section 3.5.

There are several springs within the Project Area that may provide habitat for springsnails. However, formal surveys for springsnails have not been completed to confirm their presence or absence within the Project Area.

Species of highest conservation concern are discussed below, and include the GRSG, pygmy-rabbit, and northern leopard frog.

Greater Sage-grouse

The Project Area contains the different sagebrush vegetation communities that provide GRSG with nesting (201,626 acres), brood-rearing (278,164 acres), and wintering (231,434 acres) habitat, as shown in Figures 10a through 10c (see Appendix A). There are 9 pending and active lek clusters within the Project Area (Figure 11; see Appendix A). Three GRSG Habitat

Management Area designations occur within the Project Area: 136,867 acres of Priority Habitat Management Areas (PHMAs); 140,211 acres of General Habitat Management Areas (GHMAs); and, 55,078 acres of Other Habitat Management Areas (OHMAs), as shown in Figure 12 (see Appendix A).

As detailed in the Long and Ruby Valley Watershed Analysis (BLM 2019a), the BLM's Assessment, Inventory, and Monitoring (AIM) Terrestrial Benchmark Tool was used to analyze data from the Project Area and determine whether GRSG seasonal habitats were meeting habitat objectives of the 2015 NVCA GRSG ARMPA, Table 2-2, and the GRSG Habitat Assessment Framework for seasonal habitats (BLM 2019b). The analysis indicated that habitat for the GRSG within the Project Area is not meeting objectives for nesting habitat, summer brood-rearing habitat, or winter habitat. The exception was the lack of non-native invasive plant species within nesting habitat. Seasonal habitat objectives were also not met in nesting/brood-rearing, upland/late summer brood-rearing or winter habitat types (BLM 2019a).

Pygmy Rabbit

The pygmy rabbit is listed as a BLM Sensitive Species. In 2010, the pygmy rabbit was found not to warrant listing under the Endangered Species Act (USFWS 2010). The extent of pygmy rabbit occurrence is influenced by the presence of tall, dense, big sagebrush stands in combination with deep, sandy, and loose soils for burrows.

Pygmy rabbits highly dependent on sagebrush to provide both forage and shelter throughout the year. The primary threats to this species is habitat loss and fragmentation, conversion of sagebrush rangeland to agriculture, disturbance (roads, mines, oil and gas production), and wildfire frequency (USFWS 2015).

3.4.2 Direct and Indirect Effects of Proposed Action

Vegetation Treatments: Under the Proposed Action, impacts of vegetation treatment activities on special status species would be similar to wildlife discussed previously. Direct impacts to GRSG and pygmy rabbit would be avoided during the breeding/nesting season as described under the Proposed Action Design Features (see Appendix D). The Proposed Action consists of habitat improvements designed to increase the sagebrush vegetation community within the Project Area, specifically to increase GRSG habitat, as well as pygmy rabbit and other sagebrush dependent species habitats.

The Proposed Action would likely result in short-term impacts to GRSG and pygmy rabbit during treatment activities; however, with implementation of Design Features (see Appendix D), impacts would likely be negligible. The Proposed Action would result in long-term increase in GRSG and pygmy rabbit habitat from the reduction of pinyon/juniper and increase of sagebrush vegetation, including herbaceous understory vegetation such as grass and forb cover (Davies et al. 2011; Bates et al. 2005; Monsen et al. 2004). Expanded sagebrush vegetation would increase habitat for sagebrush obligate species such as GRSG, pygmy rabbit, and other sage dependent species. Sagebrush vegetation as well as increased herbaceous understory vegetation, which provide concealment for nests and young, would also expand GRSG nesting/brood-rearing habitat, leading to the potential for an increase in GRSG leks within the Project Area.

Range and Riparian Developments: Under the Proposed Action, range developments would consist primarily of fence, pipeline, and well/trough construction or developments. The majority

of range development activities would occur within existing footprints. Several developments would occur within priority PHMAs and near pending and existing leks, as shown in Figure 13 (see Appendix A). For developments occurring within GRSG HMAs, the BLM would apply avoidance and minimization measures, specifically SSS1 through SSS4, to reduce impacts as outlined in the NVCA Greater Sage-Grouse Record of Decision and ARMPA (BLM 2019b). These impacts would result in short-term disturbance to GRSG. New fencing may result in GRSG collisions; however, fencing would comply with the Sage-Grouse Fence Collision Risk Tool to Reduce Bird Strikes where appropriate (NRCS 2012).

Wildlife escape ramps would be incorporated as part of troughs to minimize wildlife mortality. Riparian developments or activities would increase production and density of riparian area vegetation, providing amphibians (including the northern leopard frog), migratory birds, and other wildlife with more vegetation for nesting, roosting, and foraging habitat.

Riparian developments would occur in areas where special status species may seek water. Special status species would likely temporarily disperse from areas during development activities and return once development is complete. Any development within riparian areas that includes piping from the water source into a trough could lead to a reduction of water and loss of riparian habitat, if there is not sufficient water at the source (i.e., spring) to support the development.

The Proposed Action may result in short-term minor to major adverse impacts to special status species during construction activities. Design Features would be implemented to avoid or minimize potential impacts to special status species (see Appendix D; BLM 2019b measures).

3.4.3 Direct and Indirect Effects of No Action Alternative

Under the No Action Alternative, vegetation treatments and range/riparian developments would not occur within the Project Area. Existing pinyon/juniper vegetation would not be reduced and shrub and understory vegetation would not likely increase. Riparian areas would continue to degrade without additional exclusion fencing. The continued establishment of pinyon/juniper trees within sagebrush vegetation communities would likely result in a decline of existing GRSG nesting/brood-rearing and winter habitat, as well as the decline of pygmy rabbit habitat. The No Action Alternatives would result in long-term moderate to major adverse impacts to special status species in the Project Area.

3.5 Fire Management

3.5.1 Affected Environment

Current fire management is guided by the Ely District Fire Management Plan (BLM 2016b). The Long and Ruby Valley Watersheds occur within five Fire Management Units (FMUs), listed in Table 3.2, and shown in Figure 14 (see Appendix A). A fire management type is assigned to each FMU to clearly define its primary resource management objective and fire protection value. Fire management types of each of the five FMUs within the Project Area are listed in Table 3.2. Each FMU is also identified on the basis of similar vegetation type and condition, management constraints, issues, and objectives and strategies (BLM 2008).

Table 3.2 Fire Management Units and Fire Management Types within the Project Area

Fire Management Unit	Fire Management Type
Buck and Bald/Diamond Mountains	High Value Habitat
Northern Mountains	Vegetation
Northern Benches	High Value Habitat
Northern Valleys	Vegetation
Illipah/Wells Station/Horse Quinn	High Value Habitat

Fire occurrence in the last 10 years within the Project Area consists of approximately 30 fires (Figure 15; see Appendix A). The size of fires during this period ranged from less than an acre to 4,789 acres. Three large fires have occurred within the Project Area within the last 10 years, Blue Jay Fire, Overland Pass Fire, and Hobson Fire (BLM 2019a). Of these, the Overland Pass Fire has been one of the largest fires in over 30 years, burning approximately 7,628 acres (BLM 2019). Within the overall Ely District, 96 percent of fires are lightning caused and approximately 4 percent are human caused or undetermined (BLM 2016b).

As described in Chapter 2, Section 2.3.1, BpS models were used to identify treatment areas within the Project Area. The BpS model provided the primary environmental descriptors that determined the Project Areas natural fire regimes, vegetation characteristics, and resultant FRCC classifications. The BpS model results, including FRCC ratings by vegetation community, for the Project Area, are presented in Table 3.3 below.

Table 3.3 Biophysical Models for the Long and Ruby Valley Watersheds Project Area

Vegetation Community	BpS Model Name	Acres within Project Area	Proportion of Project Area	FRCC Rating
Black Sagebrush	Great Basin Xeric Mixed Sagebrush Shrubland	160,130	32%	2
Wyoming Sagebrush	Inter-Mountain Basins Big Sagebrush Shrubland	134,510	26	2
Mountain Sagebrush	Inter-Mountain Basins Montane Sagebrush Steppe	58,287	11	2
Pinyon/Juniper	Great Basin Pinyon/Juniper Woodlands	57,599	11	2
Salt Desert Shrub	Inter-Mountain Basin Mixed Salt Desert Scrub	40,167	8	1
Greasewood	Inter-Mountain Basins Greasewood Flat	33,410	7	1
Mountain Mahogany	Inter-Mountain Basins Curl-leaf Mountain Mahogany Woodland and Shrubland	7,689	2	2
Source: BLM 2019a				

FRCC is a measure commonly used and accepted for the measurement and characterization of fuels conditions. Fire regimes represent classifications of wildfire within vegetation types based on two criteria: fire severity and fire frequency. Fire frequency represents the average number of years between fire occurrences. Fire severity, in terms of fire regime, is defined by the replacement of the upper canopy of vegetation. This replacement of vegetation is independent from the degree of mortality of the vegetation that composes the upper canopy. Fire severity is described as Low (<5% replacement), Mixed (26–75% replacement), Replacement (>75% replacement).

FRCC refers to the amount of departure from the Historical Range of Variability (HRV). The Interagency FRCC Guidebook (LANDFIRE 2010) defines HRV as the variability and central tendencies of biophysical, disturbance, and climatic systems, across landscapes and through time, in the absence of modern human interference. FRCC is characterized into three classes (Barrett et al. 2010):

- FRCC 1 – Less than 33% departure from the central tendency of the HRV: Fire regimes are within the natural or historical range and risk of losing key ecosystem components is low. Vegetation attributes (composition and structure) are well intact and functioning.
- FRCC 2 – 33 to 66% departure from the HRV: Fire regimes have been moderately altered. Risk of losing key ecosystem components is moderate. Fire frequencies may have departed by one or more return intervals (either increased or decreased). This departure may result in moderate changes in fire and vegetation attributes.
- FRCC 3 – Greater than 66% departure from the HRV: Fire regimes have been substantially altered. Risk of losing key ecosystem components is high. Fire frequencies may have departed by multiple return intervals. This may result in dramatic changes in fire size, fire intensity and severity, and landscape patterns. Vegetation attributes have been substantially altered.

As shown in Table 3.3, the majority of the Project Area, 418,215 acres, is rated as FRCC 2. The remainder, 73,577 acres, is rated as FRCC 1. The overall rating for the Project Area is FRCC 2.

3.5.2 Direct and Indirect Effects of Proposed Action

Vegetation Treatments: Under the Proposed Action, vegetation treatments would reduce woody vegetation in the short-term to increase sagebrush and herbaceous ground cover over the long-term. Implementation of vegetation treatments would serve to move vegetation composition and structure attributes from FRCC 2 conditions within 418,215 acres of the Project Area towards FRCC 1 conditions.

The Proposed Action includes prescribed fire (pile burning) as part of preferred treatment methods within five treatment units (Units 4, 5, 6, 7, and 8). Piles would be burned when the ground is frozen and there is sufficient snow on the ground to prevent burning surrounding vegetation. Pile burning under the Proposed Action would likely result in direct effects by assisting with wildfire suppression efforts within treated units by reducing fuels (reduced woody vegetation and potential for running crown fires) that would in turn reduce fire intensity and flame lengths, also reducing wildfire risk within treated areas.

Pile burning under the Proposed Action, along with other treatment methods, would result in changes to vegetation communities within the Project Area. Vegetation treatments would create a mosaic of vegetation types and stand age classes within treated areas that would slow potential fire progression and aid in fire suppression. Treated areas would provide more resilient vegetation that could recover with minimal assistance after wildfire.

Short-term risk of fire escaping the controlled pile burn area would occur, resulting in the threat of wildfire that could affect adjacent areas and resources. A comprehensive burn plan would be required for all pile burns, which would establish control measures and contingency plans to minimize risks. Piles would also be burned when ground is frozen or snow is present, which

would reduce risk of escaped fires. Vegetation treatments under the Proposed Action would result in short-term negligible adverse impacts from risk of wildfire. Long-term impacts would include a mosaic vegetative community more resilient to fire with a mosaic of succession classes conducive to FRCC 1, which would reduce accumulations of vegetation, canopy fuels, and surface fuels that contribute to wildfire risk.

Range and Riparian Developments: Rangeland developments under the Proposed Action would not likely result in direct impacts related to fire risk, fire suppression, or changes in vegetation that would increase or decrease fuels within the Project Area. Rangeland and riparian developments would result in indirect impacts by distributing livestock grazing, which could reduce fire risk by reducing fuel loading of fine fuels in areas that are not currently being grazed.

3.5.3 Direct and Indirect Effects of No Action Alternative

Under the No Action Alternative, treatment activities would not occur and vegetation communities would remain in their current conditions and fuel loading would not be reduced. Wildfire risk would likely increase as vegetation composition and structure attributes move the Project Area toward FRCC 2 and FRCC 3 conditions. The No Action Alternative would likely result in long-term moderate to major adverse impacts related to wildfire risk in the Project Area.

3.6 Soil Resources

3.6.1 Affected Environment

Both Long and Ruby valleys are internally drained desert basins bounded by dominant mountain ranges that are strongly modified by erosion. Soils within the Project Area include the following soil orders: Mollisols, Aridisols, and Entisols. Mollisols are found in the upper elevations and include more weathered or developed soils in the upper layers, primarily due to transformation by plants. Entisols occur in valley bottoms in areas of recently deposited parent material or in areas where erosion or deposition rates are faster than the rate of soil development, such as dunes, steep slopes, and lake plains. Aridisols generally occur in mid-elevation positions where a lack of moisture restricts the intensity of weathering processes and limits most soil development processes to the upper part of the soils. Aridisols often accumulate salt, calcium carbonate, and other materials in the semi-arid Great Basin. Overall, the soils in the Project Area are generally well drained, loamy or loamy-skeletal, and shallow to very deep (BLM 2019a).

3.6.2 Direct and Indirect Effects of Proposed Action

Vegetation Treatments: Under the Proposed Action, heavy equipment used for vegetation treatments would compact and displace/disturb the soil surface horizon. The use of heavy equipment may require multiple passes across treatment areas and up-rooting of vegetation, which would expose soils below the root zone. Soil displacement and disturbance would increase the risk of erosion from wind and water. Soil compaction from equipment use for vegetation treatments would occur over a short period of time. Thus, soil structure and vegetation would recover well because the treatment disturbances would not be ongoing.

Once mechanical removal of woody vegetation, primarily pinyon/juniper, is completed, biomass woody material would be left on-site to degrade naturally, with biomass depth no more than four inches across the area. This material would serve to protect and stabilize surface soils as well as provide nutrients from decomposition. The removal of woody vegetation may also improve soil

retention, stability, and hydrological function over the long-term by allowing the herbaceous and shrub layers to re-establish (Bates et al. 2005, Pierson et al. 2007).

Burning of wood piles would result in high temperatures that can cause soils to repel water (water collecting on soil surface) rather than infiltrate, and cause surface runoff and erosion during rain events. Under the Proposed Action, wood piles would be burned when the ground is frozen and there is sufficient snow on the ground to prevent burning surrounding vegetation (see Appendix C). Burning during cold weather would help minimize the potential effects of heat on soils underneath and surrounding the burn piles.

Herbicide chemical treatment of invasive species (weed control) would not result in direct effects to soils due to low toxicity and moderate to rapid biodegradation rates in soils (BLM 2016a). The loss of invasive species ground cover due to chemical treatments may affect soil water retention or soil stability in the short-term; however, perennial understory grasses and forbs would be expected to establish within one to two years, improving soil water retention and stability.

The Proposed Action would likely result in short-term minor adverse impacts from soil erosion potential and compaction during vegetation treatment activities. In the long-term, compacted soils would be expected to recover and an increase in shrub and understory vegetation would reduce erosion potential and increase soil water retention.

Range and Riparian Developments: Under the Proposed Action, range developments would consist primarily of fence, pipeline, and well/trough construction or developments. These activities would likely result in soil disturbance from the use of equipment to construct/improve fences, pipelines, and wells/troughs. These activities would be temporary with localized areas of soil disturbance expected.

Range and riparian development projects under the Proposed Action would result in increasing riparian area properly functioning conditions and the health, productivity, and diversity of native and/or desirable plant species within the Project Area over the long-term, which would also increase soil stability, water retention, and erosion potential.

3.6.3 Direct and Indirect Effects of No Action Alternative

Under the No Action Alternative, treatment activities and range/riparian developments would not occur and soil resources would not be disturbed in the short-term. Long-term adverse impacts to soil retention, stability, and hydrological function may occur as woody vegetation continues to spread, reducing sagebrush and herbaceous layers (Bates et al. 2005, Pierson et al. 2007). Woody vegetation typically decreases soil moisture as well as increases erosion potential and soil stability (U.S. Geological Survey 2009).

3.7 Vegetation and Rangeland/Grazing Resources

3.7.1 Affected Environment

Vegetation Resources: Vegetation resources existing conditions were analyzed in the Long and Ruby Valley Watershed Analysis (BLM 2019a). Within the Project Area, single-leaf pinyon pine (*Pinus monophylla*) and Utah juniper (*Juniperus osteosperma*) assemblages dominate areas from the middle to the upper alluvial slopes along valley borders, with an understory of sagebrush/bunchgrass communities. At elevations above approximately 7,500 feet, vegetation is

dominated by antelope bitterbrush (*Purshia tridentata*), mountain big sagebrush (*A. tridentata* ssp. *vaseyana*), curl leaf mountain mahogany (*Cercocarpus ledifolius*), single-leaf pinyon pine, and Utah juniper.

At elevations above approximately 9,000 feet, vegetation is dominated by limber pine (*Pinus flexilis*), single-leaf pinyon pine, white fir (*Abies concolor*), and bristlecone pine (*P. longaeva*). Quaking aspen (*Populus tremuloides*) generally occurs near springs and where subsurface water is easily accessible to roots, primarily in the Ruby and Buck Mountains. A unique population of Engleman spruce (*Picea engelmannii*) occurs at the higher elevations of Sherman Mountain at the south end of the Ruby Mountains. Curl leaf mountain mahogany also occurs at higher elevations of the Long and Southern Ruby Valley watersheds (BLM 2019a).

Vegetation characteristics as determined by the BpS models are described in Table 3.3 in Section 3.5, Fire Management. Based on the BpS models, there are seven major vegetation communities within the Project Area: black sagebrush; Wyoming sagebrush; mountain sagebrush; pinyon/juniper; Salt Desert shrub; greasewood; and mountain mahogany. A detailed description of each vegetation community, associated BpS setting vegetation type, and succession classes are found in the Long and Ruby Valley Watershed Analysis (BLM 2019a).

There are four Pine Nut Commercial Units within the Project Area, consisting of 178,990 acres, as shown in Figure 16 (see Appendix A). Pinyon pine nuts are harvested in the fall within the Project Area. Pinyon pine nut crops are variable by year and geographic location. Permits for commercial pinyon pine nut harvesting are sold by auction to the highest bidder.

Rangeland/Grazing Resources: The Project Area includes 10 grazing allotments within BLM-administered lands and one allotment within USFS lands, as shown in Figure 17 (see Appendix A). The 10 BLM grazing allotments are located either partially or entirely within the Project Area. Cattle and sheep grazing are permitted in the Project Area, with cattle the primary livestock grazed. Grazing is permitted during the fall, spring, summer, and winter. Currently, there are 21,819 animal unit months (AUMs) of allocated livestock forage on BLM-administered lands within the Project Area (BLM 2019a).

Based on analysis conducted for the Long and Ruby Valley Watershed Analysis (BLM 2019a), approximately 411,368 acres (81 percent) of the Project Area were classified as suitable for grazing, and 97,883 acres (19 percent) were classified as unsuitable for grazing. The Watershed Assessment analysis of rangeland resources was compared to the Standards for Rangeland Health and Guidelines for Livestock Grazing and Management (Standards and Guidelines; BLM 1997), and specifically the Northeastern Great Basin Resource Advisory Council Standards. Standards and Guidelines provide the resource measures and guidance to ensure healthy, functional rangelands. The Standards and Guidelines comply with regulation requirements and are in conformance with the Ely RMP (BLM 2008).

A summary of the standards determination findings, based on the watershed assessment (BLM 2019a), of whether or not each standard is achieved, and the casual factors that may cause standards to not be achieved, are presented in Table 3.4 below.

Table 3.4 Standards Conformance Summary for the Long and Ruby Valley Watersheds

Achieving Standard	Rationale
Standard 1. Upland Sites: <i>Upland Soils exhibit infiltration and permeability rates that are appropriate to soil type, climate, and land form.</i>	
Yes	<ul style="list-style-type: none"> • Is being met as indicated by soil erodibility, soil aggregate stability, and soil/site stability, hydrologic function, and biotic integrity. • Not being met for vegetation cover. Localized horse trailing, particularly between and around water sources and roads, are not meeting Standard 1. • Overall, evidence shows the infiltration and permeability characteristics for the Project Area appear appropriate to the location where they are found on the landscape, and for the climate acting upon the landscape.
Standard 2. Riparian and Wetland Sites: <i>Riparian and wetland areas exhibit a properly functioning condition and achieve state water quality criteria.</i>	
Yes	<ul style="list-style-type: none"> • There are no perennial streams or natural, undeveloped springs within BLM-administered lands in the Project Area, therefore, not assessed. • Five developed springs with surface water flows and riparian vegetation showed signs of degradation. • Water quality data has not been collected, the State of Nevada has no water quality monitoring sites within the Project Area.
Standard 3. Habitat: <i>Habitats exhibit a healthy, productive, and diverse population of native and/or desirable plant species, appropriate to the site characteristics, to provide suitable feed, water, cover, and living space for animal species and maintain ecological process. Habitat conditions meet the life cycle requirements of threatened and endangered species.</i>	
Yes	<ul style="list-style-type: none"> • Standard met as indicated by: cover and composition for Disturbance Response Groups; Rangeland Health Assessments; LANDFIRE analysis; and, cover and composition for recent fires. • However, analysis showed that in some areas plant communities needed to provide habitat for animal species and ecological processes have been altered or are at risk of being altered. Treatments are needed in at-risk areas and areas that have already crossed thresholds. • Habitat for GRSG in not meeting objectives for nesting habitat, summer brood-rearing habitat, or for winter habitat. Season habitat objectives were also not met in nesting/brood-rearing, upland/late summer brood-rearing, or winter habitat types. • The exception was the lack of non-native plants in nesting habitat.
Standard 4. Cultural Resources: <i>Land use plans will recognize cultural resources within the context of multiple use.</i>	
Yes	<ul style="list-style-type: none"> • Specific projects are required to include cultural needs assessments and are likely to reveal new information with site-specific inventories and discoveries. • Cultural resources examined for the Project Area include the Sunshine Locality (eligible for the National Register of Historic Places) and the Pony Express National Historic Trail, which runs east-west through the Project Area.
Standard 5. Healthy Wild Horse and Burro Populations: <i>Wild horse and burros exhibit characteristics of a healthy, productive, and diverse population. Age structure and sex ratios are appropriate to maintain the long-term viability as a distinct group. Herd management areas are able to provide suitable feed, water, cover, and living space for wild horses and burros and maintain historic patterns of habitat use.</i>	
No	<ul style="list-style-type: none"> • In 2017, there were approximately 3,842 wild horses in the Triple B Herd Management Area (HMA), which exceeds the Appropriate Management Level for this HMA. • Severe utilization of key forage species and degradation of water resources in concentrated areas is occurring within the Triple B HMA. • Sufficient quantities and quality of preferred forage is extremely limited within the HMA and Project Area.
Source: BLM 2019a	

3.7.2 Direct and Indirect Effects of Proposed Action

Vegetation Resources

Vegetation Treatments: Under the Proposed Action, vegetation treatment methods including hand thinning, chaining, mastication, mulching/chipping, mowing, prescribed fire, seeding, and fuelwood harvest, would result in the removal of larger trees within sagebrush and shrub communities. Treatment methods would also result in reducing overstory tree canopy and fuel loading within some woodland sites, as well as create mosaic openings and improve understory in some pinyon/juniper woodland sites. The Proposed Action would result in short-term minor adverse impacts to vegetative resources during treatment activities due to vegetation removal and disturbance.

As described in Table 2.2, Section 2.3.3 (Vegetation Treatments), objectives of vegetation treatments include, but are not limited to: creating mosaic openings, reducing fuel loading and enhance shrub, forb and grass composition within Phase II and III areas; reducing tree cover in Phase I areas and along the boundary with other treatments; and thinning/reducing pinyon/juniper and tree cover from sagebrush areas. Proposed vegetation treatments within Phase I and Phase II areas would likely increase water available for shrubs and perennial plants, while treatments in Phase III areas may increase available water; however, invasion by non-native annuals, like cheatgrass, that take advantage of the lack of competition from native plants may occur (Kormos et al. 2017).

Under the Proposed Action, tree thinning would allow remaining trees appropriate space to reduce competitive interactions and increase tree health and vigor. Vegetation treatments would also increase understory species establishment, creating overall ecological resiliency and health.

Mowing would be conducted to reduce shrub cover, which would help increase the vigor of existing shrubs, and reduce competition to existing grasses and forbs. Seed would be applied in treated areas that do not have an appropriate amount of grasses, forbs and shrubs present prior to or post treatment. These methods would help understory establishment.

The Proposed Action vegetation treatments would be implemented to meet the goals and objectives for vegetation resources in the Project Area, as stated in the Ely RMP (see Appendix B). Specifically, the Proposed Action would help achieve desired range of conditions and mosaic upon the landscape. The Proposed Action would also reduce vegetation community departure from historic (reference) conditions, with more native perennial grasses and forbs as well as healthier shrub vegetation.

Short-term negligible to minor adverse impacts to pine nut production would likely occur due to the reduction in pinyon trees after vegetation treatments. However, increased pinyon pine health and vigor as a result of tree thinning would likely increase pinyon pine nut production over the long-term.

Range and Riparian Developments: Under the Proposed Action, range developments would consist primarily of fence, pipeline, and well/trough construction or developments. These activities would likely result in disturbance to vegetation from the use of equipment to construct/improve fences, pipelines, and wells/troughs. These activities would be temporary, occur within existing disturbed areas where possible, and minimal vegetation disturbance would be expected. Range and riparian development projects under the Proposed Action would result in

short-term negligible adverse impacts. Range and riparian development projects under the Proposed Action would result in increasing the health, productivity, and diversity of native vegetation communities, particularly sagebrush communities, within the Project Area. .

Rangeland Resources

Vegetation Treatments and Rangeland/Riparian Developments: Under the Proposed Action, within vegetation treatment areas, vegetation objectives in which livestock grazing would resume include at least 10 percent foliar cover of well-established desirable species, and in seeded treatment areas livestock grazing would be closed for at least two growing seasons, and may be closed longer, until the vegetation objectives have been met as detailed in the Design Features (see Appendix D). Short-term adverse impacts would occur to grazing permittees during temporary closures after some vegetation treatments, as well as during range and riparian development construction activities. Closures would be coordinated with grazing permittees and livestock would be expected to be moved to other areas within the grazing allotments, or removed from the area. The Proposed Action would result in short-term negligible adverse impacts.

Based on recent research as well as field observations of similar treatments within adjacent watersheds, the long-term impacts of the Proposed Action would be expected to shift vegetation treatment areas from minimal understory to more desirable ecological condition, with more native perennial grasses and forbs as well as healthier shrub vegetation (BLM 2019a). Vegetation treatments would also make progress towards Standard 1 of the Standards and Guidelines by providing a more diverse vegetative community of perennial plants that provide for soil stability, hydrologic function, wildlife habitat and ecological resiliency (Davies et al. 2011; Bates et al. 2005; Monsen et al. 2004). In addition, progress towards improving Standard 5 would be made because vegetation treatments would result in an increase of available forage for livestock, wildlife, and wild horse, reducing competition between these species within treated areas.

Vegetation treatments and riparian development projects under the Proposed Action would result in progress towards Standard 2 of the Standards and Guidelines by increasing riparian area properly functioning conditions. Progress towards meeting Standard 3 would also be accomplished by increasing the health, productivity, and diversity of native and/or desirable plant species to provide suitable feed, water, cover, and living space for animal species.

3.7.3 Direct and Indirect Effects of No Action Alternative

Under the No Action Alternative, treatment activities and range/riparian developments would not occur and vegetation resources would remain in their current condition; however, vegetation would continue to move toward FRCC 2 and FRCC 3 conditions. Sagebrush communities would likely continue to degrade as pinyon/juniper expands.

Grazing would continue as authorized within the Project Area. Vegetation composition would likely continue to trend towards departure from rangeland standards and grazing forage would likely continue to decrease over the long-term. Forage competition between livestock, wildlife, and wild horses would continue and likely increase over time, leading to reductions in permitted livestock uses as well as changes in wild horse management. Livestock use would not be distributed throughout the Project Area as new water developments would not be constructed or

repaired. The No Action Alternative would result in short-term and long-term moderate to major adverse impacts to vegetation resources and rangeland health.

3.8 Visual Resource Management

3.8.1 Affected Environment

BLM-administered lands are placed into four visual resource management (VRM) classes; VRM Class I, II, III, and IV. Each management class portrays the relative value of the visual resources and serves as a tool that describes the visual management objectives. The VRM classes within the Project Area are shown in Figure 18 (see Appendix A) and include Class II (approximately 29,864 acres), III (approximately 306,361 acres), and IV (approximately 147,517 acres). The Pony Express National Historic Trail corridor is managed under VRM Class II (Figure 18; see Appendix A). There are no VRM Class I designations within the Project Area. Objectives for these VRM classes are as follows:

- Class II: Retain the existing character of the landscape. The level of change to the characteristic landscape should be low. Management activities may be seen, but should not attract the attention of a casual observer. Any changes must repeat the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape.
- Class III: Partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. Management activities may attract attention but should not dominate the view of the casual observer. Changes should repeat the basic elements found in the predominant natural feature of the landscape. Changes caused by management activities may be evident and begin to attract attention, but these changes should remain subordinate to the existing landscape.
- Class IV: Provide for management activities, which require major modification of the existing character of the landscape. The level of change to the characteristic landscape can be high. The se management activities may dominate the view and be a major focus of viewer attention. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and repeating the basic elements.

The existing landscape within the Project Area is typical of northeast Nevada. The landform is characterized by steep mountains and narrow ravines or canyons between ridges. Mountains and steep ravines are covered with vegetation consisting of conifer trees and mixed xeric shrubs, typical of mountains in the Basin and Range Province. Steep mountainous topography gives way to gentle rolling alluvial fans and nearly flat valley floors trending north-south within the Project Area. Vegetation cover in the alluvial fans and valley floors is characterized by low scattered shrubs. There are several groundwater springs scattered throughout the Project Area, and vegetation cover at these springs consists of riparian species, which are generally visually apparent against the backdrop of upland xeric shrubs. Ruby Lake is located in the northwestern portion of the Project Area, which provides a contrast to the alluvial fan landscape. Colors generally range from browns, tans, and pale greens in the alluvial fans, to darker greens in forested areas at higher elevations and within riparian areas.

Human modifications and other alterations to the natural landscape include mining and exploration sites (such as the Bald Mountain Mine south of Ruby Lake), roads and trails, including the Pony Express Trail, ranching and range infrastructure (such as fences and other range improvements), wildland fire areas, and management controls, such as interpretative information signage at landmarks.

Casual observers would view the Project Area predominantly from major roadways, such as Highway 50, State Route 892, and Pine County Road 3. Observers would also view the Project Area from recreational roads and trails, including the Pony Express Trail.

3.8.2 Direct and Indirect Effects of Proposed Action

Vegetation Treatments: Within the Project Area, VRM classes within proposed vegetation treatment units are described in Table 3.5 below. Minimal VRM Class II areas are located within proposed treatment units (approximately 8,355 acres, less than two percent of BLM-managed lands within the Project Area). The majority of treatment units fall within VRM Classes III and IV (approximately 127,339 acres).

Table 3.5 VRM Classes within Proposed Action Treatment Units

Unit Number and Name	VRM Classes	Acres
Unit 1: Satos Spring	Class III	127
	Class IV	2,763
Unit 2: Maverik	Class II	4,925
	Class III	15,951
	Class IV	5,676
Unit 3: Long Valley Wash	Class II	1,217
	Class IV	5,120
Unit 4: Cabin Spring	Class III	1,072
	Class IV	89
Unit 5: Small Canyon	Class III	451
Unit 6: Butte Mountain	Class III	12,786
Unit 7: Southern Long Valley	Class II	165
	Class III	24,452
	Class IV	3,543
Unit 8: Buck Mountain	Class III	3,164
	Class IV	17,107
Unit 9: Alligator Ridge	Class III	7,173
	Class IV	1,137
Unit 10: Mooney Basin	Class III	6,868
	Class IV	2,985
Unit 11: Long Valley Wash East Bench	Class II	2,048
	Class III	3,585
	Class IV	11
Unit 12: Long Valley North	Class III	2,632
	Class IV	10,539

Under the Proposed Action, the removal of pinyon and juniper trees would create additional breaks between woodland communities and shrub communities. Roughly horizontal lines would be created where these communities converge. The vertical lines would appear soft and faint because they would mimic similar vertical lines from natural vegetation breaks in the existing

landscape. Vertical lines associated with trunks of individual trees would be slightly more pronounced after treatments because of the reduced tree density.

Scattered trees from hand thinning, mulch chips from mastication, and root wads from chaining would add coarse textures to treated areas. Textures would become less coarse and eventually diminish entirely as scattered trees, mulch chips and root wads naturally decompose over time. The color of the vegetation would become slightly more gray-green as sagebrush establishes within treatment units. Biomass material would increase the brown and tan hues as it decomposes, typically over a short period of time.

Proposed vegetation treatments under the Proposed Action would result in weak visual contrast with the existing landscape because typical of the landscape features of form, line, color, and texture elements would be repeated. The visual modifications would not dominate the landscape character, and the level of change within the landscape would be low. Most contrast and changes would be expected to dissipate within the first 10 years following implementation of vegetation treatments.

Under the Proposed Action, vegetation treatments would result in creation of a mosaic pattern of vegetation that better mimics the characteristic landscape prior to tree expansion. The Proposed Action would result in negligible short-term adverse impacts on the current characteristic landscape, these impacts would diminish every year and would be viewed as natural within 1 to 25 years. The Proposed Action would meet VRM Class II, III, and IV objectives.

Range and Riparian Developments: Range and riparian developments under the Proposed Action would not likely impact VRM class objectives. Pipelines would follow existing roads or trails, minimizing the removal of vegetation as much as possible. Fenceline, well, and trough developments would not likely change the visual character of the area as several already exist.

3.8.3 Direct and Indirect Effects of No Action Alternative

Under the No Action Alternative, treatment activities and range/riparian developments would not occur and there would be no short-term adverse impacts to visual resources within the Project Area. The overall color, line, and contrast of the Project Area would likely remain similar to the current viewshed. Over the long-term, vegetation would continue to move toward FRCC 2 and FRCC 3 conditions. Sagebrush communities would likely continue to degrade as pinyon/juniper expands. These conditions could increase the risk of large wildfires, which would result in a short- and long-term minor to moderate adverse impact to the visual character of the Project Area.

3.9 Lands with Wilderness Characteristics

3.9.1 Affected Environment

On June 1, 2011, the Secretary of the Department of the Interior issued a memorandum Instruction Memorandum 2011-154 to the BLM Director that in part affirms BLM's obligations relating to wilderness characteristics under Sections 201 and 202 of the Federal Land Management Policy Act. The BLM Released Manuals 6310 and 6320 in March 2012, which provide direction on how to conduct and maintain wilderness characteristics inventories and provides guidance on how to consider whether to update wilderness characteristics inventory.

The primary function of an inventory is to determine the presence or absence of wilderness characteristics. An area having wilderness characteristics is defined by:

- Size (at least 5,000 acres of contiguous, roadless federal land);
- Naturalness (i.e. the degree to which an area generally appears to have been affected primarily by the forces of nature with the imprint of people's work substantially unnoticeable.); and,
- Outstanding opportunities for solitude or primitive and unconfined types of recreation.
- The area may also contain supplemental values (ecological, geological, or other features of scientific, educational, scenic, or historical values).

The Nevada BLM completed the original wilderness review in 1979, and issued an initial wilderness inventory decision in 1980 and within the Project Area no units were found to have wilderness characteristics.

In 2011, the BLM Ely District Office began updating the lands with wilderness characteristics (LWC) inventory on a project-by-project basis until there is a land use plan revision. Vegetation treatment units within the Project Area overlap 15 LWC inventory units in which one LWC inventory unit (NC-040-034-2012) was determined to possess LWC (approximately 8,861 acres), as shown in Figure 19 (see Appendix A). There has not been a land use plan amendment to determine if or how these LWC units would be preserved to protect the wilderness characteristics.

3.9.2 Direct and Indirect Effects of Proposed Action

The area determined to possess LWC within the Project Area is located within Treatment Unit 8. Vegetation treatments within this unit would consist of reducing fuel loadings and conifer cover, improving forb and grass cover, and reducing invasive species within sagebrush vegetation communities. The proposed vegetation treatments would not affect the size of the LWC and no new roads would be created. In addition, the proposed treatments would not measurably affect the outstanding opportunities for primitive and unconfined recreation. Solitude may be temporarily affected during treatment activities from noise and the presence of workers, as well as from the long-term loss of screening vegetation. Naturalness characteristics may also be temporarily affected after treatments are complete but would return once sagebrush vegetation, forbs, and grasses recover treated areas, and the area is observed as natural again.

Vegetation treatments would result in an adverse impact to naturalness. Areas treated with chaining would not be considered natural for approximately 25 years and areas treated with mastication could be observed as unnatural for up to 15 years. Areas treated with hand cutting may take some time before being observed as natural.

The Proposed Action would result in short-term to long-term adverse impacts to LWC solitude and naturalness during treatment activities and until treated areas are observed as returning to naturalness (from one to 25 years, depending on the treatment method).

3.9.3 Direct and Indirect Effects of No Action Alternative

Under the No Action Alternative, treatment activities and range/riparian developments would not occur and there would be no anticipated adverse impacts to LWC, including impacts to size, naturalness, or opportunities for solitude or primitive recreation.

3.10 Wetland/Riparian Zones

3.10.1 Affected Environment

Within the Project Area, the majority of spring systems are located in mountain range higher elevations. Springs are small-scale aquatic systems that occur where ground water reaches the surface (Adele 2011). The spring systems are relatively small and supplied by local or perched groundwater systems. Most springs form small seeps and stringer meadow habitats shaped by the topography. These springs are surrounded by herbaceous riparian plants but at higher elevations, they are surrounded by more woody species such as aspens and willows. A few of the springs occur along the topographic break between the mountains and alluvial apron and on the Project Area valley floors (BLM 2019a).

Within the Project Area, there are 113 identified springs within Ruby Valley, the majority of which are located on the eastern slope of the Ruby Mountains, and 20 identified springs within Long Valley. Few riparian areas are associated with lotic systems (riverine or stream systems) within these watersheds because most are either intermittent or ephemeral in nature and do not support riparian ecosystems (BLM 2019a).

The majority of the springs in the Project Area have been developed for livestock and wild horse watering purposes. There are no natural, undeveloped springs on BLM-administered lands in the Project Area, and no riparian areas that exhibit properly functioning conditions. Several developed springs currently have small areas in which sufficient surface water is available to support riparian vegetation (BLM 2019a).

One of the largest springs within the Project Area is the Long Valley Slough, which is located on private land. This spring is currently damned and the area surrounding the spring is primarily meadow vegetation.

The southern portion of Ruby Lake and its associated wetland habitat are also located within the Project Area. Ruby Lake was designated a National Wildlife Refuge and is considered one of the most important waterfowl nesting areas in the Great Basin and Intermountain West. The Refuge is also habitat for the federally listed relic dace (USFWS 2014). The NPS designated the South Marsh portion of Ruby Lake a National Natural Landmark because of the biological diversity and pristine condition of the habitat (USFWS 2014).

3.10.2 Direct and Indirect Effects of Proposed Action

Vegetation Treatments: Under the Proposed Action, vegetation treatment methods would result in the removal of larger trees within sagebrush and shrub communities. No vegetation treatments are proposed within wetland or riparian vegetation communities. Short-term soil erosion and sediment transport to wetland/riparian zones as a result of woody vegetation removal would occur (see Section 3.7, Soil Resources). Under the Proposed Action, short-term negligible adverse impacts may occur due to soil erosion/sedimentation during treatment activities.

The removal of woody vegetation would improve soil retention, stability, and hydrological function over the long-term by allowing the herbaceous and shrub layers to re-establish, resulting in improved riparian and wetland zones (Bates et al. 2005, Pierson et al. 2007).

Herbicide treatments are not proposed near wetland/riparian zones; however, adherence to the Standard Operating Procedures and Project Design Features for Herbicide Applications would ensure no impacts to wetland and riparian resources (BLM 2007).

Range and Riparian Developments: Under the Proposed Action, range developments would consist primarily of fence, pipeline, and well/trough construction or developments. These activities would result in soil and vegetation disturbance from the use of equipment during construction/development activities. Riparian developments may require temporary diversion of water flow during pipeline and well/trough construction. The Proposed Action may result in short-term negligible adverse impacts to livestock and wild horse ponds and troughs where development activities are proposed. Fencing of water sources with heavy impacts from livestock and wild horses, as well as developments to pipelines and wells and troughs, would result in reduced soil compaction and allow herbaceous and woody riparian vegetation to re-establish.

3.10.3 Direct and Indirect Effects of No Action Alternative

Under the No Action Alternative, treatment activities and range/riparian developments would not occur and pond, well, and trough areas would not be disturbed in the short-term. Over the long-term, these features would continue to degrade. Fences would not be extended or improved under this alternative, which would result in long-term adverse impacts from continued heavy use by livestock and wild horses.

3.11 Wild Horses

3.11.1 Affected Environment

The majority of the Project Area is within the Triple B wild horse HMA. The Triple B HMA consists of 1,230,579 BLM-managed lands and 1,915 acres of a mix of private and other public lands (primarily USFS). The Appropriate Management Level for the entire Triple B HMA is 250 to 518 wild horses. In 2017, the estimated population with foal crop was 2,124. In February of 2018, the BLM removed 1,294 wild horses from the HMA to prevent undue or unnecessary degradation of the public lands associated with excess wild horses. The majority of the wild horses removed were made available for adoption (BLM 2018). In July of 2019, the BLM gathered and removed 804 wild horses from the HMA with the same purpose as the 2018 gather and removal (BLM 2019c).

Within the HMA, wild horses generally utilize the middle and lower piedmont zones and valley floors most of the year. During the summer, they utilize higher elevations when preferable forage and water are accessible. Wild horses primarily rely on livestock wells and spring developments for water sources within the Project Area.

3.11.2 Direct and Indirect Effects of Proposed Action

Vegetation Treatments: Under the Proposed Action, vegetation treatments within the Triple B HMA would likely result in temporary disturbance and displacement of wild horses due to noise,

heavy equipment, and human activity in treatment areas. The Proposed Action would likely result in short-term minimal adverse impacts to wild horses in or adjacent to treatment areas. The Proposed Action would result in the removal of pinyon/juniper trees, which would increase forage and browse vegetation and reduce conflicts between wildlife, wild horses, and livestock.

Range and Riparian Developments: Range developments under the Proposed Action may result in short-term disturbance to wild horses during construction activities. Proposed trough, pond and well developments would provide drinking water for wild horses. Proposed developments to range and riparian areas would result in an increase or improved condition of riparian habitats, and improving water availability for wild horses.

Fencing can adversely impact the wild free-roaming behavior of wild horses. New fencing may also cause injury or mortality of wild horses. Wild horses may become aware of new fences by use of flagging or white fence tops; however, under stressful circumstances, wild horses may bolt through fencing and sustain injuries. New fencing would be installed according to BLM Handbook H-1741-1 (Fencing) standards for wildlife and wild horses (BLM 1989) to minimize potential adverse impacts. Wild horses would continue to have access to rangeland and water resources during construction and after range and riparian developments are completed.

3.11.3 Direct and Indirect Effects of No Action Alternative

Under the No Action Alternative, treatment activities and range/riparian developments would not occur and wild horse habitat would continue to degrade. The available forage may be reduced through the continued move toward FRCC 2 and FRCC 3 conditions (Davies et al. 2011; Pyke 2011; Miller and Tausch 2001). A continued reduction in forage availability would result in continued conflicts between wildlife, wild horses, and livestock. The No Action Alternative would result in long-term minor to major adverse impacts to wild horses in the Project Area.

Chapter 4 Cumulative Effects

4.1 Introduction

As defined by the Council on Environmental Quality (CEQ), Regulations for Implementing National Environmental Policy Act (NEPA), Cumulative Effects (40 CFR 1508.7) 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 regardless of what agency (Federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

To be cumulative, effects must overlap in both time and place. It is unknown if, when, or where projects would be proposed within the Project Area; nor is it known what types or extent of projects would be proposed; therefore this analysis considers general possible effects of future uses. A more specific cumulative effects analysis would be part of the NEPA process for any project proposed.

A Cumulative Effects Study Area (CESA) was determined for resources analyzed, as listed in Table 4.1. The CESAs vary depending on the resource analyzed due to the migratory nature of wildlife in this area, the location of active and pending GRSG leks, and previous fuels treatments. The general area reviewed includes the entire Long and Ruby Valley Watersheds Project Area and areas within the surrounding watersheds, including Newark Valley, northern Ruby Valley, Butte Valley, Jakes Valley, and Huntington Valley.

Information used in the cumulative effects was collected from BLM Land and Mineral Legacy Rehost 2000 System (LR2000) and Geographic Information Systems (GIS) shapefiles provided by the BLM and NDOW.

4.1.1 Past and Present Actions

According to CEQ regulations, consideration of the individual effects of all past actions is not required to determine the present effects of past actions. In compliance with CEQ regulations only past actions that result in present impacts are considered in the analysis (CEQ 2005). Past actions in the CESA include grazing, mining, recreation, wild horse gathers, vegetation treatments, range development projects, and wildfire. There are mining projects within or adjacent to the Project Area, including the Bald Mountain Mine, which is a large mining operation that has removed or disturbed native vegetation.

Table 4.1 Cumulative Effects Study Areas by Resource

Resource	Acres	Description	Explanation of Area
Fish and Wildlife - General	509,252	Project Area	Incorporates habitat where most of the impacts to wildlife could occur.
Fish and Wildlife - Big Game	1,447,152	Portions of NDOW Hunt Area 10, including Hunting Units 103, 104, and 108	Encompasses the Project Area mountains and surrounding valleys within the Project Area and vicinity where big game may be affected by the Proposed Action, and accounts for the migratory nature of big game species.
Fish and Wildlife - Special Status Species GRSG	507,903	GRSG Population Management Units (PMU), including: Butte/Buck/White Pine PMU and Ruby Valley PMU	Includes PMUs that bisect the Project Area and a 4-mile buffer area that encompasses GRSG populations and seasonal habitat.
Soil/Wetland/Riparian	508,100	Portions of Ruby Valley and all of Long Valley Watershed. Includes Hydrologic Unit 10	Includes watersheds where water and soil resources have the potential to be affected by the Proposed Action.
Vegetation	509,252	Project Area	Incorporates habitat where most of the impacts to vegetation could occur.
Rangeland - Grazing	487,982	Includes all or portions of grazing allotments within the Project Area, including: Maverick/Ruby #9, Horse Haven, Ruby Valley, Maverick Springs, Medicine Butte, North Butte, Warm Springs, Thirty Mile Spring, Dry Mountain, Newark, and Mormon Ranch	Includes all or portions of grazing allotments that may be impacted by the Proposed Action within the Project Area.
Visual Resources	4,235,455	Visible areas within a 10-mile buffer of Proposed Action Treatments Units	Encompasses the areas where the Proposed Action Treatment Unit activities could be viewed and have an impact on visual resources.
Lands with Wilderness Characteristics	8,846	Portions of Treatment Unit 8 located within area designated as Lands with Wilderness characteristics	Encompasses the areas where the Proposed Action Treatment Unit activities could impact naturalness and solitude.
Wild Horses	481,956	Portion of the Triple B Herd Management Unit within the Project Area	Incorporates habitat where most of the impacts to wild horses could occur.

4.1.2 Reasonably Foreseeable Future Actions

Based on recent and current activities, the following future actions could occur concurrently within the Project Area and vicinity over the next 10 years:

- Mineral exploration and mining, including: Bald Mountain Mine Expansion (proposed expansion from 10,207.7 acres to 10,782.3 acres); oil leases (approximately 25 acres).
- Oil and gas exploration and development

- Land and Realty actions, including the White Pine County Conservation, Recreation, and Development Act Round 2 sales/disposal (432 acres)
- Issuance of right-of-way grants for communication sites, access roads, utility services, etc.
- Livestock grazing
- Fence repair and construction
- Off-highway vehicle use
- Non-motorized recreation such as camping, hunting, hiking, mountain biking, geo-caching
- Development of water for livestock, agriculture, and mining
- Wild horse use and management
- Wild horse gathers
- Fuel wood harvest and forest product use
- Range and fuels treatment projects (Table 4.2)
- Noxious weed treatment (see Table 4.2)
- Fire suppression and rehabilitation
- Wildland fires (see Table 4.2)
- Construction of wildlife habitat improvement projects

Table 4.2 Past and Present Range Treatments, Fuels Treatments, and Wildfires within the Project Area

Name	Type	Total Size	Year
Hobson Fire Treatment	Habitat Rehabilitation	331	
Paris Seeding Treatment	Seeding	1,763	
Alligator Ridge Treatment	Chaining/Seeding	1,692	
Willow, Thirty Mile-2, Maverick 1, and Robinson Well Treatment	Miscellaneous	1,017	
Chrome Treatment	Aerial seeding and one-way chain of burned trees	4,533	2004
Blue Jay Fire Treatment	Post-fire aerial seeding	349	2016
Blue Jay Fire Treatment	Stabilization aerial seeding	179	2016
Overland Pass Fire Treatment	Seeding	4,645	2017
Overland Fire Treatment	One-way smooth chaining	633	2017
Overland Fire Treatment	Post-fire stabilization seeding	3,287	2017
Overland Fire Treatment	Post fire aerial seeding for wildlife	1,334	2017
Weed Treatment – Long Valley	Weed treatment efforts	429	2002-2011
Weed Treatment – Ruby Valley	Weed treatment efforts	776	2005-2014
Blue Jay Wildfire	Human caused	1,717	1985
Uhalde Wildfire	Natural	440	1987
Maverick Wildfire	Natural	773	1999
Willow Wildfire	Natural	402	2000
Hastings Wildfire	Unknown	54	2000
Robisonwel Wildfire	Natural	639	2001
Chrome Wildfire	Natural	5,164	2004
Blue Jay Wildfire	Natural	657	2015
Overland Wildfire	Natural	4,789	2016
Hobson Wildfire	Natural	338	2017

4.2 Cumulative Effects Analysis

Analysis of potential impacts to migratory birds and fire management indicated that impacts would likely be negligible overall; therefore, cumulative impacts to migratory birds and fire management were not analyzed in detail. Below are the resources analyzed for cumulative effects.

4.2.1 Fish and Wildlife, and Special Status Species

Proposed Action Alternative: Past actions in and surrounding the Project Area, such as vegetation treatments and range developments (see Table 4.2), have resulted in areas of increased forage and water availability for wildlife, including big game species, and typically result in a decrease in competition for resources. Fencing can result in an increase of livestock use within some areas while grazing is reduced in others, which in turn affects forage availability for wildlife and big game species.

Past and present activities that displace or disturb wildlife, big game, and special status species, particularly the GRSG and pygmy rabbit, include recreation, road travel and maintenance, mining exploration and activities, and utility corridors. An increase in roads and trails have caused increased human activity and increased noise, which can impact GRSG and pygmy rabbit habitat use. Overall disturbance (such as roads, power lines, power plants, mines, gravel pits, etc.) within the Project Area was less than one percent (BLM 2019a).

Past and future actions that result in alterations of wildlife habitat, loss of habitat, and effects to wildlife behavior and distribution include the following: livestock and wild horse grazing; mining operations, which include large vehicle traffic on roads through the Project Area; road construction and maintenance; fence construction; uncontrolled wildfire; and recreation activities including off-highway travel, camping and hunting. These activities adversely affect wildlife.

Reasonably foreseeable future actions within the CESAs include any activities that remove or alter vegetation composition. Removal of vegetation could increase fragmentation causing fewer areas for wildlife cover and possibly forage. Activities or actions that remove pinyon/juniper would reduce habitat for species dependent on those vegetation communities. However, if the pinyon/juniper woodland was replaced with a more diverse sagebrush community, the number of sagebrush obligate species and species that utilize sagebrush habitat would increase.

The Proposed Action vegetation treatments would create a mosaic landscape and a healthy, resilient plant community conducive to the viability of several species. The reduction of trees would improve grass and forb production, as well as improve sagebrush communities and overall wildlife habitat, particularly for sagebrush dependent species. The Proposed Action would improve the habitat requirements for most wildlife species found in the Project Area and vicinity by increasing understory components in treated areas while maintaining adjacent cover, and could also offset adverse effects from past and future projects that fragment habitat. Past vegetation treatments and range developments have been conducted to meet objectives for GRSG habitat by removing pinyon/juniper woodland and creating a mosaic of vegetation with more species diversity. The Proposed Action would contribute to meeting GRSG habitat objectives, which would also improve habitat for pygmy rabbit and other sagebrush dependent species. Lek populations would be expected to increase, or new leks would be established as grasses and forbs increase in treated areas. The Proposed Action in combination with past,

present, and reasonably foreseeable actions would not likely result in cumulative impacts to fish and wildlife within the Project Area and vicinity.

No Action Alternative: Implementation of the No Action Alternative, combined with the past, present, and future actions, would result in the continuation of current conditions. The density, cover and area of pinyon/juniper would likely continue to increase and shrub and herbaceous cover and area would continue to decrease (Davies et al., 2011; Pyke, 2011; Miller and Tausch, 2001). The No Action Alternative would result in a continued reduction in forage for wildlife, as well as an increase in hiding/thermal cover. Competition among wildlife, wild horses and livestock could increase, leaving fewer resources available. Wildfire risk would likely continue to increase as vegetation composition and structure attributes would move the Project Area toward FRCC 2 and FRCC 3 conditions.

4.2.2 Soil Resources

Proposed Action Alternative: Past and future actions, including wildfires and human disturbances (such as off-highway recreation, mining, vegetation removal, construction activities), increase soil compaction and erosion within, and adjacent to the CESA. Such past actions within the CESA have resulted in increased soil erosion vulnerability. The implementation of present and future vegetation treatments would increase soil stability in the CESA and vicinity as vegetative diversity and ground cover is increased. Present and future vegetation treatments would help recover compacted soils, an increase in shrub and understory vegetation would reduce erosion potential and increase soil water retention. The Proposed Action in combination with past, present, and reasonably foreseeable actions would not result in negligible cumulative impacts to soils within the CESA.

No Action Alternative: Implementation of the No Action Alternative, combined with the past, present, and future actions, would not likely change current soil conditions. Soils could become more susceptible to water erosion within areas with increasing expansion of pinyon/juniper trees and a reduction in ground cover, which would result in less stable soils from reduced herbaceous understory.

4.2.3 Vegetation and Rangeland/Grazing Resources

Vegetation

Proposed Action Alternative: Within the CESA, native vegetation has been removed by roads and trails, and smaller mining activities. Past and present activities in the CESA have changed the range of species abundance, composition, and diversity. A lack of natural disturbance by wildfire has caused substantial changes to the condition and composition of vegetation communities. Past and present grazing has affected species composition. Pinyon/juniper woodland has become established in areas that would historically be a sagebrush community. Past vegetation treatments have reintroduced disturbance and in some cases improved the vegetation composition and species diversity, while in other areas invasive species have spread.

Past and future actions that impact vegetation communities include wildfires, livestock and wild horse grazing, roads and trails, and mining. Wildfire in particular can affect large continuous expanses of vegetation, leaving minimal mosaic to the burn pattern. Long-term changes in ecological conditions affect vegetative diversity and habitat quality. Surface disturbance from

past and present actions likely has contributed to the increase of noxious and invasive species distribution within the CESA and vicinity.

Past actions to adjust livestock and wild horse use of vegetation communities combined with present and future actions to implement fuels and vegetation treatments would allow for an improvement in vegetative recruitment, establishment, production, vigor, and diversity. Past, present, and future vegetation and range improvement projects would improve the FRCC of the CESA and vicinity, as well as maintain or improve vegetative diversity and abundance. Past, present, and reasonably foreseeable future actions combined with treatments included in the Proposed Action would mitigate impacts to vegetation, soils and water by improving the health, vigor and recruitment of perennial grasses, forbs and shrubs; increasing ground cover to improve soil stability, improve water quality by reducing erosion potential; and promote rangeland health and economic stability by increasing the quantity and quality of forage and reducing competition between livestock, wild horses, and wildlife.

The Proposed Action in combination with past, present, and reasonably foreseeable actions would likely result in a resilient vegetative community that could respond to disturbance and move toward a more historical (natural) regime.

No Action Alternative: Implementation of the No Action Alternative, combined with the past, present, and future actions, would likely result in an increase of pinyon/juniper density, cover, and area, while shrub and herbaceous cover would continue to decrease (Davies et al. 2011; Pyke 2011; Miller and Tausch 2001). Increasing density of trees would result in vegetation communities that are more susceptible to large, high severity wildfires as well as an increase in non-native invasive species.

Rangeland/Grazing

Proposed Action Alternative: Within the CESA, past and present surface disturbances have altered and in some cases removed vegetation that would otherwise be available forage for livestock grazing. Disturbance for roads and trails would have improved access to grazing locations within the CESA. Previous fuels treatments and rangeland treatment projects have altered vegetation cover for livestock grazing by promoting forage species. Surface disturbance from past and present actions likely has contributed to the increase of noxious and invasive species distribution within the CESA.

Reasonably foreseeable actions within the CESA that would affect livestock grazing include mining operations, future vegetation treatments, and continued use and maintenance of roads and trails. Future vegetation treatments would require postponement of livestock grazing for two years or until the site has recovered from the disturbance. This postponement would temporarily reduce the area available but over time, the available grazing area with forage availability would most likely increase. Livestock would most likely distribute throughout the areas as available forage would be available in more locations. This would meet Rangeland Health Standards, and prevent competition among other resource users.

The Proposed Action in combination with past, present, and reasonably foreseeable actions should shift the area toward FRCC 1 that would facilitate and establish conditions that would promote healthier, more productive and resilient rangeland conditions. These conditions would also assist in progressing towards or meeting the rangeland health standards in the Project Area.

Livestock would most likely distribute throughout the CESA as available forage would be available in more locations.

No Action Alternative: Implementation of the No Action Alternative, combined with the past, present, and future actions, would likely result in the current declining conditions to continue. Tree density and cover in the CESA would likely increase while shrub and herbaceous cover would likely decrease (Davies et al. 2011; Pyke 2011; Miller and Tausch 2001). These conditions could potentially reduce the amount of areas available for livestock grazing, and prevent Rangeland Health Standards from being met.

4.2.4 Visual Resources

Proposed Action Alternative: Past and future actions that impact visual resources include roads, powerlines, fence lines, range improvements, gravel pits, mining activities, vegetation treatments, wildland fire, and buildings/development. Past and future actions that include vegetation treatments that incorporate Design Features to meet VRM class objectives would mimic the natural landscape and camouflage or reduce visual effects from past or future projects within the CESA. The Proposed Action in combination with past, present, and reasonably foreseeable actions would not likely result in cumulative impacts to visual resources within the Project Area and vicinity.

No Action Alternative: Implementation of the No Action Alternative, combined with the past, present, and future actions, would not likely have an immediate cumulative effect on visual resources within the CESA. Future planned projects would be subject to Design Features that meet VRM Class objectives. Long-term cumulative effects of the No Action Alternative could result in a monotypic visual landscape (e.g., same color, line form,) if pinyon/juniper trees continue increasing in density within the CESA. Natural, uncontrollable disturbances such as wildfire could occur causing an abrupt change in the visual landscape, particularly within VRM Class II areas.

4.2.5 Lands with Wilderness Characteristics

Proposed Action Alternative: Past and future actions that impact outstanding opportunities for primitive and unconfined recreation, as well as solitude and naturalness, include roads, powerlines, mining activities, wildland fire, and recreational activities (such as off-highway vehicle use). Past and future actions that include vegetation treatments that mimic the natural landscape and improve the naturalness of an area would also improve LWC. Treatment activities temporarily impact naturalness and solitude; however, over the long-term vegetation treatments return the landscape to a more primitive state and improve the naturalness of the landscape. The Proposed Action in combination with past, present, and reasonably foreseeable actions would not likely result in cumulative impacts to LWC within the Project Area and vicinity.

No Action Alternative: Implementation of the No Action Alternative, combined with the past, present, and future actions, would not likely have noticeable cumulative impacts to the size, naturalness, or opportunities for solitude or primitive recreation within LWC.

4.2.6 Wetland/Riparian Zones

Proposed Action Alternative: Past and present actions that create surface disturbances cause impacts to soil and water resources within the CESA. Soil and riparian areas are impacted by

activities such as utility lines, mining exploration, roads, wildfires, vegetation treatment activities, and livestock/wild horse grazing. Actions that remove vegetation cover or compact and disturb soils would result in additional erosion or sedimentation in riparian areas. Past and future vegetation treatments typically leave mulch on-site to reduce erosion potential. Based on similar vegetation treatment projects, soils could be expected to recover within 1 to 2 years of implementation. Vegetation treatments help wetland/riparian area health by reducing tree cover and increasing forb and grass cover (ground cover), resulting in increased potential water availability. The Proposed Action in combination with past, present, and reasonably foreseeable actions would not result in cumulative impacts to wetland/riparian zones within the CESA.

No Action Alternative: Implementation of the No Action Alternative, combined with the past, present, and future actions, would not likely result in short-term changes to current conditions within riparian areas. However, over the long-term, continued degradation of existing infrastructure as well as the continued heavy use by livestock and wild horses would result in a decline of wetland and riparian areas.

4.2.7 Wild Horses

Proposed Action Alternative: Past and present actions that impact wild horses include road construction and maintenance; fence construction; uncontrolled wildfire; and recreation activities including off-highway travel, camping and hunting. Past actions to adjust livestock and wildlife use of vegetation communities combined with present and future actions to implement fuels and vegetation treatments would allow for an improvement in vegetative recruitment, establishment, production, vigor, and diversity, which would improve wild horse foraging habitat. Past and future vegetation treatment activities, as well as range/riparian improvements, would result in the removal of pinyon/juniper trees that would increase forage and browse vegetation, and reduce conflicts between wildlife, wild horses, and livestock for range and water resources. The Proposed Action in combination with past, present, and reasonably foreseeable actions would not likely result in cumulative impacts to wild horses within the CESA.

No Action Alternative: Implementation of the No Action Alternative, combined with the past, present, and future actions, would likely result in continued decline of wild horse habitat. Forage available for wild horses would continue to be reduced as the CESA moves toward FRCC 2 and FRCC 3 conditions. In addition, conflicts between wildlife, wild horses, and livestock would increase as forage resources decline.

Chapter 5 Tribes, Agencies, Individuals, or Organizations Consulted

5.1 Tribal Consultation

On March 28, 2019, the BLM sent notification letters to tribes, including invitation to participate in government-to-government consultation and a request for scoping comments. No responses were received. Letters were sent to the following tribes:

- Confederate Tribes of the Goshute Reservation
- Duckwater Shoshone Tribe
- Ely Shoshone Tribe
- Yomba Shoshone Tribe

5.2 Agencies Consulted

Agencies consulted include:

- Nevada Department of Wildlife

5.3 Individuals or Organizations

Individuals and organizations that had previously expressed interest in the watershed analysis process were notified by a scoping letter about the scoping period ending on April 19, 2019.

Chapter 6 List of Preparers

Table 6.1 below lists individuals that assisted with the preparation of the EA.

Table 6.1 List of Preparers

Name	Title	Responsible for the Following Section(s) of this Document
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Katie Walsh	Natural Resource Specialist	Forest Resources, Fuels
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Ian Collier	Rangeland Management Specialist	Rangeland Resources, Vegetation Resources
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Lisa Gilbert	Archaeologist Technician, Cultural Resource Specialist	Cultural Resources, Heritage Special Designations, Paleontological Resources
Alicia Hankins	Land Law Examiner	Lands and Realty
Stacy Holt	Environmental Protection Specialist	Mineral Resources
John Miller	Park Ranger (Wilderness)	Lands with Wilderness Characteristics, Visual Resources, Transportation and Access, Recreation Uses, Wild and Scenic Rivers
Chris McVicars	Natural Resource Specialist	Noxious and Invasive Weed Management
Concetta Brown	Natural Resource Specialist	ACECs (historical and cultural areas), NEPA Compliance
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Holly Trejo	Program Manager	Contract management
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Susy Morales	Project Manager, NEPA Coordinator	EA Development
Frank McDermott	GIS Specialist	GIS data management
Benjamin Arp	GIS Specialist	GIS data and figure revisions
Jennifer Gutierrez	Production Specialist	QA/QC, document production

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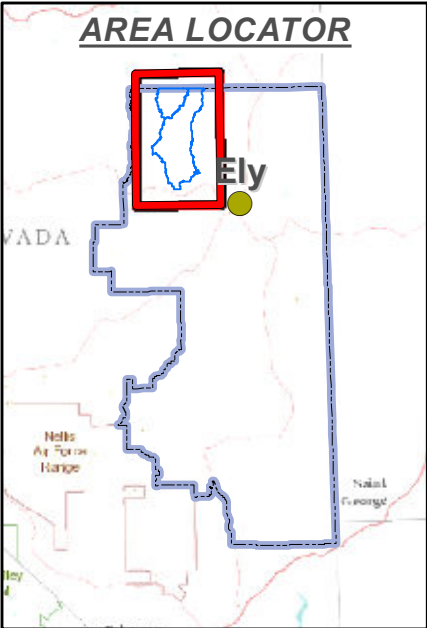
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Appendix A – Figures

**Table A.1 Long and Ruby Valley Watersheds Project Area
Township, Range, and Sections**

Township, Range	Sections
18 North, 58 East	1–16, 22–27
18 North, 59 East	2–7, 18, 19, 30
19 North, 57 East	1, 11, 12, 13, 24, 25
19 North 58 East	1–36
19 North, 59 East	1–36
19 North, 60 East	3–10, 15–20, 30
20 North, 57 East	1–4, 10–15, 23–26, 35, 36
20 North, 58 East	1–36
20 North, 59 East	1–36
20 North, 60 East	5–7, 17–20, 29–32
21 North, 56 East	1, 2, 11–14, 23–26
21 North, 57 East	1–30, 32–36
21 North, 58 East	1–36
21 North, 59 East	1–36
21 North, 60 East	31
22 North, 56 East	36
22 North, 57 East	1–4, 9–16, 20–36
22 North, 58 East	1–36
22 North, 59 East	1–36
22 North, 60 East	6, 7, 18, 19, 30
23 North, 57 East	1, 2, 11–15, 22–28, 33–36
23 North, 58 East	1–36
23 North, 59 East	1–36
23 North, 60 East	6, 7, 31
24 North, 57 East	1–5, 9–16, 22–27, 35, 36
24 North, 58 East	1–36
24 North, 59 East	1–36
24 North, 60 East	2–11, 15–20, 29–32
25 North, 57 East	1–5, 7–18, 20–29, 32–36
25 North, 58 East	1–36
25 North, 59 East	1–36
25 North, 60 East	1–36
26 North, 57 East	14–17, 20–23, 26–29, 32–35
26 North, 58 East	13–17, 20–29, 31–36
26 North, 59 East	19–36
26 North, 60 East	19–36
26 North, 61 East	19



LONG AND RUBY VALLEY WATERSHEDS RESTORATION EA



Legend

BLM Ely District Boundary


Watershed Analysis Area


Land Ownership

- Bureau of Land Management
- US Fish and Wildlife Service
- Forest Service
- Private
- Water

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

Map Produced by: RECON Environmental
Date: 8/20/2019





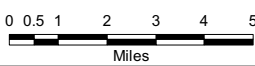
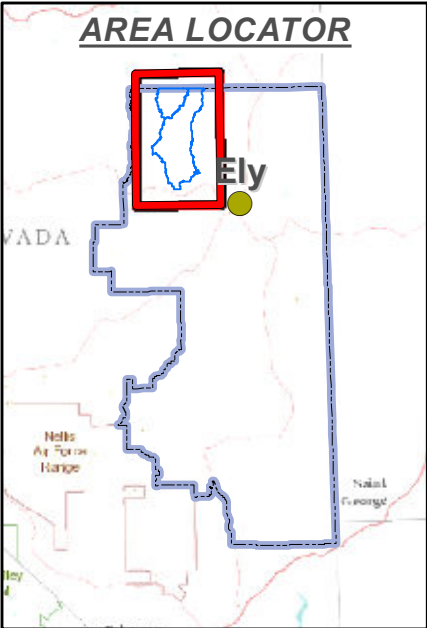


FIGURE 1
Watershed Project Area



LONG AND RUBY VALLEY WATERSHEDS RESTORATION EA



Legend

- BLM Ely District Boundary
- Treatment Units
- Watershed Analysis Area

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

Map Produced by: RECON Environmental
Date: 8/20/2019

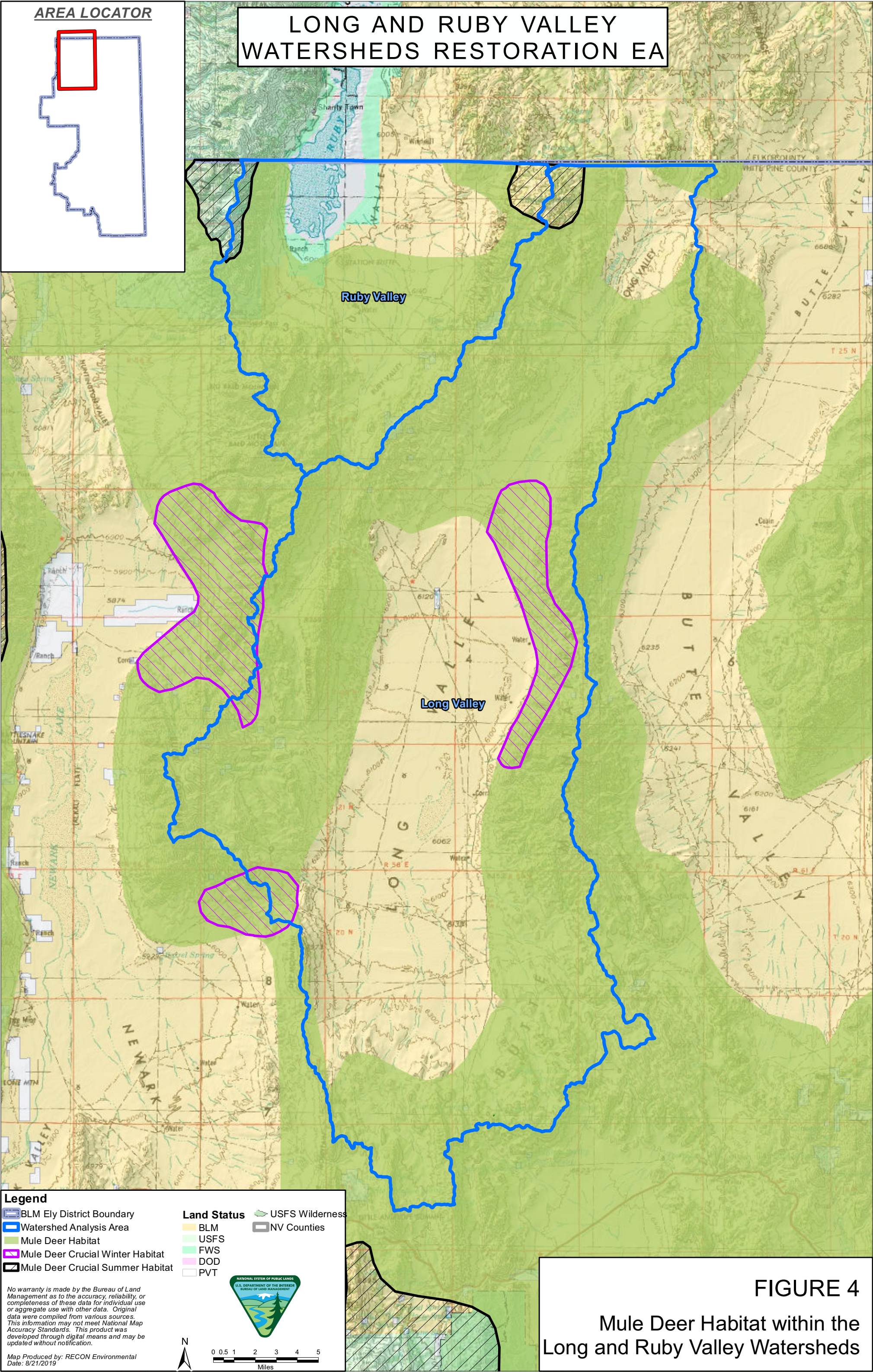
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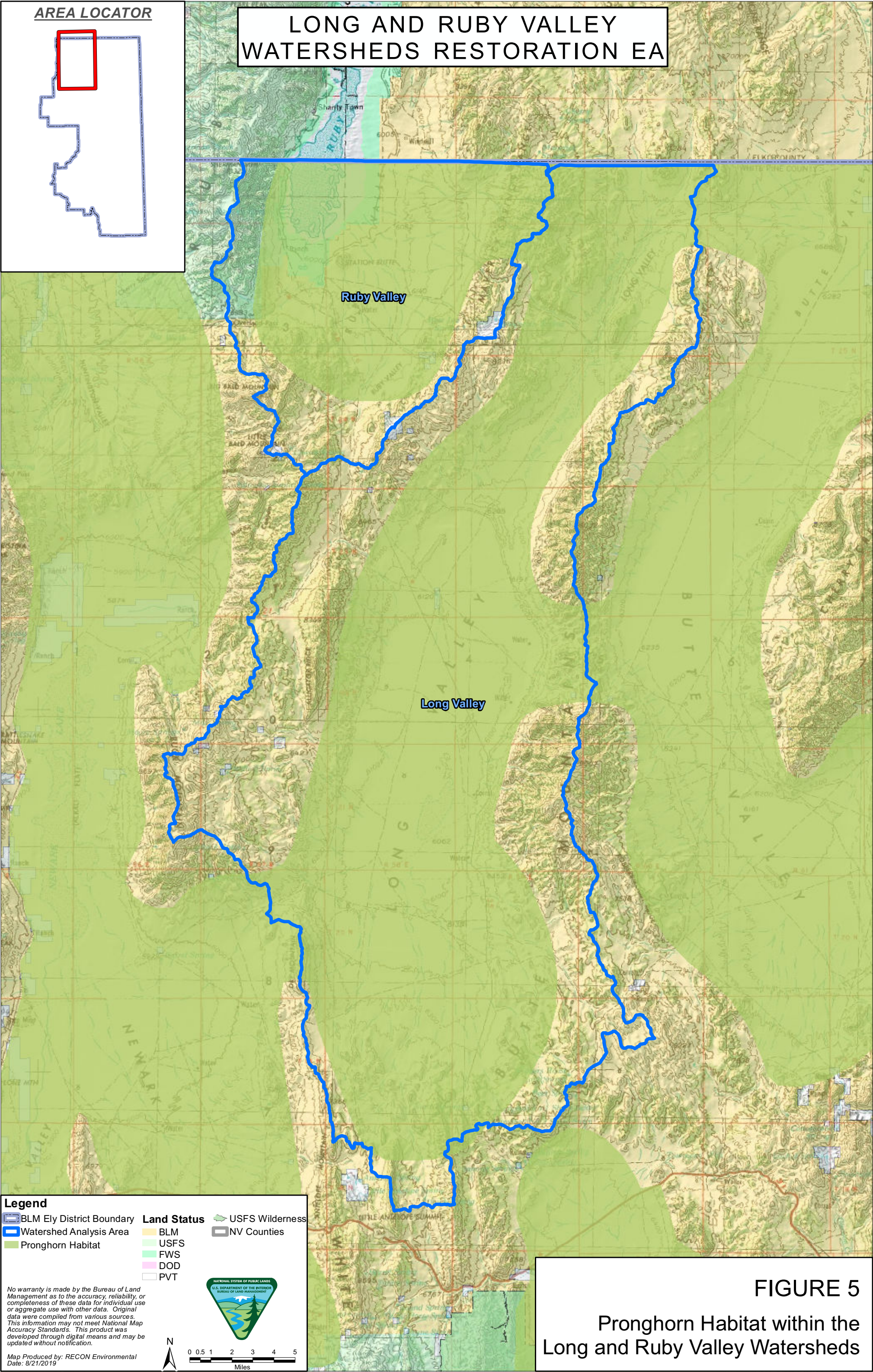
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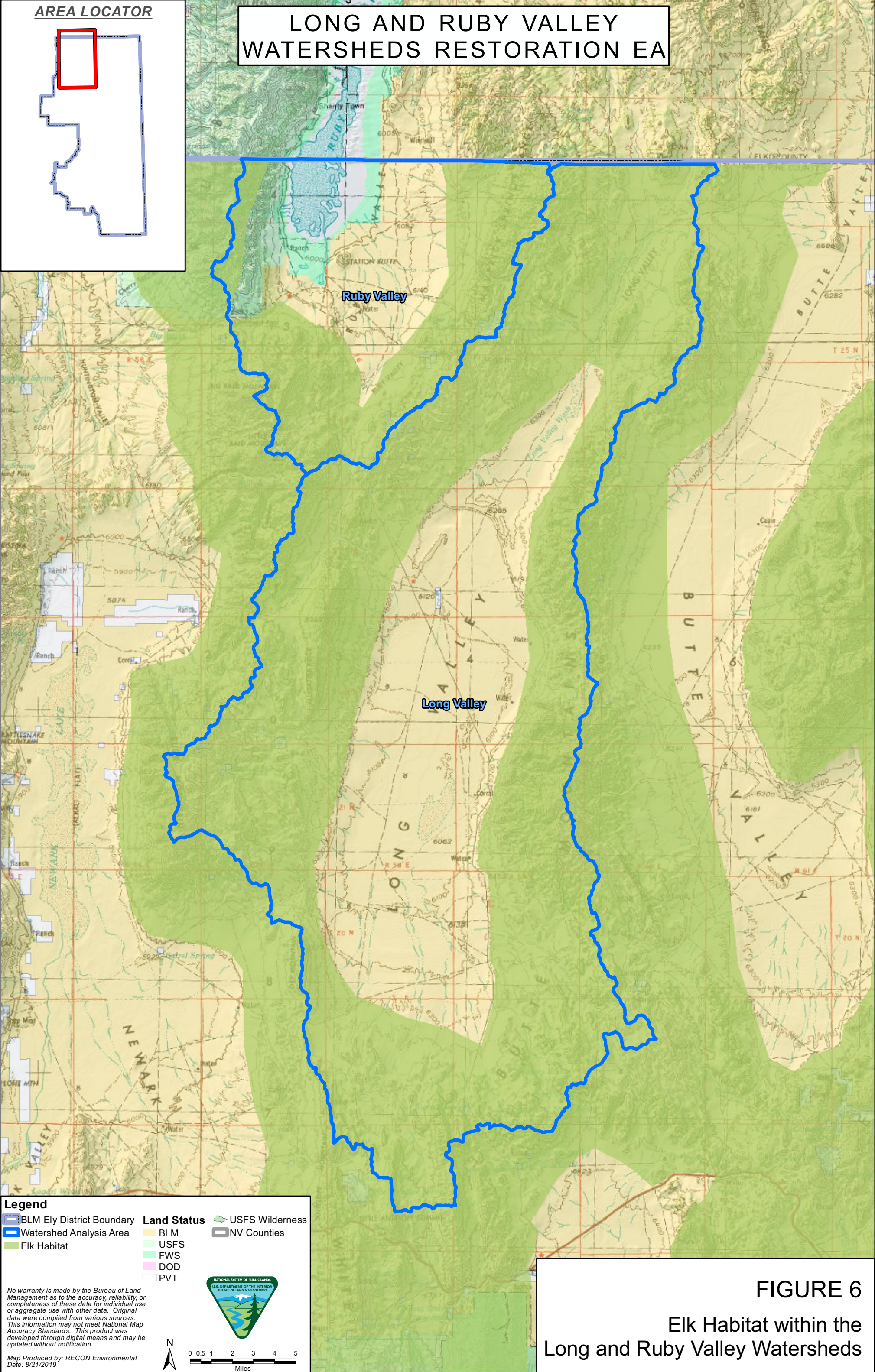
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Sources: Esri, Garmin, USGS, NPS

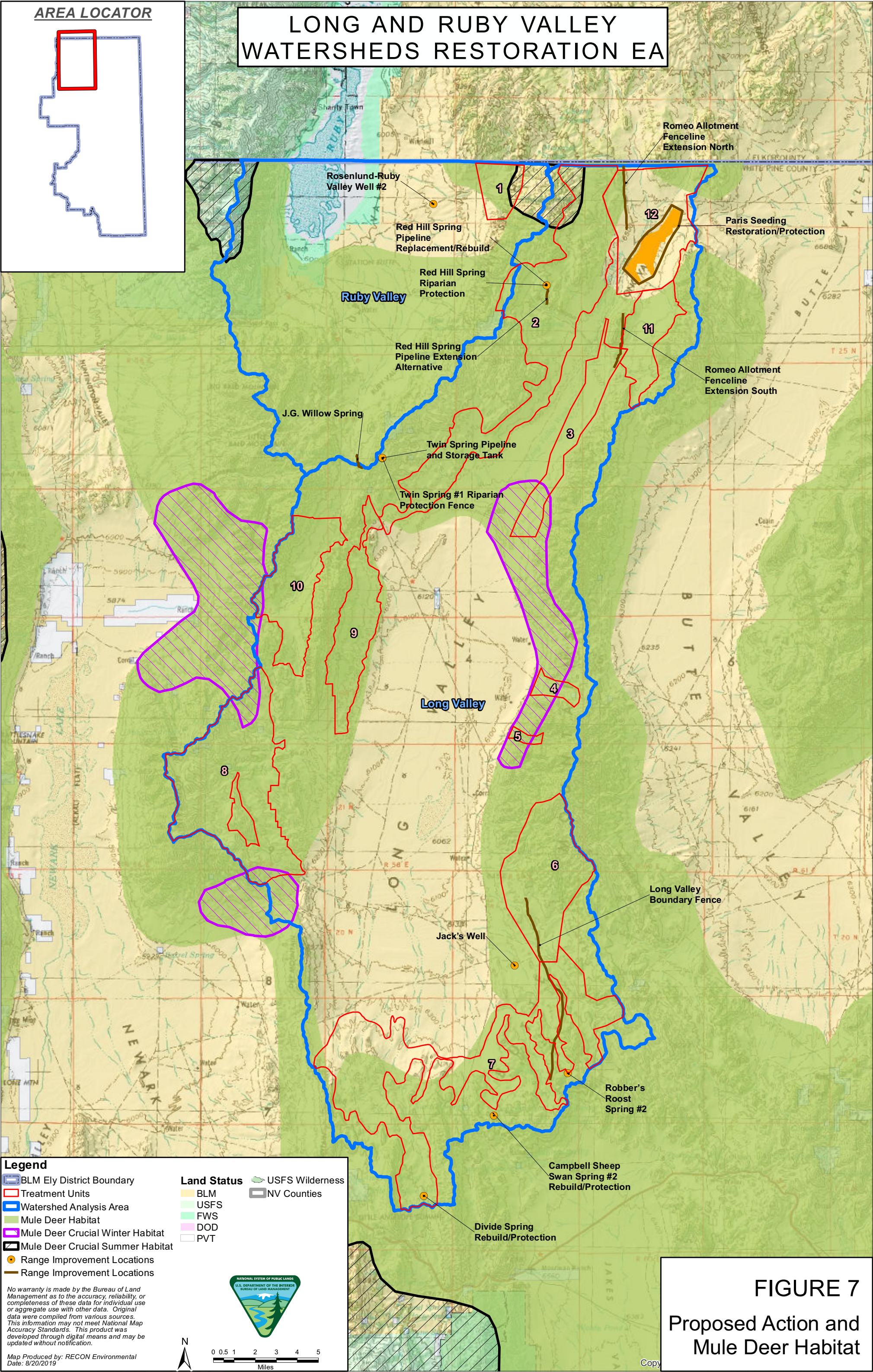
FIGURE 2
Watershed Treatment Units







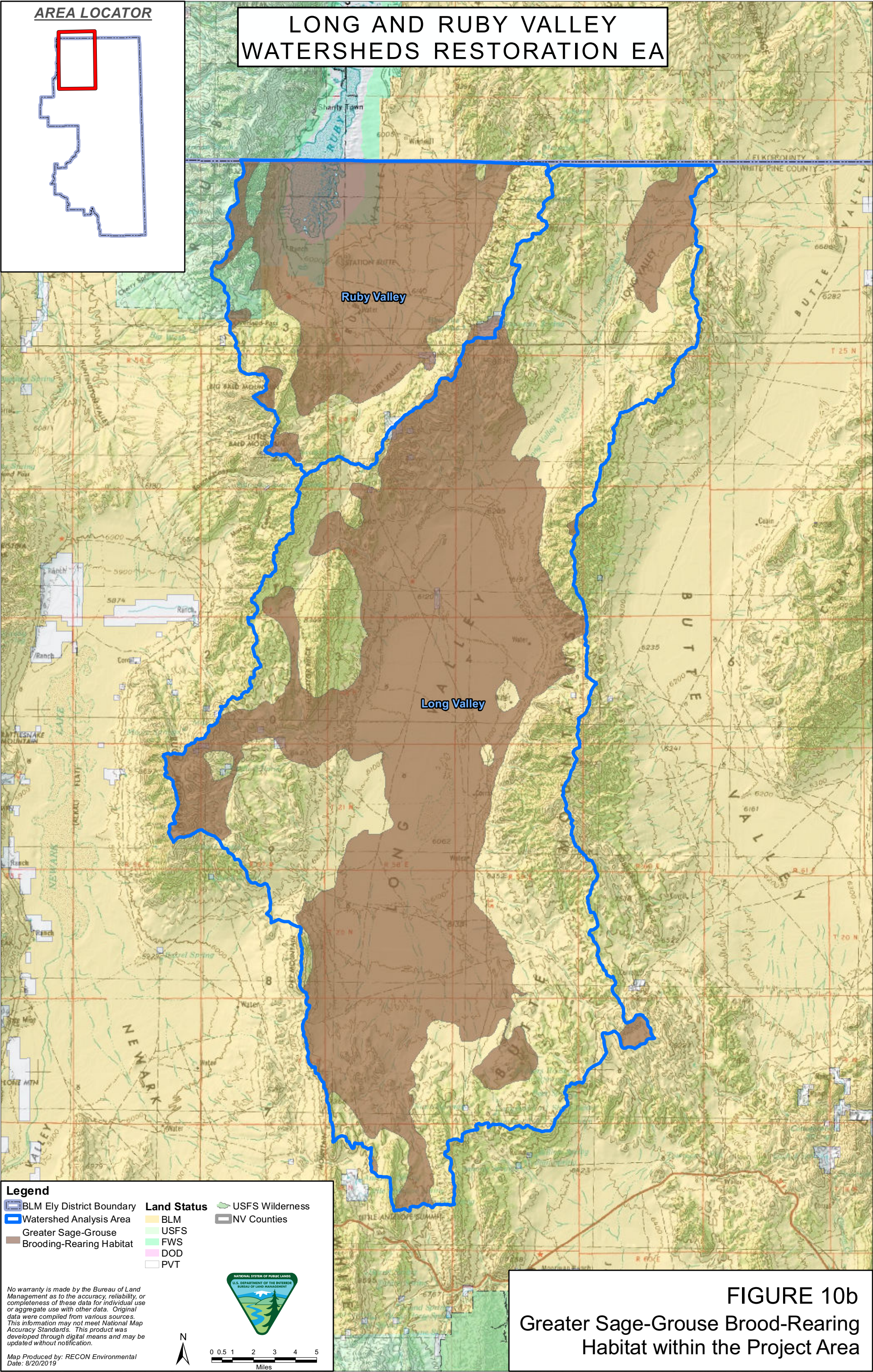


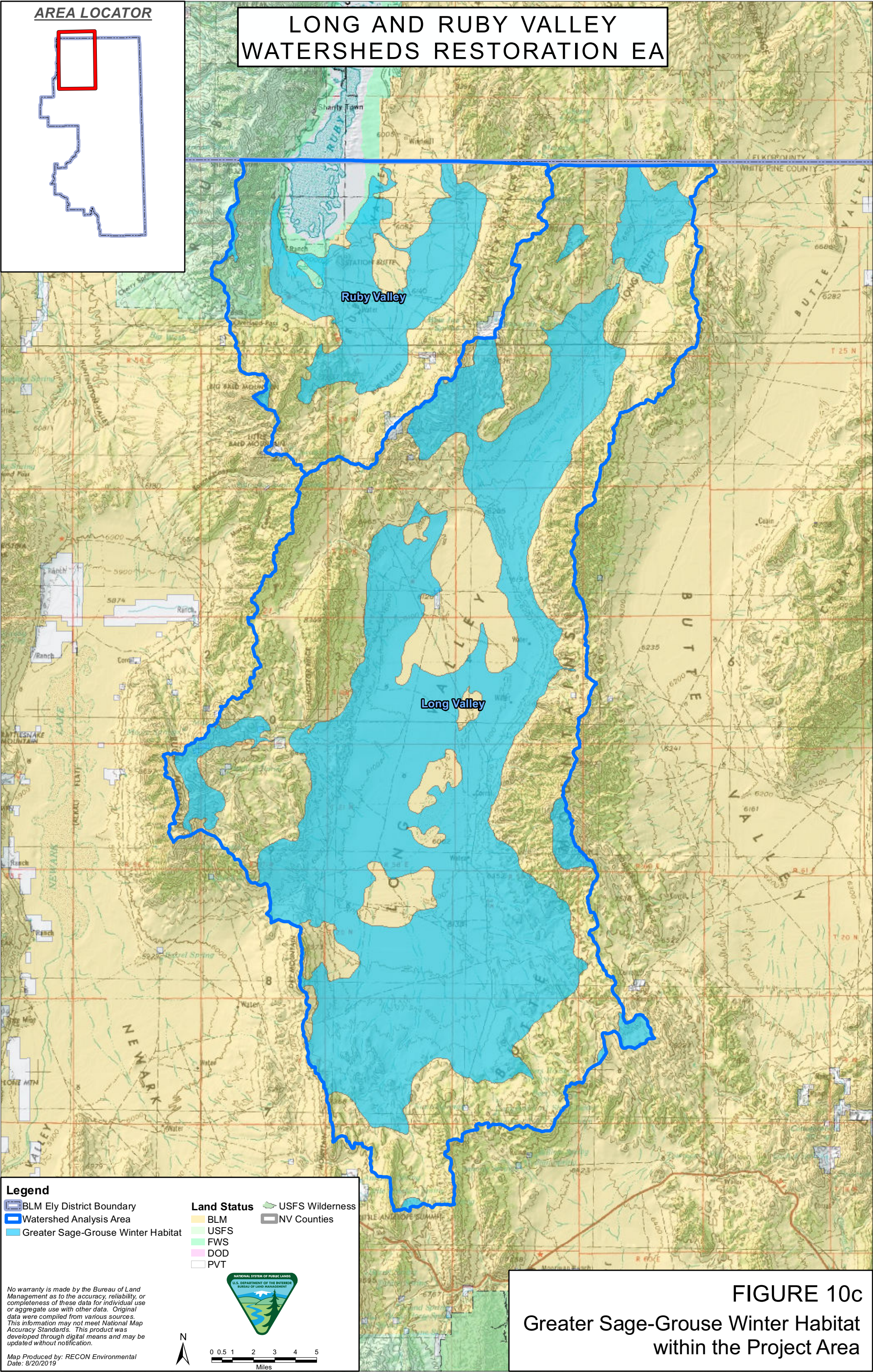












LONG AND RUBY VALLEY
WATERSHEDS RESTORATION EA

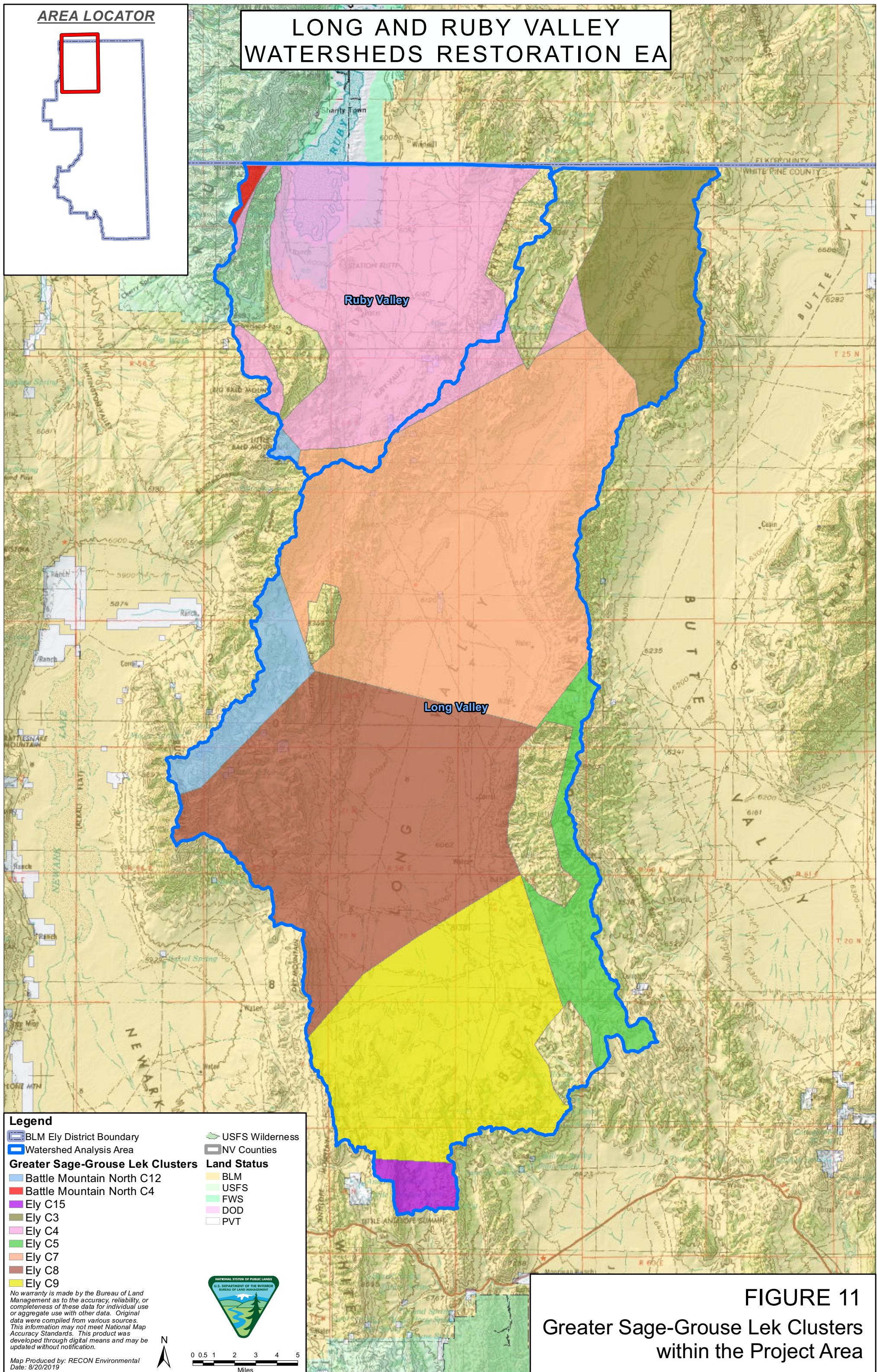
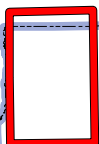


FIGURE 11
Greater Sage-Grouse Lek Clusters
within the Project Area

LONG AND RUBY VALLEY WATERSHEDS RESTORATION EA

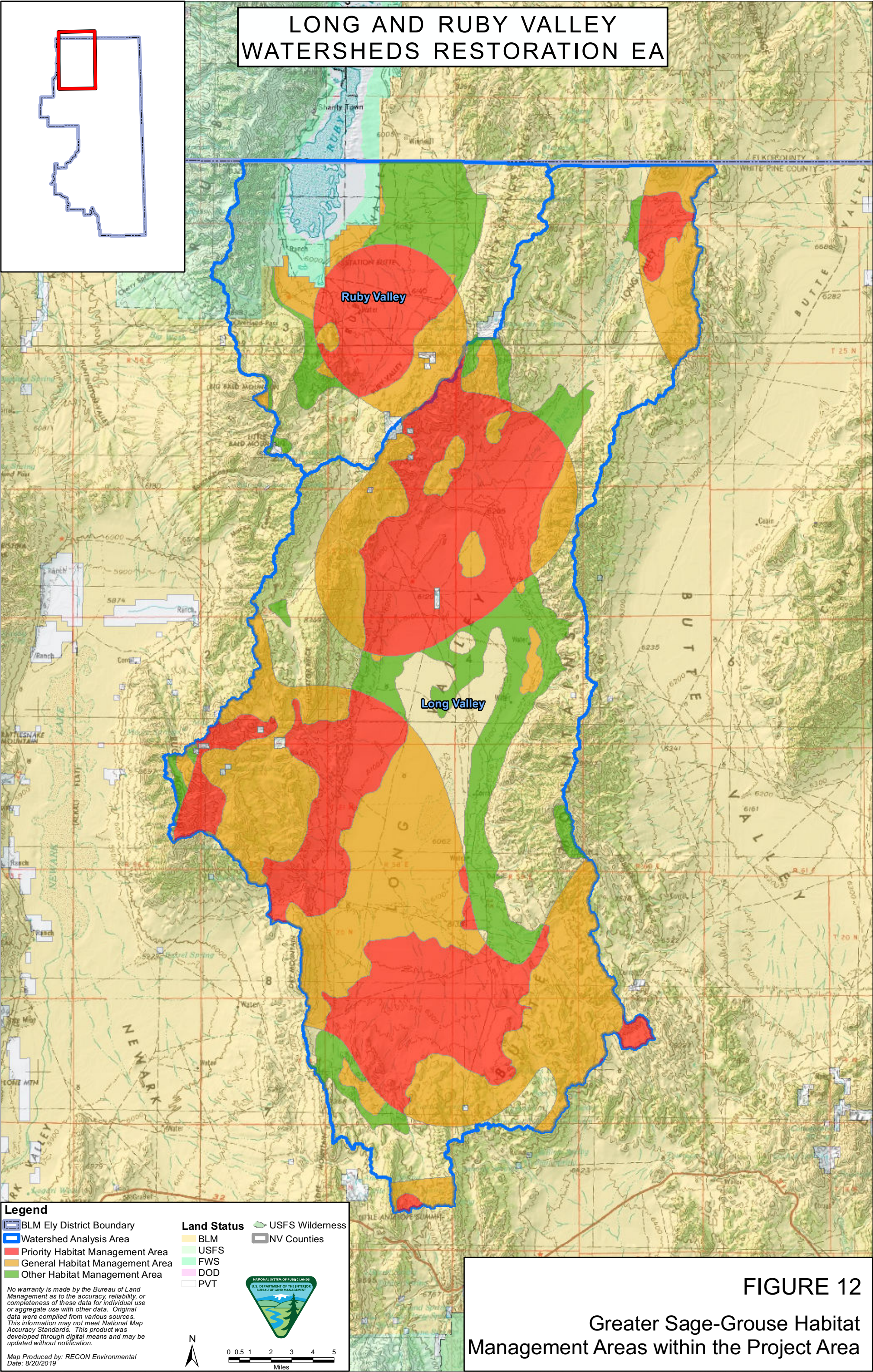
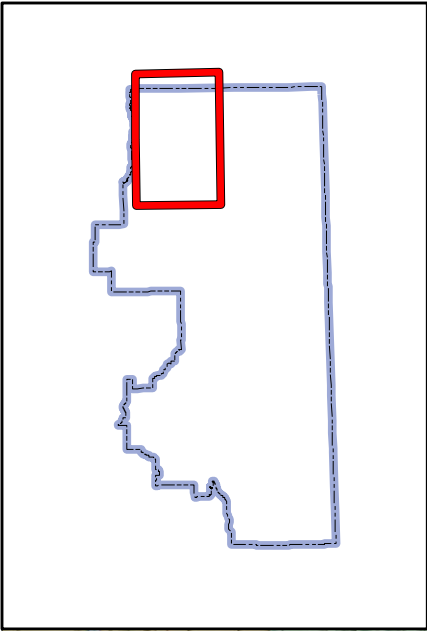
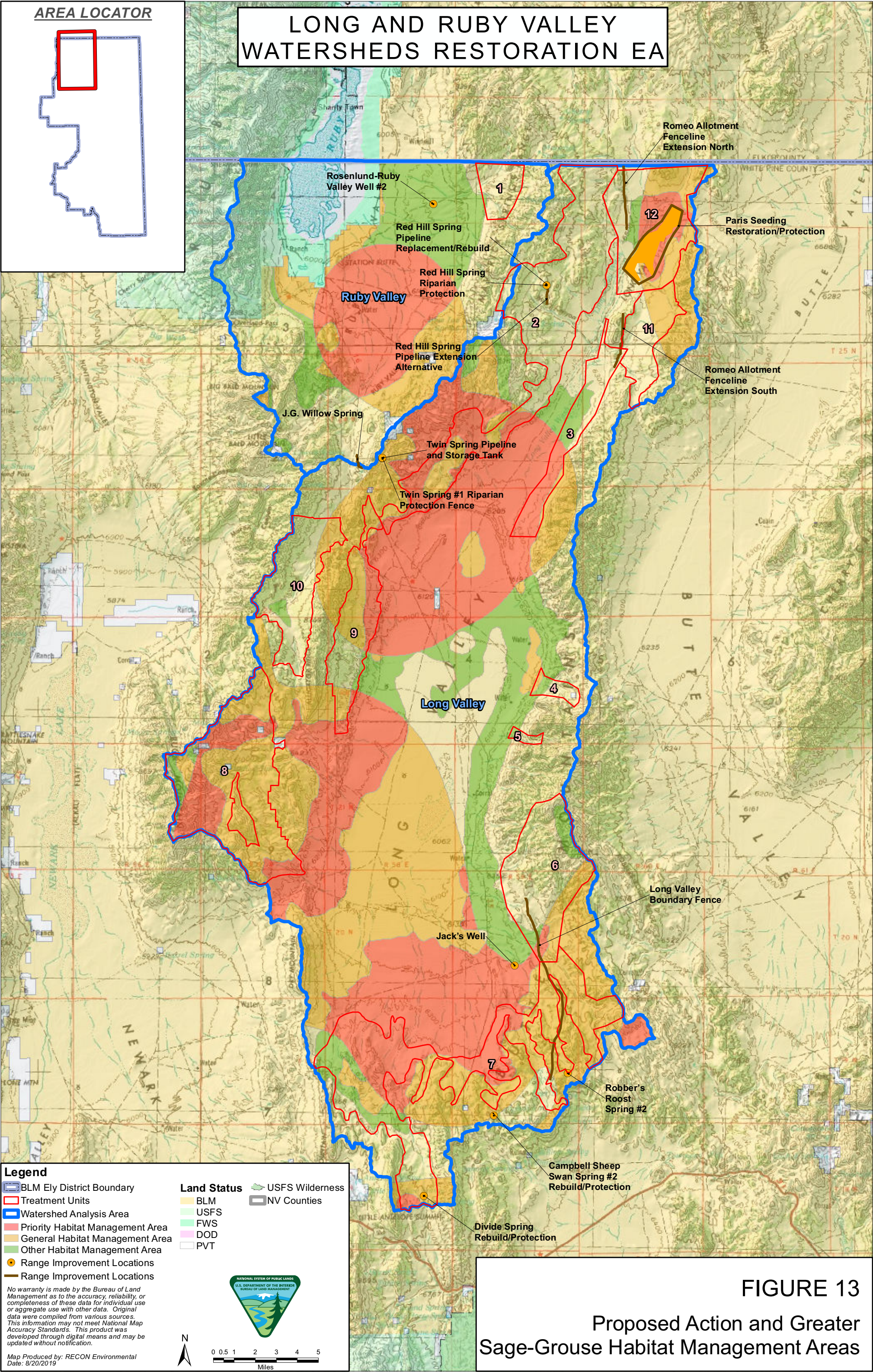
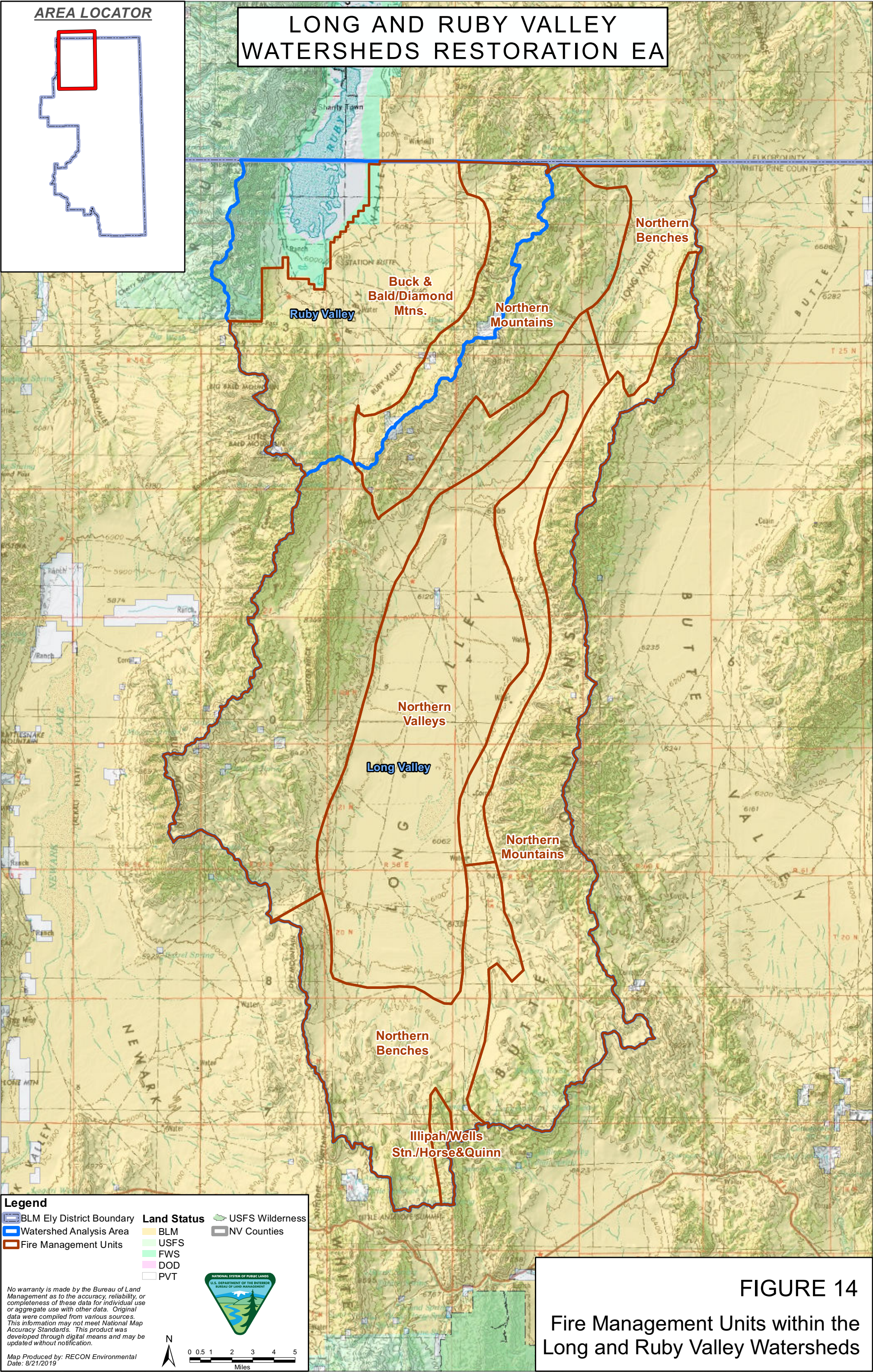
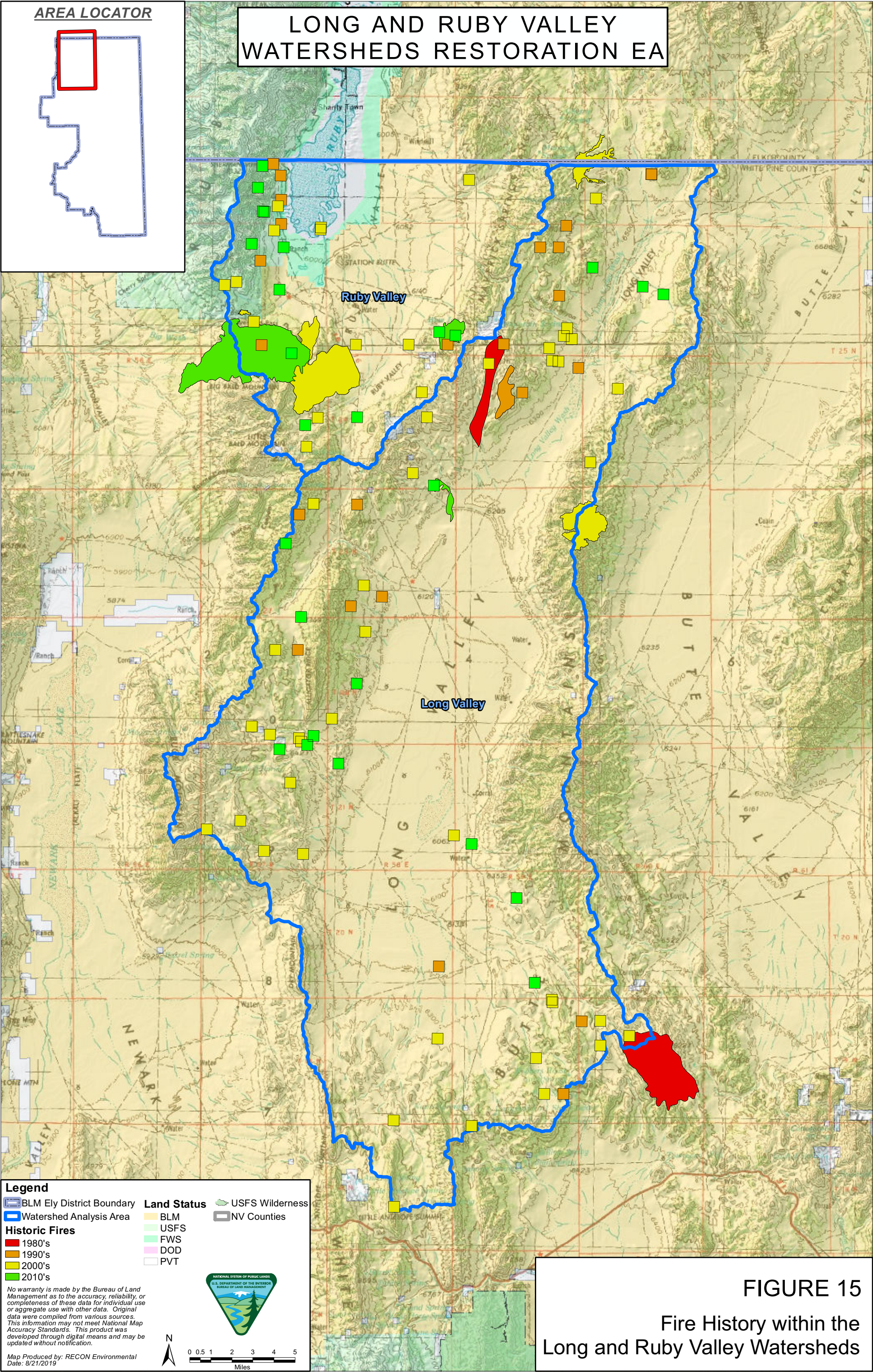
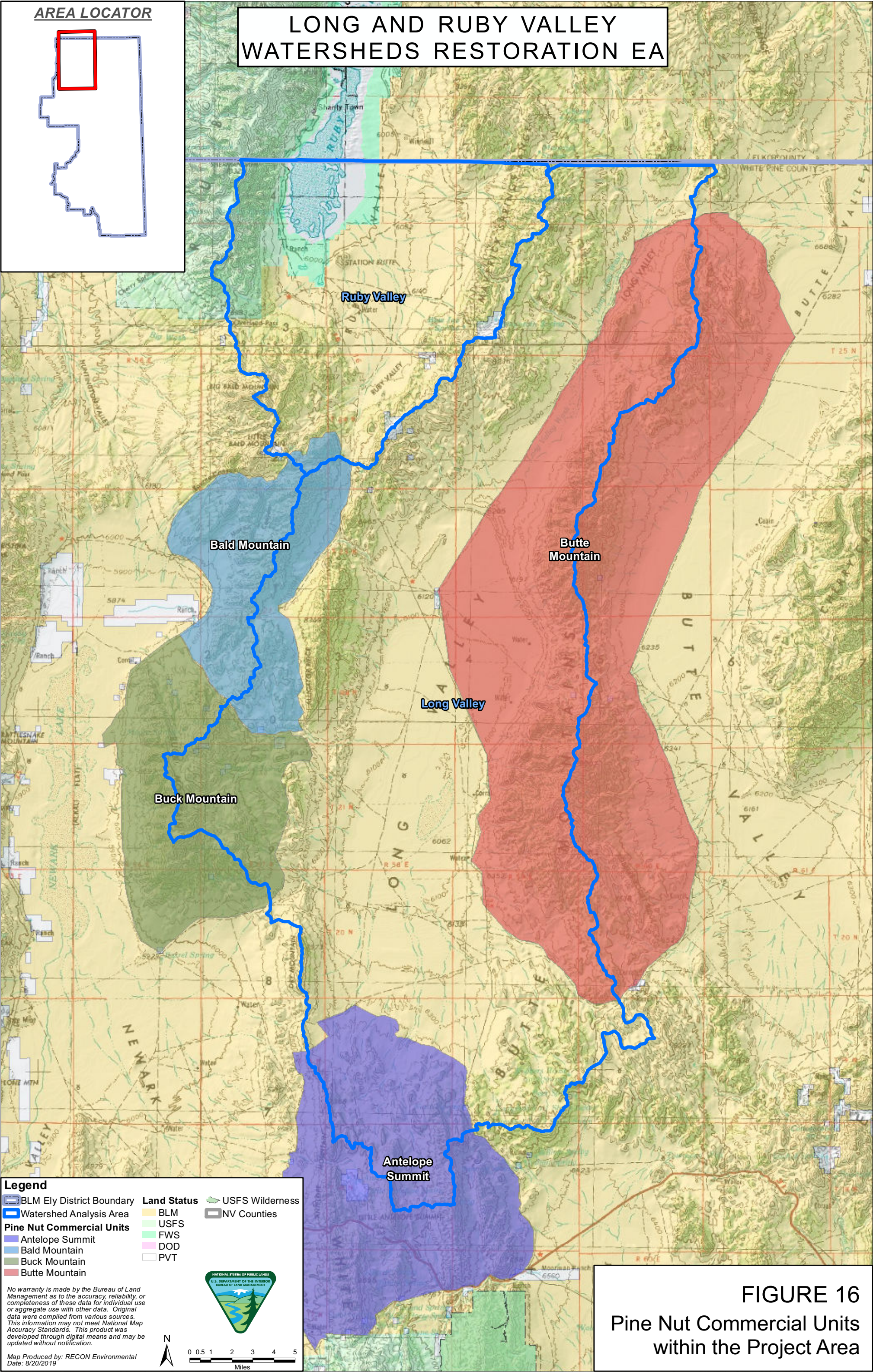


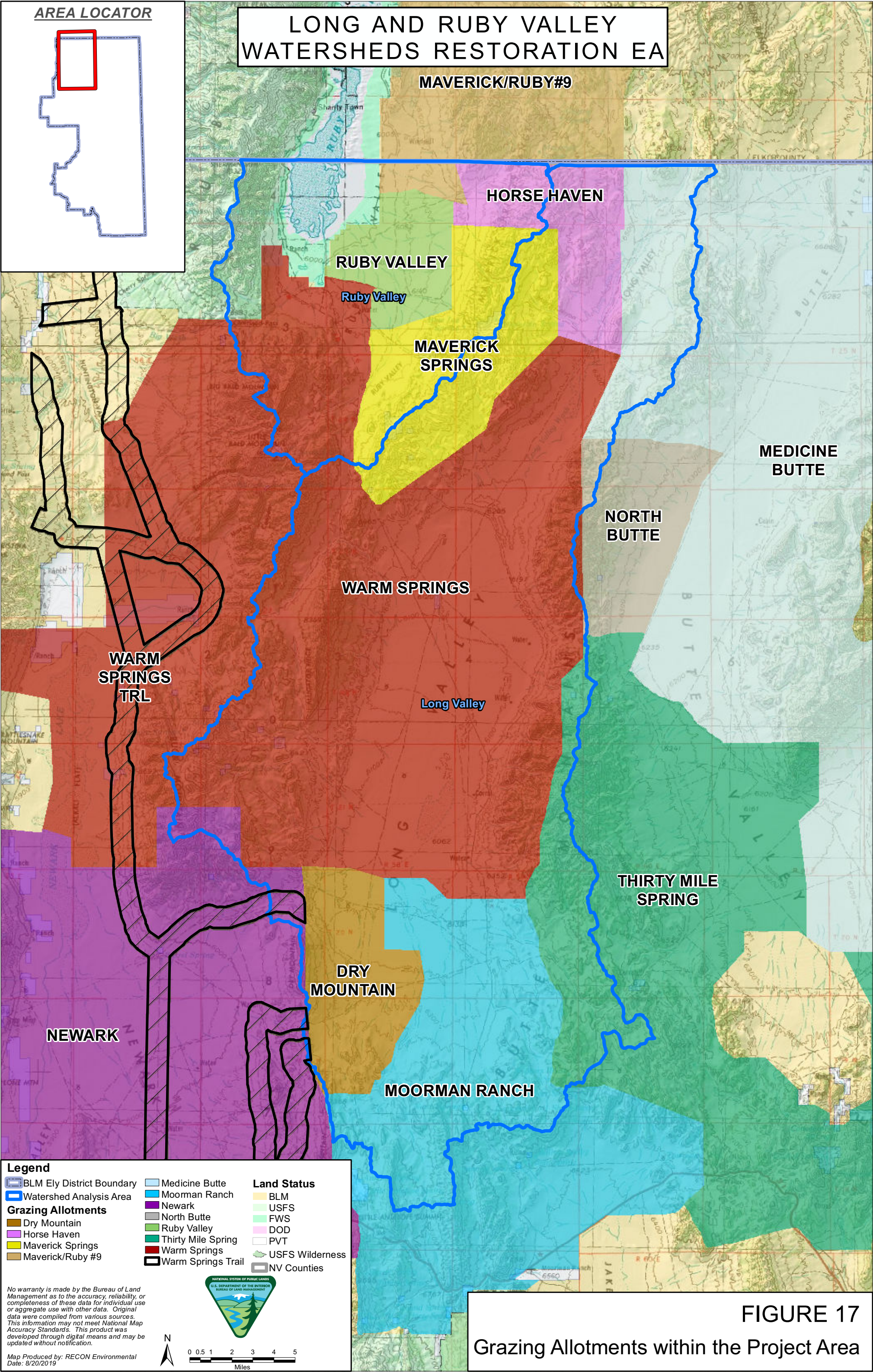
FIGURE 12
Greater Sage-Grouse Habitat
Management Areas within the Project Area

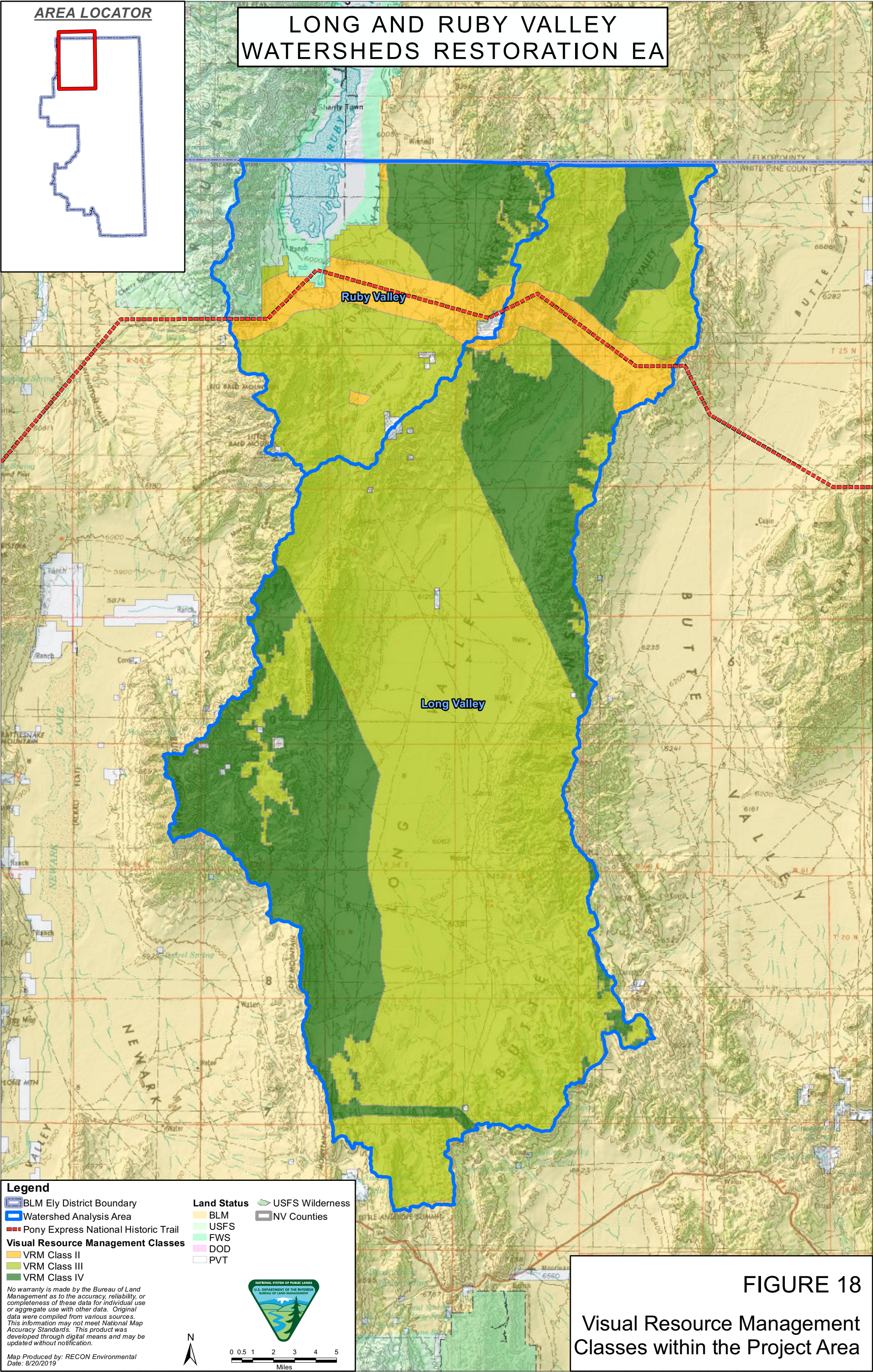


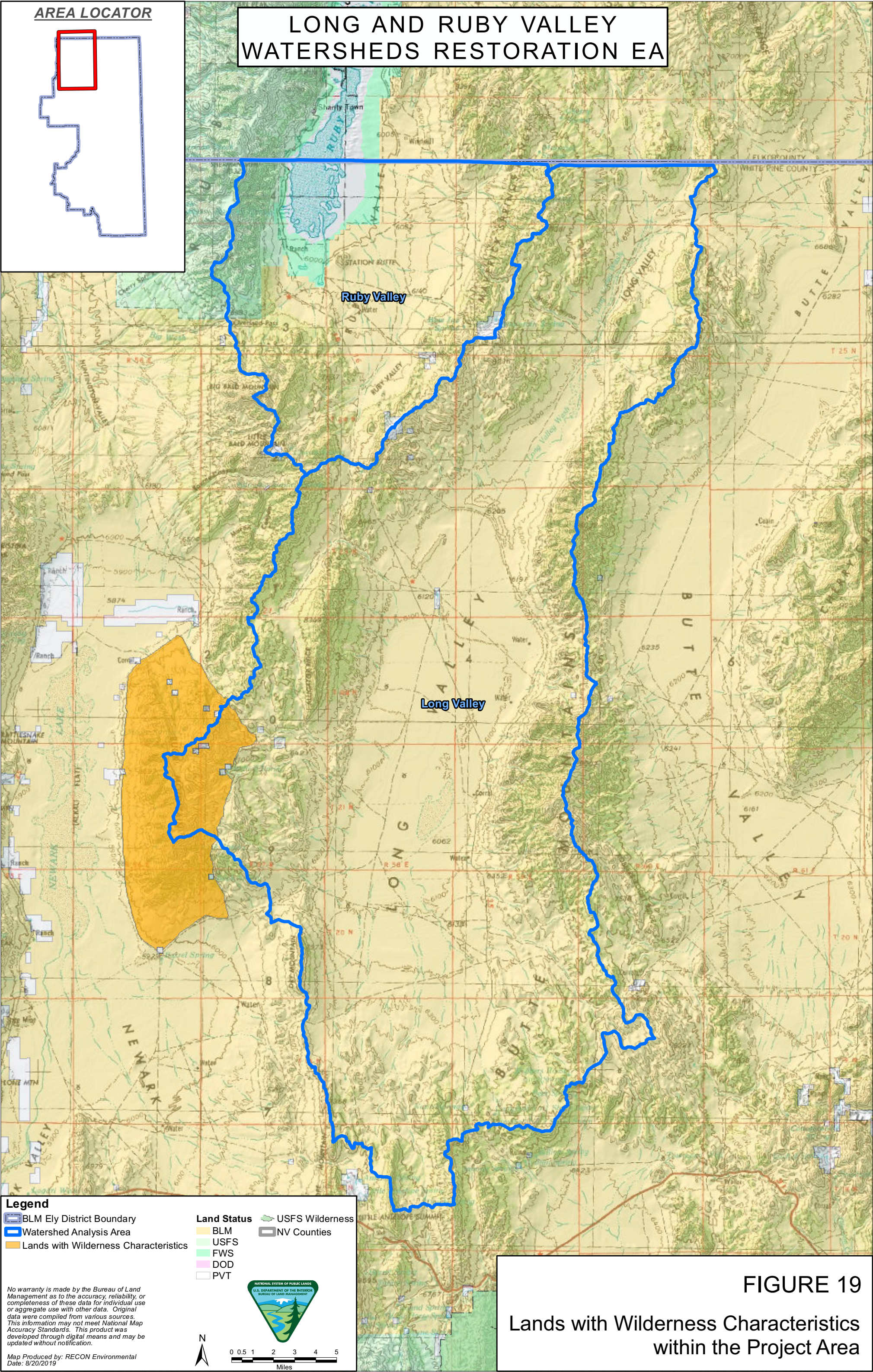












Appendix B – Relationship to Planning, Statutes, Regulations, or Other Plans

Objectives and management decisions identified in the Ely RMP, as amended, and the Nevada and NVCA ARMPA relevant to the Long and Ruby Valley Watershed Restoration EA are listed in Table B.1. All activities would comply with relevant Required Design Features and management decision, including, but not limited to, those listed below.

Table B.1 Ely RMP and NVCA ARMPA Management Goals, Objectives, and Management Decisions

Goals	Objectives and Management Decisions
<i>Vegetation</i>	
Goal: Manage vegetation resources to achieve or maintain resistant and resilient ecological conditions while providing for sustainable multiple uses and options for the future across the landscape.	<p><i>VEG-1:</i> Emphasize treatment areas that have the best potential to maintain desired conditions or respond and return to the desired range of conditions and mosaic upon the landscape, using all available current or future tools and techniques.</p> <p><i>VEG-4:</i> Design management strategies to achieve plant composition within the desired range of conditions for vegetation communities, and emphasize plant and animal community health at the mid-scale (watershed level).</p>
<i>Forest / Woodland Products</i>	
Goal: Provide opportunities for traditional and non-traditional uses of vegetation products on a sustainable, multiple-use basis. (Non-traditional uses are based on new emerging technology that would still be in conformance with the Ely RMP).	
<i>Watershed</i>	
Goal: Manage watersheds to achieve and maintain resource functions and conditions required for healthy lands and sustainable uses (described in detail in Title 43 Code of Federal Regulations 4180). The objective of the Healthy Rangelands Initiative is to: implement the intent of the legislative authorities to promote healthy, sustainable rangeland ecosystems; accelerate restoration and improvement of public lands to properly functioning conditions; and provide for the sustainability of the variety of uses and the communities that are dependent upon productive, healthy, public lands (BLM Manual H-4180–1, Rangeland Health Standards, pages 1–2).	
<i>Fire</i>	
Goal: Return fire to its natural role in the ecological system and implement fuels treatments, where applicable, to aid in returning fire to the ecological system.	<p><i>FM-4:</i> Incorporate and utilize FRCC as a major component in fire and fuels management activities. Use FRCC ratings in conjunction with vegetation objectives and other resource objectives to determine appropriate response to wildland fires and to help determine where to utilize prescribed fire, wildland fire use, or other non-fire (e.g., mechanical) fuels treatments.</p> <p><i>FM-5:</i> In addition to fire, implement mechanical, biological, and chemical treatments along with other tools and techniques to achieve vegetation, fuels, and other resource objectives.</p>
<i>Fish and Wildlife</i>	
Goal: Provide habitat for wildlife (i.e., forage, water, cover, and space) and fisheries that is of sufficient quality and quantity to support productive and diverse wildlife and fish populations, in a manner consistent with the principles of multi-use management, and to sustain the ecological, economic, and social values necessary for all species.	<p>General Wildlife Habitat Management:</p> <p><i>WL-1:</i> Emphasize management of priority habitats for priority species.</p>

Goals	Objectives and Management Decisions
<p><i>Special Status Species</i></p> <p>Greater Sage Grouse Goal (BLM 2019) SSS 1: Conserve, enhance, and restore the sagebrush ecosystem upon which GRSG populations depend on in an effort to maintain and/or increase their abundance and distribution, in cooperation with other conservation partners.</p> <p>Ely RMP 2008 Goal: Manage public lands to conserve, maintain, and restore special status species populations and their habitats; support the recovery of federally listed threatened and endangered species; and preclude the need to list additional species.</p>	<p>SSS 1: Manage land resource uses to meet GRSG habitat objectives, as described in Table 2-2 (of the NVCA ARMPA 2019). The habitat objectives will be used to evaluate management actions that are proposed for GRSG HMA. Managing for habitat objectives will ensure that habitat conditions are maintained if they are currently meeting objectives or if habitat conditions move toward these objectives in the event that current conditions do not meet these objectives.</p> <p>SSS 2: Maintain or improve connectivity between, to, and in PHMAs and GHMAs to promote movement and genetic diversity for GRSG population persistence and expansion.</p> <p>SSS 3: Identify and implement GRSG conservation actions that can augment, enhance, or integrate program conservation measures established in agency and state land use and policy plans, to the extent consistent with applicable law.</p> <p>Management Decisions (including but not limited to):</p> <p>MD SSS 2B (PHMAs), MD SSS 3B (GHMAs), and MD SSS 4 (OHMAs): Authorized/permitted activities are implemented by adhering to the Required Design Features (RFDs) described in Appendix C (BLM 2019b), consistent with applicable law. At the site-specific scale, if an RFD is not implemented, at least one of the following must be demonstrated in the NEPA analysis associated with the project/activity:</p> <ol style="list-style-type: none"> 1. A specific RFD is documented to not be applicable to the site-specific conditions of the project/activity (e.g., due to the site limitations or engineering considerations). Economic considerations, such as increased cost, do not necessarily require that an RFD be varied or rendered inapplicable. 2. An alternative RFD is determined to provide equal or better protection for GRSG or its habitat. 3. A specific RFD will provide no additional protection to GRSG or its habitat. <p>MD SSS 2D (PHMAs) and MD SSS 3D (GHMAs): Seasonal restrictions will be applied during the period specified below to manage discretionary surface-disturbing activities and uses on public lands (i.e., anthropogenic disturbances) that are disruptive to GRSG, to prevent disturbances to GRSG during seasonal live-cycle periods:</p> <ol style="list-style-type: none"> 1. In breeding habitat within 4 miles of active and pending GRSG leks from March 1 through June 30 <ol style="list-style-type: none"> a. Lek – March 1 to May 15 b. Lek hourly restrictions – 6 p.m. to 9 a.m. c. Nesting – April 1 to June 30 2. Brood-rearing habitat from May 15 to September 15 <ol style="list-style-type: none"> a. Early – May 15 to June 15 b. Late – June 15 to September 15 3. Winter habitat from November 1 to February 28 <p>MD SSS 11: Design and construct fences consistent with BLM H-1741-1, Fencing Standards Manual (BLM 1990), and apply Sage-Grouse Fence Collision Risk Tool to Reduce Strikes (NRCS 2012). Bring existing fencing into compliance as opportunities arise.</p>

Goals	Objectives and Management Decisions
	<p>Livestock Grazing (BLM 2019b)</p> <p>MD LG 13: For range improvement projects, review Objective SSS 4 and apply MDs SSS 1 through SSS 4 when reviewing and analyzing projects and activities proposed in GRSG habitat.</p> <p>MD LG 14: Build or modify livestock exclosures so that they are large enough to provide hiding cover to GRSG and other wildlife and to reduce the possibility of wildlife collisions with fences.</p> <p>MD LG 16: Authorize new water developments for diversion from spring or seep source, in accordance with state water law and subject to valid existing rights when PHMAs and GHMAs will benefit from or not be negatively impacts by the new development. This includes developing new water sources for livestock as part of a grazing management plan to improve GRSG habitat.</p> <p>Ely RMP Special Status Species Objectives and Management Decisions:</p> <p>Great Basin Sagebrush Habitat</p> <p>SS-38: Maintain intact and quality sagebrush habitat. Prioritize habitat maintenance actions from the BLM National Sage Grouse Conservation Strategy to:</p> <ul style="list-style-type: none"> • maintain large areas of high quality sagebrush currently occupied by GRSG [<i>Centrocercus urophasianus</i>]; • maintain habitats which connect seasonal sagebrush habitats in occupied source habitats; and, • maintain habitats that connect seasonal sagebrush habitats in occupied isolated habitats. <p>SS-39: Implement proactive and large scale management actions to restore lost, degraded, or fragmented sagebrush habitats and increase GRSG populations. Prioritize habitat restoration actions from the BLM National Sage Grouse Conservation Strategy to:</p> <ul style="list-style-type: none"> • reconnect large patches of high quality seasonal habitats, which GRSG currently occupy; enlarge sagebrush habitat in areas GRSG currently occupy; • reconnect stronghold/source habitats currently occupied by GRSG with isolated habitats currently occupied by GRSG; • reconnect currently occupied and isolated habitats; • restore potential sagebrush habitats that currently are not occupied by GRSG; and • develop allowable use restrictions in GRSG habitats undergoing restoration, on a case-by-case basis, as dictated by monitoring. <p>Vegetation – Sagebrush-steppe</p> <p>VEG 1: In PHMAs, the desired condition is to maintain all lands ecologically capable of producing sagebrush (but no less than 70%) with a minimum of 15% sagebrush cover or as consistent with specific ecological site conditions. The attributes necessary to sustain these habitats are described in Interpreting Indicators of Rangeland Health (BLM Tech Ref 1734-6).</p>

Goals	Objectives and Management Decisions
	<p>VEG 2: On public lands, establish, maintain, and enhance a resistant and resilient sagebrush vegetative community and restore sagebrush vegetation communities to reduce GRSG habitat fragmentation and maintain or reestablish GRSG habitat connectivity over the long term (Chambers et al. 2014).</p> <p>VEG 3: Manage PHMAs and GHMAs for vegetation composition and structure, consistent with ecological site potential and to achieve GRSG habitat objectives (see Table 2-2 in ARMPA< BLM 2019).</p> <p>MD VEG 2: Incorporate GRSG habitat objectives in the design of habitat restoration projects and manage treated areas to meet GRSG habitat objectives.</p> <p>MD VEG 4: Plan vegetation treatments (including GRSG habitat treatments) in a landscape-scale context to address habitat fragmentation, effective patch size, invasive species presence, and intact sagebrush community protection, consistent with the GRSG habitat objectives identified in Table 2-2 (ARMPA BLM 2019)MD VEG 5: For Wyoming, mountain, and big basin sagebrush communities in PHMAs and GHMAs:</p> <ul style="list-style-type: none"> • Prioritize treatments that focus on enhancing, reestablishing, or maintaining the most limiting GRSG habitat component • Reestablish sagebrush to meet GRSG habitat objectives (Table 2-2 of ARMPA 2019) • Manage sagebrush communities to achieve age-class, structure, cover, and species composition objectives in GRSG habitat (Table 2-2 of ARMPA 2019) • Restore herbaceous understory in brush-dominated areas to meet GRSG habitat objectives (Table 2-2 of ARMPA 2019) • Treat areas that contain cheatgrass and other invasive or noxious species to maximize competition and favor establishment of desired species (Table 2-2 of ARMPA 2019) • Treat disturbed areas in accordance with FIAT (Appendix H of ARMPA 2019), including implementation-level assessments <p>MD VEG 6: Manage for establishment of sagebrush in unmaintained nonnative seedings (e.g., crested wheatgrass seedings) in or next to GRSG habitat to meet habitat objectives (see Table 2-2 of ARMPA 2019).</p> <p>MS VEG 7: In PHMAs and GHMAs, give preference to native seeds for restoration, based on availability, adaptation (ecological site potential), and probability of success. Where the probability of success or adapted seed availability is low, nonnative seeds may be used, as long as they support GRSG habitat objectives. Choose native plant species outlined in Ecological Site Descriptions (ESDs), where available, to revegetate sites. Emphasize use of local seed collected from intact stands or greenhouse cultivation. If the commercial supply of appropriate native seeds and plants is limited, work with the BLM Native Plant Materials Development Program, Natural Resource Conservation Service (NRCS) Plant Material Program, or State Plant Material Programs. If currently available supplies are limited, use the materials that provide the greatest benefit for GRSG. In all cases, seed must be certified as weed free.</p>

Goals	Objectives and Management Decisions
	<p>MD VEG 8: To increase seeding success and to ensure effective soil and seed contact, consider the use of specialized seed drills or other proven and effective methods that may become available based on new science.</p> <p>MD VEG 9a: For Nevada BLM-managed lands, before implementation, establish project monitoring sites where vegetation treatment is planned. Treatment areas will be monitored both pre- and post-treatment on a multiple-year basis to ensure project objectives are achieved.</p> <p>MD VEG 10: On public lands, where the attributes, quality, or lack of GRSG winter habitat has been identified as a limiting factor, emphasize vegetation treatments in known winter habitats to enhance quality or reduce wildfire risk around or in winter habitat.</p> <p>MD VEG 11: In perennial grass, invasive annual grass, and conifer-invaded cover types, restore sagebrush steppe with local sagebrush seedlings or planted seedlings where feasible.</p> <p>MD VEG 12: Continue to coordinate with NDOW, CDFW, and NRCS for all development or habitat restoration proposals in PHMAs and GHMAs. Also, coordinate with the Nevada SETT, tribes, and local working groups on projects in sagebrush ecosystems.</p>
<p><i>Wild Horses</i></p> <p>Goal: Manage HMAs to provide suitable feed, water, cover, and living space for wild horses and maintain historic patterns of habitat use. Maintain and manage healthy, self-sustaining wild horse herds inside herd management areas within appropriate management levels to ensure a thriving natural ecological balance while preserving a multiple-use relationship.</p>	<p>To maintain wild horse herds at appropriate management levels within herd management areas where sufficient habitat resources exist to sustain healthy populations at those levels.</p>

Appendix C – Proposed Action Treatment Method Descriptions

Treatment Method Descriptions

Group Tree Removal

Chaining

Chaining would be the primary treatment method in areas identified as Phase II and Phase III woodland succession and areas of higher pinyon/juniper densities. The chaining would consist of two bull dozers pulling a large ship anchor chain between them to remove larger areas of trees. The chain would be pulled in one direction and would then be pulled in the opposite direction to increase tree mortality. Areas treated with chaining would be seeded after the first pass, but prior to the second pass. Chaining would be conducted in such a way to create irregular edges that blend the treatment areas into the landscape and replicate natural disturbance patterns. Island and stringers would be left to provide cover for wildlife. Timing of the chaining would follow design feature restrictions, but would mostly occur in late fall or early winter. Chaining would mostly occur in sagebrush ecological sites with established stands of pinyon/juniper, and would avoid areas of high density and established stands of mahogany.

Individual Tree Removal

Mastication

The mastication method would consist of grinding trees to mulch using a cutting head attached to a piece of machinery. Mastication would thin/remove trees while still maintaining a natural mosaic appearance. Mastication is designed to be implemented in areas where perennials and desired vegetation would likely be more abundant or areas of Phase II and Phase III woodland succession that require more selective thinning. Seeding areas prior to or immediately after mastication would also be considered in areas with minimal understory. Mastication would be used in conjunction with other methods like hand felling, seeding, prescribed fire, chaining, and feller-buncher. Biomass from the mastication process would be left on-site to degrade naturally and the resulting wood chip depth would no more than 4 inches across the area.

Mechanical Whole Tree Thinning

Whole tree thinning would use a piece of machinery with an attachment that cuts the trees at the base, like a feller-buncher. Trees thinned with this method would be either left on-site or removed from the site. Biomass utilization would occur in areas that are easily accessible by vehicles for fuelwood harvest. Similar to mastication, this method would be used in areas of Phase II and Phase III woodland succession that require more selective thinning treatments. Whole tree thinning would be used in conjunction with other methods like mastication, seeding, hand felling, prescribed fire and chaining. This method would be primarily used where access is conducive to biomass utilization.

Hand Felling and Piling

Hand felling would consist of cutting trees with chainsaws to selectively thin a treatment area. Hand felling would occur in the areas that exhibit lower tree density, Phase I or Phase II woodland succession, around spring sources, within aspen stands, and other sensitive areas or in areas where slope prevents access by heavy machinery. Hand felling would be used in areas where trees are establishing into sagebrush habitat. Larger pieces of biomass would be made

available to the public for removal as biomass (fuelwood). Leftover slash may be lopped and scattered, chipped, removed from the site, or piled and burned. A prescribed fire burn plan would be completed and approved separately for burning piles associated with the Proposed Action. Hand felling would be used in conduction with all other methods and may be used before and after other methods. In high density areas (e.g., Phase II areas) thinned trees would be piled and later burned, scattered within the treatment unit or be made available for biomass as fuelwood and removed from the site. In areas of low tree density (e.g., Phase I), the cut material would be limbed and scattered or left next to the stump. Cut trees would be limbed to a height that allows greater sage-grouse movement through the area.

Prescribed Fire Pile Burning

Pile burning is a technique used to remove slash created from hand felling or other whole tree thinning. Piles would be burned when the ground is frozen and there is sufficient snow on the ground to prevent burning surrounding vegetation. Pile burning would require an approved prescribed fire burn plan before being implemented at the project site. Piles would either be created by hand piling slash in an area of hand felling or by mechanized equipment dragging slash to piles in areas of whole tree thinning. Number and height of piles would depend on density and size of trees being removed in an area.

Seeding

Seeding would primarily occur in late Phase II and Phase III pinyon/juniper expansion areas, and in dense sagebrush cover areas. Seed would be applied in treated areas that do not have an appropriate amount of grasses, forbs and shrubs present prior to or post treatment. This would mostly occur in areas where very dense tree or shrub cover has prevented adequate understory vegetation to grow or in areas where herbicide is applied to cheatgrass. Native seed would be the priority, however, non-native seed would be used depending on availability of native seed, site characteristics, and risk of invasive species establishment.

Seed could be applied by a number of methods or a combination of the following methods: hand broadcast seeding; aerial seeding; drill seeding; or, broadcast seeding with all-terrain vehicles (ATVs). Hand broadcast seeding would consist of people walking through the treatment area with portable seed spreaders. Aerial seeding would be completed with a helicopter using a large aerial broadcast seeder. Drill seeding would be completed by a tractor pulling a rangeland drill to apply and bury the seed directly into the soil. ATV seeding would consist of driving ATVs through the treatment area with broadcast seeders mounted to the ATV.

In areas that would be chained or in some mastication areas, the seed would be aurally applied after the first pass of the chaining to help incorporate the seed into the soil. Seed dribblers may also be used on the bulldozers to press smaller seed into the soil. Sagebrush and antelope bitterbrush seedlings may also be planted manually by hand. Species typically used to restore sagebrush sites are listed in Table C.1 below. The seed mix used during the project could differ depending on specific site characteristics and seed availability.

Table C.1 Example Seed Mix for Sagebrush Restoration

Seed Type	Native or Introduced
Snake River wheatgrass (<i>Elymus wawawaiensis</i>)	Native
Crested wheatgrass, Hycres (<i>Agropyron cristatum</i>)	Introduced
Indian ricegrass (<i>Achnatherum hymenoides</i>)	Native
Squirreltail (<i>Elymus elymoides</i>)	Native
Needle and Thread (<i>Hesperostipa comate</i>)	Native
Small Burnett (<i>Sanguisorba minor</i>)	Introduced
Blue Flax (<i>Linum perenne</i>)	Native
Palmer's Penstemon (<i>Penstemon palmeri</i>)	Native
Bluebunch wheatgrass (<i>Pseudoroegneria spicata</i>)	Native
Eski Sanfoin (<i>Onobrychus vicifolia</i>)	Introduced
Canby's or Sandberg's bluegrass (<i>Poa canbyi</i>) (<i>Poa secunda</i>)	Native
Antelope Bitterbrush (<i>Purshia tridentate</i>)	Native

Invasive Species and Weed Control

Management of weeds would include BMPs for early detection and to prevent spread; and treatments to control current populations and any new weed populations discovered during the life of the project. Treatments could include biological controls, targeted grazing, mechanical controls, and herbicide.

For biological controls, only the release of U.S. Department of Agriculture Animal and Plant Health Inspection Service approved insects or pathogens would be used and would be accompanied by a BLM Biological Control Agent Release Proposal. Targeted grazing would only be used to suppress large patches of cheatgrass that are hindering successful recovery of desired plant species. Sheep, cattle, or goat intensive grazing may be used to target invasive species to reduce competition and fuel loads. Timing restrictions would apply when using targeted grazing to reduce impacts to desired plant species.

Treatments for weed control may include hand pulling, mowing, cutting using hand or chainsaw, and prescribed fire. Chemical treatments would be used to target cheatgrass or newly discovered noxious and invasive weeds within the vegetative treatments areas.

Any herbicide treatments would require a Pesticide Use Proposal prior to treatment and a Pesticide Application Record following implementation. Herbicides most likely to be used for treatment of noxious and invasive weeds before, during or after proposed treatments include: glyphosate and/or imazapic for cheatgrass; 2,4-D, dicamba, picloram for yellow star thistle; 2,4-D, dicamba, chlorsulfuron, metsulfuron, picloram, glyphosate for other thistles; 2,4-D, dicamba, clopyralid, picloram, aminopyralid for spotted knapweed; 2,4-D, chlorsulfuron, metsulfuron, imazapic for hoary cress; and 2,4-D, glyphosate for water hemlock. Other herbicides that have similar mode of action as those above may be used if approved by BLM and are listed in the *BLM Vegetation Treatments Using Herbicides on BLM Lands in 17 Western States PEIS and Record of Decision* (BLM 2007b), the *Vegetation Treatments Using Aminopyralid, Fluroxypyr, and Rimsulfuron on Bureau of Land Management Lands in 17 Western States PEIS and Record of Decision* (BLM 2016a). Surfactants appropriate to the herbicide and targeted plants that have been approved and described in the above listed PEISs would be used. Depending on chemical, size of the area and acceptable amount of drift, applications of treatments could include

backpack application, pack animal tank application, ATV/UTV tank application, truck or tractor tank application, and aerial application.

Riparian resources along the border of the proposed treatment areas would be buffered to avoid introduction of herbicide into water sources. Herbicide would be used according to label instructions. In addition, all Standard Operating Procedures listed in the *BLM Programmatic EIS for Vegetation Treatments Using Herbicide* and the *Vegetation Treatments Using Aminopyralid, Fluroxypyr, and Rimsulfuron on Bureau of Land Management Lands in 17 Western States Programmatic EIS and Record of Decision* would be followed.

Mechanical Methods for Sagebrush Restoration

Mowing

Mowing involves the use of a mowing deck pulled behind a tractor equipped with a power take-off. Its use would be limited to sagebrush and other small shrubs in areas that have fairly gentle terrain and with no large rocks or downed trees. Within these units, hand cutting of trees may be utilized to remove the trees as opposed to avoiding them. Any biomass resulting from this treatment would be left on site for natural decomposition.

Mowing is a desirable method for reducing shrub cover, increasing the vigor of existing shrubs, and reducing competition to existing grasses and forbs. The height to which the target species is cut may range from ground level to 12–15 inches high. The degree of sagebrush mortality and re-growth can be controlled by adjusting the height of the cutting blades. Cutting to less than four inches would likely result in 85–100% mortality. Leaving greater than a 10-inch height may result in only 40–60% mortality. Mowing is not an effective method of incorporating seed into the soil or preparing the seedbed, and would have to negotiate around pinyon/juniper trees if they are not removed prior to treatment. Mowing treatments would be restricted to areas that are less than 20% slope and a relatively low amount of surface rock.

Dixie Harrow

The Dixie harrow consists of a large spike-tooth harrow pulled by a four-wheel drive rubber-tired tractor or dozer. The Dixie harrow can be used in sagebrush or other small shrub stands and offers a high degree of control. Factors such as the pattern of treatment, residual density of sagebrush, seeding, and timing could be controlled. Sagebrush mortality levels could be adjusted through the removal or addition of tines. Within these units, mechanical removal of pinyon/juniper may be utilized to remove the trees prior to treatment, as opposed to avoiding them. Seeding could be conducted within the same pass as the treatment with the use of a broadcast seeder attached to the back of the equipment pulling the Dixie harrow. Any biomass resulting from this treatment would be left on-site for natural decomposition.

The Dixie harrow would be desirable for reducing shrub cover, increasing the vigor of existing shrubs, and reducing competition to existing grasses and forbs. It allows incorporation of seed into a seedbed to promote re-vegetation of an area. Equipment would be restricted to areas that are less than 20% slope.

Roller Chopper

Roller chopper treatment involves the use of a large drum with paddles attached that is pulled behind a piece of machinery such as a tractor or bull dozer. The weight of the drum can be adjusted through the addition of water to the drum. The treatment crushes and chops brush and small trees. Seeding can be conducted within the same pass as the treatment with the use of a broadcast seeder attached to the back of the equipment pulling the roller chopper.

The roller chopper is desirable for reducing shrub and small tree cover and is effective at incorporating seed into a seedbed to promote re-vegetation of the area. The roller chopper can be used in areas where small trees are present up to five inches in diameter. Equipment would be restricted to areas that are less than 20% slope and soils that contain a low amount of rock fragments.

Appendix D – Proposed Action Design Features

Design Features

Cadastral Markers

In accordance with IM-NV-2007-003, surveys would be conducted for cadastral monuments and markers prior to any surface disturbing activities. Monument markers and associated bearing trees or other accessories would be avoided to the extent practical such that the cadastral survey integrity is maintained.

Cultural Resources

Prior to implementation, a Cultural Resources Inventory Needs Assessment (CRINA) would be completed for each proposed habitat restoration treatment, with a detailed description of the specific location and proposed activities, as well as for any range improvement projects. The CRINA would identify all requirements to comply with Section 106 of the National Historic Preservation Act prior to any treatment/improvements. A cultural resource specialist would determine the appropriate inventory and actions needed to protect cultural properties and areas of traditional religious or cultural importance in accordance with the most recent Nevada State Protocol Agreement between BLM and the Nevada State Historic Preservation Office (BLM 2014), and BLM-Nevada's most recent Guidelines and Standards for Archaeological Inventory (BLM 2012). All required inventory and avoidance measures would be completed prior to proceeding with any ground disturbance. All historic properties shall be completely avoided from direct and indirect effects, thereby rendering a "No Effect" conclusion. In the event of the inability to avoid an historic property, a treatment plan for mitigation would be developed. The State Historic Preservation Office would be consulted as a part of this process before implementation may occur.

All historic properties would be avoided during any surface disturbing activities, which typically would be incorporated with planned vegetative mosaic patterns with a minimum 50-meter buffer. Potential impacts would be adequately mitigated Design Features.

For areas that include the Pony Express Trail Corridor, consultation would also include the BLM National Historic Trails office, and the NPS National Trails Intermountain Region. Depending on level of surface disturbance, some treatment areas would be inventoried prior to treatment. Treatment activities would avoid historic properties eligible for listing in the National Register of Historic Places.

Wildlife Design Features

In accordance with the Ely RMP, as amended by the ARMPA (March 2019), Required Design Features (RDF) that apply to the Proposed Action would be included or recommended during project implementation. RDFs establish the minimum specifications for certain activities to help mitigate adverse impacts. Not all RDFs listed in the ARMPA apply to the Proposed Action.

- Greater sage-grouse seasonal habitat data for the Project Area was delineated by BLM and reviewed by the NDOW. Recommendations for each habitat would be applied to the Proposed Action design during implementation. Seasonal greater sage-grouse use restrictions are described in Table D.1, below. The Proposed Action consists of habitat improvements designed to increase and improve greater sage-grouse habitat within the Long and Ruby Valley Watersheds. Any temporary or permanent fencing within high use

greater sage-grouse habitat would be equipped with reflective fence markers to increase visibility to birds and wildlife, and reduce collisions.

- Tree removal treatments would include runners of trees along the drainages and islands of trees to maintain diversity for wildlife, nesting habitat for Ferruginous Hawks (*Buteo regalis*), and to achieve a natural appearance and seeded if there is no existing herbaceous understory. The location of stringers and islands of trees would take into account the relationship to habitat of the greater sage-grouse.
- Leave and maintain large, cone-bearing pinyon trees in patches within the treatment area for the Pinyon Jay (*Gymnorhinus cyanocephalus*), black-throated gray warbler (*Setophaga nigrescens*), and the juniper titmouse (*Baeolophus ridgwayi*). Large stands of pinyon would remain within, and adjacent to, treated areas.
- Pinyon/juniper stringers would be incorporated on benches along the interface between sagebrush ecological sites and woodland ecological sites for Ferruginous hawk nesting.
- If areas are to be treated during nesting season, areas would be surveyed for nest locations and nest sites would be avoided with an appropriate buffer.
- Active raptor nests would be avoided with the appropriate buffer during treatment.
- Through coordination with NDOW, inactive older raptor nests would be identified and potentially left for future raptor use. If a raptor nest site is within greater sage-grouse habitat, the tree housing the nest may be removed, after consultation with NDOW.
- Bird ladders and wildlife escape ramps would be installed and maintained in all water troughs.
- Treatments within pygmy rabbit habitat will be avoided unless treatment is hand trimming pinyon/juniper with chainsaws. Pre-treatment surveys would be conducted by a qualified biologist in potential pygmy rabbit habitat to determine presence and location of any pygmy rabbit burrows or colonies. The colonies would be flagged and avoided.
- RDF Gen 12: Control the spread and effects of nonnative, invasive plant species (e.g., by washing vehicles and equipment, minimize unnecessary surface disturbance; Evangelista et al. 2011). All projects would be required to have a noxious weed management plan in place prior to construction and operations.
- RDF Gen 13: Implement project site-cleaning practices to preclude the accumulation of debris, solid waste, putrescible wastes, and other potential anthropogenic subsidies for predators of GRSG.
- RDF GEN 19: Instruct all construction employees to avoid harassment and disturbance of wildlife, especially during the GRSG breeding (e.g., courtship and nesting) season. In addition, pets shall not be permitted on site during construction (BLM 2005b).
- RDF GEN 22: Load and unload all equipment on existing roads to minimize disturbance to vegetation and soil.

Seasonal Timing Restrictions

- Seasonal restrictions for GRSG would be requested to be modified to allow treatment activities to occur during periods of late brood-rearing (between August 1 and September 15) and winter seasonal habitat dates (between November 1 and February 29).

Table D.1 Greater Sage-grouse Habitat Type and Seasonal Use

Seasonal Habitat Type	Seasonal Use
Breeding	March 1–May 15
Nesting and Brood Rearing	May 15 – September 15
Winter	November 1 – February 29

- Avoid conducting treatment from March 1 through August 31 with a half mile of active raptor nests.
- Avoid conducting treatments from March 15 through August 30 within one mile of an active golden eagle nest.

Fire Management

A comprehensive burn plan would be required for all pile burns which would establish control measures and contingency plans to minimize risks. A smoke permit would also be obtained from the state of Nevada to comply with air quality standards.

Grazing Management and Range Improvement

Coordination with the affected livestock permittees within the allotments being treated would be conducted prior to treatment occurring. Any livestock grazing closure for the purpose of the vegetation treatment would be done through a grazing decision or agreement process and would occur prior to the treatment. Livestock grazing would resume immediately within treatment areas that exhibit at least 10 percent foliar cover of desired perennial species. Seeded areas would be closed to livestock grazing for at least two growing seasons, and may be closed longer, until the following vegetation objectives have been met: a minimum of three of desired perennial species functional within the ecological site per square meter would be firmly rooted in the treated area.

Proof of valid water right held by the livestock grazing permittee or range user would be verified by BLM prior to commencing any project work to new or existing water developments, in accordance with state laws. Cultural resources inventory and consultation, as needed, would be completed prior to approval or commencement of any proposed project work. This could include adopting site-specific requirements for mitigation and avoidance of historic properties. If historic properties could not be avoided or mitigated, some range improvements may not be implemented or feasible.

Hydrology

Slash or woody material of sufficient size and depth could be placed in ephemeral drainage features to protect banks and draw bottoms at designated crossing sites and would be removed when the crossing is no longer needed. Re-contouring of drainage feature banks or bottoms would occur as needed following completion of treatment, restoration of drainage crossing, or otherwise as identified by project manager.

Mineral Claims

A survey for mining claim markers in documented active claim sites would be conducted prior to implementing treatments that could potentially damage claim markers. All active mining claim marker locations and tag information would be recorded. Active mining claim markers or stakes would be avoided to the extent practical. Active mining claim markers that are destroyed by prescribed burning, thinning, or chaining operations would be re-staked using a legal mining claim marker. The re-staking of mining claim markers would occur in coordination with the existing mining claimants to ensure accurate, legal staking procedures that would minimize damage to claims. If any mining sites or dumps are discovered within the Project Area, operations would avoid these sites in order to minimize risk from potentially hazardous materials or mine features. Sites would also be reported to the Ely District Hazardous Materials Coordinator.

Monitoring

Progress towards meeting vegetation objectives would be measured from selected monitoring sites using BLM-approved protocols. Monitoring sites would be established prior to project implementation. Additional sites may be established following treatment completion.

The Project Area would be inspected prior to the mechanical treatments to solidify those areas targeted for each specific treatment in order to achieve desired management objectives. The treatment areas would be monitored following project implementation to determine success toward meeting objectives. All monitoring methods would follow objectives consistent with those in the ARMPA and Final Environmental Impact Statement for site scale habitat objectives (outlined in Table 2-2 of the ARMPA). The treatment areas would be inventoried for weeds and monitored to ensure noxious weed infestations are controlled. Noxious weed infestations would be reported to the Ely District Office Weed Coordinator in order to be evaluated and to determine treatment needed.

When an area is closed to livestock grazing, an interdisciplinary team would conduct a review of the resource monitoring data and objectives to recommend when livestock grazing should be allowed to occur within the Project Area. If environmental factors prevent attainment of resource management objectives following the mandatory rest period, an interdisciplinary team would review resource-monitoring data and recommend an appropriate grazing regime with the permittee. Monitoring locations would be measured the second year, and as needed thereafter during the livestock grazing closure period. The livestock closure period may be extended until vegetation objectives have been met, after which livestock grazing would resume as permitted.

Non-Native and Invasive Species

Stipulations identified in the Ely District Integrated Weed Management Plan and Environmental Assessment (BLM 2010) would be carried out at the time of implementation within each treatment unit. Subsequent treatments or changes in treatment methods would require an additional Weed Risk Assessment and those stipulations would also be implemented.

Overland Travel

No new roads would be constructed or maintained during project implementation. Overland travel with heavy equipment and vehicles would occur during implementation. Loading and unloading of any equipment would occur on existing roads, when available, to minimize overland disturbance and impacts. If determined necessary, signs would be posted along roads

within or adjacent to treatment units in regards to travel restrictions to assist in mitigating impacts from future cross country travel. Temporary roads or overland travel may be allowed for harvesting fuelwood by the public as part of implementation. Any temporary roads or discernable cross country travel routes would be rehabilitated by scattering vegetation or slash over the road and seeding after roads are no longer needed.

Paleontological Resources

Paleontological resources would be considered and evaluated for each proposed project prior to project implementation. Any localities present may require mitigation prior to implementation.

Recreation

In units where tree removal is proposed, some trees would be left surrounding regularly used dispersed campsites to maintain integrity of the campsite.

Wetland/Riparian Zones

Adhere to the Standard Operating Procedures and Project Design Features for Herbicide Applications as identified in the *Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States Final Programmatic Environmental Impact Statement and Record of Decision* (BLM 2007) within all wetland/riparian zones.

Wild Horse Management

Consider timing of vegetation treatments in relation to wild horse populations. Do not implement vegetation treatments in areas where horse populations exceed Appropriate Management Level in areas with heavy wild horse utilization.

Appendix E – Treatment Methods: Equipment Photos



PHOTOGRAPH 1: Heavy Equipment – Masticator
(Source: Diversified Resources)



PHOTOGRAPH 2: Heavy Equipment – Bull Hog (Masticator)
(Source: FECON)



PHOTOGRAPH 3: Heavy Equipment – Feller-Buncher
(Source: Papé Machinery)



PHOTOGRAPH 4: Heavy Equipment – Ely Chain
(Source: BLM)



PHOTOGRAPH 5: Hydroax Masticator
(Source: BLM)

Appendix F – Resources Analyzed and Dismissed

Table F.1 Resources Considered for Analysis

Resource/Concern Considered	Issue(s) Analyzed	Rationale for Dismissal from Analysis or Issue(s) Requiring Detailed Analysis
Air Quality	No	<p>White Pine County, Nevada is designated as attaining Air Quality standards for lead and attainment/unclassifiable for the other six criteria pollutants monitored in Nevada (sulphur dioxide, carbon monoxide, ozone, particulate matter <2.5 micrometers, particulate matter <10 micrometers, and nitrogen dioxide).</p> <p>Prescribed burning would require a smoke variance permit from the Nevada Department of Environmental Quality to ensure particulate matter does not exceed standards. The Proposed Action and No Action Alternative would not affect the designation of air quality standards in White Pine County. Negligible impacts would be expected from the Proposed Action, primarily from prescribed burning, however, detailed analysis is not necessary.</p>
Areas of Critical Environmental Concern (ACEC)	No	There are no ACEC's within the Project Area. No detailed analysis is necessary.
Cultural, Historic Resource Values, and Heritage Special Designations	No	<p>Inventory needs, buffers and avoidance areas associated with each specific proposed treatment would be determined by following the Protocol Agreement between BLM and the State Historic Preservation Office. All Historic Properties that could potentially be affected through implementation of the Proposed Action would be avoided. Cultural resources would be avoided through Design Features (Appendix D) and avoidance using appropriate buffer areas. No detailed analysis of cultural resources is necessary.</p> <p>The Sunshine Locality National Register of Historic Places District is located within the Project Area. The Pony Express National Historic Trail is present in the northern portion of both Ruby and Long Valley and trends east-west. These Heritage Special Designations would not be impacted by the Proposed Action. No detailed analysis is necessary.</p>
Environmental Justice	No	The Project Area is predominantly open space with minimal population. Implementation of the Proposed Action would occur at a significant distance from communities and would not disproportionately affect minority or low-income communities. No detailed analysis is necessary.
Fish and Wildlife	Yes	Big game habitat, particularly crucial habitat (elk, mule deer, and pronghorn) is present in the Project Area. Effects from the Proposed Action to wildlife habitat are expected and analyzed in EA (Chapter 3, Section 3.3).
Fire Management	Yes	The Proposed Action would result in changes to vegetation communities within the Project Area. A determination of changes to Fire Management Units would be needed, as well as updates to the Fire Management Plan. Impacts to Fire Management are expected and analyzed in the EA (Chapter 3, Section 3.4).
Floodplains	No	The Federal Emergency Management Agency Flood Insurance Rate Maps designate the Project Area as Zone D, which is a designation used for areas where there are possible but undermined flood hazards, as no analysis of flood hazards has been conducted for the area. The Proposed Action would not change or impact the function of floodplains. No detailed analysis is necessary.

Resource/Concern Considered	Issue(s) Analyzed	Rationale for Dismissal from Analysis or Issue(s) Requiring Detailed Analysis
Forest Heath and Resources	No	The Proposed Action is not a designated Healthy Forest Restoration Act project. Impacts to forest and woodland vegetation to be analyzed under general vegetation and rangeland health.
Lands and Realty	No	ROWs within the proposed treatment areas include aerial power lines, buried telephone lines, a maintained dirt road and a monitoring well that may be pending development. Avoidance of ROW structures is recommended, but should coordinate with ROW holders to treat lands within a ROW boundary (i.e., under powerlines). Effects to Lands and Realty would be negligible and no detailed analysis is necessary.
Migratory Birds and Sensitive Avian Species	Yes	The Proposed Action may affect migratory and sensitive avian species. A list of migratory bird species that may be present in the area is included in Appendix C. Effects are analyzed in the EA (Section 3.5).
Mineral Resources	No	The Proposed Action would not impact mineral resources. Authorized mining associated with Bald Mountain would be avoided and Design Features would be implemented to avoid or minimize any potential impacts. There are known and unknown abandoned mine land hazards throughout the Project Area, these areas would be avoided. Impacts related to mineral resources would be negligible and no detailed analysis is necessary.
Native American Religious Concerns and other concerns	No	No properties of traditional religious or cultural importance have been identified by Tribes within or adjacent to the proposed Project Area. BLM would continue ongoing consultation with Native American Tribes to identify and avoid properties of traditional religious or cultural importance.
Noxious and Invasive Weed Management	No	The Design Features of the Proposed Action and weed stipulations would help minimize the spread of weeds. No further analysis is necessary.
Paleontological Resources	No	Long Valley is known to contain mollusks and vertebrate fossils within the Sunshine Locality National Register District. Ruby Valley is known to contain ostracode remnants near Lake Franklin, and the "County Line" fossil site exists. Neither valley has been systematically inventoried for fossils, and very little is known of the Paleontology. Paleontological Resources would be avoided through Design Features and a mitigation plan, if needed (Appendix D). No detailed analysis is necessary.
Prime and Unique Farmlands	No	Farmlands of statewide importance exist in areas within Long and Ruby Valleys. Areas of Prime Farmland exist in both valleys if irrigated and removed of excess salt. Otherwise, Prime and Unique Farmlands are not present. No detailed analysis is necessary.
Public Health and Safety	No	The Proposed Action would follow all Standard Operating Procedures listed in the EIS for Herbicide Treatment in 17 Western States, as well as follow all label directions for specific herbicides. Negligible public health and safety impacts are likely. No detailed analysis is necessary.
Recreation Uses	No	Recreation is largely dispersed within the Project Area and impacts of the Proposed Action would be negligible. If recreational Off-highway vehicle trails and dispersed campsites are identified within areas of vegetation treatment or range improvements, Design Features (Appendix D) and mitigation may be necessary, likely minimal. Cave resources would not be impacted by the Proposed Action. No detailed analysis is necessary.

Resource/Concern Considered	Issue(s) Analyzed	Rationale for Dismissal from Analysis or Issue(s) Requiring Detailed Analysis
Special Status Wildlife Species, other than those listed or proposed by the FWS as Threatened or Endangered	Yes	General and Priority GRSG habitat is present. Special status bird species such as the golden eagle (<i>Aquila chrysaetos</i>), ferruginous hawk (<i>Buteo regalis</i>), and loggerhead shrike (<i>Lanius ludovicianus</i>) may be present within or near the Project Area. Adherence to the minimization measure in the Migratory Bird section of the Proposed Action, would avoid impacts to most Special Status avian species. Impacts analyzed further in the EA (Section 3.3).
Special Status Plant Species, other than those listed or proposed by the FWS as Threatened or Endangered	No	There are no USFWS listed species or critical habitat within the Project Area. There are no BLM Sensitive Plant Species known to occur in the Project Area. No detailed analysis is necessary.
Soil Resources	Yes	Direct effects to soils during implementation of the Proposed Action are expected and analyzed further in the EA (Section 3.7).
Transportation and Access	No	The Proposed Action would not likely impact transportation and access within the Project Area. Design Features (Appendix D) would be implemented to avoid or minimize any potential impacts related to transport of heavy equipment or overland travel. No detailed analysis is necessary.
Threatened or Endangered Species or Critical Habitat	No	There are no Threatened or Endangered species listed or proposed for listing known to occur within the proposed Project Area. No detailed analysis is necessary.
Vegetative and Rangeland Resources	Yes	<p>Direct impacts to vegetation are expected and analyzed further in the EA (Section 3.8). The effects from the Proposed Action to vegetative resources are consistent with the need for the action. The Proposed Action would also impact pine nut harvest areas. Impacts to vegetative resources are analyzed in the EA (Section 3.8).</p> <p>The Proposed Action includes vegetation treatments to maintain or improve watershed/rangeland health, particularly Standards 2 and 3. The Proposed Action would result in direct or indirect effects to rangeland health due to the change in livestock use as well as change in vegetation composition. Effects are analyzed in the EA (Section 3.8).</p>
Visual Resources	Yes	The Project Area falls within all VRM Classes II, III, and IV, including the Pony Express Corridor. Potential effects of the Proposed Action may occur and are analyzed in the EA (Section 3.9).
Wastes, Hazardous and Solid	No	The Proposed Action or alternatives would not likely produce hazardous or solid waste. No detailed analysis is necessary.
Water Resources	No	The Proposed Action is not expected to lead to a measurable change in the surface and subsurface water sources, water rights, quantity, and quality of water that occurs in the Project Area. Design features and SOPs would prevent contamination of water or groundwater resources. Any water rights would be approved by the State of Nevada water engineer. The Proposed Action would not prohibit or restrict any water right holders.
Wilderness and Wilderness Study Areas	No	No Wilderness or Wilderness Study Areas occur within or adjacent to the Project Area. No further analysis is necessary.
Lands with Wilderness Characteristics	Yes	The Project Area overlaps a portion of one unit found to possess Lands with Wilderness Characteristics, Unit 034-2012. Potential impacts are analyzed further in this EA (Section 3.10).

Resource/Concern Considered	Issue(s) Analyzed	Rationale for Dismissal from Analysis or Issue(s) Requiring Detailed Analysis
Wetlands/Riparian Zones	Yes	The Proposed Action would include vegetation treatments in or around riparian areas. Direct or indirect impacts to riparian areas are expected, and analyzed further in the EA (Section 3.11).
Wild Horses	Yes	The Project Area is within the Triple B HMA. Wild horses would be temporarily disturbed during vegetation treatment activities that occur within this area. Vegetation treatments would potentially provide more areas available for wild horse use. Wild horse populations could adversely impact vegetation treatment areas. Proposed range improvements, particularly fencing, could impact horse movement through the watersheds. Effects are analyzed in the EA (Section 3.12).
Wild and Scenic Rivers	No	No Wild and Scenic Rivers occur within or adjacent to the Project Area. No detailed analysis is necessary.
Climate Change	No	<p>Creating diverse plant populations would create vegetation communities that could adapt and respond to climate changes. The Proposed Action would result in carbon sequestration as a result of additional vegetation productivity.</p> <p>This EA is tiered to the analysis described in the Nevada and Northeastern California Greater Sage-Grouse Proposed Land Use Plan Amendment and Final EIS (2015). Impacts from this project would be no more than those disclosed in the above listed EIS. No detailed analysis is necessary.</p>

Appendix G – BLM Sensitive Species List for White Pine County Nevada

Table G.1 BLM Sensitive Species List for BLM Ely District, Nevada

Common Name	Scientific Name
<i>Amphibians</i>	
Northern leopard frog	<i>Lithobates pipiens</i>
Western toad	<i>Anaxyrus boreas</i>
<i>Birds</i>	
Bald eagle	<i>Haliaeetus leucocephalus</i>
Black rosy finch	<i>Leucosticte atrata</i>
Brewer's sparrow	<i>Spizella breweri</i>
Burrowing owl - Western	<i>Athene cunicularia</i>
Ferruginous hawk	<i>Buteo regalis</i>
Flammulated owl	<i>Psiloscoops flammeolus</i>
Golden eagle	<i>Aquila chrysaetos</i>
Greater sage-grouse	<i>Centrocercus urophasianus</i>
Loggerhead shrike	<i>Lanius ludovicianus</i>
Long-billed curlew	<i>Numenius americanus</i>
Northern goshawk	<i>Accipiter gentilis</i>
Peregrine falcon	<i>Falco peregrinus</i>
Pinyon jay	<i>Gymnorhinus cyanocephalus</i>
Sage thrasher	<i>Oreoscoptes montanus</i>
Sandhill crane (greater and lesser)	<i>Antigone canadensis</i>
Short-eared owl	<i>Asio flammeus</i>
Swainson's hawk	<i>Buteo swainsoni</i>
<i>Fish</i>	
Relict dace	<i>Relictus solitarius</i>
<i>Mammals</i>	
Big brown bat	<i>Eptesicus fuscus</i>
Big free-tailed bat	<i>Myctinomops</i>
Brazilian (or Mexican) free-tailed bat	<i>Tadarida brasillensis</i>
California myotis	<i>Myotis californicus</i>
Canyon bat	<i>Parastrellus hesperus</i>
Dark kangaroo mouse	<i>Microdipodops megacephalus</i>
Fringed myotis	<i>Myotis thysanodes</i>
Hoary bat	<i>Lasiurus cinereus</i>
Little brown myotis	<i>Myotis lucifugus</i>
Long-eared myotis	<i>Nyotis evotis</i>
Pallid bat	<i>Antrozous pallidus</i>
Pocket gopher	<i>Thomomys bottae</i>
Pygmy rabbit	<i>Brachylagus idahoensis</i>
Silver-haired bat	<i>Lasionycteris noctivagans</i>
Spotted bat	<i>Euderma maculatum</i>
Townsend's big eared bat	<i>Corynorhinus townsendii</i>
Western small-footed myotis	<i>Myotis ciliolabrum</i>
<i>Reptiles</i>	
Desert horned lizard	<i>Phrynosoma platyrhinos</i>
Greater short-horned lizard	<i>Phrynosoma hernandesi</i>
<i>Insects</i>	
Ash Springs riffle beetle	<i>Stenelmis lariversi</i>
Baking Powder Flat blue	<i>Euphilotes Bernardino minuta</i>
Colorado hairstreak	<i>Hypaurotis crysalus intermedia</i>
Monarch butterfly	<i>Hesperia uncas giulianii</i>
Pahranagat naucorid bug	<i>Pelocaris Shoshone shoshone</i>
Railroad Valley skipper	<i>Hesperia uncas fulvapalia</i>
Steptow Valley crescent spot	<i>Phyciodes cocyta arenacolor</i>

Common Name	Scientific Name
White River Valley skipper	<i>Hesperia uncas grandiosa</i>
White River wood nymph	<i>Cercyonis pegala pluvialis</i>
SOURCE: BLM 2017	